Fishery Management Report No. 05-72

Annual Management Report for the Subsistence and Commercial Fisheries of the Kuskokwim Area, 2003

by

Craig Whitmore,

Michael M. Martz,

Douglas G. Bue,

John C. Linderman,

and

Roberta L. Fisher

December 2005

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

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

Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Measures (fisheries)

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

Mathematics, statistics

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

FISHERY MANAGEMENT REPORT NO. 05-72

ANNUAL MANAGEMENT REPORT FOR THE SUBSISTENCE AND COMMERCIAL FISHERIES OF THE KUSKOKWIM AREA, 2003

by

Craig Whitmore, Mike M. Martz, Douglas G. Bue, John C. Linderman, and Roberta L. Fisher
Division of Commercial Fisheries, Bethel

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1599

December 2005

The Division of Commercial Fisheries Fishery Management Reports series was established in 1989 for the publication of an overview of Division of Commercial Fisheries management activities and goals in a specific geographic area. Since 2004, the Division of Commercial Fisheries has also used the Fishery Management Report series. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: http://www.sf.adfg.state.ak.us/statewide/divreports/html/intersearch.cfm. This publication has undergone regional peer review.

Craig Whitmore, Michael M. Martz, Douglas G. Bue, John C. Linderman, and Roberta L. Fisher
Alaska Department of Fish and Game, Division of Commercial Fisheries,
Box 1467, Bethel, AK, 99559-1467, USA

This document should be cited as:
Whitmore, C., M. M. Martz, D. G. Bue, J. C. Linderman and R. L. Fisher. 2005. *Annual management report for the subsistence and commercial fisheries of the Kuskokwim Area, 2003. Alaska Department of Fish and Game, Fishery Management Report No. 05-72, Anchorage.*

TABLE OF CONTENTS

Page

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF APPENDICES (Continued)

LIST OF APPENDICES (Continued)

ABSTRACT

The 2003 Kuskokwim River salmon fishery was managed according to the Kuskokwim River Salmon Rebuilding Management Plan. The subsistence fishing schedule allowed escapement of Chinook and chum salmon from throughout the run, provided the necessary opportunity for fishers to achieve amounts necessary for their subsistence use, spread the subsistence harvest out across the run and moved fish through the lower river giving those fishers in the upper river greater opportunity to meet their subsistence needs. The Kuskokwim River Salmon Management Working Group served as a public forum for Federal and State fisheries managers to meet with local users of the salmon resource to review run assessment information toward a consensus on how to proceed with management of Kuskokwim River salmon fisheries. Kuskokwim Bay salmon fisheries were managed according to associated management plans and regulations.

The 2003 subsistence salmon harvest estimates for the Kuskokwim Area were 72,498 Chinook, 46,291 chum, 36,894 sockeye and 38,791 coho for a total of 194,474 salmon. Subsistence harvests of all salmon species fell within or surpassed amounts necessary for subsistence use ranges set under 5AAC 01.286. No June or July directed chum salmon fishery was established in the Kuskokwim River, as no market was available, however, a directed commercial coho fishery was implemented. Kuskokwim Bay commercial fisheries occurred on schedule. A total of 463,000 salmon were commercially harvested from the Kuskokwim Area. A total of 438 permit holders participated in the fishery with the exvessel value estimated at $857,000. Limited processor capacity, low prices and low fishing effort dominated the season.

For the past 2 decades, a system has been upgraded and improved annually to monitor salmon run timing and run strength through comparison of current year information to historic information. This system includes the evaluation of subsistence fishery information, sport fishery harvest information, test fish project catch rates, commercial harvest catch rates and, as fish begin reaching clear water tributary streams, weir passage, sonar passage and evaluation of the numbers of salmon on spawning grounds through aerial surveys. In recent years, mark recapture studies and radio telemetry studies have been employed to further the understanding of salmon run timing, distribution and abundance. Cooperative partnerships have been established with federal agencies and local organizations increasing the number of escapement monitoring projects. These cooperative efforts have added substantially in monitoring salmon escapements and evaluating the effectiveness of inseason management actions. Established salmon escapement goals were generally achieved during the 2003 season with marked improvement in escapement levels from the poor returns experienced during 1997 to 2001.

The 2003 Kuskokwim Area commercial herring harvest was 1,257 tons, all for sac roe. Herring was harvested commercially in all of the Kuskokwim Bay districts except Security Cove. The overall recoverable roe content by district ranged from 8.4% in the Nunivak Island District to 10.4% in the Nelson Island District. The overall recoverable roe percentage for the Kuskokwim Bay Area was 9.7%. Estimated exploitation rates in the individual districts ranged from less than 1% in the Goodnews Bay District to 15.5% in the Nelson Island District. Exvessel values ranged from $4,600 in the Goodnews Bay district to $187,500 in the Nelson Island district. The exvessel value for the entire Kuskokwim Area was $252,500.

Key words: Kuskokwim River Salmon Management Working Group, subsistence fishing, commercial fishing, sport fishing, salmon fishery management, Bethel, Kuskokwim River, Kuskokwim Bay, Chinook, chum, sockeye, coho, salmon, Pacific herring, sonar, radio telemetry, mark–recapture, weir, escapement.

INTRODUCTION

The Alaska Department of Fish and Game (ADF&G), Division of Commercial Fisheries (CF) is responsible for the management of commercial and subsistence fisheries in the Kuskokwim Area. This annual management report details the activities of fisheries management and research in the Kuskokwim Area during the 2003 season and provides 2004 salmon and herring outlook and management strategy information.

This report is one of a series of Annual Management Reports detailing the management activities of the Division of Commercial Fisheries staff in the Kuskokwim Area. Reports from 1960–1974 appear in the Arctic-Yukon-Kuskokwim (AYK) Area report series under the section described as Kuskokwim District. Reports during 1975–1986 appear in the Kuskokwim Area Annual Report series. From 1987 to 2002, The Kuskokwim Area Annual Management Reports were included in the Regional Information Report Series. This report is included in the Fisheries Management Report (FMR) series.

Data presented in this report supersedes information found in previous management reports. In addition to fishery catch, harvest and effort information, this report includes summary data from many fishery assessment projects. Complete documentation of assessment project findings appear in separate reports. Some of the data presented in this report are preliminary and may be presented with minor differences in future reports.

This report focuses primarily on the salmon and herring subsistence and commercial fisheries. Other marine and freshwater finfish are harvested primarily for subsistence use and recreational activity. A list of indigenous fish found in the area is provided in Appendix A1. Data are organized in Appendices by area and fishery for the Kuskokwim Area salmon fishery (Appendix A) and further separated for salmon fisheries of the Kuskokwim River (Appendix B) and Kuskokwim Bay District 4 (Appendix C), District 5 (Appendix D), and Kuskokwim Area herring (Appendix E).

SECTION I. MANAGEMENT AREA OVERVIEW AND FISHERY BACKGROUND

MANAGEMENT AREA

The Kuskokwim Area includes the Kuskokwim River drainage, all waters of Alaska that flow into the Bering Sea between Cape Newenham and the Naskonat Peninsula, and Nunivak and St. Matthew Islands (Figure 1).

Subsistence Salmon Fisheries

There are 38 communities consisting of approximately 4,500 households within the Kuskokwim Area (Figure 1). Approximately 75% of the approximately 4,500 households in the region are situated within the drainage of the Kuskokwim River (ADF&G, Division of Subsistence 2003). Bethel is the largest community in the region, containing approximately 1,500 households. Much of the salmon fishing effort occurs within the mainstem of the Kuskokwim River; however, fishing also occurs in many of the tributaries that contain salmon. Residents of Quinhagak, Goodnews Bay, and Platinum, located along the south shore of Kuskokwim Bay, harvest salmon

stocks primarily from the Kanektok, Arolik, and Goodnews River systems. Residents of Kipnuk, Kwigillingok and Kongiganak, located on the north Kuskokwim Bay harvest salmon from within the Kuskokwim River drainage and from local drainages that drain into Kuskokwim Bay. Residents of Toksook Bay, Nightmute, Tununak, Newtok, Chefornak and Mekoryuk, situated near the Bering Sea Coast, harvest salmon from coastal waters as well as local tributaries.

Commercial Salmon Fisheries

There are 4 commercial salmon fishing districts: 1, 2, 4, and 5 (5AAC 07.200). District 1 (District W-1), the Lower Kuskokwim River, consists of the Kuskokwim River from a line between Apokak Slough and the southernmost tip of Eek Island and Popokamiut upstream to a line between ADF&G regulatory markers located at Bogus Creek, about 9 miles above the Tuluksak River (Figure 2; Appendix A2). The downstream boundary has been in effect since 1986, and the upstream boundary was established in 1994 (Appendix A3). District 1 was divided into 2 subdistricts in 2000. Subdistrict 1A consists of that portion of District 1 upstream from a line between regulatory markers located at the downstream end of Steamboat Slough. Subdistrict 1B consists of that portion of District 1 downstream from the Steamboat Slough regulatory markers. Subdistrict registration requirements are in effect in District 1 (5 AAC 07.370).

District 2, the Middle Kuskokwim River, consists of the Kuskokwim River from ADF&G regulatory markers located at the upstream entrance to the second slough on the west bank downstream from Kalskag to the regulatory markers at Chuathbaluk (Figure 3). The downstream boundary of District 2 was used for the first time in 1990 (Appendix A3).

The District 4 commercial salmon fishery was established in 1960. The boundaries of District 4 extend from the northern-most edge of the mouth of Oyak Creek to the southern-most tip of the south mouth of the Arolik River, and expand 3 mi from the coast into Kuskokwim Bay (Figure 4). Prior to 2001, the northern most boundary of the district was the northern most edge of Weelung Creek. The northern boundary was moved by regulation to minimize the number of Kuskokwim River bound Chinook and chum salmon harvested in the District 4 commercial fishery. The Kanektok and Arolik Rivers are the main spawning streams in the district. The village of Quinhagak is located at the mouth of the Kanektok River.

The District 5 commercial salmon fishery was established in 1968 (Appendix A3; Figure 5). The boundaries of District 5 extend from the southern most tip of the north spit to the northern most tip of the south spit at the entrance of Goodnews Bay, expanding east to a line between the mouth of Ukfigag Creek to the mouth of the Tunulik River. The Goodnews River drainage is the main spawning drainage in the district. The Goodnews and Middle Fork Goodnews Rivers are the primary spawning rivers within the drainage.

Sport Fisheries

Kuskokwim Area sport fisheries are divided between 2 management areas. The Lower Kuskokwim Management Area (LKMA) includes waters including and downstream of Aniak and all drainages in Kuskokwim Bay (Lafferty 2004). The Upper Kuskokwim Management Area (UKMA) includes all waters of the Kuskokwim River upstream of Aniak (Burr 2004).

Commercial Herring Fisheries

The Kuskokwim Area includes all waters of Alaska that flow into the Bering Sea between Cape Newenham and the Naskonat Peninsula to 3 miles seaward as well as the waters surrounding

Nunivak and St. Matthew Islands to 3 miles seaward (Figure 6) (5 AAC 27.870). There are 5 commercial gillnet sac roe districts and a significant subsistence herring fishery in the Kuskokwim Area.

The Security Cove District includes all waters between the latitude of Cape Newenham and the latitude of the Salmon River.

The Goodnews Bay District includes the waters of Goodnews Bay inside of a line between the north and south spits at the mouth of the bay and a line between Ukfigag Creek and Tunulik River at the head of the bay.

The Cape Avinof District consists of all waters landward of Kikegtek, Pingurbek and Kwigluk Islands and northward of a line from the southernmost tip of Kwigluk Island and westward of a line from the longitude of the Ishkowik River. The district also includes waters south of a line along the latitude of Tern Mountain to a point at 60° 42’ N. lat., 164° 14’ W. long. and landward of a line from that point to the northernmost point of Kikegtek Island.

The Nelson Island District consists of the waters north of Chinigyak Cape and east of Atrnak Point, all waters north of Talurarevuk Point and south of the southernmost tip of Chinit Point and east of 165° 30’ W. long., and all waters north of the northernmost tip of Chinit Point and south of Kigigak Island and east of 165° 30’ W. long.

The Nunivak Island District includes the waters extending 3 miles seaward of mean low water along the northern, eastern, and southern sides of Nunivak Island from Kikoojit Rocks to Cape Mendenhall (5 AAC 27.875).

Other Fisheries

Kuskokwim Area residents also harvest freshwater and marine finfish for subsistence use. The contribution of non-salmon species to the overall subsistence fishery is not well quantified throughout the Kuskokwim Area. However, subsistence harvest estimates based on community specific harvest surveys are being developed in Aniak and have been developed for Kwethluk (Coffing 1991), Akiachak (Coffing 2000), Bethel (Coffing 2001) and Quinhagak (Wagner 1991).

Commercial fresh water finfish fisheries are allowed in the Kuskokwim Area. The fishery has occurred sporadically with the primary harvest consisting of whitefish and burbot for local markets. A permit from the Commercial Fisheries Entry Commission and a permit from the ADF&G are required to commercially harvest whitefish, pike, smelt, burbot and lamprey. Those species may also be taken incidentally to commercial salmon fishing.

A poorly documented commercial fishery on Saffron cod or "Tom Cod" (*Eleginus gracilus*) has occurred in the Kuskokwim Area for some time. These fish are surplus to subsistence needs, and fishers and local stores are often unaware of the regulatory requirements for their commercial harvest and sale. From 1988 to 1997, ADF&G documented sporadic information on the sale of these fish, which were harvested near coastal villages and sold in Bethel. The peak documented harvest occurred in 1991 when 2 fishers sold 1,356 pounds valued at $2,600. Sales within the villages have never been documented.

ADF&G Staff

In 2003, Commercial Fisheries Division permanent full time staff assigned to the Kuskokwim Area included the Area Management Biologist, Assistant Area Biologist, the Research Project Biologist, and the Program Technician. There were additionally 2 long term Fishery Biologists

and approximately 25 seasonal employees to assist in conducting various management and research projects. The staff aids in the enforcement of regulations in cooperation with the Department of Public Safety, Division of Fish and Wildlife Protection (FWP). The staff has also had increasing involvement with Native organizations and the United States Fish and Wildlife Service (USFWS) Office of Subsistence Management (OSM) in developing and operating salmon escapement monitoring projects (Table 1).

Subsistence Division staff includes a Subsistence Resource Specialist. The position was vacant from July through August. Additionally several seasonal employees are employed annually to conduct harvest survey studies.

Full time Sport Fish Division staff assigned to the Kuskokwim Area includes the LKMA Management Biologist, the UKMA Management Biologist and 2 Fishery Biologist project leaders. Additionally several seasonal staff are employed annually to participate in program studies.

FISHERIES RESOURCE INVENTORY

There are over 40 fish species present in the Kuskokwim Area (Appendix A1). Five species of Pacific salmon are in the area; Chinook or "king" salmon (*Oncorhynchus tshawytscha*), sockeye or "red" salmon (*O. nerka*), coho or "silver" salmon (*O. kisutch*), pink or "humpy" salmon (*O. gorbuscha*), and chum or "dog" salmon (*O. keta*). The Kuskokwim River drainage has the largest populations of Chinook, sockeye, coho and chum salmon in the area. Pink salmon occur throughout the area with significantly larger returns in even years than in odd years. Little quantitative data on the population size of pink salmon are available because of the lack of commercial markets and interest by subsistence fishers. Several species of fish other than salmon, herring, and halibut are used for commercial, subsistence, and sport purposes in the Kuskokwim Area. These include: sheefish (*Stenodus leucichthys*), whitefish (*Coregonus*) and (*Prosopium*), char (*Salvelinus alpinus*), burbot (*Lota lota*), Arctic grayling (*Thymallus arcticus*), northern pike (*Esox lucius*), Arctic lamprey (*Lampetra japonica*), rainbow smelt (*Osmerus mordax*), blackfish (*Dallia pectoralis*), rainbow trout (*Oncorhynchus mykiss*), lake trout (*Salvelinus namaycush*), threespine stickleback (*Gasterosteus aculeatus*), ninespine stickleback (*Pungitius pungitius*), longnose sucker (*Catostomus catostomus*) and Saffron cod or "Tom Cod" (*Eleginus gracilus*).

ALASKA BOARD OF FISHERIES AND FEDERAL SUBSISTENCE BOARD ACTIVITIES

Alaska Board of Fisheries

Kuskokwim Area fisheries are governed by regulations of Title 5 of the Alaska Administrative Code. Subsistence fishing regulations fall within Chapter 01, commercial fishing regulations in Chapter 07, commercial herring fishing regulations in Chapter 27, and sport fishing regulations are in Chapter 70. Other regulations pertaining to Kuskokwim Area fisheries include Chapter 39 (General Provisions and Policies) and Chapter 75 (Sport Fishing General Provisions). Commercial resident species fishery requirements are outlined in 5 AAC 39.734 and 5 AAC 39.780.

The process of developing fishing regulations in Kuskokwim Area fisheries occurs within the established Alaska Board of Fisheries (BOF) process. Public input concerning regulations changes and allocation issues is provided for in this process through various means including submission of proposals, direct testimony to the BOF, and through public participation by local

Fish and Game Advisory Committees and the Kuskokwim River Salmon Management Working Group. Within the Kuskokwim Area there are 4 Fish and Game Advisory Committees; Central Bering Sea, Lower Kuskokwim, and Central Kuskokwim and McGrath. Under the current operating schedule, the BOF meets on a 3-year cycle. Proposals regarding the Kuskokwim Area were most recently discussed during January 2001. The next regularly scheduled BOF meeting to address Kuskokwim Area finfish issues is scheduled for January 2004.

Federal Subsistence Board

The Alaska National Interest Lands Conservation Act (ANILCA) of 1980 mandates that rural subsistence users have a priority over other users to take fish and wildlife on Federal public lands and waters and required the creation of Regional Advisory Councils to enable rural residents to have a meaningful role in Federal Subsistence Management. 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. The Secretary of Interior and the Secretary of Agriculture delegated their authority in Alaska to the Federal Subsistence Board to manage fish and wildlife resources for subsistence uses on Federal public land, including waters running through or next to these lands. Federal subsistence fishing regulations are adopted by the Federal Subsistence Board (FSB). The Regional Advisory Councils provide recommendations and information to the FSB, review policies and management plans, provide a public forum and deal with other matters relating to subsistence uses. The FSB may close fishing for other uses in these waters to a priority for Federally qualified rural subsistence users if it is determined that there are subsistence or conservation concerns.

Federal subsistence fishing schedules, openings, closings, and fishing methods are established in regulations (DOI 2005). In general, the regulations are the same as those issued for the subsistence taking of fish under Alaska Administrative Code. However, differences in regulations do exist in some cases, primarily when a Federal Special Action supersedes State regulations.

Existing Management Plans and Policies

Salmon

Alaska Statute Title 16.05.258, Subsistence Use and Allocation of Fish and Game establishes the subsistence use priority for reasonable harvest opportunity consistent with sustained yield when resources are not large enough to provide for all consumptive uses. In 1993, the Board of Fisheries made a positive finding for Customary and Traditional Use for all salmon in the entire Kuskokwim Area (Appendix A3). In 2001, ADF&G recommended that the BOF amend 5 AAC 01.286 to include a revised finding of the Amount Necessary for Subsistence (ANS) for the Kuskokwim Area using subsistence harvest data through 1999. After a thorough review of various options, the BOF made a finding of the ANS for the Kuskokwim River by species and for the remainder of the Kuskokwim Area by all species combined (Appendix A4; Burkey et al. 2000b).

ANS range for Kuskokwim River drainage by species are as follows: 64,500 to 83,000 Chinook salmon, 39,500 to 75,500 chum salmon, 27,500 to 39,500 sockeye salmon, and 24,500 to 35,000 coho salmon. The ANS range for the remainder of the Kuskokwim Area is from 7,500 to 13,500 salmon. In establishing the ANS range, the BOF used harvest information that represents the

pattern of use in the subsistence fishery. The approach captured the dynamic pattern of use within the recent decade (Appendices A4 and A5) by using the low and mean subsistence harvests for the most recent 10 years, rounded down to the nearest 500 fish for the low, and median rounded up to the nearest 500 fish for the high.

The Kuskokwim River salmon fisheries are managed according to the Kuskokwim River Salmon Management Rebuilding Plan (5 AAC 07.365) adopted by the BOF in January 2001 (Burkey et al. 2002; Ward et al. 2003). 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 amounts necessary for subsistence, and to provide for other fisheries. The management 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. Implementation of the subsistence fishing schedule has provided reasonable opportunity for fishers to harvest Chinook and chum salmon for their subsistence use, spread the subsistence harvest out across the run and moved fish through the lower river to spread subsistence fishing opportunity out to fishers in the upper river.

The fisheries associated with the Kanektok and Arolik rivers are managed according to 5 AAC 07.367. District 4 Salmon Management Plan. The objective of this plan is to maintain a level of sustained yield which will provide for subsistence needs, the long-term economic health of the commercial and sport fishing industries, and recreational opportunities, in the district and freshwater systems flowing in to the district. There is no management plan associated with the District 5, Goodnews Bay commercial salmon fishery. The primary fishery strategy since 1990 has been to delay the commercial opening until late June to increase Chinook salmon escapements into the Goodnews River drainage.

Resident Species

In association with sport fisheries, the Southwest Rainbow Trout Management Plan and the Aniak River Resident Fish Management Plan are in effect (Lafferty 2004).

Pacific Herring

Kuskokwim Area herring fisheries are managed according to 5 AAC 27.059 Management Guidelines for commercial herring sac roe fisheries and 5 AAC 27.060 Bering Sea Herring Fishery Management Plan. These management plans provide authority and direction to ADF&G in establishing commercial fishing periods by emergency order to achieve the highest quality product, directs fishery management so that the exploitation rate does not exceed 20% of the biomass by stock and establishes minimum biomass thresholds below which fisheries may not be conducted. The Management Plan of the Gillnet and Cooperative Purse Seine Fishery in the Nunivak District (5 AAC 27.894) establishes the criteria necessary to allow for a herring gillnet and cooperative purse seine fishery in the Nunivak Island District.

All Kuskokwim Area commercial herring fisheries are opened and closed by emergency order to provide for an orderly fishery and allow periodic assessment of herring biomass. ADF&G attempts to harvest stocks in good condition (large volume, increasing abundance, good

recruitment) at the upper end of the exploitation range (15–20%). Stocks in poor condition (small volume, decreasing abundance, poor recruitment) are exploited at lower than maximum rates (0-15%).

The Goodnews Bay and Cape Avinof Districts are superexclusive use areas. The Nelson Island and Nunivak Island Districts are a combined superexclusive use area (5 AAC 27.899).

In 1990, the Nelson and Nunivak Island Districts were given limited entry status by the Commercial Fisheries Entry Commissions (CFEC). The Goodnews Bay District was closed to new entry beginning in 1997 and given limited entry status with 182 limited entry permits being issued.

Other User Groups

Salmon

Western Alaska salmon migrate as juveniles out of the rivers and into the Bering Sea. Where they go once they enter the ocean is only partly understood, but evidence from tagging studies and the analysis of scale patterns indicate that these salmon spread throughout the Bering Sea, and some move considerably south of the Aleutian Island chain into the Gulf of Alaska and North Pacific Ocean. While in the ocean, they mix with salmon stocks from Asia and elsewhere in North America (Yukon River Joint Technical Committee, 2005).

While in the ocean, some of these salmon are caught by commercial fisheries that take place in marine waters. Marine commercial fisheries that harvest migratory salmon that likely included some salmon bound for western Alaska included: (1) the U.S. groundfish trawl fisheries in the Bering Sea-Aleutian Islands management area (BSAI) and in the Gulf of Alaska, and (2) the June South Peninsula salmon purse seine and gill net fishery. Other commercial fisheries which operate in marine waters of the Bering Sea and Gulf of Alaska include: (1) the U.S. longline fisheries for Pacific halibut, Pacific cod, and other groundfish, (2) the U.S. pot fisheries for Pacific cod and other groundfish, and Dungeness, king, and Tanner crab, and (3) the U.S. purse seine and gillnet fisheries for Pacific herring.

Until 1992, 5 commercial fisheries in the ocean were known to catch salmon, some of which were likely bound to western Alaska. However, under international agreements, those fisheries no longer operate. They were (in order of decreasing overall salmon catches): (1) the Japanese high-seas mothership and land-based salmon gill net fisheries; (2) the high-seas squid gillnet fisheries in the North Pacific Ocean of Japan, the Republic of Korea, and the Republic of China (Taiwan); (3) the foreign groundfish fisheries of the Bering Sea and Gulf of Alaska, (4) the joint venture groundfish fisheries of the Bering Sea and the Gulf of Alaska, and (5) the groundfish trawl fishery by many nations in the international waters area of the Bering Sea ("the Doughnut Hole").

Salmon harvested in the June South Peninsula (South Unimak and Shumagin Islands) fisheries include stocks migrating to a wide range of locations, including Bristol Bay and the Arctic-Yukon-Kuskokwim (AYK) regions (5 AAC 09.365 South Unimak and Shumagin Islands June Salmon Management Plan). The 1993–2002 June South Peninsula fishery average chum salmon harvest was 349,144 fish with a 2003 harvest of 282,438 fish (Appendix A6; Burkey et al. 2004). In a study conducted in 1993 and 1994, genetics samples were collected from chum salmon harvested incidentally in sockeye fisheries along the south side of the Alaska Peninsula (Seeb and Crane 1999a). The stock of origin of Asian and North American chum salmon in these

complex mixtures was estimated using a representative baseline of allozyme allele frequencies covering the entire range of chum salmon. Of the 8 major regions (Japan, Russia, northwest Alaska summer run, Alaska Peninsula-Kodiak Island, southeast Alaska, British Columbia, and Washington) reported, northwest Alaska summer-run chum salmon predominated in the fishery with estimates ranging from 52 to 72%. Northwest Alaska summer-run chum salmon includes all stocks from the North Alaska Peninsula (Area M stocks) to Kotzebue.

Pacific Herring

Kuskokwim Area herring are harvested in U.S. groundfish trawl fisheries in the BSAI. Under the current management regime, targeted harvest and retention of Pacific herring is allowed only in state-managed inshore fisheries for herring sac roe and bait. Herring bycatch in groundfish fisheries may not be retained and herring bycatch amounts are limited by federal regulations. As part of the federal regulatory process, ADF&G provides an annual estimate of the biomass of herring in the Bering Sea to the North Pacific Fisheries Management Council (NPFMC). The NPFMC then allocates 1% of this estimated biomass among various segments of the groundfish fishery as a "bycatch cap". Attainment of the bycatch cap triggers restrictive actions for that component of the groundfish fishery.

Kuskokwim Area herring may also be harvested in the Dutch Harbor food and bait fishery. Scale pattern analysis studies identified some herring harvested during the Aleutian Islands herring food bait fishery to be part of the Eastern Bering Seas herring biomass (Rogers et al. 1985).

ESCAPEMENT GOALS AND GUIDELINE HARVEST LEVELS

Salmon

Kuskokwim Area provisional salmon spawning escapement objectives were first established in 1983 for specific aerial survey index areas of area streams and lakes, salmon weir passages on the Kogrukluk, Tuluksak, Kwethluk and Goodnews rivers, and salmon passage enumerated by sonar on the Aniak River (Francisco et al. 1993). The objectives were based on the average escapement counts obtained in these systems beginning in 1959. The objectives represented the minimum escapement levels needed to maintain the salmon stocks at past levels of abundance. Since the initial setting of salmon escapement objectives in the Kuskokwim Area in 1983, a few revisions and corrections were made over the years. Consistent with the escapement goal policy established by the Commissioner in October 1992, the established Kuskokwim Area escapement goals in effect during 1992 were documented and established as the official biological escapement goals during 1993–2000 (Buklis 1993).

ADF&G is responsible for establishing BEG's, SEG's or SET's. An escapement goal review occurred during the 2001 Board of Fisheries meeting based on the *Policy for the Management of Sustainable Salmon Fisheries* (Sustainable Salmon Policy: 5 AAC 39.222) and the *Policy for Statewide Salmon Escapement Goals* (Escapement Goal Policy: 5 AAC 39.223). The Sustainable Salmon Policy defines 3 types of escapement goals including the biological escapement goal (BEG), sustainable escapement goal (SEG), and sustainable escapement threshold (SET). BEG means the escapement that provides the greatest potential for maximum sustained yield. SEG means a level of escapement indicated by an index or an escapement estimate, that is known to provide for sustained yield over a 5 to 10 year period, used in situations where a BEG cannot be estimated due to the absence of a stock specific catch estimate. SET means a threshold level of escapement, below which the ability of the salmon stock to sustain itself is jeopardized; in

practice, SET can be estimated based on lower ranges of historical escapement levels, for which the salmon stock has consistently demonstrated the ability to sustain itself. BEG's and SEG's are the primary management objectives for escapement unless the BOF sets an optimal escapement goal (OEG) which take into account socio-economic factors. BEGs are set to provide levels of escapement that will on average produce large returns with large harvestable surpluses. Escapements above or below these levels may be sustainable, but will on average produce less fish for harvest. SEGs are set to provide levels of escapement that will produce runs and harvests similar to what has occurred in the past. Escapement goals established in the Kuskokwim Area are SEGs because not enough data exists to determine total escapement or total return for a given stock.

Before adoption of the regulatory Escapement Goal Policy in 2001, all escapement goals established by ADF&G for stocks in these areas were termed biological escapement goals (ADF&G 2004). However, most of these goals did not meet the criteria for a BEG under the new policy definition. At the 2001 board meeting, only select stocks were reviewed and goals were established consistent with the Escapement Goal Policy definitions. SEGs were established for select Kuskokwim Area stocks including 7 Chinook salmon stocks, 4 chum salmon stocks and 1 coho salmon stock (Appendix A7; Burkey et al. 2000b). Aerial survey index area escapement goals were discontinued for 2 Chinook salmon stocks and 4 chum salmon stocks. Goals not specifically reviewed in 2001 remained as management targets referred to as escapement objectives, but their designation was undefined.

Pacific Herring

The Bering Sea Herring Fishery Management Plan (5 AAC 27.060) requires minimum spawning biomass thresholds for each district prior to commercial fishing. The thresholds are: Security Cove, 1,200 short tons (st); Goodnews Bay, 1,200 st; Cape Avinof, 500 st; Nelson Island, 3,000 st; and Nunivak Island, 1,500 st. The maximum exploitation rate is established at 20% of the estimated spawning biomass for Security Cove, Goodnews Bay, Nunivak Island, and Nelson Island. Other regulations further reduce the maximum Nunivak Island exploitation rate to 15% if aerial surveys are inadequate (5 AAC 27.894), and the maximum 20% exploitation rate at Nelson Island must include a 200 st subsistence herring harvest estimate. Regulations set the maximum allowable exploitation rate in the Cape Avinof District at 15%.

Other Species

Escapement goals or guideline harvest levels have not been established for fish other than salmon or herring in the Kuskokwim Area. The Southwest Alaska Rainbow Trout Management Plan directs that the Kuskokwim Area rainbow trout fishery be managed to maintain historic size and age composition (Lafferty 2004).

RESEARCH PLANNING AND FUNDING INITIATIVES

Research planning is an ongoing task of government agencies and non-governmental organizations interested in making the best use of research funding. Research in support of sustainable salmon fisheries must be well planned and prioritized as information needs generally outpace available funds. Recently several funding initiatives have been available to support research and assessment projects on the Kuskokwim River. Kuskokwim stakeholders interested in salmon fisheries have responded to discuss and plan activities funded primarily by USFWS

Office of Subsistence Management, Bering Sea Fishermen's Association, and the AYK Sustainable Salmon Initiative though other minor funding opportunities also exist.

The Kuskokwim Fisheries Resource Coalition (KFRC) formed as a collective of federal, state, and tribal organizations that are actively involved in a variety of fishery research and management initiatives in the Kuskokwim Region. Participants meet under the title of KFRC to coordinate fishery research initiatives and grant proposal submissions. Participating organizations include, but are not limited to: Alaska Department of Fish and Game (Divisions of Commercial Fisheries, Subsistence, and Sport Fish), Association of Village Council Presidents (AVCP), Bering Sea Fishermen's Association (BSFA), Kuskokwim Native Association (KNA), Kuskokwim River Salmon Management Working Group (KRSMWG), McGrath Native Village Council (MNVC), Orutsararmiut Native Council (ONC), USFWS (Kenai Fish and Wildlife Resource Office, Togiak National Wildlife Refuge, and Yukon Delta National Wildlife Refuge), and Tanana Chiefs Conference (TCC). The KFRC does not presume to have any special authority regarding the proposal submission process for the Kuskokwim Region, but seeks to provide an open and cooperative forum that is inclusive of a broad range of stakeholder groups who want to work together to improve management of Kuskokwim Region fisheries. It is the intertwining of organizational strengths, and the valuing of mentoring and capacity building relationships, that offer the best opportunity for long-term success and public acceptance of fisheries management programs in the Kuskokwim Region.

The AYK Sustainable Salmon Initiative began with a Memorandum of Agreement (MOA) signed following discussions between the ADF&G and the AYK Coalition to form a body which would provide direction in response to salmon failures in western Alaska. The AYK coalition is comprised of 3 Alaska Native organizations in the AYK region: the Association of Village Council Presidents, the Tanana Chiefs Conference, and Kawerak, Inc. and the Bering Sea Fisherman's Association. Representatives from the AYK Coalition lobbied Congress in 2001 seeking funding to understand the decline of salmon in AYK. The lobbying effort was successful in obtaining a total appropriation of $14 million for the Arctic-Yukon–Kuskokwim Sustainable Salmon Initiative (AYK SSI) by Congress for federal fiscal years 2002–2004 (as an earmark of the Pacific Coastal Salmon Recovery Fund).

The MOA outlining a process for administering the AYK SSI research grant also specified that a research plan would be developed to guide research-funding decisions. The objective of the research plan was to address the decline of Chinook and chum salmon to the Yukon River, Kuskokwim River, and rivers draining into Norton Sound, (collectively known as the AYK Region) which have led to severe restrictions on commercial and subsistence fisheries and to repeated disaster declarations by the state and federal governments. It was also implicit that the AYK SSI research plan would recognize regional or watershed research plans. Plans had been developed for the Yukon River and Norton Sound. The AYK SSI steering committee has tasked its Scientific Technical Committee (STC) to complete a research plan. The National Research Council, a part of the National Academies of Sciences, Engineering and Medicine, has also been contracted to assist the STC in background for and review of the final plan.

In response to the absence of a Kuskokwim watershed plan, and the initiation of the AYK SSI research planning process the KFRC requested funds from the AYK SSI and OSM to develop a research plan. The science plan would be developed in conjunction with a gap analysis to guide long-term research and monitoring of the freshwater life history stages of the salmon resources

of the Kuskokwim Area. The planning process began in 2003 and a draft of the plan is available for review.

FUNDING SOURCES

The OSM funds about $7 million annually in research and monitoring projects. This Fisheries Monitoring Program was established to help provide information needed for effective management of subsistence fisheries on Federal public lands in Alaska. The Program funds projects that address research priorities identified by management agencies and local users from around the state. In 2003, 19 projects were funded in the Kuskokwim area for about $1.1 million.

The Bering Sea Fisherman's Association (BSFA), a non-profit organization has been active in AYK fisheries issues, including research for decades. BSFA generally receives money from the Federal Government primarily from the Bureau of Indian Affairs (BIA). These funds have been used in the Kuskokwim Area to support Native organizations that participate in research and assessment projects with ADF&G or USFWS.

The state supports its research and assessment program using 3 types of funds: general, permit, and test fish. General funds are those appropriated by the legislature resulting from the state's taxes (oil, fish sales, etc). Permit funds are generated by the sale of fishing permits and crew member licenses. Test fish monies are derived from the sale of fish caught during operation of research and assessment projects to licensed buyers. The legislature approves the total dollar amount the ADF&G can receive for permit and test fish funds.

COOPERATIVE MANAGEMENT PROCESS

Salmon

The Kuskokwim River Salmon Management Working Group (Working Group) was formed in 1988 by the Alaska Board of Fisheries in response to requests from stakeholders in the Kuskokwim River drainage seeking a more active role in the management of salmon fishery resources. 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 charter 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. 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. Working Group meetings provide the forum for area fishers, user representatives, community representatives, Regional Advisory Council representatives, Fish and Game Advisory Committee members, and State and Federal managers to come together to discuss issues relevant to sustained yield fishery management and providing for the subsistence use priority.

Improvements have been made toward strengthening the cooperative management process of the Kuskokwim River Salmon Management Working Group through funding provided by OSM in support of project Fisheries Information Services (FIS) 01-116. The funding provided by OSM allowed ADF&G staff and Working Group members to more effectively keep area fishers

informed of run abundance, fishery status, and management strategies through discussion, news releases, newspaper articles and radio talk shows. The funding allowed dedicated staff to more effectively prepare for meetings by providing complete and frequent distribution of updated fishery status information in a standardized format. The funding also allowed travel for Working Group members to participate in fishery meetings located outside the drainage. Although progress has been made toward strengthening cooperative management, it is an ongoing process that will require the continued unselfish participation by area fishers and basic funding for material preparation, communication and travel to maintain the interaction of Working Group members with fishery managers, fishery project leaders, research planners, and policy makers.

Other Species

Halibut and groundfish are managed by the North Pacific Fisheries Management Council. Other fisheries are managed by ADF&G according to established management plans, polices and regulations.

GENERAL DESCRIPTION OF MANAGEMENT AND RESEARCH ACTIVITIES

Salmon

The vast size, remoteness and geomorphic diversity of the Kuskokwim Area present tremendous challenges in assessing salmon run timing, implementing fisheries, establishing escapement goals and monitoring escapements toward sustained yield fishery management. For the past 2 decades, a system has been upgraded and improved annually to monitor salmon run timing and run strength though comparison of current year information to historic information. This system includes the evaluation of subsistence fishery information, sport fishery harvest information, test fish project catch rates, commercial harvest catch rates and, as fish begin reaching clear water tributary streams, weir passage, sonar passage and evaluation of the numbers of salmon on spawning grounds through aerial surveys. In recent years, mark recapture studies and radio telemetry studies have been employed to further the understanding of salmon run timing, distribution and abundance. Cooperative partnerships have been established with federal agencies and local organizations increasing the number of escapement monitoring projects (Table 1). These cooperative efforts have added substantially to our ability to monitor salmon escapements and to evaluate the effectiveness of inseason management actions.

During 2003, programs established toward assessing salmon escapements included salmon weirs operated on the Takotna, Tatlawiksuk, George, Tuluksak, Kwethluk, Kanektok, and Goodnews Rivers, plus mark–recapture and radio-telemetry projects operated on the main stem Kuskokwim and Holitna Rivers (Table 1; Figure 1). These projects received federal funding through grants obtained by BSFA, Bureau of Indian Affairs (BIA), OSM and the National Marine Fisheries Service (NMFS). ADF&G and/or USFWS staff worked jointly to provide varying levels of support to each project, including an on-site crew leader or crewmember.

Post Season Subsistence Harvest Surveys

ADF&G conducts annual household surveys to collect information about the harvest and use of salmon in the Kuskokwim Area (Tables 2-6; Appendices A4–A5, A8, B1–B4, C1–C4, and D1–D5). Prior to statehood, subsistence salmon harvest information was collected periodically by various federal departments and bureaus. Since 1960, ADF&G has been collecting subsistence salmon harvest information from fishers along the Kuskokwim River drainage through visits to fish camps by survey staff during late July. Over the years, data collection methods changed

several times. Harvest surveys were initiated in Quinhagak in 1967 and in Goodnews Bay and Platinum starting in 1979. The Division of Subsistence took over the annual subsistence salmon harvest surveys in 1988 and has been responsible for collecting and analyzing the data since then. The Division of Subsistence made several changes to the methodology, including starting the data collection in October, well after the late summer, early fall salmon harvest was completed. This was done primarily to improve estimates of the subsistence coho salmon harvest.

More recently, ADF&G has collaborated in data collection with the USFWS and local tribal organizations including the ONC in Bethel and the KNA in Aniak to complete these annual surveys. These subsistence harvest surveys have been aimed at gathering data on the harvest and use of Chinook, chum, sockeye, and coho salmon. Pink salmon are harvested in the Kuskokwim Area; however, they are generally available only during even number years. Although data for subsistence pink salmon harvests are not usually collected during the annual fall survey efforts, some data have been collected from the communities of Bethel and Aniak for the past couple of years in association with specific cooperative fisheries harvest assessment projects in those 2 communities funded by the OSM Fisheries Information Service (FIS),. Other Division of Subsistence community-baseline studies conducted in the region also include pink salmon harvest data.

Commercial Catch Statistics

Participation in the Kuskokwim Area salmon fisheries requires fishers to have a Commercial Fishery Entry Commission (CFEC) permit. Fish tickets (landing receipts) are filled out at the time of each delivery by processors and a copy is provided to ADF&G. Computer tabulations of fish ticket information provide the commercial catch data presented in this report. The Division of Commercial Fisheries Computer Services section in Juneau maintains the computer fish ticket software program and archives the fish ticket information, however, data entry is conducted during the season ADF&G staff in the Bethel Area Office.

Evaluation of commercial catch statistics is a standard method for assessing salmon run strength within and between years (Tables 7–10; Appendices A9–A13, B5–B9, C5–D8 and D6–D9). Catch information is standardized by dividing the number of fish caught during a period by the product of the number of unique CFEC permits used in a fishing period and the total number of hours the district was open to commercial fishing. This catch statistic is referred to as the catch per unit of effort (CPUE). Many variables need to be considered when evaluating CPUE information. These variables include an inconsistent number of fishers, fishing periods of different duration, changing river water level, weather conditions, and fish behavior.

Post Season Sport Fishing Harvest Surveys

Research and Technical Services of the Division of Sport Fisheries has been surveying the angling public with postal questionnaires since 1977 and annually produce the Statewide Harvest Survey Report (Jennings et al. 2004). Questionnaire recipients are randomly selected from zip codes from angler license sales throughout the State of Alaska. Surveys are based on the calendar and a statewide report are published electronically the following September or October. Anglers are primarily asked locations of sport fish harvest, catch and effort-spent fishing by days and trips. This information is used to create a statewide database providing information on where sport fishing occurs, the extent of participation, and species and number of major game fishes being caught and harvested.

Inseason Subsistence Catch Reports

Historically, fishery mangers have collected inseason subsistence harvest information ad hoc from a few subsistence fishers. During some years, efforts were made to establish a systematic inseason subsistence monitoring program (Kuskokwim Fishermen's Cooperative, 1991). However, the inseason subsistence monitoring program initiated in 2001 increased the quality and consistency of information obtained from subsistence fishers (Table 11; Appendix B10) (Whitmore et al. 2004). The inseason subsistence catch monitoring project was funded by OSM for ONC in the lower river, KNA in the middle river, and MNVC in the upper river and has provided additional information to evaluate salmon run strength by obtaining the relative success of some subsistence fishers in achieving their harvest goals since 2001. Additionally, this project provided an avenue for local user input into the evaluation of salmon run abundance and corresponding management strategies. This project increased the number and frequency of fishing family interviews 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.

Test Fish Projects

Daily inseason assessment of Kuskokwim River relative salmon run strength and timing is available from a drift gillnet test fishery operated near Bethel. The Bethel test fishery is located at river mile 80 of the Kuskokwim River, which is about the midpoint of District 1 (Figure 2). The project began in 1984 and the methodology has remained largely unchanged (Molyneaux 1997a; Bue 2004). From early June through late August the test fish crew conducts 3 or 4 systematic gillnet drifts beginning 1 hour after high tide. The drifts are done at 3 stations distributed across the width of the channel. Each drift is 20 minutes in duration. Two 50 fathom gillnets are used, one net is hung with 5 3/8-inch mesh web and the other with 8-inch mesh. The 2 gillnets are rotated between the 3 stations following a systematic schedule. Both mesh sizes are operated from early June through about 10 July when Chinook, sockeye and chum salmon all occur in relatively good abundance. The 8-inch mesh is discontinued after about 10 July when Chinook abundance diminishes. Test fishing with the 5 3/8-inch mesh continues until late August.

The test fish catch from each tide is tallied by species then distributed to charities or sold to a local fish buyer when available. Catch statistics for Chinook, sockeye, chum and coho salmon are presented as daily catch-per-unit-effort data. Comparisons are made with test fish results from previous years to assess relative abundance and run timing. The comparisons are subjective in that managers need to consider variables such as water level, fishing patterns and changing river morphology when comparing data among years, and even within a year.

Historically, other test fisheries have been attempted in the Kuskokwim River: Kwegooyuk test fishery, 1966–1983 (Baxter 1970; Huttunen 1984a); Eek test fishery, 1988–1994 (unpublished); Kuskokwim River subsistence test fishery, 1988–1990 (Kuskokwim Fishermen’s Cooperative 1991); Aniak test fishery, 1992–1995 (*unpublished*); Chuathbaluk test fishery, 1992–1993 (unpublished); and the Lower Kuskokwim River test fishery, 1995 (*unpublished*). Most of these projects were initiated at the prompting of groups other than ADF&G. They were all eventually discontinued for a variety of reasons including lack of funding, inconsistent methods; problems with catch disposition and ambiguous results.

Weirs

Kwethluk River Weir

Kwethluk River joins the Kuskokwim River at river mile 82 and the current weir is located about 52 river miles upstream of the confluence (Figure 1; Appendix A2). The USFWS operated a resistance board weir in that vicinity in 1992 (Harper 1998), but the project was discontinued because of concerns from some local residents. The Association of Village Council President and Kwethluk Joint Council operated a counting tower in that same vicinity from 1996 to 1999, but success was limited (Cappiello and Sundown 1998; Chris and Cappiello 1999; and Hooper 2001). The weir project was re-established in 2001 as a cooperative venture between USFWS and the Organized Village of Kwethluk (Harper and Watry 2001; Roettiger et al. 2001; Roettiger et al. *In prep*) (Table 12; Appendices B11, B12).

Tuluksak River Weir

Tuluksak River joins the Kuskokwim River at river mile 119 and the weir is located about 34 river miles upstream of the confluence (Figure 1; Appendix A2). The USFWS operated a resistance board weir was in that vicinity from 1991 to 1994 (Harper 1995a-c, 1997). The project was discontinued after 1994 because of concerns from some local residents, but re-establish in 2001 as a cooperative venture between USFWS and Tuluksak Traditional Council (Gates and Harper 2002a-b; Table 13; Appendices B11, B13).

George River Weir

George River joins the Kuskokwim River at river mile 277 and the weir is located about 4 river miles upstream of the confluence (Figure 1; Appendix A2). Salmon escapement monitoring began at the site in 1996 through the joint effort of Kuskokwim Native Association and ADF&G (Molyneaux et al. 1997b). The original fixed-panel weir design was replaced with a resistance board weir in 1999, which improved performance subsequent years (Linderman et al. 2003; Table 14; Appendices B11, B14).

Kogrukluk River Weir

The Kogrukluk River is tributary of the Holitna River sub-basin and has the most extensive history of salmon escapement monitoring in the Kuskokwim Area (Figure 1; Appendix B15). The Holitna River joins the Kuskokwim at river mile 305, and the Kogrukluk River weir is located an additional 136 river miles upstream (Baxter 1976b). Salmon escapement monitoring began in that vicinity in 1969 with a counting tower located several miles upstream of the current weir site (Yanagawa 1972a). The tower was also upstream of Shotgun Creek, a productive salmon spawning area. ADF&G tried to install a weir near the tower site in 1971, but was unsuccessful (Yanagawa 1972b). Operation of the counting tower continued through 1978 (Yanagawa 1972a and 1973; Kuhlmann 1973, 1975; Baxter 1976a and 1977). Weir operation at the current site, located downstream of Shotgun Creek, began in 1976 (Baxter, 1976b), and tower project was discontinued after 1978 (Table 15; Appendices B11, B15).

Tatlawiksuk River Weir

Tatlawiksuk River joins the Kuskokwim River at river mile 350 and the weir is located about 3 river miles upstream of the confluence (Figure 1; Appendix A2). Salmon escapement monitoring began at the site in 1998 through the joint effort of Kuskokwim Native Association and ADF&G

(Linderman et al. 2002). Operations in 1998 were incomplete and the fixed-panel weir design was replaced with a resistance board weir, which improved performance in subsequent years (Table 16; Appendices B11, B16).

Takotna River Weir

Takotna River joins the Kuskokwim River across from McGrath at river mile 467, and the weir is located about 52 river miles upstream of the confluence, near the community of Takotna (Figure 1; Appendix A2). Salmon escapement monitoring began in that vicinity in 1995 with a counting tower located a few miles downstream of the current weir site (Molyneaux et al. 2000). The counting tower was operated by Iditarod Area School District (IASD) in consultation with ADF&G. The tower project was replaced in 2000 with the current resistance board weir, and project administration transferred from IASD to Takotna Tribal Council (Schwanke et al. 2001). With the adoption of the weir, project objectives were broadened in 2000 to include assessment of coho salmon escapement (Table 17; Appendices B11, B16).

Kanektok River Weir

Counting towers were attempted from 1960–1962, and again from 1996–1999, but were limited by logistical problems, poor visibility into the water column, and difficulties in species identification (ADF&G 1960, 1961, 1962; Fox 1997; Menard and Caole 1999). In 1999, resources were redirected toward developing a resistance board-floating weir (Burkey et al. 2000 c). Despite initial technical and logistical difficulties (Linderman 2000; Estensen 2002), the weir has demonstrated its ability to be a viable and accurate method to monitor salmon escapement in the Kanektok River. The weir saw a partial achievement of its annual objectives in 2001, and a complete achievement since that time (Table 18; Appendix C9).

Middle Fork Goodnews River Weir

The Middle Fork Goodnews River Weir (MFGR) weir enumerates the Chinook, sockeye, chum, and coho salmon escapements into the MFGR. The MFGR project is the third oldest continuing escapement monitoring project in the Kuskokwim Area. The project was initiated in 1981 as a counting tower and continued through 1990. Though successful, the tower was limited by difficulties in species apportionment and high labor costs (Menard and Caole 1999). In 1991, resources were directed towards a fixed-panel weir. The fixed-panel weir greatly reduced labor costs and improved species identification. However, the fixed panel weir was susceptible to frequent high water levels that often exceeded the height of the panels, rendering the weir inoperable. In July of 1997, the fixed-panel weir was replaced with a resistance-board floating weir designed to withstand high water levels (Menard 1998). Use of the resistance-board floating weir has allowed the project to remain operational during high water events, and to operate into September, traditionally a period of high water level in the Goodnews drainage (Table 19; Appendix D10).

Other Weirs

Other weir projects operated in the Kuskokwim River basin have included South Fork Salmon River weir in 1981 and 1982 (Schneiderhan 1982b-c). These projects were discontinued because of funding shortages, technical limitations and /or lack of local support.

Sonar

Aniak River Sonar

Aniak River joins the Kuskokwim River near the community of Aniak at river mile 225 and the sonar site is located approximately 12 mile upstream of the confluence (Figure 1; Appendix A2). Salmon escapement monitoring began in that vicinity with the use of non-configurable sonar equipment in 1980 (Schneiderhan 1981). A transducer was deployed from one bank and passage in the unensonified section of the river was estimated using an expansion factor (Schneiderhan 1989). Results from the 1995 sonar operations were considered unusable because of abnormalities in the operation that could not be resolved (Burkey et al. 1996b), including the lack of documentation inherent with non-user configurable sonar. In 1996, the project was redesigned to incorporate user-configurable sonar technology (Vania 1998). At the same time, the project was relocated to the current site about a mile downstream where a transducer was deployed from each bank to allow full channel ensonification.

The sonar passage estimates for the Aniak River include a mix of species; but the sonar counts are currently unapportioned to species. During the first few years of sonar use investigators tried to apportion counts between Chinook, chum and in one year coho salmon (Schneiderhan 1981, 1982a-b, 1984c). The apportionment was done using gillnets catches, but the practice was discontinued after 1986 because of inadequate sample sizes, gillnet selectivity problems and the perceived dominance of chum salmon (Schneiderhan 1989). The overall dominance of chum salmon has generally been confirmed through periodic netting activities (Schneiderhan 1989; Vania 1998); however, other species, including residents such as longnose suckers, may periodically vie with chum salmon for dominance of the daily passage estimates. Continued interest in species apportionment initiated renewed investigations with gillnets in 2001 and 2002, but the practice was again found unfeasible (Sandall and Pfisterer, *In prep*). The current project-operating period of mid-June through late July is when the majority of the fish passage is typically chum salmon (Table 20; Appendix B17).

Kuskokwim River Sonar

ADF&G began developing a user-configurable sonar project in 1988 for deployment in the mainstem of the Kuskokwim River near Bethel (Mesiar et al. 1994). Shortages in technical support and the restructuring of the regional sonar program precluded its operation after 1995. Since 1995, the original sonar site has degraded and is considered unsuitable. In addition, 2 sloughs that bypass the site have enlarged enough to possibly allow significant salmon migration, which could compromise estimates of salmon passage. As part of the regional sonar-rebuilding program, ADF&G staff conducted limited site surveys in 1998 and began development of a redesigned sonar project in 1999 at a new site located 16 miles upriver of Bethel. Development, however, has been suspended indefinitely due to continued staffing shortages and technical challenges.

Other Sonar

Experimental sonar was deployed in the Kwethluk and Kasigluk Rivers in 1978 and 1979 (Schneiderhan 1979, 1980). These projects were discontinued because of funding shortages, technical limitations and /or lack of local support.

On the Kanektok River, hydroacoustic sonar was attempted from 1982 through 1987 but this method was unsuccessful because of budget constraints, technical obstacles, and site limitations (Schultz and Williams 1984; Huttunen 1984a, 1985, 1986, 1988).

Aerial Surveys

Aerial surveys have been conducted in the Kuskokwim Area since 1962. Surveys are conducted using fixed wing aircraft and are ordinarily restricted to clear water streams and lakes, the distribution of which is geographically skewed towards the middle and lower Kuskokwim River basin and Kuskokwim Bay streams. Tributaries in the upper Kuskokwim River are oftentimes stained from organics or clouded by glacial runoff, which reduces fish visibility. Aerial survey escapement assessment is also subject to variability depending on viewing conditions and survey observers. However, when observers, timing, and methods are standardized to the extent feasible and survey conditions meet acceptable criteria, the resulting counts are taken as an index of escapement. Aerial surveys are numerically ranked on a scale of 1=good, 2=fair, and 3=poor. Ranking criteria are based on survey method, weather and water conditions, time of survey, and spawning stage. Aerial surveys are flown during peak spawning periods for each species in order to maximize the number of observable fish on the spawning grounds. Peak spawning periods were developed from run timing estimates and vary by species and geographic location within the Kuskokwim Management Area. Only surveys with rankings of fair and good (1 and 2) and conducted within the peak spawning period are included as part of the Kuskokwim Area aerial survey database.

Currently, aerial survey escapement goals have been established on 9 Kuskokwim Area tributaries for Chinook salmon, 7 tributaries for chum salmon, 3 tributaries for sockeye salmon, and 2 tributaries for coho salmon (Table 21; Appendices B18, C10, D11; Buklis 1993). Aerial surveys are best directed at indexing spawning populations of sockeye and Chinook salmon because these species are typically more visible than chum and coho salmon. Sockeye salmon aerial surveys are focused on Kuskokwim Bay populations in the Kanektok and Goodnews Rivers. The Holitna River and Telaquana Lake at the headwaters of the Stony River drainage are the primary Kuskokwim River sockeye populations that have received sockeye directed aerial

surveys but the historical data base is inconsistent over time. Chum salmon have protracted run timing requiring multiple surveys throughout their runs to ensure accuracy of the index. Chum salmon aerial surveys have been discontinued as an escapement index until survey methods can be improved or funding can be secured to allow for multiple aerial surveys of chum salmon populations throughout the duration of their runs. Coho salmon are frequently difficult to survey because of poor fall weather conditions. Coho salmon aerial surveys have been conducted when funding and weather conditions allow.

Procedures established in recent years have increased the number streams surveyed on a consistent yearly basis through the creation of an aerial survey location data base, intensive pre-flight planning, and establishment of a dedicated aerial survey project staff. Additionally, variability between observers and methods has been addressed through standardized training and consistency of the observers, pilots, and aircraft used. Efforts have also been made to increase the number of survey streams in the Kuskokwim Area. Exploratory surveys have been conducted since the late nineties in the middle and upper Kuskokwim drainage to increase the number of Chinook and chum salmon aerial survey streams and evaluate Chinook and chum salmon spawning distribution (Schwanke et al. 2001). Aerial surveys have been conducted in the middle and upper Kuskokwim River to determine spawn timing and distribution of late spawning chum salmon as part of an emerging fall chum salmon investigation. Additionally, efforts are made each season to conduct aerial surveys on streams having more intensive escapement monitoring projects such as weirs. This generates paired data between the aerial survey index and escapement counts for use in verifying the accuracy of aerial surveys and establishing a correlation between aerial survey indices and escapement in the event these weir projects are discontinued in the future.

Mark Recapture

Mark–recapture experiments have been performed to estimate the abundance of coho salmon during 2001 and chum, sockeye, and coho salmon during 2002 and 2003 upstream from the village of Kalskag on the Kuskokwim River (Appendices A2, B16; Kerkvliet and Hamazaki 2003; Kerkvliet et al. 2003 and 2004). Adult salmon were captured with fish wheels and gillnets deployed near Kalskag (river mile 168) and Birch Tree Crossing (river mile 183), and marked with uniquely number spaghetti tags. Fish wheels and drift gillnets were used for capturing salmon from June 6 to September 8 at the Kalskag site and from June 6 to September 10 at the Birch Tree Crossing site. The recapture event was considered from two aspects: the recovery of tags from catches in the fish wheels and gillnets fished at Birch Tree Crossing, and the observation of tagged fish at Aniak River sonar and at George, Tatlawiksuk, Kogrukluk and Takotna River weirs (Figure 1).

Radio Telemetry

Kuskokwim River Chinook Radio Telemetry

Radio telemetry studies were initiated in the Kuskokwim River in the mainstem Kuskokwim River have been conducted annually since 2002 to estimate the total passage of Chinook salmon in the mainstem Kuskokwim River, upstream of Birch Tree Crossing at river mile 183 (Figure 1; Appendix A2). Total estimated passage during the 2002 and 2003 seasons excluding Aniak River, were, 100,733 (± 24,267) and 103,161 (± 18,720) Chinook salmon (Stuby 2003, 2004; Appendix B16). Aniak River was excluded due to suspected sampling bias.

Holitna River Radio Telemetry

Radio telemetry studies have been conducted to estimate the annual escapements of Chinook, chum and coho salmon in the Holitna River drainage since 2001 (Wuttig and Evenson 2002; Chythlook and Evenson 2003; Stroka and Brase 2004), which joins the Kuskokwim River at river mile 305 (Figure 1; Appendix A2). In 2003, there was an estimated 42,013 Chinook salmon in the Holitna River drainage (SE=4,981) (Stroka and Brase 2004). By comparison, the estimated abundance of Chinook salmon in the Holitna River drainage for 2001 and 2002 was 22,405 (SE=6,207) and 42,902 (SE=6,334), respectively. In 2003, total abundance of chum salmon in the Holitna River drainage was not estimated due to a significant difference ($D=0.64$; $P<0.01$) in run timing between chum salmon spawning upstream from the Kogrukluk River weir and those spawning elsewhere in the drainage as well as a large catch of chum salmon on the last day of tagging (Stroka and Brase 2004; Appendix B16). Coho salmon were not sampled in 2003.

Biological Sampling

Other information collected at ground based projects may include salmon sex and length composition, scales for age determination, statistics on the occurrence of gillnet marks on fish, samples for genetic stock identification, data on resident species, and information from the recovery of tagged fish in coordination with the mark–recapture and radio telemetry projects (Appendices B19–B25, C11–C17 and D12–D19).

The ages of fish in this report are presented as both total age, year spawned to year recorded and in the European notation. In the European system, the number of winters in fresh water after hatching is followed by the number of winters in salt water. The fresh and salt-water winters are separated by a decimal point. To derive total age from the European system you must add the fresh and salt water winters and add 1 for the year of spawning. For example an age-1.3 Chinook salmon's total age is 5 years; 1+3+1=5.

Genetics

Since the early 1990's, several genetics studies have been initiated that either focused on or included Kuskokwim Area Chinook, sockeye, chum, and coho salmon populations. Objectives of these studies have included: 1) Establishing a genetic baseline for Kuskokwim Area salmon populations, 2) Identifying genetic units for improved conservation and management, and 3) Standardizing and contributing data to Pacific Rim salmon genetics databases and research including the Bering-Aleutian Salmon International Survey (BASIS). Salmon genetics sampling and analysis is ongoing in the Kuskokwim Area with the objectives of: 1) Increasing the resolution of genetic markers to identify genetic variability between populations, and 2) Establishing genetic baseline information and methodologies that allow for identification of specific populations within the mixed stock fisheries of the Kuskokwim Area, Western Alaska, and the Pacific Rim. Current findings of these studies and ongoing genetics research in the Kuskokwim Area are a valuable contribution towards effective sustained yield management of Kuskokwim Area salmon stocks.

Chinook Salmon

Genetic baseline sample collections for Chinook salmon were begun by ADF&G in 1992, with the majority being collected since 2001. In total, 1,399 samples have been collected from 15 tributaries and river systems ranging from Kuskokwim Bay to the Upper Kuskokwim River region (Templin et al. 2004). Significant genetic variation was found between Kuskokwim Bay

and middle Kuskokwim River populations; however, enough genetic similarity remained between the 15 populations to preclude adequate population identification through mixed stock analysis. The 15 sample populations were grouped into 4 regions based on genetic diversity and geographic location: 1) Goodnews and Kanektok rivers (Kuskokwim Bay), 2) sample tributaries between the Eek and Kogrukluk rivers (Lower Kuskokwim River), 3) Stony, Cheeneetnuk, and Tatlawiksuk rivers (middle Kuskokwim River), and 4) Takotna River and Pitka Fork of the Salmon River (upper Kuskokwim River). Significant genetic variation was found between the 4 regional groups and was adequate to differentiate between these groups through mixed stock analysis. Genetic analyses provided adequate distinction within the Kuskokwim River to estimate composition and run timing of regional groups from mixed stock inriver fisheries. Additionally, these findings can be used to identify Kuskokwim River Chinook salmon through mixed stock analysis of high seas harvest or bycatch. Chinook salmon genetics research is ongoing in the Kuskokwim Area with the goals of further increasing the baseline and increasing the resolution of genetic markers to differentiate between Chinook salmon populations.

Chum Salmon

Genetic baseline sample collections of Kuskokwim Area chum salmon populations were begun by ADF&G in 1991. In total, 2,033 samples have been collected from 18 Kuskokwim River tributaries and river systems ranging from Kuskokwim Bay to the upper Kuskokwim River regions, and an additional 3,322 mixed stock samples have been collected from within the Kuskokwim River drainage. The primary goal of these and other chum salmon collections was to increase the genetic baseline of Pacific Rim chum salmon populations in order to partition genetic variation and estimate overall stock components through mixed stock analysis. Several Pacific Rim mixed stock analysis studies have been conducted which included Kuskokwim Area chum salmon genetics collections (Crane and Seeb 2000; Seeb and Crane 1999a-b; Seeb et al. 1995, 1997) To date, analysis of genetic markers has been inadequate to differentiate between Kuskokwim Area populations and the whole of North Western Alaska chum salmon stocks (defined as stocks from Bristol Bay to Kotzebue Sound, excluding Yukon River Fall chum). However, genetic analysis specific to 16 Kuskokwim River populations indicated 2 genetically distinct populations within the drainage. Three Kuskokwim River populations from the Stony River, South Fork of the Kuskokwim, and Big River were found to be genetically distinct from each other and genetically distinct from the remaining 13 genetically similar populations from the middle and lower Kuskokwim River regions (ADF&G, Gene Conservation Laboratory, unpublished data). Aerial surveys, genetics sample collections, and local traditional ecological knowledge also indicated these 3 genetically distinct populations had a later spawning period and morphological differences. These findings were analogous to the divergent genetic, run timing, and morphological characteristics between summer and fall run chum salmon populations in the Yukon River. A study was initiated in 2004 to investigate the occurrence of Kuskokwim River fall chum salmon populations in greater detail (Gilk et al. 2005*)*. In addition to genetic and spawning timing differences, preliminary findings of the 2004 study have indicated that Kuskokwim River fall chum salmon are distinct from summer chum salmon by exhibiting a younger average age, a less robust body shape, and a spawning distribution limited to upper river tributaries.

Sockeye Salmon

Kuskokwim Area sockeye salmon genetics information is limited compared to other salmon species. A total of 849 samples have been collected by ADF&G and USFWS from 4 tributaries and river systems ranging from Kuskokwim Bay to middle Kuskokwim River regions (Goodnews, Kanektok, and Kogrukluk Rivers, and Telaquana Lake (Stony River)). The primary goal of these and other sockeye salmon collections was increasing the genetic baseline of Pacific Rim sockeye salmon populations for use in identifying sockeye salmon stock compositions in mixed stock fisheries (Habicht et al. 2001). Ninety-five of the Kuskokwim Area samples have been analyzed and contributed to the Pacific Rim baseline and more are expected to be analyzed and included in coming years. Kuskokwim Area sockeye salmon genetics collections have contributed to the high seas BASIS studies used to identify migration and utilization patterns of sockeye salmon in the Bering Sea (Habicht et al. 2005). Analysis of sockeye salmon genetics markers groups the 4 Kuskokwim Area populations as genetically similar to Western Bristol Bay stocks. Findings from the recent migration and utilization study have shown that the majority of Western Bristol Bay stocks, inclusive of Kuskokwim Area populations, migrate to and utilize the Southeastern Bering Sea, Western Bristol Bay, and the Northern Aleutian regions throughout their ocean life cycle. A minority migrate to and utilize regions off the Kamchatka Peninsula and the Northern Russian coast. Sockeye salmon genetics studies are ongoing and new information is expected to emerge in coming years.

Coho Salmon

Genetic baseline sample collections for Coho salmon were begun in 1997, with the majority being collected since 2001. Samples were collected by ADF&G and USFWS from 7 tributaries and river systems ranging from Kuskokwim Bay to the upper Kuskokwim River region. Significant genetic variation was found between these 7 populations and the variation increased with distance between populations; however, the level of variation was less compared to other Alaskan coho salmon populations and was inadequate to identify individual populations through mixed stock analysis (Crane et al. 2004). Similar to Chinook salmon analysis, the 7 sample populations were grouped into 4 regions based on genetic diversity and geographic location 1) Arolik and Kanektok rivers (Kuskokwim Bay), 2) Kisaralik and George rivers (lower and middle Kuskokwim River), 3) Kogrukluk and Tatlawiksuk rivers (middle Kuskokwim River), and 4) Takotna River (Upper Kuskokwim River). A higher level of genetic variation was found between the 4 regional groups and mixed stock analysis was adequate to differentiate between combinations of 3 of the 4 groups: 1) Kuskokwim Bay, 2) lower-mid Kuskokwim River, and 3) upper Kuskokwim River. Increasing the number of baseline sample populations is expected to increase the resolution of genetic markers and allow for more detailed identification of stock compositions through mixed stock analysis. Coho salmon genetics research is ongoing in the Kuskokwim Area and coho salmon genetics collections were continued in 2004.

Resident Fish Species

The Kuskokwim Area is rich in a diverse assortment of resident fish species spread throughout the Management Area. The Division of Commercial Fisheries does not monitor the status of the freshwater species in the Kuskokwim Area, however, Sport Fish Division has conducted a variety of studies investigating sheefish, pike, whitefish and conducting angler surveys (Alt 1970, 1972, 1977a-b,1980-1981, 1987; Burr 1999; Dunaway 1997; and Lafferty and Bingham

2002). USFWS began operating a weir in the river below Whitefish Lake to monitor whitefish in 2001 (Harris et al. 2002).

There is continued concern by area residents in the Kuskokwim River drainage that beaver dams are impacting freshwater finfish stocks. In addition, residents of Kasigluk, Atmautluak and Nunapitchuk have expressed concerns that subsistence fishers are overexploiting the whitefish stocks in Nunavakpak Lake (near Kasigluk).

Subsistence Fishery

Gear used for harvesting subsistence freshwater finfish includes set and drift gillnets, seines, fish wheels, long lines, dip nets, jigging devices (hook and line through the ice), rod-and-reels, and pots (locally called "traps"). Subsistence harvests occur year round; and fish may be eaten fresh, dried, smoked, or frozen. Most are used for human consumption, but some are also used for dog food. Regulations do not limit the number of freshwater fish that may be harvested for subsistence. Harvest data for these species are not collected on an annual basis. Data for some Kuskokwim Area communities may be found in the Division of Subsistence Technical Paper series.

Commercial Fishery

The freshwater commercial finfish fishery has targeted primarily whitefish and burbot for local markets. Some of the harvest has occurred under the ice in the winter. A permit from the Commercial Fisheries Entry Commission and a permit from ADF&G are required for fishery participation. The ADF&G permit stipulate that only whitefish (excluding sheefish), smelt, pike, burbot, and lamprey may be taken. Sheefish, char, and trout may not be taken due to their smaller populations, lower reproductive rates, and their heavy utilization by subsistence and sport fishers. Species caught in a commercial operation, which are prohibited for sale, may be utilized for subsistence use.

All waters of the Kuskokwim Management Area, excluding the Johnson River drainage and Whitefish Lake Ophir drainage southwest of Aniak, are open to the commercial harvest of freshwater finfish. Legal commercial fishing gear may be used. Gillnets may not be less than 2 ½ inches nor greater than 5 inches stretch mesh. Long lines and setlines must use hooks with a gap between the point and shank larger than ¾ of an inch. Freshwater finfish taken incidentally during the open commercial salmon fishery may be sold.

Fishing effort has ranged from no participation to 14 fishers in a single year since 1977. In 2003, one lower Kuskokwim River fisher made 4 landings in October. The harvest included 646 whitefish valued at $1,192. (Appendix A14)

Herring

The remoteness of the Kuskokwim Area herring fishing districts present challenges in assessing abundance, implementing fisheries, and monitoring escapements toward sustained yield fishery management. Although the fisheries typically progress in a northward progression, herring fishery and spawn timing is quite similar. Aerial surveys are flown throughout the herring-spawning season in all commercial herring districts, as weather permits and funding allows, to determine relative abundance, distribution and biomass of herring. Occurrence and extent of milt, numbers of fishing vessels, and visibility factors affecting survey quality are additionally recorded. Test fishing with variable mesh gill nets and sampling commercial landings have been

conducted as funding has allowed to determine age, size and sexual maturity of herring and to estimate occurrence and relative abundance of other schooling fish. As possible ADF&G coordinates test fishing by volunteer fishers providing samples to commercial roe technicians to determine roe quality toward achievement of highest roe percentage and corresponding value possible from the fisheries (Tables 25–32, 34; Appendices E1–E4).

SECTION II. MAJOR FISHERIES OVERVIEW

SALMON

Background and Historical Perspective

Kuskokwim River and Kuskokwim Bay salmon fisheries compose the Kuskokwim Area salmon fisheries. The immense size of the Kuskokwim drainage adds complexity to the management of Kuskokwim River salmon fisheries. The Chinook salmon run begins entry into the Kuskokwim River in late May while chum and sockeye salmon begin their entry in mid June. The Chinook and sockeye salmon entries decline rapidly in early July. The chum salmon run entry begins decline in late July when coho salmon run entry begins. Coho salmon entry to the river declines in late August to early September. Arrival of salmon on the spawning grounds occurs weeks and months after lower river fisheries have been initiated. Kuskokwim Bay salmon have similar run timing into the Kanektok, Goodnews and Arolik Rivers. These are small drainages in comparison to the Kuskokwim River. Although, evaluation of run size and timing in Kuskokwim Bay rivers is not immediate it is much more timely than the Kuskokwim River as there are fewer stocks to evaluate. Therefore, many of the factors that make Kuskokwim River fisheries management difficult are not present in Kuskokwim Bay fisheries.

For the past 2 decades, efforts have been taken to expand coverage and apply new technologies toward the goal of improving salmon run timing and run strength monitoring by comparison of current year to historic information. These seasonal monitoring programs include the evaluation of subsistence fishery information; test fishery catch rates, radio telemetry projects, mark–recapture projects and commercial harvest catch rates. Additionally, fish have been monitored as they begin reaching clear water tributary streams by weir and sonar passage estimates and aerial spawning ground surveys. These projects assist fishery managers in evaluating the strength of the returning salmon runs.

The Kuskokwim Area has no formal forecast for salmon returns. Broad expectations are developed based on an evaluation of parent-year escapements and trends in harvest and productivity. The overall goal of Kuskokwim Area research and management programs are to manage the salmon runs for sustained yield by policies set forth by the BOF (5 AAC 39.220, 5 AAC 39.222, and 5 AAC 39.223) (Burkey et al. 2000). For all statewide fisheries, the Alaska State Legislature has designated subsistence fishing as the highest priority among beneficial users of the resource (A.S. 16.05.258).

In January 2001, the BOF replaced the Kuskokwim River Salmon Management Plan with the Kuskokwim River Salmon Rebuilding Management Plan (Rebuilding Plan) (5 AAC 07.365). 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 escapement goals, amounts necessary for subsistence, and for fisheries other than subsistence. 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 stepwise progression up the river consistent with salmon run timing. The schedule may be altered based on run strength to achieve escapement goals. The Rebuilding Plan provides direction to revoke the subsistence fishing schedule when it is determined that escapement goals are assured for Chinook and chum salmon, fishers have the opportunity to achieve amounts necessary for subsistence and chum salmon run strength is sufficient to allow a commercial chum salmon fishery. Additionally, subsistence-fishing closures are scheduled prior to, during and after commercial fishing periods to assure salmon harvested during open subsistence fishing periods do not reach the commercial market.

The Quinhagak fishery targets fish bound primarily for the Kanektok and Arolik rivers and is managed according to the District 4 Management Plan (5 AAC 07.367). The objective of the District 4 management plan is to maintain a level of sustained yield that will provide for subsistence needs, long-term economic health of commercial and sport fishing industries, and recreational opportunities of all freshwater systems flowing into the district. There is no specific management plan for the Goodnews River fishery (District 5), however, the fishery is managed similar to the District 4. There is no Chinook salmon directed commercial fishery in District 5. Regulations do provide for subsistence fishing closures prior to, during and after commercial fishing periods.

Kuskokwim River (District 1 and 2) and Goodnews River (District 5) Chinook salmon are harvested primarily for subsistence use (Figure 1; Appendices B1, D1). Directed Chinook salmon commercial fishing in the Kuskokwim River was discontinued in 1987 by regulation, and District 5 (Goodnews River) Chinook salmon directed fisheries have not occurred since prior to 1990. Chinook salmon in the Kuskokwim River and in District 5 are harvested incidentally in the commercial salmon fishery during late June and July. The only directed Chinook salmon fishery in the Kuskokwim Area is in District 4; targeting Chinook salmon bound for the Kanektok and Arolik Rivers (Appendix C1). Sockeye salmon are incidentally harvested in the Kuskokwim River chum salmon fishery; however, Kuskokwim Bay fisheries do have directed sockeye salmon commercial fishing.

Salmon returns to the majority of western Alaskan rivers (including the Kuskokwim River) were significantly below average from 1997 to 2001; however, these declines were not evident in Kuskokwim Bay rivers. The Kuskokwim Area was declared an economic disaster area by the State of Alaska in 1997, 1998, 2000, and 2001 because of the extremely low chum and Chinook salmon commercial harvest levels and exvessel prices (Appendix A3). An appeal was made by Kuskokwim Area residents prior to and during the 2000 to 2002 seasons to undertake conservation measures for Chinook and chum salmon in the subsistence and sport fisheries. This appeal was made through news releases issued by ADF&G, USFWS, Association of Village Council Presidents, KNA, Working Group, Kwethluk Indian Reorganization Act Tribal Council, MNVC, and ONC during 2000 and 2001. During 2002, ADF&G did not participate in the appeal, as the action was allocative in nature requiring BOF authority (Appendix A3).

The precise causes for the production failures are not known, but it is hypothesized that poor marine conditions had a large impact on ocean survival of these stocks. Likely factors that have received the most attention to date include the effects of El Nino, ocean and climate regime shifts, and competition relative to ocean carrying capacity (Yukon River Joint Technical

Committee 2005). In 2002, salmon returns to the Kuskokwim River began to rebound and substantially improved during the 2003 season.

Subsistence Fishery

The Kuskokwim Area has long supported an important subsistence salmon fishery. Many households throughout the region are involved in harvesting, processing, and preserving salmon for subsistence use. The movement of families from permanent winter communities to summer fish camps situated along rivers and sloughs is a significant element of annual subsistence harvest efforts. Approximately 1,700 households in the Kuskokwim region annually harvest salmon for subsistence use (Tables 2–6). Many other households, which are not directly involved in catching salmon, participate by assisting family and friends with cutting, drying, smoking, and associated preservation activities (salting, canning and freezing). Division of Subsistence studies in the region indicate that fish contribute as much as 85% of the total pounds of fish and wildlife harvested in a community annually, 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 pounds per capita in some Kuskokwim River communities (Coffing et al. 2001). The subsistence salmon fishery in the Kuskokwim region is one of the largest and most important in the state and supports one of the largest subsistence salmon fisheries in North America (Figure 7).

Subsistence harvest of salmon have remained relatively stable for the past 15 years with the exception of the 2000 Chinook salmon harvest as the result of a poor run (Appendices A5, B1–B4, C1–C4, D1–D4). The subsistence salmon fishing season is open unless the subsistence fishing schedule closure is in effect as a result of the Rebuilding Plan or if closures to the fishery are implemented by emergency order prior to, during and after commercial fishing periods (5 AAC 07.360 and 5 AAC 01.260). Salmon may be taken for subsistence purposes by gillnet, beach seine, hook and line attached to a rod or poles, hand line or fish wheels subject to restrictions (5 AAC 01.270). Additionally, salmon may be taken by spear in the Holitna, Kanektok, Arolik, and Goodnews Bay drainages. Subsistence fishing with rod and reel was allowed beginning in 2000 in the AVCP Region of the Kuskokwim Area and was extended the next year to the remaining portion of the area (Appendix A3). Subsistence salmon fishing gillnets may be up to 50 fathoms in length. The aggregate length of set or drift gillnets in use by any individual for the taking of salmon for subsistence purposes may not exceed 50 fathoms. The maximum depth of gillnets with 6-inch or smaller mesh size may be 45 meshes in depth while gillnets with greater than 6-inch mesh size may not be more than 35 meshes in depth.

Lower river fishers generally recognize the need for the subsistence fishing schedule to spread their harvest across the run to allow fish to pass up river for use by other fishers and to meet spawning ground escapement goals. In general, middle and upper river fishers are in strong support of the subsistence fishing schedule as they see the benefit of fish passing through the lower river fishery becoming available to them. Many lower river subsistence users also participate in the commercial fishery. Opportunity to commercial fish may allow them income to afford to participate in subsistence activities. Middle and upper river fishers do not have the same opportunity to commercial fish and generally do not support the incidental harvest of Chinook salmon that occurs when a commercial fishery is prosecuted in the lower Kuskokwim River. Not all fishers approve of the subsistence fishing schedule and they report that the subsistence fishing closures breaks the rhythm of their subsistence harvest and disrupts fish camp activities.

Commercial Fishery

The Kuskokwim Area commercial salmon fishery dates back to the late 1800s. In the early years of the fishery, most of the commercial catch was sold locally for dog food (Oswalt 1990; Brown 1983). Salmon have been harvested in the Kuskokwim Area for export since 1913 (Pennoyer 1965). The current system of fishing districts, formerly called subdistricts, was established in 1960 for the Kuskokwim River and Quinhagak, District 4. District 5 was established in 1968. District 3 was eliminated in 1966 because of a lack of landings and District 2 has had commercial fishing only one season since 1998. (Appendices A3, A9).

Prior to 1983, a management strategy of conservatively increasing commercial harvest guidelines, establishing trends between catch and escapement, allowed development of the fishery. After changing from a harvest-guideline based management strategy to an escapement-objective based strategy in 1983, average harvests increased until the mid 1990's (Appendix A8). The directed Chinook salmon fishery in the Kuskokwim River was discontinued in 1987. Kuskokwim Area commercial salmon fishing permits may be utilized in any of the Area's commercial fishing districts. Commercial salmon fishing is allowed in the Kuskokwim Area with set or drift gill nets. Initially, Kuskokwim River fishery regulations allowed the use of unrestricted mesh size during the entire season. Regulations in place from 1971 to 1984 required that commercial fishing gillnet mesh size be restricted to 6-inch maximum, after June 25.Districts 4 and 5 commercial fishery mesh sizes have been restricted to 6-inch maximum since inception of the fisheries. Since 1985 commercial fishing regulations have limited gill net length to 50 fathoms, mesh size to 6 inches, and depth to 45 meshes for all districts in the Kuskokwim Area. (Appendix A3).

The Kuskokwim Area commercial fishery was stable from 1985 to 1996 with the harvest ranging from 802,000 to 2.33 million salmon (Appendices A8–A10). Effort ranged from 713 to 829 permits fished (Appendix A10). During these years, the value of the fishery ranged from $2.9 million salmon in 1996 to $12.5 in 1988 (Appendix A11). Beginning in 1996, prices began to decline. This was followed by a decline in effort and number of fish harvested. Poor salmon returns from 1997 through 2001 resulted in the Kuskokwim River having only one commercial fishery opening during 1999 and 2000 and no commercial openings in 2001 (Appendices B8, B9). There was no market for Kuskokwim River chum salmon during the 2002 and 2003 seasons. Low prices and poor salmon returns in 2002 resulted in a record low participation of 407 permits fished and a fishery value of $323,000. The number of permits fishing increased to 438 in 2003 and the value of the fishery was $900,000. Kuskokwim Area fishers owned 96% of the 793 commercial permits renewed in 2003 while non-local Alaskan residents owned 3% or 25 permits. Non-Alaskan residents owned 5 permits (Appendix A13).

Based on the recent 10-year average, the Kuskokwim River coho salmon commercial fishery has accounted for the largest number of salmon harvested and the greatest value. By decreasing number, chum, sockeye, and Chinook salmon follow coho salmon (Appendix B7). In the Kuskokwim Bay commercial fisheries, the number of sockeye and coho salmon harvest are similar but the value of the sockeye salmon harvest is greater (Appendices C5, C7, D6, D8). Although more chum salmon are harvested in Kuskokwim Bay fisheries than Chinook salmon, the value of the Chinook salmon catch is more than 3 times greater than the value of the chum salmon catch. Pink salmon are the least valuable species in the Kuskokwim Area commercial fishery and have not been purchased by Area fish buyers in recent years (Table 7).

Sport Fisheries

Historically, sport fishing efforts within the Kuskokwim Area rarely exceeded 10,000 angler days of effort (Lafferty 2004; Burr 2004). In general, about 75% of the sport anglers are guided and 70% are non-residents. The majority of sport salmon fishing effort and harvest occurs within the Kuskokwim Bay streams, particularly the Kanektok and Goodnews Rivers. Over 75% of the sport fishing within the Kuskokwim River occurs in tributaries downstream of and including the Aniak River.

Stock Status

Chinook Salmon

The Kuskokwim River Chinook salmon stock is considered the second most abundant in Alaska. Although total return estimates are unavailable (largely due to the inability to thoroughly estimate spawning escapement), it is estimated that the collective annual Chinook salmon return to the Kuskokwim River is between 200,000 to 300,000 fish.

Total utilization of Chinook salmon (all harvests combined) in the Kuskokwim River drainage has ranged from 24,856 to 140,389 fish since 1960 (Appendix B1). The recent 5-year average total utilization (1999–2003) was 73,013 fish; harvest ranged from 65,500 to approximately 80,000 fish. The prior 10-year average harvest (1989–1998) was 112,590 fish; harvest ranged from 87,161 to 140,389 fish. The reduction in average harvest between the recent 5 (1999-2003) and the previous 10-year average (1989–1998) was 39,577.

Chinook salmon escapements are evaluated by aerial surveys in portions of at least 13 drainages of the Kuskokwim River, by weirs on 6 tributary streams, and by a radio telemetry mark–recapture program during the last 2 seasons (Appendices B12–18). Review of escapement information indicates Chinook salmon escapements from 1998 through 2000 were below average and escapements for most other years were average or better. Weather conditions precluded aerial survey evaluation of Chinook salmon escapements in many streams during 1998 and 1999 (Appendix B18). The existing sustainable escapement goal for the Kogrukluk River weir was met in 2002, 2003 and nearly met in 2001 (Appendices A7, B15). The radio telemetry mark–recapture program estimate of Chinook salmon passage upstream of the confluence of the Kuskokwim River with the Aniak River was approximately 103,200 fish (Appendix B16).

Kuskokwim River parent years (1992–1995 escapements) of the poor runs from 1998 to 2000 were not over harvested and it is likely that they did not contribute to the poor runs. The parent year escapements of the poor salmon returns (1998–2000) were average to above average. It is likely that the recent poor runs were a result of poor ocean conditions. Poor wild stock runs have occurred through out Western Alaska and Pacific Rim countries.

Significant runs of Chinook salmon return the Kanektok, Goodnews and Arolik rivers annually. The Kanektok River Chinook salmon run is believed to range in size from 30,000 to 60,000 fish with returns in some years of up to 100,000 fish. The Goodnews River Chinook salmon run is believed to range from 10,000 to 20,000 fish. Less information is available on the Arolik River Chinook salmon run; however, the run is believed to be smaller than the return to the Goodnews River.

Total utilization of Chinook salmon (all harvests combined) in the Kuskokwim Bay River drainages (Kanektok, Goodnews and Arolik rivers) ranged from 278 to 65,652 fish since 1960

(Appendices C1, D1). The recent 5-year average total utilization (1999–2003) was 22,562 fish; harvest ranged from 16,794 to approximately 30,556 fish. The prior 10-year average harvest (1989–1998) was 28,965 fish; harvest ranged from 15,344 to 38,002 fish. The reduction in average harvest between the recent 5-year average (1999–2003) and the previous 10-year average (1989–1998) was 6,403.

Escapement of Chinook salmon to the Kanektok River weir in 2003 was 8,231 fish with a corresponding aerial survey count of 6,206 on 29 July (Table 21; Appendices C9, C10). Evaluation of Kanektok River aerial survey information indicates that Chinook salmon returns have been average in recent years. The aerial survey escapement goal was achieved in 2003 and in 4 of 5 Kanektok River surveys since 1995. Escapement goals have not been set for the Kanektok River weir because of the relative infancy of the project. Escapement of Chinook salmon to the Middle Fork Goodnews River weir in 2003 was 2,389 with corresponding aerial survey counts of 1,210 for the Middle Fork and 2,015 for the Main Stem Goodnews River on 02 August (Table 21; Appendices D10, D11). The weir count did not achieve the escapement goal while the 2 aerial surveys achieved their respective goals. Chinook salmon escapements to the Goodnews River drainage have been average to above average in recent years with aerial survey escapement goals being achieved in 4 of 6 years on the Main Stem and 4 of 5 years on the Middle fork Goodnews River since 1995. Although Chinook salmon have only achieved the Middle Fork Goodnews River weir escapement goal in 2 years since 1995, the overall trend in escapement since the mid-1990's has been above average compared to historical data. In total, the Kuskokwim Bay Chinook salmon returns from 1997 through 2001 did not indicate the decline in abundance experienced in the Kuskokwim River.

Chum Salmon

Kuskokwim River chum salmon are the largest salmon stock in the Kuskokwim Area. The total run is believed to range in size from 1 to 1.5 million fish annually. Total utilization of chum salmon in the Kuskokwim River drainage since 1960 has ranged from 46,137 to 1,538,734 fish (Appendix B2). Recent 5-year average total utilization (1999–2003) was 66,820 fish; harvest ranged from 51,001 to 79,903 fish. The previous 10-year average harvest (1989–1998) was 425,704 fish; harvest ranged from 57,900 to 893,000 fish. The reduction in average harvests between the recent 5 (1999–2003) and the previous 10-year average (1989–1998) was 358,884.

Chum salmon escapements were evaluated through enumeration at weirs on 6 tributary streams, sonar in the Aniak River, and during the last 2 seasons, a mainstem mark–recapture project located near Upper Kalskag (Tables 12–20; Appendices B11–B17). Review of escapement information indicates chum salmon escapements from 1999 through 2001 were below average. During other recent years, escapements were average or better. The Aniak River escapement objective was met from 2001 through 2003 (Appendix A7). The Kogrukluk River sustainable escapement goal was met in 2001 and 2002. The 2003 chum salmon estimated abundance estimate upstream of Kalskag, based on findings from the mark and recapture project was approximately 412,443 fish.

Significant runs of chum salmon return to the Kanektok, Goodnews and Arolik rivers annually. The Kanektok chum salmon run is believed to range in size from 100,000 to 170,000 fish. The Goodnews chum salmon run is believed to range from 60,000 to 160,000 fish. Less information is available regarding the Arolik River chum salmon run, however, the run is believed to be smaller than the return to the Goodnews River.

Total utilization of chum salmon in the Kuskokwim Bay drainage since 1960 has ranged from 707 to 102,348 fish (Appendices C2, D2). Recent 5-year average total utilization (1999–2003) was 36,777 fish; harvest ranged from 21,658 to approximately 52,084 fish. The previous 10-year average harvest (1989–1998) was 74,320 fish; harvest ranged from 51,143 to 102,348 fish. The reduction in average harvests between the recent 5 (1999–2003) and the previous 10-year average (1989–1998) was 37,543.

Escapement of chum salmon to the Kanektok River weir in 2003 was 40,066 with a corresponding aerial survey count of 2,700 on 29 July (Tables 18, 21; Appendices C9, C10). Evaluation of Kanektok River aerial survey information suggests that chum salmon returns have been below average in recent years and the chum salmon aerial survey escapement goal has not been achieved since the goal was set in 1993. However, the inherent deficiencies in evaluating chum salmon escapement from single aerial surveys and the lack of consistent annual surveys in recent years complicate this assessment. Additionally, District 4 chum salmon commercial harvest peaked in 1997 and has declined sharply through 2003, but this is likely a function of the declining chum salmon market and reduced effort as opposed to declining chum salmon abundance in the Kanektok River. Chum salmon escapement to the Kanektok River weir was similar between 2002 and 2003 at approximately 40,000 fish, but escapement goals have not been set for the Kanektok River weir because of the relative infancy of the project.

Escapement of chum salmon to the Middle Fork Goodnews River weir in 2003 was 21,637 with corresponding aerial survey counts of 2,310 for the Middle Fork and 3,370 for the Main Stem Goodnews River on 02 August (Tables 19, 21; Appendices D10, D11). The weir count achieved the escapement goal while the 2 aerial surveys did not achieve their respective goals. Chum salmon escapements at the Middle Fork Goodnews River weir have been average to above average in recent years and every year except 2000 has achieved the escapement goal since 1994. Aerial survey escapement goals have not been achieved on the mainstem since 1985 and only once on the Middle Fork Goodnews River since 1988. The discrepancy between weir and aerial survey results can be attributed to the inherent deficiencies in evaluating chum salmon escapement from single aerial surveys and the lack of consistent annual surveys in recent years. Overall Kuskokwim Bay chum salmon returns from 1997 through 2001 did not indicate the decline in abundance experienced in the Kuskokwim River.

Sockeye Salmon

Sockeye salmon are generally enumerated in low numbers by established Kuskokwim River escapement projects. Total utilization of sockeye salmon in the Kuskokwim River drainage since 1989 has ranged from 29,196 to 161,968 fish (Appendix B3). Prior to 1989, subsistence harvest surveys combined sockeye and chum salmon harvests; therefore, the total utilization of sockeye salmon is unknown prior to 1989. The recent 5-year average total utilization (1999–2003) was 44,925 fish; harvest ranged from 29,196 to 63,707 fish. The previous 10-year average harvest (1989–1998) was 99,501 fish; harvest ranged from 62,500 to 162,000 fish. The reduction in average harvests between the recent 5 (1999–2003) and the previous 10-year average (1989-1998) was 54,954.

Sockeye salmon escapements are evaluated through enumeration at weirs on 6 tributary streams and, during the last 2 seasons, by a mainstem mark–recapture project located near Upper Kalskag (Tables 12–20; Appendices B12–17). Sockeye salmon escapements are monitored at all weir sites. The sockeye salmon estimated abundance upstream of Kalskag based on the finding of the

mark and recapture project during 2003 was approximately 90,444 fish. Escapements during 2003 were at historic high levels. It is believed that the majority of Kuskokwim River sockeye salmon spawn and rear in Telaquana Lake in the Stony River drainage.

Significant runs of sockeye salmon return to the Kanektok and Goodnews rivers annually. The Kanektok sockeye salmon run is believed to range in size from 100,000 to 160,000 fish annually. The Goodnews sockeye salmon run is believed to range from 100,000 to 200,000 fish annually.

Total utilization of sockeye salmon in the Kuskokwim Bay drainages since 1989 has ranged from 29,196 to 161,968 fish (Appendices C3, D3). Prior to 1989, subsistence harvest surveys combined sockeye and chum salmon harvests; therefore, the total utilization of sockeye salmon is unknown prior to 1989. The recent 5-year average total utilization (1999–2003) was 65,902 fish; harvest ranged from 25,724 to 108,190 fish. The previous 10-year average harvest (1989-1998) was 102,267 fish; harvest ranged from 41,622 to 123,040 fish. The reduction in average harvests between the recent 5 (1999–2003) and the previous 10-year average (1989-1998) was 36,365.

Escapement of sockeye salmon to the Kanektok River weir in 2003 was 127,471 with a corresponding aerial survey count of 21,335 on 29 July (Tables 18, 21; Appendices C9, C10). Evaluation of Kanektok River aerial survey information indicates that sockeye salmon returns have been average in recent years. The aerial survey escapement goal was achieved in 2003 and in 5 of 6 Kanektok River surveys since 1995. Escapement goals have not been set for the Kanektok River weir because of the relative infancy of the project.

Escapement of Sockeye salmon to the Middle Fork Goodnews River weir in 2003 was 44,387 fish with corresponding aerial survey counts of 21,760 for the Middle Fork and 27,380 for the Main Stem Goodnews River on 02 August (Tables 19, 21; Appendices D10, D11). The weir count and aerial surveys achieved their respective escapement goals. Sockeye salmon escapements to the Goodnews River drainage have been average in recent years. Although sockeye salmon escapement goals were not achieved at the Middle Fork Goodnews River weir in 2001 and 2002, weir escapement goals were achieved every year prior to 2001 since 1990. Aerial survey escapement goals were achieved in 1 of 6 years on the Main Stem and 5 of 6 years on the Middle fork Goodnews River since 1992. It is unclear why such a discrepancy exists between aerial survey results, however, the trend in weir escapement since 1990 correlate well with the trend in Middle Fork Goodnews aerial surveys. The overall trend in Goodnews River drainage sockeye abundance based on total run estimates indicates high and low decadal fluctuations in abundance (Appendix D5).

Coho Salmon

Kuskokwim River coho salmon are the second largest stock in the Kuskokwim Area. The total run is believed to range in size from 500,000 to 1.5 million fish annually. Total utilization of coho salmon in the Kuskokwim River drainage since 1989 has ranged from approximately 50,800 to 973,463 fish (Appendix B4). Recent 5-year average total utilization (1999–2003) was 200,800 fish; harvest ranged from 50,800 to 299,682 fish. The previous 10-year average harvest (1989–1998) was 555,237 fish; harvest ranged from 193,534 to 973,463 fish. The reduction in average harvests between the recent 5 (1999–2003) and the previous 10-year average (1989-1998) was 354,438.

Coho salmon escapements are evaluated through enumeration at weirs on 6 tributary streams and, during the last 2 seasons, by a mainstem mark–recapture project near Upper Kalskag (Tables 12–17; Appendices B12–16). Coho escapements are monitored at all weir sites. The coho salmon estimated abundance upstream of Kalskag based on the finding of the mark and recapture project during 2003 was approximately 850,000 fish. Escapements during the 2003 season were at historic high levels. The coho salmon escapements were below average in only 2 recent years, 1999 and 2000.

Significant runs of coho salmon return to the Kanektok, Goodnews and Arolik rivers annually. The Kanektok chum salmon run is believed to range in size from 100,000 to 170,000 fish. The Goodnews chum salmon run is believed to range from 60,000 to 160,000 fish. Less information is available regarding the Arolik River chum salmon run, however, the run is believed to be smaller than the return to the Goodnews River.

Total utilization of coho salmon in the Kuskokwim Bay drainage since 1960 has ranged from 379 to 205,222 fish (Appendices C4, D4). Recent 5-year average total utilization (1999–2003) was 39,315 fish; harvest ranged from 13,141 to approximately 67,614 fish. The previous 10-year average harvest (1989–1998) was 91,001 fish; harvest ranged from 41,194 to 165,714 fish. The reduction in average harvests between the recent 5 (1999–2003) and the previous 10-year average (1989–1998) was 51,686.

Escapement of coho salmon to the Kanektok River weir in 2003 was 72,448, which was almost double the previous high escapement of 35,650 in 2001. (Table 18; Appendix C9). No aerial survey was conducted for coho salmon on the Kanektok River in 2003. The available information indicates average Kanektok River coho salmon abundance in recent years; however, evaluating Kanektok River coho salmon escapement is complicated by the lack of consistent aerial surveys and the relative infancy of the weir project and resultant lack of a coho salmon escapement goal. Poor survey conditions characteristic of late fall in the Kuskokwim Area have resulted in only 7 aerial surveys conducted since 1981 with only 2 years achieving the escapement goal in 1981 and 1985 (Appendix C10).

Escapement of coho salmon to the Middle Fork Goodnews River weir in 2003 was 52,810 fish, which is the highest escapement since coho salmon enumeration was incorporated into the project in 1997 (Table 19; Appendix D10). No coho salmon aerial surveys were conducted on the Goodnews River in 2003. No escapement goals have been established for Goodnews River coho salmon, which complicates abundance assessment, however, the available information indicates coho salmon escapements to the Goodnews River drainage have been above average in recent years with an overall trend of increasing weir escapements since 1997. Similar to the Kanektok River, poor survey conditions in late fall have resulted in only 2 coho salmon aerial surveys conducted on the main stem Goodnews River in 1984 and 1987 and no surveys have been conducted on the Middle Fork (Appendix D11). Additional weir escapement data in coming years will improve assessment of Goodnews River coho salmon abundance and may result in the establishment of coho salmon escapement goals for the Middle Fork Goodnews River weir.

Recent Board of Fisheries Activities

In response to the guidelines established in the Policy for the Management of Sustainable Salmon Fisheries (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 the anticipated low harvest level in 2001 (Burkey et al. 2000).

In March 2000, the BOF divided District 1 into 2 subdistricts and implemented a Subdistrict registration requirement (5 AAC 07.370) (Appendix A3). The purpose of this regulation was to reduce the potential commercial harvest during a single fishing period to assure that the market could handle the entire harvest. Additionally, a regulation was adopted by the BOF to require permit holders to identify their fishing vessel by permanently marking their ADFG vessel license or CFEC entry permit number on both sides of the vessel (5 AAC 07.340).

In January 2001, the BOF replaced the Kuskokwim River Salmon Management Plan with the Kuskokwim River Salmon Rebuilding Management Plan (Rebuilding Plan) (5 AAC 07.365).

In October 2002, the Board accepted an Agenda Change Request proposing the formation of a cooperative salmon fishery on the Kuskokwim River in 2003. The proposal was developed by 2 members of the Kuskokwim River Salmon Management Working Group and endorsed by the Group. The envisioned cooperative would have emulated, to a large degree, the Chignik cooperative salmon fishery, which operated in 2002. The principal idea was; through management, fishing technique, and processing changes; to dramatically slash harvest costs and boost product quality so that Kuskokwim River salmon could more easily compete on the world market. However, the proposal was withdrawn with plans for re-submittal later before BOF action could be taken.

Recent Federal Subsistence Board (FSB) Activities

The FSB during their annual meeting took action to establish Federal subsistence fishing schedules, openings, closings and fishing methods in applicable waters in the Kuskokwim River drainage to be the same as those issued for subsistence taking of fish under Alaska Statute (AS16.05.060) unless superseded by Federal Special Action. Action was also taken to remove the restriction on rod and reel use in District 2 before, during, and after state commercial fishing periods providing for subsistence fishing 24 hours per day, 7 days per week unless rod and reel are specifically restricted. Statewide, including the Kuskokwim Area, FSB action was taken to provide for ceremonial harvest of fish from Federal public waters outside of published open seasons and harvest limits, if using these fish for food in traditional funerary or mortuary ceremonies, including memorial potlatches.

2003 Season Outlook and Management Strategy

ADF&G expected the 2003 Chinook, chum, and sockeye salmon runs to be similar to the 2002 salmon runs or slightly stronger. In 2002, Chinook and chum salmon run sizes provided for adequate escapements and subsistence harvests throughout most of the drainage. The 2003 commercial salmon harvests were expected to range from 0 to 1,000 Chinook salmon; 0 to 150,000 chum salmon; and 0 to 15,000 sockeye salmon (Ward et al. 2003).

ADF&G anticipated that a modest commercial fishery would be allowed for coho salmon in 2003. An average to below average coho run and commercial harvest were expected given the trend since 1997 and the tendency of weaker odd year runs. The 2003 coho commercial fishery was expected to be similar to the 2002 fishery, which was characterized by a below average harvest, limited processor capacity, and subdistrict registration in District 1. The 2003 commercial harvest was expected to be within the range of 50,000 to 250,000 coho salmon.

Recent Fishery Performance

The 2003 Kuskokwim Area Chinook, sockeye, chum and coho salmon runs returned in greater strength than anticipated. The Kuskokwim River salmon fisheries were managed according to the Rebuilding Management Plan with Chinook and chum salmon stocks identified as stocks of yield concern. No commercial fishery was directed at Chinook, chum or sockeye salmon in the Kuskokwim River. Amounts of salmon necessary for subsistence use were achieved throughout all drainages of the Area (Table 2; Appendix A4). A directed commercial coho fishery was implemented in the Kuskokwim River.

Kuskokwim Bay commercial salmon fisheries were managed according to their associated management plans and regulations (Table 22). A total of 463,000 salmon were commercially harvested from the Kuskokwim Area (Table 7). A total of 438 permit holders participated in the fishery with the exvessel value estimated at $883,000 (Appendix A11). Limited processor capacity, low prices and low fishing effort dominated the season.

Kuskokwim River

The purpose of the Rebuilding Management Plan is to provide 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 the amounts necessary for escapement goals, subsistence and for fisheries other than subsistence. The subsistence-fishing schedule was implemented according to the Rebuilding Management Plan being put into effect June 1 downstream of Bogus Creek, June 8 downstream of Chuathbaluk, and June 15 throughout the entire drainage (Table 22). The Wednesday-Saturday fishing schedule allowed escapement of Chinook and chum salmon from throughout the run, provided the necessary opportunity for fishers to achieve amounts necessary of Chinook and chum salmon for their subsistence use, spread the subsistence harvest out across the run and moved fish through the lower river giving those fishers in the upper river greater opportunity to meet their subsistence needs.

The Kuskokwim River Salmon Management Working Group met 9 times during the 2003 season (Table 23). Fishery management information discussed and reviewed at each meeting included reports from members, state and federal staff, native organizations, fishery partners, and people to be heard. Information discussed included subsistence harvest reports by species; test fish project summaries, and as fish began reaching clear water tributaries, reports from weir, sonar and aerial survey programs. In summary, from the beginning of the season there was a good showing of all species of fish that returned in greater numbers than projected. Based on a recommendation from the Kuskokwim River Salmon Management Working Group, a 7 day per week subsistence fishing schedule was established July 6, 2003 (Table 22).

Kuskokwim River District 1 includes all waters from the southern most tip of Eek Island upstream to Bogus Creek. Subdistrict 1A includes that portion of District 1 upstream from Bethel and Subdistrict 1B includes that portion of District W-1 downstream of Bethel. The coho salmon run began early and was strong. ADF&G and the Kuskokwim River Salmon Management Working Group remained in consensus in conducting management of the fishery. A coho salmon directed commercial fishery beginning July 30 and continuing through August was established with Subdistrict 1-A being open on Mondays and Thursdays and Subdistrict 1-B being open on Tuesdays and Fridays. The duration of each fishing period was announced after the available processor capacity was determined (Table 8). Three companies purchased fish for at least a portion of the season (Table 24). Processor capacity was nearly achieved during each open

period. In response to the 4 day per week fishing schedule in District 1 it was necessary to reduce the time closed to subsistence fishing adjacent to commercial fishing periods. Therefore, beginning August 2 and continuing through the season, the time period closed to subsistence fishing adjacent to commercial fishing periods was reduced from 16 hours before, during and 6 hours after commercial fishing periods to 6 hours before, during and 3 hours after commercial fishing periods. The last 3 commercial fishing periods, each of 8 hours durations, occurred September 1 to 3 in District 1 (Subdistrict 1-A and Subdistrict 1-B)(Table 22).

A total of 359 individual entry permit holders recorded landings during the 2003 season (Table 8). This level of fishing effort was 38% below the recent 10-year average of 577 fishers. The 2003 salmon harvest for each species was below the recent 10-year average (Table 7). The Chinook, chum, sockeye and coho salmon harvest was 158, 2,764, 282 and 284,064 fish, respectively. The total value of the fishery to fishers was $444,000, only 28% of the recent 10-year average value.

Kuskokwim Bay

District 4 Quinhagak

District 4 is made up of the marine waters along the Kuskokwim Bay coast from Oyak Creek south to the Arolik River (Figures 1 and 4). The district is approximately 7 miles in length with the confluence of the Kanektok River about center in the District. District 4 is managed according to the District 4 Management Plan. The fishery commenced June 14 with 12 hour fishing periods established on Mondays and Fridays (Table 22). Chinook salmon catches and catch rates were average for the first 2 commercial openings after which catch rates dropped to below average. In response to the drop in the catch rate only a single fishing period was allowed during the last week in June (Table 9; Appendix C8).

In response to passage of the majority of Chinook salmon into tributary streams and an increase in sockeye salmon abundance, 12 hour fishing periods were established on a Monday, Wednesday and Friday fishing schedule beginning July 4. Sockeye salmon catches were average to above average, and catch rates were above average through the first 2 weeks in July. Commercial sockeye salmon catches fell to below average levels the third week of July while catch rates remained average. The fishery was closed from July 19 to July 31 as fish abundance was low and there was no market for the fish. A coho salmon directed fishery occurred from August 1 until August 27 on a Monday, Wednesday and Friday fishing schedule with 12-hour fishing periods. Coho salmon catches and catch rates were above average to average for the majority of the fishery. Chum salmon run timing appeared late when compared to historical timing. The chum catch was below average for the majority of the season.

The 2003 season was the first season since 2000 in which fishing effort did not decrease from the prior year (Table 9; Appendix C8). A total of 114 individual entry permit holders recorded landings during the 2003 season. This level of fishing effort was 55% below the recent 10-year average of 253 fishers. The 2003 salmon harvest for each species was below the recent 10-year average (Table 7; Appendix C5). The Chinook, sockeye and coho salmon harvest was 14,444, 33,941, and 49,833 fish, respectively. The total value of the fishery was estimated at $303,000, only 56% of the recent 10-year average value (Appendix C7). A single fish processor operated in District 4. As a result, of limited processing capacity, the buyer imposed a 1,000 lb limit per fisher during the third week in August.

Escapement of salmon to the Kanektok River weir was 8,200 Chinook, 127,500 sockeye, 72,500 coho, and 40,000 chum salmon (Appendices C9 and C10). No escapement goals have been established. An aerial survey for Chinook, sockeye, and chum salmon was flown over the Kanektok River drainage on August 2. A total of 5,400 Chinook, 18,000 sockeye, and 2,700 chum salmon were observed. The Chinook and sockeye salmon escapement goals were achieved while the chum salmon goal was not achieved.

District 5 Goodnews Bay

District 5, the Goodnews Bay commercial fishing district, is made up of waters within Goodnews Bay. There is no management plan that directs the fishery, however, the primary fishery strategy since 1990 has been to delay the commercial opening until late June to increase Chinook salmon escapement into the Goodnews River drainage.

The District 5 commercial fishery was opened Tuesday June 24 and Thursday June 26 (Table 22). The following week, a Monday, Wednesday and Friday fishing schedule was established and maintained through July 19. All fishing periods were 12 hours in duration. Sockeye salmon run timing was early compared to prior years harvest and passage at Middle Fork Goodnews River weir. Sockeye salmon harvests were near average, and catch rates were high through mid-July. The fishery was closed from July 19 to July 31 as fish abundance was low and there was no market for the fish (Table 10).

The fishery was reopened August 1 on a Monday, Wednesday and Friday schedule of 12 hour fishing periods. Coho salmon catches ranged from average to above average, and catch rates were above average. The district closed to commercial salmon fishing by regulation on September 5. There is not a Chinook or chum salmon directed fishery in the district. The Chinook and chum salmon catches ranged from average to below average for the entire season (Appendix D9).

This was the first season since 2000 in which fishing effort did not decrease from the previous year. A total of 34 entry permit holders recorded landing during the 2003 season. This level of fishing effort was 51% below the recent 10-year average of 69 fishers. The 2003 salmon harvest for each species was below the recent 10-year average, though in total better than each season since 2000 (Table 7). The sockeye and coho salmon harvest was 29,423 and 12,658 fish, respectively. The total value of the fishery was $135,000, 58% below the recent 10-year average value.

A single fish processor operated in District 5. As a result of limited capacity, the buyer imposed a 1,000 lb limit per fisher during the third week in August. The processor was unable to get a tender to the district during commercial fishing periods scheduled on June 24 and August 11, August 18, August 22, and August 28. No landings were reported during those periods (Table 10; Appendices D6–D9).

Postseason Subsistence Harvest Surveys

Postseason subsistence salmon harvest estimates are made by community and fishing area (Tables 2–6). The 2003 subsistence salmon harvest estimates for the Kuskokwim Area were 72,498 Chinook salmon, 46,291 chum salmon, 36,894 sockeye salmon and 38,791 coho salmon for a total of 194,474 salmon. Subsistence harvests of all salmon species fell within or surpassed amounts necessary for subsistence use ranges set under 5AAC 01.286 (Appendix A4). Lower Kuskokwim Area communities accounted for 77% of the 2003 subsistence salmon harvests in

the Kuskokwim area and 81% of the entire Chinook subsistence catch. Residents of Bethel accounted for 28% of the Kuskokwim Area subsistence harvests and 30 and 34% of all subsistence caught Chinook and coho salmon respectively (ADF&G Division of Subsistence 2003).

Subsistence salmon harvests in the Kuskokwim area in 2003 varied from previous years. The 2003 Chinook salmon estimated subsistence harvest was increased from 2002 but below recent 5 and 10-year averages, and 14% below the 1989–2002 average (Appendix A8). The 2003 chum salmon subsistence harvest estimate was the second lowest since the surveys were re-formatted in 1988. In 2003 chum salmon subsistence harvests were 22 and 27% below the recent 5 and 10-year averages and 41% below the 1989–2002 average. The 2003 sockeye salmon harvest estimate was 13 and 9% below recent 5 and 10-year averages but 33% higher than the 2002 subsistence harvest. Coho salmon subsistence harvests were 24 and 16% higher than recent 5 and 10-year averages and nearly equal to the 1989–2002 average.

Kuskokwim area subsistence salmon harvest demographics vary between regions (i.e. South Kuskokwim Bay, Lower, Middle, and Upper Kuskokwim) year to year. Chinook harvest estimates in the South Kuskokwim Bay communities increased 39% while Lower Kuskokwim communities showed a 3% increase in estimated Chinook subsistence from 2002. Although Bay and Lower Kuskokwim River communities showed increased Chinook harvests, Middle and Upper Kuskokwim communities experienced decreases of 11 and 25%, respectively, from 2002. The 2003 chum salmon subsistence harvests were down for North and South Kuskokwim Bay by 51 and 42% while Lower, Middle, and Upper Kuskokwim communities saw chum subsistence harvest decreases of 37, 32, and 41% from 2002. Sockeye salmon subsistence harvests were much improved from 2002. The South Kuskokwim Bay, Lower, Middle, and Upper Kuskokwim areas saw increases of 20 (Middle) to 36% (Lower). Coho salmon subsistence harvest estimates in the Kuskokwim area were the most improved compared to recent years. South Kuskokwim Bay communities saw subsistence harvest increases of roughly two and a half times that of 2002 while the Lower, Middle, and Upper Kuskokwim area communities saw increases of 8 (Upper) to 36% (Middle) (ADF&G Division of Subsistence 2003).

Inseason Subsistence Harvest Reports

During the 2003 season, inseason subsistence survey information was evaluated along with other run assessment information (Whitmore et al. 2004). By the week ending June 28 just over half of the inseason subsistence reports indicated chum salmon fishing as being poor while the majority of middle and upper river subsistence reports indicated chum salmon fishing was at least average (Table 11; Appendix B10). During a July 2 Working Group meeting a decision was reached to go to 7 day per week subsistence fishing beginning July 5 (Table 23). In the discussion of the poor rating of chum salmon harvest by survey participants in the lower river subsistence fishery, it was pointed out that the majority of lower river fishers were fishing gillnets with mesh size greater than 6 inches while middle and upper river fishers were utilizing more 6 inch or smaller mesh size gillnets. Fishery managers agreed to eliminate the subsistence schedule if a preliminary lower river subsistence report showed an increase in lower river chum salmon catches by interviewed fishing families. A preliminary report was provided July 2 indicating an increase in chum salmon catches and 7 day per week subsistence fishing was implemented effective July 5.

Lower Kuskokwim River (Bethel Area)

ONC staff conducted inseason subsistence surveys from June 4, 2003 to August 16, 2003 and conducted 433 interviews (Table 11). Each week 18 to 50 fishing families were interviewed regarding their subsistence fishing activities.

The most intense fishing activity occurred during June, as this is the period of greatest Chinook salmon abundance. By the end of June, Chinook salmon fishing was described as good by 89% of the fishing families, normal by 10% of the fishing families and poor by 1% of the fishing families. Chum salmon fishing was described as good by 14% of the fishing families while 39% and 47% of the fishing families reported fishing as normal and poor, respectively. In June, just over half the fishing families described sockeye salmon fishing as good with 43% of the fishing families reporting fishing for sockeye salmon as normal, and 5% reporting sockeye salmon fishing as poor. All fishing families that reported fishing gear type in June reported using gillnets with the exception of a report of the use of rod and reel by one fishing family. The use of drift gear was used by 92% of reporting fishers with set gear use by 8%. Gillnets with mesh size greater than 6 inches, utilized to target Chinook salmon, dominated the fishery, 93% of the interviewed fishing families reported this use.

Participation in the subsistence fishery by interviewed fishing families declined in July, with the passage of the majority of Chinook salmon run, during which time weekly fishing participation ranged from 5 to 21 families. Chinook salmon fishing was described as good by 34% of reporting fishers, normal by 62% of reporting fishers and poor by 4% of reporting fishers. Chum salmon fishing was described as good by 64% of the fishers and normal by 36% of the fishers. There were no reports of chum salmon fishing being poor. Sockeye salmon fishing was described to be good by 40% of reporting fishers, normal by 55% of reporting fishers and poor by 5% of the reporting fishers. Gillnets were the only fishing gear type reported to be used in July, A total of 87% of the fishers reported the use of drift gear. Approximately 87% of the fishers reported using gillnets with 6-inch or less mesh size indicating fishers were targeting chum and sockeye salmon. Fishing participation by interviewed families was low during August as fish were abundant and easy to catch. Coho salmon fishing was reported to be good by 90% of participating fishers, 10% of the fishers reported coho salmon fishing as normal. Gillnets were used by 56% of the fishers and rod and reel gear by 43%. All reports on gear use were for gillnet mesh size of less than 6 inches.

Middle Kuskokwim River

KNA staff conducted inseason subsistence surveys from June 11, 2003 to August 9, 2003 and conducted 127 interviews (Table 11). Each week, 7 to 27 fishing families were interviewed regarding their subsistence fishing activities.

The most intense fishing activity was documented during June, as this is the time of greatest Chinook salmon abundance. By the end of June, Chinook salmon fishing was described as good by 8% of the fishing families, normal by 53% of the fishing families and poor by 39% of the fishing families. Chum salmon fishing was described as normal by 64% of the fishing families and poor by 34% of the fishing families. In June, sockeye salmon fishing was described as normal by 70% of the fishing families and poor by 30% of the fishing families. All fishing families that reported fishing gear type in June reported using gillnets. Drift gillnet gear was used by 78% of reporting fishers. Gillnet mesh size greater than 6 inches, utilized to target large Chinook salmon, dominated the fishery being used by 59% of the interviewed fishing families.

During July, 19 families commented on Chinook salmon fishing, 22 families commented on chum salmon fishing, and 24 families commented on sockeye salmon fishing. Chinook salmon fishing was reported to be normal by 90% of the fishing families and good by 10% of the fishing families. Chum salmon fishing was reported to be good by 54% of the families, normal by 41% of the families and poor by 5% of the families. Sockeye salmon fishing was reported to be good by 29% of the families, normal by 58% of the families and poor by 13% of the families. Gillnets were the only reported gear type used in July with 83% of the fishers using drift gear. Approximately 62% of the fishers reported using mesh size of 6-inches or less.

During August, interviews were conducted only during the week ending August 9. One fishing family reported chum salmon fishing as normal and one family reported chum salmon fishing as poor. Four fishing families reported coho salmon fishing as normal. Two families reporting using drift gillnets and 5 families reported using rod and reel. Mesh size was not reported since it was understood to be 6 inch or less mesh size.

Upper Kuskokwim River

MNVC staff conducted inseason subsistence surveys from June 18, 2003 to August 9, 2003. Sixty-four interviews were conducted (Table 11) during this period. Each week 3 to 12 fishing families were interviewed regarding their subsistence fishing activities.

Fourteen fishing families reported participating in June and commented on Chinook salmon fishing. There was only one report in June regarding chum and sockeye salmon fishing. Chinook salmon fishing was reported to be good by 36% of the families, normal by 7% of the families and poor by 57% of the families. Chum salmon fishing was described as normal and sockeye salmon fishing was described as good by the single report for each of the species. Twenty-three fishers commented on Chinook salmon fishing in July, the period of highest salmon abundance in the area. Thirty percent reported fishing as good, 48% reported fishing as normal and 22% reported fishing as poor. Gillnets were the only gear type used by interviewed fishers in June, with set gillnets being the primary gear type. Gillnet mesh size greater than 6 inches, utilized to target large Chinook salmon, were used by 61% of the reporting fishing families.

Four reports were received for chum salmon and sockeye salmon fishing in July. One family reported chum salmon fishing as normal while 2 families reported fishing as poor. All 3 families reported sockeye salmon fishing as good. In August, 3 fishing families commented on chum and coho salmon fishing. Chum salmon fishing was reported to be normal by one family and poor by 2 families. Coho salmon fishing was reported to be good by 2 families and poor by one family. During July and August, zero fishers reported using drift gillnets. Approximately 65% of the interviewed fishers used set gillnets and 35% used rod and reels. Gillnets with mesh size 6-inches or less is generally used to target chum, sockeye and coho salmon. This gear type accounted for approximately 73% of the gillnet gear use as indicated by interviewed fishing families (Whitmore et al. 2004).

Test Fishery

The first Chinook salmon of the 2003 season was caught in the Bethel test fishery on June 1. The 2003 cumulative daily CPUE index for Chinook salmon was the highest index in the history of the project. Based on the cumulative indices, the central 50% of the run passed the test-fish site between June 12 and June 25 with 50% of the passage occurring on June 17 (Bue 2005). The 2003 cumulative daily CPUE index for Chinook salmon was well above the contemporary years

with similar water levels of 1994, 1995, 1998 and 2002 based on the USGS water level data collected at Crooked Creek for the June 1 to June 30 time period. Additionally the cumulative daily CPUE index was above all years when the Chinook salmon escapement goal of 10,000 fish was not achieved at the Kogrukluk River weir (Bue 2005).

The first sockeye salmon of the 2003 season was caught in the test fishery on June 9. The 2003 cumulative daily CPUE index for sockeye salmon was above the 1984–2002 historical average but below the cumulative indices in 1986, 1987 and 1996. Based on the cumulative indices the central 50% of the run passed the test-fish site between June 19 and June 30 with 50% of the passage occurring by June 27 (Bue 2005). The 2003 cumulative daily CPUE index for sockeye salmon was well above the more recent years with similar water levels of 1994, 1995, 1998 and 2002 for the period from June 1 to July 10 (Bue 2005).

The first chum salmon of the 2003 season was caught in the test fishery on June 10. The 2003 cumulative daily CPUE index for chum salmon was above the 1984–2002 historical average but below the cumulative indices of the more recent years of 1996 and 2002. Based on the cumulative indices the central 50% of the run passed the test-fish site between July 1 and July 11 with 50% of the passage occurring by July 4 (Bue 2005). The cumulative daily CPUE index for chum salmon was above the more recent years with similar water levels of 1998, 1999 and 2001 but below the 2002 index for the period from June 1 to July 27. With the exception of 1987, the 2003 cumulative index was above all years when the chum salmon escapement goals of 30,000 fish and 250,000 fish were not achieved at the Kogrukluk River weir and Aniak River sonar projects respectively (Bue 2005).

The first coho salmon of the 2003 season was caught in the test fishery on July 8 and catches continued through the project termination date of August 24. The 2003 cumulative daily CPUE index for coho salmon was above the historical 1984–2002 average but below the cumulative indices of the more recent years of 1996 and 2000. Based on cumulative indices the central 50% of the run passed the test-fish site between July 27 and August 14 with 50% of the passage occurring by August 8 (Bue 2005). The 2003 cumulative daily CPUE index for coho salmon was above the more recent years with similar water level of 1998, 1999 and 2001 but below the cumulative index achieved in 1996. The 2003 cumulative daily CPUE index was above all years when the coho salmon escapement of 25,000 fish was not achieved at the Kogrukluk River weir (Bue 2005).

Weirs

Kwethluk River Weir

The 2003 Kwethluk River salmon escapements included 14,474 Chinook, 41,812 chum and 107,789 coho salmon during the June 20 through September 14 operational period (Table 12; Appendix B12; Roettiger et al. 2004). Currently no escapement goals have been established for the project; however, the 2003 Chinook, chum, sockeye, and coho salmon escapement ranked highest among 5 years in which annual escapements were determined.

Tuluksak River Weir

The 2003 Tuluksak River salmon escapements included 1,064 Chinook, 11,724 chum and 41,071 coho salmon during the June 9 through September 14 operational period (Table 13; Appendix B13; Gates and Harper 2002b). Currently no escapement goals have been established for the project; however, among the 7 years for which annual escapements were determined, the

2003 Chinook return ranked third and chum salmon escapements ranked fourth while coho salmon escapements were the highest for any operational season.

George River Weir

The 2003 George River salmon escapements included 4,693 Chinook, 33,666 chum and 33,280 coho salmon during the June 15 through September 20 target operational period (Table 14; Appendix B14; Linderman et al. 2004b). Currently no escapement goals have been established for the river; however, the 2003 Chinook salmon escapement was the third highest of 6 years of annual escapement records. Chum and coho salmon escapement were the highest of 6 years of records.

Kogrukluk River Weir

The 2003 Kogrukluk River salmon escapements included 11,771 Chinook, 9,164 sockeye, 23,413 chum and 74,604 coho salmon during the June 15 through September 20 operational period (Table 15; Appendix B15; Clark and Molyneaux 2003). The escapement goals of 10,000 Chinook salmon, 30,000 chum salmon, and 25,000 coho salmon were achieved. The 2003 coho salmon escapement was the highest on record for the Kogrukluk River weir. The origin of the escapement goals was based on historic average passage coupled with some subjective weighting determined by Area biologists in the early 1980s (Buklis 1993). The 2003 passage was slightly larger than the average historic escapement.

Tatlawiksuk River Weir

In 2003, Tatlawiksuk River weir operations were incomplete as an extreme high water event dislodged the weir from the river bottom on July 4. Field camp operations were discontinued on August 6. A season estimate of Chinook salmon escapement was made at 1,683 salmon, cumulative passage estimates were not made for chum and coho salmon (Table 16; Appendix B16; Linderman et al. 2004a).

Takotna River Weir

The 2003 Takotna River salmon escapements included 378 Chinook, 3,393 chum and 7,171 coho salmon during the July 02 through September 20 target operational period (Table 17; Appendix B16; Clark and Molyneaux 2003b). No escapement goals have been established for the river. The 2003 Chinook salmon escapement was the second highest of 4 years in which the weir was operated. Chum salmon escapement ranked third of 4 years, and coho salmon ranked highest of 4 years, for years in which the weir was operational.

Kanektok River Weir

The Kanektok River weir was operational from June 24 through September 18. Salmon escapement at the weir was 8,231 Chinook, 127,471 sockeye, 40,066 chum, 72,448 coho, and 2,443 pink salmon (Table 18; Appendix C9; Estensen and Diesinger 2004). Chinook, sockeye and coho salmon passage was the highest of the 3 years the weir was operated. Chum salmon passage was the second highest of the program. Because of the location of the weir (at approximately river mile 40), it is likely a substantial number of Chinook, chum, and coho salmon spawn below the weir. In addition, it is possible a number of Chinook, sockeye, and chum salmon passed the weir site prior to the operation of the weir. Thus, escapement counts of Chinook, sockeye, and chum salmon may not reflect the total number of spawners in the drainage.

Middle Fork Goodnews River Weir

The Middle Fork Goodnews weir was operational from June 18 through September 18. Chinook, sockeye, chum and coho salmon passage as monitored through the weir were 2,389, 44,387, 21,637 and 54,477 fish, respectively (Table 19; Appendix D10). Sockeye and chum salmon escapements exceeded their respective escapement goals of 25,000 and 15,000 fish, respectively. The Chinook salmon escapement goal of 3,500 fish was not achieved.

Aniak River Sonar

In 2003 total estimated fish passage at the Aniak River sonar site was 363,396 fish, during the 28 June through 31 July operational period (Table 20; Appendix B17; Sandal and Pfisterer 2005). This passage exceeded the minimum escapement goal of 250,000 unapportioned fish counts (Schneiderhan 1984, Buklis 1993). DIDSON sonar equipment was evaluated during the 2003 season in consideration of using it in the future to replace the aging BioSonics equipment (Sandal and Pfisterer 2005 *In prep).*

Aerial Surveys

In 2003, aerial surveys were flown in 30 streams, including 12 used for the Kuskokwim River Chinook Salmon Index (Figure 8). The index represents the relative Chinook salmon abundance from 13 possible index streams throughout the Kuskokwim River drainage. Restructuring of the Kuskokwim Area aerial survey program in recent years resulted in the highest number of successfully surveyed index streams since 1975. Overall, Kuskokwim River Chinook salmon escapements continued to show improvements over the low escapements of 1998, 1999, and 2000. The following paragraphs describe details of Kuskokwim Area aerial survey results by geographic area.

Lower Kuskokwim River

Chinook salmon aerial survey escapement goals were initially established on the Kwethluk, Kisaralik, and Tuluksak Rivers in 1993 and set at 1,200, 1,000, and 400 fish respectively (Buklis 1993). Chinook salmon aerial survey counts in 2003 were 2,628 fish on the Kwethluk River on August 1, 654 fish on the Kisaralik River on July 28, and 94 fish on the Tuluksak River on July 28 (Table 21; Appendix B18). Chinook salmon have achieved their goal on 5 of 12 (41.6%) acceptable surveys on the Kwethluk River since 1960, 5 of 16 (31.2%) surveys on the Kisaralik River since 1960, and 3 of 9 (33.3%) surveys on the Tuluksak River since 1977. No chum or coho aerial surveys were flown on these rivers in 2003.

An additional lower Kuskokwim River stream surveyed for Chinook salmon in 2003 was the Eek River with a count of 1,236 fish on July 31 (Table 21; Appendix B18). The Eek River has been surveyed for Chinook salmon 9 times since 1980 with a median count of 1,312 from 1975 through 1994. Paired data sets between weir counts and aerial surveys counts were achieved on the Kwethluk and Tuluksak Rivers in 2003.

Middle Kuskokwim River

Chinook salmon aerial survey escapement goals were initially established on the Aniak River, Salmon River of the Aniak, and Holitna River in 1993 and set at 1,500, 600, and 2,000 fish respectively (Buklis 1993). Chinook salmon aerial survey counts in 2003 were 3,514 fish on the Aniak River on July 25, 1,242 fish on the Salmon River of the Aniak on July 25 (Table 21; Appendix B18). Although an aerial survey was conducted on the Holitna River in 2003 it did not

meet acceptable criteria for inclusion in the aerial survey database because of poor survey conditions. Chinook salmon have achieved their goal on 13 of 19 (68.4%) acceptable surveys on the Aniak River since 1960, 9 of 22 (40.9%) surveys on the Salmon River of the Aniak River since 1960, and 4 of 12 (33.3%) surveys on the Holitna River since 1976. No chum or coho aerial surveys were flown on these rivers in 2003.

Additional middle Kuskokwim River streams surveyed for Chinook salmon in 2003 were the Kipchuk River of the Aniak with a count of 1,493 fish on July 25, the Holokuk River with a count of 528 fish on July 22, the Oskowalik River with a count of 844 fish on July 22, and the Kogrukluk River with a count of 3,058 fish on July 26 (Table 21; Appendix B18). The Kipchuk River has been surveyed for Chinook salmon 18 times since 1960 with a median count of 778 from 1975 through 1994. The Holokuk River has been surveyed for Chinook salmon 17 times since 1977 with a median count of 82 from 1975 through 1994. The Oskowalik River has been surveyed for Chinook salmon 11 times since 1987 with a median count of 103 from 1975 through 1994. A paired data set between the weir count and aerial survey was achieved on the Kogrukluk River in 2003.

Upper Kuskokwim River

Chinook salmon aerial survey escapement goals were initially established on the Salmon River of the Pitka Fork in 1993 and set at 1,300 fish (Buklis 1993). Chinook salmon aerial survey counts on the Salmon River of the Pitka Fork in 2003 were 1,391 fish on July 20 (Table 21; Appendix B18). Chinook salmon have achieved their goal on 5 of 19 (26.3%) acceptable surveys on the Salmon River of the Pitka Fork since 1977. No chum aerial surveys were flown on this river in 2003.

Additional upper Kuskokwim River streams surveyed for Chinook salmon in 2003 were the Cheneetnuk River with a count of 810 fish on July 22, the Gagarayah River with a count of 1,095 fish on 22 July, and the Bear Creek with a count of 176 fish on July 20 (Table 21; Appendix B18). The Cheneetnuk River has been surveyed for Chinook salmon 12 times since 1968 with a median count of 1,050 from 1975 through 1994. The Gagarayah River has been surveyed for Chinook salmon 12 times since 1968 with a median count of 504 from 1975 through 1994. Bear Creek was initially surveyed as part of exploratory aerial survey work done in the late 1990's and efforts are being made to survey this and other upper Kuskokwim River streams for Chinook salmon on a consistent yearly basis.

Several upper Kuskokwim River streams were surveyed for coho and late spawning chum salmon in late September of 2003. Coho salmon aerial surveys were conducted on tributaries of the Takotna River, tributaries of the South Fork of the Kuskokwim, tributaries of the Big River, Highpower Creek, and the Big River (Table 21). A total of 321 coho salmon and no chum salmon were observed in the Takotna River drainage on September 27, a total of 2,089 coho salmon and 1,300 chum salmon were counted in the South Fork Kuskokwim drainage on September 28, a total of 84 coho salmon and 23 chum salmon were counted in the Big river on September 28, and 1,433 coho salmon and zero chum salmon were counted in the Highpower Creek drainage on September 30. These surveys were part of exploratory work done to gauge the distribution of coho salmon in the upper Kuskokwim River drainage and to gauge distribution of late spawning chum salmon in the upper Kuskokwim Drainage as part of an emerging fall chum salmon study.

Kuskokwim Bay

Aerial survey escapement goals were established on the Kanektok River in 1993 and set at 5,800 for Chinook, 15,000 for sockeye salmon, 30,500 for chum salmon, and 25,000 for coho salmon (Buklis 1993). Aerial survey counts in 2003 were 5,430 Chinook salmon, 18,010 sockeye salmon, and 2,700 chum salmon on July 29 (Table 21; Appendix C10). No aerial surveys were flown for coho salmon in 2003. Chinook salmon have achieved their goal on 12 of 23 (52.2%) acceptable surveys since 1962 and counts in 1977 were just short of the goal. Sockeye salmon have achieved their goal on 15 of 23 (65.2%) acceptable surveys flown since 1962 and counts in 1987, 1990, and 1993 were just short of the goal. Chum salmon achieved their goal on 4 of 22 (18.2%) acceptable surveys flown since 1966. Aerial surveys for coho salmon have been sporadic because of the difficulties in conducting aerial surveys in late September. Survey conditions were rated as good. A total of 3,120 Chinook were observed above the weir, 2,310 were observed below the weir. Most of the Chinook salmon observed were centered above and below the weir, approximately 15 mi in each direction. A large amount of sockeye salmon observed in Kagati and Pegati Lakes were observed on the fringe of the shallow and deep water areas. As a result, it is probable a substantial amount of sockeye were in the deeper water and unobservable (Estensen and Diesinger 2004).

Aerial survey escapement goals were established for the Goodnews River drainage in 1993 and renamed escapement objectives in 2001 (ADFG, 2004; Buklis 1993; Burkey et al. 2000b). Main stem Goodnews River goals are established at 1,600 for Chinook, 15,000 for sockeye, 17,000 for chum, and 15,000 for coho salmon (Appendix A7). Middle Fork Goodnews River goals were established at 800 for Chinook salmon, 5,000 for sockeye salmon, 4,000 for chum salmon, and 2,000 for coho salmon. In 2003, Goodnews River drainage aerial surveys were flown on August 2. Main stem Goodnews River aerial survey counts were 2,015 Chinook salmon, 27,380 sockeye salmon, and 3,370 chum salmon (Table 21; Appendix D11). Middle Fork Goodnews River aerial survey counts were 1,210 Chinook salmon, 21,760 sockeye salmon, and 2,310 chum salmon. No coho salmon aerial surveys were flown in the Goodnews River drainage in 2003. In the main stem Goodnews River since 1980, Chinook salmon have achieved their goal on 9 of 17 (52.9%) acceptable surveys, sockeye salmon have achieved their goal on 5 of 16 (31.2%) acceptable surveys, and chum salmon achieved their goal on 1 of 12 (18.2%) acceptable surveys. In the Middle Fork Goodnews River since 1980, Chinook salmon have achieved their goal on 14 of 15 (93.3%) acceptable surveys, sockeye salmon have achieved their goal on 13 of 15 (86.6%) acceptable surveys, and chum salmon achieved their goal on 6 of 13 (46.2%) acceptable surveys. Aerial surveys of coho salmon in the Goodnews River drainage have been sporadic because of the difficulties in conducting aerial surveys in late September.

An additional Kuskokwim Bay stream surveyed in 2003 was the Arolik River, but it did not meet acceptable criteria for inclusion in the aerial survey data base because of poor survey conditions. Paired data sets between weir counts and aerial surveys were achieved on the Kanektok and Middle Fork Goodnews Rivers in 2003.

Mark–Recapture

A mark–recapture study was conducted in 2003 to estimate the total passage of chum, sockeye and coho salmon in the mainstem Kuskokwim River, upstream of Kalskag at river mile 192 (Figure 1). This was the third year of the project; however, in 2001 the study was limited to coho salmon (Kerkvliet et al. 2003). Fish were captured with fish wheels and gillnets deployed near

Kalskag (river mile 192) and Birch Tree Crossing (river mile 221), and marked with uniquely numbered spaghetti Floy tags. The recapture event was considered from two aspects: the recovery of tags from catches in the fish wheels and gillnets fished at Birch Tree Crossing, and the observation of tagged fish at Aniak River sonar and at George, Tatlawiksuk, Kogrukluk and Takotna River weirs. In 2003, abundance estimates were made for the Kuskokwim River upstream of Kalskag for sockeye salmon 90,449 (SE=18,168), chum salmon 412,443 (SE=30,958) and coho salmon 849,494 (SE=99,649), respectively (Appendix B16; Kerkvliet et al. 2004).

Radio Telemetry

Kuskokwim River Chinook Radio Telemetry

A radio telemetry study was conducted in 2003 to estimate the total passage of Chinook salmon in the mainstem Kuskokwim River, upstream of Kalskag at river mile 192 (Figure 3; Appendix A2). Estimated passage of Chinook salmon in the Kuskokwim River upstream from the confluence with the Aniak River, is 103,161 (SE=18,720) (Stuby 2004). By comparison, the 2002 estimate for Chinook salmon for the Kuskokwim River upstream of its confluence with the Aniak River was 100,733 (SE=24,267) (Stuby 2003). Aniak River was excluded due to suspected sampling bias. ADF&G Sport Fish Division operated the project with assistance from Kuskokwim Native Association. Details of the study will be reported in the Fishery Data Series of ADF&G Sport Fish Division.

Holitna Radio Telemetry

For the third consecutive year, a radio telemetry study was conducted to estimate the annual escapements of Chinook, chum and coho salmon in the Holitna River drainage (Stroka, and Brase 2004), which joins the Kuskokwim River at river mile 335 (Figure 1; Appendix A2). In 2003, there was an estimated 42,013 Chinook salmon in the Holitna River drainage (SE=4,981) (Appendix B16). Total abundance estimates for chum and coho were not provided in 2003. By comparison, the estimated abundance of Chinook salmon in the Holitna River drainage for 2001 and 2002 was 22,405 (SE=6,207) and 42,902 (SE=6,334), respectively (Chythlook and Evenson 2003; Wuttig and Evenson 2002).

Biological Sampling

Kuskokwim Area salmon were sampled from subsistence catch, commercial catch, and escapement monitoring programs during the 2003 season. Age, sex, and length (ASL) composition estimates were produced following procedures described in DuBois and Molyneaux (2000). Results are summarized in this report to show 2003 age and sex composition estimates and general trends in salmon age and sex composition over time (Appendices B19–B25, C11–C17, and D12–D19).

PACIFIC HERRING

Background and Historical Perspective

Subsistence Fishery

Subsistence fishing for Pacific herring in the northeastern Bering Sea is very important in villages of the Yukon-Kuskokwim River delta. Primarily residents of the coastal villages of Kwigillingok, Kongiganak, Kipnuk, Chefornak, Toksook Bay, Nightmute, Tununak, and Newtok

participate in the subsistence fishery. The herring stocks utilized by the subsistence fishery are the same stocks targeted by the commercial fishery.

Subsistence harvest surveys occurred sporadically in Kuskokwim delta villages during 1975 to 1996 with surveys conducted annually in Nelson Island villages from 1985 to 1996. Subsistence survey results reflect harvest trends and reported catches represent minimum figures because not all area villages are surveyed and not all fishers are contacted in each surveyed village. No subsistence herring surveys have been conducted in Nelson Island District since 1996 or in the Nunivak Island District since 1993. Available data suggests that Nelson Island villages harvest approximately 110 tons of herring annually (Appendix E1; Pete 1992).

Commercial Fishery

The Kuskokwim Area commercial herring fishery was initiated in 1977 in the Security Cove and Goodnews Bay Districts with the first documented deliveries in 1978 in Security Cove District and 1979 in Goodnews Bay District. In 1978, purse seines were allowed in the Security Cove District, however, since that time the fishery has been limited to gillnets. Initially fisheries were managed through open seasons and guideline harvest levels. In 1980, emergency order authority was established to open and close fisheries and guideline harvest levels were established not to exceed 20% of estimated herring biomass and gillnet length was established at 100 fathoms. Spawn on kelp fisheries were prohibited in 1978 before fisheries were established.

In the Goodnews Bay District beginning mechanical shakers were prohibited, vessel length was limited to 30 feet and the area was designated as a super exclusive use area in 1987. The Goodnews Bay District has become a limited-entry fishery with a moratorium on new permits in 1997. As of March 2001, 169 limited entry permits had been issued; another 21 were waiting for final determination. The goal is to establish 182 limited entry herring permits for the area.

In 1985, the commercial herring fishery was initiated in the Nelson and Nunivak Island Districts with gillnets up to 100 fathoms in length and fishery openings and closing established by emergency order. A minimum herring abundance threshold was established and required prior to the implementation of a fishery. The harvest guideline level was set at 10% of estimated abundance. The commercial guideline harvest level was increased from 10% to not to exceed 15% of estimated biomass in 1987. Beginning in 1987 mechanical shakers were eliminated in Nelson and Nunivak Island fisheries, vessel length was established not to exceed 30 feet, and a combined super exclusive use area was established for the Nelson and Nunivak Island Districts. The Nelson Island and Nunivak Island herring fisheries were designated limited entry status in 1990. In December 1997, the Board of Fisheries approved a proposal that raised the Nelson Island harvest level to 20% of the available biomass minus 200 tons allocated for subsistence use. Regulations went into effect beginning in the 2001 season for a cooperative purse seine fishery in Nunivak Island District.

The implementation of the super exclusive use designation with vessel length restrictions and prohibition of mechanical shakers was in response to request from fishers living in communities adjacent to the fisheries. These fishers expressed that it would be in the best interest of the fisheries to standardize equipment rather than to force fishers to over invest in equipment to stay competitive and limited participation to only one herring fishery rather than multiple fisheries.

The Kuskokwim Area herring fisheries developed rapidly in response to the relative strong market for herring sac roe. During 1981 to 1984, an average of 206 fishers harvested 1,400 tons

of herring with an average value of $477,000 in the Security Cove and Goodnews Bay fisheries. The addition of the Nelson and Nunivak Island fisheries in 1985 and the Cape Avinof fishery in 1988 resulted in an average of 442 fishers harvesting an average of 2,200 tons of herring with an average value of $1.33 million during 1985 to 1989. During 1990 and 1991 season's fisher participation, harvest levels and values were reduced in response to a decline in herring abundance caused by a lack of recruitment of younger age herring into the fishery. Additional year classes of herring began recruiting to the fishery in 1992. The fishery peaked in 1996 during which 802 fishers harvested over 5,000 tons of herring valued at $3.5 million. Although harvest levels remained high during 1997 to 1999 seasons, value declined. The trend in declining value was followed by an annual reduction in effort and harvest levels which continued through the 2003 season during which 97 fishers harvested 1,257 tons of herring valued at $235,000.

Recent Board of Fisheries Activities

In the winter of 2000, the Board adopted regulations that allowed for the development of a cooperative herring purse seine fishery in Nunivak Island District. In 2001, the Board made the regulation permanent by removing the sunset clause from regulation implemented in 2000 (5 AAC 27.894). During the 2001 season, no processor showed interest in buying herring in the district and as a result, no commercial fishery occurred. However, there was an active cooperative herring purse seine fishery in the district during the 2002 and 2003 seasons.

2003 Outlook and Management Strategy

The total 2003 guideline harvest for the Kuskokwim Area was expected to be approximately 4,387 tons. The 2003 preseason guideline harvest for the Security Cove District was 918 tons. A minimum biomass threshold of 1,200 tons or significant spawning activity was required to be observed before the fishery could be opened. The exploitation rate in the Security Cove fishery could have been up to 20% of the available biomass. Projections from postseason escapement estimates indicate that the 2003 spawning biomass was 4,590 tons. The 2003 preseason guideline harvest in the Goodnews Bay District was 1,037 tons. To open the fishery a minimum biomass threshold of 1,200 tons or significant spawning activity was required to be observed. The projected 2003 spawning biomass was estimated at 5,186 tons. The exploitation rate in the Goodnews Bay fishery may be up to 20% of the available biomass. The 2002 estimated biomass was 5,529 tons. The 2003 preseason guideline harvest in the Cape Avinof District was 572 tons. The projected total biomass was estimated at 3,812 tons. To open the fishery, a minimum herring biomass threshold of 500 tons or significant spawning activity was required to be observed. The exploitation rate of Cape Avinof herring stocks cannot exceed 15% by regulation. The 2003 preseason guideline harvest for the Nunivak Island District was 1,036 tons. The projected biomass of herring returning to the district in 2003 was estimated to be 5,182 tons. The minimum biomass threshold required to open the Nunivak Island fishery is 1,500 tons. The exploitation rate may be up to 20% of the available biomass. The total biomass estimate in 2002 was estimated to be 5,422 tons. The 2003 preseason guideline harvest in the Nelson Island District was 824 tons. The projected 2003 spawning biomass was estimated to be 5,120 tons. The Nelson Island harvest level is up to 20% of the available biomass minus 200 tons allocated for subsistence. Therefore, the preliminary commercial exploitation rate in 2003 was allowed up to 16% of the estimated biomass. The biomass threshold remained at 3,000 tons. The biomass estimate in 2002 was 6,130 tons.

Recent Fishery Performance

The 2003 Kuskokwim Area commercial herring season began with the commercial opening of the Goodnews Bay District on May 9 (Table 25). The season closed on May 22 with the last commercial opening in the Cape Avinof District. Approximately 1,257 tons of herring were harvested (Table 26; Appendix E1), all of it harvested for sac roe. Herring was harvested commercially in all of the Kuskokwim Bay Districts except Security Cove. The overall recoverable roe content by district ranged from 8.4% in the Nunivak Island District to 10.8% in the Nelson Island District. The overall recoverable roe percentage for the Kuskokwim Bay Area was of 9.7%. Estimated exploitation rates in the individual districts ranged from less than 1% in the Goodnews Bay District to 13.3% in the Nelson Island District. Exvessel values ranged from $4,600 in the Goodnews Bay district to $187,500 in the Nelson Island district. The exvessel value for the entire Kuskokwim Area was $235,400 (Appendix E3).

The timing of the herring runs in the Kuskokwim Area in 2003 were among the earliest on record based on historical commercial harvests and spawning timing documentation. The early arrival of herring into the Kuskokwim Area may have been the result of abnormally warm climatic conditions in southwestern Alaska during the winter of 2002–2003. In addition, water temperatures in the Bering Sea during March and April were above average, and the Bering Sea ice pack had migrated north of Cape Newenham by the end of March.

Aerial surveys were flown under acceptable conditions in the Security Cove, Goodnews Bay, and Nunivak Island Districts. Surveys flown in the Nelson Island district were rated as poor to unsatisfactory. Based on aerial survey results, guideline harvest levels were raised in the Security Cove and the Goodnews Bay Districts. Aerial surveys were not flown in the Cape Avinof District as turbid water typically makes observing herring schools difficult. Poor weather in the Kuskokwim Area limited the number of aerial surveys flown in 2003.

Security Cove District

There were no commercial openings in the Security Cove District in 2003 (Appendix E3). Permit holders participating in the Security Cove fishery frequently come from the Togiak District once that fishery concludes. In recent years, the Togiak District fishery has typically finished prior to the opening of the commercial fishery in the Security Cove district. In 2003, the Togiak District fishery overlapped with the peak spawning activity in Security Cove district. As a result, there was no interest from fishers or buyers in the fishery.

Two successful aerial surveys were flown over the Security Cove District (Table 27). The first survey was flown on May 2 and approximately 10,600 tons of herring biomass and 2 spawns for a combined 1.5 miles were documented. Survey conditions were rated as good to excellent. On May 3, 2,600 tons of herring biomass and 2 spawns for a combined 1.5 miles in length were documented. Survey conditions were rated as fair to poor. The 10,600 tons of herring documented on May 2 exceeded the 2003 preseason projected biomass of 4,590 tons. As a result, the 2003 guideline harvest in the Security Cove District was increased to 2,120 tons. Four other attempts to fly surveys were made between May 5 and May 9. Poor weather and poor survey conditions resulted in unacceptable surveys.

A total of 1,048 herring were sampled with variable mesh gillnet (VMG) for age, weight, and length (AWL) determination in the Security Cove District (Tables 28 and 29). Based on age data 68% of the fish sampled were age 6 and 7 herring.

Goodnews Bay District

There were 9 commercial periods in the Goodnews Bay District between May 9 and May 14 for a total of 50.5 hours of fishing time (Tables 25 and 26). A total of 35.8 tons of sac roe herring was harvested with an overall recoverable roe content of 9% (Table 26; Appendix E1). Commercial fishing effort ranged from no permit holders on May 13 to 9 permit holders on May 12. One company bought herring in the district (Appendix E3). The exploitation rate was less than 1% of the preseason projected biomass of 5,186 tons. Fishers in the district fished mainly with 2 7/8 to 3 inch gear throughout most of the season. There was no commercial effort during the May 13 and 14 commercial openings because of poor weather in the district.

Two acceptable aerial surveys were flown over the district, the first on May 2 and the other and May 3 (Table 30). The May 2 aerial survey observed 8,300 tons of herring biomass and 0.25 miles of spawn. The survey conditions were rated as fair. The observed biomass exceeded the preseason biomass estimate of 5,186 tons. As a result, the 2003 guideline harvest was increased to 1,700 tons. A second survey on May 3 observed 2,600 tons of herring biomass and spawn less than 1 mile in length. Four other attempts to fly surveys were made between May 4 and May 15. Poor weather and poor survey conditions resulted in unacceptable surveys.

A total of 379 commercially caught herring were sampled for AWL determination. Age information from sampled fish indicated over 99% of all of the fish sampled were greater than 6 years old with over 66% ranging in age from 6 to 9 years (Table 28). A total of 1,669 herring captured with VMG were sampled for AWL determination. Based on age data 65% of the fish sampled were age 6 and 7 herring (Table 28). Approximately 60% of the run was estimated to be age 7 and 8 herring (Table 29).

Cape Avinof District

There were 13 commercial periods in the Cape Avinof District between May 15 and May 23 for a total of 74.5 hours of fishing time (Tables 25 and 26). The total harvest was 175.6 tons of sac roe herring with an overall recoverable roe content of 10.5% (Table 26; Appendix E1). Commercial fishing effort ranged from one permit holder on May 15 to 13 permit holders on May 17. One company bought herring in the district (Appendix E3). The exploitation rate was 4.6% of the preseason projected biomass of 3,812 tons. Fishers in the district fished mainly with 3-inch gear throughout most of the season.

No aerial surveys of the Cape Avinof District were flown. Aerial survey conditions in this district are typically classified as poor because of turbid water conditions. The estimated total returning biomass was based on the preseason projection of 3,812 tons. The corresponding preseason guideline harvest level of 572 tons was used for the season.

A total of 579 commercially harvested herring were sampled for AWL determination. Age 6-9 herring accounted for over 72% of the samples. No VMG samples were collected because ADF&G staff was only present on the grounds during the commercial fishery, therefore, Cape Avinof District VMG information was utilized to estimate the age composition of the total run. Approximately 60% of the run were estimated to be age 6 and 7 herring (Tables 28 and 29).

Nelson Island District

There were 14 commercial openings in the Nelson Island district between May 14 and May 21 for a total of 78 hours of fishing time (Tables 25 and 26). The total harvest was approximately 816.5 tons of sac roe herring with an overall recoverable roe content of 10.8% (Table 26; Appendix E1).

One company bought herring in the district (Appendix E2). Commercial fishing effort ranged from 5 permit holders on May 14 to 35 permit holders on May 19 (Appendix E3). The exploitation rate was 15.9% of the preseason-projected biomass of 5,120 tons.

Five aerial surveys were flown over the district between May 14 and May 21 (Table 31). Survey conditions were rated as poor to unsatisfactory. The peak observed herring biomass of 1,450 tons was documented on May 21 under poor to unsatisfactory survey conditions. Five spawns for a combined 6 miles in length were observed during aerial surveys of the district. The management strategy for the Nelson Island district is to prosecute the commercial fishery once a threshold biomass of 3,000 tons is observed. The peak biomass observed during aerial survey was 1,450 tons, below the threshold. In the absence of aerial surveys under acceptable conditions, the commercial fishery was prosecuted and the guideline harvest was based on the preseason biomass estimate.

A total of 427 commercially harvested herring and 1,692 herring captured with VMG were sampled for AWL determination (Tables 28 and 29). Approximately 54% of the total run was estimated to be age 6 and 7 herring.

Nunivak Island District

The Nunivak Island cooperative commercial purse seine herring fishery opened on May 9 and remained open until May 18 (Tables 25 and 26). Fourteen landings were made for a harvest of 229 tons of sac roe herring with an overall recoverable roe content of 8.4% (Appendix E1). Nineteen permit holders participated with one buyer and one purse seine vessel in the cooperative (Appendix E3). The exploitation rate was 4.4% of the preseason projected biomass of 5,182 tons.

Three aerial surveys were flown in the Nunivak Island District between May 14 and May 17 (Table 32). Survey conditions ranged from good to unsatisfactory. The peak observed herring biomass of 1000 tons was documented on May 14 under fair to unsatisfactory survey conditions. Ten spawns for a combined length of approximately 3 miles were observed during aerial surveys of the district.

A total of 634 commercially harvested herring VMG were sampled for AWL determination (Tables 28 and 29). No VMG samples were collected. Nunivak Island age composition information from VMG samples were used to estimate total run. Approximately 60% of the total run was estimated to be age 6 and 7 herring.

Enforcement

The Division of Fish and Wildlife Protection (FWP) was present in the Goodnews Bay, Nelson Island, and Cape Avinof Districts this year. Two individuals were cited in the Cape Avinof District in 2003 for commercial fishing after a period closure.

SECTION III. 2004 OUTLOOK AND MANAGEMENT STRATEGY

SALMON

Management of the Kuskokwim Area salmon fisheries will follow the Kuskokwim River Salmon Rebuilding Management Plan (Rebuilding Plan) and the District 4 Salmon Management Plan. The Kuskokwim Area has no formal forecast for salmon returns. Broad expectations for salmon runs are developed based on an evaluation of parent year escapements and trends in harvest and productivity.

Kuskokwim River Outlook

ADF&G expects the 2004 Chinook, chum, and sockeye salmon runs to be similar to the 2003 salmon runs or slightly stronger. In 2003, Chinook and chum salmon run sizes provided for adequate escapements and subsistence harvests throughout most of the drainage. Salmon runs during the 2004 season are 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 is anticipated that the commercial harvestable surplus of salmon will range from 5,000 to 15,000 Chinook salmon; 150,000 to 300,000 chum salmon; 20,000 to 40,000 sockeye salmon and 200,000 to 600,000 coho salmon (Table 33).

Kuskokwim River Management Strategy

State and federal staff will continue to follow the guidelines in the Kuskokwim River Salmon Rebuilding Management Plan. Salmon runs will be managed to achieve established escapement goals, amounts necessary for subsistence, and to allow commercial fishing on harvestable surpluses. When the inseason fishery monitoring program determines that the Chinook and chum salmon runs are large enough to meet escapement needs, subsistence fishing will be allowed 7 days per week. Since there is currently no market for chum salmon, it is anticipated that there will be no chum salmon directed commercial fishery. It is anticipated that a coho directed commercial fishery will occur from late July through August. The fishery will likely be scheduled to allow commercial fishing in Subdistrict 1-A twice per week and in Subdistrict 1-B twice per week. The Alaska Board of Fisheries during their January 2004 meeting liberalized subsistence fishing regulations to provide subsistence fishers greater opportunity to fish during the commercial salmon fishing season. During the 2004 season while one subdistrict is open to commercial fishing, subsistence fishing will be allowed in the majority of the other subdistrict.

Subsistence Fishery

As directed by the Kuskokwim River Salmon Rebuilding Management Plan the subsistence salmon fishing schedule for gillnet and fish wheel gear provides 4 consecutive days of subsistence salmon fishing per week during June and July in the entire drainage. When it is determined that Chinook and chum salmon escapement goals will be achieved subsistence fishing will be allowed 7 days per week.

2004 JUNE AND JULY SUBSISTENCE SALMON FISHING SCHEDULE

AREA	SCHEDULE BEGINS	SALMON FISHING CLOSED
From the mouth of the Kuskokwim River upstream to Bogus Creek (9 miles upriver of Tuluksak), tributaries included.[a]	June 6	SUNDAY, MONDAY, & TUESDAY 12:01 AM Sunday to 11:59 PM Tuesday
From Bogus Creek upstream to Chuathbaluk, tributaries included.[a]	June 13	SUNDAY, MONDAY, & TUESDAY 12:01 AM Sunday to 11:59 PM Tuesday
From Chuathbaluk upstream and including the remainder of the Kuskokwim River drainage, tributaries included.	June 20	SUNDAY, MONDAY, & TUESDAY 12:01 AM Sunday to 11:59 PM Tuesday

[a] Non-salmon streams that remain open 7 days per week with any gillnet mesh size and that are not affected by this schedule include the following systems 100 yards upstream from their confluence with the Kuskokwim River: the Whitefish Lake drainage near Aniak; Discovery, Birch, and Swift Creeks; and the Gweek, Johnson, Kinak, Kaliak, and Tagayarak Rivers.

In each area, subsistence fishing is open 7 days per week until the schedule begins. During closures in all Kuskokwim River salmon streams, all gillnets with mesh greater than 4 inches must be removed from the water and all fish wheels must be stopped. During subsistence salmon fishing closures, subsistence fishing for fish other than salmon will be allowed with gillnets of 4 inches or less mesh size and 60 feet or less in length.

Subsistence fishing with hook and line for any species of salmon will be allowed 7 days per week, except in that portion of the Aniak River drainage upstream of Doestock Creek. Upstream of Doestock Creek when fishing with hook and line gear from June 1 through August 31, there is a daily bag and possession limit of 3 salmon, only 2 of which can be Chinook salmon.

Commercial Fishery

As directed by the Kuskokwim River Salmon Rebuilding Management Plan the commercial fishery can only be conducted in June and July if it is determined that escapement goals and amounts necessary for subsistence will be achieved. It is not anticipated that there will be chum or sockeye salmon directed fishery in late June or July since there is no market for chum salmon and no processors have expressed interest in buying salmon during that time frame. A directed coho salmon fishery is anticipated in late July and August.

Sport Fishery

Within the Rebuilding Plan, the sport fisheries for Chinook and chum salmon are to be managed based on abundance. Persistent below average run performance of Chinook and chum salmon stocks in the Kuskokwim require additional conservation measures to protect escapement and ensure the state's subsistence needs are met. For these reasons a preseason emergency order may be issued in 2004 closing the sport fishery for Chinook and chum salmon until June 15 in the Kuskokwim River drainage. Additionally, the bag and possession limit may be reduced from 3 to 1 Chinook salmon or 1 chum salmon. The Kuskokwim drainage Chinook salmon sport fishing season will close July 26. Further restrictions to the salmon sport fisheries will be based on abundance from inseason run assessment.

Existing conservative sport fishing regulations in the Aniak River drainage remains in effect, including the annual bag limit of 2 Chinook salmon greater than 20 inches per year and the no retention of chum salmon.

Kuskokwim Bay Outlook

The harvest may be affected by effort and price, both of which are anticipated to be low. Average salmon runs are expected to Kuskokwim Bay Rivers. Chinook salmon runs to the Kanektok (District 4) and Goodnews River (District 5) are anticipated to range from 14,000 to 20,000 fish and 1,000 to 2,000 fish, respectively. Sockeye salmon returns to both the Kanektok and Goodnews rivers are expected to range between 30,000 to 50,000 fish each. The chum salmon return is anticipated to range from 20,000 to 40,000 fish to the Kanektok River and 5,000 to 10,000 fish to the Goodnews River. The coho salmon return to the Kanektok River is anticipated to be 30,000 to 60,000 fish with a return of 20,000 to 40,000 fish to the Goodnews River (Table 33).

Kuskokwim Bay Management Strategy

Subsistence Fishery

ADF&G staff will be in contact with Kuskokwim Bay subsistence fishers to assure that fishers are achieving amounts necessary for subsistence prior to initiating a commercial fishery. Prior to the commercial salmon season, subsistence fishing will be allowed 7 days per week. Once the commercial fishing season begins, there will be subsistence fishery closures before, during, and after commercial fishing periods. Fishers will be informed of subsistence fishing closures through radio announcement.

Commercial Fishery

ADF&G will work closely with buyers and fishers to manage the Kuskokwim Bay commercial fisheries by timing harvests for fish quality and processor capacity to the extent feasible within biological constraints. The BOF during their January 2004 meeting moved the northern boundary of District 4 from Oyak Creek to Weelung Creek, moved the District 5 boundaries to ADF&G markers outside Goodnews Bay entrance and provided ADF&G emergency order authority to increase gill net length from 50 fathoms to 100 fathoms in both districts when fish abundance warrants.

District 4 (Kanektok River)

The District 4 commercial fishery will be managed in accordance to the District 4 Salmon Management Plan. It is anticipated that the fishing schedule will be two 12-hour periods per week beginning around June 16. As the abundance of Chinook salmon tapers off in the catch and sockeye salmon become more available, a commercial fishing schedule of three 12-hour periods per week will be initiated and continued through the coho salmon season. It is anticipated that during the last week or 10 days in July the fishery will be closed, similar to recent years when the single buyer stopped purchasing fish.

District 5 (Goodnews River)

District 5 will be open to commercial fishing in late June to allow Chinook salmon escapements to be achieved and to provide amounts necessary for subsistence. The commercial fishing schedule will be three 12-hour periods per week from late June through September targeting sockeye and coho salmon. Fishing time may be reduced if such action is necessary to achieve salmon escapement objectives. It is anticipated that during the last week or 10 days in July the fishery will be closed, similar to recent years when the single buyer stopped purchasing fish.

Sport Fishery

Within the District 4 Salmon Management Plan, sport fisheries are managed based on abundance and commercial fishery performance. If necessary, any additional inseason restrictions will follow the guidance from the District 4 Salmon Management Plan. Sport fishing daily bag and possession limits for Chinook salmon is 3 per day with only 2 over 28 inches. The area spawning season closure for Chinook salmon sport fishing of July 26 will remain unchanged. The daily bag and possession limit for other salmon is 5 per day with no size limit.

HERRING

Projections from postseason escapement estimates; using historical mean rates of survival, current mean weights for each age class, and estimates of recruitment for each age class (Wespedstad 1982); suggest that the 2004 Kuskokwim Area spawning biomass will be approximately 30,635 st. The projected harvest, using is 5,759 st (Table 34). Overall, these 2004 projections are slightly greater than comparable 2003 projections.

Commercial fishing periods are opened by emergency order. The commercial fishery could open when observed herring biomass exceeds the district's threshold. If aerial surveys are not possible, the opening will be based on the test fishing results and the presence of herring with adequate roe quality. Buyers are required to report their deliveries as soon as possible after each opening. Additional openings will not occur until ADF&G receives catch reports from all buyers. ADF&G will ask commercial fishers to conduct test fishing and buyers to provide roe technicians to determine roe quality. If commercial fishers do not participate in the test fishery, openings may be delayed or will be based on ADF&G's limited test fishing. ADF&G thanks all the fishers who have participated in the past in this program and hope to see them again this year. Waste can occur when unmarketable herring with poor roe quality are refused by the processors. Unmarketable fish can be used for subsistence. To minimize waste during commercial fishing, fishers should set a short length of gillnet for a short period of time and check for roe quality. If roe quality is acceptable, fishers can then set all their gear. The estimated weight of discarded herring (not sold or used for subsistence) is included in the total harvest.

ADF&G will conduct aerial surveys as regularly as possible. Guideline harvests may be increased or decreased accordingly based on inseason aerial survey observations. If aerial surveys are not adequate due to weather or water conditions, harvest guidelines based on the preseason projection will remain unchanged.

ADF&G technicians will be stationed in the Goodnews Bay and Nelson Island districts to sample herring caught in the commercial fishery and from ADF&G's variable-mesh gillnets. The herring are sampled for age, sex, length, and weight. This sampling program is extremely important for determining herring stock status and for making biomass projections. These technicians will also

assist with vessel and buyer registrations, catch monitoring, news releases, and opening announcements.

The Alaska Department of Public Safety, Bureau of Wildlife Enforcement, conducts fishery enforcement. Period openings and closures are patrolled, licenses and photograph ID's of permit holders and crewmembers "spot checked" and other enforcement duties accomplished as warranted.

Security Cove District

The 2004 preseason guideline harvest for the Security Cove District is 1,940 tons (Table 34). A minimum biomass threshold of 1,200 tons or significant spawning activity must be observed to open the fishery. The exploitation rate will be up to 20% of the available biomass. Projections from postseason escapement estimates indicate that the 2004 spawning biomass is 9,698 tons. Ages 7, 8 and 9 are expected to comprise 75% of the returning biomass (35%, 31% and 9%, respectively). Age 9 and older herring are expected to comprise 31% of the biomass. The 2003 estimated biomass was 10,600 tons.

The Security Cove District includes the waters from Cape Newenham to the Salmon River (Figure 6). To minimize disturbance of marine mammals, the Security Cove district west of the westernmost point of Airport Cove will be closed to commercial herring fishing. The Fish and Game field office will be located in Platinum. ADF&G personnel will coordinate the commercial test fishery from this location and will be present within the District as necessary to assure orderly conduct of the fishery.

Goodnews Bay District

The 2004 preseason guideline harvest in the Goodnews Bay District is 1,549 tons (Table 34). To open the fishery a minimum biomass threshold of 1,200 tons or significant spawning activity must be observed. The projected 2004 spawning biomass is 7,744 tons. The exploitation rate will be up to 20% of the available biomass. Ages 8, 7, and 9 herring are expected to dominate the biomass, contributing 33%, 29%, and 13%, respectively. Age 9 and older herring are expected to comprise 33% of the biomass. The 2003 estimated biomass was 8,300 tons.

The Goodnews Bay District includes the waters of Goodnews Bay inside a line between the southernmost tip of the North Spit and the northernmost point of the South Spit, and a line between the mouth of Ukfigag Creek and the mouth of the Tunulik River (Figure 6). The Fish and Game field office will be located at the warehouse on the South Spit.

At the January 2004 Alaska Board of Fisheries meeting the superexclusive use regulation was repealed for the Goodnews Bay District. This regulation change makes it legal for permit holders who sell herring in non-exclusive use areas in other districts to sell herring caught in the Goodnews Bay fishery. Anyone who sells herring in the Goodnews Bay District must have a permit for the Goodnews Bay District. A vessel used to take herring in any other district can also be used in the Goodnews Bay District provided the vessel is no more than 30 feet in overall length and does not use mechanical shakers. The Goodnews Bay District will become a limited-entry fishery and there is a moratorium on new permits. As of March 2001, 169 limited entry permits have been issued; another 21 are awaiting final determination. In 2004, the number of permits that could be issued is expected to be around 190. This will eventually be cut back to a total of 182 limited entry herring permits. To be eligible for a Goodnews Bay herring limited entry permit an individual must have participated as a permit holder during at least 1 of the 4

years from 1993 to 1996. The application period for Goodnews Bay limited entry herring permits closed on June 30, 1999.

Cape Avinof District

The 2004 preseason guideline harvest in the Cape Avinof District is 505 tons (Table 34). The projected total biomass is 3,369 tons. To open the fishery, a minimum herring biomass threshold of 500 tons or significant spawning activity must be observed. The exploitation rate of Cape Avinof herring stocks will be no greater than 15%. This exploitation rate was established by the Board of Fisheries at the request of local residents to protect the subsistence fishery and because the abundance of these stocks is not well known. The estimated 2004 herring age composition was calculated using the 2003 data from the Security Cove District. Ages 7, 8 and 9 are expected to comprise 76% of the returning biomass (36%, 31%, and 9%, respectively). Age 9 and older herring are expected to comprise 31% of the biomass. The 2003 estimated biomass was 3,812 tons.

The Cape Avinof District includes the waters landward of Kikegteg, Pingurbek, and Kwigluk Islands from the Ishkowik River west to the latitude of Tern Mountain (Figure 6). Cape Avinof is a superexclusive area and permit holders who sell herring in the district may not take herring in any other district in the same year. A vessel used to take herring in the Cape Avinof District may not be used to fish for herring in any other district in the same year.

Nunivak Island District

The 2003 preseason guideline harvest for the Nunivak Island District is 948 tons (Table 34). The projected herring biomass returning to the district in 2004 is 4,739 tons. The biomass threshold is 1,500 tons. The exploitation rate will be up to 20% of the available biomass. The estimated 2004 herring age composition was calculated using the 2003 data from the Nelson Island District. Ages 7, 8 and 10 are expected to dominate the returning population, contributing 40%, 24% and 9%, respectively. Age 9 and older herring are expected to comprise 29% of the biomass. The total biomass estimate in 2003 was 5,182 tons.

The Nunivak Island District consists of the waters extending 3 miles seaward from Kikoojit Rocks southeast to Kaksajookalik Island, the western most point of Cape Mendenhall (Figure 6).

In January 2001, the Board of Fisheries approved the Nunivak Island Gillnet and Cooperative Purse Seine Fishery Management Plan (5 AAC 27.887). Under this regulation Nunivak Island permit holders can choose to fish using gillnet gear or join a cooperative for the purpose of chartering a purse seine vessel to harvest herring. Permit holders wishing to participate in the Nunivak Island herring fishery as part of a purse seine cooperative must register with the ADF&G in Bethel before April 16, 2004.

The Nelson and Nunivak Island Districts are a combined superexclusive area and fishers who hold limited entry permits for both districts may fish in both districts. Fishers with only one permit may fish only in the district they have a permit. Permit holders who sell fish in the Nelson or Nunivak Island District cannot fish in any other herring fishery (for example Security Cove) in the same year. A vessel used to fish in the Nelson Island District may be used to fish in the Nunivak Island District and vice versa. A vessel used to take herring in the Nelson and/or Nunivak Islands Districts may not be used to fish for herring in any other district in the same year.

Nelson Island District

The 2004 preseason guideline harvest in the Nelson Island District is 817 tons (Table 34). The projected 2004 spawning biomass is 5,085 tons. In December 1997, the Board of Fisheries approved a proposal that raised the harvest level to 20% of the available biomass minus 200 tons allocated for subsistence. Therefore, the preliminary commercial exploitation rate in 2004 will be up to 16% of the estimated biomass. The biomass threshold is still 3,000 tons. Ages 7, 8 and 10 are expected to dominate the returning population, contributing 40%, 24% and 9%, respectively. Age 9 and older herring are expected to comprise 29% of the biomass. The biomass estimate in 2003 was 6,130 tons.

The Nelson Island District consists of the waters north of Chinigyak Cape and east of Atrnak Point (about 2 miles west of Umkumiut) and the waters north of Talurarevuk Point to the southernmost tip of Chinit Point and all waters north of the northernmost tip of Chinit Point to Kigigak Island (Figure 6). ADF&G's district office will be located at Toksook Bay.

ACKNOWLEDGMENTS

Many people contributed toward the collection and processing of the data used in this report. Alaska Department of Fish and Game employees worked long and irregular hours at various locations throughout the Kuskokwim Area collecting the data presented in this report. We thank the numerous seasonal technicians for their work during the commercial season. We also thank Susan K. McNeil and Christopher Bach who conducted the subsistence salmon harvest surveys in most of the Kuskokwim communities. Salmon processors contributed data, communications, transportation and advice. We gratefully acknowledge the subsistence and commercial fishers who voluntarily provided their time, skill, and knowledge and the many subsistence-fishing households that provided subsistence catch information. ADF&G is very grateful to Jennifer Chris Hooper and her staff from the Association of Village Council Presidents, Angela Morgan and her staff from the Kuskokwim Native Association, technicians from the Native Village of Kwinhagak, the students and staff of the Takotna Charter School. Tassy Olsen and staff of the McGrath Native Village Council, Wayne Morgan and staff of the Kuskokwim Native Association and the Bering Sea Fishermen's Association. We also thank Greg Roczicka and technicians of the Orutsararmuit Native Council in Bethel. Their participation in cooperative assessment projects provided welcome assistance and information important for management of the fishery. Staff from the Yukon Delta National Wildlife Refuge (United States Fish and Wildlife Service) provided meeting space, contributed to dialogue regarding fishery management and research, and provided assistance with escapement monitoring in the Kuskokwim River drainage. Staff from the Togiak National Wildlife Refuge provided assistance with escapement monitoring in Kuskokwim Bay and were active participants in fisheries discussions. U.S. Fish and Wildlife Service staff from the Kenai Fisheries Resource Office also provided support and contributed dialogue regarding salmon escapement projects.

REFERENCES CITED

ADF&G (Alaska Department of Fish and Game). 1960. Kanektok River Counting Tower, 1960. Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 1, Juneau.

ADF&G (Alaska Department of Fish and Game) 1961. Kanektok River Counting Tower, 1961. Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 2, Juneau.

ADF&G (Alaska Department of Fish and Game). 1962. Kanektok River Counting Tower, 1962. Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 3, Juneau.

ADF&G (Alaska Department of Fish and Game)Division of Subsistence. 2003. Alaska Subsistence Fisheries 2002 Annual Report. Alaska Department of Fish and Game, Division of Subsistence, Juneau.

ADF&G (Alaska Department of Fish and Game). 2004. Escapement goal review of select AYK Region salmon stocks, 2004. Alaska Department of Fish a Game, Division of Commercial Fisheries Management and Development, Regional Informational Report No. 3A04-01, Anchorage.

Alt, K. T. 1970. Sheefish and pike investigations of the upper Yukon and Kuskokwim drainages with emphasis on Minto Flats drainages. Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Report of Progress 1969-1970, Project F-9-2-1, (1-A): 321-330.

Alt, K. T. 1972. A life history study of sheefish and whitefish in Alaska. Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Report of Progress 1971-1972, Project F-9-2-4, 13(R-II): 34 pp.

Alt, K. T. 1977a. *Inconnu, Stenodus leucichthys*, migration studies in Alaska, 1961-1974. Journal of the Fisheries Research Board of Canada, 34:129-133.

Alt, K. T. 1977b. Inventory and cataloging of sport fish and sport fish waters of Western Alaska. Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Project F-9-9, Completion Report, 1975-1977, Project F-9-11, 18(G-I-P) 128 pp.

Alt, K. T. 1980. A life history study of sheefish and whitefish in Alaska. Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Report of Progress 1979-1980, Project F-9-12, 21(R-II): 31 pp.

Alt, K. T. 1981. A life history study of sheefish and whitefish in Alaska. Alaska Department of Fish and Game. Federal Aid in Fish Restoration, Annual Report of Progress 1980-1981, Project F-9-13, 22(R-II): 28 pp.

Alt, K. T. 1987. Review of sheefish (*Stenodus leucichthys*) studies in Alaska. Alaska Department of Fish and Game, Fishery Manuscript No. 3, Juneau.

Baxter, R. 1970. Kuskokwim test fishing studies, 1966-1970. AYK Region, Alaska Department of Fish & Game, Division of Commercial Fisheries, Kuskokwim Salmon Test Fishing Report No. 1, Anchorage.

Baxter, R. 1976a. Kogrukluk River counting tower project, 1976. AYK Region, Alaska Department of Fish & Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 10, Anchorage.

Baxter, R. 1976b. Holitna weir development project, 1976. Alaska Department of Fish and Game, Commercial Fisheries Division, AYK Region, Kuskokwim Escapement Report No. 11, Anchorage.

Baxter, R., 1977. Kogrukluk River counting tower project, 1977. AYK Region, Alaska Department of Fish & Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 12, Anchorage.

Brown, C. M., 1983. Alaska's Kuskokwim River region: a history (Draft Report). U. S. Bureau of Land Management, Anchorage Field Office, Anchorage, Alaska.

Bue, D. G. 2005. The Kuskokwim River Salmon Test Net Fishery at Bethel 1984-2003. Alaska Department of Fish and Game, Fishery Data Series No. 05-14, Anchorage. http://www.sf.adfg.state.ak.us/FedAidPDFs/fds05-14.pdf

Buklis, L.S. 1993. Documentation of Arctic-Yukon-Kuskokwim Region salmon escapement goals in effect as of the 1992 fishing season. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report No. 3A93-03, Anchorage.

REFERENCES CITED (Continued)

Burkey, Jr., C.E., D. B. Molyneaux, and C. Anderson. 1996. Report to the Alaska Board of Fisheries, Kuskokwim Area 1995. Alaska Department of Fish & Game, Commercial Fisheries Management and Development Division, Regional Information Report No. 3A96-15, Anchorage.

Burkey, C., Jr., M. Coffing, D. B. Molyneaux, and P. Salome. 2000b. Kuskokwim River chum salmon stock status and development of management / action plan options. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A00-41, Anchorage.

Burkey, C., Jr., M. Coffing, D. B. Molyneaux, and P. Salome. 2000a. Kuskokwim River chinook salmon stock status and development of management / action plan options. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A00-40, Anchorage.

Burkey, Jr., C.E., M. Coffing, J. Menard, D. B. Molyneaux, P. Salome, C. Utermohle, and T. Vania 2000c. Annual Management Report of the Subsistence and Commercial Fisheries of the Kuskokwim Area, 1999. Alaska Department of Fish & Game, Division of Commercial Fisheries, Regional Information Report No. 3A00-29, Anchorage.

Burkey, Jr., C.E , M. Coffing, J. Estensen, R. L. Fisher and D. B. Molyneaux. 2002. Annual Management Report of the Subsistence and Commercial Fisheries of the Kuskokwim Area, 2001. Alaska Department of Fish & Game, Division of Commercial Fisheries, Regional Information Report No. 3A02-53, Anchorage.

Burkey, Jr., C., J. Dinnocenzo, D. Switgard and A. Shaul 2004. South Peninsula Annual Management Report, 2003. Alaska Department of Fish & Game, Division of Commercial Fisheries, Regional Information Report No. 4Ko4-53, Kodiak.

Burr J. M. 1999. Holitna River angler survey, 1998. Alaska Department of Fish and Game, Fishery Data Series No. 99-39, Anchorage.

Burr, J. 2004. Fishery Management Report for Sport Fisheries in the Arctic-Yukon-Kuskokwim Management Area, 2002-2003. Alaska Department of Fish and Game, Fishery Management Report No. 04-02, Anchorage.

Cappiello, T. and R. Sundown. 1998. Kwethluk River counting tower salmon assessment project, 1996-1997. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report No. 3A98-34, Anchorage.

Chris, J. L., and T. Cappiello. 1999. Kwethluk River counting tower salmon assessment project, 1998. Alaska Department of Fish & Game, Division of Commercial Fisheries, Regional Information Report No. 3A99-20, Anchorage.

Crane, P., D. Molyneaux, S. Miller, K. Harper, and J. Wenberg. 2004. Genetic variation among coho salmon populations from the Kuskokwim River region and application to stock specific harvest estimation. U.S. Fish and Wildlife Service, Office of Subsistence Management, Fisheries Resource Monitoring Program, Final Report for Study 03-041, Anchorage.

Crane, P. A. and L W. Seeb. 2000. Genetic analysis of chum salmon harvested in the South Peninsula post June fishery, 1996-1997. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 5J00-05, Anchorage.

Chythlook, J. S. and M. J. Evenson. 2003. Assessment of Chinook, chum, and coho salmon escapement in the Holitna drainage using radio telemetry, 2002. Alaska Department of Fish and Game, Fishery Data Series No. 03-23, Anchorage.

Clark, K. J. and D. B. Molyneaux. 2003a. Kogrukluk River weir salmon studies, 2002. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A03-11, Anchorage.

Clark, K. J. and D. B. Molyneaux. 2003b. Takotna River salmon studies and upper Kuskokwim River aerial surveys, 2002. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A03-10, Anchorage.

REFERENCES CITED (Continued)

Coffing, M., 1991. Kwethluk subsistence: contemporary land use patterns, wild resource harvest and use, and the subsistence economy of a Lower Kuskokwim River area community. Alaska Department of Fish & Game, Division of Subsistence, Technical Paper No. 157, Juneau.

Coffing, M. 2001. Bethel post-season subsistence fisheries harvest surveys, 2000. Alaska Department of Fish and Game, Division of Subsistence, Final Project Report to U.S. Fish and Wildlife Service, Office of Subsistence Management, FIS 00-009, Juneau.

Coffing, M., L. Brown, G. Jennings, and C. Utermohle. 2001. The subsistence harvest and use of wild resources in Akiachak, Alaska, 1998. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 258, Juneau.

United States Department of Interior 2005-2006. Subsistence management regulations for public lands in Alaska. Proposed Rule change United States Code of Federal Register 50 CFR Part 100, Subpart C & D. U. S. Fish and Wildlife Service. Washington.

DuBois, L. and D. B. Molyneaux. 2000. Salmon age, sex, and length catalog for the Kuskokwim Area, 1999 Progress Report. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A00-18, Anchorage.

Dunaway, D. O. 1997. Monitoring the sport fisheries of the Aniak River, Alaska, 1996. Alaska Department of Fish and Game, Fishery Management Report No. 97-4, Anchorage.

Estensen, J. L. 2002a. Kanektok River Weir Report, 2001. Alaska Department of Fish & Game, Division of Commercial Fisheries, Regional Information Report No. 3A02 -39, Anchorage.

Estensen, J. L. and C. Diesigner. 2004. Kanektok River Weir, 2003. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A04-07, Anchorage.

Fox, F. 1997. Final Report for Kanektok River salmon escapement monitoring project grant from Bering Sea Fishermen's Association April 1, 1997. The Native Village of Kwinhagak, Quinhagak I.R.A. Council, Natural Resources Program, Quinhagak.

Francisco, R. K., C. Anderson, C. Burkey Jr., M. Coffing, K. Hyer, D. B. Molyneaux, and C. Uttermole. 1993. Annual management report for the subsistence and commercial fisheries of the Kuskokwim Area, 1992. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A93-11, Anchorage.

Gates, K. S., and K. C. Harper 2002a. Abundance and run timing of adult Pacific salmon in the Tuluksak River, Yukon Delta National Wildlife Refuge, Alaska, 2001. U.S. Fish and Wildlife Service, Kenai Fishery Resource Office, Alaska Fisheries Data Series Number 2002-6.

Gates, K. S., and K. C. Harper 2002b. Abundance and run timing of adult Pacific salmon in the Tuluksak River, Yukon Delta National Wildlife Refuge, Alaska, 2002. U.S. Fish and Wildlife Service, Kenai Fishery Resource Office, Alaska Fisheries Data Series Number 2003-1.

Gilk, S. E., W. D. Templin, D. B. Molyneaux, T. Hamazaki, and J. A. Pawluk. 2005. Characteristics of fall chum salmon *Oncorhynchus keta* in the Kuskokwim River drainage. Alaska Department of Fish and Game, Division of Commercial Fisheries, Fisheries Data Series Report No. 05-56, Anchorage. http://www.sf.adfg.state.ak.us/FedAidPDFs/fds05-56.pdf

Habicht, C., N. V. Varnavskaya, T. Azumaya, S. Urawa, R. L. Wilmot, C M. Guthrie III, and J. E. Seeb. 2005. North Pacific Anadromous Fish Commission Technical Report No. 6, the proceedings of the NPAFC International Workshop "BASIS-2004" held in Sapporo, Japan, October 30-31, 2004.

Habicht, C. W., W. D. Templin, C. M. Guthrie III, R. L. Wilmot, G. A.Winans, E. Iwamoto, J. E. Seeb, and L. W. Seeb. 2001. Status report for genetic stock identification studies of Pacific Rim sockeye salmon. (North Pacific Anadromous Fish Commission Doc. 562). Alaska Department of Fish and Game, 333 Raspberry Road, Anchorage, Alaska 99802

REFERENCES CITED (Continued)

Harper, K. C. 1995a. Run timing and abundance of adult salmon in the Tuluksak River, Yukon Delta National Wildlife Refuge, Alaska, 1991. U.S. Fish and Wildlife Service, Kenai Fishery Resource Office, Alaska Fisheries Progress Report Number 95-1, Kenai, Alaska.

Harper, K. C. 1995b. Run timing and abundance of adult salmon in the Tuluksak River, Yukon Delta National Wildlife Refuge, Alaska, 1992. U.S. Fish and Wildlife Service, Kenai Fishery Resource Office, Alaska Fisheries Progress Report Number 95-3, Kenai, Alaska.

Harper, K.C. 1995c. Run timing and abundance of adult salmon in the Tuluksak River, Yukon Delta National Wildlife Refuge, Alaska, 1993. U.S. Fish and Wildlife Service, Kenai Fishery Resource Office, Alaska Fisheries Progress Report Number 95-2, Kenai, Alaska.

Harper, K. C. 1997. Run timing and abundance of adult salmon in the Tuluksak River, Yukon Delta National Wildlife Refuge, Alaska, 1994. U. S. Fish and Wildlife Service, Kenai Fishery Resource Office, Alaska Fisheries Technical Report Number 41, Kenai, Alaska.

Harper, K. C. 1998. Run timing and abundance of adult salmon in the Kwethluk River, Yukon Delta National Wildlife Refuge, Alaska, 1992. U.S. Fish and Wildlife Service, Kenai Fishery Resource Office, Alaska Fisheries Technical Report Number 44, Kenai, Alaska.

Harper K. C., and C. B. Watry 2001. Abundance and run timing of adult salmon in the Kwethluk River, Yukon Delta National Wildlife Refuge, Alaska, 2000. U.S. Fish and Wildlife Service, Kenai Fishery Resource Office, Alaska Fisheries Data Series Number 2001-4.

Hooper, J. L. 2001. Kwethluk River counting tower salmon assessment project, 1999. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A01-15, Anchorage.

Huttunen, D.C. 1984a. 1982-1983 Kuskokwim River test fishing projects. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim River Salmon Test Fishing Report No. 13, Juneau.

Huttunen, D.C. 1984b. 1984 Kanektok River sonar project report, 1984. Alaska Department of Fish and Game, Division of Commercial Fisheries, AYK Region Kuskokwim Escapement Report No. 40, Anchorage.

Huttunen, D. C. 1985. 1985 Kanektok River sonar project report. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 42, Anchorage.

Huttunen, D. C. 1986. 1986 Kanektok River sonar project report, 1986. Alaska Department of Fish and Game, Division of Commercial Fisheries, AYK Region Kuskokwim Escapement Report No. 43, Anchorage.

Huttunen, D. C. 1986b. Kuskokwim River test fishing report, 1986. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim River Salmon Test Fishing Report No. 16, Juneau.

Huttunen, D. C. 1988. Kanektok River sonar project, 1987. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3B88-04, Anchorage.

Kerkvliet, C. M. and T. Hamazaki. 2003. A mark-recapture experiment to estimate the abundance of Kuskokwim River coho salmon, 2001. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A02-15, Anchorage.

Kerkvliet, C. M., J. Pawluk, T. Hamazaki, K. E. Hyer, and D. Cannon. 2003. A mark-recapture experiment to estimate the abundance of Kuskokwim River sockeye, chum, and coho salmon, 2002. Alaska Department of Fish and Game, Division of Commercial Fisheries Regional Information Report No. 3A03-25.

Kerkvliet, C. M., J. Pawluk, T. Hamazaki, K. E. Hyer and D. Cannon. 2004. A mark-recapture experiment to estimate the abundance of Kuskokwim River sockeye, chum and coho salmon, 2003. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A04-14, Anchorage.

Kuhlmann, F. W. 1973. Kogrukluk River counting tower project, 1973. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 7, Anchorage.

REFERENCES CITED (Continued)

Kuhlmann, F. W. 1974. Kogrukluk River counting tower project, 1974. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 8, Anchorage.

Kuhlmann, F. W. 1975. Kogrukluk River counting tower project, 1975. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 9, Anchorage.

Kuskokwim Fishermen's Cooperative. 1991. Kuskokwim Fishermen's Cooperative, Kuskokwim River Salmon Management Working Group, Subsistence Survey Final Report, 1990. Alaska Department of Fish & Game, Commercial Fisheries Management and Development Division, Regional Information Report No. 3B91-01, Anchorage.

Lafferty, R. and A. E. Bingham. 2002. Survey of rod and reel fisheries in the Aniak River, Alaska, 2001. Alaska Department of Fish and Game, Fishery Data Series No. 02-16.

Lafferty, R. 2004. Fishery management report for sport fisheries in the Lower Yukon-Lower Kuskokwim management area for 1999 and 2000. Alaska Department of Fish and Game, Fishery Management Report Series No. 04-03, Anchorage.

Linderman, J. C., Jr., D. B. Molyneaux, D. L. Folletti, and D. J. Cannon. 2004. Tatlawiksuk River weir salmon studies, 2003. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A04-16, Anchorage.

Linderman, J. C. Jr. 2000. Report 2000 Kanektok River weir project. The Native Village of Kwinhagak. Natural Resources Department, Quinhagak, AK.

Linderman, J. C. Jr., D. B. Molyneaux, D. L. Folletti and D. J. Cannon. 2004b. George River salmon studies, 2003. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A04-17, Anchorage.

Menard, J. 1998. Middle Fork Goodnews River fisheries studies, 1990-1997. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A98-30, Anchorage.

Menard, J. and A. Caole. 1999. Kanektok River counting tower cooperative project, 1997. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A99-16, Anchorage.

Mesiar, D. C., K. E. Hyer, and P. A. Skvorc. 1994. Kuskokwim River sonar progress report, 1989-1990. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report No. 3A94-12, Anchorage.

Molyneaux, D. B. 1997a. Data summary for the Kuskokwim River salmon test fishery at Bethel, 1984-1997. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report No. 3A97-47, Anchorage.

Molyneaux, D. B., L. DuBois, A. Morgan. 1997b. George River weir salmon escapement project, 1996. Alaska Department of Fish & Game, Commercial Fisheries Management and Development Division, Regional Information Report No. 3A97-27, Anchorage.

Molyneaux, D. B. and L. DuBois. 2000. Takotna River salmon counting tower, project summary, 1995-1999. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A00-13, Anchorage.

Oswalt, W .H. 1990. Bashful no longer: an Alaskan Eskimo enthnohistory, 1778-1988. University of Oklahoma Press, Norman, Oklahoma.

Pennoyer, S., K. Middleton, and M. E. Morris, Jr. 1965. Arctic-Yukon-Kuskokwim Area Salmon Fishing History. Alaska Department of Fish and Game, Division of Commercial Fisheries, Informational Leaflet No. 70, Juneau.

Pete, M. C. 1992. Subsistence herring fishing in the Nelson Island and Nunivak Island Districts, 1992. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 221, Fairbanks.

REFERENCES CITED (Continued)

Roettiger T.G., K.C. Harper and A. Chikowski. 2001. Abundance and run timing of adult salmon in the Kwethluk River, Yukon Delta National Wildlife Refuge, Alaska, 2001. U.S. Fish and Wildlife Service, Kenai Fishery Resource Office, Alaska Fisheries Data Series Number 2001-4.

Roettiger, T., F. Harris, and K. Harper. 2004. Abundance and run timing of adult salmon in the Kwethluk River, Yukon Delta National Wildlife Refuge, Alaska, 2003. Alaska Fisheries Data Series 2004-8

Rogers, D. E., and K. N. Schnepf. 1985. Feasibility of using scale analysis methods to identify Bering Sea herring stocks. University of Washington Fisheries Research Institute, Report FRI-UW-8501, Seattle, Washington.

Sandall H. D., C. T. Pfisterer. In prep. Sonar Estimation of chum salmon passage in the Aniak River, 2003. Alaska Department of Fish and Game, Fishery Data Series No., Anchorage.

Schneiderhan, D. J. 1979. 1978 Kuskokwim River sonar studies. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 16, Anchorage.

Schneiderhan, D. J. 1980. 1979 Kuskokwim River Sonar Studies. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 18, Anchorage.

Schneiderhan, D. J. 1981. 1980 Kuskokwim River sonar studies. Alaska Department of Fish and Game, Division of Commercial Fisheries, AYK Region, Kuskokwim Escapement Report No. 19, Anchorage.

Schneiderhan, D. J. 1982a. 1981 Kuskokwim River sonar studies. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 22, Anchorage.

Schneiderhan, D. J. 1982b. 1981 Salmon River weir studies. Alaska Department of Fish and Game, Division of Commercial Fisheries, AYK Region, Kuskokwim Escapement Report Number 21, Anchorage.

Schneiderhan, D. J. 1982c. 1982 Aniak River Sonar Studies. Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 26, Anchorage.

Schneiderhan, D. J. 1982d. 1982 Salmon River weir studies. Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 29, Anchorage.

Schneiderhan, D. J. 1984. 1983 Aniak River sonar study. Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 32, Anchorage.

Schneiderhan, D. J. 1989. Aniak River salmon escapement study, 1989. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A89-24, Anchorage.

Schultz, K. and M. Williams. 1984. Kanektok River Sonar Enumeration Project, 1983. AYK Region, Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 37, Anchorage.

Seeb, L. W. and P. A. Crane. 1999a. Allozymes and mitochondrial DNA discriminate Asian and North American populations of chum salmon in mixed stock fisheries along the south coast of the Alaska Peninsula. Transactions of the American Fisheries Society 128: 88-103.

Seeb, L. W. and P. A. Crane. 1999b. High genetic heterogeneity in chum salmon in Western Alaska, the contact zone between Asia and North America. Transactions of the American Fisheries Society 128: 58-87.

Seeb, L. W., P. A. Crane., and E. M. Debevec. 1997. Genetic analysis of chum salmon harvested in the South Unimak and Shumagin Islands June Fisheries, 1993-1996. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 5J97-17, Anchorage.

Seeb, L. W., P. A. Crane., and R. B. Gates. 1995. Progress report of genetic studies of Pacific Rim chum salmon and preliminary analysis of the 1993 and 1994 South Unimak June fisheries. Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development, Regional Information Report No. 5J95-07, Anchorage.

REFERENCES CITED (Continued)

Schwanke, C. J., D. B. Molyneaux, D. B., L. DuBois and C. Goods. 2001. Takotna River salmon studies and upper Kuskokwim River aerial surveys, 2000. Alaska Department of Fish and Game, Commercial Fisheries Division, Regional Information Report No. 3A01-02, Anchorage.

Stroka, S. M. and A. L. J. Brase. 2004. Assessment of Chinook, chum, and coho salmon escapements in the Holitna River drainage using radiotelemetry, 2001-2003. Alaska Department of Fish and Game, Fishery Data Series No. 04-07, Anchorage.

Stuby, L. 2003. Inriver abundance of Chinook salmon in the Kuskokwim River, 2002. Alaska Department of fish and Game, Fishery Data Series No. 03-22, Anchorage.

Stuby, L. 2004. Inriver abundance of Chinook salmon in the Kuskokwim River, 2003. Alaska Department of Fish and Game, Fishery Data Series No. 04-30, Anchorage.

Templin, W. D., C. T. Smith, D. Molyneaux, and L. W. Seeb. 2004. Genetic Diversity of Chinook salmon from the Kuskokwim River. USFWS Office of Subsistence Management, Fisheries Resource Monitoring Program, Final Report No. 01-070, Anchorage, Alaska.

Vania, T. D. 1998. Aniak River sonar project report, 1997. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A98-05, Anchorage.

Wagner, T. A. 1991. Southwestern Alaska rainbow trout investigations, Kanektok River, Togiak National Wildlife Refuge, Alaska 1985-1987 Final Report. U.S. Fish and Wildlife Service, King Salmon Fishery Assistance Office, King Salmon.

Ward, T. C, M. Coffing, J. L. Estensen, R. L. Fisher and D. B. Molyneaux. 2003. Annual management report for the subsistence and commercial fisheries of the Kuskokwim area, 2002. Alaska Department of Fish & Game, Commercial Fisheries Management and Development Division, Regional Information Report No. 3A03-27, Anchorage.

Whitmore, C., S. L. McNeil, and L. K. Brannian. 2004. Kuskokwim River inseason subsistence salmon catch monitoring, 2001-2003. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A04-27, Anchorage.

Wuttig, K. G. and M. J. Evenson. 2002. Assessment of Chinook, chum, and coho salmon escapements in the Holitna River drainage using radiotelemetry, 2001. Alaska Department of Fish and Game, Sport Fish Division, Fishery Data Series No. 02-05, Anchorage.

Yanagawa, C. M. 1972a. Kogrukluk River Counting Tower Project, 1969-70. Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 4, Anchorage.

Yanagawa, C. M. 1972b. Kogrukluk River Weir Project, 1971. Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 5, Anchorage.

Yanagawa, C. M. 1973. Kogrukluk River counting tower project, 1972. Alaska Department of Fish and Game, Division of Commercial Fisheries, Kuskokwim Escapement Report No. 6, Anchorage.

Yukon River Joint Technical Committee, 2005. US/Canada Yukon River Joint Technical Committee 2004 Season Summary and 2005 Season Outlook. Joint Technical Committee Series JTC 05-01. Whitehorse, Yukon and Anchorage, Alaska.

TABLES AND FIGURES

Table 1.–Salmon run assessment programs, Kuskokwim Area, 2003.

Project Name	Location	Primary Objectives	Duration	Agency	Responsibility Involvement
Salmon Management	Kuskokwim Area	- develop a comprehensive plan for managing salmon stocks of the Kuskokwim Area.	All Year	ADF&G/CF	all aspects
		- define goals and objectives.		ADF&G/SF	all aspects
		- identify potential opportunities and concerns.		ADF&G/S	subsistence
		- recommend appropriate procedures.		USFWS OSM	monitor regulations
		- evaluate priorities.			and inseason actions
				KRSMWG	make recommendations
Post-season Subsistence Salmon Harvest Surveys	Kuskokwim Area	-document and estimate the harvest and gear used in the subsistence salmon fishery, as well as community fishing and sharing patterns via household surveys, catch calendars, and mail out postcards.	Post season	ADF&G/S	all aspects
				ONC	survey crew for Bethel
				KNA	survey crew for Aniak
				ADF&G/CF	Funding
		- Household Surveys in Bethel, Kongiganak, Tuntutuliak, Eek, Nunapitchuk, Atmautluak, Napakiak, Napaskiak, Oscarville, Kwethluk, Akiachak, Akiak, Tuluksak, Lower Kalskag, Upper Kalskag, Aniak, Chuathbaluk, Crooked Creek, Red Devil, Sleetmute, Stony River, Lime Village, McGrath, Takotna, Nikolai, Quinhagak, Goodnews Bay, and Platinum.		OSM	Funding - Bethel
				AYK-SSI	Funding
Age, Sex, and length Reporting	Kuskokwim Area	- scale aging, sample processing and reporting of salmon age, sex and length information of Chinook, sockeye, chum and coho salmon from escapement, commercial and subsistence samples.	All Year	ADF&G/CF	all aspects
				OSM	funding
Escapement Sampling	Kuskokwim Area	- sample collection for age, sex and length information about of Chinook, sockeye, chum and coho salmon from selected tributary spawning populations.	June-Sept	ADF&G/CF	all aspects
				OSM	funding
Aerial Surveys	Kuskokwim Area	- index relative abundance of Chinook salmon spawning escapement in selected streams in the Kuskokwim Area.	July-Aug	ADF&G/CF	all aspects
				NOAA	Funding - Upper Kuskokwim
		- index relative abundance of sockeye salmon spawning escapement in the Kanektok and Goodnews Rivers.			
Sport Fish Statewide Harvest Survey	Kuskokwim Area	- statewide mail-out survey to estimate sport catch, harvest and effort.	Post season	ADF&G/SF	all aspects
Chinook Genetic Sampling	Kuskokwim Area	-establish a genetic baseline for Chinook salmon from the Kuskokwim River.	June-July	ADF&G/SF	radio tagged
		-identify genetic units for improved conservation and management.	Post		Chinook samples
		-standardize and contribute data to Pacific Rim databases.	season	OSM	funding
				ADF&G/CF	all aspects

-continued-

Table 1.–Page 2 of 4.

Project Name	Location	Primary Objectives	Duration	Agency	Responsibility Involvement
Coho Genetic Sampling	Kuskokwim Area	-conduct a pilot study to characterize the genetic diversity within and among spawning aggregates of coho salmon distributed throughout the Kuskokwim River.	July-August post-season	USFWS ADF&G/CF OSM	all aspects sample collection funding
Commercial Catch and Effort	Districts 1, 2, 4, and 5	- document and estimate the catch and associated effort of the commercial Salmon fishery via receipts (fish tickets) of commercial sales and dock side sampling.	June-September	ADF&G/CF	all aspects
Commercial Catch Sampling	Districts 1, 4, and 5	- determine age, sex, and length of salmon harvested in the commercial fisheries.	June-September	ADF&G/CF	all aspects
Inseason Subsistence Salmon Monitoring	Kuskokwim River	- weekly interviews with subsistence fishers to assess adequacy and quality of harvest. - collect age-sex-length samples from subsistence caught Chinook salmon to determine timing and relative abundance of salmon runs as judged by subsistence fishers through interviews.	June-August	ONC KNA MNVC ADF&G/CF OSM	all aspects - Bethel all aspects - middle river all aspects- upper river ASL sampling funding
Kuskokwim River Mark-Recapture	R.M. 192	- estimate passage and stock run timing of chum, sockeye and coho salmon passing upstream of Kalskag	June 6 - September 11	ADF&G/CF ADF&G/SF KNA TTC OSM AYKSSI	all aspects crew support crew support tag recovery tag recovery funding funding
Kuskokwim River Radio Telemetry	R.M. 221	- estimate abundance and distribution of Chinook salmon for all waters upstream of Kalskag.	June-September	ADF&G/SF KNA ADF&G/CF OSM	all aspects crew support tag recovery funding

-continued-

Table 1.–Page 3 of 4.

Project Name	Location	Primary Objectives	Duration	Agency	Responsibility Involvement
Bethel Test Fishery	Bethel Area R.M. 80	- index relative run abundance of Chinook, sockeye, chum, and coho salmon using CPUE derived from drift gillnet catches.	June - August	ADF&G/CF ONC BFSA	all aspects crew support funding ONC crew
Kwethluk River Weir	mile 55 Kwethluk River R.M. 99	- estimate daily escapement of Chinook, sockeye, chum, coho and pink salmon into the Kwethluk River. - estimate age, sex and length composition of Chinook, chum, and coho salmon escapement. - collect environmental / habitat information.	June-September	USFWS ADF&G/CF OVK ONC	all aspects inseason data mgt. crew support funding
Tuluksak River Weir	mile 47 Tuluksak River R.M. 136	- estimate daily escapement of Chinook, sockeye, chum, coho, and pink salmon into the Tuluksak River. - estimate age, sex and length composition of Chinook, chum, and coho salmon escapement. - collect environmental / habitat information.	June-September	USFWS ADF&G/CF TUTC OSM	all aspects inseason data mgt. crew support funding
Aniak River Sonar	mile 12 Aniak River R.M. 225	- estimate daily escapement of chum salmon into the Aniak River. - estimate age, sex and length composition of chum salmon escapement.	June - July	ADF&G/CF AVCP NOAA BSFA	all aspects crew support funding funding AVCP crew
George River Weir	mile 4 George River R.M. 277	- estimate daily escapement of Chinook, sockeye, chum, and coho salmon into the George River. - estimate age, sex and length composition of Chinook, chum, and coho salmon escapement. - collect environmental / habitat information	June-September	KNA ADF&G/CF ADF&G/SF BSFA NOAA	all aspects all aspects in-kind support funding funding
Holitna River Radio Telemetry	R.M. 335	- estimate the abundance of Chinook and chum salmon escaping into the Holitna River drainage and the proportion of Chinook and chum salmon that pass through the Kogrukluk River weir.	June-September	ADF&G/S KNA ADF&G/CF OSM	all aspects crew support tag recovery funding
Kogrukluk River Weir	mile 137 Holitna Drainage R.M 135	- estimate daily escapement of Chinook, sockeye, chum, and coho salmon into the Kogrukluk River. - estimate age, sex and length composition of Chinook, chum, and coho salmon escapement.	June-September	ADF&G/CF ONC NOAA BSFA	all aspects crew support funding funding

-continued-

Table 1.–Page 4 of 4.

Project Name	Location	Primary Objectives	Duration	Agency	Responsibility Involvement
Tatlawiksuk River Weir	mile 2.5 Tatlawiksuk River R.M. 350	- estimate daily escapement of Chinook, sockeye, chum, and coho salmon into the Tatlawiksuk River. - estimate age, sex and length composition of Chinook, chum, and coho salmon escapement. - collect environmental / habitat information	June-September	KNA	all aspects
				ADF&G/CF	all aspects
				BSFA	funding
				NOAA	funding
				OSM	funding
Takotna River Weir	mile 52 Takotna River R.M. 467	- estimate daily escapement of Chinook, chum, and coho salmon into the Takotna River. - estimate age, sex and length composition of Chinook, chum, and coho salmon escapement. - collect environmental / habitat information	June-September	MNVC	field operations
				ADF&G/CF	all aspects
				BSFA	funding
				NOAA	funding
				OSM	funding
Kanektok River Weir	mile 13 Kanektok River	- estimate daily escapement of Chinook, sockeye, chum, and coho salmon into the Kanektok River. - estimate age, sex and length composition of Chinook and chum salmon escapement.	June-September	NVK	all aspects
				ADF&G/CF	planning and supplies
				OSM	funding
				BSFA	funding
Middle Fork Goodnews River Weir	mile 5 Middle Fork Goodnews River	- estimate daily escapement of Chinook, sockeye, chum, pink, and coho salmon into the Middle Fork Goodnews River. - estimate age, sex and length composition of Chinook, sockeye, chum, and coho salmon escapement.	June-September	ADF&G/CF	all aspects
				OSM	funding for coho extension

Note: R.M. = river mile of the Kuskokwim River.

ADF&G/CF = Alaska Department of Fish and Game/Division of Commercial Fisheries
ADF&G/S = Alaska Department of Fish and Game/Division of Subsistence
ADF&G/SF = Alaska Department of Fish and Game/Division of Sport Fish
AVCP = Association of Village Council Presidents
BIA = Bureau of Indian Affairs
BSFA = Bering Sea Fishermen's Association
DEC = Department of Enviromental Conservation
KNA = Kuskokwim River Native Association
NOAA = National Oceanic and Atmospheric Administration, Western AK Fisheries Disaster Grant
MNVC = McGrath Native Village Council
NVK = Native Village of Kwinhagak
ONC = Orutsararmuit Native council
OSM = USFWS Office of Subsistence Management
OVK = Organized Village of Kwethluk
TUTC = Tuluksak IRA Council
USFWS = U.S. Fish and Wildlife Service

Table 2.–Subsistence salmon harvest summary, Kuskokwim Area, 2003.

			Chinook		Chum		Sockeye		Coho		Total	
	Total HH's	HH's Contacted	Reported Harvest	Est.[a] Total	Reported Harvest	Est.[a] Total	Reported Harvest	Est.[a] Total	Reported Harvest	Est.[a] Total	Reported Harvest	Est.[a] Total
Kipnuk	176	0	0	0	0	0	0	0	0	0	0	0
Kwigillingok	95	0	0	0	0	0	0	0	0	0	0	0
Kongiganak	84	36	1,156	1,386	804	970	536	637	635	768	3,131	3,761
N. KUSKOKWIM BAY	355	36	1,156	1,386	804	970	536	637	635	768	3,131	3,761
Tuntutuliak	79	66	2,727	3,095	2,231	2,514	1,339	1,555	2,075	2,329	8,372	9,493
Eek	78	58	1,787	2,364	474	621	544	714	1,135	1,493	3,940	5,192
Kasigluk	135	4	356	356	297	297	210	210	134	134	997	997
Nunapitchuk	103	77	3,038	3,763	3,389	4,139	2,054	2,521	551	676	9,032	11,099
Atmautluak	62	44	1,354	1,396	1,491	1,539	841	868	394	407	4,080	4,210
Napakiak	93	56	1,888	2,105	1,244	1,384	1,104	1,223	981	1,098	5,217	5,810
Napaskiak	88	59	3,318	5,012	1,906	2,893	1,603	2,420	1,004	1,522	7,831	11,847
Oscarville	14	11	918	1,073	582	704	556	700	24	27	2,080	2,504
Bethel	1,651	1,077	15,787	21,475	7,199	9,829	7,694	10,542	9,613	13,237	40,293	55,083
Kwethluk	159	104	4,767	4,938	2,269	2,348	1,716	1,776	1,865	1,933	10,617	10,995
Akiachak	134	79	3,554	5,346	2,628	3,943	2,019	3,016	1,719	2,611	9,920	14,916
Akiak	73	51	3,337	3,896	2,254	2,715	1,459	1,698	942	1,135	7,992	9,444
Tuluksak	80	45	2,597	3,678	1,096	1,555	939	1,333	1,066	1,523	5,698	8,089
LOWER KUSKOKWIM	2,749	1,731	45,428	58,497	27,060	34,481	22,078	28,576	21,503	28,125	116,069	149,679
Lower Kalskag	73	47	1,536	2,016	1,210	1,569	551	714	289	375	3,586	4,674
Upper Kalskag	62	39	989	1,128	423	485	421	483	550	605	2,383	2,701
Aniak	150	118	1,794	2,077	1,106	1,160	631	670	1,388	1,552	4,919	5,459
Chuathbaluk	32	25	336	399	1,924	2,249	245	287	261	313	2,766	3,248
MIDDLE KUSKOKWIM	317	229	4,655	5,620	4,663	5,463	1,848	2,154	2,488	2,845	13,654	16,082

-Continued-

Table 2.–Page 2 of 2

	Total HH's	HH's Contacted	Chinook Reported Harvest	Chinook Est.[a] Total	Chum Reported Harvest	Chum Est.[a] Total	Sockeye Reported Harvest	Sockeye Est.[a] Total	Coho Reported Harvest	Coho Est.[a] Total	Total Reported Harvest	Total Est.[a] Total
Crooked Creek	38	26	737	831	788	889	663	747	381	430	2,569	2,897
Red Devil	15	11	54	72	37	49	217	289	157	209	465	619
Sleetmute	33	26	593	685	388	408	604	668	613	678	2,198	2,439
Stony River	15	11	89	111	220	275	111	139	703	879	1,123	1,404
Lime Village	14	13	65	65	140	140	1,000	1,000	164	164	1,369	1,369
McGrath	139	101	424	506	544	610	194	242	964	1,099	2,126	2,457
Takotna	19	0	0	0	0	0	0	0	0	0	0	0
Nikolai	36	2	15	15	35	35	0	0	43	43	93	93
Telida	2	0	0	0	0	0	0	0	0	0	0	0
UPPER KUSKOKWIM	311	190	1,977	2,285	2,152	2,406	2,789	3,085	3,025	3,502	9,943	11,278
KUSKOKWIM RIVER	3,732	2,186	53,216	67,788	34,679	43,320	27,251	34,452	27,651	35,240	142,797	180,800
Quinhagak	143	104	2,953	3,898	935	1,129	1,388	1,622	1,838	2,047	7,114	8,696
Goodnews Bay	64	42	616	649	119	126	635	672	1,050	1,110	2,420	2,557
Platinum	16	15	88	88	50	50	111	111	209	209	458	458
S. KUSKOKWIM BAY	223	161	3,657	4,635	1,104	1,305	2,134	2,405	3,097	3,366	9,992	11,711
Mekoryuk	94	17	10	10	1,484	1,484	2	2	112	112	1,608	1,608
Newtok	79	3	0	0	9	9	0	0	0	0	9	9
Nightmute	68	3	4	4	15	15	20	20	0	0	39	39
Toksook Bay	136	3	51	51	133	133	0	0	58	58	242	242
Tununak	110	1	5	5	10	10	5	5	0	0	20	20
BERING SEA COAST	487	27	70	70	1,651	1,651	27	27	170	170	1,918	1,918
Chefornak	93	1	5	5	15	15	10	10	15	15	45	45
TOTALS	4,535	2,375	56,948	72,498	37,449	46,291	29,422	36,894	30,933	38,791	154,752	194,474

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

[a] If less than 30 or 50% of households in a stratum in a community were contacted, then reported harvest is used for estimated harvest.

Table 3.–Subsistence Salmon Harvest Sampling Summary, Kuskokwim Area, 2003.

Community	Total HH'S	Calendars Mailed	Calendars Returned	Postcards Mailed	Postcards Returned[a]	Surveyed	Total Contacts[b]	Any Info.[c]	Subsistence Fished[b]	Harvest Data[d]
Kipnuk	176	9	0	176	0	0	0	0	0	0
Kwigillingok	95	0	0	95	0	0	0	3	0	0
Kongiganak	84	71	3	0	0	35	36	42	28	36
N KUSKOKWIM BAY	355	80	3	271	0	35	36	45	28	36
Tuntutuliak	79	62	13	0	0	66	66	70	54	62
Eek	78	55	18	0	0	51	58	60	43	57
Kasigluk	135	13	1	134	3	0	4	7	4	4
Nunapitchuk	103	78	15	0	0	76	77	83	64	73
Atmautluak	62	40	3	0	0	44	44	48	33	43
Napakiak	93	61	9	0	0	55	56	60	44	55
Napaskiak	88	64	0	0	0	59	59	69	45	57
Oscarville	14	12	5	0	0	11	11	11	11	9
Bethel	1,651	683	75	451	3	1,057	1,077	1,083	439	1,046
Kwethluk	159	120	22	0	0	101	104	115	82	92
Akiachak	134	104	7	0	0	78	79	90	64	79
Akiak	73	51	8	0	0	50	51	55	47	50
Tuluksak	80	68	7	0	0	45	45	49	41	43
LOWER KUSKOKWIM	2,749	1,411	183	585	6	1,693	1,731	1,800	971	1,670
Lower Kalskag	73	41	6	0	0	45	47	50	29	47
Upper Kalskag	62	41	8	0	0	37	39	42	26	39
Aniak	150	119	21	33	0	112	118	125	77	112
Chuathbaluk	32	19	4	0	0	25	25	27	18	24
MIDDLE KUSKOKWIM	317	220	39	33	0	219	229	244	150	222
Crooked Creek	38	24	5	0	0	26	26	30	22	26
Red Devil	15	10	0	0	0	11	11	12	5	10
Sleetmute	33	28	8	0	0	26	26	26	18	25
Stony River	15	12	1	0	0	11	11	12	8	10
Lime Village	14	5	0	0	0	13	13	13	9	12
McGrath	139	67	5	0	0	98	101	103	50	98
Takotna	19	6	0	0	0	0	0	0	0	0
Nikolai	36	23	2	0	0	0	2	3	2	2
Telida	2	0	0	0	0	0	0	0	0	0
UPPER KUSKOKWIM	311	175	21	0	0	185	190	199	114	183
Quinhagak	143	94	12	0	0	101	104	107	86	100
Goodnews Bay	64	42	6	0	0	41	42	44	36	39
Platinum	16	10	1	0	0	15	15	15	13	13
S KUSKOKWIM BAY	223	146	19	0	0	157	161	166	135	152
Mekoryuk	94	25	4	90	13	0	17	17	12	17
Newtok	79	9	1	78	2	0	3	3	1	3
Nightmute	68	4	0	68	3	0	3	3	2	2
Toksook Bay	136	10	1	135	2	0	3	3	2	3
Tununak	110	8	0	110	1	0	1	1	1	1
Chefornak	93	0	0	93	1	0	1	1	1	1
BERING SEA COAST	580	56	6	574	22	0	28	28	19	27
TOTALS	4,535	2,088	271	1,463	28	2,289	2,375	2,482	1,417	2,290

a Postcards returned with information identifying the community. Postcards returned without identifying information were not usable and are not included.

b Households directly contacted by returning a calendar or postcard or by being interviewed in a face-to-face survey.

c Includes information for uncontacted households' fishing effort derived from other households' surveys or in consultation with village officials.

d Households that did not fish and those households which did fish and provided harvest numbers.

Table 4.–Subsistence salmon harvest gear types, Kuskokwim Area, 2003.

Community	Fishing HH'S[a]	Gear Types[b] Setnet	Drift Net	Fish Wheel	Rod and Reel	Seine	Spear	Not Reported
Kipnuk	0	0	0	0	0	0	0	0
Kwigillingok	0	0	0	0	0	0	0	0
Kongiganak	28	2	24	0	0	0	0	3
N KUSKOKWIM BAY	28	2	24	0	0	0	0	3
Tuntutuliak	54	6	47	0	2	0	0	6
Eek	43	10	20	0	9	0	0	14
Kasigluk	4	0	0	0	0	0	0	4
Nunapitchuk	64	3	52	0	0	0	0	12
Atmautluak	33	7	24	0	0	0	0	6
Napakiak	44	15	32	0	0	0	0	8
Napaskiak	45	10	37	0	11	0	0	7
Oscarville	11	3	9	0	0	0	0	1
Bethel	439	23	300	0	70	0	0	91
Kwethluk	82	20	62	0	39	0	0	11
Akiachak	64	13	52	0	13	0	0	7
Akiak	47	17	30	0	4	0	0	14
Tuluksak	41	19	32	0	17	0	0	1
LOWER KUSKOKWIM	971	146	697	0	165	0	0	182
Lower Kalskag	29	5	19	0	2	0	0	7
Upper Kalskag	26	7	19	0	3	0	0	6
Aniak	77	11	52	0	36	0	0	10
Chuathbaluk	18	2	11	0	8	0	0	4
MIDDLE KUSKOKWIM	150	25	101	0	49	0	0	27
Crooked Creek	22	6	20	0	7	0	0	2
Red Devil	5	4	3	0	2	0	0	0
Sleetmute	18	4	11	0	7	0	0	3
Stony River	8	6	0	0	4	0	0	0
Lime Village	9	5	0	0	7	0	0	0
McGrath	50	24	4	0	22	0	0	8
Takotna	0	0	0	0	0	0	0	0
Nikolai	2	0	0	0	0	0	0	2
Telida	0	0	0	0	0	0	0	0
UPPER KUSKOKWIM	114	49	38	0	49	0	0	15
Quinhagak	86	14	51	0	33	0	0	16
Goodnews Bay	36	9	17	0	19	0	0	6
Platinum	13	5	5	0	3	2	1	0
S KUSKOKWIM BAY	135	28	73	0	55	2	1	22
Mekoryuk	12	0	0	0	0	0	0	12
Newtok	1	0	0	0	0	0	0	1
Nightmute	2	0	0	0	0	0	0	2
Toksook Bay	2	0	0	0	0	0	0	2
Tununak	1	0	0	0	0	0	0	1
BERING SEA COAST	18	0	0	0	0	0	0	18
Chefornak	1	0	0	0	0	0	0	1
TOTAL	1,417	250	933	-	318	2	1	268

[a] Data on households which subsistence fished based upon in-person surveys, returned postcards, or returned calendars.

[b] A household may use multiple gear types.

Table 5.–Subsistence salmon harvest reported retained from commercial catches, Kuskokwim Area, 2003.

		Households		Fish Retained from Commercial Catch				
	Face-to-face Surveys	Commercial Fishing	Retaining Catch	Chinook	Chum	Sockeye	Coho	Total
Kipnuk	-	-	-	-	-	-	-	-
Kwigillingok	-	-	-	-	-	-	-	-
Kongiganak	35	5	1	-	-	-	300	300
N. KUSKOKWIM BAY	35	5	1	-	-	-	300	300
Tuntutuliak	66	25	7	2	-	-	1,720	1,722
Eek	51	19	6	-	1	-	330	331
Kasigluk	-	-	-	-	-	-	-	-
Nunapitchuk	76	15	2	-	-	35	57	92
Atmautluak	44	15	1	-	-	-	6	6
Napakiak	55	9	-	-	-	-	-	-
Napaskiak	59	15	3	-	-	-	21	21
Oscarville	11	4	1	-	-	-	2	2
Bethel	1,057	4	4	-	-	-	20	20
Kwethluk	101	27	6	3	2	2	4	11
Akiachak	78	40	4	-	-	20	37	57
Akiak	50	14	5	2	-	-	58	60
Tuluksak	45	11	3	-	2	-	7	9
LOWER KUSKOKWIM	1,693	198	42	7	5	57	2,262	2,331
Lower Kalskag	45	1	-	-	-	-	-	-
Upper Kalskag	37	-	-	-	-	-	-	-
Aniak	112	-	-	-	-	-	-	-
Chuathbaluk	25	-	-	-	-	-	-	-
MIDDLE KUSKOKWIM	219	1	-	-	-	-	-	-
Crooked Creek	26	-	-	-	-	-	-	-
Red Devil	11	-	-	-	-	-	-	-
Sleetmute	26	-	-	-	-	-	-	-
Stony River	11	-	-	-	-	-	-	-
Lime Village	13	-	-	-	-	-	-	-
McGrath	98	-	-	-	-	-	-	-
Takotna	-	-	-	-	-	-	-	-
Nikolai	-	-	-	-	-	-	-	-
Telida	-	-	-	-	-	-	-	-
UPPER KUSKOKWIM	185	-	-	-	-	-	-	-
Quinhagak	101	40	12	60	14	28	31	133
Goodnews Bay	41	18	3	52	-	7	25	84
Platinum	15	4	2	4	-	20	-	24
S. KUSKOKWIM BAY	157	62	17	116	14	55	56	241
Mekoryuk	-	-	-	-	-	-	-	-
Newtok	-	-	-	-	-	-	-	-
Nightmute	-	-	-	-	-	-	-	-
Toksook Bay	-	-	-	-	-	-	-	-
Tununak	-	-	-	-	-	-	-	-
BERING SEA COAST	-	-	-	-	-	-	-	-
Chefornak	-	-	-	-	-	-	-	-
TOTAL	2,289	266	60	123	19	112	2,618	2,872

Note: Data are based upon surveyed households only without expansion to the community as a whole.

Table 6.–Subsistence salmon quality assessment, Kuskokwim Area, 2003.

	Number and Percent of Households Reporting Quality of Subsistence Fishing											
	CHINOOK			CHUM			SOCKEYE			COHO		
Community	Number of Households Responding	Very Good or Average	Poor	Number of Households Responding	Very Good or Average	Poor	Number of Households Responding	Very Good or Average	Poor	Number of Households Responding	Very Good or Average	Poor
Kongiganak	24	83	17	20	85	15	22	77	23	18	94	6
N. KUSKOKWIM BAY	24	83	17	20	85	15	22	77	23	18	94	6
Tuntutuliak	46	87	13	33	85	15	36	67	33	28	96	4
Eek	23	87	13	13	77	23	15	80	20	21	95	5
Nunapitchuk	44	84	16	39	67	33	37	76	24	24	92	8
Atmautluak	25	100	0	22	100	0	24	83	17	15	93	7
Napakiak	34	91	9	27	78	22	25	80	20	24	96	4
Napaskiak	36	100	0	28	86	14	32	97	3	29	93	7
Oscarville	9	100	0	10	90	10	8	88	13	2	100	0
Bethel	292	90	10	180	92	8	239	93	7	218	99	1
Kwethluk	62	94	6	48	83	17	49	84	16	44	95	5
Akiachak	55	98	2	46	80	20	51	75	25	37	97	3
Akiak	30	100	0	15	80	20	18	89	11	14	100	0
Tuluksak	35	91	9	28	75	25	32	78	22	23	87	13
LOWER KUSKOKWIM	693	92	8	491	85	15	568	85	15	481	96	4
Lower Kalskag	21	81	19	10	100	0	10	90	10	8	100	0
Upper Kalskag	20	95	5	13	92	8	17	71	29	16	94	6
Aniak	57	77	23	31	68	32	46	80	20	52	98	2
Chuathbaluk	11	73	27	9	78	22	9	67	33	9	78	22
MIDDLE KUSKOKWIM	109	81	19	63	79	21	82	78	22	85	95	5
Crooked Creek	20	80	20	18	94	6	19	74	26	14	100	0
Red Devil	4	50	50	1	100	0	3	100	0	2	100	0
Sleetmute	15	93	7	12	83	17	16	81	19	13	92	8
Stony River	4	100	0	3	67	33	3	100	0	6	100	0
Lime Village	6	67	33	6	83	17	6	100	0	3	33	67
McGrath	23	78	22	7	86	14	6	100	0	18	78	22
UPPER KUSKOKWIM	72	81	19	47	87	13	53	85	15	56	88	13

-Continued-

Table 6.–Page 2 of 2

	Number and Percent of Households Reporting Quality of Subsistence Fishing											
	CHINOOK			CHUM			SOCKEYE			COHO		
Community	Number of Households Responding	Very Good or Average	Poor	Number of Households Responding	Very Good or Average	Poor	Number of Households Responding	Very Good or Average	Poor	Number of Households Responding	Very Good or Average	Poor
Quinhagak	52	88	12	32	88	13	36	81	19	46	89	11
Goodnews Bay	26	69	31	16	50	50	25	96	4	27	85	15
Platinum	7	43	57	4	50	50	8	88	13	11	100	0
S. KUSKOKWIM BAY	85	79	21	52	73	27	69	87	13	84	89	11
BERING SEA COAST	8	75	25	11	91	9	5	60	40	10	90	10
Total	992	88	12	685	84	16	800	84	16	735	95	5

Note: The question asked was "How was subsistence salmon fishing for your household this year?"

Note: data are reported from households that were surveyed in person or returned postcard surveys. Kipnuk, Kwigillingok, and Kasigluk have not consented to surveys be conducted in their village. Bering Sea Coast villages (Mekoryuk, Newtok, Nightmute, Toksook Bay, Tununak, and Chefornak) responded via postcards but household surveys were not conducted due to budget constraints while inclement weather prevented survey staff from traveling to Takotna, Nikolai, and Telida.

Table 7.–Commercial salmon harvest and ex-vessel value by District, Kuskokwim Area, 2003**.**

	Chinook	Sockeye	Coho	Pink	Chum	Total
Lower Kuskokwim River, District W-1			**2003**			
Fish	158	282	284,064	0	2,764	287,268
Pounds	2,763	2,037	2,207,288	0	17,943	2,230,031
Price	0.31	0.39	0.20		0.06	
Value	$846	$803	$450,451	$0	$1,087	$453,187
			Ave. 1993-2002			
Fish	9,304	30,396	356,165	3,822	136,467	536,154
Value	$64,079	$125,115	$1,013,369	$988	$162,142	$1,365,693
Quinhagak, District W-4		**2003**				
Fish	14,444	33,941	49,833	0	27,868	126,086
Pounds	196,368	242,302	435,219	0	192,606	1,066,495
Price	0.35	0.44	0.25		0.10	
Value	$69,201	$107,287	$108,804	$0	$19,261	$304,553
			Ave. 1993-2002			
Fish	19,968	55,153	51,963	4,953	46,536	178,573
Value	$131,239	$194,656	$162,170	$1,118	$53,154	$542,337
Goodnews Bay, District W-5		**2003**				
Fish	1,412	29,423	12,658	0	5,593	49,086
Pounds	18,461	217,769	115,782	0	38,835	390,847
Price	0.35	0.44	0.25		0.10	
Value	$6,459	$95,999	$28,946	$0	$3,884	$135,287
			Ave. 1993-2002			
Fish	2,353	34,758	18,377	2,195	12,217	69,900
Value	$15,430	$137,234	$67,851	$564	$14,044	$235,123
Kuskokwim Area Total		**2003**				
Fish	16,014	63,646	346,555	0	36,225	462,440
Pounds	217,592	462,108	2,758,289	0	249,384	3,687,373
Price	0.35	0.44	0.21	0.00	0.10	
Value	$76,047	$203,226	$579,208	$0	$24,221	$882,701
			Ave. 1993-2002			
Fish	31,625	120,307	426,505	10,970	195,220	784,627
Value	$210,748	$457,005	$1,243,390	$2,670	$229,340	$2,143,153
Avg weight	13.6	7.3	8.0		6.9	

Table 8.–Commercial salmon harvest, District 1, Kuskokwim Area, 2003**.**

					CHINOOK				SOCKEYE				COHO				CHUM			
Period	**Date**	**Permits**	**Hours**	**Del**	**Catch**	**Lbs**	**$/Lb**	**Value**	**Catch**	**Lbs**	**$/Lb**	**Value**	**Catch**	**Lbs**	**$/Lb**	**Value**	**Catch**	**Lbs**	**$/Lb**	**Value**
1	7/31	57	2	57	11	211	0.31	$ 65	13	101	0.39	$ 39	7,717	57,160	0.20	$ 11,432	405	2,804	0.06	$ 168
2	8/1	95	4	96	30	557	0.31	$ 173	69	450	0.39	$ 176	9,707	72,090	0.20	$ 14,418	545	3,743	0.06	$ 225
3	8/4	91	4	92	7	143	0.31	$ 44	10	58	0.39	$ 23	14,308	106,732	0.20	$ 21,346	310	2,025	0.06	$ 122
4	8/5	119	4	121	13	177	0.31	$ 55	69	539	0.39	$ 210	12,233	94,450	0.20	$ 18,890	214	1,396	0.06	$ 84
5	8/7	123	6	137	16	282	0.31	$ 87	3	21	0.39	$ 8	30,162	231,788	0.20	$ 46,358	374	2,366	0.06	$ 142
6	8/8	118	4	119	12	174	0.31	$ 54	41	300	0.39	$ 117	16,031	122,648	0.20	$ 24,530	200	1,229	0.06	$ 74
7	8/11	130	4	133	9	208	0.31	$ 64	9	66	0.39	$ 26	31,371	240,528	0.20	$ 48,106	208	1,276	0.06	$ 77
8	8/12	107	4	113	12	203	0.31	$ 63	10	74	0.39	$ 29	18,703	146,345	0.20	$ 29,269	116	702	0.06	$ 42
9	8/14	141	4	143	12	229	0.31	$ 71	2	14	0.39	$ 5	36,537	289,658	0.20	$ 57,932	78	475	0.06	$ 29
10	8/15	116	4	118	15	262	0.31	$ 81	12	90	0.39	$ 35	16,027	126,860	0.20	$ 25,372	67	408	0.06	$ 24
11	8/18	105	3	105	3	21	0.31	$ 7	3	25	0.39	$ 10	14,219	112,125	0.20	$ 22,425	40	279	0.06	$ 17
12	8/19	95	4	96	6	71	0.31	$ 22	15	106	0.39	$ 41	8,720	68,853	0.20	$ 13,771	25	141	0.06	$ 8
13	8/21	111	6	111	2	50	0.31	$ 16	3	24	0.39	$ 9	18,804	150,106	0.20	$ 30,021	27	164	0.06	$ 10
14	8/22	49	6	49	0	0	0.31	$ -	1	8	0.39	$ 3	2,914	22,487	0.20	$ 4,497	14	80	0.06	$ 5
15	8/25	109	6	113	1	14	0.31	$ 4	5	38	0.39	$ 15	12,789	101,101	0.20	$ 20,220	32	187	0.06	$ 11
16	8/26	112	6	113	4	83	0.31	$ 26	2	13	0.39	$ 5	11,434	89,308	0.20	$ 17,862	15	101	0.06	$ 6
17	8/28	100	6	100	3	38	0.31	$ 12	7	51	0.39	$ 20	8,228	64,710	0.20	$ 12,942	40	241	0.06	$ 14
18	8/29	60	6	60	0	0	0.31	$ -	4	30	0.39	$ 12	4,524	35,044	0.20	$ 7,009	29	175	0.06	$ 11
19	9/1	44	8	44	1	15	0.31	$ 5	1	6	0.39	$ 2	3,504	27,205	0.20	$ 5,441	12	71	0.06	$ 4
20	9/2	37	8	37	0	0	0.31	$ -	0	0	0.39	$ -	3,011	22,721	0.20	$ 4,544	7	44	0.06	$ 3
21	9/3	30	8	30	1	25	0.31	$ 8	2	19	0.39	$ 7	3,121	23,522	0.20	$ 4,704	6	36	0.06	$ 2
Totals		**359**	**107**	**1,987**	**158**	**2,763**		**$ 857**	**281**	**2,033**		**$ 793**	**284,064**	**2,205,441**		**$ 441,088**	**2,764**	**17,943**		**$1,077**

Table 9.–Commercial salmon harvest, District 4, Kuskokwim Area, 2003.

					CHINOOK				SOCKEYE				CHUM				COHO			
Period	**Date**	**Permits**	**Hours**	**Del**	**Catch**	**Lbs**	**$/Lb**	**Value**	**Catch**	**Lbs**	**$/Lb**	**Value**	**Catch**	**Lbs**	**$/Lb**	**Value**	**Catch**	**Lbs**	**$/Lb**	**Value**
1	6/14	54	12	80	2,657	35,657	0.35	$ 12,480	186	1,360	0.44	$ 598	81	703	0.10	$ 70	0	0	0.25	$ -
2	6/17	53	12	74	2,797	36,720	0.35	$ 12,852	735	5,136	0.44	$ 2,260	232	1,782	0.10	$ 178	0	0	0.25	$ -
3	6/19	60	12	68	1,732	23,356	0.35	$ 8,175	760	5,267	0.44	$ 2,317	209	1,495	0.10	$ 150	0	0	0.25	$ -
4	6/24	62	12	68	2,209	31,145	0.35	$ 10,901	690	4,939	0.44	$ 2,173	252	2,130	0.10	$ 213	0	0	0.25	$ -
5	7/1	35	12	56	571	8,882	0.35	$ 3,109	2,890	21,986	0.44	$ 9,674	1,626	12,249	0.10	$ 1,225	0	0	0.25	$ -
6	7/4	56	12	97	1,010	14,518	0.35	$ 5,081	8,246	60,713	0.44	$ 26,714	3,780	26,738	0.10	$ 2,674	0	0	0.25	$ -
7	7/7	70	12	78	771	10,661	0.35	$ 3,731	4,974	36,514	0.44	$ 16,066	1,442	10,240	0.10	$ 1,024	1	12	0.25	$ 3
8	7/9	62	12	70	800	9,513	0.35	$ 3,330	4,311	30,156	0.44	$ 13,269	3,065	22,736	0.10	$ 2,274	3	34	0.25	$ 9
9	7/11	60	12	62	647	8,538	0.35	$ 2,988	4,350	29,894	0.44	$ 13,153	3,335	22,360	0.10	$ 2,236	1	6	0.25	$ 2
10	7/14	48	12	73	434	6,309	0.35	$ 2,208	2,607	18,039	0.44	$ 7,937	4,501	31,087	0.10	$ 3,109	16	138	0.25	$ 35
11	7/16	45	12	67	384	5,058	0.35	$ 1,770	2,156	15,046	0.44	$ 6,620	3,474	23,827	0.10	$ 2,383	66	523	0.25	$ 131
12	7/18	43	12	47	164	2,101	0.35	$ 735	1,100	7,188	0.44	$ 3,163	3,082	20,185	0.10	$ 2,019	136	940	0.25	$ 235
13	8/1	39	12	50	72	1,018	0.35	$ 356	254	1,684	0.44	$ 741	1,233	7,487	0.10	$ 749	3,090	25,501	0.25	$ 6,375
14	8/4	42	12	47	27	442	0.35	$ 155	162	1,013	0.44	$ 446	550	3,416	0.10	$ 342	2,189	18,777	0.25	$ 4,694
15	8/6	43	12	48	36	489	0.35	$ 171	142	825	0.44	$ 363	379	2,331	0.10	$ 233	5,594	46,718	0.25	$ 11,680
16	8/8	47	12	63	34	471	0.35	$ 165	141	956	0.44	$ 421	270	1,652	0.10	$ 165	3,894	33,105	0.25	$ 8,276
17	8/11	55	12	91	31	474	0.35	$ 166	79	541	0.44	$ 238	163	972	0.10	$ 97	9,882	86,155	0.25	$ 21,539
18	8/13	51	12	57	24	416	0.35	$ 146	25	153	0.44	$ 67	54	343	0.10	$ 34	4,931	44,317	0.25	$ 11,079
19	8/15	43	12	47	12	189	0.35	$ 66	23	133	0.44	$ 59	16	92	0.10	$ 9	4,846	42,801	0.25	$ 10,700
20	8/18	46	18	51	9	137	0.35	$ 48	39	277	0.44	$ 122	57	348	0.10	$ 35	4,514	40,455	0.25	$ 10,114
21	8/20	34	12	43	10	61	0.35	$ 21	20	130	0.44	$ 57	27	162	0.10	$ 16	3,924	34,872	0.25	$ 8,718
22	8/22	33	12	38	6	84	0.35	$ 29	25	175	0.44	$ 77	22	159	0.10	$ 16	3,174	28,426	0.25	$ 7,107
23	8/25	20	12	24	3	62	0.35	$ 22	3	23	0.44	$ 10	5	32	0.10	$ 3	1,518	13,666	0.25	$ 3,417
24	8/27	24	12	35	4	67	0.35	$ 23	23	154	0.44	$ 68	13	80	0.10	$ 8	2,054	18,773	0.25	$ 4,693
Totals		**114**	**294**		**14,444**	**196,368**		**$ 68,729**	**33,941**	**242,302**		**$ 106,613**	**27,868**	**192,606**		**$ 19,261**	**49,833**	**435,219**		**$ 108,805**

Table 10.–Commercial salmon harvest, District 5, Kuskokwim Area, 2003.

					CHINOOK				SOCKEYE				CHUM				COHO			
Period	**Date**	**Permits**	**Hours**	**Del**	**Catch**	**Lbs**	**$/Lb**	**Value**	**Catch**	**Lbs**	**$/Lb**	**Value**	**Catch**	**Lbs**	**$/Lb**	**Value**	**Catch**	**Lbs**	**$/Lb**	**Value**
1	6/24	0	12	0	No Commercial Harvest / No Tender															
2	6/26	13	12	20	389	4,636	0.35	$ 1,623	2,726	19,852	0.44	$ 8,735	342	2,686	0.25	$ 672	0	0	0.10	$ -
3	6/30	19	12	31	186	2,570	0.35	$ 900	4,718	35,229	0.44	$15,501	468	3,408	0.25	$ 852	0	0	0.10	$ -
4	7/2	10	12	12	64	906	0.35	$ 317	2,002	15,212	0.44	$ 6,693	344	2,497	0.25	$ 624	0	0	0.10	$ -
5	7/4	23	12	32	114	1,579	0.35	$ 553	3,727	27,375	0.44	$12,045	617	4,337	0.25	$ 1,084	0	0	0.10	$ -
6	7/7	27	12	37	123	1,758	0.35	$ 615	4,082	29,690	0.44	$13,064	432	3,195	0.25	$ 799	0	0	0.10	$ -
7	7/9	26	12	31	118	1,885	0.35	$ 660	3,230	23,726	0.44	$10,439	759	5,233	0.25	$ 1,308	0	0	0.10	$ -
8	7/11	28	12	31	176	1,905	0.35	$ 667	2,652	19,589	0.44	$ 8,619	1,209	7,994	0.25	$ 1,999	2	15	0.10	$ 2
9	7/14	25	12	26	84	1,101	0.35	$ 385	2,048	15,490	0.44	$ 6,816	826	5,655	0.25	$ 1,414	5	38	0.10	$ 4
10	7/16	15	12	16	47	669	0.35	$ 234	1,127	8,657	0.44	$ 3,809	391	2,620	0.25	$ 655	3	27	0.10	$ 3
11	7/18	3	12	3	5	58	0.35	$ 20	144	1,027	0.44	$ 452	44	219	0.25	$ 55	0	0	0.10	$ -
12	8/1	15	12	15	41	544	0.35	$ 190	898	6,776	0.44	$ 2,981	73	456	0.25	$ 114	546	4,496	0.10	$ 450
13	8/4	13	12	13	18	207	0.35	$ 72	904	6,547	0.44	$ 2,881	26	157	0.25	$ 39	548	4,938	0.10	$ 494
14	8/6	12	12	12	8	136	0.35	$ 48	321	2,589	0.44	$ 1,139	19	125	0.25	$ 31	490	4,381	0.10	$ 438
15	8/8	13	12	13	20	268	0.35	$ 94	394	2,786	0.44	$ 1,226	31	182	0.25	$ 46	1,213	10,613	0.10	$ 1,061
16	8/11	0	12	0	No Commercial Harvest / No Tender															
17	8/13	16	12	16	8	78	0.35	$ 27	176	1,195	0.44	$ 526	4	24	0.25	$ 6	2,182	19,406	0.10	$ 1,941
18	8/15	16	12	16	1	4	0.35	$ 1	35	280	0.44	$ 123	0	0	0.25	$ -	1,739	16,354	0.10	$ 1,635
19	8/18	0	12	0	No Commercial Harvest / No Tender															
20	8/20	16	12	21	9	152	0.35	$ 53	149	1,108	0.44	$ 488	5	30	0.25	$ 8	3,534	32,790	0.10	$ 3,279
21	8/22	0	12	0	No Commercial Harvest / No Tender															
22	8/25	14	12	18	1	5	0.35	$ 2	90	641	0.44	$ 282	3	17	0.25	$ 4	2,396	22,724	0.10	$ 2,272
23	8/28	0	12	0	No Commercial Harvest / No Tender															
Totals		**34**	**276**	**363**	**1,412**	**18,461**		**$ 6,461**	**29,423**	**217,769**		**95,818**	**5,593**	**38,835**		**9,709**	**12,658**	**115,782**		**11,578**

Table 11.–Inseason subsistence harvest summary Kuskokwim River, 2003.

Summary of Subsistence Salmon Information Collected by ONC Technicians [a]

Week Ending	Number of Families			Chinook			Chum			Sockeye			Coho		
	Inter-viewed	Fishing	Not Fishing	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
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			
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

Summary of Subsistence Salmon Information Collected by KNA Technicians [c]

Week Ending	Number of Families			Chinook			Chum			Sockeye			Coho		
	Inter-viewed	Fishing	Not Fishing	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
Jun 07 [d]															
Jun 14	19			0	11	7	0	10	6	0	4	6	0	0	0
Jun 21	27			3	15	9	1	13	10	0	18	8	0	0	0
Jun 28	17			3	9	4	0	13	3	0	15	2	0	0	0
Jul 05	17			0	8	0	3	4	0	2	4	2	0	0	0
Jul 12	27			2	5	0	8	0	1	5	4	1	0	0	0
Jul 19	7			0	4	0	1	5	0	0	6	0	0	0	0
Jul 26 [d]															
Aug 02 [d]															
Aug 09	13			0	0	0	0	1	1	0	0	0	0	4	0
Aug 16 [d]															
Total [b]	127														
Average	18			1	7	3	2	7	3	1	7	3	0	1	0

Table 11.–Page 2 of 2

Summary of Subsistence Salmon Information Collected by MNVC Technicians [e]															
	Number of Families			Chinook			Chum			Sockeye			Coho		
Week Ending	Inter-viewed	Fishing	Not Fishing	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor	Very Good	Normal	Poor
Jun 07 [d]															
Jun 14 [d]															
Jun 21	3			2	0	1	0	1	0	1	0	0	0	0	0
Jun 28	11			3	1	7	0	0	2	1	0	0			
Jul 05	9			1	6	2	0	0	0	0	0	0	0	0	0
Jul 12	11			3	5	0	1	2	0	3	0	0	0	0	0
Jul 19	9	3	6	1	0	2	0	0	0	0	0	0	0	0	0
Jul 26	12	3	9	2	0	1	0	0	0	0	0	0	0	0	0
Aug 02 [d]															
Aug 09	9	3	6	0	0	0	0	1	2	0	0	0	0	2	1
Aug 16 [d]															
Total [b]	64														
Average	9			2	2	2	0	1	1	1	0	0	0	0	0

Note: Surveys in the Lower Kuskokwim River were conducted from Oscarville to the mouth of the Kwethluk River.

[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.

[c] Surveys in the Middle Kuskokwim River were conducted from Lower Kalskag to Chuathbaluk.

[d] Surveys not conducted.

[e] Surveys in the Middle Kuskokwim River were conducted from Georgetown to Nikolai.

Table 12.–Daily and cumulative salmon passage through the Kwethluk River weir, Kuskokwim River drainage, 2003.

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
20-Jun	2	2	0	-	4	4	0	-	-	-
21-Jun	1	3	0	-	60	64	0	-	-	-
22-Jun	-	3	54	54	16	80	0	-	-	-
23-Jun	2	5	43	97	14	94	0	-	-	-
24-Jun	14	19	83	180	14	108	0	-	-	-
25-Jun	3	22	60	240	14	122	0	-	-	-
26-Jun	17	39	78	318	14	136	0	-	-	-
27-Jun	42	81	107	425	76	212	0	-	-	-
28-Jun	150	231	39	464	121	333	0	-	-	-
29-Jun	447	678	30	494	102	435	0	-	-	-
30-Jun	27	705	42	536	31	466	0	-	-	-
1-Jul	134	839	38	574	225	691	0	-	-	-
2-Jul	1,406	2,245	170	744	414	1,105	0	-	-	-
3-Jul	1,090	3,335	107	851	304	1,409	0	-	-	-
4-Jul	328	3,663	84	935	223	1,632	0	-	-	-
5-Jul	670	4,333	124	1,059	167	1,799	3	3	-	-
6-Jul	472	4,805	237	1,296	207	2,006	2	5	-	-
7-Jul	150	4,955	224	1,520	169	2,175	1	6	1	1
8-Jul	309	5,264	138	1,658	519	2,694	0	6	-	1
9-Jul	1,463	6,727	235	1,893	1,362	4,056	13	19	-	1
10-Jul	397	7,124	82	1,975	609	4,665	10	29	-	1
11-Jul	398	7,522	97	2,072	811	5,476	20	49	-	1
12-Jul	383	7,905	135	2,207	1,687	7,163	27	76	-	1
13-Jul	997	8,902	151	2,358	2,454	9,617	40	116	-	1
14-Jul	732	9,634	99	2,457	1,696	11,313	39	155	-	1
15-Jul	431	10,065	43	2,500	1,473	12,786	16	171	-	1
16-Jul	315	10,380	22	2,522	545	13,331	16	187	-	1
17-Jul	207	10,587	13	2,535	372	13,703	12	199	-	1
18-Jul	246	10,833	29	2,564	1,299	15,002	42	241	4	5
19-Jul	334	11,167	40	2,604	2,195	17,197	67	308	37	42
20-Jul	810	11,977	60	2,664	2,967	20,164	194	502	64	106
21-Jul	107	12,084	10	2,674	639	20,803	21	523	3	109
22-Jul	167	12,251	34	2,708	936	21,739	30	553	3	112
23-Jul	190	12,441	22	2,730	1,411	23,150	28	581	14	126
24-Jul	288	12,729	10	2,740	553	23,703	45	626	59	185
25-Jul	180	12,909	17	2,757	1,373	25,076	69	695	43	228
26-Jul	153	13,062	9	2,766	1,284	26,360	59	754	34	262
27-Jul	161	13,223	11	2,777	1,211	27,571	57	811	41	303
28-Jul	184	13,407	21	2,798	1,628	29,199	30	841	102	405
29-Jul	150	13,557	18	2,816	1,979	31,178	46	887	85	490
30-Jul	95	13,652	5	2,821	817	31,995	12	899	33	523
31-Jul	186	13,838	6	2,827	751	32,746	40	939	252	775
1-Aug	63	13,901	4	2,831	814	33,560	28	967	65	840
2-Aug	88	13,989	17	2,848	1,402	34,962	39	1,006	302	1,142
3-Aug	68	14,057	4	2,852	864	35,826	18	1,024	277	1,419
4-Aug	19	14,076	4	2,856	412	36,238	5	1,029	81	1,500
5-Aug	25	14,101	3	2,859	1,041	37,279	12	1,041	331	1,831
6-Aug	41	14,142	7	2,866	741	38,020	9	1,050	334	2,165
7-Aug	27	14,169	6	2,872	675	38,695	12	1,062	750	2,915
8-Aug	23	14,192	4	2,876	849	39,544	8	1,070	1,353	4,268

-Continued-

Table 12. –Page 2 of 2

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
9-Aug	20	14,212	3	2,879	729	40,273	21	1,091	2,090	6,358
10-Aug	21	14,233	2	2,881	160	40,433	11	1,102	390	6,748
11-Aug	7	14,240	1	2,882	70	40,503	2	1,104	24	6,772
12-Aug	29	14,269	6	2,888	196	40,699	4	1,108	1,136	7,908
13-Aug	36	14,305	6	2,894	247	40,946	9	1,117	1,694	9,602
14-Aug	24	14,329	4	2,898	214	41,160	11	1,128	1,766	11,368
15-Aug	15	14,344	2	2,900	89	41,249	26	1,154	2,114	13,482
16-Aug	14	14,358	0	2,900	76	41,325	3	1,157	477	13,959
17-Aug	16	14,374	1	2,901	96	41,421	15	1,172	1,219	15,178
18-Aug	16	14,390	4	2,905	72	41,493	14	1,186	1,039	16,217
19-Aug	10	14,400	1	2,906	34	41,527	19	1,205	481	16,698
20-Aug	17	14,417	1	2,907	68	41,595	27	1,232	2,966	19,664
21-Aug	12	14,429	5	2,912	48	41,643	41	1,273	2,925	22,589
22-Aug	8	14,437	1	2,913	30	41,673	46	1,319	2,338	24,927
23-Aug	6	14,443	1	2,914	40	41,713	54	1,373	2,950	27,877
24-Aug	11	14,454	3	2,917	31	41,744	38	1,411	2,779	30,656
25-Aug	2	14,456	1	2,918	14	41,758	55	1,466	6,514	37,170
26-Aug	5	14,461	1	2,919	6	41,764	36	1,502	5,296	42,466
27-Aug	2	14,463	2	2,921	6	41,770	29	1,531	5,633	48,099
28-Aug	5	14,468	1	2,922	3	41,773	26	1,557	4,845	52,944
29-Aug	0	14,468	2	2,924	6	41,779	29	1,586	3,683	56,627
30-Aug	1	14,469	2	2,926	5	41,784	49	1,635	4,213	60,840
31-Aug	0	14,469	0	2,926	5	41,789	35	1,670	6,968	67,808
1-Sep	0	14,469	0	2,926	1	41,790	22	1,692	4,449	72,257
2-Sep	0	14,469	0	2,926	7	41,797	26	1,718	5,154	77,411
3-Sep	0	14,469	0	2,926	2	41,799	14	1,732	3,530	80,941
4-Sep	2	14,471	0	2,926	1	41,800	17	1,749	5,478	86,419
5-Sep	0	14,471	1	2,927	5	41,805	23	1,772	5,355	91,774
6-Sep	0	14,471	1	2,928	0	41,805	31	1,803	3,116	94,890
7-Sep	0	14,471	0	2,928	3	41,808	11	1,814	1,957	96,847
8-Sep	0	14,471	0	2,928	1	41,809	9	1,823	1,130	97,977
9-Sep	0	14,471	0	2,928	0	41,809	15	1,838	1,356	99,333
10-Sep	1	14,472	0	2,928	1	41,810	4	1,842	1,607	100,940
11-Sep	2	14,474	0	2,928	0	41,810	18	1,860	1,810	102,750
12-Sep	0	14,474	0	2,928	0	41,810	13	1,873	1,946	104,696
13-Sep	0	14,474	0	2,928	1	41,811	10	1,883	1,963	106,659
14-Sep	0	14,474	0	2,928	1	41,812	2	1,885	1,130	107,789

Table 13.–Daily and cumulative salmon passage through the Tuluksak River weir, Kuskokwim River drainage, 2003.

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	-	-	-	-	-	-	-	-	-	-
16-Jun	-	-	-	-	-	-	-	-	-	-
17-Jun	-	-	-	-	-	-	-	-	-	-
18-Jun	-	-	-	-	-	-	-	-	-	-
19-Jun	-	-	-	-	-	-	-	-	-	-
20-Jun	-	-	-	-	-	-	-	-	-	-
21-Jun	-	-	-	-	2	2	-	-	-	-
22-Jun	3	3	-	-	-	2	-	-	-	-
23-Jun	-	3	-	-	-	2	-	-	-	-
24-Jun	2	5	-	-	2	4	-	-	-	-
25-Jun	3	8	-	-	-	4	-	-	-	-
26-Jun	-	8	-	-	-	4	-	-	-	-
27-Jun	-	8	-	-	-	4	-	-	-	-
28-Jun	-	8	-	-	1	5	-	-	-	-
29-Jun	-	8	-	-	4	9	-	-	-	-
30-Jun	-	8	1	1	-	9	-	-	-	-
1-Jul	2	10	-	1	35	44	-	-	-	-
2-Jul	23	33	1	2	80	124	-	-	-	-
3-Jul	209	242	1	3	181	305	-	-	-	-
4-Jul	286	528	3	6	217	522	-	-	-	-
5-Jul	24	552	4	10	70	592	-	-	-	-
6-Jul	3	555	-	10	23	615	-	-	-	-
7-Jul	8	563	4	14	48	663	-	-	-	-
8-Jul	18	581	14	28	83	746	1	1	-	-
9-Jul	28	609	30	58	306	1,052	-	1	-	-
10-Jul	16	625	6	64	43	1,095	-	1	-	-
11-Jul	5	630	18	82	113	1,208	1	2	-	-
12-Jul	6	636	26	108	236	1,444	3	5	-	-
13-Jul	9	645	10	118	281	1,725	22	27	-	-
14-Jul	7	652	25	143	123	1,848	13	40	-	-
15-Jul	8	660	5	148	197	2,045	7	47	-	-
16-Jul	11	671	13	161	216	2,261	15	62	-	-
17-Jul	11	682	2	163	150	2,411	5	67	-	-
18-Jul	54	736	18	181	916	3,327	64	131	-	-
19-Jul	11	747	10	191	523	3,850	43	174	-	-
20-Jul	9	756	5	196	89	3,939	7	181	-	-
21-Jul	11	767	4	200	113	4,052	3	184	-	-
22-Jul	46	813	3	203	130	4,182	9	193	-	-
23-Jul	8	821	3	206	78	4,260	16	209	2	2
24-Jul	13	834	3	209	305	4,565	21	230	4	6
25-Jul	30	864	6	215	740	5,305	50	280	4	10
26-Jul	30	894	7	222	532	5,837	12	292	7	17
27-Jul	4	898	6	228	318	6,155	14	306	-	17
28-Jul	27	925	7	235	738	6,893	48	354	14	31
29-Jul	50	975	6	241	1,020	7,913	18	372	45	76
30-Jul	20	995	6	247	459	8,372	5	377	19	95
31-Jul	7	1,002	4	251	358	8,730	5	382	11	106
1-Aug	6	1,008	-	251	345	9,075	4	386	15	121
2-Aug	5	1,013	1	252	283	9,358	2	388	15	136
3-Aug	4	1,017	2	254	203	9,561	-	388	3	139
4-Aug	6	1,023	5	259	214	9,775	5	393	13	152

-Continued-

Table 13.–Page 2 of 2

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
5-Aug	9	1,032	-	259	344	10,119	15	408	38	190
6-Aug	5	1,037	1	260	403	10,522	11	419	102	292
7-Aug	4	1,041	-	260	202	10,724	5	424	101	393
8-Aug	3	1,044	8	268	199	10,923	13	437	335	728
9-Aug	4	1,048	4	272	150	11,073	6	443	435	1,163
10-Aug	1	1,049	-	272	50	11,123	-	443	241	1,404
11-Aug	2	1,051	1	273	41	11,164	3	446	101	1,505
12-Aug	3	1,054	1	274	55	11,219	2	448	268	1,773
13-Aug	3	1,057	1	275	67	11,286	11	459	839	2,612
14-Aug	2	1,059	-	275	47	11,333	8	467	1,621	4,233
15-Aug	-	1,059	1	276	27	11,360	3	470	854	5,087
16-Aug	-	1,059	-	276	39	11,399	6	476	289	5,376
17-Aug	-	1,059	-	276	33	11,432	12	488	716	6,092
18-Aug	-	1,059	-	276	27	11,459	7	495	439	6,531
19-Aug	-	1,059	5	281	10	11,469	2	497	140	6,671
20-Aug	-	1,059	2	283	25	11,494	6	503	366	7,037
21-Aug	-	1,059	-	283	25	11,519	18	521	1,799	8,836
22-Aug	-	1,059	1	284	20	11,539	13	534	2,341	11,177
23-Aug	-	1,059	2	286	25	11,564	13	547	1,116	12,293
24-Aug	-	1,059	-	286	20	11,584	8	555	690	12,983
25-Aug	-	1,059	-	286	27	11,611	16	571	2,271	15,254
26-Aug	1	1,060	-	286	30	11,641	7	578	4,498	19,752
27-Aug	1	1,061	-	286	31	11,672	15	593	4,808	24,560
28-Aug	-	1,061	-	286	26	11,698	12	605	3,416	27,976
29-Aug	1	1,062	-	286	3	11,701	2	607	1,167	29,143
30-Aug	-	1,062	-	286	5	11,706	4	611	401	29,544
31-Aug	1	1,063	-	286	3	11,709	1	612	1,279	30,823
1-Sep	1	1,064	-	286	3	11,712	6	618	1,602	32,425
2-Sep	-	1,064	-	286	2	11,714	4	622	1,057	33,482
3-Sep	-	1,064	1	287	2	11,716	5	627	1,181	34,663
4-Sep	-	1,064	-	287	-	11,716	4	631	693	35,356
5-Sep	-	1,064	-	287	2	11,718	5	636	727	36,083
6-Sep	-	1,064	-	287	1	11,719	3	639	510	36,593
7-Sep	-	1,064	-	287	-	11,719	2	641	850	37,443
8-Sep	-	1,064	1	288	1	11,720	2	643	862	38,305
9-Sep	-	1,064	-	288	-	11,720	9	652	395	38,700
10-Sep	-	1,064	-	288	-	11,720	4	656	424	39,124
11-Sep	-	1,064	-	288	2	11,722	2	658	477	39,601
12-Sep	-	1,064	-	288	-	11,722	-	658	542	40,143
13-Sep	-	1,064	-	288	1	11,723	2	660	527	40,670
14-Sep	-	1,064	-	288	1	11,724	2	662	401	41,071
15-Sep	-	1,064	-	288	-	11,724	-	662	-	41,071
16-Sep	-	1,064	-	288	-	11,724	-	662	-	41,071
17-Sep	-	1,064	-	288	-	11,724	-	662	-	41,071
18-Sep	-	1,064	-	288	-	11,724	-	662	-	41,071
19-Sep	-	1,064	-	288	-	11,724	-	662	-	41,071
20-Sep	-	1,064	-	288	-	11,724	-	662	-	41,071

Table 14.–Daily and cumulative salmon passage through the George River weir, Kuskokwim River drainage, 2003.

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	1 [b]	1	0	0	4 [b]	4	0	0	0 [b]	0
16-Jun	0 [b]	1	0	0	8 [b]	12	0	0	0 [b]	0
17-Jun	0 [b]	1	0	0	13 [b]	25	0	0	0 [b]	0
18-Jun	4 [b]	5	0	0	17 [b]	42	0	0	0 [b]	0
19-Jun	3 [b]	8	0	0	21 [b]	63	0	0	0 [b]	0
20-Jun	14 [b]	22	0	0	26 [b]	89	0	0	0 [b]	0
21-Jun	24 [b]	46	0	0	48 [b]	137	0	0	0 [b]	0
22-Jun	30 [b]	76	0	0	13 [b]	150	0	0	0 [b]	0
23-Jun	44 [b]	120	0	0	11 [b]	161	0	0	0 [b]	0
24-Jun	10 [b]	130	0	0	11 [b]	173	0	0	0 [b]	0
25-Jun	163 [b]	293	0	0	11 [b]	184	0	0	0 [b]	0
26-Jun	206 [b]	499	0	0	11 [b]	195	0	0	0 [b]	0
27-Jun	137 [b]	636	0	0	61 [b]	256	0	0	0 [b]	0
28-Jun	245 [b]	881	0	0	97 [b]	353	0	0	0 [b]	0
29-Jun	271 [b]	1,152	0	0	82 [b]	435	0	0	0 [b]	0
30-Jun	286 [b]	1,438	0	0	25 [b]	460	0	0	0 [b]	0
1-Jul	354 [e]	1,792	0	0	181 [e]	641	0	0	0 [e]	0
2-Jul	513 [e]	2,305	0	0	332 [e]	973	0	0	0 [e]	0
3-Jul	336 [b]	2,641	0	0	244 [b]	1,217	0	0	0 [b]	0
4-Jul	42 [b]	2,684	0	0	179 [b]	1,396	0	0	0 [b]	0
5-Jul	360 [b]	3,044	0	0	134 [b]	1,531	0	0	0 [b]	0
6-Jul	213 [b]	3,257	0	0	166 [b]	1,697	0	0	0 [b]	0
7-Jul	455 [b]	3,712	0	0	136 [b]	1,833	0	0	0 [b]	0
8-Jul	117	3,829	0	0	824	2,657	18	18	0	0
9-Jul	65	3,894	0	0	1,362	4,019	19	37	0	0
10-Jul	17	3,911	0	0	660	4,678	10	47	0	0
11-Jul	5	3,916	0	0	224	4,903	1	48	0	0
12-Jul	40	3,956	0	0	801	5,704	9	57	0	0
13-Jul	59	4,015	0	0	1,856	7,560	1	58	0	0
14-Jul	40	4,055	0	0	2,020	9,580	10	68	0	0
15-Jul	90	4,145	0	0	1,539	11,119	6	74	0	0
16-Jul	11	4,156	0	0	468	11,587	0	74	0	0
17-Jul	38	4,194	0	0	675	12,262	3	77	0	0
18-Jul	47	4,241	0	0	846	13,108	5	82	1	1
19-Jul	72	4,313	0	0	1,580	14,688	6	88	1	2
20-Jul	50	4,363	0	0	1,605	16,293	8	96	2	4
21-Jul	90	4,453	1	1	1,230	17,523	11	107	8	12
22-Jul	12	4,465	2	3	1,122	18,645	0	107	1	13
23-Jul	25	4,490	0	3	1,020	19,665	3	110	10	23
24-Jul	13	4,503	0	3	588	20,253	1	111	5	28
25-Jul	18	4,521	1	4	749	21,002	0	111	11	39
26-Jul	5	4,526	1	5	750	21,752	2	113	19	58
27-Jul	39	4,565	0	5	761	22,513	1	114	22	80
28-Jul	11 [b]	4,576	0 [b]	5	1,307 [b]	23,820	2	116	12 [b]	92
29-Jul	9 [b]	4,585	0 [b]	6	1,589 [b]	25,409	2	118	12 [b]	104

-Continued-

Table 14.–Page 2 of 3

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
30-Jul	9 [b]	4,594	0 [b]	6	656 [b]	26,066	2	120	12 [b]	116
31-Jul	4 [b]	4,598	0 [b]	6	603 [b]	26,669	2	122	11 [b]	127
1-Aug	4 [b]	4,602	0 [b]	6	654 [b]	27,322	2	124	21 [b]	148
2-Aug	4 [b]	4,607	0 [b]	7	1,126 [b]	28,448	2	126	30 [b]	178
3-Aug	3 [b]	4,610	0 [b]	7	694 [b]	29,142	2	128	23 [b]	201
4-Aug	5 [e]	4,615	0 [b]	7	331 [e]	29,473	2	130	23 [e]	223
5-Aug	18	4,633	0	7	602	30,075	2	132	62	285
6-Aug	12	4,645	0	7	591	30,666	3	135	98	383
7-Aug	13	4,658	1	8	587	31,253	3	138	156	539
8-Aug	7	4,665	2	10	366	31,619	0	138	113	652
9-Aug	5	4,670	1	11	385	32,004	2	140	507	1,159
10-Aug	4	4,674	1	12	338	32,342	1	141	340	1,499
11-Aug	3	4,677	3	15	284	32,626	0	141	186	1,685
12-Aug	3	4,680	1	16	144	32,770	0	141	304	1,989
13-Aug	1	4,681	0	16	227	32,997	0	141	146	2,135
14-Aug	6	4,687	0	16	188	33,185	0	141	1,620	3,755
15-Aug	1 [e]	4,687	0 [b]	16	71 [e]	33,257	1	142	534 [e]	4,290
16-Aug	1 [b]	4,688	0 [b]	16	61 [b]	33,318	1	143	376 [b]	4,666
17-Aug	1 [b]	4,689	0 [b]	16	77 [b]	33,395	1	143	282 [b]	4,947
18-Aug	1 [e]	4,690	0 [b]	16	58 [e]	33,453	1	144	105 [e]	5,053
19-Aug	0	4,690	0	16	43	33,496	2	146	216	5,269
20-Aug	0	4,690	0	16	34	33,530	1	147	353	5,622
21-Aug	1	4,691	0	16	30	33,560	1	148	2,064	7,686
22-Aug	0	4,691	0	16	35	33,595	4	152	855	8,541
23-Aug	0	4,691	0	16	15	33,610	2	154	671	9,212
24-Aug	1	4,692	0	16	13	33,623	2	156	474	9,686
25-Aug	1	4,693	0	16	3	33,626	0	156	2,672	12,358
26-Aug	0	4,693	0	16	7	33,633	0	156	2,232	14,590
27-Aug	0	4,693	0	16	3	33,636	0	156	2,005	16,595
28-Aug	0	4,693	0	16	4	33,640	0	156	969	17,564
29-Aug	0	4,693	0	16	3	33,643	0	156	444	18,008
30-Aug	0	4,693	0	16	1	33,644	0	156	396	18,404
31-Aug	0	4,693	0	16	5	33,649	1	157	2,934	21,338
1-Sep	0	4,693	0	16	5	33,654	0	157	5,659	26,997
2-Sep	0	4,693	0	16	4	33,658	0	157	1,506	28,503
3-Sep	0	4,693	0	16	1	33,659	0	157	241	28,744
4-Sep	0	4,693	0	16	3	33,662	0	157	190	28,934
5-Sep	0	4,693	0	16	2	33,664	1	158	407	29,341
6-Sep	0	4,693	0	16	0	33,664	0	158	634	29,975
7-Sep	0	4,693	0	16	0	33,664	0	158	801	30,776
8-Sep	0	4,693	0	16	0	33,664	0	158	392	31,168
9-Sep	0	4,693	0	16	1	33,665	0	158	212	31,380
10-Sep	0	4,693	0	16	0	33,665	0	158	148	31,528
11-Sep	0	4,693	0	16	0	33,665	0	158	231	31,759
12-Sep	0	4,693	0	16	0	33,665	0	158	59	31,818

-Continued-

Table 14.–Page 3 of 3

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
13-Sep	0	4,693	0	16	1	33,666	0	158	1,259	33,077
14-Sep	0	4,693	0	16	0	33,666	0	158	150	33,227
15-Sep	0	4,693	0	16	0	33,666	0	158	14	33,241
16-Sep	0	4,693	0	16	0	33,666	0	158	1	33,242
17-Sep	0	4,693	0	16	0	33,666	0	158	28	33,270
18-Sep	0	4,693	0	16	0	33,666	0	158	7	33,277
19-Sep	0	4,693	0	16	0	33,666	0	158	0	33,277
20-Sep	0 [b]	4,693	0	16	0 [b]	33,666	0	158	4 [b]	33,280

[a] Daily passage was estimated due to the occurrence of a hole in the weir.

[b] The weir was not operational due to high water; daily passage was estimated.

[c] The weir was not operational; daily passage was not estimated.

[d] Partial day count, passage was not estimated.

[e] Partial day count, passage was estimated.

Table 15.–Daily and cumulative salmon passage through the Kogrukluk River weir, Kuskokwim River drainage, 2003.

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	0	0	0	0	0	0	0	0	0	0
16-Jun	0	0	0	0	0	0	0	0	0	0
17-Jun	0	0	0	0	0	0	0	0	0	0
18-Jun	0	0	0	0	0	0	0	0	0	0
19-Jun	0	0	0	0	0	0	0	0	0	0
20-Jun	0	0	0	0	0	0	0	0	0	0
21-Jun	0	0	0	0	2	2	0	0	0	0
22-Jun	1	1	0	0	2	4	0	0	0	0
23-Jun	0	1	0	0	10	14	0	0	0	0
24-Jun	0	1	0	0	2	16	0	0	0	0
25-Jun	7	8	0	0	2	18	0	0	0	0
26-Jun	5	13	0	0	7	25	0	0	0	0
27-Jun	24	37	1	1	34	59	0	0	0	0
28-Jun	40	77	1	2	48	107	0	0	0	0
29-Jun	50	127	1	3	28	135	0	0	0	0
30-Jun	74	201	11	14	81	216	0	0	0	0
1-Jul	17	218	4	18	67	283	0	0	0	0
2-Jul	272	490	20	38	272	555	0	0	0	0
3-Jul	344	834	49	87	391	946	0	0	0	0
4-Jul	229	1,063	37	124	365	1,311	0	0	0	0
5-Jul	410	1,473	49	173	712	2,023	0	0	0	0
6-Jul	454	1,927	271	444	689	2,712	0	0	0	0
7-Jul	479	2,406	173	617	626	3,338	1	1	0	0
8-Jul	592	2,998	466	1,083	580	3,918	0	1	0	0
9-Jul	858	3,856	662	1,745	658	4,576	0	1	0	0
10-Jul	562	4,418	220	1,965	567	5,143	1	2	0	0
11-Jul	71	4,489	89	2,054	152	5,295	0	2	0	0
12-Jul	602	5,091	420	2,474	544	5,839	0	2	0	0
13-Jul	357	5,448	449	2,923	489	6,328	0	2	0	0
14-Jul	761	6,209	758	3,681	1,137	7,465	0	2	0	0
15-Jul	554	6,763	705	4,386	1,070	8,535	0	2	0	0
16-Jul	646	7,409	502	4,888	1,057	9,592	0	2	0	0
17-Jul	459	7,868	466	5,354	955	10,547	0	2	0	0
18-Jul	400	8,268	469	5,823	1,067	11,614	0	2	0	0
19-Jul	441	8,709	704	6,527	1,422	13,036	0	2	0	0
20-Jul	376	9,085	538	7,065	1,357	14,393	0	2	6	6
21-Jul	542	9,627	448	7,513	1,583	15,976	0	2	8	14
22-Jul	466	10,093	310	7,823	1,078	17,054	0	2	12	26
23-Jul	223	10,316	103	7,926	539	17,593	0	2	3	29
24-Jul	257	10,573	175	8,101	484	18,077	0	2	3	32
25-Jul	248	10,821	321	8,422	858	18,935	0	2	14	46
26-Jul	116	10,937	131	8,553	535	19,470	0	2	4	50
27-Jul	153	11,090	112	8,665	366	19,836	0	2	8	58
28-Jul	106	11,196	100	8,765	356	20,192	0	2	27	85

-Continue-

Table 15.–Page 2 of 3

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
29-Jul	85 [a]	11,281	75 [a]	8,840	354 [a]	20,546	0	2	27 [a]	112
30-Jul	85 [a]	11,367	75 [a]	8,915	354 [a]	20,900	0	2	27 [a]	139
31-Jul	43	11,410	46	8,961	315	21,215	0	2	25	164
1-Aug	39	11,449	41	9,002	379	21,594	0	2	47	211
2-Aug	40	11,489	34	9,036	292	21,886	0	2	67	278
3-Aug	31 [a]	11,519	25 [a]	9,061	237 [a]	22,123	0	2	51 [a]	329
4-Aug	31 [a]	11,550	25 [a]	9,086	237 [a]	22,360	0	2	51 [a]	380
5-Aug	23	11,573	18	9,104	125	22,485	0	2	37	417
6-Aug	20	11,593	7	9,111	152	22,637	0	2	53	470
7-Aug	27	11,620	17	9,128	177	22,814	0	2	135	605
8-Aug	24	11,644	5	9,133	113	22,927	0	2	67	672
9-Aug	15	11,659	5	9,138	137	23,064	0	2	269	941
10-Aug	7	11,666	5	9,143	88	23,152	0	2	324	1,265
11-Aug	3	11,669	2	9,145	34	23,186	0	2	27	1,292
12-Aug	14	11,683	1	9,146	42	23,228	0	2	955	2,247
13-Aug	5	11,688	1	9,147	37	23,265	0	2	547	2,794
14-Aug	6	11,694	3	9,150	12	23,277	0	2	1,006	3,800
15-Aug	5	11,699	3	9,153	38	23,315	0	2	1,200	5,000
16-Aug	8	11,707	1	9,154	20	23,335	0	2	845	5,845
17-Aug	7	11,714	1	9,155	16	23,351	0	2	633	6,478
18-Aug	3	11,717	0	9,155	9	23,360	0	2	237	6,715
19-Aug	2	11,719	0	9,155	4	23,364	0	2	442	7,157
20-Aug	7	11,726	2	9,157	4	23,368	0	2	1,145	8,302
21-Aug	7	11,733	0	9,157	3	23,371	0	2	2,186	10,488
22-Aug	2	11,735	0	9,157	2	23,373	0	2	1,430	11,918
23-Aug	0	11,735	1	9,158	2	23,375	0	2	1,011	12,929
24-Aug	7	11,742	2	9,160	3	23,378	0	2	1,593	14,522
25-Aug	2	11,744	1	9,161	1	23,379	0	2	1,765	16,287
26-Aug	3	11,747	0	9,161	5	23,384	0	2	3,171	19,458
27-Aug	2	11,749	0	9,161	2	23,386	0	2	3,369	22,827
28-Aug	2	11,751	0	9,161	2	23,389	0	2	3,576	26,402
29-Aug	2	11,753	0	9,161	2	23,391	0	2	3,576	29,978
30-Aug	2	11,755	0	9,161	1	23,392	0	2	4,100	34,078
31-Aug	1	11,756	0	9,161	2	23,394	0	2	3,662	37,740
1-Sep	3	11,759	1	9,162	2	23,396	0	2	3,701	41,441
2-Sep	1	11,760	0	9,162	1	23,397	0	2	2,790	44,231
3-Sep	2	11,762	0	9,162	1	23,398	0	2	2,101	46,332
4-Sep	2	11,764	1	9,163	0	23,398	0	2	4,501	50,833
5-Sep	1	11,765	0	9,163	3	23,401	0	2	4,661	55,494
6-Sep	1	11,766	0	9,163	1	23,402	0	2	2,873	58,367
7-Sep	1	11,767	0	9,163	0	23,402	0	2	1,687	60,054
8-Sep	1	11,768	1	9,164	2	23,404	0	2	1,907	61,961
9-Sep	1	11,769	0	9,164	3	23,407	0	2	2,957	64,918
10-Sep	0	11,769	0	9,164	0	23,407	0	2	2,002	66,920

-Continued-

Table 15.–Page 3 of 3

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
11-Sep	0	11,769	0	9,164	1	23,408	0	2	1,309	68,229
12-Sep	2	11,771	0	9,164	1	23,409	1	3	1,857	70,086
13-Sep	0	11,771	0	9,164	1	23,410	0	3	1,720	71,806
14-Sep	0	11,771	0	9,164	0	23,410	0	3	687	72,493
15-Sep	0	11,771	0	9,164	0	23,410	0	3	501	72,994
16-Sep	0	11,771	0	9,164	0	23,410	0	3	356	73,350
17-Sep	0	11,771	0	9,164	0	23,410	0	3	333	73,683
18-Sep	0	11,771	0	9,164	0	23,410	0	3	552	74,235
19-Sep	0	11,771	0	9,164	1	23,411	0	3	181	74,416
20-Sep	0	11,771	0	9,164	0	23,411	0	3	338	74,754

[a] The weir was not operational; daily passage was estimated.

Table 16.–Daily and cumulative salmon passage through the Tatlawiksuk River weir, Kuskokwim River drainage, 2003**.**

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	0 a	0	0 b	0	0 b	0	0 b	0	0 b	0
16-Jun	0 a	0	0 b	0	0 b	0	0 b	0	0 b	0
17-Jun	0 a	0	0 b	0	0 b	0	0 b	0	0 b	0
18-Jun	0 a	0	0 b	0	0 b	0	0 b	0	0 b	0
19-Jun	0 a	0	0 b	0	0 b	0	0 b	0	0 b	0
20-Jun	0	0	0	0	0	0	0	0	0	0
21-Jun	0	0	0	0	0	0	0	0	0	0
22-Jun	6	6	0	0	1	1	0	0	0	0
23-Jun	0	6	0	0	5	6	0	0	0	0
24-Jun	5	11	0	0	6	12	0	0	0	0
25-Jun	13	24	0	0	4	16	0	0	0	0
26-Jun	19	43	0	0	12	28	0	0	0	0
27-Jun	3	46	0	0	20	48	0	0	0	0
28-Jun	152	198	0	0	106	154	0	0	0	0
29-Jun	297	495	0	0	71	225	0	0	0	0
30-Jun	57	552	0	0	135	360	0	0	0	0
1-Jul	41	593	0	0	78	438	0	0	0	0
2-Jul	8	601	0	0	41	479	0	0	0	0
3-Jul	96 a	697	0 b	0	0 b	479	0 b	0	0 b	0
4-Jul	29 a	726	0 b	0	0 b	479	0 b	0	0 b	0
5-Jul	59 a	785	0 b	0	0 b	479	0 b	0	0 b	0
6-Jul	42 a	827	0 b	0	0 b	479	0 b	0	0 b	0
7-Jul	13 a	840	0 b	0	0 b	479	0 b	0	0 b	0
8-Jul	27 a	868	0 b	0	0 b	479	0 b	0	0 b	0
9-Jul	129 a	997	0 b	0	0 b	479	0 b	0	0 b	0
10-Jul	35 a	1,032	0 b	0	0 b	479	0 b	0	0 b	0
11-Jul	35 a	1,067	0 b	0	0 b	479	0 b	0	0 b	0
12-Jul	34 a	1,101	0 b	0	0 b	479	0 b	0	0 b	0
13-Jul	88 a	1,189	0 b	0	0 b	479	0 b	0	0 b	0
14-Jul	65 a	1,254	0 b	0	0 b	479	0 b	0	0 b	0
15-Jul	38 a	1,292	0 b	0	0 b	479	0 b	0	0 b	0
16-Jul	28 a	1,320	0 b	0	0 b	479	0 b	0	0 b	0
17-Jul	18 a	1,339	0 b	0	0 b	479	0 b	0	0 b	0
18-Jul	22 a	1,360	0 b	0	0 b	479	0 b	0	0 b	0
19-Jul	30 a	1,390	0 b	0	0 b	479	0 b	0	0 b	0
20-Jul	72 a	1,461	0 b	0	0 b	479	0 b	0	0 b	0
21-Jul	9 a	1,471	0 b	0	0 b	479	0 b	0	0 b	0
22-Jul	15 a	1,486	0 b	0	0 b	479	0 b	0	0 b	0
23-Jul	17 a	1,503	0 b	0	0 b	479	0 b	0	0 b	0
24-Jul	25 a	1,528	0 b	0	0 b	479	0 b	0	0 b	0
25-Jul	16 a	1,544	0 b	0	0 b	479	0 b	0	0 b	0
26-Jul	14 a	1,557	0 b	0	0 b	479	0 b	0	0 b	0
27-Jul	14 a	1,572	0 b	0	0 b	479	0 b	0	0 b	0
28-Jul	16 a	1,588	0 b	0	0 b	479	0 b	0	0 b	0
29-Jul	13 a	1,601	0 b	0	0 b	479	0 b	0	0 b	0
30-Jul	8 a	1,610	0 b	0	0 b	479	0 b	0	0 b	0
31-Jul	16 a	1,626	0 b	0	0 b	479	0 b	0	0 b	0
1-Aug	6 a	1,632	0 b	0	0 b	479	0 b	0	0 b	0
2-Aug	8 a	1,639	0 b	0	0 b	479	0 b	0	0 b	0
3-Aug	6 a	1,645	0 b	0	0 b	479	0 b	0	0 b	0

-Continue-

Table 16.–Page 2 of 2

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
4-Aug	2 a	1,647	0 b	0	0 b	479	0 b	0	0 b	0
5-Aug	2 a	1,649	0 b	0	0 b	479	0 b	0	0 b	0
6-Aug	4 a	1,653	0 b	0	0 b	479	0 b	0	0 b	0
7-Aug	2 a	1,655	0 b	0	0 b	479	0 b	0	0 b	0
8-Aug	2 a	1,657	0 b	0	0 b	479	0 b	0	0 b	0
9-Aug	2 a	1,659	0 b	0	0 b	479	0 b	0	0 b	0
10-Aug	2 a	1,661	0 b	0	0 b	479	0 b	0	0 b	0
11-Aug	1 a	1,662	0 b	0	0 b	479	0 b	0	0 b	0
12-Aug	3 a	1,664	0 b	0	0 b	479	0 b	0	0 b	0
13-Aug	3 a	1,667	0 b	0	0 b	479	0 b	0	0 b	0
14-Aug	2 a	1,670	0 b	0	0 b	479	0 b	0	0 b	0
15-Aug	1 a	1,671	0 b	0	0 b	479	0 b	0	0 b	0
16-Aug	1 a	1,672	0 b	0	0 b	479	0 b	0	0 b	0
17-Aug	1 a	1,674	0 b	0	0 b	479	0 b	0	0 b	0
18-Aug	1 a	1,675	0 b	0	0 b	479	0 b	0	0 b	0
19-Aug	1 a	1,676	0 b	0	0 b	479	0 b	0	0 b	0
20-Aug	2 a	1,677	0 b	0	0 b	479	0 b	0	0 b	0
21-Aug	1 a	1,678	0 b	0	0 b	479	0 b	0	0 b	0
22-Aug	1 a	1,679	0 b	0	0 b	479	0 b	0	0 b	0
23-Aug	1 a	1,680	0 b	0	0 b	479	0 b	0	0 b	0
24-Aug	1 a	1,681	0 b	0	0 b	479	0 b	0	0 b	0
25-Aug	0 a	1,681	0 b	0	0 b	479	0 b	0	0 b	0
26-Aug	0 a	1,681	0 b	0	0 b	479	0 b	0	0 b	0
27-Aug	0 a	1,681	0 b	0	0 b	479	0 b	0	0 b	0
28-Aug	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
29-Aug	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
30-Aug	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
31-Aug	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
1-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
2-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
3-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
4-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
5-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
6-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
7-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
8-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
9-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
10-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
11-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
12-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
13-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
14-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
15-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
16-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
17-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
18-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
19-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0
20-Sep	0 a	1,682	0 b	0	0 b	479	0 b	0	0 b	0

[a] The weir was not operational; daily passage was estimated.

[b] The weir was not operational; daily passage was not estimated.

Table 17.–Daily and cumulative salmon passage through the Takotna River weir, Kuskokwim River drainage, 2003.

	Chinook		Sockeye		Chum		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	0	0	0	0	0	0	0	0
16-Jun	0	0	0	0	0	0	0	0
17-Jun	0	0	0	0	0	0	0	0
18-Jun	0	0	0	0	0	0	0	0
19-Jun	0	0	0	0	0	0	0	0
20-Jun	0	0	0	0	0	0	0	0
21-Jun	0	0	0	0	0	0	0	0
22-Jun	0	0	0	0	0	0	0	0
23-Jun	0	0	0	0	0	0	0	0
24-Jun	0 a	0	0 a	0	0 a	0	0 a	0
25-Jun	0 a	0	0 a	0	0 a	0	0 a	0
26-Jun	0 a	0	0 a	0	1 a	1	0 a	0
27-Jun	0 a	0	0 a	0	5 a	6	0 a	0
28-Jun	0 a	0	0 a	0	7 a	13	0 a	0
29-Jun	0 a	0	0 a	0	4 a	17	0 a	0
30-Jun	0 a	0	0 a	0	12 a	29	0 a	0
1-Jul	0 a	0	0 a	0	10 a	39	0 a	0
2-Jul	10 a	10	0 a	0	40 a	79	0 a	0
3-Jul	5 a	15	0 a	0	57 a	136	0 a	0
4-Jul	0 a	15	0 a	0	54 a	190	0 a	0
5-Jul	6	21	0	0	111	301	0	0
6-Jul	6	27	0	0	120	421	0	0
7-Jul	6	33	0	0	126	547	0	0
8-Jul	10	43	0	0	137	684	0	0
9-Jul	37	80	0	0	142	826	0	0
10-Jul	23	103	0	0	88	914	0	0
11-Jul	10	113	0	0	47	961	0	0
12-Jul	16	129	0	0	77	1,038	0	0
13-Jul	24	153	0	0	62	1,100	0	0
14-Jul	5	158	0	0	140	1,240	0	0
15-Jul	2	160	0	0	129	1,369	0	0
16-Jul	5	165	0	0	155	1,524	0	0
17-Jul	9	174	0	0	150	1,674	0	0
18-Jul	22	196	0	0	172	1,846	0	0
19-Jul	26	222	0	0	187	2,033	0	0
20-Jul	26	248	0	0	231	2,264	0	0
21-Jul	8	256	0	0	155	2,419	0	0
22-Jul	15	271	0	0	168	2,587	0	0
23-Jul	6	277	0	0	87	2,674	0	0
24-Jul	11	288	0	0	69	2,743	0	0
25-Jul	7	295	0	0	63	2,806	0	0
26-Jul	4	299	0	0	53	2,859	4	4
27-Jul	9	308	0	0	53	2,912	3	7
28-Jul	6 a	314	0 a	0	50 a	2,962	4 a	11
29-Jul	6 a	320	0 a	0	46 a	3,008	4 a	15
30-Jul	6 a	326	0 a	0	43 a	3,051	5 a	20
31-Jul	5 a	331	0 a	0	39 a	3,090	5 a	25
1-Aug	5 a	336	0 a	0	36 a	3,126	6 a	31
2-Aug	4	340	0	0	29	3,155	4	35
3-Aug	5	345	0	0	35	3,190	8	43

-Continued-

Table 17.–Page 2 of 2

	Chinook		Sockeye		Chum		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
4-Aug	5	350	0	0	32	3,222	13	56
5-Aug	4	354	0	0	44	3,266	15	71
6-Aug	1	355	0	0	28	3,294	27	98
7-Aug	2	357	0	0	18	3,312	25	123
8-Aug	5	362	1	1	11	3,323	48	171
9-Aug	2	364	1	2	6	3,329	40	211
10-Aug	0	364	0	2	6	3,335	50	261
11-Aug	0	364	0	2	6	3,341	85	346
12-Aug	0	364	0	2	4	3,345	139	485
13-Aug	0	364	0	2	10	3,355	150	635
14-Aug	2	366	0	2	7	3,362	212	847
15-Aug	0	366	0	2	6	3,368	140	987
16-Aug	0	366	0	2	5	3,373	131	1,118
17-Aug	1	367	0	2	0	3,373	121	1,239
18-Aug	2	369	0	2	2	3,375	160	1,399
19-Aug	1	370	0	2	0	3,375	348	1,747
20-Aug	1	371	0	2	4	3,379	197	1,944
21-Aug	1	372	0	2	2	3,381	356	2,300
22-Aug	0	372	0	2	0	3,381	254	2,554
23-Aug	2	374	0	2	5	3,386	176	2,730
24-Aug	0	374	0	2	0	3,386	189	2,919
25-Aug	1	375	0	2	1	3,387	217	3,136
26-Aug	1	376	0	2	0	3,387	299	3,435
27-Aug	1	377	0	2	0	3,387	429	3,864
28-Aug	0	377	1	3	1	3,388	335	4,199
29-Aug	0	377	0	3	0	3,388	288	4,487
30-Aug	0	377	0	3	0	3,388	219	4,706
31-Aug	0	377	0	3	1	3,389	267	4,973
1-Sep	1	378	0	3	0	3,389	285	5,258
2-Sep	0	378	0	3	0	3,389	277	5,535
3-Sep	0	378	0	3	0	3,389	192	5,727
4-Sep	0	378	0	3	0	3,389	91	5,818
5-Sep	0	378	0	3	0	3,389	262	6,080
6-Sep	0	378	0	3	1	3,390	209	6,289
7-Sep	0	378	0	3	1	3,391	188	6,477
8-Sep	0	378	0	3	1	3,392	200	6,677
9-Sep	0	378	1	4	1	3,393	131	6,808
10-Sep	0	378	0	4	0	3,393	70	6,878
11-Sep	0	378	0	4	0	3,393	78	6,956
12-Sep	0	378	0	4	0	3,393	83	7,039
13-Sep	0	378	0	4	0	3,393	79	7,118
14-Sep	0	378	0	4	0	3,393	28	7,146
15-Sep	0	378	0	4	0	3,393	10	7,156
16-Sep	0	378	0	4	0	3,393	9	7,165
17-Sep	0	378	0	4	0	3,393	4	7,169
18-Sep	0	378	0	4	0	3,393	1	7,170
19-Sep	0	378	0	4	0	3,393	1	7,171
20-Sep	0	378	0	4	0	3,393	0	7,171

Table 18.–Daily and cumulative salmon passage through the Kanektok River weir, Kuskokwim Bay drainage, 2003.

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	0	0	0	0	0	0	0	0	0	0
16-Jun	0	0	0	0	0	0	0	0	0	0
17-Jun	0	0	0	0	0	0	0	0	0	0
18-Jun	0	0	0	0	0	0	0	0	0	0
19-Jun	0	0	0	0	0	0	0	0	0	0
20-Jun	0	0	0	0	0	0	0	0	0	0
21-Jun	0	0	0	0	0	0	0	0	0	0
22-Jun	0	0	0	0	0	0	0	0	0	0
23-Jun	0	0	0	0	0	0	0	0	0	0
24-Jun	1	1	111	111	0	0	0	0	0	0
25-Jun	2	3	182	293	2	2	0	0	0	0
26-Jun	6	9	368	661	12	14	0	0	0	0
27-Jun	9	18	467	1,128	15	29	0	0	0	0
28-Jun	7	25	382	1,510	14	43	12	12	0	0
29-Jun	10	35	815	2,325	11	54	9	21	0	0
30-Jun	42	77	2,088	4,413	60	114	27	48	0	0
1-Jul	37	114	1,821	6,234	47	161	14	62	0	0
2-Jul	101	215	1,867	8,101	117	278	10	72	0	0
3-Jul	76	291	3,098	11,199	83	361	13	85	0	0
4-Jul	146	437	8,016	19,215	354	715	58	143	0	0
5-Jul	167	604	6,399	25,614	412	1,127	73	216	0	0
6-Jul	145	749	7,431	33,045	290	1,417	77	293	0	0
7-Jul	61	810	4,734	37,779	210	1,627	36	329	0	0
8-Jul	158	968	6,896	44,675	720	2,347	91	420	0	0
9-Jul	193	1,161	9,163	53,838	765	3,112	126	546	0	0
10-Jul	262	1,423	6,233	60,071	1,022	4,134	153	699	0	0
11-Jul	132	1,555	5,621	65,692	440	4,574	84	783	0	0
12-Jul	172	1,727	6,477	72,169	993	5,567	109	892	4	4
13-Jul	190	1,917	4,884	77,053	1,640	7,207	144	1,036	0	4
14-Jul	272	2,189	5,284	82,337	1,572	8,779	145	1,181	8	12
15-Jul	392	2,581	3,714	86,051	1,705	10,484	168	1,349	1	13
16-Jul	370	2,951	3,949	90,000	900	11,384	135	1,484	4	17
17-Jul	302	3,253	2,069	92,069	669	12,053	90	1,574	6	23
18-Jul	275	3,528	3,852	95,921	984	13,037	86	1,660	2	25
19-Jul	255	3,783	3,879	99,800	2,187	15,224	92	1,752	6	31
20-Jul	425	4,208	3,574	103,374	2,414	17,638	89	1,841	8	39
21-Jul	632	4,840	2,045	105,419	1,866	19,504	47	1,888	5	44
22-Jul	271	5,111	2,481	107,900	1,154	20,658	60	1,948	12	56
23-Jul	393	5,504	1,935	109,835	1,612	22,270	83	2,031	5	61
24-Jul	269	5,773	1,216	111,051	963	23,233	15	2,046	14	75
25-Jul	225	5,998	1,323	112,374	695	23,928	26	2,072	27	102
26-Jul	312	6,310	1,588	113,962	1,246	25,174	23	2,095	15	117
27-Jul	127	6,437	918	114,880	542	25,716	25	2,120	11	128
28-Jul	274	6,711	1,740	116,620	1,048	26,764	26	2,146	38	166
29-Jul	200	6,911	1,237	117,857	1,075	27,839	15	2,161	52	218
30-Jul	143	7,054	937	118,794	906	28,745	20	2,181	31	249
31-Jul	133	7,187	962	119,756	559	29,304	4	2,185	58	307
1-Aug	157	7,344	914	120,670	881	30,185	1	2,186	92	399
2-Aug	122	7,466	728	121,398	813	30,998	14	2,200	155	554
3-Aug	49	7,515	667	122,065	806	31,804	4	2,204	101	655

-Continued-

Table 18.–Page 2 of 2

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
4-Aug	55	7,570	724	122,789	671	32,475	12	2,216	105	760
5-Aug	121	7,691	802	123,591	1,178	33,653	12	2,228	407	1,167
6-Aug	111	7,802	572	124,163	1,398	35,051	15	2,243	560	1,727
7-Aug	72	7,874	442	124,605	1,005	36,056	7	2,250	622	2,349
8-Aug	55	7,929	408	125,013	914	36,970	14	2,264	632	2,981
9-Aug	57	7,986	270	125,283	792	37,762	5	2,269	522	3,503
10-Aug	61	8,047	198	125,481	766	38,528	5	2,274	617	4,120
11-Aug	23	8,070	154	125,635	315	38,843	5	2,279	300	4,420
12-Aug	36	8,106	253	125,888	459	39,302	10	2,289	1,456	5,876
13-Aug	27	8,133	131	126,019	151	39,453	8	2,297	777	6,653
14-Aug	13	8,146	95	126,114	177	39,630	3	2,300	631	7,284
15-Aug	7	8,153	49	126,163	89	39,719	1	2,301	1,548	8,832
16-Aug	9	8,162	88	126,251	58	39,777	0	2,301	650	9,482
17-Aug	7	8,169	127	126,378	39	39,816	0	2,301	514	9,996
18-Aug	3	8,172	87	126,465	53	39,869	0	2,301	497	10,493
19-Aug	3	8,175	73	126,538	31	39,900	1	2,302	633	11,126
20-Aug	3	8,178	86	126,624	13	39,913	2	2,304	1,554	12,680
21-Aug	4	8,182	114	126,738	25	39,938	0	2,304	1,393	14,073
22-Aug	4	8,186	88	126,826	21	39,959	7	2,311	1,515	15,588
23-Aug	6	8,192	87	126,913	18	39,977	13	2,324	1,318	16,906
24-Aug	8	8,200	100	127,013	14	39,991	12	2,336	3,379	20,285
25-Aug	4	8,204	71	127,084	17	40,008	7	2,343	3,179	23,464
26-Aug	2	8,206	47	127,131	7	40,015	11	2,354	1,494	24,958
27-Aug	2	8,208	33	127,164	4	40,019	7	2,361	2,678	27,636
28-Aug	5	8,213	42	127,206	7	40,026	10	2,371	2,499	30,135
29-Aug	4	8,217	27	127,233	7	40,033	13	2,384	1,854	31,989
30-Aug	0	8,217	20	127,253	3	40,036	9	2,393	2,599	34,588
31-Aug	2	8,219	10	127,263	8	40,044	4	2,397	4,118	38,706
1-Sep	4	8,223	13	127,276	1	40,045	13	2,410	2,124	40,830
2-Sep	0	8,223	13	127,289	1	40,046	4	2,414	2,620	43,450
3-Sep	0	8,223	14	127,303	0	40,046	5	2,419	2,226	45,676
4-Sep	1	8,224	12	127,315	4	40,050	0	2,419	3,534	49,210
5-Sep	1	8,225	25	127,340	2	40,052	3	2,422	2,745	51,955
6-Sep	1	8,226	16	127,356	5	40,057	0	2,422	1,716	53,671
7-Sep	1	8,227	22	127,378	0	40,057	6	2,428	1,755	55,426
8-Sep	0	8,227	6	127,384	0	40,057	5	2,433	1,848	57,274
9-Sep	0	8,227	9	127,393	0	40,057	2	2,435	1,779	59,053
10-Sep	0	8,227	14	127,407	1	40,058	0	2,435	1,471	60,524
11-Sep	2	8,229	16	127,423	2	40,060	1	2,436	2,368	62,892
12-Sep	1	8,230	11	127,434	1	40,061	3	2,439	2,164	65,056
13-Sep	0	8,230	3	127,437	0	40,061	2	2,441	2,089	67,145
14-Sep	1	8,231	7	127,444	0	40,061	0	2,441	1,521	68,666
15-Sep	0	8,231	6	127,450	0	40,061	0	2,441	1,003	69,669
16-Sep	0	8,231	5	127,455	2	40,063	0	2,441	984	70,653
17-Sep	0	8,231	8	127,463	2	40,065	2	2,443	884	71,537
18-Sep	0	8,231	8	127,471	1	40,066	0	2,443	911	72,448
19-Sep	0	8,231	0	127,471	0	40,066	0	2,443	0	72,448
20-Sep	0	8,231	0	127,471	0	40,066	0	2,443	0	72,448

Table 19.–Daily and cumulative salmon passage through the Goodnews River weir, Kuskokwim Bay drainage, 2003.

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	0	0	0	0	0	0	0	0	0	0
16-Jun	0	0	0	0	0	0	0	0	0	0
17-Jun	0	0	0	0	0	0	0	0	0	0
18-Jun	4	4	60	60	0	0	0	0	0	0
19-Jun	8	12	497	557	1	1	1	1	0	0
20-Jun	2	14	657	1,214	1	2	0	1	0	0
21-Jun	30	44	1,164	2,378	7	9	0	1	0	0
22-Jun	24	68	1,236	3,614	11	20	0	1	0	0
23-Jun	43	111	826	4,440	22	42	0	1	0	0
24-Jun	18	129	2,161	6,601	13	55	0	1	0	0
25-Jun	22	151	2,311	8,912	27	82	0	1	0	0
26-Jun	16	167	2,190	11,102	17	99	4	5	0	0
27-Jun	14	181	1,357	12,459	29	128	2	7	0	0
28-Jun	10	191	1,445	13,904	17	145	1	8	0	0
29-Jun	7	198	1,727	15,631	28	173	7	15	0	0
30-Jun	70	268	1,433	17,064	71	244	2	17	0	0
1-Jul	82	350	1,226	18,290	213	457	9	26	0	0
2-Jul	29	379	1,114	19,404	36	493	6	32	0	0
3-Jul	15	394	1,003	20,407	41	534	4	36	0	0
4-Jul	33	427	1,202	21,609	73	607	2	38	0	0
5-Jul	6	433	1,079	22,688	121	728	6	44	0	0
6-Jul	91	524	2,862	25,550	237	965	27	71	0	0
7-Jul	50	574	1,645	27,195	159	1,124	31	102	0	0
8-Jul	83	657	2,107	29,302	709	1,833	88	190	0	0
9-Jul	185	842	2,232	31,534	399	2,232	92	282	0	0
10-Jul	23	865	992	32,526	210	2,442	20	302	0	0
11-Jul	37	902	1,670	34,196	189	2,631	23	325	1	1
12-Jul	28	930	844	35,040	611	3,242	18	343	0	1
13-Jul	131	1,061	1,368	36,408	1,484	4,726	58	401	0	1
14-Jul	117	1,178	1,159	37,567	1,192	5,918	88	489	0	1
15-Jul	198	1,376	475	38,042	729	6,647	80	569	0	1
16-Jul	51	1,427	578	38,620	417	7,064	26	595	0	1
17-Jul	32	1,459	431	39,051	641	7,705	27	622	0	1
18-Jul	77	1,536	702	39,753	634	8,339	45	667	0	1
19-Jul	60	1,596	654	40,407	1,096	9,435	40	707	0	1
20-Jul	199	1,795	595	41,002	1,591	11,026	75	782	2	3
21-Jul	81	1,876	308	41,310	622	11,648	73	855	2	5
22-Jul	55	1,931	324	41,634	797	12,445	93	948	1	6
23-Jul	25	1,956	225	41,859	474	12,919	16	964	1	7
24-Jul	50	2,006	323	42,182	426	13,345	39	1,003	0	7
25-Jul	85	2,091	329	42,511	633	13,978	55	1,058	1	8
26-Jul	14	2,105	140	42,651	663	14,641	24	1,082	0	8
27-Jul	4	2,109	124	42,775	507	15,148	29	1,111	0	8
28-Jul	53	2,162	126	42,901	561	15,709	41	1,152	4	12
29-Jul	28	2,190	193	43,094	384	16,093	33	1,185	5	17
30-Jul	6	2,196	58	43,152	409	16,502	15	1,200	1	18
31-Jul	23	2,219	126	43,278	367	16,869	26	1,226	4	22
1-Aug	6	2,225	80	43,358	463	17,332	19	1,245	0	22
2-Aug	16	2,241	116	43,474	506	17,838	20	1,265	7	29

-Continued-

Table 15.–Page 2 of 2

	Chinook		Sockeye		Chum		Pink		Coho	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
3-Aug	9	2,250	95	43,569	600	18,438	50	1,315	11	40
4-Aug	4	2,254	73	43,642	744	19,182	47	1,362	15	55
5-Aug	8	2,262	29	43,671	481	19,663	49	1,411	19	74
6-Aug	26	2,288	56	43,727	362	20,025	32	1,443	144	218
7-Aug	0	2,288	19	43,746	410	20,435	30	1,473	44	262
8-Aug	23	2,311	47	43,793	372	20,807	32	1,505	223	485
9-Aug	3	2,314	21	43,814	202	21,009	9	1,514	89	574
10-Aug	3	2,317	24	43,838	176	21,185	20	1,534	96	670
11-Aug	0	2,317	25	43,863	114	21,299	9	1,543	65	735
12-Aug	1	2,318	6	43,869	16	21,315	3	1,546	24	759
13-Aug	13	2,331	18	43,887	28	21,343	12	1,558	271	1,030
14-Aug	6	2,337	11	43,898	15	21,358	8	1,566	215	1,245
15-Aug	15	2,352	28	43,926	37	21,395	8	1,574	529	1,774
16-Aug	7	2,359	21	43,947	19	21,414	5	1,579	493	2,267
17-Aug	4	2,363	18	43,965	13	21,427	11	1,590	344	2,611
18-Aug	1	2,364	7	43,972	13	21,440	3	1,593	198	2,809
19-Aug	2	2,366	17	43,989	6	21,446	0	1,593	303	3,112
20-Aug	7	2,373	27	44,016	23	21,469	9	1,602	816	3,928
21-Aug	4	2,377	27	44,043	12	21,481	14	1,616	512	4,440
22-Aug	1	2,378	13	44,056	21	21,502	14	1,630	1,036	5,476
23-Aug	1	2,379	29	44,085	20	21,522	22	1,652	781	6,257
24-Aug	1	2,380	7	44,092	11	21,533	5	1,657	795	7,052
25-Aug	1	2,381	18	44,110	16	21,549	20	1,677	5,886	12,938
26-Aug	0	2,381	17	44,127	14	21,563	22	1,699	1,979	14,917
27-Aug	0	2,381	23	44,150	4	21,567	8	1,707	672	15,589
28-Aug	0	2,381	11	44,161	15	21,582	13	1,720	3,088	18,677
29-Aug	0	2,381	9	44,170	6	21,588	13	1,733	2,420	21,097
30-Aug	1	2,382	24	44,194	5	21,593	25	1,758	4,010	25,107
31-Aug	0	2,382	20	44,214	16	21,609	28	1,786	3,247	28,354
1-Sep	0	2,382	24	44,238	3	21,612	29	1,815	2,260	30,614
2-Sep	0	2,382	13	44,251	1	21,613	16	1,831	1,416	32,030
3-Sep	0	2,382	10	44,261	1	21,614	9	1,840	1,191	33,221
4-Sep	1	2,383	16	44,277	3	21,617	23	1,863	2,272	35,493
5-Sep	0	2,383	4	44,281	1	21,618	3	1,866	1,203	36,696
6-Sep	1	2,384	9	44,290	2	21,620	0	1,866	1,005	37,701
7-Sep	1	2,385	4	44,294	1	21,621	2	1,868	1,063	38,764
8-Sep	0	2,385	7	44,301	1	21,622	6	1,874	974	39,738
9-Sep	1	2,386	5	44,306	0	21,622	5	1,879	347	40,085
10-Sep	0	2,386	11	44,317	2	21,624	3	1,882	1,925	42,010
11-Sep	2	2,388	13	44,330	3	21,627	7	1,889	3,264	45,274
12-Sep	1	2,389	15	44,345	2	21,629	9	1,898	1,768	47,042
13-Sep	0	2,389	13	44,358	2	21,631	9	1,907	2,435	49,477
14-Sep	0	2,389	5	44,363	2	21,633	5	1,912	604	50,081
15-Sep	0	2,389	6	44,369	1	21,634	1	1,913	417	50,498
16-Sep	0	2,389	4	44,373	1	21,635	1	1,914	989	51,487
17-Sep	0	2,389	5	44,378	0	21,635	6	1,920	518	52,005
18-Sep	0	2,389	9	44,387	2	21,637	1	1,921	805	52,810
19-Sep	0	2,389	0	44,387	0	21,637	0	1,921	0	52,810
20-Sep	0	2,389	0	44,387	0	21,637	0	1,921	0	52,810

Table 19.–Daily and cumulative salmon passage enumerated by Aniak River sonar, Kuskokwim River drainage, 2003.

Date	Left Bank	Right Bank	Daily Total	Cum. Total	Left Bank Percent Passage	Right Bank Percent Passage	Daily Percent Passage	Cum. Percent passage
6/27	1,340	1,528	2,868	2,868	47	53	0.8	0.8
6/28	1,206	1,610	2,816	5,684	43	57	0.8	1.6
6/29	868	990	1,858	7,542	47	53	0.5	2.1
6/30	1,244	1,864	3,108	10,650	40	60	0.9	2.9
7/1	1,740	1,846	3,586	14,236	49	51	1.0	3.9
7/2	2,232	3,054	5,286	19,522	42	58	1.5	5.4
7/3	4,204	5,524	9,728	29,250	43	57	2.7	8.1
7/4	4,246	5,294	9,540	38,790	45	55	2.6	10.7
7/5	3,762	6,006	9,768	48,558	39	61	2.7	13.4
7/6	2,700	4,446	7,146	55,704	38	62	2.0	15.3
7/7	6,886	7,064	13,950	69,654	49	51	3.8	19.2
7/8	6,868	9,632	16,500	86,154	42	58	4.5	23.7
7/9	5,556	9,176	14,732	100,886	38	62	4.1	27.8
7/10	3,314	3,706	7,020	107,906	47	53	1.9	29.7
7/11	5,420	4,460	9,880	117,786	55	45	2.7	32.4
7/12	8,342	7,152	15,494	133,280	54	46	4.3	36.7
7/13	11,544	11,664	23,208	156,488	50	50	6.4	43.1
7/14	6,150	6,596	12,746	169,234	48	52	3.5	46.6
7/15	3,946	3,834	7,780	177,014	51	49	2.1	48.7
7/16	3,962	3,844	7,806	184,820	51	49	2.1	50.9
7/17	3,836	3,032	6,868	191,688	56	44	1.9	52.8
7/18	8,872	5,816	14,688	206,376	60	40	4.0	56.8
7/19	10,972	6,924	17,896	224,272	61	39	4.9	61.7
7/20	9,370	8,580	17,950	242,222	52	48	4.9	66.7
7/21	7,128	5,070	12,198	254,420	58	42	3.4	70.0
7/22	7,830	6,184	14,014	268,434	56	44	3.9	73.9
7/23	7,110	6,280	13,390	281,824	53	47	3.7	77.6
7/24	6,028	4,092	10,120	291,944	60	40	2.8	80.3
7/25	7,380	6,464	13,844	305,788	53	47	3.8	84.2
7/26	5,674	4,414	10,088	315,876	56	44	2.8	86.9
7/27	4,804	3,042	7,846	323,722	61	39	2.2	89.1
7/28	7,062	6,620	13,682	337,404	52	48	3.8	92.9
7/29	7,844	9,358	17,202	354,606	46	54	4.7	97.6
7/30	5,062	3,728	8,790	363,396	58	42	2.4	100.0
Total	**184,502**	**178,894**	**363,396**					

Table 20.–Peak salmon spawning aerial survey index counts, Kuskokwim Area, 2003.

Location	Date	Chinook	Sockeye	Coho	Chum
KUSKOKWIM RIVER:					
Bear Creek (Pitka Fork)	7/20	176	0	0	0
Pitka Fork Mainstream	7/20	197	0	0	0
Salmon River (Pitka Fork)	7/20	1,391	0	0	0
Cheeneetnuk River (Swift River)	7/22	810	0	0	0
Gagaryah River (Swift River)	7/22	1,095	0	0	0
Holokuk River	7/22	1,096	0	0	0
Oskawalik River	7/22	844	0	0	0
Aniak River	7/25	3,514	0	0	0
Shotgun Creek (Kogrukluk River)	7/27	347	0	0	0
Kipchuck River (Aniak River)	7/25	1,493	0	0	0
Salmon River (Aniak River)	7/25	1,236	0	0	0
Holitna River [a]	7/26	1,477	0	0	0
Kogrukluk River (Holitna River)	7/26	3,058	0	0	0
Kisaralik River	7/28	688	0	0	0
Tuluksak River	7/28	94	0	0	0
Eek River	7/31	1,236	1,170	0	0
Kwethluk River / Canyon Creek	8/1	2,661	0	0	0
Big Creek (Takotna River) [b]	9/27	0	0	52	0
Big Waldren Creek (Takotna River) [b]	9/27	0	0	0	0
Fourth of July Creek (Takotna River)	9/27	0	0	259	0
Little Waldren Creek (Takotna River) [b]	9/27	0	0	4	0
Moore Creek (Takotna River)	9/27	0	0	5	0
Big River (Side Channels)	9/28	0	0	84	23
Jones River (S. Fork Kuskokwim)	9/28	0	0	136	20
South Fork Kuskokwim	9/28	0	0	759	1,280
Unnamed Tributary (Little Tonzona)	9/28	0	0	1,194	0
Fish River (Highpower Creek)	9/30	0	0	1,433	0
Highpower Creek (N. Fork Kuskokwim) [b]	9/30	0	0	0	0
KUSKOKWIM BAY:					
Kanektok River	7/29	6,206	21,335	0	0
Middle Fork Goodnews River & Lakes	8/2	1,210	21,760	0	0
North Fork Goodnews River & Lake	8/2	2,015	27,350	0	0
Kanektok River					
Kanuktik Creek (Kanektok River)					

Note: Peak aerial salmon escapement index count. Aerial index counts do not represent total escapement, but reflect annual spawner abundance trends when using standard survey methods under acceptable conditions.

a Fish were observed and appeared to be abundant, but conditions prevented the surveyor from making a reliable count.

b Survey was incomplete because of poor survey conditions.

Table 21.–Salmon Emergency Order (EO) summary, Kuskokwim Area, 2003.

EO#	DESCRIPTION	Effective Date - Expiration Date	Rescind EO#	EO Still In Effect
Kuskokwim River Salmon				
3-S-WR-01-03	Implements the subsistence salmon fishing schedule in the Kuskokwim River. Issued May 30, 2003	12:01 a.m. June 1, 2003 Exp 11:59 p.m. July 31, 2003	None	None
3-S-WR-02-03	Rescinds the subsistence salmon fishing schedule in the Kuskokwim River. Issued July 3, 2003	12:01 a.m. July 6, 2003 Exp 11:59 p.m. December 31, 2003	3-S-WR-01-03	None
3-S-WR-03-03	Opens the commercial salmon fishing season in the Kuskokwim River. Issued July 30, 2003	5:00 p.m. July 31, 2003 Exp 12:01 a.m. September 1, 2003	None	None
3-S-WR-04-03	Establishes subsistence salmon fishing closures in the Kuskokuak Slough. Issued July 30, 2003	5:00 p.m. July 31, 2003 Exp 12:01 a.m. September 1, 2003	None	3-S-WR-03-03
3-S-WR-05-03	Establishes commercial salmon fishing periods in Kuskokwim River Subdistrict 1A. Issued July 30, 2003	5:00 p.m. July 31, 2003 Exp 7:00 p.m. July 31, 2003	None	3-S-WR-03-03
3-S-WR-06-03	Establishes commercial salmon fishing periods in Kuskokwim River Subdistrict 1B. Issued July 31, 2003	3:00 p.m. August 1, 2003 Exp 7:00 p.m. August 1, 2003	None	3-S-WR-03-03
3-S-WR-07-03	Modifies the subsistence salmon fishing schedule in the Kuskokwim River to 6 hours before, during and 3 hours after commercial periods. Issued August 2, 2003	5:00 p.m. August 2, 2003 Exp 12:01 a.m. September 1, 2003	3-S-WR-04-03	3-S-WR-03-03
3-S-WR-08-03	Establishes commercial salmon fishing periods in Kuskokwim River Subdistricts 1A and 1B. Issued August 2, 2003	3:00 p.m. August 4, 2003 Exp 7:00 p.m. August 5, 2003	None	3-S-WR-03-03 3-S-WR-07-03
3-S-WR-09-03	Establishes commercial salmon fishing periods in Kuskokwim River Subdistricts 1A and 1B. Issued August 7, 2003	1:00 p.m. August 7, 2003 Exp 7:00 p.m. August 8, 2003	None	3-S-WR-03-03 3-S-WR-07-03

-Continued-

Table 21.–Page 2 of 4

EO#	DESCRIPTION	Effective Date - Expiration Date	Rescind EO#	EO Still In Effect
3-S-WR-10-03	Establishes a commercial salmon fishing period in Kuskokwim River Subdistrict 1B with a reduced fishing time from six to four hours. Issued August 8, 2003	1:00 p.m. August 8, 2003 Exp 7:00 p.m. August 8, 2003	3-S-WR-09-03	3-S-WR-03-03 3-S-WR-07-03
3-S-WR-11-03	Establishes a four hour commercial salmon fishing period in Kuskokwim River Subdistrict 1A. Issued August 9, 2003	3:00 p.m. August 11, 2003 Exp 7:00 p.m. August 11, 2003	None	3-S-WR-03-03 3-S-WR-07-03
3-S-WR-12-03	Establishes a four hour commercial salmon fishing period in Kuskokwim River Subdistrict 1B. Issued August 12, 2003	3:00 p.m. August 12, 2003 Exp 7:00 p.m. August 12, 2003	None	3-S-WR-03-03 3-S-WR-07-03
3-S-WR-13-03	Establishes a four hour commercial salmon fishing period in Kuskokwim River Subdistrict 1A. Issued August 13, 2003	3:00 p.m. August 14, 2003 Exp 7:00 p.m. August 14, 2003	None	3-S-WR-03-03 3-S-WR-07-03
3-S-WR-14-03	Establishes a four hour commercial salmon fishing period in Kuskokwim River Subdistrict 1B. Issued August 15, 2003	1:00 p.m. August 15, 2003 Exp 5:00 p.m. August 15, 2003	None	3-S-WR-03-03 3-S-WR-07-03
3-S-WR-15-03	Establishes a reduced, three hour commercial salmon fishing period in Kuskokwim River Subdistrict 1A. Issued August 17, 2003	2:00 p.m. August 18, 2003 Exp 5:00 p.m. August 18, 2003	None	3-S-WR-03-03 3-S-WR-07-03
3-S-WR-16-03	Establishes a four hour commercial salmon fishing period in Kuskokwim River Subdistrict 1B. Issued August 19, 2003	1:00 p.m. August 19, 2003 Exp 5:00 p.m. August 19, 2003	None	3-S-WR-03-03 3-S-WR-07-03
3-S-WR-17-03	Establishes a six hour commercial salmon fishing period in Kuskokwim River Subdistrict 1A. Issued August 20, 2003	11:00 a.m. August 21, 2003 Exp 5:00 p.m. August 21, 2003	None	3-S-WR-03-03 3-S-WR-07-03
3-S-WR-18-03	Establishes a six hour commercial salmon fishing period in Kuskokwim River Subdistrict 1B. Issued August 22, 2003	11:00 a.m. August 22, 2003 Exp 5:00 p.m. August 22, 2003	None	3-S-WR-03-03 3-S-WR-07-03

-Continued-

Table 21.–Page 3 of 4

EO#	DESCRIPTION	Effective Date - Expiration Date	Rescind EO#	EO Still In Effect
3-S-WR-19-03	Establishes 2 - six hour commercial salmon fishing periods in Kuskokwim River Subdistrict W1 (1A and 1B combined). Issued August 24, 2003	11:00 a.m. August 25, 2003 Exp 5:00 p.m. August 26, 2003	None	3-S-WR-03-03 3-S-WR-07-03
3-S-WR-20-03	Establishes 2 - six hour commercial salmon fishing periods in Kuskokwim River Subdistrict W1 (1A and 1B combined). Issued August 27, 2003	11:00 a.m. August 28, 2003 Exp 5:00 p.m. August 29, 2003	None	3-S-WR-03-03 3-S-WR-07-03
3-S-WR-21-03	Extends the salmon fishing season in the Kuskokwim River. Issued August 30, 2003	12:01 a.m. September 1, 2003 Exp 12:01 a.m. September 15, 2003	None	None
3-S-WR-22-03	Reduces the time closed to subsistence fishing adjacent to fishing periods to 6 hours before, during and 3 hours after commercial periods. Issued August 20, 2003	12:01 a.m. September 1, 2003 Exp 12:01 a.m. September 15, 2003	None	3-S-WR-21-03
3-S-WR-23-03	Establishes an eight hour commercial salmon fishing period in Kuskokwim River Subdistrict W1 (1A and 1B combined). Issued August 30, 2003	11:00 a.m. September 1, 2003 Exp 7:00 p.m. September 1, 2003	None	3-S-WR-21-03 3-S-WR-22-03
3-S-WR-24-03	Establishes an eight hour commercial salmon fishing period in Kuskokwim River Subdistrict W1 (1A and 1B combined). Issued September 2, 2003	11:00 a.m. September 2, 2003 Exp 7:00 p.m. September 2, 2003	None	3-S-WR-21-03 3-S-WR-22-03
3-S-WR-25-03	Establishes an eight hour commercial salmon fishing period in Kuskokwim River Subdistrict W1 (1A and 1B combined). Issued September 3, 2003	11:00 a.m. September 3, 2003 Exp 7:00 p.m. September 3, 2003	None	3-S-WR-21-03 3-S-WR-22-03
Kuskokwim Bay Salmon				
3-S-WB-01-03	Opens the commercial salmon fishing season in District W-4, Quinhagak. Issued June 11, 2003	9:00 a.m. June 14, 2003 Exp 9:01 p.m. September 5, 2003	None	None

-Continued-

Table 21.–Page 4 of 4

EO#	DESCRIPTION	Effective Date - Expiration Date	Rescind EO#	EO Still In Effect
3-S-WB-02-03	Establishes a 12 hour commercial salmon fishing period in District W-4, Quinhagak. Issued June 15, 2003	9:00 a.m. June 14, 2003 Exp 9:00 p.m. June 14, 2003	None	3-S-WB-01-03
3-S-WB-03-03	Establishes a commercial salmon fishing schedule in District W-4, Quinhagak. Issued June 15, 2003	9:00 a.m. June 17, 2003 Exp 9:01 p.m. September 5, 2003	None	3-S-WB-01-03
3-S-WB-04-03	Opens the commercial salmon fishing season in District W-5, Goodnews Bay. Issued June 18, 2003	9:00 a.m. June 24, 2003 Exp 9:01 p.m. September 5, 2003	None	None
3-S-WB-05-03	Establishes a commercial salmon fishing schedule in District W-5, Goodnews Bay. Issued June 18, 2003	9:00 a.m. June 24, 2003 Exp 9:00 p.m. September 5, 2003	None	3-S-WB-04-03
3-S-WB-06-03	Establishes a commercial salmon fishing schedule in District W-4, Quinhagak. Issued June 25, 2003	9:00 a.m. June 26, 2003 Exp 9:01 p.m. September 5, 2003	3-S-WB-03-03	None
3-S-WB-07-03	Modifies the commercial salmon fishing schedule in District W-5, Goodnews Bay. Issued June 30, 2003	9:00 a.m. June 30, 2003 Exp 9:00 p.m. September 5, 2003	3-S-WB-05-03	None
3-S-WB-08-03	Modifies the commercial salmon fishing schedule in District W-4, Quinhagak. Issued July 3, 2003	9:00 a.m. July 04, 2003 Exp 9:01 p.m. September 5, 2003	3-S-WB-06-03	None
3-S-WB-09-03	Closes commercial salmon fishing in Districts W-4 and W-5 until coho season. Issued July 17, 2003	9:01 p.m. July 18, 2003 Exp 9:01 p.m. September 5, 2003	3-S-WB-07-03 3-S-WB-08-03	None
3-S-WB-10-03	Establishes a Monday, Wednesday, Friday, commercial salmon fishing schedule in Districts W-4 and W-5. Issued July 30, 2003	9:00 a.m. August 01, 2003 Exp 9:01 p.m. September 5, 2003	3-S-WB-09-03	3-S-WB-01-03 3-S-WB-04-03
3-S-WB-11-03	Establishes a Wednesday Thursday, commercial salmon fishing schedule in Districts W-4 and W-5. Issued August 25, 2003	9:00 a.m. August 27, 2003 Exp 9:01 p.m. August 28, 2003	3-S-WB-10-03	3-S-WB-01-03 3-S-WB-04-03

Table 22.–Executive Summary of Working Group and ADF&G actions, 2003.

Date	Comment
12 March	The Kuskokwim River Salmon Working Group (Working Group) met from 12:00 p.m. to 4:30 p.m. on Wednesday, March 12, 2003 at the United States Fish & Wildlife Service (USFWS) conference room in Bethel. Representatives from seven of the twelve Working Group organizations were present. The Group reviewed Proposal 462 to the BOF. A Motion was made to have co-chair Frank Charles write a letter on behalf of the Working Group to state their opposition to Proposal 462. The 2003 Kuskokwim Area Preliminary Outlook and Management Strategy and nomination of vacant seats were tabled until the next meeting.
06 May	The Working Group met at 10:15 a.m. on Tuesday May 6, 2003, at the USFWS conference room in Bethel. The Group adjourned at 12:07 p.m. Representatives from six of the twelve Working Group organizations were present. ADF&G presented the 2003 Kuskokwim River Outlook, the Kuskokwim River Salmon Rebuilding Management Plan, and 2002 subsistence salmon harvest data for the Kuskokwim Area. The US Fish and Wildlife Fisheries Information Service provided information regarding the Fishery Resource Monitoring Program. Erin Hebert, newly hired Fisheries Partners Biologist for the Association of Village Council Presidents ("AVCP"), was introduced. AVCP and ADF&G staff provided a description of the Kuskokwim Fisheries Research Coalition ("KFRC") strategic research plan for the Kuskokwim Area. Request of Working Group Committee: A request was made by the co-chair of the Working Group for Kuskokwim Area fishers to continue to support responsible harvest of fish with the intent of allowing more fish access to their spawning grounds.
17 June	The Working Group was called to order at 10:50 a.m. on Tuesday June 17, 2003, at the USF&WS conference room in Bethel. The Group adjourned at 12:45 p.m. Representatives from seven of the twelve Working Group organizations were present. The Working Group heard reports from subsistence fishers, the Orutsararmiut Native Council ("ONC"), the USFWS, ADF&G in-season indicators, and a presentation on the strategic research plan for Kuskokwim River Salmon by Joe Spaeder from Arctic Yukon Kuskokwim ("AYK")-Sustainable Salmon Initiative (AYK-SSI). The goals of the AYK-SSI report are to: (a.) foster expanded fishery research in order to help understand the causes of decline of Kuskokwim salmon stocks, and (b.) support sustainable salmon management in the Kuskokwim drainage area. Meeting Action Announcement**:** The Working Group arrived at the decisions to retain the subsistence-fishing schedule.
26 June	The Working Group was called to order at 10:17 a.m. on Thursday June 26, 2003, at the USF&WS conference room in Bethel. The Group adjourned at 12:50 p.m. Representatives from six of the twelve Working Group organizations were present. Subsistence reports indicate subsistence harvests of chinook, sockeye, and chum salmon in the lower Kuskokwim River are good while the ADF&G Bethel Test Fishery ("BTF") has reported a below average chum salmon return. Meeting Action Announcement**:** The Working Group arrived at the decisions to retain the subsistence-fishing schedule.
02 July	The Working Group was called to order at 10:02 a.m. on Wednesday July 2, 2003, at the USF&WS conference room in Bethel. The Group adjourned at 1:55 p.m. Representatives from seven of the twelve Working Group organizations were present. Points of discussion focused around new management conservation measures such as the absence of a commercial fishery and subsistence fishing schedules implemented in 2003 that were not implemented in years with similar run strength. Request of Working Group Committee: The Working Group made a request to fishers to continue to make an effort to conserve both chinook and chum salmon and to harvest only what is necessary.
28 July	The Working Group was called to order at 10:08 a.m. on Monday, July 28, 2003, at the USF&WS conference room in Bethel. The Group adjourned at 12:54 p.m. Representatives from ten of the twelve Working Group organizations were present. The Working Group heard reports from commercial fish processing representatives, subsistence fishers, elders with traditional Yup'ik knowledge, ONC, KNA, and the Department concerning the status of the Kuskokwim River subsistence fishery and salmon runs. There was a discussion on opening the Kuskokwim River to commercial fishing provided adequate processing capacity. Meeting Action Announcement**:** Open the Kuskokwim River to commercial fishing with a two-hour period in District W1-A (upstream of Bethel) from 5:00 p.m. to 7:00 p.m. Wednesday, July 30, 2003. Additionally, a commercial salmon fishing period will be announced Thursday, July 31, 2003 for District W1-B

-Continued-

Table 23.–Page 2 of 3

Date	Comment
	(downstream of Bethel). The District W1-B commercial period will end 7:00 p.m. Friday, August 1. It is anticipated that this commercial fishing period will be two to four hours in duration depending on fish processor availability.
02 August	The Working Group was called to order at 12:05 p.m. on Saturday, August 2, 2003, at the USF&WS conference room in Bethel. The Group adjourned at 12:54 p.m. Representatives from six of the twelve Working Group organizations were present. The combined fishing effort for the July 30 & July 31 commercial periods was very low for this time of year. It was pointed out that opportunity for subsistence fishing was reduced significantly with the restrictions associated with commercial fishing periods. There was a discussion toward providing more subsistence fishing opportunity. Meeting Action Announcement**:** Establish Kuskokwim River commercial fishery periods in District 1. Subdistrict 1-A (upstream of Bethel) will open to commercial fishing from 3:00 p.m. to 7:00 p.m. Monday, August 4, 2003. Subdistrict 1-B will open to commercial fishing from 3:00 p.m. to 7:00 p.m. on Tuesday, August 5, 2003. Additionally, the hours closed to subsistence gillnet fishing adjacent to commercial periods will be reduced to six hours before, during and three hours after commercial fishing periods.
06 August	The Working Group was called to order at 12:05 p.m. on Wednesday, August 7, 2003, at the USF&WS conference room in Bethel. The Group adjourned at 1:35 p.m. Representatives from seven of the twelve Working Group organizations were present. Frank Charles chaired the meeting. A request was made to prepare and submit an Agenda Change Request (ACR) that reduces the time period between transferring commercial fishing permits between Subdistrict 1A and 1B at the January 2004 BOF meeting. Meeting Action Announcement**:** Establish Kuskokwim River commercial fishery periods in District 1. Subdistrict 1-A (upstream of Bethel) will open to commercial fishing from 1:00 p.m. to 7:00 p.m. Thursday, August 7, 2003. Subdistrict 1-B will open from 1:00 p.m. to 7:00 p.m. on Friday, August 8, 2003. If coho salmon abundance remains sufficient, commercial salmon fishing periods in Subdistrict 1A will continue on Monday's and Thursday's and Subdistrict 1-B on Tuesday's and Friday's. The commercial salmon fishing periods scheduled after August 7 will be four to six hours, depending on processor availability, ending at 7:00 p.m.
20 August	The Working Group was called to order at 12:15 p.m. on Wednesday August 20, 2003, at the BNC conference room in Bethel. The Group adjourned at 2:00 p.m. Representatives from six of the twelve Working Group organizations were present. The Working Group acknowledged the untimely death of Nixie Mellick. Action was taken by the Working Group to transfer Evelyn Thomas from the Sport Fisher Working Group seat to the Upper River Subsistence seat. Further action established Lamont Albertson as the primary Sport Fisher representative on the Working Group. Evelyn Thomas will serve as an alternate representative for the Sport Fish seat along with Beverly Hoffman. Three ACR's that provide proposals for regulation changes for the January 2004 Board of Fisheries meeting were discussed. Oscar Larson submitted an ACR for the Working Group that reduces the time commercial fishermen must wait when they transfer between Subdistricts 1-A and 1-B. Vince Goddard submitted two ACR's, one that liberalizes or eliminates subsistence fishing closures prior to, during, and following commercial fishing periods. The second establishes a Kuskokwim commercial fishery in June and July with a cap (quota) on the number of chinook salmon that can be harvested. Doug Molyneaux briefly described the Kuskokwim Area strategic planning process, Rich Cannon provided additional information about other regional planning processes and how the Kuskokwim plan will fit within these broader plans for Western Alaska and the Bering Sea. Meeting Action Announcement**:** Maintain the current schedule of fishing periods to achieve a harvest that can be purchased by the processor without creating waste. The period for Thursday, August 21 (Subdistrict 1-A) will be six hours in duration from 11:00 a.m. to 5:00 p.m. The period on Friday, August 22 (Subdistrict 1-B) will be six hours in duration if there is adequate processor capacity, and, if catch rates and processor capacity allow, District 1 fishing periods (Subdistrict 1-A and 1-B combined) will be scheduled for the week August 25-August 29. If catch rates remain high Subdistrict fishing periods will be scheduled that week as necessary to meet processor capacity and avoid wanton waste. The last commercial fishing period of the season will be Friday, August 29.

-Continued-

Table 23.–Page 3 of 3

Date	Comment
26 September	The Working Group was called to order at 10:23 a.m. on Friday, September 26 at the USFWS conference room in Bethel. The Group adjourned at 5:00 p.m. Representatives from seven of the twelve Working Group organizations were physically present thanks to the OSM funding available for Working Group members' travel. Positions were taken on selected Federal subsistence proposals and selected Alaska Board of Fisheries proposals. The Working Group operated towards a consensus on proposals, and were in support, opposed, or had no consensus on FSB Proposals: F2004-04K, F2004-12K, F2004-13K, and, Proposals: 130-133, 135 & 136 to the BOF. The BOF did not accept the ACRs regarding transferring commercial fishing permits between Subdistricts 1-A and 1-B, and, the implementation of a June-July commercial fishery, as both ACR's did not meet the appropriate criteria. Frank Charles was selected by the Working Group to attend a Tri-Council meeting between the Eastern, Western, and Yukon-Kuskokwim Region Advisory Councils in Wasilla to provide information to the council regarding Working Group recommendations toward FSB Proposals. Oscar Larson was selected by the Working Group members to attend the post season Kuskokwim Area Interagency fishery meeting to take place in Anchorage at the Fish and Game office on November 25 and 26. Frank Charles was selected by Working Group members to attend the Arctic-Yukon-Kuskokwim BOF work session to take place in Fairbanks January 12-19. Ben Greene of Bering Sea Fisherman's Association made a presentation regarding the status of the Kuskokwim Research Restoration Plan.
10 November	The Working Group was called to order at 11:07 a.m. on Monday, November 10, 2003 at the USFWS conference room in Bethel. The Group adjourned at 3:26 p.m. Representatives from seven of the twelve Working Group organizations were present in person or by teleconference, which qualified the meeting as an executive session. Dave Cannon, the KNA partner, introduced Dwayne Hoffman as the new Natural Resource Director for KNA. It was noted that Wayne Morgan would remain a co-chair on the Working Group unless he takes action to relinquish the seat and position. The primary focus of the meeting was discussion of fishery proposals that will be addressed by the BOF during the January 12-19, 2004 meetings scheduled to occur in Fairbanks. At a prior Working Group meeting Frank Charles was selected to attend, however, Evelyn Thomas, Peter Miller and Ray Collins were additionally selected to attend portions of the BOF meetings. There was a discussion regarding action taken toward proposals presented at the last meeting. All proposals were discussed and a decision was made to revisit proposals 133 and 136 submitted to the BOF. The Department is recommending to the BOF that Kuskokwim River chinook and chum salmon remain a yield concern. Craig Whitmore explained that in accordance with the Policy for the management of sustainable salmon fisheries an action plan has to be prepared for the BOF because of the yield concern classification. The action plan will describe how a fishery may be implemented that will result in the sustained yield of salmon stocks large enough to meet escapement goals and Amounts Necessary for Subsistence in accordance to the Kuskokwim River Salmon Rebuilding Management Plan. The Working Group responded that the Department would be making this fishery recommendation to the BOF through the action plan without Working Group support.

Table 23.–Processor summary, Kuskokwim Area, 2003.

SALMON	Processor Code
Inlet Fish Producers	F 4682
Coastal Villages Seafoods, Inc	F 4240
Woodbine Alaska Fish Company	F 1273
HERRING	
Norquest Seafoods, Inc	F 1482

Table 24.–Herring Emergency Order summary, Kuskokwim Area, 2003.

EO#	DESCRIPTION	Effective Date - Expiration Date	Rescind EO#	EO Still In Effect
NELSON ISLAND DISTRICT				
3-H-WN-O1-03	Opens the Nelson Island district to commercial herring fishing. Issued May 14, 2003	9:00 p.m May 14, 2003 11:00 p.m. May 14, 2003	None	None
3-H-WN-O2-03	Opens the Nelson Island district to commercial herring fishing. Issued May 15, 2003	6:00 a.m. May 15, 2003 12:00 p.m. May 15, 2003	None	None
3-H-WN-O3-03	Opens the Nelson Island district to commercial herring fishing. Issued May 15, 2003	8:00 p.m. May 15, 2003 2:00 a.m. May 16, 2003	None	None
3-H-WN-O4-03	Opens the Nelson Island district to commercial herring fishing. Issued May 16, 2003	8:00 a.m. May 16, 2003 2:00 p.m. May 16, 2003	None	None
3-H-WN-O5-03	Opens the Nelson Island district to commercial herring fishing. Issued May 16, 2003	9:00 p.m. May 16, 2003 3:00 a.m. May 17, 2003	None	None
3-H-WN-O6-03	Opens the Nelson Island district to commercial herring fishing. Issued May 17, 2003	9:00 a.m. May 17, 2003 3:00 p.m. May 17, 2003	None	None
3-H-WN-O7-03	Opens the Nelson Island district to commercial herring fishing. Issued May 17, 2003	10:00 p.m. May 17, 2003 4:00 a.m. May 18, 2003	None	None
3-H-WN-O8-03	Opens the Nelson Island district to commercial herring fishing. Issued May 18, 2003	10:30 a.m. May 18, 2003 3:30 p.m. May 18, 2003	None	None
3-H-WN-O9-03	Opens the Nelson Island district to commercial herring fishing. Issued May 18, 2003	10:30 p.m. May 18, 2003 3:30 p.m. May 19, 2003	None	None

-Continued-

Table 24.–Page 2 of 4

EO#	DESCRIPTION	Effective Date - Expiration Date	Rescind EO#	EO Still In Effect
3-H-WN-10-03	Opens the Nelson Island district to commercial herring fishing. Issued May 18, 2003	11:00 a.m. May 19, 2003 4:00 p.m. May 19, 2003	None	None
3-H-WN-11-03	Opens the Nelson Island district to commercial herring fishing. Issued May 19, 2003	11:00 p.m. May 19, 2003 6:30 a.m. May 20, 2003	None	None
3-H-WN-12-03	Opens the Nelson Island district to commercial herring fishing. Issued May 20, 2003	12:00 p.m. May 20, 2003 5:00 p.m. May 20, 2003	None	None
3-H-WN-13-03	Opens the Nelson Island district to commercial herring fishing. Issued May 20, 2003	12:01 a.m. May 21, 2003 6:30 a.m. May 21, 2003	None	None
3-H-WN-14-03	Opens the Nelson Island district to commercial herring fishing. Issued May 21, 2003	1:00 p.m. May 21, 2003 7:00 p.m. May 21, 2003	None	None
NUNIVAK ISLAND DISTRICT				
3-H-WU-01-03	Opens the Nunivak Island district to commercial herring fishing. Issued May 9, 2003	8:00 p.m. May 9, 2003 11:59 p.m. May 31, 2003	None	None
3-H-WU-02-03	Closes the Nunivak Island district to commercial herring fishing. Issued May 18, 2003	8:00 a.m. May 18, 2003 11:59 p.m. June 30, 2003	3-H-WU-01-03	3-H-WU-02-03
CAPE AVINOF DISTRICT				
3-H-WV-Ol-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 15, 2003	8:00 p.m. May 15, 2003 1:00 a.m. May 16, 2003	None	None
3-H-WV-O2-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 16, 2003	8:00 a.m. May 16, 2003 1:00 p.m. May 16, 2003	None	None

-Continued-

Table 24.–Page 3 of 4

EO#	DESCRIPTION	Effective Date - Expiration Date	Rescind EO#	EO Still In Effect
3-H-WV-O3-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 16, 2003	8:00 p.m. May 16, 2003 1:30 a.m. May 17, 2003	None	None
3-H-WV-O4-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 17, 2003	8:30 a.m. May 17, 2003 2:00 p.m. May 17, 2003	None	None
3-H-WV-O5-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 17, 2003	8:30 p.m. May 17, 2003 1:30 a.m. May 18, 2003	None	None
3-H-WV-O6-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 18, 2003	9:00 a.m. May 18, 2003 3:00 p.m. May 18, 2003	None	None
3-H-WV-O7-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 18, 2003	8:30 p.m. May 18, 2003 2:30 a.m. May 19, 2003	None	None
3-H-WV-O8-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 19, 2003	9:30 a.m. May 19, 2003 4:30 p.m. May 19, 2003	None	None
3-H-WV-O9-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 19, 2003	10:30 p.m. May 19, 2003 4:30 a.m. May 20, 2003	None	None
3-H-WV-10-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 20, 2003	11:30 a.m. May 20, 2003 5:30 p.m. May 20, 2003	None	None
3-H-WV-11-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 20, 2003	11:30 p.m. May 20, 2003 5:30 a.m. May 21, 2003	None	None
3-H-WV-12-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 21, 2003	12:30 p.m. May 21, 2003 6:30 p.m. May 21, 2003	None	None

-Continued-

Table 24.–Page 4 of 4

EO#	DESCRIPTION	Effective Date - Expiration Date	Rescind EO#	EO Still In Effect
3-H-WV-13-03	Opens the Cape Avinof district to commercial herring fishing. Issued May 21, 2003	12:30 a.m. May 22, 2003 6:30 a.m. May 22, 2003	None	None
	GOODNEWS BAY DISTRICT			
3-H-WW-01-03	Opens the Goodnews Bay district to commercial herring fishing. Issued May 9, 2003	12:00 noon May 9, 2003 4:30 p.m. May 9, 2003	None	None
3-H-WW-02-03	Opens the Goodnews Bay district to commercial herring fishing. Issued May 10, 2003	12:00 noon May 10, 2003 4:00 p.m. May 10, 2003	None	None
3-H-WW-03-03	Opens the Goodnews Bay district to commercial herring fishing. Issued May 11, 2003	11:30 p.m. May 10, 2003 5:30 a.m. May 11, 2003	None	None
3-H-WW-04-03	Opens the Goodnews Bay district to commercial herring fishing. Issued May 11, 2003	12:00 noon May 11, 2003 6:00 p.m. May 11, 2003	None	None
3-H-WW-05-03	Opens the Goodnews Bay district to commercial herring fishing. Issued May 11, 2003	12:30 a.m. May 12, 2003 6:30 a.m. May 12, 2003	None	None
3-H-WW-06-03	Opens the Goodnews Bay district to commercial herring fishing. Issued May 12, 2003	1:00 p.m. May 12, 2003 7:00 p.m. May 12, 2003	None	None
3-H-WW-07-03	Opens the Goodnews Bay district to commercial herring fishing. Issued May 12, 2003	1:00 a.m. May 13, 2003 7:00 a.m. May 13, 2003	None	None
3-H-WW-08-03	Opens the Goodnews Bay district to commercial herring fishing. Issued May 13, 2003	2:00 p.m. May 13, 2003 8:00 p.m. May 13, 2003	None	None
3-H-WW-09-03	Opens the Goodnews Bay district to commercial herring fishing. Issued May 13, 2003	2:00 a.m. May 14, 2003 8:00 a.m. May 14, 2003	None	None

Table 25.–Herring commercial fishing periods by district, Kuskokwim Bay, 2003.

District	Period	Date	Time	Hours	Permits	Deliveries	Harvest (st)	% roe
Security Cove			**No commercial openings in 2003**					
Goodnews Bay	1	5/9	12:00 - 16:30	4.5	7	7	4.6	7.2
	2	5/10	12:00 - 16:00	4.0	7	7	7.2	8.5
	3	5/10-5/11	23:30 - 05:30	6.0	5	5	8.7	9.1
	4	5/11	12:00 - 18:00	6.0	5	6	5.0	9.1
	5	5/12	00:30 - 06:30	6.0	5	5	3.2	10.7
	6	5/12	13:00 - 19:00	6.0	9	9	6.4	9.8
	7	5/13	01:00 - 07:00	6.0	2	2	0.8	10.7
	8	5/13	14:00 - 20:00	6.0	0	0	0	0
	9	5/14	02:00 - 08:00	6.0	0	0	0	0
			TOTALS	**50.5**	**12**	**41**	**35.8**	**9**
Cape Avinof	1	5/15-5/16	20:00 - 01:00	5.0	1	1	0.4	11.4
	2	5/16	08:00 - 13:00	5.0	3	3	1.0	11.8
	3	5/16-5/17	20:00 - 01:30	5.5	10	17	28.6	10.0
	4	5/17	08:30 - 14:00	5.5	9	10	10.7	10.2
	5	5/17-5/18	20:00 - 01:30	5.5	13	23	46.1	10.2
	6	5/18	09:00 - 15:00	6.0	2	2	1.9	10.6
	7	5/18-5/19	20:30 - 02:30	6.0	8	16	28.5	9.7
	8	5/19	09:30 - 16:30	6.0	6	6	2.8	9.7
	9	5/19-5/20	22:30 - 04:30	6.0	12	16	30.3	11.0
	10	5/20	11:30 - 17:30	6.0	9	9	4.0	12.6
	11	5/20-5/21	23:30 - 05:30	6.0	7	7	7.5	11.5
	12	5/21	12:30 - 18:30	6.0	11	13	5.7	11.9
	13	5/22	00:30 - 06:30	6.0	11	12	8.1	11.1
			TOTALS	**74.5**	**22**	**135**	**175.6**	**10.5**
Nelson Island	1	5/14	21:00 - 23:00	2.0	5	5	0.5	13.1
	2	5/15	06:00 - 12:00	6.0	6	6	3.3	12.1
	3	5/15-5/16	20:00 - 02:00	6.0	7	7	3.7	10.5
	4	5/16	08:00 - 14:00	6.0	7	7	6.6	11.4
	5	5/16-5/17	21:00 - 03:00	6.0	16	16	47.9	10.8
	6	5/17	09:00 - 15:00	6.0	21	27	90.3	11.2
	7	5/17-5/18	22:00 - 04:00	6.0	25	27	69.1	11.4
	8	5/18	10:30 - 15:30	5.0	23	27	56.3	10.5
	9	5/18-5/19	22:30 - 03:30	5.0	30	49	103.1	10.1
	10	5/19	11:00 - 18:00	5.0	31	36	69.7	10.2
	11	5/19-5/20	23:00 - 06:30	7.5	35	52	143.4	10.3
	12	5/20	12:00 - 17:00	5.0	28	31	38.5	10.9
	13	5/21	00:01 - 06:30	6.5	28	39	124.5	11.6
	14	5/21	13:00 - 19:00	6.0	23	26	59.6	10.3
			TOTALS	**78.0**	**44**	**355**	**816.5**	**10.8**
Nunivak Island	1	5/9-5/18	20:00 - 08:00	**204**	**19**	**14 (sets)**	**229.0**	**8.4**
		Kuskokwim Bay Totals		**407**	**97**	**545**	**1256.9**	**9.7**

Table 26.–Herring aerial survey abundance estimates, Security Cove District, Kuskokwim Bay, 2003.

	Flight		Spawn		Biomass Estimates by Index Area [a]						
					SEC		CGV		SRM		
Date [b]	No.	Hours	No.	Length (mi)	Tons	Rating [c]	Tons	Rating [c]	Tons	Rating [c]	Total
2-May	1	0.7	2	1.5	8,600	1	2,000	2	n/s	n/a	10,600
3-May	2	0.6	2	1.5	1,500	3.5	1,000	3.5	100	3.5	2,600

Note: n/s = not surveyed; n/a = not applicable.

[a] Index Areas: SEC = Cape Newenham to Pinnacle Rock; CGV = Chagvan Bay to Salmon River; SRM = South Red mountain to Salmon River.

[b] Aerial surveys were attempted on May 4, 6, 7, and 9, Poor weather prevented surveys from being flown.

[c] Survey Ratings: 1 = Excellent visibility; 2 = Good (light ripple, uneven lighting, easy to see schools): 3 = Fair (light chop, some glare or shadows, relatively easy to see school); 4 = Poor (rough seas, strong glare, difficult to see schools); 5 = unsatisfactory.

Table 27.–Herring age class composition of number by district, Kuskokwim Bay, 2003.

District	Age (years) 2	3	4	5	6	7	8	9	10	11	12	13+	Total weight (st)
Commercial catch[a]													
Security Cove	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Goodnews Bay	0.0	0.0	0.0	0.6	14.0	24.1	16.0	11.5	12.6	8.1	6.4	6.7	36
Cape Avinof	0.0	0.0	0.0	0.4	17.7	30.2	10.7	13.6	12.2	6.4	5.3	3.5	175
Nelson Island	0.0	0.0	0.0	0.4	17.7	30.2	10.7	13.6	12.2	6.4	5.3	3.5	175
Nunivak Island	0.0	0.2	0.2	3.3	45.6	25.5	7.6	6.3	5.4	3.3	1.8	0.8	229
All Districts	0.0	0.0	0.2	0.9	17.9	19.5	10.1	17.2	13.5	9.8	5.8	4.9	615
Total Run[b]													
Security Cove	0.0	0.2	0.3	2.9	37.5	30.9	7.4	3.7	6.3	3.9	4.2	2.7	10,600
Goodnews Bay	0.1	0.7	0.7	2.5	31.7	33.8	12.1	6.8	4.6	2.7	2.1	2.2	8,300
Cape Avinof	0.0	0.2	0.3	2.9	37.5	30.9	7.4	3.7	6.3	3.9	4.2	2.7	3,812
Nelson Island	0.0	1.1	1.2	5.3	38.0	22.0	7.1	9.6	7.6	3.4	2.4	2.4	6,130
Nunivak Island	0.0	1.3	1.3	5.9	41.6	22.9	6.6	8.1	6.4	2.3	1.8	1.8	5,182
All Districts	0.0	0.7	0.7	3.7	36.7	28.7	8.4	6.3	6.1	3.2	3.0	2.4	34,024

[a] Commercial set gill net.

[b] ADF&G variable mesh gill net.

Table 28.–Herring age class composition of biomass by district, Kuskokwim Bay, 2003.

	Security Cove		Goodnews Bay		Cape Avinof		Nelson Island		Nunivak Island		Kuskokwim Area	
Age	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons
						Run						
2	0.0	0	0.0	2	0.0	0	0.0	0	0.0	0	0.0	2
3	0.1	9	0.3	28	0.1	3	0.4	27	0.5	25	0.3	91
4	0.2	17	0.4	37	0.2	6	0.7	40	0.7	37	0.4	135
5	2.1	216	1.6	132	2.0	74	3.9	237	4.4	226	2.6	885
6	31.2	3,240	27.4	2,240	30.4	1,134	32.4	1,966	36.6	1,878	31.2	10,457
7	30.0	3,114	32.8	2,679	29.9	1,113	21.9	1,326	23.4	1,202	28.2	9,434
8	7.7	796	13.0	1,062	7.8	290	7.8	470	7.5	385	9.0	3,004
9	4.8	498	8.3	681	5.3	198	11.7	711	10.0	513	7.8	2,600
10	9.1	940	6.6	535	9.4	349	10.2	619	8.9	455	8.7	2,898
11	5.9	614	4.0	326	6.0	225	4.9	295	3.4	173	4.9	1,634
12	6.6	681	3.4	276	6.6	246	3.5	215	2.7	140	4.7	1,558
13+	2.4	251	2.1	171	2.4	90	2.6	160	2.0	100	2.3	772
Total	100.0	10,374	100.0	8,168	100.0	3,729	100.0	6,066	100.0	5,134	100.0	33,472
						Commercial Harvest						
2	[a]	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
3	[a]	0	0.0	0	0.0	0	0.0	0	0.1	0	0.0	0
4	[a]	0	0.0	0	0.0	0	0.1	1	0.1	0	0.1	1
5	[a]	0	0.5	0	0.2	0	0.1	1	2.5	6	0.6	7
6	[a]	0	11.5	4	13.3	23	6.0	48	39.4	90	13.3	165
7	[a]	0	21.4	7	26.4	45	12.3	99	25.6	59	17.0	210
8	[a]	0	16.1	6	10.0	17	9.7	78	8.4	19	9.7	120
9	[a]	0	11.9	4	15.8	27	22.3	179	7.7	18	18.4	228
10	[a]	0	14.7	5	15.8	27	18.6	150	7.4	17	16.1	199
11	[a]	0	10.0	3	8.8	15	15.1	121	4.7	11	12.2	150
12	[a]	0	8.2	3	7.5	13	8.9	72	2.7	6	7.6	93
13+	[a]	0	5.6	2	2.2	4	6.9	55	1.3	3	5.2	64
Total	[a]	0	100.0	35	100.0	170	100.0	804	100.0	229	100.0	1,237
						Escapement						
2	0.0	0	0.0	2	0.0	0	0.0	0	0.0	0	0.0	2
3	0.1	9	0.3	28	0.1	3	0.5	27	0.5	25	0.3	91
4	0.2	17	0.5	37	0.2	6	0.7	39	0.7	36	0.4	134
5	2.1	216	1.6	132	2.1	74	4.5	236	4.5	220	2.7	878
6	31.2	3,240	27.5	2,236	31.2	1,112	36.4	1,918	36.4	1,788	31.9	10,292
7	30.0	3,114	32.8	2,671	30.0	1,069	23.3	1,227	23.3	1144	28.6	9,225
8	7.7	796	13.0	1,056	7.7	273	7.5	393	7.5	366	8.9	2,884
9	4.8	498	8.3	677	4.8	171	10.1	532	10.1	496	7.4	2,373
10	9.1	940	6.5	530	9.1	322	8.9	470	8.9	438	8.4	2,700
11	5.9	614	4.0	322	5.9	211	3.3	174	3.3	162	4.6	1,483
12	6.6	681	3.4	273	6.6	234	2.7	143	2.7	134	4.5	1,465
13+	2.4	251	2.1	169	2.4	86	2.0	105	2.0	97	2.2	708
Total	100.0	10,374	100.0	8,134	100.0	3,559	100.0	5,262	100.0	4,905	100.0	32,235

[a] No commercial periods.

Table 29.–Herring aerial survey abundance estimates, Goodnews Bay District, Kuskokwim Bay, 2003.

	Flight		Spawn		Biomass estimates by index area [a]								
					NRM		GBE		GNB		CRB		
Date [b]	No.	Hours	No. of	length (mi)	Tons	Rating [c]	Tons	Rating [c]	Tons	Rating [c]	Tons	Rating [c]	Total
2-May	1	1	1	0.25	0	3	3,000	2	5,300	2	n/s	n/a	8,300
3-May	2	0.7	1	0.25	100	3.5	1,000	3.5	1,500	3.5	n/s	n/a	2,600
3-May	2[d]	0.7	5	1	0	3	2,500	3	4,205	3	n/s	n/a	6,705
15-May	3	n/a	0	0	0	4.5	0	4.5	0	4.5	0	4.5	0

n/s = not surveyed.

n/a = not applicable.

[a] Index Areas: NRM = Thorenson Mt. to Seattle Creek; GBE = Goodnews Bay entrance to south edge of Nunvakfak Lake; GNB = all waters of Goodnews Bay; CRB = south edge of Nunvakfak Lake to Carter Spit.

[b] Aerial surveys were attempted on May 4, 6, 7, and 9. Poor weather prevent surveys from being flown.

[c] Survey Ratings: 1 = Excellent; 2 = Good (light ripple, uneven lighting, easy to see schools): 3 = Fair (light chop, some glare or shadows, relatively easy to see school); 4 = Poor (rough seas, strong glare, difficult to see schools); 5 = unsatisfactory.

[d] Same survey flight, different observer.

Table 30.–Herring aerial survey abundance estimates, Nelson Island District, Kuskokwim Bay, 2003.

	Flight		Spawn		Biomass estimates by index area [a]								
					KGB		CPV		TAB		NLK		
Date	No.	Hours	No. of	Length (mi)	Tons	Rating [b]	Tons	Rating [b]	Tons	Rating [b]	Tons	Rating [b]	Total
14-May	1	0.4	1	2	150	4.5	100	5	0	5	0	5	250
15-May	2	0.3	1	0.1	0	5	0	5	0	5	0	5	0
16-May	3	0.3	1	2	n/s	n/a	2,500	5	n/s	n/a	n/s	n/a	2,500
17-May	4	0.4	1	1.5	0	5	0	5	0	5	0	5	0
21-May	5	0.5	1	0.5	200	4	200	5	400	4	650	4	1,450

n/s = not surveyed.

n/a = not applicable.

[a] Index Areas: KGB = Kangirlvar Bay, Chinigyak Cape to Umkumiut; CPV = Cape Vancouver, Umkumiut to Taluvarevuk Point; TAB = Tununak Bay, Taluvarevuk Point to Niliklguk; NLK = Niliklguk to the tundra flats. Index areas CYC, Kolovinarak River to Chinigyak Cape, and KIG, Tundra Flats to Kigigak Island were not surveyed in 2003.

[b] Survey Ratings: 1 = Excellent; 2 = Good (light ripple, uneven lighting, easy to see schools): 3 = Fair (light chop, some glare or shadows, relatively easy to see school); 4 = Poor (rough seas, strong glare, difficult to see schools); 5 = unsatisfactory.

Table 31.–Herring aerial survey abundance estimates, Nunivak Island District, Kuskokwim Bay, 2003.

	Flight		Spawn		Biomass estimates by index area [a]								
					ING		CCW		BIN		MEK		
Date	No.	Hours	No. of	Length (mi)	Tons	Rating [b]	Tons	Rating [b]	Tons	Rating [b]	Tons	Rating [b]	Total
14-May	1	0.8	7	2	0	3	100	3	400	5	500	4	1,000
15-May	2	0.8	2	0.5	100	2	100	3	0	5	500	3	700
17-May	3	0.8	1	0.5	50	1	500	3	0	5	150	1.5	700

[a] Index Areas: ING = Dunulimjinga Point to Twin Mountain; CCW = Twin Mountain to Cape Mendenhal; BIN = Binajoak to Cape Mendenhall; MEK = Mekoryuk to Kikartik Rock;

[b] Survey Ratings: 1 = Excellent; 2 = Good (light ripple, uneven lighting, easy to see schools): 3 = Fair (light chop, some glare or shadows, relatively easy to see school); 4 = Poor (rough seas, strong glare, difficult to see schools); 5 = unsatisfactory.

Table 32.–Preliminary commercial salmon harvest projections for the 2004 season, Kuskokwim Area, 2003.

Species	Management District									Kuskokwim Area Total[a]		
	Districts 1 and 2[a]			District 4[a]			District 5[a]					
Chinook	5	to	15	14	to	20	1	to	2	20	to	37
Sockeye	20	to	40	30	to	50	30	to	50	80	to	140
Coho	200	to	600	30	to	60	20	to	40	250	to	700
Pink[b]	0	to	1	0	to	1	0	to	0	0	to	2
Chum	150	to	300	20	to	40	5	to	10	175	to	350
TOTAL	375	to	956	94	to	171	56	to	102	525	to	1,229

[a] In 1,000's of fish.

[b] Projection is based on historic catches in odd years only.

Table 33.–Projections of herring spawning biomass and harvest levels for 2004 season, Kuskokwim Bay, 2003.

	2004 Projection[a]			
District	Biomass (st)	Threshold (st)[b]	Harvest (st)	Exploitation Rate (%)
Security Cove	9,698	1,200	1940	20
Goodnews Bay	7,744	1,200	1,549	20
Cape Avinof	3,369	500	505	15
Nelson Island	5,085	3,000	817	16[c]
Nunivak Island	4,739	1,500	948	20[d]
Total	30,635		5,759	

[a] Preseason projection. Projection may be adjusted based on inseason biomass estimates.

[b] Threshhold biomass needed to allow a commercial fishery from 5AAC 27.060. Bering Sea Herring Fishery Management Plan.

[c] Nelson Island exploitation rate is 20% of projected biomass minus 200 st for subsistence harvest.

[d] Nunivak Island exploitation rate is 15% of projected biomass when inseason aerial survey estimate isn't available.

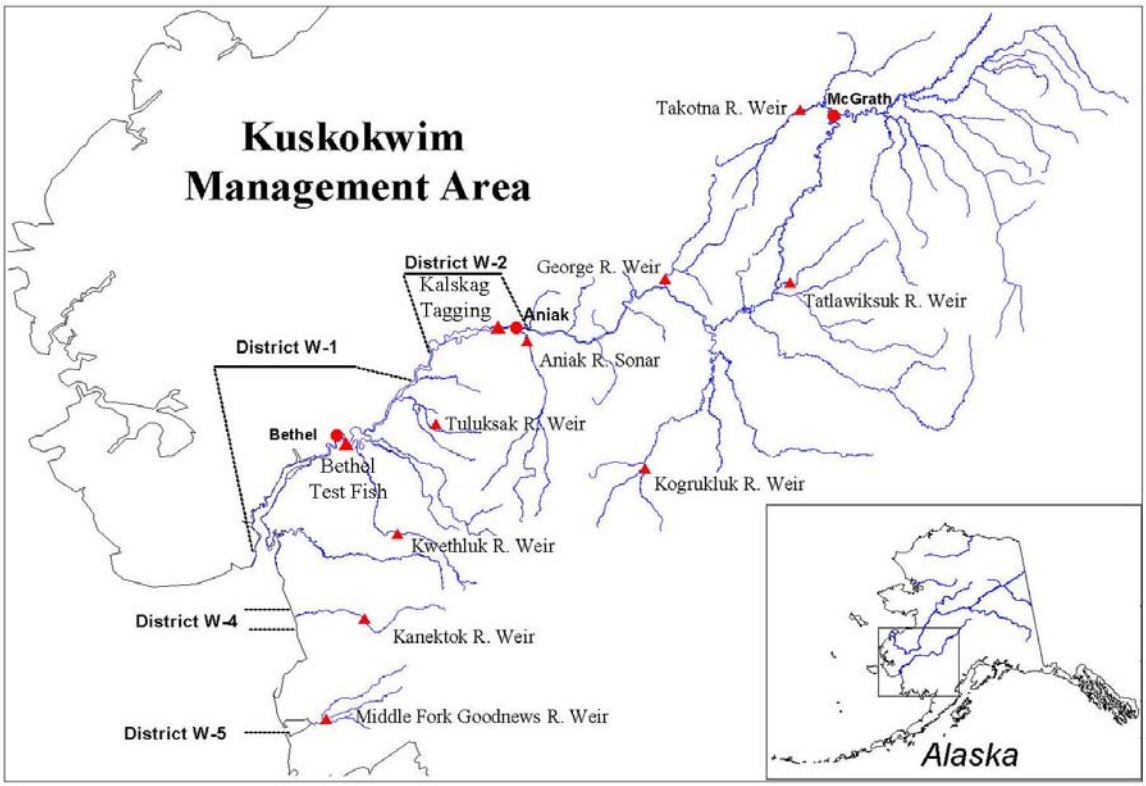

Figure 1.–Kuskokwim Management Area and Salmon Run Assessment Projects.

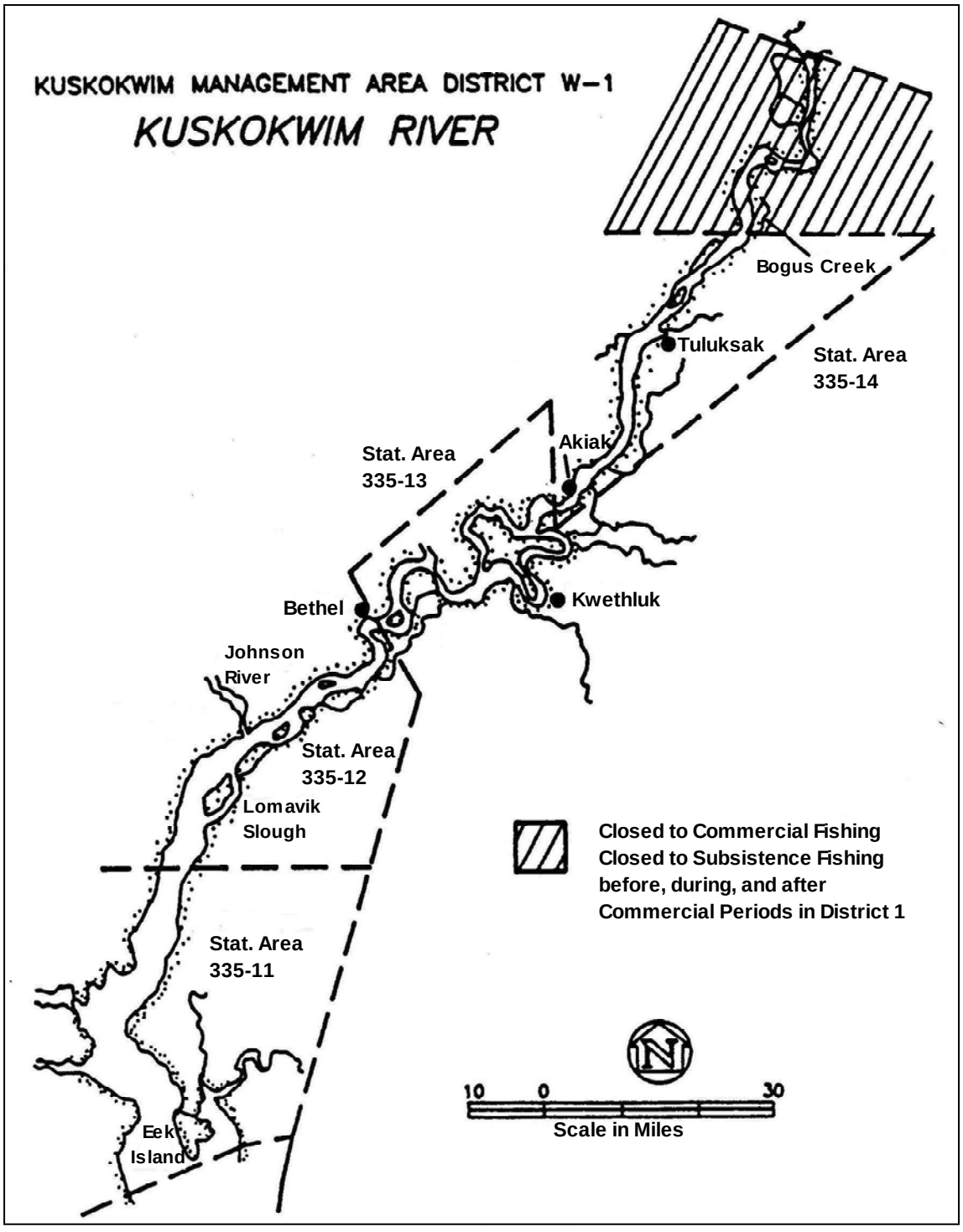

Figure 2.–Kuskokwim Management Area, District 1.

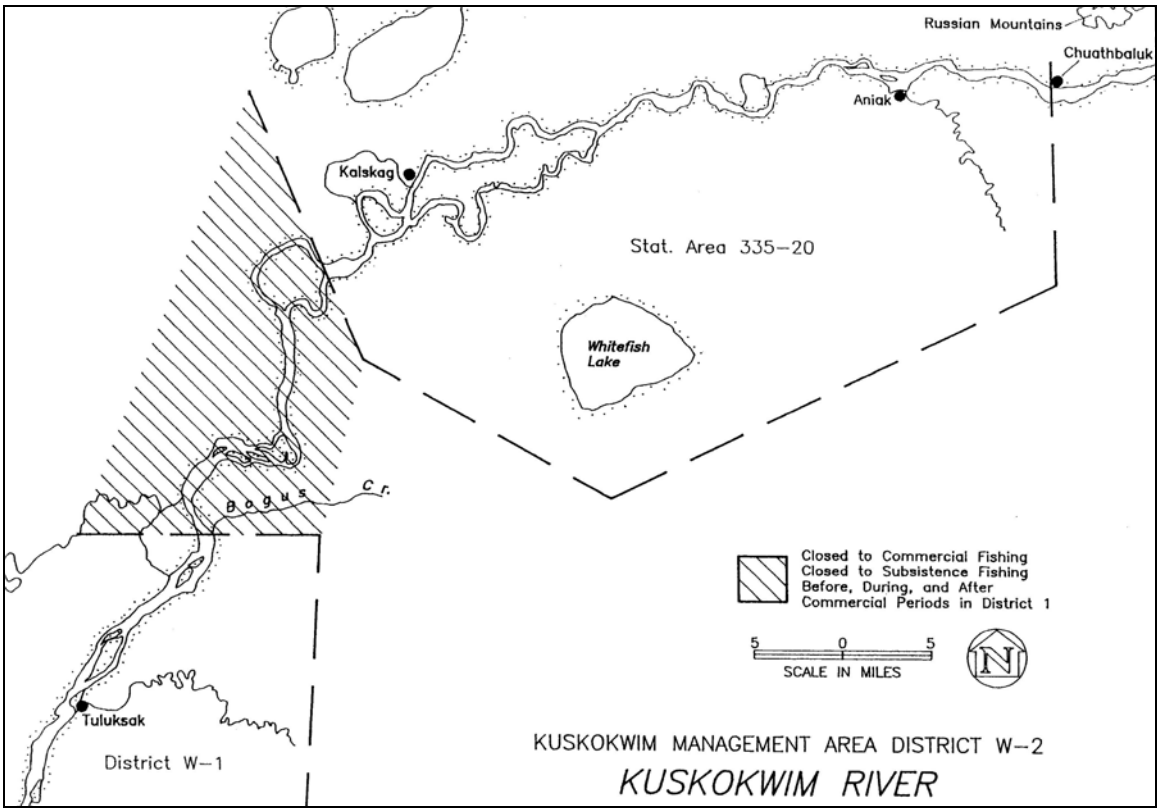

Figure 3.–Kuskokwim Management Area, District 2.

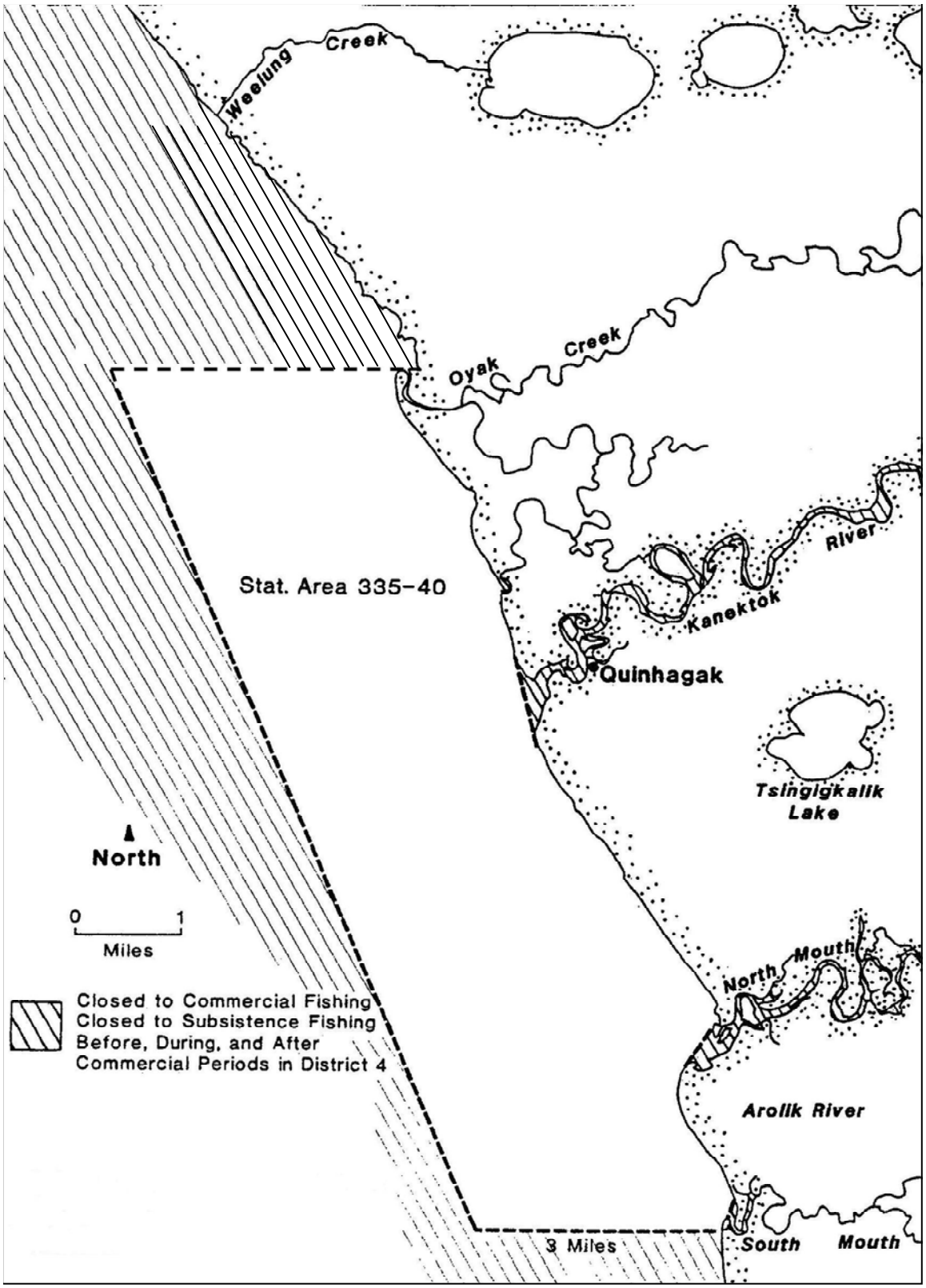

Figure 4.–Kuskokwim Management Area, District 4.

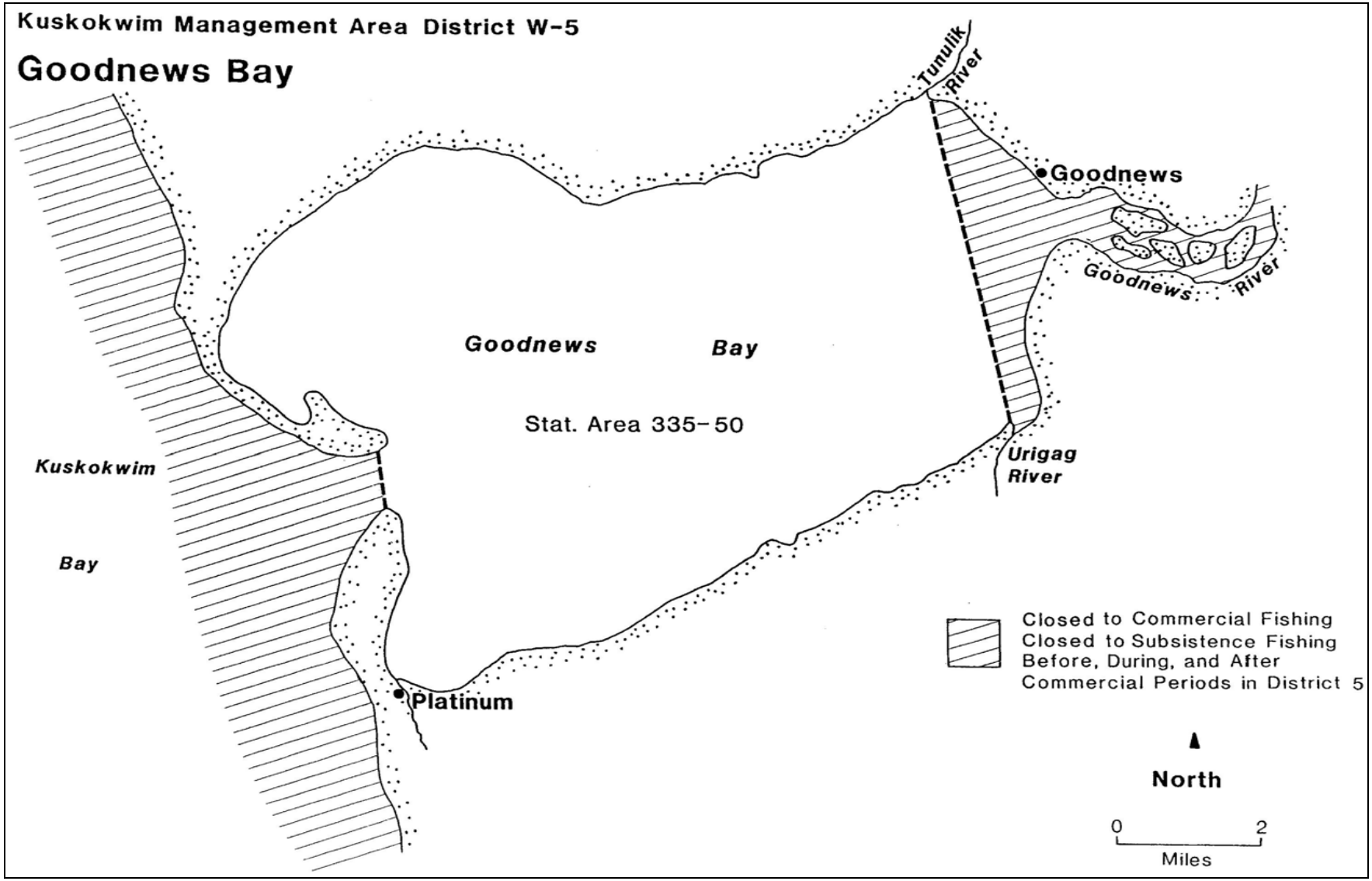

Figure 5.-Kuskokwim Management Area, District 5.

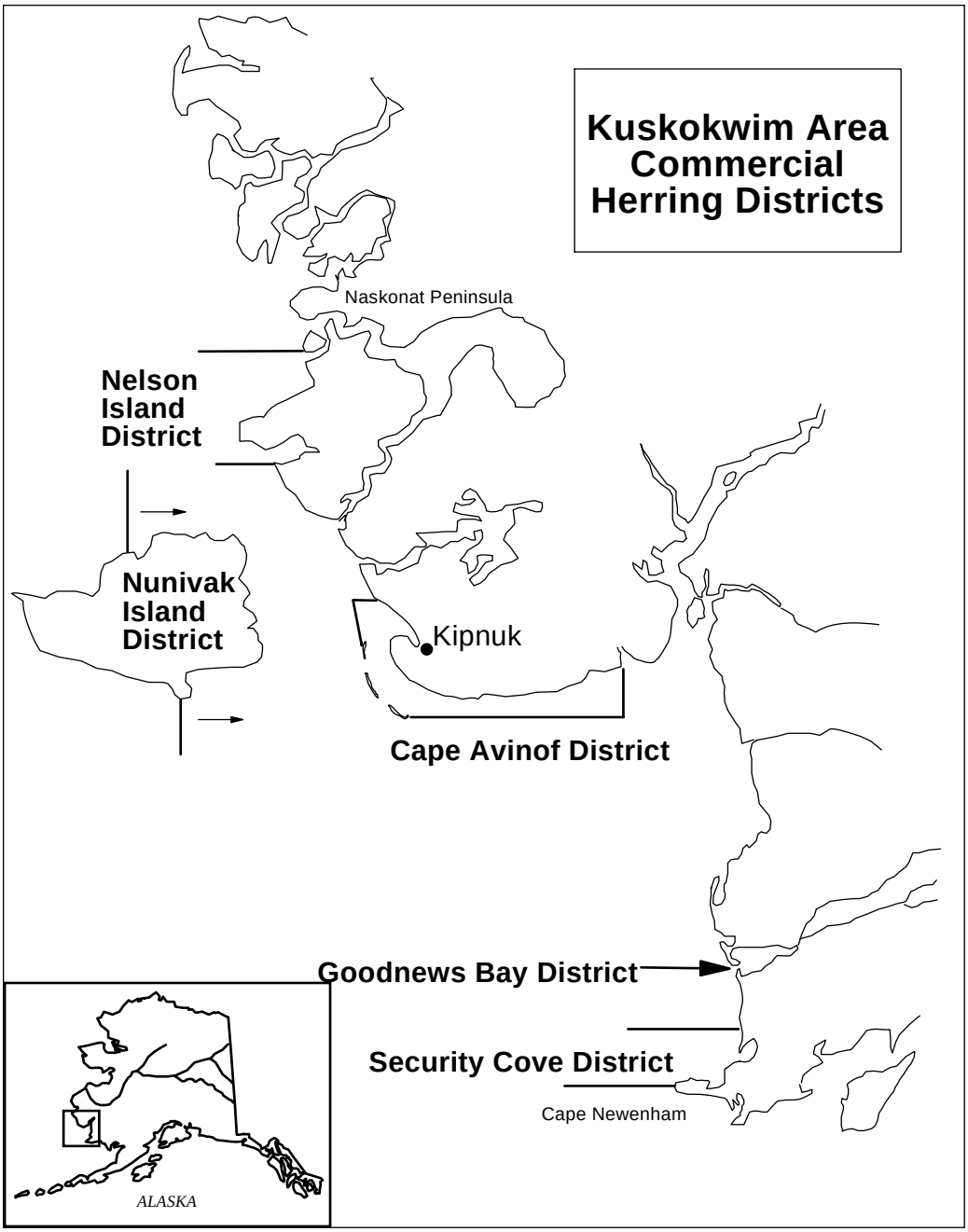

Figure 6.–Commercial herring fishing districts in the Kuskokwim Area.

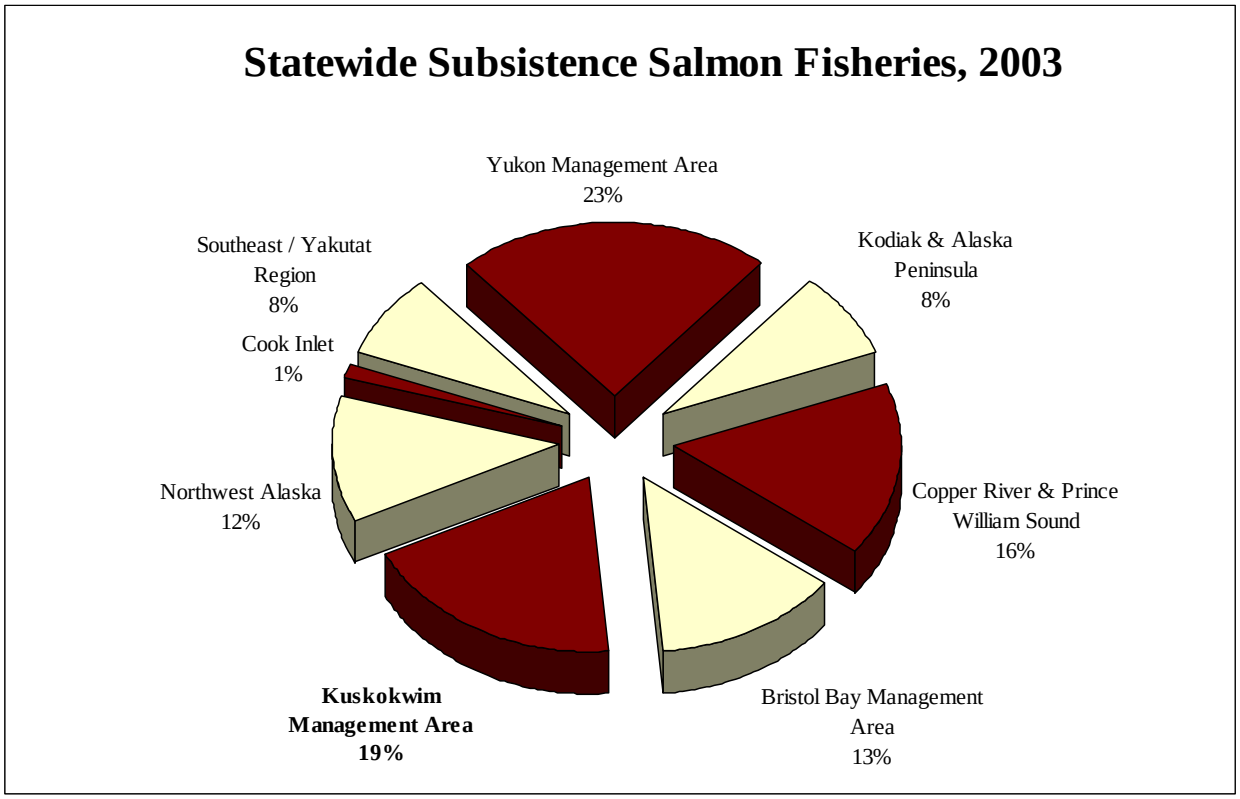

Figure 7.–Percentage of subsistence salmon harvest by Area or Region, State of Alaska, 2003.

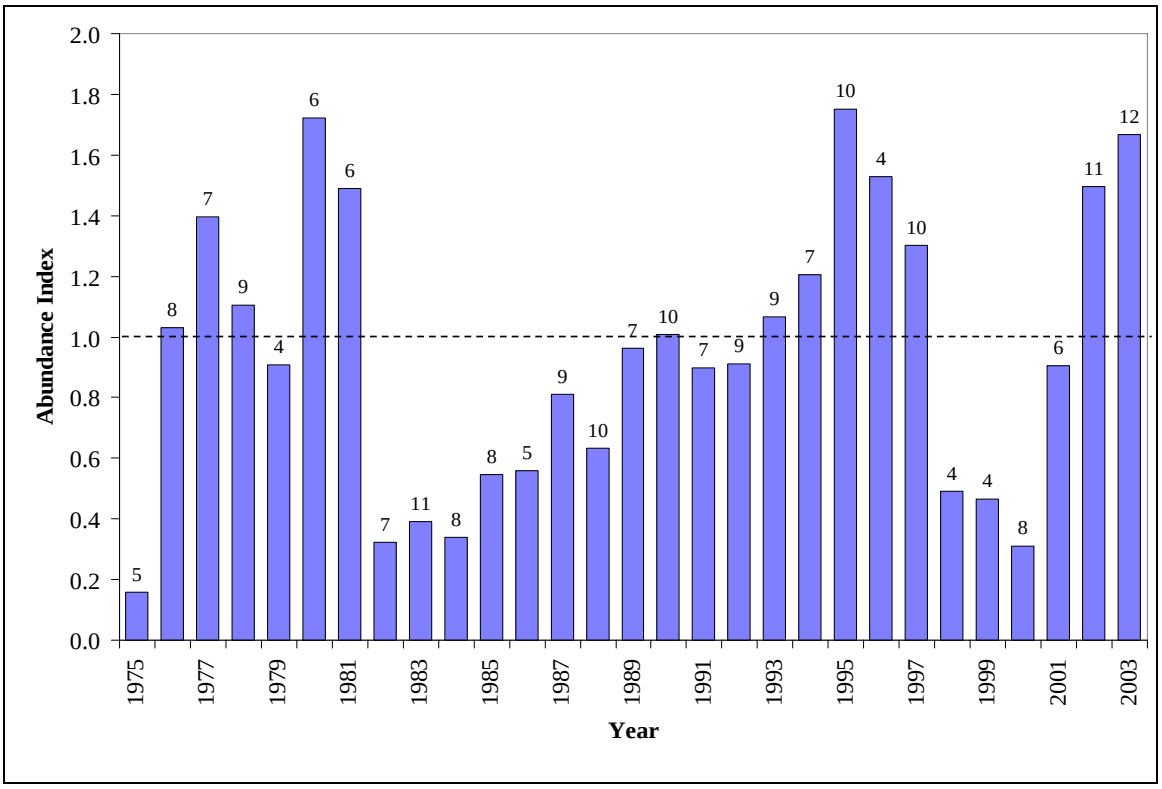

Figure 8.–The Kuskokwim River Chinook salmon escapement index, 1975 through 2003.

APPENDIX A. KUSKOKWIM AREA SALMON FISHERY

Appendix A1.–Fish species commonly found, Kuskokwim Area, 2003.

Species Code	Genus and Species[a]	Common Name[a]
110	*Gadus macrocephalus*	Pacific Cod
113	*Eleginus gracilis*	Saffron Cod
129	*Platichthys stellatus*	Starry Flounder
122	*Pleuronectes glacialis*	Arctic Flounder
127	*Pleuronectes aspera*	Yellowfin Sole
128	*Pleuronectes vetulus*	English Sole
162	*Cottus cognatus*	Slimy Sculpin
166	*Oligocottus maculosus*	Tidepool Sculpin
192	*Hexagrammos stelleri*	Whitespotted Greenling
200	*Hippoglossus stenolepis*	Pacific Halibut
230	*Clupea pallasi*	Pacific Herring
410	*Oncorhynchus tshawytscha*	Chinook Salmon
420	*Oncorhynchus nerka*	Sockeye Salmon
430	*Oncorhynchus kisutch*	Coho Salmon
440	*Oncorhynchus gorbuscha*	Pink Salmon
450	*Oncorhynchus keta*	Chum Salmon
500	*Esox lucius*	Northern Pike
513	*Osmerus mordax*	Rainbow Smelt
514	*Hypomesus olidus*	Pond Smelt
516	*Mallotus villosus*	Capelin
520	*Salvelinus alpinus*	Arctic Char
532	*Salvelinus malma*	Dolly Varden
541	*Oncorhynchus mykiss*	Rainbow Trout
550	*Salvelinus namaycush*	Lake Trout
570	*Stenodus leucichthys*	Inconnu
588	*Coregonus nasus*	Broad Whitefish
589	*Coregonus pidschian*	Humpback Whitefish
583	*Coregonus sardinella*	Least Cisco
584	*Coregonus autumnalis*	Arctic Cisco
586	*Prosopium cylindraceum*	Round Whitefish
590	*Lota lota*	Burbot
600	*Lampetra tridentata*	Pacific Lamprey
601	*Lampetra japonica*	Arctic Lamprey
610	*Thymallus arcticus*	Arctic Grayling
630	*Dallia pectoralis*	Alaska Blackfish
640	*Catostomus catostomus*	Longnose Sucker
660	*Gasterosteus aculeatus*	Threespine Stickleback
661	*Pungitius pungitius*	Ninespine Stickleback
670	*Percopsis omiscomaycus*	Trout Perch
NA	*Megalocottus platycephalus*	Belligerent Sculpin
NA	*Myoxocephalus quadricornis*	Fourhorn Sculpin

[a] Based on American Fisheries Society Special Publication No. 20, Common and Scientific Names of Fishes from the United States and Canada (Fifth Edition). Committee and Names of Fishes, Bethesda, Maryland, 1991.

Appendix A2.–Distance to selected locations from mouth of the Kuskokwim River, 2003.

Location [a]	Distance from River Mouth [b]		Distance from Bethel	
	Kilometer	Miles	Kilometer	Miles
Popokamiut (Downstream boundary District 1)	(3)	(2)	(109)	(68)
Kuskokwim River Mouth [b]	0	0	(106)	(66)
Apokak Slough (Downstream boundary District 1)	5	0	(106)	(66)
Eek River	13	8	(93)	(58)
Eek (community)	46	29	(60)	(37)
Kwegooyuk	22	13	(85)	(53)
Kinak River	32	20	(74)	(46)
Tuntutuliak (community)	45	28	(61)	(38)
Kialik River	50	31	(56)	(35)
Fowler Island	68	42	(39)	(24)
Johnson River	77	48	(29)	(18)
Napakiak (community)	87	54	(19)	(12)
Napaskiak (community)	97	60	(10)	(6)
Oscarville (community)	97	60	(10)	(6)
Bethel (community)	106	66	0	0
Gweek River	135	84	29	18
Kwethluk River	131	82	25	16
Kwethluk (community)	132	82	26	16
Kwethluk River Weir	216	134	109	68
Akiachak (community)	143	89	37	23
Kasigluk River	150	93	43	27
Kisaralik River	151	94	45	28
Akiak (community)	161	100	55	34
Mishevik Slough,	183	114	77	48
Tuluksak River	192	119	85	53
Tuluksak (community)	192	120	86	54
Tuluksak River Weir	248	154	142	88
Nelson Island	190	118	84	52
Bogus Creek (Upstream Boundary District 1)	203	126	97	60
High Bluffs	233	145	127	79
Downstream Boundary District 2	262	163	156	97
Mud Creek Slough	267	166	161	100
Lower Kalskag	259	161	153	95
Kalskag (community)	263	163	157	97
Lower Kalskag Fishwheel (2004)	249	155	143	89
Kalskag Fishwheel (2002, 2003, and 2005)	270	168	163	102
Birchtree Fishwheel (2001 to 2004)	294	183	187	117
Aniak River	307	191	201	125
Aniak (community)	307	191	201	125
Aniak Receiver Site (upper)	310	191	201	125
Aniak Receiver Site (lower)	306	191	201	125
Aniak Sonar Site	323	201	217	135
Aniak Sonar Receiver Site	323	201	217	135
Chuathbaluk (community)	323	201	217	135
Upstream Boundary District 2	322	200	216	134
Kolmakof River	344	214	238	148
Napaimiut (community)	359	223	253	157
Holokuk River	362	225	256	159

-continued-

Appendix A2.–Page 2 of 2.

Location [a]	Distance from River Mouth [b]		Distance from Bethel	
	Kilometer	Miles	Kilometer	Miles
Sue Creek	381	237	275	171
Oskawalik River	398	247	291	181
Crooked Creek (community)	417	259	311	193
Georgetown (community)	446	277	340	211
George River	446	277	340	211
George River Weir	453	281	347	215
George Receiver Site	453	281	347	215
Red Devil (community)	472	293	365	227
Red Devil Receiver Site	472	293	365	227
Sleetmute (community)	488	303	381	237
Holitna River	491	305	385	239
Hoholitna River	538	334	432	268
Chukowan River	709	441	603	375
Kogrukluk River	709	441	603	375
Kogrukluk River Weir	710	441	604	375
Kogrukluk Receiver Site	710	441	604	375
Stony River (community)	534	332	428	266
Stony River	536	333	430	267
Lime Village (community)	644	400	538	334
Telaquana River	727	452	621	386
Telaquana Lake (outlet)	756	470	650	404
Swift River	560	348	454	282
Tatlawiksuk River	563	350	457	284
Tatlawiksuk River Weir	568	353	462	287
Tatlawiksuk Receiver Site	568	353	462	287
Devil's Elbow	599	372	492	306
Vinasale (abandoned community)	665	413	558	347
Takotna River	752	467	645	401
Takotna (community)	832	517	726	451
Takotna River Weir	835	519	729	453
Takotna Receiver Site	835	519	729	453
McGrath (community)	753	468	647	402
McGrath Receiver Site	753	468	647	402
Middle Fork	806	501	700	435
Big River	827	514	721	448
Pitka Fork	845	525	739	459
Medfra (community)	863	536	756	470
South Fork	869	540	763	474
East Fork	882	548	776	482
North Fork	884	549	777	483
Nikolai (community)	941	585	835	519
Swift Fork	1,078	670	972	604
Telida (community)	1,128	701	1,022	635
Highpower Creek	1,151	715	1,044	649
Fish Creek	1,234	767	1,128	701
Headwaters South Fork	1,292	803	1,186	737
Headwaters North Fork	1,548	962	1,442	896

Note: Distances are determined using a computer version (Garmin Topo MapSource) of U.S. Geological Survey 1:100,000 scale maps. Routing is as if traveling by boat.

[a] Locations not on the mainstem of the Kuskokwim River are listed as subordinate to the point of departure from the mainstem.

[b] The "mouth" of the Kuskokwim River is defined as the southern most tip of Eek Island (latitude N 60o 05.569, longitude W 162o 19.054), and is one of 3 points that define the downstream boundry of District 1.

Appendix A3.–Historical events, which have potential of actual influence on the salmon fisheries of the Kuskokwim Area, 1913–2003.

Year	Event [a]
1913	Commercial sale of salmon export first documented in the Kuskokwim Area.
1954	Commercial Chinook salmon quota established.
1959	First Chinook landing since quota established.
1960	Kanektok Counting Tower (1960–1962)
	Quinhagak District (W-4) commercial salmon fishery established.
	Kuskokwim Area divided into 4 subdistricts; Lower Kuskokwim River (Subdistrict 1), Middle Kuskokwim River (Subdistrict 2), Upper Kuskokwim River (Subdistrict 3), Quinhagak (Subdistrict 4). District boundaries are not well recorded; in the Aniak area some commonly used drift sites overlap between District 2 and 3 which confused catch reporting.
	Kuskokwim River Drainage Surveys, 1960.
1961	ADF&G Kuskokwim River tagging study.
1962	ADF&G Kuskokwim River tagging study.
	Boundary between Subdistricts 2 and 3 changed; the new location was not recorded but the most likely location was Kolmakof River. The reason for the change was to move the boundary to a point which was between commonly used gillnet locations and thereby avoid confusion in catch reporting. As a result, there were no landings in Subdistrict 3.
1963	ADF&G Kuskokwim River tagging study.
	Boundaries of subdistrict documented; Subdistrict 1 extended from Kuskokuak to Mishevik Slough, Subdistrict 2 was from Mishevik Slough to Kolmakof River, Subdistrict 3 was upstream of Kolmakof River.
1965	Kwegooyuk test fishery (1965–1984; no records available for 1965).
1966	ADF&G Kuskokwim River tagging study.
	Subdistrict 3 was deleted from the regulations due to a lack of landings.
1968	Goodnews Bay District (W-5) commercial salmon fishery established.
1969	District 4 tagging study (1969–1970) on Chinook and chum salmon.
	Kogrukluk River (aka. Holitna River, Ignatti) tower/weir (1969–present).
1970	Effect of explosive detonation in ice on northern pike.
1971	Commercial fishing time in the Kuskokwim River reduced from two 24-hour periods per week to
	two 12-hour periods per week.
	Chum fishery begins in the Kuskokwim River; season was from 25 June to 31 July, location limited to waters downstream of Napakiak, mesh size restricted to 6 in. or smaller.
	Fishing periods established by Emergency Order in August.
	Gillnet mesh size in Districts 4 and 5 restricted to 6 inch or smaller.
1974	Commercial sale of salmon roe from subsistence caught fish (1974–1977).

-continued-

Appendix A.3.–Page 2 of 7.

Year	Event [a]
1976	Commercial fishing time in the Kuskokwim River was reduced from two 12 hour periods per week to two 6 hour periods per week.
	Eek River reconnaissance survey.
	Study on genetic variants in chum and Chinook salmon.
1977	Fishing periods to be established by Emergency Order before 26 June and after 31 July.
	Limited entry permits issued.
	Subsistence fishing closed 24 hours before during and 6 hours after each commercial fishing period.
	Hoholitna River reconnaissance survey
1978	Kasigluk River reconnaissance survey.
	Kwethluk River sonar project.
1979	The portion of District 1 used during the chum salmon season was extended from Napakiak upstream to Bethel.
	Kasigluk River sonar project.
	High seas salmon fleet moved for west of 160° W. longitude to west of 180° W. longitude.
1980	Subsistence fishing closed 24 hours before, during and 6 hours after each commercial fishing period.
	Aniak River sonar project.
1981	Pilot test fish and FanScan projects at Bethel.
	Inventory of Kisaralik River and Lake.
	Goodnews River counting tower (1981–1990).
	Salmon River (Pitka Fork drainage) weir project (1981–1984).
	Species identification program results in better differentiation of sockeye and chum salmon.
1982	Kanektok River sonar project (1982–1986).
1983	Pilot test fish project at Bethel using drift gillnets.
	Provisional escapement goals established for many of the major spawning tributaries in the area.
	Management strategy shifts from guideline harvest based to obtaining escapement objective.
1984	Kwegooyuk test fishery replaced by the Bethel drift test fishery.
1985	Commercial fishing restricted to mesh sizes less than or equal to 6 inches.
	Chum season utilizes entire length of District 1.
1986	*Migratory timing of coho salmon in the Kuskokwim Area, 1979–1984.*
	Kuskokwim River salmon abundance estimate based on calibrated test fish CPUE.
	Downstream boundary of District 1 extended to a line from Apokak Slough to Popokamiut.
1987	Discontinued the directed commercial Chinook salmon fishery in the Kuskokwim River.
	Sale of Chinook salmon limited to 14,000 in the Kuskokwim River June commercial fishery.

-continued-

Appendix A3.–Page 3 of 7.

Year	Event [a]
	First fishing period restricted to that portion of District 1, which is downstream of Bethel, due to Chinook conservation concerns.
	Subsistence fishing in all of District 2 and its tributary streams is closed before, during and after commercial periods.
	South peninsula sockeye and chum salmon tagging study.
1988	Review of the estimation of Kuskokwim River annual salmon passage through expansion of the Bethel test fish CPUE.
•	Kuskokwim River sonar project (1988–1995).
	Kuskokwim River subsistence test fisheries (1988–1990).
	District 1 upstream boundary extended to Bogus Creek.
	District 2 reduced in size; downstream boundary moved upstream to High Bluffs, the upstream boundary moved downstream to Chuathbaluk.
	Portion of Kuskokwim River between Districts 1 and 2 closed to subsistence fishing when District 1 subsistence fishing is closed.
	Reorganization of District 1 Statistical Areas.
	District 4 Salmon Management Plan adopted.
	Establishment of the Kuskokwim River Salmon Management Working Group (1988–present).
	Eek Test Fishery (1988–1990, 1992–1995).
1989	USFWS conducted genetic sampling throughout the Kuskokwim Area.
	USFWS conducted Chinook tagging study in the lower Kuskokwim River.
	Record low temperatures recorded in interior Alaska coupled with shallow snow pack threaten survival of salmon eggs/fry from 1988 spawning.
1990	ADF&G genetic sampling (1990–1996).
	Reorganization of District 1 statistical areas.
	Upstream boundary of District 1 moved downstream from Bogus Creek to Big (Nelson) Island.
	Downstream boundary of District 2 moved upstream to second slough below Kalskag.
	District 4 northern boundary is extended north to Weelung Creek.
1991	USFWS operates Tuluksak River weir (1991–1994).
	Weir replaces counting tower on Goodnews River (1991–present).
1992	Aniak and Chuathbaluk test fisheries (1992–1995).
	Eek test fishery is re-established for the coho season.
	USFWS operates Kwethluk River weir (1992).
	Ban on high-seas drift gillnet fishing imposed.
	Unusual proportion of returning 5-year old chum salmon had reduced growth between the second third annuli.

-continued-

Year	Event [a]
	Failure of age 4 chum salmon in the Kuskokwim River; Aniak drainage especially hard hit; attributed to cold winter of 1988–1989.
1993	Failure of age 4 and 5 chum salmon in the Kuskokwim River, Yukon River, and the Norton Sound/Kotzebue Area; cause unknown; especially hard hit were the Aniak drainage and the Yukon fall chum; commercial fishing severely restricted, chum sport fishery was closed, and the subsistence salmon fishery was restricted and closed for a period of time (first time ever).
1994	Working Group commissioned and Dr. Mundy started "Recommendations for Strengthening the Cooperative Management Process of the Kuskokwim River Salmon Management Working Group".
	Upstream boundary of District 1 moved upstream to Bogus Creek.
1995	BSFA operates a chum salmon radio telemetry project on the Kuskokwim River.
	Takotna Community School and ADF&G operate a salmon counting tower on the Takotna River (1995–1998).
	AVCP and BSFA operate the Lower Kuskokwim test fishery in cooperation with ADF&G; the project is a modification of the Eek test fishery.
1996	ADF&G genetic sampling for late spawning chum salmon and one mixed stock sample from District 1.
	Near record low water levels during June and early August coupled with record high water temperatures.
	Irregular fishing schedule in District 1 during June and July due to limited market interest for chum salmon.
	Record early coho run coupled with record high harvest and escapement at Kogrukluk River.
	AVCP and ADF&G operate a salmon counting tower on the Kwethluk River (1996–1999).
	KNA and ADF&G operate a salmon weir on the George River (1996–present).
	Aniak River sonar is relocated to allow for full channel ensoniffication and configurable sonar technology is employed (1996–present).
	Native Village of Kwinhagak (NVK) begins development of a salmon counting tower on the Kanektok River.
	Kuskokwim River declared an economic disaster area due to very low chum and coho salmon returns, harvests and exvessel prices. Northern boundary of District 4 moved 3 miles south from July 14 to July 28. Record low chum salmon escapement at Kogrukluk River weir.
	Second summer of record low water levels in the Kuskokwim River basin during the summer and fall coupled with record high water temperatures.
	Anomalous Bering Sea conditions: warm water, odd plankton blooms, sea bird die offs, etc.
	Aniak chum salmon return vastly exceeded expectations based on 1992–1993 spawning abundance estimates.
	Due to an extremely low return of chum salmon, ADF&G, AVCP, KNA, KRSMWG, ONC, TCC and McGrath Native Village Council issue a joint appeal for subsistence users to conserve chum salmon. Record low subsistence harvest of chum salmon in the Kuskokwim Area.
	Aniak processor does not operate due to depressed salmon market (1997–present).

-continued-

Year	Event[a]
	Sale of salmon roe is prohibited in Districts 1 and 2 (effective beginning December 1997).
	Middle Fork Goodnews River weir converted from fixed-panel to a resistance board "floating weir" and operated through majority of coho run for first time (1997-present).
	NVK and ADF&G operate a salmon counting tower on the Kanektok River (1997–1998).
1998	Kuskokwim River declared an economic disaster area for second straight year due to low chum and coho salmon returns, harvests and exvessel prices.
	KNA and ADF&G operate a salmon weir on the Tatlawiksuk River (1998–present).
	Second year of anomalous Bering Sea conditions: warm water, odd plankton blooms, sea bird die offs, etc.
	High water levels severely restrict operational period of many Kuskokwim Area escapement projects.
	Record low average water temperature measured at the Bethel test fish site.
1999	Kuskokwim River experiences extremely low Chinook, chum and coho salmon returns, harvests and exvessel prices for third consecutive year. All species have very late run timing. Kuskokwim Bay coho returns and harvests extremely low.
	Federal government assumes control of subsistence fishery management in federal waters on October 1.
	KNA-operated salmon weirs on the Tatlawiksuk and George Rivers converted to resistance board (floating) weirs and operations extended through coho run.
	Kuskokwim River sonar project begins redevelopment using split-beam sonar and is relocated to a new site one mile above upstream end of Church Slough.
2000	Kuskokwim River declared an economic disaster area due to extremely low chum salmon return, harvest and exvessel price. Chinook salmon returns are very low for second consecutive year. Many subsistence fishers report that they were unable to meet their Chinook and chum salmon harvest goals.
	Due to an extremely low return of Chinook salmon, ADF&G, AVCP, KNA, KRSMWG, Kwethluk IRA, TCC, McGrath Native Village Council and USFWS issue a joint appeal for subsistence users to conserve Chinook salmon.
	ADF&G and Federal Office of Subsistence Management (FOSM) restrict subsistence Chinook salmon fishery.
	Takotna Community Schools and ADF&G operate a resistance board weir on the Takotna River (2000–present).
	Kwethluk IRA and USFWS operate a resistance board weir on the Kwethluk River (2000–present).
	District W-1 divided into Subdistricts W-1A (above Bethel) and W-1B (below Bethel) and fishers are required to register to fish in only one subdistrict. Due to limited processing capacity, only one subdistrict is opened at a time to reduce harvest.
	Commercial fishers required to identify vessels with either ADF&G or CFEC permit number.

-continued-

Appendix A3.–Page 6 of 7.

Year	Event[a]
	ADF&G Sport Fish Division creates Lower Yukon-Kuskokwim Management Area and stations Area Management Biologist in Bethel.
	Line attached to a pole (rod and reel) added to legal gear for subsistence fishing in AVCP area (prior to 2000 fishing season).
	Use of rod and reel for subsistence extended throughout the Kuskokwim Area (2000–2001 BOF meeting).
2001	Alaska Board of Fisheries designates Kuskokwim River Chinook and chum salmon to be stocks of concern based on the Sustainable Fisheries Policy because of poor runs since 1997.
	Subsistence fishing schedule implemented in the Kuskokwim River during June and July to conserve Chinook and chum salmon and provide for adequate fishing opportunity throughout the drainage.
	Kuskokwim River declared an economic disaster area due to low chum salmon return, harvest and exvessel price. No commercial fishing periods in Kuskokwim River in June and July. Chinook salmon returns are below average in size.
	Due to an extremely low return of Chinook salmon, ADF&G, AVCP, KNA, KRSMWG, Kwethluk IRA, McGrath Native Village Council, ONC, and USFWS issue a joint appeal for subsistence users to conserve Chinook and chum salmon.
	Native Community of Tuluksak and USFWS operate a resistance board weir on the Tuluksak River.
	NVK and ADF&G operate a salmon counting weir on the Kanektok River.
	ADF&G/CF and KNA operate fish wheels at Kalskag and Birch Tree Crossing to tag salmon and then make salmon population estimates.
2002	The State of Alaska declared the Kuskokwim region a disaster area for the fifth year in 6 because of low salmon prices in the bay and river and a complete lack of buyers during the chum season on the river.
	ADF&G did not join USFWS and Native groups in issuing a pre-season appeal for subsistence users to conserve Chinook and chum salmon because such a request is allocative in nature and only the BOF makes allocation decisions.
	In June the Federal Subsistence Board adopted a special regulatory action that tied the time allowed for sport fishing to the time allowed for subsistence net and fish wheel fishing in federal waters in the Kuskokwim River drainage. Upon a request for reconsideration by ADF&G, the Federal Subsistence Board rescinded its decision. The reason for the rescission was that under ANILCA, sport fishing on federal waters is managed by ADF&G unless there are overriding conservation or subsistence concerns. In this instance there were no overriding conservation or subsistence concerns.
	A subsistence fishing schedule was implemented in the Kuskokwim River during June to conserve Chinook and chum salmon and to provide adequate subsistence fishing opportunity throughout the drainage. However, because an average Chinook run and an above average chum run developed, the subsistence schedule was lifted on June 28.
	The Kuskokwim River Fisheries Co-op dissolved. ACR #28 was accepted by BOF so that the formation of a Chignik-style salmon fishing cooperative on the Kuskokwim River could be considered.

-continued-

Appendix A3.–Page 7 of 7.

Year	Event[a]
	ADF&G/SF and KNA operated salmon radio telemetry projects on the Kuskokwim main stem and on the Holitna River to estimate salmon abundance.
	The Kuskokwim River Fisheries Co-op dissolved. ACR #28 was accepted by BOF so that the formation of a Chignik-style salmon fishing cooperative on the Kuskokwim River could be considered.
	ADF&G/SF and KNA operated salmon radio telemetry projects on the Kuskokwim main stem and on the Holitna River to estimate salmon abundance.
2003	Second consecutive season of no chum salmon (June or July) directed commercial fishery.

[a] For additional information on specific topics refer to the Region III report catalog or historical Area Management Reports for the Kuskokwim Area.

Appendix A4.–Subsistence catch information used to establish amounts necessary for subsistence (ANS) and current ANS, 1990–2003.

Species		District 1 Lower River	District 2 Middle River	Upper River Above District 2	District 2 and Upper River	District 4 Quinhagak	District 5 Goodnews/ Platinum	All River[a]	All Non Kuskokwim River [a]	Total Kuskokwim Area
Chinook	Max	78,956	12,754	4,750	17,480	6,013	917	96,436	6,699	100,159
	Min	52,795	7,181	3,082	10,263	2,746	374	64,795	3,535	68,686
	Mean	69,207	9,357	4,197	13,554	3,698	666	82,762	4,511	87,272
Sockeye	Max	42,883	5,089	7,445	12,534	1,951	1,282	52,984	3,420	56,404
	Min	21,671	2,183	3,121	5,572	400	253	27,791	823	28,622
	Mean	30,733	3,315	5,156	8,471	1,173	750	39,204	2,073	41,276
Coho	Max	43,362	4,448	7,112	10,295	4,174	1,828	50,370	5,922	55,620
	Min	18,979	2,010	2,976	4,986	1,264	305	24,864	1,682	27,239
	Mean	26,725	2,926	5,153	8,079	2,427	853	34,803	3,416	38,220
Chum	Max	93,743	19,132	13,633	32,765	3,234	1,006	126,508	4,961	131,469
	Min	32,790	3,916	2,297	7,001	600	133	39,970	1,006	40,976
	Mean	58,001	10,304	6,837	17,142	1,459	325	75,143	3,004	78,147
All Species	Max	233,946	34,691	30,583	65,274	15,372	4,176	293,554	20,968	314,522
	Min	153,722	16,097	15,202	31,299	5,853	1,404	188,476	7,588	198,466
	Mean	184,667	25,902	21,343	47,245	8,757	2,594	231,912	13,003	244,915

[a] All Kuskokwim River and All Non Kuskokwim River data were used to determine Amounts Necessary for Subsistence (ANS) ranges in January 2001.

Appendix A5.–Historic subsistence salmon harvest, Kuskokwim Management Area, 1989–2003.

	Households		Estimated Salmon Harvest					
Year	**Total**	**Surveyed**	**Chinook**	**Sockeye**	**Coho**	**Chum**	**Pink**	**Total**
1989	3,422	2,135	85,323	37,088	57,846	145,106	0	325,363
1990	3,317	1,830	92,675	39,659	50,708	131,470	0	314,513
1991	3,347	2,024	90,226	56,401	55,620	96,314	0	298,561
1992	3,314	1,724	68,706	34,159	44,494	99,577	0	246,937
1993	3,274	1,816	91,722	51,362	35,295	61,724	0	240,103
1994	3,179	1,821	98,378	39,280	36,504	76,949	0	251,111
1995	3,652	1,894	100,157	28,622	39,165	68,941	0	236,885
1996	3,643	1,837	81,597	35,037	34,699	90,239	0	241,572
1997	3,510	1,831	85,506	41,251	30,717	40,993	0	198,466
1998	3,495	1,849	86,113	37,579	27,240	67,664	0	218,595
1999	4,180	2,523	77,660	49,388	27,753	47,612	0	202,413
2000	4,441	2,750	68,841	44,832	35,670	55,371	0	204,714
2001	4,483	2,297	77,570	51,965	31,686	51,117	0	212,338
2002	4,339	2,798	70,219	27,733	34,413	73,234	0	205,599
2003	4,535	2,375	72,498	36,894	38,791	42,291	0	194,474
1993–2002 Avg.	3,820	2,142	83,776	40,705	33,314	63,384	0	221,180
1989–2002 Avg.	3,685	2,081	83,907	41,025	38,701	79,022	0	242,655

Source: Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.3.

Appendix A6.–Commercial harvest of sockeye and chum salmon in the June South Peninsula Fishery, 1980–2003.

Year	Sockeye	Chum
1980	3,206,275	508,865
1981	1,820,965	563,947
1982	2,118,701	1,095,044
1983	1,961,569	785,631
1984	1,388,203	337,120
1985	1,791,400	433,829
1986	471,387	351,769
1987	792,964	443,019
1988	756,687	526,711
1989	1,744,505	455,163
1990	1,344,529	518,545
1991	1,548,930	772,705
1992	2,457,856	426,203
1993	2,973,744	532,247
1994	1,461,263	582,165
1995	2,105,321	537,433
1996	1,028,970	359,820
1997	1,628,181	322,325
1998	1,288,725	245,619
1999	1,375,399	245,306
2000	1,251,228	239,357
2001	150,632	48,350
2002	591,106	378,817
2003	453,147	282,438

Appendix A7.–Salmon spawning escapement objectives, Kuskokwim Area, 2003.

Area	Escapement Objectives [a]			
	Chinook	**Sockeye**	**Coho**	**Chum**
Kuskokwim River				
Kwethluk River				
3-step Mt. to Canyon Cr.	1,000	-	-	-
Canyon Creek	200[b]	-	-	-
Kisaralik River				
Airstrip to Kisaralik L.	1000[b]	-	-	-
Aniak River				
Buckstock R. to Aniak L.	1,500[b]	-	-	10,000[b]
Salmon River	600[b]	-	-	-
Aniak Sonar Project[c]	-	-	-	250,000[b]
Holitna River				
Nogamut to Kashegelok	2,000[b]	-	-	12,000[b]
Kogrukluk Weir[d]	10,000[b]	-	25,000	30,000[b]
Salmon River (Pitka Fork)	1,300[b]	-	-	-
Kuskokwim Bay				
Kanektok River to Kagati Lake	5,800	15,000	25,000	30,500
Goodnews River System				
Main Fork and lakes	1,600	15,000	15,000	17,000
Middle Fork and Lakes	800	5,000	2,000	4,000
Middle Fork Weir[d]	3,500	25,000	-	15,000

[a] Escapement objectives are preliminary and are subject to change as additional data becomes available. Unless otherwise indicated, escapement objectives are based on aerial index counts which do not represent total escapement, but do reflect annual spawner abundance trends when made using standard survey methods under acceptable survey conditions.

[b] Established as sustainable escapement goals during 2001 BOF meeting.

[c] Sonar total escapement estimates.

[d] Weir total escapement estimates.

Appendix A8.–Subsistence, personal use and commercial salmon harvests, Kuskokwim Area, 2003.

	Commercial Harvest						Subsistence Harvest							Total
Year	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Sockeye	Chum	Other[c]	Pink	Coho[b]	Subtotal	Harvest
1913	7,800					7,800								7,800
1914		2,667				2,667								2,667
1915														0
1916	949					949								949
1917	7,878					7,878								7,878
1918	3,055					3,055								3,055
1919	4,836					4,836								4,836
1920	34,853					34,853								34,853
1921	9,854					9,854								9,854
1922	8,944	6,120				15,064							180,000	195,064
1923	7,254					7,254								7,254
1924	19,253	900		7,167	7,167	34,487	17,700			203,148			220,848	255,335
1925	1,644	5,800				7,444	10,800			230,850			241,650	249,094
1926													738,576	738,576
1927													286,254	286,254
1928													481,090	481,090
1929													560,196	560,196
1930	7,626	2,448				10,074							538,650	548,724
1931	8,541					8,541							389,367	397,908
1932	9,339					9,339							746,415	755,754
1933							6,290			443,998			450,288	450,288
1934							20,800			597,132			617,932	617,932
1935	6,448				8,296	14,744	22,930			554,040			576,970	591,714
1936	624					624	33,500			549,423			582,923	583,547
1937	480					480				537,111			537,111	537,591
1938	624				828	1,452	10,153			400,242			410,395	411,847
1939	134					134	14,000			125,425			139,425	139,559
1940	247				500	747	8,000			415,523			423,523	424,270
1941	187				674	861	8,000			415,523			423,523	424,384
1942							6,400			325,339			331,739	331,739

-continued-

Appendix A8.–Page 2 of 3.

	Commercial Harvest						Subsistence Harvest							Total
Year	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Sockeye	Chum	Other[c]	Pink	Coho[b]	Subtotal	Harvest
1943							6,400			325,339			331,739	331,739
1944														
1945														0
1946	2,288				674	2,962								2,962
1947	5,356					5,356								5,356
1948														0
1949														0
1950														0
1951	4,210					4,210								4,210
1952														0
1953														0
1954	57					57								57
1955														0
1956														0
1957														0
1958														0
1959	3,760					3,760								3,760
1960	5,969	5,649	0	0	5,498	17,116	18,887			301,753			320,640	337,756
1961	23,246	2,308	18,864	90	5,090	49,598	28,934			179,529			208,463	258,061
1962	20,867	10,313	45,707	4,340	12,432	93,659	13,582			175,304		161,849	350,735	444,394
1963	18,571	0	0	0	15,660	34,231	34,482			170,829		137,649	342,960	377,191
1964	21,230	13,422	707	939	28,992	65,290	29,017			219,208		190,191	438,416	503,706
1965	24,965	1,886	4,242	0	12,191	43,284	24,697			250,878			275,575	318,859
1966	25,823	1,030	2,610	268	22,985	52,716	49,325			175,735			225,060	277,776
1967	29,986	652	8,235	0	58,239	97,112	61,262			214,468			275,730	372,842
1968	43,157	5,884	19,684	75,818	154,275	298,818	35,698			278,008			313,706	612,524
1969	64,777	10,362	50,377	1,251	110,473	237,240	40,617			204,105			244,722	481,962
1970	64,722	12,654	60,566	27,422	62,245	227,609	69,612			246,810		11,868	328,290	555,899
1971	44,936	6,054	99,423	13	10,006	160,432	43,013			116,391		6,899	166,303	326,735
1972	55,598	4,312	97,197	1,952	23,880	182,939	38,176			120,316		1,325	159,817	342,756
1973	51,374	5,224	184,207	634	152,408	393,847	38,451			179,259		23,746	241,456	635,303
1974	30,670	29,003	196,127	60,099	179,579	495,478	26,665			277,170		32,780	336,615	832,093

-continued-

Appendix A8.–Page 3 of 3.

	Commercial Harvest						Subsistence Harvest							Total
Year	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Sockeye	Chum	Other[c]	Pink	Coho[b]	Subtotal	Harvest
1975	28,219	17,686	225,308	910	112,751	384,874	47,569			176,389			223,958	608,832
1976	49,262	14,636	231,877	39,998	112,130	447,903	58,055			223,792		4,312	286,159	734,062
1977	58,256	18,621	298,959	434	263,727	639,997	58,158			203,397		12,193	273,748	913,745
1978	63,194	13,734	282,044	61,968	247,271	668,211	38,145			125,052		12,437	175,634	843,845
1979	53,314	39,463	297,167	574	308,683	699,201	57,053			163,451			220,504	919,705
1980	48,599	42,213	561,483	30,306	327,908	1,010,509	62,047			168,987		47,335	278,369	1,288,878
1981	79,377	105,940	485,653	463	278,541	949,974	64,274			163,554		28,301	256,129	1,206,103
1982	79,816	97,716	326,481	18,259	567,452	1,089,724	61,141			195,691		45,181	302,013	1,391,737
1983	93,676	90,834	306,554	379	248,389	739,832	51,020			149,172		2,834	203,026	942,858
1984	74,016	81,304	488,480	23,902	826,774	1,494,476	60,668			144,651		15,016	220,335	1,714,811
1985	74,083	121,221	224,680	111	382,096	802,191	45,720	33,632	95,999		1,062	24,524	200,937	1,003,128
1986	44,972	142,029	349,268	16,569	736,910	1,289,748	54,256	20,239	142,930 [c]			29,742	247,167	1,536,915
1987	65,558	170,849	603,274	163	478,594	1,318,438	71,804	25,180	70,709		291	18,085	186,069	1,504,507
1988[de]	74,563	149,949	1,443,953	37,592	623,733	2,329,790	75,107	33,102	153,980			43,866	306,055	2,635,845
1989[d]	66,914	82,365	801,355	819	554,411	1,505,864	85,322	37,088	145,106			57,847	325,363	1,831,227
1990	84,451	203,919	521,023	16,050	443,783	1,269,226	92,678	39,662	131,469			50,713	314,522	1,583,748
1991	48,170	202,441	502,187	522	556,818	1,310,138	90,224	56,404	96,308			55,581	298,517	1,608,655
1992	67,597	192,341	436,506	85,978	772,449	1,554,871	68,665	34,159	99,576			44,496	246,896	1,801,767
1993	26,636	167,235	94,937	71	686,570	975,449	91,721	51,363	61,726			35,295	240,105	1,215,554
1994	27,345	191,169	360,893	84,870	856,100	1,520,377	98,378	39,279	76,951			36,504	251,112	1,771,489
1995	72,352	198,045	707,212	318	555,539	1,533,466	100,159	28,622	68,942			39,165	236,888	1,770,354
1996	22,959	122,260	301,975	1,663	1,099,865	1,548,722	81,598	35,036	90,238			34,698	241,570	1,790,292
1997	47,990	123,002	67,200	7	166,648	404,847	85,506	41,270	40,976			30,714	198,466	603,313
1998	44,402	130,074	268,199	2,720	312,517	757,912	86,115	37,578	67,665			27,240	218,598	976,510
1999	25,019	81,201	72,659	2	32,251	211,132	77,659	49,388	47,612			27,754	202,413	413,545
2000	26,115	109,939	49,574	17	307,439	493,084	68,841	44,832	55,371			35,670	204,714	697,798
2001	14,384	59,545	21,893	0	220,804	316,626	77,570	51,965	51,117			31,686	212,338	528,964
2002	12,531	24,190	34,951	0	113,199	184,871	70,219	27,733	73,234			34,413	205,599	390,470
2003	16,014	63,646	36,225	0	346,555	462,440	72,498	36,894	46,291			38,791	194,474	656,914
10-Yr. Avg. [g]	31,973	120,666	197,949	8,967 [f]	435,093	794,649	83,777	40,707	63,383			33,314	221,180	1,015,829

[a] Primarily chum and coho salmon.

[b] Reported subsistence coho salmon harvest only. Coho salmon subsistence harvest is poorly documented with no Kuskokwim River estimates attempted prior to 1988.

[c] Includes sockeye, pink and chum salmon.

[d] The personal use catch is included with the subsistence catch.

[e] Beginning in 1988, estimates are based on a new formula therefore data since 1988 is not comparable with previous years.

[f] Even years only.

[g] 10-year average from 1993–2002.

Appendix A9.–Commercial fishing effort in permit-hours for the Kuskokwim Area, 1980–2003.

Year	District 1	District 2	District 4	District 5	Total
1980	35,370	714	21,636	9,504	67,224
1981	45,096	1,248	25,656	11,256	83,256
1982	46,200	1,128	22,632	14,556	84,516
1983	45,102	708	20,478	9,456	75,744
1984	62,643	1,050	31,488	14,004	109,185
1985	37,452	462	22,260	8,544	68,718
1986	46,944	606	25,740	10,572	83,862
1987	60,525	576	21,222	10,332	92,655
1988	81,724	912	27,276	13,764	123,676
1989	66,990	846	25,992	12,552	106,380
1990	51,236	1,051	44,520	10,548	107,355
1991	64,806	1,548	29,160	11,532	107,046
1992	54,488	1,164	35,280	15,180	106,112
1993	39,210	774	36,000	13,116	89,100
1994	53,808	758	26,580	16,188	97,334
1995	42,784	602	34,680	14,844	92,910
1996	37,015	132	18,880	6,518	62,545
1997	13,662	30	28,848	5,832	48,372
1998	28,212	18	23,712	7,896	59,838
1999	4,788	0	16,488	5,424	26,700
2000	13,936	36	21,852	5,808	41,632
2001	10,028	0	10,689	2,700	23,417
2002	3,756	0	12,210	1,632	17,598
2003	38,413	0	32,832	9,384	80,629
10-Year Average (1993–2002)	24,720	235	22,994	7,996	55,945

Note: Number of permits that made deliveries times the number of hours in the period.

Appendix A10.–Commercial salmon fishing estimated exvessel value, Kuskokwim Area, 2003.

	District 1		District 2		District 4		District 5			
Year	Value of Catch	Permits Fished [a]	Value of Catch	Permits Fished [a]	Value of Catch	Permits Fished [a]	Value of Catch	Permits Fished [a]	Total Value	Total Permits
1980		663		43		169		48	0	
1981		679		153		186		48	0	
1982		686		60		177		48	0	
1983		679		43		226		79	0	
1984		654		58		263		77	0	774
1985		654		23		300		69	0	781
1986		688		43		324		86	0	789
1987		703		29		310		69	0	798
1988		744		29		288		125	0	811
1989	3,922,644	745	130,124	30	744,808	227	379,554	88	5,177,130	824
1990	3,398,718	743	120,959	22	1,014,238	390	360,664	82	4,894,579	824
1991	2,980,220	749	111,491	23	594,636	346	274,919	72	3,961,266	820
1992	3,092,457	741	148,840	22	989,721	349	405,447	111	4,636,465	814
1993	2,535,321	739	90,274	20	896,161	409	441,135	114	3,962,891	807
1994	3,559,114	706	129,555	17	837,157	307	591,903	116	5,117,729	797
1995	2,776,677	712	107,913	21	1,047,188	382	287,599	87	4,219,377	829
1996	2,108,418	620	11,015	11	534,726	218	222,388	54	2,876,547	713
1997	430,614	604	2,944	4	497,071	289	121,973	53	1,052,602	702
1998	982,791	615	617	3	467,843	203	184,060	50	1,635,311	707
1999	170,278	509	0	0	279,092	218	102,803	73	552,173	604
2000	509,594	532	3,039	4	466,560	230	212,336	46	1,191,529	623
2001	429,534	412	0	0	228,615	159	98,458	32	756,607	514
2002	127,208	318	0	0	167,613	114	28,703	30	323,524	407
2003	453,187	359	0	0	304,553	114	135,287	34	893,027	438
10 year Average (1993–2002)	1,362,955		34,536		542,203		229,136		2,168,829	

[a] Number of permits that made at least one delivery.

Appendix A11.–Commercial salmon fishing estimated exvessel value, permits fished and average income, Kuskokwim Area, 1964–2003.

Year	Gross Value ($) of Catch to Fishers	Permits Fished[a]	Average Income
1964	83,030		
1965	90,950		
1966	87,466		
1967	138,647		
1968	290,370		
1969	297,233		
1970	362,470		
1971	371,220		
1972	360,727		
1973	827,735		
1974	1,056,042		
1975	899,178		
1976	1,380,229		
1977	3,891,950		
1978	2,337,470		
1979	3,678,000		
1980	2,725,134		
1981	3,766,525		
1982	4,213,954		
1983	2,670,400		
1984	5,809,000	774	7,505
1985	3,248,089	781	4,159
1986	4,746,089	789	6,015
1987	6,392,822	798	8,011
1988	12,514,489	811	15,431
1989	5,171,860	824	6,277
1990	4,894,580	824	5,940
1991	3,971,423	820	4,843
1992	5,295,912	814	6,506
1993	3,962,890	807	4,911
1994	5,201,611	797	6,526
1995	4,209,752	829	5,078
1996	2,900,603	713	4,068
1997	1,058,808	702	1,508
1998	1,634,495	707	2,312
1999	551,725	604	913
2000	1,197,149	623	1,922
2001	749,916	514	1,459
2002	322,679	407	793
2003	882,701	439	2,011
10-Year Average (1993–2002)	2,178,963	670	2,949

[a] Number of permits that made at least one delivery.

Appendix A12.–Commercial salmon average mean weights and prices paid, Kuskokwim Area, 1967–2003.

	Average Weight (lb)					Average Price ($)				
Year	Chinook	Sockeye	Chum	Pink	Coho	Chinook	Sockeye	Chum	Pink	Coho
1967	27.8	7.4	7.0	[a]	5.9	0.13	0.05	0.04	[a]	0.09
1968	23.8	6.2	7.9	4.0	7.2	0.16	0.10	0.04	0.05	0.09
1969	19.6	6.2	5.8	3.6	7.3	0.19	0.15	0.07	0.06	0.10
1970	18.9	5.4	6.1	3.3	7.3	0.20	0.21	0.08	0.08	0.14
1971 [b]	26.2	6.9	6.4	[a]	6.1	0.17	0.10	0.08	[a]	0.13
1972	24.7	[a]	6.5	[a]	6.4	0.20	[a]	0.08	[a]	0.16
1973	26.7	[a]	6.8	[a]	5.8	0.25	[a]	0.19	[a]	0.26
1974	17.1	6.3	6.8	4.1	7.5	0.46	0.34	0.25	0.23	0.27
1975	14.9	[a]	6.4	[a]	8.2	0.54	[a]	0.26	[a]	0.31
1976 [c]	17.0	6.7	7.0	3.5	7.8	0.64	0.43	0.27	0.25	0.40
1977	22.7	8.3	7.3	3.9	7.8	1.15	0.45	0.45	0.25	0.65
1978	24.2	6.5	8.9	3.9	7.1	0.50	0.49	0.32	0.12	0.40
1979	16.6	6.9	7.0	3.9	7.9	0.66	0.53	0.37	0.11	0.75
1980	14.1	6.7	6.4	3.6	6.9	0.47	0.31	0.24	0.12	0.64
1981	17.8	7.2	7.5	3.5	6.4	0.84	0.61	0.23	0.11	0.63
1982	19.3	7.2	7.3	3.6	7.3	0.82	0.41	0.22	0.05	0.53
1983	18.8	6.8	7.4	3.5	6.8	0.54	0.51	0.33	0.05	0.39
1984	16.4	6.6	6.7	3.2	7.7	0.89	0.52	0.28	0.07	0.55
1985	17.0	7.0	7.1	3.6	7.5	0.71	0.59	0.25	0.05	0.51
1986	17.0	7.2	6.8	3.4	6.4	0.80	0.70	0.25	0.05	0.60
1987	15.2	7.5	6.8	3.7	7.2	1.10	1.30	0.27	0.10	0.73
1988	14.1	7.3	6.9	3.4	7.2	1.30	1.42	0.40	0.15	1.25
1989	16.6	7.2	6.8	3.4	7.3	0.75	1.20	0.26	0.05	0.55
1990	15.1	6.7	6.9	3.2	6.5	0.56	1.05	0.26	0.12	0.62
1991	15.3	6.9	6.3	3.4	6.5	0.56	0.67	0.31	0.12	0.45
1992	13.4	7.0	6.8	3.9	7.3	0.66	0.90	0.32	0.06	0.45
1993	14.3	7.1	6.5	3.4	6.6	0.62	0.70	0.40	0.25	0.58
1994	15.6	6.9	6.6	3.6	7.6	0.51	0.53	0.21	0.08	0.57
1995	17.3	6.9	6.9	3.7	7.2	0.60	0.71	0.18	0.12	0.41

-continued-

Appendix A12.–Page 2 of 2.

Year	Average Weight (lb)					Average Price ($)				
	Chinook	Sockeye	Chum	Pink	Coho	Chinook	Sockeye	Chum	Pink	Coho
1996	15.7	7.2	7.2	3.8	8.0	0.26	0.40	0.11	0.12	0.25
1997	16.2	7.1	7.3	2.7	7.5	0.28	0.42	0.12	0.10	0.33
1998	14.2	6.8	6.9	3.8	7.8	0.27	0.53	0.13	0.10	0.32
1999	16.2	7.1	7.3	2.7	7.5	0.28	0.42	0.12	0.1	0.33
1999	15.5	6.5	7.3	3.0	6.6	0.32	0.58	0.10	0.05	0.32
2000	15.6	6.8	7.6	3.2	6.9	0.39	0.55	0.10	0.10	0.28
2001	20.0	7.6	7.5	[a]	7.7	0.36	0.35	0.10	[a]	0.28
2002	13.9	6.7	7.9	[a]	7.9	0.35	0.35	0.10	[a]	0.20
2003	13.6	7.3	8.0	[a]	6.9	0.35	0.44	0.21	[a]	0.10
10-Year Average (1993–2002)	15.9	7.0	7.2	3.3	7.4	0.4	0.5	0.2	0.1	0.4

[a] Information unavailable.

[b] Information on price per pound was not available for District 5.

[c] Information was not available for District 4.

Appendix A13.–Commercial salmon fishery limited entry permits by location, Kuskokwim Area, 1994–2003.

Village	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Akiachak	64	64	64	66	67	67	67	67	68	67
Akiak	24	24	23	23	24	23	23	23	24	24
Aniak	10	11	10	11	11	11	11	11	11	10
Atmautluak	27	28	28	28	27	26	27	27	26	26
Bethel	163	164	157	162	168	167	161	165	173	171
Chefornak	6	5	2	2	3	2	2	2	2	2
Chuathbaluk	2	2	2	2	2	2	1	2	2	2
Eek	39	39	40	37	37	36	39	38	39	36
Goodnews Bay	28	29	27	26	28	28	26	26	25	24
Hooper Bay	0	0	0	0	0	0	0	1	1	1
Kalskags	8	5	8	7	7	7	7	4	3	3
Kasigluk	41	45	44	44	43	44	44	45	42	42
Kipnuk	17	18	17	16	15	15	15	14	14	13
Kongiganak	20	21	21	21	19	20	18	16	15	14
Kwethluk	62	57	58	57	55	56	57	55	49	49
Kwigillingok	20	20	18	19	18	19	19	17	17	15
Napakiak	41	37	39	39	39	39	38	38	35	33
Napaskiak	34	33	35	36	36	34	33	33	34	32
Nunapitchuk	47	46	48	48	46	46	46	46	46	44
Oscarville	3	3	2	1	1	1	1	1	1	1
Platinum	5	5	4	4	4	4	5	4	4	3
Quinhagak	76	79	83	82	83	82	84	82	83	82
Sleetmute	1	1	1	1	1	1	1	1	1	1
Toksook Bay	0	0	0	0	0	0	0	0	1	1
Tuluksak	27	27	27	27	27	27	27	27	28	26
Tuntutuliak	43	43	44	45	43	42	42	43	43	41
Tununak	0	1	1	0	1	1	0	0	0	0
Kuskokwim Area Subtotal	**808**	**807**	**803**	**804**	**805**	**800**	**794**	**788**	**787**	**763**

-continued-

Appendix A13.–Page 2 of 2.

Village	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Aleknagik	1	0	0	0	0	0	0	0	0	0
Anchorage	10	8	12	11	11	13	16	16	16	17
Dillingham	1	1	1	1	1	1	1	1	1	0
Fairbanks	2	3	2	2	1	1	1	1	1	1
Juneau	0	0	0	0	0	0	0	0	2	1
Kenai	0	0	0	0	0	1	1	2	2	2
Kodiak	0	0	0	0	0	0	0	0	0	0
Manokotak	2	2	2	1	1	1	1	1	1	1
Mekoryuk	1	2	2	1	1	0	0	0	0	0
Newtok	0	0	1	1	1	0	0	0	0	0
Noorvik	0	0	0	0	0	1	1	1	0	1
Sitka	0	0	0	0	0	0	0	1	0	0
Sterling	0	0	0	0	0	0	0	0	0	0
Togiak	1	1	1	1	0	0	0	0	1	1
Twin Hills	0	0	0	0	0	1	1	1	1	1
Wasilla	0	0	0	0	1	1	1	1	1	0
Non-Local Alaska Resident Subtotal	**18**	**17**	**21**	**18**	**17**	**20**	**23**	**25**	**26**	**25**
Alpharetta, GA	0	0	0	1	1	1	1	1	1	1
Comstock, TX	0	0	0	0	1	1	1	0	0	0
Dunwoody, GA	1	1	1	0	0	0	0	0	0	0
Florence, OR	1	1	1	1	1	1	1	1	1	1
Goldbar, WA	1	1	1	1	1	1	1	1	1	1
Haleiwa, HI	0	0	0	0	0	0	0	0	0	0
Honey in the Hills, FL	0	0	1	1	1	1	1	1	1	1
Paul Smiths, NY	1	1	1	1	0	0	0	0	0	0
San Francisco, CA	0	0	0	0	0	1	0	0	1	0
Valencia, CA	1	1	1	1	1	1	1	1	0	1
Weirsdale, FL	0	1	0	0	0	0	0	0	0	0
Non-Resident Subtotal	**5**	**6**	**6**	**6**	**6**	**7**	**6**	**5**	**5**	**5**
Total Number of Permits	**831**	**830**	**830**	**828**	**828**	**827**	**823**	**818**	**818**	**793**

Appendix A14.–Commercial freshwater finfish harvest, Kuskokwim Area, 1977–2003.

Year	Number of Fishers[b]	Number Caught[a]		Total Weight (lbs)		Total Value ($)		
		Whitefish[c]	Burbot	Whitefish	Burbot	Whitefish	Burbot	Total
1977	3	718	0	[d]	0	952	0	952
1978	[b]	1,735	0	6,017	0	[d]	0	[d]
1979	[b]	3,219	0	11,211	0	[d]	0	[d]
1980	4	603	0	2,173	0	830	0	830
1981	4	1,197	0	4,620	0	2,310	0	2,310
1982	5	1,512	0	6,219	0	2,856	0	2,856
1983	0	0	0	0	0	0	0	0
1984	2	0	651	0	[d]	0	[d]	[d]
1985	5	555	1,829	2,275	2,016	1,137	455	1,592
1986	3	0	0	0	3,428	0	857	857
1987	4	417	0	1,260	0	1,008	0	1,008
1988	3	[d]	[d]	2,588	7	1,991	3	1,994
1989	7	178	282	583	270	501	597	1,098
1990	11	1,664	d	5,502	10	5,166	5	5,171
1991	5	1,413	41	2,442	256	2,412	197	2,609
1992	6	2,124	18	6,309	86	6,285	43	6,328
1993	5	2,509	0	5,208	0	4,898	0	4,898
1994	3	2,393	0	4,905	0	4,345	0	4,345
1995	1	[d]	0	2,363	0	2,507	0	2,507
1996	2	3,139	0	4,915	0	4,776	0	4,776
1997	14	4,447	0	5,770	0	4,832	0	4,832
1998	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0
2001	0	0	0	0	0	0	0	0
2002	1	193	0	339	0	339	0	39
2003	1	646	0	1,163	0	1,192	0	1,192

[a] Does not include catches incidental to the commercial salmon fishery.

[b] Does not include fishers who delivered catches incidental to the commercial salmon fishery.

[c] Inculdes cisco, pike, and blackfish.

[d] Data not available.

APPENDIX B. SALMON FISHERIES OF THE KUSKOKWIM RIVER

Appendix B1.–Chinook salmon total utilization, Kuskokwim River, 1960–2003.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Test-Fish	Sport Fish	Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Harvest	Harvest	Utilization	Average
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	55,716	38,486	70,943 [c]	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
1997	10,441	31,074	81,577	82,528	332	1227	93,577	115,340
1998	17,359	27,238	81,265	83,560	210	1434	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	0	401	68,347	88,440
10-Yr. Ave. (1993–2002)	9,632		80,457		717	731	91,537	107,177

[a] Districts 1 and 2; also includes harvests in District 3 from 1960 to 1965.

[b] Estimated subsistence harvest expanded from villages surveyed.

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

Appendix B2.–Chum salmon total utilization, Kuskokwim River, 1960–2003.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Test-Fish	Sport Fish	Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Harvest	Harvest	Utilization	Average
1960	0		301,753 [c]				301,753	
1961	0		179,529 [c]				179,529	
1962	0		161,849 [c]				161,849	
1963	0		137,649 [c]				137,649	
1964	0		190,191 [c]				190,191	
1965	0		250,878 [c]				250,878	
1966	0		175,735 [c]		502 [d]		176,237	
1967	148		208,445 [c]		338		208,931	
1968	187		275,008 [c]		562		275,757	
1969	7,165	750	204,105 [c]		384		211,654	209,443
1970	1,664	916	246,810 [c]	203,020	1,139 [d]		249,613	204,229
1971	68,914	7,808	116,391 [c]	196,706	254		185,559	204,832
1972	78,619	15,670	120,316 [c]	192,553	486		199,421	208,589
1973	148,746	30,544	179,259 [c]	196,714	675		328,680	227,692
1974	171,887	47,733	277,170 [c]	205,412	2,021		451,078	253,781
1975	184,171	66,150	176,389 [c]	197,963	1,062		361,622	264,855
1976	177,864	83,937	223,792 [c]	202,769	2,101		403,757	287,607
1977	248,721	108,794	198,355 [c]	201,760	576	125	447,777	311,492
1978	248,656	133,641	118,809 [c]	186,140	2,153	555	370,173	320,933
1979	261,874	159,112	161,239 [c]	181,853	412	259	423,784	342,146
1980	483,751	207,320	165,172 [c]	173,689	2,058	324	651,305	382,316
1981	418,677	242,297	157,306 [c]	177,781	1,793	598	578,374	421,597
1982	278,306	262,265	190,011 [c]	184,750	504	1,125	469,946	448,650
1983	276,698	275,061	146,876 [c]	181,512	1,069	922	425,565	458,338
1984	423,718	300,244	142,542 [c]	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 [c]	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	1,381,674	460,773	151,967 [e]	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
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	0	53	46,137	199,449
10-Yr. Ave. (1993–2002)	139,083		61,744		4,873	289	205,989	449,457

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

[b] Estimated subsistence harvest expanded from villages surveyed.

[c] Includes small numbers of small chinook, sockeye and coho salmon.

[d] Includes small numbers of sockeye.

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

Appendix B3.–Sockeye salmon total utilization, Kuskokwim River, 1960–2003.

Year	Commercial Harvest		Subsistence Harvest		Test Fish	Sport Fish	Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Harvest	Harvest	Utilization	Average
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	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
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	0	140	34,874	65,932
10-Yr. Ave. (93-02)	30,692		39,142		369	208	70,410	

Appendix B4.–Coho salmon total utilization, Kuskokwim River, 1960–2003.

Year	Commercial Havest		Subsistence Harvest		Test Fish	Sport Fish	Total	10-Year
	Annual	10-Yr Ave.	Annual	10-Yr Ave.	Harvest	Harvest	Utilization	Average
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	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	
1997	130,803	545,658	29,032		33,699	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	1,998	50,807	508,633
2000	261,379	453,755	33,786	33,699	2,828	1,689	299,682	493,031
2001	192,998	422,961	29,504	31,616	1,723	1,204	225,429	460,347
2002	83,463	364,691	35,964	31,196	2,484	2,030	123,941	401,938
2003	284,064	332,023	35,240	31,546	570	3,244	323,118	369,904
10-Yr. Ave. (93-02)	364,691		31,196		8,189	1,957	401,938	

Appendix B5.–Districts 1 and 2 commercial salmon harvests, Kuskokwim River, 1960–2003.

Year	Chinook	Sockeye	Chum	Pink	Coho	Total
1970	39,290	117	1,664	44	38,601	79,716
1971	40,274	2,606	68,914	0	5,253	117,047
1972	39,454	102	78,619	8	22,579	140,762
1973	32,838	369	148,746	33	130,876	312,862
1974	18,664	136	171,887	84	147,269	338,040
1975	22,135	23	184,171	10	81,945	288,284
1976	30,735	2,971	177,864	133	88,501	300,204
1977	35,830	9,379	248,721	203	241,364	535,497
1978	45,641	733	248,656	5,832	213,393	514,255
1979	38,966	1,054	261,874	78	219,060	521,032
1980	35,881	360	483,211	803	222,012	742,267
1981	47,663	48,375	418,677	292	211,251	726,258
1982	48,234	33,154	278,306	1,748	447,117	808,559
1983	33,174	68,855	276,698	211	196,287	575,225
1984	31,742	48,575	423,718	2,942	623,447	1,130,424
1985	37,889	106,647	199,478	75	335,606	679,695
1986	19,414	95,433	309,213	3,422	659,988	1,087,470
1987	36,179	136,602	574,336	43	399,467	1,146,627
1988	55,716	92,025	1,381,674	10,825	524,296	2,064,536
1989	43,217	42,747	749,182	464	479,856	1,315,466
1990	53,504	84,870	461,624	3,397	410,332	1,013,727
1991	37,778	108,946	431,802	378	500,935	1,079,839
1992	46,872	92,218	344,603	7,451	666,170	1,157,314
1993	8,735	27,008	43,337	64	610,739	689,883
1994	16,211	49,365	271,115	30,949	724,689	1,092,329
1995	30,846	92,500	605,918	93	471,461	1,200,818
1996	7,419	33,878	207,877	1,621	937,299	1,188,094
1997	10,441	21,989	17,026	2	130,803	180,261
1998	17,359	60,906	207,809	92	210,481	496,647
1999	4,705	16,976	23,006	2	23,593	68,282
2000	444	4,130	11,570	7	261,379	277,530
2001	90	84	1,272	0	192,998	194,444
2002	72	84	1,900	0	83,463	85,519
2003	158	282	2,764	0	284,064	287,268
10-Year Average 1993-2002	9,632	30,692	139,083	3,283 [a]	364,691	547,381

a Even years only.

Appendix B6.–District 1 commercial salmon fishing effort, Kuskokwim River, 1970–2003.

Year	Unrestricted Mesh Season	Restricted Mesh Season	Coho Salmon Season	Total
1970	361	a	266	387
1971	418	216	83	422
1972	405	176	245	425
1973	456	341	411	530
1974	606	467	516	666
1975	472	540	533	737
1976	561	517	516	674
1977	563	522	572	653
1978	615	617	597	723
1979	591	617	613	685
1980	553	579	586	663
1981	589	613	586	679
1982	610	576	596	686
1983	544	619	577	679
1984	520	587	619	654
1985	b	598	627	654
1986	b	631	663	688
1987	b	680	694	703
1988	b	c	c	746
	Number of Permits Landing Each Species			
	Chinook	**Sockeye**	**Coho**	**Pink**	**Chum**	**Roe**	**Total**
1989	695	688	732	261	719	22	745
1990	724	722	714	526	736	1	744
1991	687	705	731	159	733	1	749
1992	711	706	706	520	722	0	741
1993	669	654	717	54	715	0	740
1994	651	666	682	664	700	0	706
1995	684	692	680	80	699	0	712
1996	482	514	615	196	593	17	620
1997	445	446	593	2	551	0	604
1998	555	568	580	48	589	0	618
1999	412	425	388	2	442	0	509
2000	210	328	515	5	353	0	532
2001	77	61	413	0	258	0	411
2002	59	31	318	0	270	0	318
2003	117	112	359	0	287	0	359
Ten Year Average	424	439	550	105	517	2	577

a No commercial salmon season

b No unrestricted mesh season.

c Fishery continued without interruption

Appendix B7.–Commercial salmon harvest and exvessel value, District 1, Kuskokwim River, 1993–2003.

	Chinook		Sockeye		Pink		Chum		Coho	
Year	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
1993	8,714	72,659	27,003	140,000	64	59	42,718	112,756	586,330	2,535,321
1994	16,201	126,892	49,362	188,691	30,930	8,967	269,426	381,639	690,369	2,875,803
1995	28,054	280,287	90,026	448,530	335	50	588,250	724,273	455,269	1,313,742
1996	6,972	23,665	33,404	97,176	1,621	744	202,827	170,977	930,131	1,824,683
1997	10,436	36,843	21,988	64,922	2	1	17,003	19,509	129,601	2,167,491
1998	17,356	74,387	60,906	209,860	92	55	207,698	183,307	210,168	516,024
1999	4,705	22,266	16,976	86,442	2	0	23,006	16,428	23,593	44,633
2000	444	3,044	4,130	14,272	7	3	11,570	7,967	259,721	489,644
2001	90	534	84	265	0	0	1,272	827	192,998	422,573
2002	72	212	84	196	0	0	1,900	1,190	83,463	124,763
2003	153	856	282	808	0	0	2,764	1,077	284,064	441,458
10-year Ave (1993-2002)	9,304	64,079	30,396	125,035	3,305	988	136,567	161,887	356,164	1,231,468

Appendix B8.–Commercial salmon harvest by period, District 1, Kuskokwim River, 1994–2003.

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
1994	Jun 24	576	8	4,608	14,221	3.09	38,958	8.45	87,214	18.93	0	0.00
	Jul 14	496	4	1,984	578	0.29	3,891	1.96	43,585	21.97	820	0.41
	Jul 19	500	6	3,000	441	0.15	4,475	1.49	60,104	20.03	7,027	2.34
	Jul 23	506	6	3,036	313	0.10	1,125	0.37	38,149	12.57	24,213	7.98
	Jul 26	552	6	3,312	225	0.09	471	0.14	22,460	6.78	39,901	12.05
	Jul 29	577	6	3,462	204	0.06	159	0.05	11,252	3.25	52,090	15.05
	Aug 04	606	6	3,636	88	0.06	87	0.02	3,983	1.10	75,514	20.77
	Aug 09	530	6	3,180	29	0.03	70	0.02	1,153	0.36	129,570	40.75
	Aug 12	606	8	4,848	34	0.01	47	0.01	777	0.16	117,753	24.29
	Aug 15	595	8	4,760	22	0.01	33	0.01	321	0.07	47,902	10.06
	Aug 18	598	8	4,784	20	0.00	16	0.00	212	0.04	82,750	17.30
	Aug 22	554	8	4,432	12	0.00	15	0.00	104	0.02	44,054	9.94
	Aug 25	447	8	3,576	9	0.00	7	0.00	63	0.02	37,595	10.51
	Aug 27	445	6	2,670	3	0.00	4	0.00	30	0.01	20,526	7.69
	Aug 30	263	6	1,578	2	0.00	2	0.00	16	0.01	8,192	5.19
	Sept 02	157	6	942			2	0.00	3	0.00	2,489	2.64
Total		706	106	53,808	16,201		49,362		269,426		690,396	
1995	Jun 22	569	4	2,276	6,895	3.03	4,420	1.94	49,157	21.60	0	0.00
	Jun 26	568	4	2,272	9,452	4.16	19,449	8.56	93,152	41.00	0	0.00
	Jun 29	565	4	2,260	4,972	2.20	18,188	8.05	83,580	36.98	0	0.00
	Jul 03	475	4	1,900	2,847	1.50	17,078	8.99	89,427	47.07	0	0.00
	Jul 06	481	4	1,924	1,521	0.79	14,765	7.67	81,246	42.23	0	0.00
	Jul 10	494	4	1,976	906	0.46	7,100	3.59	86,368	43.71	21	0.01
	Jul 14	435	4	1,740	546	0.31	4,219	2.42	43,137	24.79	221	0.13
	Jul 18	336	6	2,016	366	0.18	2,482	1.23	37,294	18.50	671	0.33
	Jul 21	368	4	1,472	202	0.14	940	0.64	21,039	14.29	1,272	0.86
	Aug 04	234	6	1,404	64	0.05	123	0.09	1,072	0.76	48,665	34.66
	Aug 08	611	6	3,666	95	0.03	363	0.10	1,229	0.34	98,548	26.88
	Aug 12	617	6	3,702	50	0.01	359	0.10	899	0.24	102,421	27.67
	Aug 16	593	6	3,558	52	0.01	147	0.04	208	0.06	65,713	18.47
	Aug 19	555	6	3,330	28	0.01	87	0.03	133	0.04	41,057	12.33
	Aug 22	497	6	2,982	16	0.01	113	0.04	157	0.05	43,978	14.75
	Aug 26	477	6	2,862	25	0.01	117	0.04	101	0.04	29,129	10.18
	Aug 29	355	6	2,130	15	0.01	45	0.02	39	0.02	17,790	8.35
	Sept 01	219	6	1,314	2	0.00	31	0.02	12	0.01	5,783	4.40
Total		712	92	42,784	28,054		90,026		588,250		455,269	
1996	Jun 17	245	2	490	2,045	4.17	1,850	3.78	11,560	23.59	0	0.00
	Jun 20	283	2	566	2,046	3.61	6,423	11.35	27,442	48.48	0	0.00
	Jun 24	240	1.5	360	666	1.85	4,420	12.28	19,438	53.99	0	0.00
	Jul 02	224	2	448	545	1.22	3,962	8.84	20,915	46.69	0	0.00
	Jul 05	194	2	388	316	0.81	3,481	8.97	17,651	45.49	2	0.01
	Jul 08	211	2	422	178	0.42	6,795	16.10	18,801	44.55	24	0.06
	Jul 12	237	2	474	230	0.49	3,781	7.98	26,468	55.84	1,608	3.39
	Jul 16	197	2	394	87	0.22	602	1.53	15,192	38.56	4,675	11.87
	Jul 19	267	3	801	164	0.20	298	0.37	13,390	16.72	14,746	18.41
	Jul 22	417	6	2,502	183	0.07	639	0.26	14,504	5.80	50,443	20.16
	Jul 25	487	8	3,896	124	0.03	256	0.07	9,024	2.32	113,637	29.17
	Jul 29	526	6	3,156	97	0.03	186	0.06	3,828	1.21	144,773	45.87
	Jul 31	464	6	2,784	52	0.02	92	0.03	1,541	0.55	122,946	44.16
	Aug 03	541	6	3,246	59	0.02	129	0.04	1,097	0.34	132,540	40.83
	Aug 07	514	6	3,084	43	0.01	73	0.02	581	0.19	94,332	30.59

-Continued-

Appendix B8.–Page 2 of 3.

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
1996	Aug 10	502	6	3,012	45	0.01	60	0.02	797	0.26	83,653	27.77
	Aug 13	471	6	2,826	25	0.01	82	0.03	296	0.10	70,053	24.79
	Aug 16	459	6	2,754	28	0.01	147	0.05	215	0.08	49,012	17.80
	Aug 20	400	6	2,400	19	0.01	83	0.03	51	0.02	25,870	10.78
	Aug 23	293	6	1,758	9	0.01	22	0.01	23	0.01	13,133	7.47
	Aug 26	209	6	1,254	11	0.01	23	0.02	13	0.01	8,684	6.93
Total		620	92.5	37,015	6,972		33,404		202,827		930,131	
1997	Jun 23	353	6	2,118	10,023	4.73	21,218	10.02	13,090	6.18	0	0.00
	Jul 31	429	6	2,574	141	0.05	352	0.14	2,060	0.80	14,963	5.81
	Aug 6	513	6	3,078	145	0.05	229	0.07	1,387	0.45	37,216	12.09
	Aug 12	507	6	3,042	61	0.02	122	0.04	408	0.13	56,149	18.46
	Aug 18	475	6	2,850	66	0.02	67	0.02	58	0.02	21,273	7.46
Total		604	30	13,662	10,436		21,988		17,003		129,601	
1998	Jun 24	338	6	2,028	6,413	3.16	9,043	4.46	32,467	16.01		
	Jun 29	426	6	2,556	6,358	2.49	22,506	8.81	66,789	26.13		
	Jul 03	445	4	1,780	2,277	1.28	15,985	8.98	51,471	28.92	1	0.00
	Jul 11	417	4	1,668	1,127	0.68	10,172	6.10	29,407	17.63	23	0.01
	Jul 22	346	6	2,076	460	0.22	1,538	0.74	15,663	7.54	3,633	1.75
	Jul 27	370	6	2,220	356	0.16	932	0.42	7,500	3.38	18,497	8.33
	Aug 01	425	6	2,550	156	0.06	235	0.09	2,787	1.09	26,791	10.51
	Aug 06	496	6	2,976	88	0.03	295	0.10	1,020	0.34	45,128	15.16
	Aug 11	464	6	2,784	67	0.02	95	0.03	388	0.14	58,426	20.99
	Aug 17	439	6	2,634	34	0.01	45	0.02	122	0.05	34,640	13.15
	Aug 22	382	6	2,292	19	0.01	53	0.02	67	0.03	18,936	8.26
	Aug 29	154	6	924	1	0.00	7	0.01	17	0.02	4,093	4.43
Total		615	68	104,831	45,337		138,703		445,926		1,649,906	
1999	Jun 30	409	6	2,454	4,668	1.90	16,772	6.83	22,700	9.25		
	Aug 7	389	6	2,334	37	0.02	204	0.09	306	0.13	23,593	10.1
Total		509	12	4,788	4,705		16,976		23,006		23,593	
2000	July 05	224	4	896	357	0.40	3,658	4.08	11,026	12.31		
	Aug 01	248	6	1,488	12	0.01	94	0.06	156	0.10	25,642	17.2
	Aug 04	123	6	738	7	0.01	7	0.01	53	0.07	50,260	68.1
	Aug 05	270	6	1,620	8	0.00	73	0.05	43	0.03	32,056	19.8
	Aug 08	186	6	1,116	9	0.01	26	0.02	55	0.05	26,771	24.0
	Aug 09	217	6	1,302	13	0.01	57	0.04	128	0.10	20,905	16.1
	Aug 12	189	6	1,134	12	0.01	17	0.01	23	0.02	37,451	33.0
	Aug 14	224	6	1,344	6	0.00	75	0.06	33	0.02	16,766	12.5
	Aug 14	193	6	1,158	5	0.00	23	0.02	15	0.01	17,916	15.5
	Aug 18	199	6	1,194	6	0.01	58	0.05	16	0.01	14,697	12.3
	Aug 21	158	6	948	4	0.00	3	0.00	10	0.01	8,577	9.0
	Aug 22	143	6	858	1	0.00	32	0.04	4	0.00	4,489	5.2
	Aug 25	106	6	636	4	0.01	7	0.01	8	0.01	4,191	6.6
Total		532	76	14,432	444		4,130		11,570		259,721	
2001	Aug 03	144	4	576	9	0.02	22	0.04	347	0.60	17,174	29.8
	Aug 06	108	4	432	8	0.02	5	0.01	101	0.23	20,089	46.5
	Aug 08	262	6	1,572	23	0.01	11	0.01	356	0.23	46,369	29.5
	Aug 11	175	6	1,050	20	0.02	10	0.01	218	0.21	41,643	39.7
	Aug 13	143	4	572	5	0.01	4	0.01	37	0.06	9,647	16.9
	Aug 15	296	6	1,776	5	0.00	15	0.01	122	0.07	28,893	16.3

-Continued-

Appendix B8.–Page 3 of 3**.**

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
	Aug 17	259	6	1,554	12	0.01	9	0.01	65	0.04	11,064	7.1
	Aug 20	149	6	894	6	0.01	5	0.01	17	0.02	5,440	6.1
	Aug 22	149	6	894	0	0.00	3	0.00	4	0.00	8,149	9.1
	Aug 25	118	6	708	2	0.00	0	0.00	5	0.01	4,530	6.4
Total		412	54	10,028	90		84		1,272		192,998	
2002	Aug 02	40	2	80	7	0.09	3	0.04	134	1.68	2,492	31.2
	Aug 05	175	4	700	18	0.03	41	0.06	573	0.82	11,164	15.9
	Aug 08	119	6	714	22	0.03	20	0.03	541	0.76	22,890	32.1
	Aug 09	132	6	792	8	0.01	9	0.01	254	0.32	13,749	17.4
	Aug 12	136	6	816	9	0.01	8	0.01	292	0.36	22,962	28.1
	Aug 13	109	6	654	8	0.01	3	0.00	106	0.16	10,206	15.6
Total		318	30	9,540	72		84		1,900		83,463	
2003	Jul 31	57	2	114	11	0.10	13	0.11	405	3.55	7,717	67.7
	Aug 1	95	4	380	30	0.08	69	0.18	545	1.43	9,707	25.5
	Aug 4	91	4	364	7	0.02	10	0.03	310	0.85	14,308	39.3
	Aug 5	119	4	476	13	0.03	69	0.14	214	0.45	12,233	25.7
	Aug 7	123	6	738	16	0.02	3	0.00	374	0.51	30,162	40.9
	Aug 8	118	4	472	12	0.03	41	0.09	200	0.42	15,800	33.5
	Aug 11	130	4	520	9	0.02	9	0.02	208	0.40	31,371	60.3
	Aug 12	107	4	428	12	0.03	10	0.02	116	0.27	18,703	43.7
	Aug 14	141	4	564	12	0.02	2	0.00	78	0.14	36,537	64.8
	Aug 15	116	4	464	15	0.03	12	0.03	67	0.14	16,027	34.5
	Aug 18	105	3	315	3	0.01	3	0.01	40	0.13	14,219	45.1
	Aug 19	95	4	380	6	0.02	15	0.04	25	0.07	8,720	22.9
	Aug 21	111	6	666	2	0.00	3	0.00	27	0.04	18,804	28.2
	Aug 22	49	6	294	0	0.00	1	0.00	14	0.05	2,914	9.9
	Aug 25	109	6	654	1	0.00	5	0.01	32	0.05	12,789	19.6
	Aug 26	112	6	672	4	0.01	2	0.00	15	0.02	11,434	17.0
	Aug 28	100	6	600	3	0.01	7	0.01	40	0.07	8,228	13.7
	Aug 29	60	6	360	0	0.00	4	0.01	29	0.08	4,524	12.6
	Sep 1	44	8	352	1	0.00	1	0.00	12	0.03	3,504	10.0
	Sep 2	37	8	296	0	0.00	0	0.00	7	0.02	3,011	10.2
	Sep 3	30	8	240	1	0.00	2	0.01	6	0.03	3,121	13.0
Total		1,949	107		158		281		2,764		283,833	

[a] Gillnet mesh size unrestricted.
[b] Gillnets were restricted to 6 inches or less; after 1985 this restriction was in effect for all periods.
[c] Sales of chinook salmon were prohibited. Estimated chinook harvest was between 12,119 and 13,615 on 6/24 and between 5,831 and 6,555 on 6/25.
[d] Subdistrict W-1B (below Bethel) opening
[e] Subdistrict W-1A (above Bethel) opening

Appendix B9.–Commercial harvest by period, District 2, Kuskokwim River, 1995–2003.

			Number of	Hours	Chinook		Sockeye		Chum		Coho	
Year	Date		Permits	Fished	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1995	Jun	26	16	4	1,656	25.88	535	8.36	3,628	56.69	0	0.00
	Jun	29	13	4	707	13.60	620	11.92	3,577	68.79	0	0.00
	Jul	03	9	4	284	7.89	456	12.67	2,200	61.11	0	0.00
	Jul	06	8	4	74	2.31	331	10.34	2,372	74.13	0	0.00
	Jul	10	6	4	32	1.33	293	12.21	1,874	78.08	0	0.00
	Jul	14	2	4	7	0.88	51	6.38	480	60.00	0	0.00
	Jul	18	6	6	9	0.25	44	1.22	1,638	45.50	6	0.17
	Jul	21	5	4	4	0.20	132	6.60	899	44.95	13	0.65
	Aug	04	6	6	10	0.28	4	0.11	484	13.44	1,321	36.69
	Aug	08	9	6	2	0.04	6	0.11	379	7.02	2,816	52.15
	Aug	12	8	6	5	0.10	1	0.02	79	1.65	2,643	55.06
	Aug	16	12	6	1	0.01	0	0.00	41	0.57	4,398	61.08
	Aug	19	5	6	1	0.03	0	0.00	4	0.13	1,679	55.97
	Aug	22	8	6	0	0.00	1	0.02	9	0.19	1,750	36.46
	Aug	26	3	6	0	0.00	0	0.00	0	0.00	712	39.56
	Aug	29	3	6	0	0.00	0	0.00	4	0.22	660	36.67
	Sept	01	1	6	0	0.00	0	0.00	0	0.00	194	32.33
Total			**21**	**88**	**2,792**		**2,474**		**17,668**		**16,192**	
1996	Jun	24	6	2	145	12.08	69	5.75	613	51.08	0	0.00
	Jul	2	4	2	175	21.88	109	13.63	376	47.00	0	0.00
	Jul	5	3	2	8	1.33	38	6.33	606	101.00	0	0.00
	Jul	8	4	4	42	2.63	92	5.75	877	54.81	0	0.00
	Jul	12	4	4	60	3.75	56	3.50	758	47.38	0	0.00
	Jul	16	1	4	5	1.25	33	8.25	336	84.00	3	0.75
	Jul	19	3	4	9	0.75	9	0.75	444	37.00	51	4.25
	Jul	22	2	6	0	0.00	6	0.50	414	34.50	234	19.50
	Jul	25	3	8	2	0.08	5	0.21	367	15.29	700	29.17
	Jul	29	2	6	1	0.08	2	0.17	98	8.17	668	55.67
	Jul	31	1	6	0	0.00	2	0.33	148	24.67	162	27.00
	Aug	10	2	6	0	0.00	0	0.00	0	0.00	787	65.58
	Aug	13	5	6	0	0.00	1	0.03	5	0.17	1,761	58.70
	Aug	16	2	6	0	0.00	0	0.00	8	0.67	590	49.17
	Aug	20	3	6	0	0.00	52	2.89	0	0.00	1,063	59.06
	Aug	23	2	6	0	0.00	0	0.00	0	0.00	620	51.67
	Aug	26	5	6	0	0.00	0	0.00	0	0.00	541	18.03
Total			**8**	**84**	**447**		**474**		**5,050**		**7,180**	
1997	Aug	12	2	6	1	0.08	0	0.00	23	1.92	494	41.17
	Aug	18	3	6	4	0.22	1	0.06	0	0.00	708	39.33
Total			**4**	**12**	**5**		**1**		**23**		**1,202**	
1998	Aug	06	3	6	3	0.17	0	0	111	6.17	313	17.39
	Aug	11	No harvest/ No deliveries									
Total			**3**	**6**	**3**		**0**		**111**		**313**	
1999	**No commercial fishery in District 2**											
2000	Aug	12	4	6							1237	51.54
	Aug	21	2	6							439	36.58
Total			**12**	**12**							**1,676**	
2001	**No commercial fishery in District 2**											
2002	**No commercial fishery in District 2**											
2003	**No commercial fishery in District 2**											

Appendix B10.–Inseason subsistence report summaries, Kuskokwim River, 2001–2003.

2001 Summary of Subsistence Salmon Information Collected by ONC Technicians [ab]

Week	Number of Families			Chinook			Chum			Sockeye			Coho		
ending	Interviewed	Fishing	Not Fishing	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor
Jun 09	16	16	0	6	6	4									
Jun 16	39	39	0	18	15	6	1	6	15	13	24	1			
Jun 23	35	35	0	27	7	1	0	2	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	5	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	0	0	0	0	0	0	0	0	0	0	0	0
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	2	35				0	0	0				2	1	0
Aug 18	37	3	34				0	0	3				1	2	0
Aug 25	44	3	34		0	0	0	0	3				3	0	0
Total [c]	466	165	294	59	36	28	16	31	67	56	46	7	24	12	1
Average	39	14	25	7	4	3	1	3	6	8	7	1	2	1	0

2001 Summary of Subsistence Salmon Information Collected by KNA Technicians [eb]

Week	Number of Families			Chinook			Chum			Sockeye			Coho		
ending	Interviewed	Fishing	Not Fishing	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor
Jun 09	4			1	2	1	1	0	0	0	0	0	0	0	0
Jun 16	14			4	11	1	2	7	3	0	7	1	0	0	0
Jun 23	14			4	11	1	2	7	3	8	7	1	0	0	0
Jun 30	14			1	10	3	0	5	6	10	2	0	0	0	0
Jul 07	3	3	0	0	3	0	0	0	3	0	2	1	0	0	0
Jul 21	2			0	0	0	1	1	0	0	0	0	0	0	0
Total [d]	51	3	0	10	37	6	6	20	15	18	18	3	0	0	0
Average	9	3	0	2	6	1	1	3	3	3	3	1	0	0	0

-Continued-

2001 Summary of Subsistence Salmon Information Collected by MNVC Technicians [fb]

Week ending	Number of Families			Chinook			Chum			Sockeye			Coho		
	Interviewed	Fishing	Not Fishing	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor
Jun 23	3	3	0		3										
Jun 30	1	1	0		1										
Jul 07	6			3	3					2					
Jul 14	7			3	4			2							
Total [d]	17	4	0	6	11	0	0	2	0	2	0	0	0	0	0
Average	4	2	0	3	3	0	0	2	0	2	0	0	0	0	0

2002 Summary of Subsistence Salmon Information Collected by ONC Technicians [ab]

Week ending	Number of Families			Chinook			Chum			Sockeye			Coho		
	Interviewed	Fishing	Not Fishing	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor
Jun 15	27	23	4	21	2	0	3	8	7	3	11	3	0	0	0
Jun 22	33	25	8	17	5	3	12	9	3	2	10	10	0	0	0
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	37	0	0												
Total [c]	313	138	138	54	58	11	48	67	13	5	55	51	18	26	0
Average	35	15	15	7	7	1	6	8	2	1	7	6	3	4	0

2002 Summary of Subsistence Salmon Information Collected by KNA Technicians [eb]

Week ending	Number of Families			Chinook			Chum			Sockeye			Coho		
	Interviewed	Fishing	Not Fishing	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor
Jun 08 [c]	3	2	1	0	1	1	1	0	0	0	0	0			
Jun 15	16	11	5	0	4	7	0	0	11	0	0	0	0	0	0
Jun 22	15	15	0	4	10	1	3	9	0	0	10	1	0	0	0
Jun 29	17	15	2	4	5	6	8	4	0	0	5	5	1	0	0
Jul 06	3	2	1	0	1	1	1	0	0	0	0	0	0	0	0
Jul 13	5	3	2	1	1	1	0	0	0	0	0	0	0	0	0
Total [d]	59	48	11	9	22	17	13	13	11	0	15	6	1	0	0
Average	10	8	2	2	4	3	2	2	2	0	3	1	0	0	0

-Continued-

2002 Summary of Subsistence Salmon Information Collected by MNVC Technicians [fb]

Week ending	Number of Families			Chinook			Chum			Sockeye			Coho		
	Interviewed	Fishing	Not Fishing	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor
Jun 15 [c]	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0
Jun 22 [c]	2			1	0	1	0	0	0	0	0	0	0	0	0
Jun 29	6			2	1	3	0	0	0	0	0	0	0	0	0
Jul 06	9			1	4	3	0	0	0	0	0	1	0	0	0
Jul 13	9			2	4	3	1	0	0	0	0	1	0	0	0
Jul 20	5	5		0	4	1	0	0	0	0	0	0	0	0	0
Jul 27	5	4	1	0	1	4	0	0	0	0	0	0	0	0	0
Aug 17	10			0	0	0	0	0	2	0	0	0	5	4	1
Total [d]	48	11	1	7	14	15	1	0	2	0	0	2	5	4	1
Average	6	4	1	1	2	2	0	0	0	0	0	0	1	1	0

2003 Summary of Subsistence Salmon Information Collected by ONC Technicians [ab]

Week ending	Number of Families			Chinook			Chum			Sockeye			Coho		
	Interviewed	Fishing	Not Fishing	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor
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			
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 [c]	433	167	264	0 105	39	3	0 34	28	13	0 50	57	5	0 27	6	0
Average	43	17	26	11	4	0	4	3	1	6	6	1	7	2	0

-Continued-

2003 Summary of Subsistence Salmon Information Collected by KNA Technicians [eb]

Week ending	Number of Families			Chinook			Chum			Sockeye			Coho		
	Interviewed	Fishing	Not Fishing	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor
Jun 07 [c]															
Jun 14	19			0	11	7	0	10	6	0	4	6	0	0	0
Jun 21	27			3	15	9	1	13	10	0	18	8	0	0	0
Jun 28	17			3	9	4	0	13	3	0	15	2	0	0	0
Jul 05	17			0	8	0	3	4	0	2	4	2	0	0	0
Jul 12	27			2	5	0	8	0	1	5	4	1	0	0	0
Jul 19	7			0	4	0	1	5	0	0	6	0	0	0	0
Jul 26 [c]															
Aug 02 [c]															
Aug 09	13			0	0	0	0	1	1	0	0	0	0	4	0
Aug 16 [c]															
Total [d]	127	0	0	8	52	20	13	46	21	7	51	19	0	4	0
Average	18	0	0	1	7	3	2	7	3	1	7	3	0	1	0

2003 Summary of Subsistence Salmon Information Collected by MNVC Technicians [fb]

Week ending	Number of Families			Chinook			Chum			Sockeye			Coho		
	Interviewed	Fishing	Not Fishing	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor	Good	Normal	Poor
Jun 07 [c]															
Jun 14 [c]															
Jun 21	3			2	0	1	0	1	0	1	0	0	0	0	0
Jun 28	11			3	1	7	0	0	2	1	0	0			
Jul 05	9			1	6	2	0	0	0	0	0	0	0	0	0
Jul 12	11			3	5	0	1	2	0	3	0	0	0	0	0
Jul 19	9	3	6	1	0	2	0	0	0	0	0	0	0	0	0
Jul 26	12	3	9	2	0	1	0	0	0	0	0	0	0	0	0
Aug 02 [c]															
Aug 09	9	3	6	0	0	0	0	1	2	0	0	0	0	2	1
Aug 16 [c]															
Total [d]	64	9	21	12	12	13	1	4	4	5	0	0	0	2	1
Average	9	3	7	2	2	2	0	1	1	1	0	0	0	0	0

a Surveys in the Lower Kuskokwim River were conducted from Oscarville to the mouth of the Kwethluk River.

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

c Surveys not conducted.

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

e Surveys in the Middle Kuskokwim River were conducted from Lower Kalskag to Chuathbaluk.

f Surveys in the Upper Kuskokwim River were conducted from Georgetown to Nikolai.

Appendix B11.–Select chum salmon spawning escapement estimates, Kuskokwim River drainage, 1976–2003.

	Lower Kuskokwim		Middle Kuskokwim		Upper Kuskokwim		
Year	Kwethluk Weir	Tuluksak Weir	Aniak Sonar	Kogrukluk Weir	George Weir	Tatlawiksuk Weir	Takotna Weir
1976				8,177			
1977				19,443 [c]			
1978				48,125			
1979				18,198 [c]			
1980			1,132,077	[a]			
1981			570,444	57,365			
1982			428,314	64,063 [c]			
1983			125,231	9,407 [c]			
1984			258,440	41,484			
1985			244,960	15,005			
1986			202,395 [a]	14,693 [b]			
1987			186,842	[a]			
1988			388,673	39,540 [c]			
1989			236,123 [a]	39,549 [c]			
1990			224,834	26,765			
1991		697	304,121 [a]	24,188 [b]			
1992	9,675	1,083	81,575	34,105			
1993		2,218	13,427	31,899 [b]			
1994		2,917	375,752 [a]	46,635 [c]			
1995			[a]	31,265			[a]
1996	7,415		302,106	48,495	7,716 [b]		[a]
1997	10,395		262,522	7,958	7,823		1,779
1998	[a]		279,430	36,442 [c]	[a]	[a]	[a]
1999	[a]		177,771 [a]	13,820	3,548 [c]	9,599	
2000	3,547		144,157	11,491	2,960	7,044	1,254
2001	[a]	997 [c]	326,013 [a]	30,569 [c]	3,309	23,718	5,414
2002	8,502	1,346	362,812	51,570	2,444	24,542	4,377
2003	14,470	1,070	359,423	23,400	1,453	[a]	3,120
BEG			**250,000**	**30,000**			

a Estimates are from "peak" aerial surveys conducted between 20 and 31 July under fair, good, or excellent viewing conditions.
b Median of years 1975 through 1994.
c Formally established BEG (Buklis 1993).

Appendix B12.-Salmon spawning escapement estimates, Kwethluk River, Kuskokwim River drainage, 1992–2003.

Year	Operating Period [a]	Chinook	Sockeye	Chum	Pink	Coho
Kwethluk River						
Weir						
1992	06/20 to 09/12	9,675	1,316	30,595	45,952	45,605
Counting Tower						
1996	06/21 to 07/27	7,415	1,801 [b]	26,049 [b]	2,853 [b]	189 [b]
1997	06/20 to 08/12	10,395	1,374	10,659	1,008 [b]	1,110 [b]
1998	07/24 to 08/18	120 [b]	120 [b]	720 [b]	4,398 [b]	2,367 [b]
1999	07/15 to 08/18	873 [b]	234 [b]	702 [b]	678 [b]	693 [b]
Weir						
2000	06/22 to 09/15	3,547	358	11,691	1,407	25,610
2001	08/08 to 09/14	69 [b]	32 [b]	324 [b]	634 [b]	22,904 [b]
2002	06/22 to 09/19	8,502	272	35,854	1,415	23,298
2003	06/20 to 09/14	14,474	2,928	41,812	1,885	107,789

[a] The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 10 percent of the total annual escapement is estimated.

[b] Field operations were incomplete and no total annual escapment was estimated.

Appendix B13.–Salmon spawning escapement estimates, Tuluksak River, Kuskokwim River drainage, 1991–2003.

Year	Operating Period [a]	Chinook	Sockeye	Chum	Pink	Coho
Tuluksak River Weir						
1991	06/12 to 09/18	697	34	7,675	392	4,651
1992	06/24 to 09/10	1,083	129	11,183	2,470	7,501
1993	06/17 to 09/10	2,218	88	13,804	210	8,328
1994	06/29 to 09/11	2,917	82	15,724	3,487	7,952 [b]
2001	06/29 to 09/10	997 [b]	137	19,321	48	23,768 [b]
2002	06/10 to 09/10	1,346	82	9,958	27	11,487
2003	06/15 to 09/20	1,064	288	11,724	662	41,071

[a] The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 10 percent of the total annual escapement is estimated.

[b] Field operations were incomplete; more than 20 percent of the total annual escapement is based on daily passage estimates.

Appendix B14.–Salmon spawning escapement estimates, George River, Kuskokwim River drainage, 1996–2003.

Year	Operating Period [a]	Chinook	Sockeye	Chum	Pink	Coho
George River Weir						
1996	06/15 to 09/20	7,716 [d]	98 [c]	21,670 [c]	644 [b]	173 [b]
1997	06/15 to 09/20	7,823	445	5,907	17	9,210
1998	06/22 to 08/02	2,505 [b]	9 [b]	6,391 [b]	4 [b]	52 [b]
1999	06/15 to 09/20	3,548 [d]	39 [b]	11,552 [d]	97 [b]	8,914
2000	06/15 to 09/20	2,960	22	3,492	61	11,262
2001	06/15 to 09/20	3,309	24	11,601	83	14,398 [d]
2002	06/15 to 09/20	2,444	17	6,543	630	6,759
2003	06/15 to 09/20	4,693 [d]	16	33,666 [d]	158	33,280

[a] The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 10 percent of the total annual escapement is estimated.

[b] Field operations were incomplete and no total annual escapment was estimated.

[c] Field operations were incomplete; 10 to 20 percent of the total annual escapement is based on daily passage estimates.

[d] Field operations were incomplete; more than 20 percent of the total annual escapement is based on daily passage estimates.

Appendix B15.–Salmon spawning escapement estimates, Kogrukluk River, Kuskokwim River drainage, 1969–2003.

Year	Operating Period [a]	Chinook	Sockeye	Chum	Pink	Coho
Kogrukluk River Tower [b]						
1969	07/01 to 07/31	2,980	269	6,824	9	0
1970	07/01 to 07/31	3,868	1,695	7,726	7	0
1971	07/01 to 07/31	[c]	[c]	[c]	[c]	
1972	07/01 to 07/31	1,934	714	8,981	4	0
1973	07/01 to 07/31	1,725	205	5,318	0	0
1974	07/01 to 07/31	3,724	290	4,881	5	0
1975	07/01 to 07/31	1,970	2,305	8,290	3	0
1976	07/01 to 07/31	3,261	4,433	9,170	4	0
1977	07/01 to 07/31	1,988	2,140	5,047	10	0
1978	07/01 to 07/31	6,712	746	16,514	9	0
Kogrukluk River Weir						
Escapement Goal:		**10,000**		**30,000**		**25,000**
1976	06/29 to 07/31	5,579	2,326	8,117	0 [c]	[c]
1977	07/14 to 07/27	1,385 [e]	1,637 [e]	19,443 [e]	2 [c]	[c]
1978	06/28 to 07/31	13,667	1,670	48,125	2 [c]	[c]
1979	07/01 to 07/24	11,338 [d]	2,628	18,198 [e]	1 [c]	[c]
1980	07/01 to 07/11	6,572 [c]	3,200 [c]	41,777 [c]	1 [c]	[c]
1981	06/27 to 10/05	16,655	18,066	57,365	6 [c]	11,455
1982	07/09 to 09/14	10,993 [e]	17,297 [e]	64,063 [e]	19 [c]	37,796
1983	06/23 to 09/27	3,009 [e]	1,176 [e]	9,407 [e]	0 [c]	8,538
1984	06/19 to 09/15	4,928	4,133	41,484	0 [c]	27,595
1985	07/06 to 09/24	4,619	4,359	15,005	0 [c]	16,441 [d]
1986	06/29 to 09/07	5,038 [e]	4,244 [e]	14,693 [d]	0 [c]	22,506 [e]
1987	07/15 to 09/24	4,063 [c]	973 [c]	17,422 [c]	0 [c]	22,821 [d]
1988	07/05 to 09/17	8,505	4,397	39,540 [e]	0 [c]	13,512 [d]
1989	07/07 to 08/24	11,940 [e]	5,811 [e]	39,549 [e]	0 [c]	1,272 [c]
1990	06/28 to 09/07	10,218	8,406	26,765	1 [c]	6,132 [e]
1991	07/04 to 09/15	7,850 [e]	16,455 [d]	24,188 [d]	4 [c]	9,964 [e]
1992	07/01 to 08/21	6,755	7,540	34,105	11 [c]	26,057 [e]
1993	07/02 to 09/06	12,332 [d]	29,358	31,899 [d]	0 [c]	20,517 [e]
1994	07/02 to 09/14	15,227 [e]	14,192 [e]	46,635 [e]	23 [c]	34,695 [e]
1995	07/02 to 09/06	20,630	10,996	31,265	2 [c]	27,861 [e]
1996	06/29 to 09/15	14,199	15,385	48,495	6 [c]	50,555

-Continued-

Appendix B15.–Page 2 of 2

Year	Operating Period [a]	Chinook	Sockeye	Chum	Pink	Coho
1997	06/28 to 09/21	13,286	13,078	7,958	0 [c]	12,237
1998	07/18 to 09/19	12,107 [e]	16,773 [e]	36,442 [e]	1 [c]	24,348
1999	07/06 to 09/18	5,570	5,864	13,820	0 [c]	12,609 [d]
2000	07/02 to 09/20	3,310	2,867	11,491	2 [c]	33,135
2001	06/21 to 09/25	9,298 [e]	8,773 [e]	30,569 [e]	9 [c]	19,387 [e]
2002	06/26 to 09/24	10,104	4,050	51,570	15 [c]	14,516
2003	06/15 to 09/20	11,771	9,164	23,413	3 [c]	74,604

[a] The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 10% of the total annual escapement is estimated.

[b] The Kogrukluk River tower was located approximately 6 miles upstream of the current Kogrukluk River weir , and upstream of Shotgun Creek.

[c] Field operations were incomplete and no total annual escapement was estimated.

[d] Field operations were incomplete; 10 to 20% of the total annual escapement is based on daily passage estimates.

[e] Field operations were incomplete; more than 20% of the total annual escapement is based on daily passage estimates.

Appendix B16.–Salmon spawning escapement estimates from select projects, Kuskokwim River drainage, 1995–2003.

Year	Operating Period [a]	Chinook	Sockeye	Chum	Coho
Holitna River Radiotelmetry Mark-Recapture					
2001	06/16 to 09/10	25,405		n.a.	63,442
2002	06/14 - 09/10	42,902		542,172	157,277
2003	06/10 - 07/29	42,013		n.a.	n.a.
Tatlawiksuk River Weir					
1998	06/15 to 07/07	970 [b]	0 [b]	5,726 [b]	0 [b]
1999	06/15 to 09/20	1,490	6	9,599	3,455 [c]
2000	06/15 to 09/20	817	0	7,044	5,756 [b]
2001	06/15 to 09/20	2,010	3	23,718	10,539 [d]
2002	06/15 to 09/20	2,237	1	24,542	11,345
2003	06/15 to 07/02	1,683 [d]			
Takotna River					
Counting Tower					
1995	07/07 to 09/01	156 [b]	0 [b]	1,685 [b]	0 [b]
1996	06/24 to 07/25	402 [b]	0 [b]	2,794 [b]	0 [b]
1997	06/24 to 08/04	1,161	0 [b]	1,779	0 [b]
1998	06/28 to 07/05	21 [b]	0 [b]	45 [b]	0 [b]
1999					
Weir					
2000	06/24 to 09/20	345	4	1,254	3,957
2001	06/24 to 09/20	721	1	5,479	2,606
2002	06/24 to 09/20	316	1	4,366	3,984
2003	06/15 to 09/20	378	4	3,393	7,171
Kuskokwim River Fish Wheel Mark-Recapture (at Kalskag-Birch Tree Crossing) [e]					
2001	07/22 to 09/10				
2002		n.a	[f]	675,659	316,068
2003			90,444	412,443	849,494
Kuskokwim River Radiotelemetry Mark-Recapture (at Kalskag-Birch Tree Crossing) [e]					
2002		100,733			
2003		103,161			

[a] The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 10% of the total annual escapement is estimated.

[b] Field operations were incomplete and no total annual escapement was estimated.

[c] Field operations were incomplete; 10 to 20% of the total annual escapement is based on daily passage estimates.

[d] Field operations were incomplete; more than 20% of the total annual escapement is based on daily passage estimates.

[e] Reported numbers are for the estimated passage at Kalskag-Birch Tree Crossing and do not account for upstream harvest. Estimate supplied for the mainstem Kuskokwim River upstream from the confluence with the Aniak River.

[f] Abundance was not estimated because few fish were captured, tagged and recovered.

Appendix B17.–Salmon spawning escapement estimates, Aniak River, Kuskokwim River drainage, 1980–2003.

Year	Operating Period [a]	Chinook	Sockeye	Chum	Pink	Coho
Aniak River Sonar [b]						
Escapement Goal:				**250,000**		
Non user-configurable, one-bank expanded estimates						
1980	06/22 to 07/30	56,469		1,169,470		
	08/16 to 09/12					81,556
1981	06/16 to 08/06	42,060		589,286		
1982	06/21 to 08/01	33,864		442,461		
1983	06/18 to 07/28	4,911		129,367		
1984	06/16 to 07/30			266,976		
1985	06/22 to 07/28			253,051		
1986	06/26 to 07/24			209,080 [c]		
1987	06/22 to 07/31			193,013		
1988	06/22 to 07/31			401,511		
1989	06/21 to 07/24			243,922 [c]		
1990	06/23 to 08/06			232,260		
1991	06/29 to 07/29			314,166 [c]		
1992	06/22 to 07/29			84,269		
1993	06/24 to 07/28			13,870		
1994	06/28 to 07/28			388,163 [c]		
1995	06/23 to 07/23			n.a. [c]		
User-configurable, two-bank estimates						
1996	06/21 to 07/28			302,106		
1997	06/16 to 08/03			262,522		
1998	06/24 to 07/31			279,431		
1999	06/30 to 08/03			178,129 [c]		
2000	06/26 to 07/31			144,157		
2001	07/11 to 07/31			222,231 [c]		
2002	06/26 to 07/31			362,812		
2003	06/28 to 07/31			363,396		

[a] The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 10% of the total annual escapement is estimated.

[b] Sonar counts for the Aniak River are generally not apportioned to species, but chum salmon dominate throughout most of the project operational period. The minimum target operational period is defined here as June 26 to July 28.

[c] Field operations were incomplete and no total annual escapement was estimated.

Appendix B18.–Chinook salmon spawning aerial survey index estimates, Kuskokwim River drainage, 1979–2003.

	Lower Kuskokwim				Middle Kuskokwim							Upper Kuskokwim		
Year	Eek	Kwethluk Canyon C.	Kisaralik	Tuluksak	Aniak	Kipchuk (Aniak)	Salmon (Aniak)	Holokuk	Oskawalik	Holitna	Kogrukluk Weir	Gagarayah	Cheeneetnuk	Salmon (Pitka)
1979								45			11,338			682
1980	2,378			1,035			1,186							1,450
1981		2,034	672		9,074						16,655			1,439
1982		471	81					42		521	10,993			413
1983	188			202	1,909		231	33		1,069				572
1984											4,926		1,177	545
1985	1,118	51	63	142				135			4,619		1,002	620
1986					424		336	100		650	5,038		317	
1987	1,739					193	516	210	193			205		
1988	2,255		869	188	954		244		80		8,506			473
1989	1,042	610	152		2,109	994	631				11,940			452
1990			631	200	1,255	537	596	157	113		10,218			
1991	1,312		217	358	1,564	885	583				7,850			
1992					2,284	670	335	64	91	2,022	6,755	328	1,050	2,536
1993					2,687	1,248	1,082	114	103	1,573	12,332	419	678	1,010
1994			1,243			1,520	1,218				15,227	807	1,206	1,010
1995			1,243		3,171	1,215	1,446	181	326	1,887	20,630	1,193	1,565	1,911
1996							985	85			14,199			
1997					2,187	855	980	165	1,470	2,093	13,280		345	
1998	522	126	457		1,930	443	557							
1999								18	98		5,570			
2000					714	182	238	42		301	3,181			362
2001							598		186	1,130	9,298	143		1,033
2002		1,795	1,727			1,615	1,236	186	295	1,578	10,059	452		1,255
2003	1,236	2,628	654	94	3,514	1,493	1,242	528	844		11,760	1,095	810	1,391
BEG[a]		**1,200**	**1,000**	**400**	**1,500**		**600**			**2,000**	**10,000**			**1,300**
Median[b]	**1,312**					**778**		**82**	**103**			**504**	**1,050**	

Note: Estimates are from "peak" aerial surveys conducted between 20 and 31 July with fair or good overall rankings.

[a] Formally established BEG (Buklis 1993).

[b] Median of years 1975 through 1994.

Appendix B19.–Chinook salmon commercial fishery age and sex composition information, District 1, Kuskokwim River, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.2 Harvest	%	1.3 Harvest	%	1.4 Harvest	%	1.5 Harvest	%	Total Harvest	%
1993	Season [b]	102	M										
			F										
			Total									8,714	
1994	Season [b]	208	M										
			F										
			Total									16,201	
1995	Season	578	M	9,318	33.2	3,601	12.8	6,273	22.4	79	0.3	19,307	68.8
			F	268	1.0	868	3.1	7,459	26.6	150	0.5	8,745	31.2
			Total	9,586	34.2	4,470	15.9	13,733	49.0	229	0.8	28,054	100.0
1996	Season	592	M	1,924	27.6	2,651	38.0	692	9.9	243	3.5	5,537	79.4
			F	10	0.1	316	4.5	692	9.9	409	5.9	1,435	20.6
			Total	1,934	27.7	2,967	42.6	1,384	19.9	652	9.4	6,972	100.0
1997	Season [b]	162	M										
			F										
			Total									10,436	
1998	Season	437	M	4,055	23.4	8,399	48.4	821	4.7	72	0.4	13,541	78.0
			F	79	0.4	1,841	10.6	1,590	9.2	305	1.8	3,815	22.0
			Total	4,134	23.8	10,240	59.0	2,411	13.9	377	2.2	17,356	100.0
1999	Season [b]	190	M										
			F										
			Total									4,705	
2000	Season [bc]		M	No Season									
			F										
			Total										
2001	Season [bc]		M	No Season									
			F										
			Total										
2003	Season [bc]		M	No Season									
			F										
			Total										
	Grand Total	1,607	M	15,297	29.2	14,651	28.0	7,786	14.9	395	0.8	38,385	73.3
			F	357	0.7	3,026	5.8	9,742	18.6	864	1.6	13,995	26.7
			Total	15,654	29.9	17,677	33.7	17,528	33.5	1,258	2.4	52,382	100.0

[a] Age classes representing less than 1% of the Grand Total are excluded, discrepancies in sums are attributed to excluded age classes.

[b] Sampling dates do not meet criteria for estimating harvest percentages for some or all of the strata; "Season" is not included in the "Grand Total".

[c] No samples taken.

Appendix B20.–Chinook salmon escapement project age and sex composition information, Kuskokwim River drainage, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.2 Esc.	1.2 %	1.3 Esc.	1.3 %	1.4 Esc.	1.4 %	1.5 Esc.	1.5 %	Total Esc.	Total %
1993	Drainage Composite	619	M		51.5		26.1		5.4		0.3		86.2
			F		0.5		2.1		10.5		0.7		13.8
			Total		52.0		28.2		15.9		0.9		100.0
Drainage Composite includes: Tuluksak River.													
1994	Drainage Composite	475	M		16.8		44.7		7.5		0.0		76.9
			F		2.0		8.2		10.4		0.5		23.1
			Total		18.8		52.9		17.9		0.5		100.0
Drainage Composite includes: Tuluksak River.													
1995	Drainage Composite	533	M		18.1		18.3		20.6		0.0		57.1
			F		1.0		7.2		34.5		0.2		42.9
			Total		19.1		25.5		55.1		0.2		100.0
Drainage Composite includes: Kogrukluk River.													
1996	Drainage Composite	671	M		8.9		32.6		14.0		6.1		61.8
			F		0.8		5.5		18.4		13.5		38.2
			Total		9.6		38.1		32.4		19.6		100.0
Drainage Composite includes: Kogrukluk and George rivers.													
1997	Drainage Composite	741	M		27.3		13.3		16.8		0.0		57.4
			F		6.9		2.8		32.8		0.2		42.7
			Total		34.2		16.1		49.6		0.2		100.0
Drainage Composite includes: Kogrukluk and George rivers.													
1998	Drainage Composite [c]	101	M										
			F										
			Total										
1999	Drainage Composite	305	M		5.4		21.4		19.5		0.0		46.8
			F		0.0		3.8		47.8		1.0		53.2
			Total		5.4		25.2		67.3		1.5		100.0
Drainage Composite includes: Kogrukluk River.													

-continued-

Appendix B20.–Page 2 of 3.

Year	Project	Sample Size	Sex	Age Class 1.2 Esc.	1.2 %	1.3 Esc.	1.3 %	1.4 Esc.	1.4 %	1.5 Esc.	1.5 %	Total Esc.	Total %
2000	Drainage Composite	176	M		20.4		39.2		9.6		0.3		67.2
			F		0.0		5.0		32.3		0.9		32.9
			Total		20.4		44.2		41.9		1.2		100.0
Drainage Composite includes: Kogrukluk, and Takotna rivers.													
2001	Drainage Composite	459	M		0.0		33.3		21.1		1.7		69.3
			F		0.8		1.6		25.2		3.2		30.8
			Total		13.9		34.9		46.3		4.8		100.0
Drainage Composite includes: Kogrukluk and George rivers.													
2002	Drainage Composite	2,153	M		23.4		26.9		16.4		0.8		68.1
			F		2.8		3.5		23.4		2.3		31.9
			Total		26.3		30.3		39.8		3.1		100.0
Drainage Composite includes: Kwethluk, Tuluksak, George, Kogrukluk, Tatlawiksuk, and Takotna rivers.													
2003	Takonta Weir [c]	61	M										
			F										
			Total										
2003	Tatlawiksuk Weir [c]	39	M										
			F										
			Total										
2003	Kogrukluk Weir	373	M	2,196	18.7	4,723	40.1	1,170	10.0	0	0.0	8,090	68.7
			F	0	0.0	288	2.5	3,064	26.0	330	2.8	3,681	31.3
			Total	2,196	18.7	5,011	42..6	4,234	36.0	330	2.8	11,771	100.0
2003	George Weir [c]	23	M										
			F										
			Total										
2003	Tuluksak Weir	225	M	356	33.4	342	32.2	39	3.7	0	0.0	739	69.5
			F	0	0.0	81	7.6	199	18.7	45	4.2	325	30.5
			Total	356	33.4	423	39.8	238	22.4	45	4.2	1,064	100.0
2003	Kwethluk Weir	1,133	M	4,424	30.6	5,826	40.2	1,445	10.0	77	0.5	11,820	81.7
			F	20	0.1	441	3.1	1,910	13.2	283	2.0	2,654	18.3
			Total	4,444	30.7	6,267	43.3	3,355	23.2	360	2.5	14,474	100.0

-continued-

Appendix B20.–Page 3 of 3

Year	Project	Sample Size	Sex	Age Class 1.2 Esc.	1.2 %	1.3 Esc.	1.3 %	1.4 Esc.	1.4 %	1.5 Esc.	1.5 %	Total Esc.	Total %
2003	Drainage	1,731	M		27.6		37.5		7.9		0.2		73.3
	Composite		F		0.0		4.4		19.3		3.0		26.7
			Total		27.6		41.9		27.2		3.2		100.0
Drainage Composite includes: Kwethluk, Tuluksak, and Kogrukluk rivers.													
	Grand	10,129	M		20.4		29.6		14.2		1.0		67.0
	Total		F		1.8		4.0		24.7		2.9		33.0
			Total		23.4		33.6		38.9		3.9		100.0

[a] Percents reported in the Drainage Composite are averages in which each contributing project is weighted equally.

[b] Age classes representing less than 1% of the Grand Total are excluded, discrepancies in sums are attributed to excluded age classes.

[c] Sampling dates do not meet criteria for estimating harvest percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix B.21.–Chum salmon commercial fishery age and sex composition information, District 1, Kuskokwim River, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 0.2 Harvest	0.2 %	0.3 Harvest	0.3 %	0.4 Harvest	0.4 %	0.5 Harvest	0.5 %	Total Harvest	Total %
1993	Season	318	M	275	0.6	6,581	15.4	14,862	34.8	1,399	3.3	23,117	54.1
			F	308	0.7	7,178	16.8	10,851	25.4	1,264	3.0	19,601	45.9
			Total	583	1.4	13,759	32.2	25,712	60.2	2,663	6.2	42,718	100.0
1994	Season	1,389	M	826	0.3	79,194	29.4	33,186	12.3	3,489	1.3	116,694	43.3
			F	1,111	0.4	116,192	43.1	33,437	12.4	2,001	0.7	152,741	56.7
			Total	1,937	0.7	195,386	72.5	66,622	24.7	5,489	2.0	269,426	100.0
1995	Season	1,811	M	12,535	2.1	161,807	27.5	96,934	16.5	7,089	1.2	267,600	45.5
			F	8,607	1.5	179,495	30.5	120,819	20.5	968	0.2	320,637	54.5
			Total	21,142	3.6	341,302	58.0	217,753	37.0	8,056	1.4	588,250	100.0
1996	Season	2,169	M	146	0.1	68,941	34.0	22,556	11.1	2,301	1.1	93,944	46.3
			F	439	0.2	78,985	38.9	27,161	13.4	2,249	1.1	108,834	53.7
			Total	585	0.3	147,975	73.0	49,716	24.5	4,551	2.2	202,827	100.0
1997	Season	355	M	291	1.7	4,872	28.7	3,442	20.2	303	1.8	8,909	52.4
			F	269	1.6	3,983	23.4	3,733	22.0	110	0.6	8,094	47.6
			Total	560	3.3	8,855	52.1	7,175	42.2	413	2.4	17,003	100.0
1999	Season	268	M	0	0.0	6,838	29.7	4,495	19.5	0	0.0	11,332	49.3
			F	5	0.0	6,517	28.3	5,151	22.4	0	0.0	11,674	50.7
			Total	5	0.0	13,355	58.0	9,646	41.9	0	0.0	23,006	100.0
2000	Season	253	M	197	1.7	4,025	34.8	1,200	10.4	57	0.5	5,479	47.4
			F	85	0.7	4,486	38.8	1,464	12.6	56	0.5	6,091	52.6
			Total	282	2.4	8,511	73.6	2,664	23.0	113	1.0	11,570	100.0
2001	Season [a]	118	M										
			F										
			Total									1,272	
2002	Season [a]	93	M										
			F										
			Total									1,900	
2003	Season [a]	118	M										
			F										
			Total									2,764	
	Grand Total	7,996	M	15,179	1.1	409,958	30.1	187,036	13.7	14,807	1.1	616,216	45.2
			F	11,639	0.9	500,353	36.7	216,807	15.9	6,682	0.5	746,229	54.8
			Total	26,818	2.0	910,360	66.8	403,843	29.6	21,490	1.6	1,362,498	100.0

[a] Sampling dates do not meet criteria for estimating harvest percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix B22.–Chum salmon escapement project age and sex composition information, Kuskokwim River drainage, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 0.2 Esc.	0.2 %	0.3 Esc.	0.3 %	0.4 Esc.	0.4 %	0.5 Esc.	0.5 %	Total Esc.	Total %
1993	Drainage	1,524	M		0.1		21.8		40.4		3.4		65.7
	Composite		F		0.9		13.4		18.4		1.6		34.3
			Total		1.0		35.2		58.7		5.1		100.0
Drainage Composite includes: Kogrukluk and Tuluksak rivers.													
1994	Drainage	851	M		0.1		23.1		23.2		2.6		49.0
	Composite		F		0.5		26.7		21.7		2.1		51.0
			Total		0.6		49.8		44.9		4.7		100.0
Drainage Composite includes: Tuluksak River.													
1995	Drainage	848	M		1.2		39.4		45.3		0.8		86.7
	Composite		F		0.2		6.5		6.6		0.0		13.3
			Total		1.4		45.9		51.8		0.8		100.0
Drainage Composite includes: Kogrukluk River.													
1996	Drainage	2,051	M		0.6		38.3		19.5		1.4		59.8
	Composite		F		1.2		26.2		12.7		0.2		40.2
			Total		1.7		64.4		32.3		1.6		100.0
Drainage Composite includes: Kogrukluk George and Aniak rivers.													
1997	Drainage	2,135	M		0.3		33.5		33.2		0.7		67.6
	Composite		F		0.6		19.8		11.7		0.3		32.4
			Total		0.8		53.3		44.9		0.9		100.0
Drainage Composite includes: Kogrukluk George and Aniak rivers.													
1998	Drainage	1,044	M		0.2		41.2		6.6		0.2		48.2
	Composite		F		0.1		46.1		5.4		0.2		51.8
			Total		0.3		87.3		12.0		0.4		100.0
Drainage Composite includes: Aniak River.													
1999	Drainage	2,480	M		0.0		34.4		27.4		0.2		62.0
	Composite		F		0.1		22.6		11.8		0.1		38.0
			Total		0.1		60.3		39.3		0.3		100.0
Drainage Composite includes: Tatlawiksuk, Kogrukluk, and Aniak rivers.													
2000	Drainage	3,614	M		0.9		32.4		21.5		0.5		55.2
	Composite		F		0.8		29.3		14.6		0.2		44.9
			Total		1.6		61.7		36.1		0.6		100.0
Drainage Composite includes: Takotna, Tatlawiksuk, Kogrukluk, George, Aniak and Kwethluk rivers.													
2001	Drainage	4,429	M		0.1		38.5		17.9		0.1		56.5
	Composite		F		0.3		31.8		11.4		0.0		43.6
			Total		0.3		70.3		29.3		0.1		100.0
Drainage Composite includes: Takotna, Tatlawiksuk, Kogrukluk, George, Aniak and Tuluksak rivers.													

-Continued-

Appendix B22.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 0.2 Esc.	0.2 %	0.3 Esc.	0.3 %	0.4 Esc.	0.4 %	0.5 Esc.	0.5 %	Total Esc.	Total %
2002	Drainage	6,923	M		2.1		34.6		19.9		0.6		59.3
	Composite		F		2.3		26.5		13.5		0.4		40.7
			Total		4.5		61.1		33.4		1.0		100.0
Drainage Composite includes: Takotna, Tatlawiksuk, Kogrukluk, George, Aniak, Tuluksak and Kwethluk rivers.													
2003	Drainage	5,738	M		0.5		48.8		10.9		0.6		61.0
	Composite		F		1.5		33.3		4.0		0.2		39.0
			Total		2.0		82.2		14.9		0.7		100.0
Drainage Composite includes: Takotna, Kogrukluk, George, Aniak, Tuluksak and Kwethluk rivers.													
	Grand	31,637	M		0.7		36.6		21.5		0.7		59.9
	Total		F		1.0		27.3		11.6		0.3		40.1
			Total		1.7		64.1		33.1		1.0		100.0

[a] Percents reported in the Drainage Composite are averages in which each contributing project is weighted equally.

Appendix B23.–Sockeye salmon commercial fishery age and sex composition information, District 1, Kuskokwim River, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.2 Harvest	1.2 %	1.3 Harvest	1.3 %	1.4 Harvest	1.4 %	2.3 Harvest	2.3 %	Total Harvest	Total %
1993	Season [a]	186	M										
			F										
			Total									27,003	
1994	Season [a]	173	M										
			F										
			Total									49,362	
1995	Season	419	M	2,960	3.3	28,334	31.5	1,961	2.2	2,404	2.7	37,566	41.7
			F	4,089	4.5	45,343	50.4	305	0.3	1,218	1.4	52,460	58.3
			Total	7,048	7.8	73,677	81.8	2,267	2.5	3,621	4.0	90,026	100.0
1996	Season	520	M	740	2.2	16,167	48.4	280	0.8	725	2.2	19,091	57.2
			F	416	1.2	11,266	33.7	218	0.7	833	2.5	14,318	42.9
			Total	1,156	3.5	27,433	82.1	498	1.5	1,559	4.7	33,404	100.0
1997	Season [a]	89	M										
			F										
			Total									21,988	
1998	Season	493	M	1,440	2.3	18,769	30.8	764	1.2	6,152	10.1	30,677	50.4
			F	2,177	3.6	19,337	31.8	164	0.3	5,215	8.6	30,229	49.6
			Total	3,617	5.9	38,106	62.6	928	1.5	11,367	18.7	60,906	100.0
1999	Season [a]	189	M										
			F										
			Total									16,976	
2000	Season [a]	170	M										
			F										
			Total									4,130	
2001	Season [a]	0	M										
			F										
			Total										
2002	Season [a]	0	M										
			F										
			Total										
2003	Season [a]	0	M										
			F										
			Total										
	Grand Total	1,432	M	5,140	2.8	63,269	34.3	3,005	1.6	9,281	5.0	87,335	47.4
			F	6,682	3.6	75,947	41.2	687	0.4	7,266	3.9	97,008	52.6
			Total	11,822	6.4	139,216	75.5	3,693	2.0	16,547	9.0	184,336	100.0

Note: Age classes representing less than 1% of the Grand Total are excluded, discrepancies in sums are attributed to excluded age classes.

[a] Sampling dates do not meet criteria for estimating harvest percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix B24.–Coho salmon commercial fishery age and sex composition information, District 1, Kuskokwim River, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.1 Harvest	1.1 %	2.1 Harvest	2.1 %	3.1 Harvest	3.1 %	Total Harvest	Total %
1993	Season	540	M	17,418	3.0	275,115	46.9	11,915	2.0	304,448	51.9
			F	16,689	2.8	259,731	44.3	5,463	0.9	281,882	48.1
			Total	34,107	5.8	534,845	91.2	17,378	3.0	586,330	100.0
1994	Season	826.00	M	29,268	4.2	349,647	50.6	38,679	5.6	417,594	60.5
			F	16,795	2.4	228,286	33.1	27,721	4.0	272,802	39.5
			Total	46,063	6.7	577,933	83.7	66,400	9.6	690,396	100.0
1995	Season	565	M	38,581	8.5	196,322	43.1	17,041	3.7	251,944	55.3
			F	17,424	3.8	164,635	36.2	21,266	4.7	203,325	44.7
			Total	56,005	12.3	360,957	79.3	38,307	8.4	455,269	100.0
1996	Season	666	M	20,111	2.2	451,313	48.5	6,315	0.7	477,739	51.4
			F	20,138	2.2	426,562	45.9	5,692	0.6	452,392	48.6
			Total	40,248	4.3	877,875	94.4	12,007	1.3	930,131	100.0
1997	Season [a]	324	M								
			F								
			Total							129,601	
1998	Season	1,194	M	4,579	2.2	99,072	47.1	2,413	1.1	106,083	50.5
			F	5,678	2.7	96,460	45.9	1,944	0.9	104,085	49.5
			Total	10,258	4.9	195,532	93.0	4,357	2.1	210,168	100.0
1999	Season [a]	151	M								
			F								
			Total							23,593	
2000	Season	2,616	M	4,328	1.7	114,661	44.2	2,572	1.0	121,547	46.8
			F	4,697	1.8	130,473	50.2	2,971	1.1	138,156	53.2
			Total	9,026	3.5	245,134	94.4	5,543	2.1	259,703	100.0
2001	Season	422	M	7,647	4.0	67,803	35.2	7,901	4.1	83,350	43.2
			F	5,251	2.7	91,523	47.4	12,873	6.7	109,648	56.8
			Total	12,898	6.7	159,326	82.6	20,774	10.8	192,998	100.0
2002	Season	428	M	469	0.6	37,467	44.9	2,401	2.9	40,337	48.3
			F	354	0.4	40,362	48.3	2,410	2.9	43,126	51.7
			Total	823	1.0	77,829	93.2	4,811	5.8	83,463	100.0
2003	Season [a]	0	M								
			F								
			Total								
	Grand Total	7,257	M	122,402	3.6	1,591,399	46.7	89,238	2.6	1,803,042	52.9
			F	87,026	2.6	1,438,032	42.2	80,340	2.4	1,605,416	47.1
			Total	209,428	6.1	3,029,431	88.9	169,577	5.0	3,408,458	100.0

[a] Sampling dates do not meet criteria for estimating harvest percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix B25.–Coho salmon escapement project age and sex composition information, Kuskokwim River drainage, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.1 Esc.	1.1 %	2.1 Esc.	2.1 %	3.1 Esc.	3.1 %	Total Esc.	Total %
1993	Drainage	818	M		1.2		53.6		3.6		58.5
	Composite		F		0.4		40.1		1.1		41.6
			Total		1.6		93.6		4.7		100.0
Drainage Composite includes: Kogrukluk and Tuluksak rivers.											
1994	Drainage	775	M		1.6		49.9		5.8		57.3
	Composite		F		0.5		37.3		4.8		42.7
			Total		2.1		87.2		10.6		100.0
Drainage Composite includes: Kogrukluk and Tuluksak rivers.											
1995	Drainage	364	M		3.1		53.3		4.0		60.9
	Composite		F		1.0		35.2		2.9		39.1
			Total		4.1		88.5		7.0		50.0
Drainage Composite includes: Kogrukluk River.											
1996	Drainage	639	M		2.5		59.3		1.2		63.0
	Composite		F		0.5		35.6		0.9		37.0
			Total		3.0		94.9		2.1		100.0
Drainage Composite includes: Kogrukluk River.											
1997	Drainage	205	M		2.2		54.9		0.7		57.8
	Composite		F		0.0		41.0		1.2		42.2
			Total		2.2		95.9		1.9		100.0
Drainage Composite includes: George River.											
1998	Drainage	455	M		0.8		55.4		2.8		59.1
	Composite		F		0.8		38.7		1.4		40.9
			Total		1.6		94.1		4.2		100.0
Drainage Composite includes: Kogrukluk River.											
1999	Drainage	968	M		2.9		53.4		9.9		66.3
	Composite		F		1.5		25.6		6.6		33.7
			Total		4.4		79.0		16.6		100.0
Drainage Composite includes: Tatlawiksuk, Kogrukluk, and George rivers.											
2000	Drainage	2,221	M		1.0		55.9		0.6		57.5
	Composite		F		0.9		41.1		0.5		42.5
			Total		1.9		97.0		1.2		100.0
Drainage Composite includes: Takotna, Tatlawiksuk, Kogrukluk, George, and Kwethluk rivers.											
2001	Drainage	2,155	M		1.9		44.5		5.5		52.0
	Composite		F		1.0		41.5		5.6		48.0
			Total		2.9		86.1		11.0		100.0
Drainage Composite includes: Takotna, Tatlawiksuk, Kogrukluk, George, Tuluksak and Kwethluk rivers.											
2002	Drainage	1,991	M		0.4		50.8		3.8		55.0
	Composite		F		0.5		39.6		4.9		45.0
			Total		0.9		90.4		8.7		100.0
Drainage Composite includes: Takotna, Tatlawiksuk, Kogrukluk, Tuluksak and Kwethluk rivers.											
2003	Drainage	919	M		2.0		43.8		4.5		50.3
	Composite		F		1.3		43.0		5.4		49.7
			Total		3.2		86.8		9.9		100.0
Drainage Composite includes: Takotna, Kogrukluk, George, Tuluksak and Kwethluk rivers.											
	Grand	11,510	M		1.6		50.3		4.2		56.2
	Total		F		0.9		39.0		3.9		43.8
			Total		2.5		89.3		8.1		100.0

[a] Percents reported in the Drainage Composite are averages in which each contributing project is weighted equally.

APPENDIX C. KUSKOKWIM BAY, DISTRICT 4.

Appendix C1.–Chinook salmon total utilization, District 4 Quinhagak, Kuskokwim Bay, 1960–2003.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
1960	0						0	
1961	4,328						4,328	
1962	5,526						5,526	
1963	6,555						6,555	
1964	4,081						4,081	
1965	2,976						2,976	
1966	278						278	
1967	0		1,349				1,349	
1968	8,879		2,756				11,635	
1969	16,802	4,943					16,802	5,353
1970	18,269	6,769					18,269	7,180
1971	4,185	6,755					4,185	7,166
1972	15,880	7,791					15,880	8,201
1973	14,993	8,634					14,993	9,045
1974	8,704	9,097					8,704	9,507
1975	3,928	9,192					3,928	9,602
1976	14,110	10,575					14,110	10,986
1977	19,090	12,484	2,012				21,102	12,961
1978	12,335	12,830	2,328				14,663	13,264
1979	11,144	12,264	1,420				12,564	12,840
1980	10,387	11,476	1,940				12,327	12,246
1981	24,524	13,510	2,562				27,086	14,536
1982	22,106	14,132	2,402				24,508	15,399
1983	46,385	17,271	2,542		1,511		50,438	18,943
1984	33,633	19,764	3,109		922		37,664	21,839
1985	30,401	22,412	2,341		672		33,414	24,788
1986	22,835	23,284	2,682	2,334	938		26,455	26,022
1987	26,022	23,977	3,663	2,499	508		30,193	26,931
1988	13,883	24,132	3,690 [c]	2,635	1,910		19,483	27,413
1989	20,820	25,100	3,542	2,847	884		25,246	28,681
1990	27,644	26,825	6,013	3,255	503		34,160	30,865
1991	9,480	25,321	3,693	3,368	316		13,489	29,505
1992	17,197	24,830	3,447	3,472	656	882	21,300	29,184
1993	15,784	21,770	3,368	3,555	1,006	832	20,158	26,156
1994	8,564	19,263	3,995	3,643	751	814	13,310	23,721
1995	38,584	20,081	2,746	3,684	739	821	42,069	24,586
1996	14,165	19,214	3,075	3,723	689	796	17,929	23,734
1997	35,510	20,163	3,433	3,700	1,632	909	40,575	24,772
1998	23,158	21,091	4,041	3,735	1,475	865	28,674	25,691

-Continued-

Appendix C1.–Page 2 of 2.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
1999	18,426	20,851	3,167	3,698	854	862	22,447	25,411
2000	21,229	20,210	3,106	3,407	833	895	25,168	24,512
2001	12,775	20,539	2,923	3,330	947	958	16,645	24,828
2002	11,480	19,968	2,475	3,233	779	971	14,734	24,171
2003	14,444	19,834	3,898	3,286	323	902	18,665	24,022
10-Yr. Ave. (93-02)	19,968		3,233		971		24,171	

[a] Quinhagak District commercial harvest. Source: Burkey et al. 2001

[b] Subsistence harvest by the community of Quinhagak. Source: Burkey et al. 2001

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

Appendix C2.–Chum salmon total utilization, District 4 Quinhagak, Kuskokwim Bay, 1960–2003.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
1960	0						0	
1961	18,864						18,864	
1962	45,707						45,707	
1963	0						0	
1964	707						707	
1965	4,242						4,242	
1966	2,610						2,610	
1967	8,087						8,087	
1968	19,497						19,497	
1969	38,206	13,792					38,206	13,792
1970	46,556	18,448					46,556	18,448
1971	30,208	19,582					30,208	19,582
1972	17,247	16,736					17,247	16,736
1973	19,680	18,704					19,680	18,704
1974	15,298	20,163					15,298	20,163
1975	35,233	23,262					35,233	23,262
1976	43,659	27,367					43,659	27,367
1977	43,707	30,929					43,707	30,929
1978	24,798	31,459					24,798	31,459
1979	25,995	30,238					25,995	30,238
1980	65,984	32,181					65,984	32,181
1981	53,334	34,494					53,334	34,494
1982	34,346	36,203					34,346	36,203
1983	23,090	36,544			315		23,405	36,576
1984	50,422	40,057			376		50,798	40,126
1985	20,418	38,575	901		149		21,468	38,749
1986	29,700	37,179	808		777		31,285	37,512
1987	8,557	33,664	1,084		111		9,752	34,117
1988	29,220	34,107	1,065 [c]		618		30,903	34,727
1989	39,395	35,447	1,568		537		41,500	36,278
1990	47,717	33,620	3,234		202		51,153	34,794
1991	54,493	33,736	1,593		80		56,166	35,078
1992	73,383	37,640	1,833		251	342	75,467	39,190
1993	40,943	39,425	1,008		183	328	42,134	41,063
1994	61,301	40,513	1,452	1,455	156	306	62,909	42,274
1995	81,462	46,617	686	1,433	213	313	82,361	48,363
1996	83,005 [d]	51,948	930	1,445	200	255	84,135	53,648
1997	38,445	54,936	600	1,397	212	265	39,257	56,599
1998	45,095	56,524	1,448	1,435	213	225	46,756	58,184
1999	38,091	56,394	1,810	1,459	293	200	40,194	58,053

-Continued-

Appendix C2.–Page 2 of 2.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
2000	30,553	54,677	912	1,227	231	203	31,696	56,108
2001	17,209	50,949	747	1,143	43	200	17,999	52,291
2002	29,252	46,536	1,839	1,143	446	219	31,537	47,898
2003	27,868	45,228	1,129	1,155	14	202	29,011	46,586
10-Yr. Ave. (93-02)	46,536		1,143		219		47,898	

[a] District 4, Quinhagak commercial harvest.

[b] Subsistence harvest by the community of Quinhagak..

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

[d] Estimate of chum roe included.

Appendix C3.–Sockeye salmon total utilization, District 4 Quinhagak, Kuskokwim Bay, 1960–2003.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
1960	5,649						5,649	
1961	2,308						2,308	
1962	10,313						10,313	
1963	0						0	
1964	13,422						13,422	
1965	1,886						1,886	
1966	1,030						1,030	
1967	652						652	
1968	5,884						5,884	
1969	3,784	4,493					3,784	4,493
1970	5,393	4,467					5,393	4,467
1971	3,118	4,548					3,118	4,548
1972	3,286	3,846					3,286	3,846
1973	2,783	4,124					2,783	4,124
1974	19,510	4,733					19,510	4,733
1975	8,584	5,402					8,584	5,402
1976	6,090	5,908					6,090	5,908
1977	5,519	6,395					5,519	6,395
1978	7,589	6,566					7,589	6,566
1979	18,828	8,070					18,828	8,070
1980	13,221	8,853					13,221	8,853
1981	17,292	10,270					17,292	10,270
1982	25,685	12,510					25,685	12,510
1983	10,263	13,258			0		10,263	13,258
1984	17,255	13,033			143		17,398	13,047
1985	7,876	12,962	106		12		7,994	12,988
1986	21,484	14,501	423		200		22,107	14,590
1987	6,489	14,598	1,067		153		7,709	14,809
1988	21,556	15,995	1,261 [c]		109		22,926	16,342
1989	20,582	16,170	633		101		21,316	16,591
1990	83,681	23,216	1,951		462		86,094	23,878
1991	53,657	26,853	1,772		88		55,517	27,701
1992	60,929	30,377	1,264		66	133	62,259	31,358
1993	80,934	37,444	1,082		331	167	82,347	38,567
1994	72,314	42,950	1,000	1,056	313	184	73,627	44,190
1995	68,194	48,982	573	1,103	148	197	68,915	50,282
1996	57,665 [d]	52,600	1,467	1,207	335	211	59,467	54,018
1997	69,562	58,907	1,264	1,227	607	256	71,433	60,390
1998	41,382	60,890	1,702	1,271	942	339	44,026	62,500
1999	41,315	62,963	2,021	1,410	496	379	43,832	64,752

-Continued-

Appendix C3.–Page 2 of 2

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
2000	68,557	61,451	1,088	1,323	694	402	70,339	63,176
2001	33,807	59,466	1,525	1,299	83	402	35,415	61,166
2002	17,802	55,153	1,099	1,282	73	402	18,974	56,838
2003	33,941	50,454	1,622	1,336	107	380	35,670	52,170
10-Yr. Ave. (93-02)	55,153		1,282		402		56,838	

[a] District 4, Quinhagak commercial harvest.

[b] Subsistence harvest by the community of Quinhagak.

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

[d] Estimate of chum roe included.

Appendix C4.–Coho salmon total utilization, District 4 Quinhagak, Kuskokwim Bay, 1960–2003.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
1960	3,000						3,000	
1961	46						46	
1962	0						0	
1963	0						0	
1964	379						379	
1965	0						0	
1966	0						0	
1967	1,926						1,926	
1968	21,511						21,511	
1969	15,077	4,194					15,077	4,194
1970	16,850	5,579					16,850	5,579
1971	2,982	5,873					2,982	5,873
1972	376	5,910					376	5,910
1973	16,515	7,562					16,515	7,562
1974	10,979	8,622					10,979	8,622
1975	10,742	9,696					10,742	9,696
1976	13,777	11,074					13,777	11,074
1977	9,028	11,784					9,028	11,784
1978	20,114	11,644					20,114	11,644
1979	47,525	14,889					47,525	14,889
1980	62,610	19,465					62,610	19,465
1981	47,551	23,922					47,551	23,922
1982	73,652	31,249					73,652	31,249
1983	32,442	32,842			367		32,809	32,879
1984	132,151	44,959			1,895		134,046	45,185
1985	29,992	46,884	67		622		30,681	47,179
1986	57,544	51,261	41		2,010		59,595	51,761
1987	50,070	55,365	125		2,300		52,495	56,108
1988	68,605	60,214	4,317 [c]		1,837		74,759	61,572
1989	44,607	59,922	3,787		1,096		49,490	61,769
1990	26,926	56,354	4,174		644		31,744	58,682
1991	42,571	55,856	3,232		358		46,161	58,543
1992	86,404	57,131	2,958		275	1,140	89,637	60,142
1993	55,817	59,469	2,152		734	1,177	58,703	62,731
1994	83,912	54,645	2,739	2,359	675	1,055	87,326	58,059
1995	66,203	58,266	2,561	2,609	970	1,090	69,734	61,964
1996	118,718 [d]	64,383	1,467	2,751	875	976	121,060	68,111
1997	32,862	62,663	1,264	2,865	1,220	868	35,346	66,396
1998	80,183	63,820	1,702	2,604	751	760	82,636	67,184
1999	6,184	59,978	2,021	2,427	1,091	759	9,296	63,164

-Continued-

Appendix C4.–Page 2 of 2

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
2000	30,529	60,338	1,088	2,118	799	775	32,416	63,232
2001	18,531	57,934	1,525	1,948	2,448	984	22,504	60,866
2002	26,695	51,963	1,099	1,762	1,784	1,135	29,578	54,860
2003	49,833	51,365	2,047	1,751	1,076	1,169	52,956	54,285
10-Yr. Ave. (93-02)	51,963		1,762		1,135		54,860	

[a] District 4, Quinhagak commercial harvest.

[b] Subsistence harvest by the community of Quinhagak.

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

[d] Estimate of chum roe included.

Appendix C5.–Commercial salmon harvest District 4 Quinhagak, Kuskokwim Bay, 1960–2003.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	0	5,649	3,000	0	0	8,649
1961	4,328	2,308	46	90	18,864	25,636
1962	5,526	10,313	0	4,340	45,707	65,886
1963	6,555	0	0	0	0	6,555
1964	4,081	13,422	379	939	707	19,528
1965	2,976	1,886	0	0	4,242	9,104
1966	278	1,030	0	268	2,610	4,186
1967	0	652	1,926	0	8,087	10,665
1968	8,879	5,884	21,511	75,818	19,497	131,589
1969	16,802	3,784	15,077	953	38,206	74,822
1970	18,269	5,393	16,850	15,195	46,556	102,263
1971	4,185	3,118	2,982	13	30,208	40,506
1972	15,880	3,286	376	1,878	17,247	38,667
1973	14,993	2,783	16,515	277	19,680	54,248
1974	8,704	19,510	10,979	43,642	15,298	98,133
1975	3,928	8,584	10,742	486	35,233	58,973
1976	14,110	6,090	13,777	31,412	43,659	109,048
1977	19,090	5,519	9,028	202	43,707	77,546
1978	12,335	7,589	20,114	47,033	24,798	111,869
1979	11,144	18,828	47,525	295	25,995	103,787
1980	10,387	13,221	62,610	21,671	65,984	173,873
1981	24,524	17,292	47,551	160	53,334	142,861
1982	22,106	25,685	73,652	11,838	34,346	167,627
1983	46,385	10,263	32,442	168	23,090	112,348
1984	33,663	17,255	132,151	16,249	50,422	249,740
1985	30,401	7,876	29,992	28	20,418	88,715
1986	22,835	21,484	57,544	8,700	29,700	140,263
1987	26,022	6,489	50,070	66	8,557	91,204
1988	13,883	21,556	68,605	21,310	29,220	154,574
1989	20,820	20,582	44,607	273	39,395	125,677
1990	27,644	83,681	26,926	12,056	47,717	198,024
1991	9,480	53,657	42,571	115	54,493	160,316
1992	17,197	60,929	86,404	64,217	73,383	302,130
1993	15,784	80,934	55,817	7	40,943	193,485
1994	8,564	72,314	83,912	35,904	61,301	261,995
1995	38,584	68,194	66,203	186	81,462	254,629
1996	14,165	57,665	118,718	20	83,005 [a]	273,573
1997	35,510	69,562	32,862	5	38,445	176,384
1998	23,158	41,382	80,183	2,217	45,095	192,035
1999	18,426	41,315	6,184	0	38,091	104,016
2000	21,229	68,557	30,529	3	30,553	150,871
2001	12,775	33,807	18,531	0	17,209	82,322
2002	11,480	17,802	26,695	0	29,252	85,229
2003	14,444	33,941	49,833	0	27,868	126,086
10 Year Average (93-02)	19,968	55,153	51,963	3,834 [b]	46,536	177,454
Historical Average (60-02)	15,746	24,119	34,083	9,722 [b]	33,389	117,059

[a] Estimate of chum roe included

[b] Even years only.

Appendix C6.–Commercial salmon fishing periods, hours, and permits fished, District 4 Quinhagak, Kuskokwim Bay, 1970–2003.

Year	Number of Periods	Fishing Hours	Permits Fished[a]
1970	14	1,494	88
1971	6	630	61
1972	16	192	107
1973	28	504	109
1974	30	360	196
1975	24	288	127
1976	27	324	181
1977	27	324	258
1978	37	444	200
1979	36	432	206
1980	36	432	169
1981	33	396	186
1982	34	408	177
1983	28	318	226
1984	33	396	263
1985	23	276	300
1986	29	348	324
1987	19	216	310
1988	32	384	288
1989	29	348	227
1990	30	444	390
1991	31	372	346
1992	34	420	349
1993	32	384	409
1994	32	384	308
1995	35	414	382
1996	27	298	218
1997	31	372	289
1998	34	408	203
1999	19	228	218
2000	27	324	230
2001	20	231	159
2002	24	294	144
2003	24	288	114
10 year avg (93-02)	28	334	256
Historical avg (70-02)	28	397	232

[a] Permits that made at least one delivery during the year.

Appendix C7.–Commercial salmon fishing ex vessel value, District 4, Quinhagak, Kuskokwim Bay, 1990–2003.

Year	Chinook	Sockeye	Coho	Pink[a]	Chum	Total
1990	251,304	544,008	123,815	4,179	90,941	1,014,247
1991	95,800	247,117	144,455	36	107,228	594,636
1992	165,310	368,598	303,371	15,086	137,356	989,721
1993	142,918	402,910	245,982	4	104,347	896,161
1994	66,918	256,091	423,612	10,237	84,351	841,209
1995	417,029	322,113	202,834	83	106,041	1,048,100
1996	61,296	165,318	245,662	6	61,323	533,605
1997	168,933	206,562	92,396	1	30,769	498,661
1998	81,566	150,261	198,041	850	35,254	465,972
1999	93,886	141,492	14,800	0	28,116	278,294
2000	131,001	249,473	61,763	1	23,929	466,167
2001	92,423	11,832	88,957	0	32,577	225,789
2002	56,316	40,325	47,653	0	23,321	167,615
2003	69,201	107,287	108,804	0	19,261	304,553
10-year avg (1993-2002)	$131,229	$194,638	$162,170	$1,118	$53,003	$542,157

[a] Even years only.

Appendix C8.–Commercial salmon harvest by period, District 4, Quinhagak, Kuskokwim Bay, 1993–2003.

		Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
Year	Date	Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1993	Jun 21	163	12	1,956	6,194	3.17	2,322	1.19	868	0.44	0	0.00
	Jun 24	206	12	2,472	2,419	0.98	3,271	1.32	1,238	0.50	0	0.00
	Jun 28	146	12	1,752	1,772	1.01	10,941	6.24	3,200	1.83	0	0.00
	Jun 30	210	12	2,520	1,272	0.50	7,574	3.01	2,501	0.99	0	0.00
	Jul 2	191	12	2,292	1,105	0.48	5,229	2.28	3,348	1.46	0	0.00
	Jul 5	155	12	1,860	611	0.33	15,375	8.27	4,475	2.41	0	0.00
	Jul 7	219	12	2,628	620	0.24	3,837	1.46	3,380	1.29	0	0.00
	Jul 9	154	12	1,848	441	0.24	9,824	5.32	3,846	2.08	0	0.00
	Jul 12	190	12	2,280	306	0.13	6,696	2.94	3,864	1.69	0	0.00
	Jul 14	174	12	2,088	328	0.16	7,490	3.59	5,131	2.46	0	0.00
	Jul 16	150	12	1,800	220	0.12	3,209	1.78	2,124	1.18	4	0.00
	Jul 19	71	12	852	105	0.12	1,426	1.67	1,577	1.85	3	0.00
	Jul 21	65	12	780	90	0.12	1,331	1.71	1,780	2.28	19	0.02
	Jul 23	66	12	792	66	0.08	715	0.90	1,261	1.59	96	0.12
	Jul 26	46	12	552	42	0.08	394	0.71	603	1.09	122	0.22
	Jul 28	32	12	384	31	0.08	363	0.95	428	1.11	294	0.77
	Jul 30	56	12	672	49	0.07	379	0.56	551	0.82	535	0.80
	Aug 2	42	12	504	24	0.05	87	0.17	246	0.49	1,789	3.55
	Aug 6	64	12	768	19	0.02	143	0.19	242	0.32	4,978	6.48
	Aug 9	62	12	744	11	0.01	113	0.15	107	0.14	3,574	4.80
	Aug 11	91	12	1,092	17	0.02	93	0.09	51	0.05	4,686	4.29
	Aug 16	70	12	840	12	0.01	18	0.02	38	0.05	6,926	8.25
	Aug 18	69	12	828	12	0.01	27	0.03	23	0.03	9,516	11.49
	Aug 20	61	12	732	7	0.01	34	0.05	4	0.01	5,529	7.55
	Aug 23	77	12	924	5	0.01	17	0.02	10	0.01	3,564	3.86
	Aug 25	53	12	636	4	0.01	10	0.02	2	0.00	3,174	4.99
	Aug 28	51	12	612	2	0.00	5	0.01	2	0.00	4,546	7.43
	Sept 1	18	12	216	0	0.00	2	0.01	0	0.00	1,916	8.87
	Sept 3	30	12	360	0	0.00	8	0.02	43	0.12	2,777	7.71
	Sept 6	19	12	228	0	0.00	1	0.00	0	0.00	1,769	7.76
Total			360	36,012	15,784		80,934		40,943		55,817	
1994	Jun 15	111	12	1,332	1,165	0.87	62	0.05	252	0.19	0	0.00
	Jun 20	95	12	1,140	746	0.65	187	0.16	287	0.25	0	0.00
	Jul 1	118	12	1,416	2,534	1.79	6,512	4.60	13,544	9.56	0	0.00
	Jul 4	171	12	2,052	836	0.41	5,555	2.71	3,120	1.52	0	0.00
	Jul 6	127	12	1,524	692	0.45	6,749	4.43	4,094	2.69	0	0.00
	Jul 8	131	12	1,572	756	0.48	9,304	5.92	8,296	5.28	0	0.00
	Jul 11	140	12	1,680	393	0.23	5,800	3.45	2,313	1.38	3	0.00
	Jul 13	111	12	1,332	362	0.27	13,450	10.10	9,794	7.35	17	0.01
	Jul 15	80	12	960	279	0.29	6,687	6.97	5,791	6.03	24	0.03
	Jul 18	93	12	1,116	187	0.17	5,842	5.23	3,023	2.71	79	0.07
	Jul 20	63	12	756	159	0.21	4,611	6.10	4,684	6.20	75	0.10
	Jul 22	83	12	996	131	0.13	3,537	3.55	2,696	2.71	250	0.25
	Jul 25	52	12	624	103	0.17	1,545	2.48	1,103	1.77	538	0.86
	Jul 27	43	12	516	40	0.08	963	1.87	834	1.62	557	1.08
	Jul 29	25	12	36	2	0.06	447	12.42	190	5.28	712	19.78
	Aug 1	49	12	588	51	0.09	368	0.63	334	0.57	2,577	4.38

-Continued-

Appendix C8.–Page 2 of 7

Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
1994	Aug 3	51	12	612	23	0.04	288	0.47	268	0.44	1,294	2.11
(cont.)	Aug 5	48	12	576	25	0.04	183	0.32	277	0.48	3,103	5.39
	Aug 8	72	12	864	12	0.01	93	0.11	234	0.27	12,298	14.23
	Aug 10	19	12	228	0	0.00	10	0.04	9	0.04	1,237	5.43
	Aug 12	49	12	588	12	0.02	46	0.08	51	0.09	2,710	4.61
	Aug 15	59	12	708	2	0.00	20	0.03	43	0.06	10,609	14.98
	Aug 17	42	12	504	1	0.00	4	0.01	0	0.00	9,897	19.64
	Aug 19	74	12	888	9	0.01	16	0.02	37	0.04	3,624	4.08
	Aug 22	63	12	756	3	0.00	17	0.02	18	0.02	8,437	11.16
	Aug 24	40	12	480	1	0.00	1	0.00	1	0.00	6,399	13.33
	Aug 26	29	12	348	1	0.00	3	0.01	4	0.01	5,732	16.47
	Aug 29	54	12	648	4	0.01	6	0.01	0	0.00	2,162	3.34
	Aug 31	50	12	600	0	0.00	4	0.01	3	0.01	7,145	11.91
	Sept 2	33	12	396	0	0.00	4	0.01	1	0.00	933	2.36
	Sept 5	27	12	324	1	0.00	0	0.00	0	0.00	2,243	6.92
	Sept 7	13	12	156	0	0.00	0	0.00	0	0.00	1,317	8.44
Total			384	26,316	8,530		72,314		61,301		83,972	
1995	Jun 13	116	12	1,392	7,621	5.47	55	0.04	182	0.13	0	0.00
	Jun 17	239	12	2,868	8,190	2.86	356	0.12	1,916	0.67	0	0.00
	Jun 20	215	12	2,580	7,341	2.85	485	0.19	2,760	1.07	0	0.00
	Jun 24	173	12	2,076	6,073	2.93	3,266	1.57	5,990	2.89	0	0.00
	Jun 26	70	6	420	1,506	3.59	805	1.92	2,851	6.79	0	0.00
	Jun 29	70	12	840	2,048	2.44	4,765	5.67	8,231	9.80	0	0.00
	Jul 03	37	12	444	1,096	2.47	7,045	15.87	8,074	18.18	0	0.00
	Jul 5	107	12	1,284	1,073	0.84	4,366	3.40	7,481	5.83	0	0.00
	Jul 7	57	12	684	676	0.99	4,812	7.04	7,138	10.44	0	0.00
	Jul 10	85	12	1,020	804	0.79	9,894	9.70	5,667	5.56	0	0.00
	Jul 12	98	12	1,176	516	0.44	6,827	5.81	9,074	7.72	0	0.00
	Jul 14	112	12	1,344	438	0.33	5,738	4.27	5,381	4.00	0	0.00
	Jul 17	127	12	1,524	287	0.19	5,166	3.39	4,193	2.75	0	0.00
	Jul 19	79	12	948	140	0.15	3,532	3.73	3,184	3.36	2	0.00
	Jul 21	57	12	684	162	0.24	2,523	3.69	2,086	3.05	7	0.01
	Jul 24	52	12	624	156	0.25	2,610	4.18	2,713	4.35	93	0.15
	Jul 26	52	12	624	71	0.11	1,404	2.25	1,279	2.05	116	0.19
	Jul 28	43	12	516	63	0.12	879	1.70	975	1.89	390	0.76
	Jul 31	51	12	612	54	0.09	730	1.19	715	1.17	954	1.56
	Aug 2	59	12	708	30	0.04	583	0.82	459	0.65	3,706	5.23
	Aug 4	65	12	780	37	0.05	387	0.50	262	0.34	4,293	5.50
	Aug 7	100	12	1,200	49	0.04	481	0.40	260	0.22	4,614	3.85
	Aug 9	79	12	948	36	0.04	307	0.32	166	0.18	9,133	9.63
	Aug 11	90	12	1,080	31	0.03	192	0.18	110	0.10	5,471	5.07
	Aug 14	112	12	1,344	25	0.02	194	0.14	98	0.07	4,252	3.16
	Aug 16	48	12	576	10	0.02	133	0.23	47	0.08	2,515	4.37
	Aug 18	68	12	816	10	0.01	146	0.18	49	0.06	5,879	7.20
	Aug 21	82	12	984	11	0.01	139	0.14	26	0.03	4,816	4.89
	Aug 23	75	12	900	11	0.01	102	0.11	27	0.03	8,588	9.54
	Aug 25	77	12	924	3	0.00	114	0.12	25	0.03	2,440	2.64
	Aug 28	67	12	804	4	0.00	68	0.08	17	0.02	4,176	5.19

-Continued-

Appendix C8.–Page 3 of 7

Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
1995	Aug 30	67	12	804	9	0.01	58	0.07	18	0.02	2,193	2.73
(cont.)	Sept 1	41	12	492	3	0.01	32	0.07	8	0.02	2,565	5.21
Total			390	34,020	38,584		68,194		81,462		66,203	
1996	Jun 22	69	12	828	4,752	5.74	1,146	1.38	6,984	8.43	0	0.00
	Jun 25	73	8	584	2,125	3.64	3,043	5.21	6,662	11.41	0	0.00
	Jun 29	120	12	1,440	2,378	1.65	6,304	4.38	8,441	5.86	0	0.00
	Jul 03	101	8	808	1,787	2.21	4,558	5.64	10,073	12.47	0	0.00
	Jul 06	76	4	304	618	2.03	6,045	19.88	5,073	16.69	0	0.00
	Jul 09	96	6	576	541	0.94	7,510	13.04	8,768	15.22	0	0.00
	Jul 11	73	12	876	453	0.52	6,525	7.45	7,947	9.07	3	0.00
	Jul 13	96	8	768	361	0.47	5,707	7.43	4,748	6.18	38	0.05
	Jul 15	94	12	1,128	332	0.29	5,283	4.68	6,567	5.82	19	0.02
	Jul 17	59	12	708	216	0.31	5,203	7.35	8,308	11.73	251	0.35
	Jul 20	70	12	840	150	0.18	2,849	3.39	3,355	3.99	398	0.47
	Jul 24	41	12	492	105	0.21	944	1.92	1,571	3.19	2,295	4.66
	Jul 27	60	12	720	88	0.12	698	0.97	1,885	2.62	4,483	6.23
	Jul 29	52	12	624	64	0.10	548	0.88	1,034	1.66	7,989	12.80
	Jul 31	53	12	636	29	0.05	225	0.35	607	0.95	5,597	8.80
	Aug 02	53	12	636	43	0.07	257	0.40	405	0.64	12,478	19.62
	Aug 05	70	12	840	32	0.04	156	0.19	114	0.14	19,091	22.73
	Aug 07	49	12	588	15	0.03	128	0.22	89	0.15	7,766	13.21
	Aug 09	59	12	708	13	0.02	82	0.12	102	0.14	11,553	16.32
	Aug 12	77	12	924	18	0.02	125	0.14	102	0.11	7,825	8.47
	Aug 14	33	12	396	8	0.02	26	0.07	25	0.06	5,938	14.99
	Aug 16	57	12	684	16	0.02	83	0.12	55	0.08	8,299	12.13
	Aug 19	71	12	852	10	0.01	48	0.06	35	0.04	12,931	15.18
	Aug 21	57	12	684	4	0.01	81	0.12	22	0.03	3,315	4.85
	Aug 23	52	12	624	2	0.00	58	0.09	18	0.03	5,091	8.16
	Aug 26	51	12	612	5	0.01	33	0.05	15	0.02	3,358	5.49
Total			286	18,880	14,165		57,665		83,005		118,718	
1997	Jun 13	115	12	1,380	6,669	4.83	216	0.16	72	0.05	0	0.00
	Jun 16	95	12	1,140	6,358	5.58	411	0.36	279	0.24	0	0.00
	Jun 19	123	12	1,476	6,405	4.34	1,678	1.14	788	0.53	0	0.00
	Jun 23	67	12	804	3,338	4.15	1,623	2.02	1,129	1.40	0	0.00
	Jun 26	132	12	1,584	3,578	2.26	2,777	1.75	1,199	0.76	0	0.00
	Jun 30	160	12	1,920	2,541	1.32	9,771	5.09	2,498	1.30	0	0.00
	Jul 2	178	12	2,136	1,955	0.92	10,007	4.68	2,935	1.37	0	0.00
	Jul 4	161	12	1,932	1,381	0.71	8,757	4.53	2,839	1.47	0	0.00
	Jul 7	124	12	1,488	1,042	0.70	6,771	4.55	3,552	2.39	0	0.00
	Jul 9	153	12	1,836	722	0.39	6,806	3.71	4,638	2.53	0	0.00
	Jul 11	102	12	1,224	331	0.27	6,236	5.09	3,997	3.27	0	0.00
	Jul 14	4	12	48	26	0.54	279	5.81	134	2.79	0	0.00
	Jul 16	75	12	900	196	0.22	3,315	3.68	2,546	2.83	0	0.00
	Jul 18	76	12	912	190	0.21	3,005	3.29	2,590	2.84	2	0.00
	Jul 21	65	12	780	197	0.25	2,452	3.14	2,503	3.21	7	0.01
	Jul 23	56	12	672	106	0.16	1,370	2.04	2,210	3.29	36	0.05
	Jul 25	53	12	636	78	0.12	974	1.53	1,281	2.01	62	0.10

-Continued-

Appendix C8.–Page 4 of 7

Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPU	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
1997	Jul 28	47	12	564	45	0.08	645	E 1.14	714	1.27	h 71	0.13
(cont.)	Jul 30	43	12	516	78	0.15	483	0.94	718	1.39	335	0.65
	Aug 1	14	12	168	28	0.17	331	1.97	359	2.14	389	2.32
	Aug 4	58	12	696	59	0.08	442	0.64	652	0.94	1,946	2.80
	Aug 6	54	12	648	58	0.09	321	0.50	381	0.59	1,589	2.45
	Aug 8	53	12	636	23	0.04	176	0.28	134	0.21	1,602	2.52
	Aug 13	62	12	744	31	0.04	205	0.28	100	0.13	4,382	5.89
	Aug 15	70	12	840	27	0.03	166	0.20	106	0.13	5,095	6.07
	Aug 18	56	12	672	13	0.02	66	0.10	28	0.04	6,931	10.31
	Aug 20	61	12	732	10	0.01	97	0.13	26	0.04	5,551	7.58
	Aug 22	62	12	744	11	0.01	75	0.10	12	0.02	2,493	3.35
	Aug 25	47	12	564	9	0.02	50	0.09	13	0.02	1,036	1.84
	Aug 28	35	12	420	5	0.01	57	0.14	12	0.03	1,335	3.18
Total			360	28,812	35,510		69,562		38,445		32,862	
1998	Jun 15	64	12	768	2,314	3.01	99	0.13	189	0.25	0	0.00
	Jun 18	56	12	672	2,913	4.33	117	0.17	290	0.43	0	0.00
	Jun 22	69	12	828	3,642	4.40	762	0.92	1,531	1.85	0	0.00
	Jun 25	68	12	816	3,151	3.86	1,727	2.12	2,305	2.82	0	0.00
	Jun 29	57	12	684	1,919	2.81	2,681	3.92	5,269	7.70	0	0.00
	Jul 2	75	12	900	1,745	1.94	2,374	2.64	3,209	3.57	0	0.00
	Jul 6	78	12	936	1,670	1.78	3,400	3.63	5,134	5.49	0	0.00
	Jul 8	116	12	1,392	1,740	1.25	6,008	4.32	5,272	3.79	0	0.00
	Jul 10	112	12	1,344	956	0.71	4,622	3.44	5,555	4.13	0	0.00
	Jul 13	112	12	1,344	740	0.55	3,738	2.78	3,182	2.37	5	0.00
	Jul 15	75	12	900	482	0.54	4,214	4.68	3,811	4.23	0	0.00
	Jul 17	98	12	1,176	443	0.38	3,609	3.07	3,260	2.77	10	0.01
	Jul 20	83	12	996	370	0.37	2,517	2.53	1,590	1.60	20	0.02
	Jul 22	51	12	612	221	0.36	1,661	2.71	1,128	1.84	42	0.07
	Jul 24	55	12	660	254	0.38	1,266	1.92	1,123	1.70	93	0.14
	Jul 27	43	12	516	165	0.32	884	1.71	742	1.44	505	0.98
	Jul 29	52	12	624	98	0.16	777	1.25	540	0.87	773	1.24
	Jul 31	40	12	480	63	0.13	282	0.59	259	0.54	602	1.25
	Aug 3	40	12	480	68	0.14	167	0.35	341	0.71	2,657	5.54
	Aug 5	46	12	552	75	0.14	159	0.29	174	0.32	4,050	7.34
	Aug 7	47	12	564	26	0.05	92	0.16	43	0.08	3,847	6.82
	Aug 10	75	12	900	47	0.05	112	0.12	63	0.07	6,111	6.79
	Aug 12	56	12	672	14	0.02	25	0.04	29	0.04	7,968	11.86
	Aug 14	59	12	708	17	0.02	28	0.04	13	0.02	10,424	14.72
	Aug 17	42	12	504	6	0.01	16	0.03	15	0.03	5,915	11.74
	Aug 21	57	12	684	5	0.01	22	0.03	20	0.03	9,161	13.39
	Aug 24	44	12	528	3	0.01	2	0.00	0	0.00	6,074	11.50
	Aug 26	51	12	612	4	0.01	5	0.01	5	0.01	2,534	4.14
	Aug 28	36	12	432	2	0.00	4	0.01	2	0.00	1,917	4.44
	Aug 31	29	12	348	0	0.00	1	0.00	1	0.00	3,929	11.29
	Sept 2	34	12	408	1	0.00	6	0.01	0	0.00	5,148	12.62
	Sept 4	31	12	372	4	0.01	5	0.01	0	0.00	4,442	11.94
	Sept 7	25	12	300	0	0.00	0	0.00	0	0.00	3,956	13.19
Total			396	23,712	23,158		41,382		45,095		80,183	

-Continued-

Appendix C8.–Page 5 of 7.

		Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
Year	Date	Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1999	Jun 21	93	12	1,116	4,075	3.65	396	0.35	766	0.69	0	0.00
	Jun 24	106	12	1,272	3,476	2.73	688	0.54	1,500	1.18	0	0.00
	Jun 28	125	12	1,500	5,468	3.65	2,497	1.66	4,559	3.04	0	0.00
	Jul 1	79	12	948	1,916	2.02	2,803	2.96	4,191	4.42	0	0.00
	Jul 5	116	12	1,392	1,246	0.90	4,367	3.14	5,038	3.62	0	0.00
	Jul 9	107	12	1,284	677	0.53	4,515	3.52	2,239	1.74	0	0.00
	Jul 14	107	12	1,284	548	0.43	5,787	4.51	6,668	5.19	0	0.00
	Jul 16	70	12	840	220	0.26	6,311	7.51	4,359	5.19	1	0.00
	Jul 19	86	12	1,032	168	0.16	2,684	2.60	1,764	1.71	12	0.01
	Jul 21	85	12	1,020	182	0.18	3,360	3.29	1,479	1.45	0	0.00
	Jul 23	63	12	756	152	0.20	3,567	4.72	2,060	2.72	4	0.01
	Jul 26	58	12	696	93	0.13	1,580	2.27	1,460	2.10	25	0.04
	Jul 28	41	12	492	62	0.13	959	1.95	889	1.81	29	0.06
	Jul 30	36	12	432	47	0.11	815	1.89	550	1.27	103	0.24
	Aug 2	28	12	336	35	0.10	441	1.31	337	1.00	200	0.60
	Aug 4	23	12	276	17	0.06	144	0.52	83	0.30	168	0.61
	Aug 11	44	12	528	23	0.04	250	0.47	109	0.21	2,458	4.66
	Aug 16	59	12	708	15	0.02	78	0.11	28	0.04	1,790	2.53
	Aug 18	48	12	576	6	0.01	73	0.13	12	0.02	1,394	2.42
Total			228	16,488	18,426		41,315		38,091		6,184	
2000	Jun 15	55	12	660	3,015	4.57	104	0.16	385	0.58	0	0.00
	Jun 19	86	12	1,032	4,700	4.55	893	0.87	1,397	1.35	0	0.00
	Jun 22	101	12	1,212	4,893	4.04	1,466	1.21	1,457	1.20	0	0.00
	Jun 26	115	12	1,380	3,147	2.28	1,863	1.35	2,360	1.71	0	0.00
	Jun 29	87	12	1,044	1,410	1.35	8,067	7.73	4,194	4.02	0	0.00
	Jul 03	128	12	1,536	1,398	0.91	4,699	3.06	3,239	2.11	0	0.00
	Jul 06	84	12	1,008	576	0.57	12,133	12.04	4,321	4.29	0	0.00
	Jul 08	116	12	1,392	578	0.42	7,165	5.15	2,845	2.04	0	0.00
	Jul 11	102	12	1,224	351	0.29	8,320	6.80	1,914	1.56	0	0.00
	Jul 13	117	12	1,404	361	0.26	6,556	4.67	2,844	2.03	4	0.00
	Jul 15	46	12	552	143	0.26	2,927	5.30	1,048	1.90	2	0.00
	Jul 17	70	12	840	191	0.23	4,570	5.44	1,024	1.22	19	0.02
	Jul 19	64	12	768	103	0.13	2,288	2.98	778	1.01	51	0.07
	Jul 21	70	12	840	131	0.16	2,626	3.13	1,172	1.40	182	0.22
	Jul 24	48	12	576	75	0.13	1,004	1.74	417	0.72	285	0.49
	Jul 26	36	12	432	36	0.08	898	2.08	328	0.76	704	1.63
	Jul 28	51	12	612	23	0.04	837	1.37	259	0.42	1257	2.05
	Jul 31	46	12	552	30	0.05	548	0.99	222	0.40	2533	4.59
	Aug 02	37	12	444	12	0.03	240	0.54	63	0.14	2,544	5.73
	Aug 05	43	12	516	16	0.03	256	0.50	59	0.11	1,899	3.68
	Aug 07	54	12	648	10	0.02	299	0.46	104	0.16	3,761	5.80
	Aug 10	50	12	600	2	0.00	238	0.40	34	0.06	5,146	8.58
	Aug 12	63	12	756	12	0.02	200	0.26	33	0.04	4,683	6.19
	Aug 14	51	12	612	9	0.01	113	0.18	25	0.04	3,427	5.60
	Aug 16	43	12	516	4	0.01	161	0.31	20	0.04	2,434	4.72
	Aug 21	34	12	408	1	0.00	34	0.08	5	0.01	833	2.04
	Aug 24	24	12	288	2	0.01	52	0.18	6	0.02	765	2.66
Total			324	21,852	21,229		68,557		30,553		30,529	

-Continued-

Appendix C8.–Page 6 of 7

Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
2001	Jun 21	52	12	624	4,024	6.45	1,225	1.96	154	0.25	0	0.00
	Jun 25	108	12	1,296	3,137	2.42	3,382	2.61	1,463	1.13	0	0.00
	Jun 28	106	12	1,272	2,490	1.96	5,222	4.11	2,486	1.95	0	0.00
	Jul 2	86	12	1,032	934	0.91	6,656	6.45	2,292	2.22	0	0.00
	Jul 5	80	12	960	828	0.86	7,638	7.96	2,275	2.37	0	0.00
	Jul 9	86	6	516	432	0.84	3,317	6.43	1,794	3.48	0	0.00
	Jul 12	61	9	549	318	0.58	2,831	5.16	2,060	3.75	0	0.00
	Jul 16	48	12	576	267	0.46	1,678	2.91	1,767	3.07	0	0.00
	Jul 18	42	12	504	138	0.27	977	1.94	1,316	2.61	0	0.00
	Jul 23	25	12	300	89	0.30	380	1.27	938	3.13	41	0.14
	Aug 01	28	12	336	34	0.10	180	0.54	278	0.83	1,005	2.99
	Aug 03	23	12	276	20	0.07	57	0.21	94	0.34	913	3.31
	Aug 06	31	12	372	23	0.06	62	0.17	141	0.38	1,828	4.91
	Aug 10	28	12	336	11	0.03	58	0.17	46	0.14	2,570	7.65
	Aug 13	31	12	372	9	0.02	37	0.10	24	0.06	3,130	8.41
	Aug 15	31	12	372	6	0.02	28	0.08	28	0.08	3,612	9.71
	Aug 18	37	12	444	5	0.01	34	0.08	26	0.06	3,844	8.66
	Aug 20	7	12	84	0	0.00	2	0.02	1	0.01	201	2.39
	Aug 22	24	12	288	4	0.01	4	0.01	21	0.07	955	3.32
	Aug 24	15	12	180	6	0.03	6	0.03	5	0.03	432	2.40
Total			231	10,689	12,775		33,774		17,209		18,531	
2002	Jun 14	51	12	612	1,727	2.82	160	0.26	1,000	1.63	0	0.00
	Jun 17	46	12	552	2,070	3.75	288	0.52	1,047	1.90	0	0.00
	Jun 20	53	12	636	1,352	2.13	477	0.75	1,653	2.60	0	0.00
	Jun 26	61	12	732	1,782	2.43	972	1.33	2,287	3.12	0	0.00
	Jul 1	62	12	744	959	1.29	2,187	2.94	3,824	5.14	0	0.00
	Jul 3	51	12	612	759	1.24	2,177	3.56	4,257	6.96	0	0.00
	Jul 5	56	12	672	596	0.89	2,788	4.15	3,116	4.64	0	0.00
	Jul 8	58	12	696	577	0.83	2,447	3.52	3,645	5.24	0	0.00
	Jul 10	52	12	624	593	0.95	2,164	3.47	1,992	3.19	0	0.00
	Jul 12	52	12	624	429	0.69	1,373	2.20	2,168	3.47	0	0.00
	Jul 15	39	12	468	243	0.52	753	1.61	1,615	3.45	0	0.00
	Jul 17	32	12	384	161	0.42	839	2.18	942	2.45	0	0.00
	Jul 19	20	12	240	78	0.33	750	3.13	926	3.86	0	0.00
	Aug 1	24	12	288	32	0.11	631	2.19	162	0.56	360	1.25
	Aug 5	25	12	300	20	0.07	413	1.38	164	0.55	1,610	5.37
	Aug 7	32	12	384	31	0.08	290	0.76	125	0.33	2,653	6.91
	Aug 9	33	12	396	16	0.04	332	0.84	858	2.17	2,383	6.02
	Aug 12	37	12	444	15	0.03	214	0.48	58	0.13	3,260	7.34
	Aug 14	38	12	456	10	0.02	172	0.38	51	0.11	2,649	5.81
	Aug 16	49	12	588	13	0.02	162	0.28	40	0.07	4,516	7.68
	Aug 19	30	12	360	3	0.01	59	0.16	25	0.07	3,156	8.77
	Aug 21	34	12	408	7	0.02	38	0.09	13	0.03	2,490	6.10
	Aug 23	29	12	348	6	0.02	61	0.18	18	0.05	2,495	7.17
	Aug 26	28	12	336	1	0.00	26	0.08	9	0.03	1,123	3.34
Total			288	11,904	11,480		19,773		29,995		26,695	

-Continued-

Appendix C8.–Page 7 of 7.

Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
2003	Jun 14	54	12	648	2,657	4.10	186	0.29	81	0.13	0	0.00
	Jun 17	53	12	636	2,797	4.40	735	1.16	232	0.36	0	0.00
	Jun 19	60	12	720	1,732	2.41	760	1.06	209	0.29	0	0.00
	Jun 24	62	12	744	2,209	2.97	690	0.93	252	0.34	0	0.00
	Jul 1	35	12	420	571	1.36	2,890	6.88	1,626	3.87	0	0.00
	Jul 4	56	12	672	1,010	1.50	8,246	12.27	3,780	5.63	0	0.00
	Jul 7	70	12	840	771	0.92	4,974	5.92	1,442	1.72	1	0.00
	Jul 9	62	12	744	800	1.08	4,311	5.79	3065	4.12	3	0.00
	Jul 11	60	12	720	647	0.90	4,350	6.04	3,335	4.63	1	0.00
	Jul 14	48	12	576	434	0.75	2607	4.53	4,501	7.81	16	0.03
	Jul 16	45	12	540	384	0.71	2,156	3.99	3,474	6.43	66	0.12
	Jul 18	43	12	516	164	0.32	1,100	2.13	3,082	5.97	136	0.26
	Aug 1	39	12	468	72	0.15	254	0.54	1,233	2.63	3,090	6.60
	Aug 4	42	12	504	27	0.05	162	0.32	550	1.09	2,189	4.34
	Aug 6	43	12	516	36	0.07	142	0.28	379	0.73	5,594	10.84
	Aug 8	47	12	564	34	0.06	141	0.25	270	0.48	3,894	6.90
	Aug 11	55	12	660	31	0.05	79	0.12	163	0.25	9,882	14.97
	Aug 13	51	12	612	24	0.04	25	0.04	54	0.09	4,931	8.06
	Aug 15	43	12	516	12	0.02	23	0.04	16	0.03	4,846	9.39
	Aug 18	46	12	552	9	0.02	39	0.07	57	0.10	4,514	8.18
	Aug 20	34	12	408	10	0.02	20	0.05	27	0.07	3,924	9.62
	Aug 22	33	12	396	6	0.02	25	0.06	22	0.06	3,174	8.02
	Aug 25	20	12	240	3	0.01	3	0.01	5	0.02	1,518	6.33
	Aug 27	24	12	288	4	0.01	23	0.08	13	0.05	2,054	7.13
Total			288	13,500	14,444		33,941		27,868		49,833	
Ten Year Average (1993 - 2002)					19,964		55,347		46,610		51,969	

Appendix C9.–Salmon spawning escapement, Kanektok River, Kuskokwim Bay, 1996–2003.

Year	Operating Period [a]	Chinook	Sockeye	Chum	Pink	Coho
Kanektok River						
Counting Tower						
1996	7/2-7/13; 7/20-7/25	6,827 [b]	71,637 [b]	70,617 [b]		
1997	06/11 to 08/21	16,731 [b]	96,348 [b]	51,180 [b]	7,872 [b]	23,172 [b]
1998	07/23 to 08/17					
1999	Not Operational					
2000	Not Operational					
Weir						
2001	08/10 to 10/03	132 [b]	733 [b]	1,058 [b]	21 [b]	36,440
2002	07/01 to 09/20	5,343 [b]	58,367 [b]	42,014 [b]	87,036	24,883
2003	06/24 to 09/18	8,231	127,471	40,066	2,443	72,448

[a] The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 10% of the total annual escapement is estimated.

[b] Field operations were incomplete and total annual escapement was not estimated.

Appendix C10.–Salmon spawning aerial survey index estimates, Kanektok River, Kuskokwim Bay drainage, 1962–2003.

Year	Chinook	Sockeye	Coho	Chum
1962	935	43,108	[a]	[a]
1963	[a]	[a]	[a]	[a]
1964	[a]	[a]	[a]	[a]
1965	[a]	[a]	[a]	[a]
1966	3,718	[a]	[a]	28,800
1967	[a]	[a]	[a]	[a]
1968	4,170	8,000	[a]	14,000
1969	[a]	[a]	[a]	[a]
1970	3,112	11,375	[a]	[a]
1971	[a]	[a]	[a]	[a]
1972	[a]	[a]	[a]	[a]
1973	814	[a]	[a]	[a]
1974	[a]	[a]	[a]	[a]
1975	[a]	6,018	[a]	[a]
1976	[a]	22,936	[a]	8,697
1977	5,787	7,244	[a]	32,157
1978	19,180	44,215	[a]	229,290 [b]
1979	[a]	[a]	[a]	[a]
1980	[a]	[a]	[a]	[a]
1981	[a]	[a]	69,325	[a]
1982	15,900	49,175	[a]	71,840
1983	8,142	55,940	[a]	[a]
1984	8,890	2,340	[a]	9,360
1985	12,182	30,840	46,830	53,060
1986	13,465	16,270	[a]	14,385
1987	3,643	14,940	[a]	16,790
1988	4,223	51,753	20,056	9,420
1989	11,180	30,440	[a]	20,583
1990	7,914	14,735	[a]	6,270
1991	[a]	[a]	[a]	2,475
1992	2,100	44,436	4,330	19,052 [c]
1993	3,856	14,955	[a]	25,675
1994	4,670	23,128	[a]	1,285
1995	7,386	30,090	[a]	10,000
1996	[a]	[a]	[a]	[a]
1997	[a]	[a]	[a]	[a]
1998	6,107	22,020	23,656	7,040
1999	[a]	[a]	5,192	[a]
2000	1,118	11,670	10,120	10,000
2001	6,483	38,610	[a]	11,440
2002	[a]	[a]	[a]	[a]
2003	5,430	18,010	[a]	2,700
GOAL	**5,800**	**15,000**	**25,000**	**30,500**

Note: Aerial surveys are those rated as fair to good, obtained between 20 July and 5 August for Chinook and sockeye salmon, 20-31 July for chum salmon, and 20 August and 5 September for coho salmon.

[a] Survey either not flown or did not meet acceptable survey criteria.

[b] Chum salmon count excluded from escapement objective calculation due to exceptional magnitude.

[c] Some chum may have been sockeye.

Appendix C11–Chinook salmon commercial fishery age and sex composition information, District 4, Quinhagak, Kuskokwim Bay drainage, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.2 Harvest	1.2 %	1.3 Harvest	1.3 %	1.4 Harvest	1.4 %	1.5 Harvest	1.5 %	Total Harvest	Total %
1993	Season	337	M	5,531	35.0	2,562	16.2	1,319	8.4	92	0.6	9,709	61.5
			F	216	1.4	1,835	11.6	3,560	22.6	431	2.7	6,076	38.5
			Total	5,747	36.4	4,397	27.9	4,879	30.9	523	3.3	15,785	100.0
1994	Season	326	M	1,304	15.2	2,103	24.6	1,040	12.1	137	1.6	4,704	54.9
			F	171	2.0	1,349	15.7	2,097	24.5	243	2.8	3,861	45.1
			Total	1,475	17.2	3,452	40.3	3,137	36.6	380	4.4	8,565	100.0
1995	Season	603	M	7,595	19.7	3,879	10.1	9,897	25.7	78	0.2	21,449	55.6
			F	1,499	3.9	2,215	5.7	13,269	34.4	153	0.4	17,135	44.4
			Total	9,094	23.6	6,093	15.8	23,166	60.0	231	0.6	38,584	100.0
1996	Season [b]	399	M										
			F										
			Total									14,165	
1997	Season	573	M	12,398	34.9	3,584	10.1	6,660	18.7	7	0.0	23,065	65.0
			F	108	0.3	661	1.9	11,461	32.3	215	0.6	12,445	35.0
			Total	12,506	35.2	4,245	12.0	18,121	51.0	222	0.6	35,510	100.0
1998	Season	724	M	5,482	23.7	9,859	42.6	2,061	8.9	244	1.1	18,356	79.3
			F	106	0.4	2,023	8.7	2,437	10.5	235	1.0	4,802	20.7
			Total	5,588	24.1	11,882	51.3	4,498	19.4	479	2.1	23,158	100.0
1999	Season	662	M	5,402	29.3	3,702	20.1	3,535	19.2	92	0.5	12,865	69.8
			F	98	0.5	385	2.1	4,873	26.4	205	1.1	5,561	30.2
			Total	5,500	29.8	4,087	22.2	8,408	45.6	297	1.6	18,426	100.0
2000	Season	480	M	2,828	13.3	8,050	37.9	3,583	16.9	162	0.7	14,770	69.6
			F	0	0.0	1,088	5.1	5,014	23.6	357	1.7	6,459	30.4
			Total	2,828	13.3	9,138	43.0	8,597	40.5	519	2.4	21,229	100.0
2001	Season	570	M	1,230	9.6	1,474	11.5	4,921	38.5	80	0.6	7,727	60.5
			F	0	0.0	250	2.0	4,703	36.8	74	0.6	5,048	39.5
			Total	1,230	9.6	1,724	13.5	9,624	75.3	154	1.2	12,775	100.0

-Continued-

Appendix C11.–Page 2 of 2.

Year	Project	Sample Size	Sex	Age Class 1.2		1.3		1.4		1.5		Total	
2002	Season	436	M	3,442	29.9	2,951	25.6	2,078	18.0	236	2.1	8,818	76.7
			F	98	0.9	229	2.0	2,102	18.3	257	2.2	2,686	23.3
			Total	3,540	30.8	3,180	27.6	4,180	36.3	493	4.3	11,504	100.0
2003	Season	547	M	3,513	24.3	4,481	31.0	2,536	17.5	138	0.9	11,020	76.3
			F	476	3.3	467	3.3	2,179	15.1	229	1.6	3,424	23.7
			Total	3,989	27.6	4,948	34.3	4,715	32.6	367	2.5	14,444	100.0
	Grand Total	5,258	M	48,724	24.4	42,645	21.3	37,631	18.8	1,265	0.6	132,483	66.2
			F	2,772	1.4	10,502	5.3	51,695	25.9	2,399	1.2	67,497	33.8
			Total	51,497	25.8	53,147	26.6	89,326	44.7	3,664	1.8	199,980	100.0

[a] Age classes representing less than 1% of the Grand Total are excluded, discrepancies in sums are attributed to excluded age classes.

[b] Sampling dates do not meet criteria for estimating harvest percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix C12.–Chinook salmon escapement project age and sex composition information, Kanektok River, Kuskokwim Bay drainage, 1997–2003.

Year	Project	Sample Size	Sex	Age Class 1.2 Esc.	1.2 %	1.3 Esc.	1.3 %	1.4 Esc.	1.4 %	1.5 Esc.	1.5 %	Total Esc.	Total %
1997	Season	85	M	6,187	37.0	1,053	6.3	1,763	10.5	0	0.0	9,357	55.9
			F	1,762	10.5	355	2.1	5,268	31.5	0	0.0	7,386	44.1
			Total	7,949	47.5	1,408	8.4	7,031	42.0	0	0.0	16,743	100.0
2002	Season	188	M	1,222	22.9	1,231	23.0	729	13.6	37	0.7	3,341	62.5
			F	-	0.0	111	2.1	1,574	29.5	317	5.9	2,002	37.5
			Total	1,222	22.9	1,342	25.0	1,303	43.1	354	6.6	5,343	100.0
2003	7/5-17	62	M	787	24.2	945	29.0	315	9.7	0	0.0	2,204	67.7
	(6/24-7/17)		F	-	0.0	262	8.1	682	20.9	105	3.2	1,049	32.3
			Subtotal	787	24.2	1,207	37.1	997	30.6	105	3.2	3,253	100.0
	7/18-24	72	M	665	26.4	805	31.9	420	16.7	0	0.0	1,925	76.4
	(7/18-24)		F	0	0.0	35	1.4	560	22.2	0	0.0	595	23.6
			Subtotal	665	26.4	840	33.3	980	38.9	0	0.0	2,520	100.0
	7/26-8/2	40	M	492	20.0	614	25.0	246	10.0	61	2.5	1,413	57.5
	(7/25-9/18)		F	0	0.0	246	10.0	799	32.5	0	0.0	1,045	42.5
			Subtotal	492	20.0	860	35.0	1,045	42.5	61	2.5	2,458	100.0
	Season	174	M	1,944	23.6	2,364	28.7	981	11.9	61	0.7	5,542	67.3
			F	0	0.0	543	6.6	2,041	24.8	105	1.3	2,689	32.7
			Total	1,944	23.6	2,907	35.3	3,022	36.7	166	2.0	8,231	100.0
	Grand	447	M	9,353	30.9	4,648	15.3	3,473	11.5	98	0.3	18,240	60.2
	Total		F	1,762	5.8	1,009	3.3	8,883	29.3	422	1.4	12,077	39.8
			Total	11,115	36.7	5,657	18.7	11,356	37.5	520	1.7	30,317	100.0

[a] Age classes representing less than 1% of the Grand Total are excluded, discrepancies in sums are attributed to excluded age classes.

Appendix C13.–Chum salmon commercial fishery age and sex composition information, District 4, Quinhagak, Kuskokwim Bay drainage, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 0.2 Harvest	0.2 %	0.3 Harvest	0.3 %	0.4 Harvest	0.4 %	0.5 Harvest	0.5 %	Total Harvest	Total %
1993	Season	398	M	250	0.6	8,849	21.6	9,661	23.6	1,270	3.1	20,031	48.9
			F	122	0.3	8,435	20.6	9,617	23.5	2,740	6.7	20,914	51.1
			Total	372	0.9	17,285	42.2	19,278	47.1	4,010	9.8	40,943	100.0
1994	Season [a]	547	M										
			F										
			Total									61,301	
1995	Season	598	M	1,975	2.4	12,704	15.6	14,278	17.5	309	0.4	29,267	35.9
			F	4,245	5.2	26,803	32.9	20,818	25.6	335	0.4	52,202	64.1
			Total	6,221	7.6	39,507	48.5	35,097	43.1	644	0.8	81,462	100.0
1996	Season [a]	615	M										
			F										
			Total									83,005	
1997	Season	1,221	M	371	1.0	6,498	16.9	10,414	27.1	248	0.6	17,531	45.6
			F	189	0.5	7,905	20.6	12,630	32.8	190	0.5	20,914	54.4
			Total	560	1.5	14,403	37.5	23,044	59.9	438	1.1	38,445	100.0
1998	Season	857	M	48	0.1	16,619	36.9	1,962	4.3	101	0.2	18,729	41.5
			F	272	0.6	23,506	52.1	2,389	5.3	198	0.5	26,366	58.5
			Total	320	0.7	40,125	89.0	4,351	9.6	299	0.7	45,095	100.0
1999	Season	814	M	64	0.2	11,230	29.5	4,793	12.6	12	0.0	16,099	42.3
			F	0	0.0	15,432	40.5	6,493	17.0	67	0.2	21,992	57.7
			Total	64	0.2	26,662	70.0	11,286	29.6	79	0.2	38,091	100.0
2000	Season	1,043	M	122	0.4	6,971	22.8	6,801	22.2	67	0.2	13,961	45.7
			F	22	0.1	9,519	31.2	6,926	22.7	124	0.4	16,592	54.3
			Total	144	0.5	16,490	54.0	13,727	44.9	191	0.6	30,553	100.0
2001	Season	576	M	0	0.0	3,725	21.7	3,338	19.4	0	0.0	7,063	41.0
			F	77	0.4	4,857	28.2	5,184	30.1	29	0.2	10,146	59.0
			Total	77	0.4	8,582	49.9	8,522	49.5	29	0.2	17,209	100.0
2002	Season	449	M	654	2.2	6,308	21.5	3,143	10.7	523	1.8	10,629	36.2
			F	524	1.8	10,412	35.4	7,668	26.1	129	0.4	18,732	63.8
			Total	1,178	4.0	16,720	56.9	10,811	36.8	652	2.2	29,361	100.0

-Continued-

Appendix C13.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 0.2 Harvest	0.2 %	0.3 Harvest	0.3 %	0.4 Harvest	0.4 %	0.5 Harvest	0.5 %	Total Harvest	Total %
2003	7/7	73	M	0	0.0	2,819	37.0	1,149	15.1	0	0.0	3,968	52.1
	(6/14-7/7)		F	0	0.0	3,028	39.7	522	6.8	104	1.4	3,654	47.9
			Subtotal	0	0.0	5,847	76.7	1,671	21.9	104	1.4	7,622	100.0
	7/13	74	M	148	1.4	4,567	41.9	0	0.0	0	0.0	4,714	43.2
	(7/9-14)		F	147	1.3	5,745	52.7	147	1.4	147	1.4	6,187	56.8
			Subtotal	295	2.7	10,312	94.6	147	1.4	147	1.4	10,901	100.0
	7/16	96	M	0	0.0	4,186	44.8	487	5.2	0	0.0	4,673	50.0
	(7/16-8/27)		F	0	0.0	4,186	44.8	389	4.2	97	1.0	4,672	50.0
			Subtotal	0	0.0	8,372	89.6	876	9.4	97	1.0	9,345	100.0
	Season	243	M	148	0.6	11,571	41.5	1,635	5.9	0	0.0	13,354	47.9
			F	147	0.5	12,959	46.5	1,059	3.8	349	1.3	14,514	52.1
			Total	295	1.1	24,530	88.0	2,694	9.7	349	1.3	27,868	100.0
	Grand	5,801	M	3,382	1.1	75,626	24.5	46,364	15.0	1,260	0.4	126,633	41.1
	Total		F	5,476	1.8	111,393	36.2	63,167	20.5	1,421	0.5	181,458	58.9
			Total	8,859	2.9	187,019	60.7	109,532	35.6	2,681	0.9	308,084	100.0

[a] Sampling dates do not meet criteria for estimating harvest percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix C14.–Sockeye salmon commercial fishery age and sex composition information, District 4, Quinhagak, Kuskokwim Bay drainage, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.2 Harvest	1.2 %	1.3 Harvest	1.3 %	1.4 Harvest	1.4 %	2.3 Harvest	2.3 %	Total Harvest	Total %
1993	Season	535	M	12,533	15.5	24,431	30.2	1,667	2.1	728	0.9	46,472	57.4
			F	7,064	8.7	20,297	25.1	2,184	2.7	820	1.0	34,463	42.6
			Total	19,597	24.2	44,728	55.3	3,851	4.8	1,548	1.9	80,934	100.0
1994	Season	527	M	4,787	6.6	28,264	39.1	1,495	2.1	587	0.8	38,911	53.8
			F	5,324	7.4	21,189	29.3	1,675	2.3	1,268	1.8	33,393	46.2
			Total	10,111	14.0	49,453	68.4	3,170	4.4	1,855	2.6	72,314	100.0
1995	Season	620	M	13,199	18.6	18,946	26.6	2,169	3.1	100	0.1	37,791	53.2
			F	13,498	19.0	16,454	23.1	860	1.2	846	1.2	33,295	46.8
			Total	26,698	37.6	35,395	49.8	3,029	4.3	946	1.3	71,094	100.0
1996	Season	509	M	2,991	5.2	17,229	29.9	65	0.1	1,960	3.4	24,784	43.0
			F	6,592	11.4	22,052	38.2	267	0.5	1,401	2.4	32,868	57.0
			Total	9,583	16.6	39,281	68.1	332	0.6	3,361	5.8	57,665	100.0
1997	Season	952	M	6,384	9.2	18,885	27.1	3,824	5.5	2,694	3.9	34,027	48.9
			F	6,069	8.7	19,516	28.1	3,426	4.9	3,225	4.6	35,535	51.1
			Total	12,453	17.9	38,401	55.2	7,250	10.4	5,919	8.5	69,562	100.0
1998	Season	757	M	5,107	12.3	11,761	28.4	248	0.6	782	1.9	19,447	47.0
			F	4,574	11.1	15,245	36.9	239	0.6	420	1.0	21,935	53.0
			Total	9,681	23.4	27,006	65.3	487	1.2	1,202	2.9	41,382	100.0
1999	Season	539	M	11,039	26.7	9,947	24.1	1,225	2.9	526	1.3	23,321	56.4
			F	8,036	19.5	8,797	21.3	276	0.7	160	0.4	17,994	43.6
			Total	19,075	46.2	18,744	45.4	1,501	3.6	686	1.7	41,315	100.0
2000	Season	880	M	6,970	10.2	22,865	33.4	133	0.2	893	1.3	30,996	45.2
			F	8,432	12.3	27,911	40.7	28	0.0	434	0.6	37,561	54.8
			Total	15,402	22.5	50,776	74.1	161	0.2	1,327	1.9	68,557	100.0
2001	Season	713	M	501	1.5	17,212	50.9	284	0.8	919	2.7	18,938	56.0
			F	396	1.2	13,150	38.9	341	1.0	599	1.8	14,869	44.0
			Total	897	2.7	30,362	89.8	625	1.8	1,518	4.5	33,807	100.0
2002	Season	307	M	5,002	27.9	3,492	19.5	184	1.1	345	2.0	9,632	53.9
			F	3,895	21.8	3,312	18.5	184	1.0	344	1.9	8,253	46.1
			Total	8,897	49.7	6,804	38.0	368	2.1	689	3.9	17,885	100.0

-Continued-

Appendix C14.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 1.2 Harvest	1.2 %	1.3 Harvest	1.3 %	1.4 Harvest	1.4 %	2.3 Harvest	2.3 %	Total Harvest	Total %
2003	7/1	97	M	1,671	12.3	4,038	29.9	278	2.1	139	1.0	6,266	46.4
	(6/14-7/1)		F	1,253	9.3	5,570	41.2	0	0.0	418	3.1	7,241	53.6
			Subtotal	2,924	21.6	9,608	71.1	278	2.1	557	4.1	13,507	100.0
	7/7	96	M	1,934	20.8	3,095	33.3	0	0.0	97	1.0	5,223	56.3
	(7/7,9)		F	871	9.4	2,902	31.3	193	2.1	0	0.0	4,062	43.7
			Subtotal	2,805	30.2	5,997	64.6	193	2.1	97	1.0	9,285	100.0
	7/14	87	M	1,119	16.1	2,719	39.1	80	1.1	80	1.1	4,318	62.1
	(7/11,14)		F	880	12.6	1,439	20.7	0	0.0	0	0.0	2,639	37.9
			Subtotal	1,999	28.7	4,158	59.8	80	1.1	80	1.1	6,957	100.0
	7/16	85	M	592	14.1	1,874	44.7	49	1.2	50	1.2	2,614	62.4
	(7/16-27)		F	690	16.5	838	20.0	0	0.0	49	1.2	1,578	37.6
			Subtotal	1,282	30.6	2,712	64.7	49	1.2	99	2.4	4,192	100.0
	Season	365	M	5,316	15.6	11,726	34.5	408	1.2	365	1.1	18,421	54.3
			F	3,694	10.9	10,749	31.7	193	0.6	467	1.4	15,520	45.7
			Total	9,010	26.5	22,475	66.2	601	1.8	832	2.5	33,941	100.0
	Grand	6,704	M	73,829	12.5	184,759	31.4	11,702	2.0	9,899	1.7	302,740	51.4
	Total		F	67,575	11.5	178,671	30.4	9,673	1.6	9,984	1.7	285,686	48.5
			Total	141,405	24.0	363,425	61.8	21,374	3.6	19,883	3.4	588,456	100.0

[a] Age classes representing less than 1% of the Grand Total are excluded, discrepancies in sums are attributed to excluded age classes.

Appendix C15.–Sockeye salmon escapement project age and sex composition information, Kanektok River, Kuskokwim Bay drainage, 1997–2003.

Year	Project	Sample Size	Sex	Age Class 1.2 Esc.	1.2 %	1.3 Esc.	1.3 %	1.4 Esc.	1.4 %	2.3 Esc.	2.3 %	Total Esc.	Total %
1997	Season	740	M	8,914	9.2	28,286	29.3	1,725	1.8	2,844	2.9	47,386	49.1
			F	14,552	15.1	24,531	25.4	2,346	2.4	3,362	3.5	49,142	50.9
			Total	23,466	24.3	52,817	54.7	4,071	4.2	6,206	6.4	96,528	100.0
2002	Season	663	M	13,036	22.3	8,481	14.5	947	1.6	1,419	2.4	24,692	42.3
			F	19,756	33.9	11,789	20.2	422	0.7	990	1.7	33,675	57.7
			Total	32,792	56.2	20,270	34.7	1,369	2.3	2,409	4.1	58,367	100.0
2003	7/5-10	115	M	5,746	9.6	24,028	40.0	522	0.9	522	0.9	30,819	51.3
	(6/24-7/10)		F	4,179	6.9	22,984	38.3	1,045	1.7	1,045	1.7	29,252	48.7
			Subtotal	9,925	16.5	47,012	78.3	1,567	2.6	1,567	2.6	60,071	100.0
	7/12-18	138	M	5,196	14.5	9,872	27.6	779	2.2	0	0.0	16,107	44.9
	(7/11-7/18)		F	5,975	16.7	12,989	36.2	0	0.0	520	1.4	19,743	55.1
			Subtotal	11,171	31.2	22,861	63.8	779	2.2	520	1.4	35,850	100.0
	7/19-24	75	M	2,633	16.0	6,362	38.7	0	0.0	0	0.0	8,994	54.7
	(7/19-7/25)		F	3,729	22.7	3,510	21.3	219	1.3	0	0.0	7,459	45.3
			Subtotal	6,362	38.7	9,872	60.0	219	1.3	0	0.0	16,453	100.0
	7/26-8/2	75	M	2,617	17.4	4,227	28.0	0	0.0	202	1.4	7,045	46.7
	(7/26-9/18)		F	3,824	25.3	4,026	26.7	0	0.0	201	1.3	8,052	53.3
			Subtotal	6,441	42.7	8,253	54.7	0	0.0	403	2.7	15,097	100.0
	Season	403	M	16,191	12.7	44,489	34.9	1,302	1.0	724	0.6	62,965	49.4
			F	17,708	13.9	43,509	34.1	1,264	1.0	1,765	1.4	64,506	50.6
			Total	33,899	26.6	87,998	69.0	2,566	2.0	2,489	2.0	127,471	100.0
	Grand	1,806	M	38,141	13.5	81,256	28.8	3,974	1.4	4,987	1.8	135,043	47.8
	Total		F	52,016	18.4	79,829	28.3	4,032	1.4	6,117	2.2	147,323	52.2
			Total	90,157	31.9	161,085	57.0	8,006	2.8	11,104	3.9	282,366	100.0

[a] Age classes representing less than 1% of the Grand Total are excluded, discrepancies in sums are attributed to excluded age classes.

Appendix C16.–Coho salmon commercial fishery age and sex composition information, District 4, Quinhagak, Kuskokwim Bay drainage, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.1 Harvest	1.1 %	2.1 Harvest	2.1 %	3.1 Harvest	3.1 %	Total Harvest	Total %
1993	Season	300	M	463	2.3	9,977	49.8	506	2.5	10,945	54.7
			F	261	1.3	8,542	42.7	265	1.3	9,069	45.3
			Total	724	3.6	18,519	92.5	771	3.9	20,014	100.0
1994	Season	429	M	545	2.7	8,785	43.9	125	0.6	9,455	47.2
			F	777	3.9	9,175	45.8	607	3.0	10,559	52.8
			Total	1,322	6.6	17,960	89.7	732	3.7	20,014	100.0
1995	Season	653	M	4,117	6.2	29,388	44.4	2,885	4.4	36,390	55.0
			F	1,573	2.4	26,392	39.9	1,849	2.8	29,814	45.0
			Total	5,690	8.6	55,780	84.3	4,735	7.2	66,203	100.0
1996	Season	556	M	3,641	3.1	62,974	53.0	915	0.8	67,530	56.9
			F	3,430	2.9	46,868	39.5	890	0.7	51,188	43.1
			Total	7,071	6.0	109,842	92.5	1,805	1.5	118,718	100.0
1997	Season [a]	359	M								
			F								
			Total							32,862	
1998	Season	446	M	2,048	2.6	31,769	39.6	313	0.4	34,131	42.6
			F	2,738	3.4	42,939	53.6	376	0.5	46,052	57.4
			Total	4,786	6.0	74,708	93.2	689	0.9	80,183	100.0
1999	Season [a]	0	M								
			F								
			Subtotal							6,184	
2000	Season	285	M	358	1.2	14,940	49.0	213	0.7	15,511	50.8
			F	68	0.2	14,660	48.0	290	0.9	15,018	49.2
			Total	426	1.4	29,600	97.0	503	1.6	30,529	100.0
2001	Season	415	M	807	4.3	9,541	51.5	896	4.8	11,244	60.7
			F	642	3.5	6,241	33.7	405	2.2	7,287	39.3
			Total	1,449	7.8	15,782	85.2	1,301	7.0	18,531	100.0
2002	Season	460	M	174	0.7	11,783	44.2	1,322	5.0	13,278	49.7
			F	188	0.7	11,994	44.9	1,234	4.6	13,417	50.3
			Total	362	1.4	23,777	89.1	2,556	9.6	26,695	100.0

-Continued-

Appendix C16.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 1.1 Harvest	1.1 %	2.1 Harvest	2.1 %	3.1 Harvest	3.1 %	Total Harvest	Total %
2003	8/1	62	M	179	1.6	5,548	50.0	358	3.2	6,085	54.8
	(7/7-8/6)		F	358	3.2	3,400	30.6	1,253	11.3	5,011	45.2
			Subtotal	537	4.8	8,948	80.6	1,611	14.5	11,096	100.0
	8/8	32	M	0	0.0	8,180	59.4	431	3.1	8,610	62.5
	(8/8-11)		F	861	6.3	3,444	25.0	861	6.3	5,166	37.5
			Subtotal	861	6.3	11,624	84.4	1,292	9.4	13,776	100.0
	8/13	59	M	1,269	5.1	16,499	66.1	1,269	5.1	19,038	76.3
	(8/13-27)		F	846	3.4	4,231	17.0	846	3.4	5,923	23.7
			Subtotal	2,115	8.5	20,730	83.1	2,115	8.5	24,961	100.0
	Season	153	M	1,448	2.9	30,227	60.7	2,058	4.1	33,733	67.7
			F	2,065	4.2	11,075	22.2	2,960	6.0	16,100	32.3
			Total	3,513	7.1	41,302	82.9	5,018	10.1	49,833	100.0
	Grand	3,697	M	13,600	3.2	209,383	48.6	9,234	2.1	232,217	53.9
	Total		F	11,742	2.7	177,887	41.3	8,876	2.1	198,504	46.1
			Total	25,342	5.9	387,270	89.9	18,110	4.2	430,720	100.0

[a] Sampling dates do not meet criteria for estimating harvest percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix C17.–Coho salmon escapement project age and sex composition information, Kanektok River, Kuskokwim Bay drainage, 1997–2003.

Year	Project	Sample Size	Sex	Age Class 1.1 Esc.	1.1 %	2.1 Esc.	2.1 %	3.1 Esc.	3.1 %	Total Esc.	Total %
1997	Season [a]	115	M								
			F								
			Total							23,172	
2001	Season	432	M	1,349	3.8	15,274	42.9	1,235	3.4	17,858	50.1
			F	615	1.7	15,405	43.2	1,772	5.0	17,792	49.9
			Total	1,964	5.5	30,679	86.1	3,007	8.4	35,650	100.0
2002	Season	440	M	207	0.8	13,057	52.5	544	2.2	13,807	55.5
			F	191	0.8	9,956	40.0	929	3.7	11,076	44.5
			Total	398	1.6	23,013	92.5	1,473	5.9	24,883	100.0
2003	8/4-8	67	M	0	0.0	6,961	41.2	994	5.9	7,956	47.1
	(6/24-8/23)		F	746	4.4	6,713	39.7	1,492	8.8	8,950	52.9
			Subtotal	746	4.4	13,674	80.9	2,486	14.7	16,906	100.0
	8/25-26	67	M	0	0.0	13,018	40.3	1,928	6.0	14,947	46.3
	(8/24-9/4)		F	0	0.0	14,947	46.3	2,411	7.4	17,357	53.7
			Subtotal	0	0.0	27,965	86.6	4,339	13.4	32,304	100.0
	9/8-9	61	M	381	1.7	9,524	41.0	1,524	6.6	11,429	49.2
	(9/5-9/18)		F	381	1.6	9,143	39.3	2,286	9.8	11,809	50.8
			Subtotal	762	3.3	18,667	80.3	3,810	16.4	23,238	100.0
	Season	195	M	381	0.5	29,503	40.7	4,447	6.1	34,331	47.4
			F	1127	1.6	30,802	42.5	6,188	8.6	38,117	52.6
			Total	1508	2.1	60,305	83.2	10,635	14.7	72,448	100.0
	Grand	1,067	M	1,937	1.5	57,834	43.5	6,226	4.7	65,996	49.6
	Total		F	1,933	1.5	56,163	42.2	8,889	6.7	66,985	50.4
			Total	3,870	2.9	113,997	85.7	15,115	11.4	132,981	100.0

[a] Sampling dates do not meet criteria for estimating harvest percentages for some or all of the strata; "Season" is not included in the "Grand Total".

APPENDIX D. KUSKOKWIM BAY, DISTRICT 5.

Appendix D1.–Chinook salmon total utilization, District 5, Goodnews Bay, Kuskokwim Bay, 1969–2003.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
1969	3,978						3,978	
1970	7,163						7,163	
1971	477						477	
1972	264						264	
1973	3,543						3,543	
1974	3,302						3,302	
1975	2,156						2,156	
1976	4,417						4,417	
1977	3,336		574 [c]				3,910	
1978	5,218	3,385					5,218	3,443
1979	3,204	3,308	338				3,542	3,399
1980	2,331	2,825	690				3,021	2,985
1981	7,190	3,496	1,409				8,599	3,797
1982	9,476	4,417	1,236				10,712	4,842
1983	14,117	5,475	1,066		31		15,214	6,009
1984	8,612	6,006	629				9,241	6,603
1985	5,793	6,369	426		323		6,542	7,042
1986	2,723	6,200	555				3,278	6,928
1987	3,357	6,202	816				4,173	6,954
1988	4,964	6,177	310 [d]	748			5,274	6,960
1989	2,966	6,153	467	760	68		3,501	6,956
1990	3,303	6,250	539	745			3,842	7,038
1991	912	5,622	917	696	26		1,855	6,363
1992	3,528	5,028	374	610	23		3,925	5,685
1993	2,117	3,828	708	574	81		2,906	4,454
1994	2,570	3,223	784	590	163		3,517	3,881
1995	2,922	2,936	883	635	41		3,846	3,612
1996	1,375	2,801	415	621	157		1,947	3,479
1997	2,039	2,670	449	585	86		2,574	3,319
1998	3,675	2,541	718	625	431		4,824	3,274
1999	1,888	2,433	871	666	223		2,982	3,222
2000	4,442	2,547	703	682	243	147	5,388	3,376
2001	1,519	2,608	895	680	147	160	2,561	3,447
2002	979	2,353	857	728	224	180	2,060	3,261
2003	1,412	2,282	737	731	10	173	2,159	3,186
10-Yr. Ave. (93-02)	2,353		728		180		3,261	

[a] District 5, Goodnews Bay commercial harvest.

[b] Subsistence harvest by the communities of Goodnews Bay and Platinum.

[c] Subsistence harvest estimate in 1977 was for Goodnews Bay only.

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

Appendix D2.–Chum salmon total utilization, District 5, Goodnews Bay, Kuskokwim Bay, 1969–2003.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
1969	5,006						5,006	
1970	12,346						12,346	
1971	301						301	
1972	1,331						1,331	
1973	15,781						15,781	
1974	8,942						8,942	
1975	5,904						5,904	
1976	10,354						10,354	
1977	6,531						6,531	
1978	8,590	7,509					8,590	7,509
1979	9,298	7,938					9,298	7,938
1980	11,748	7,878					11,748	7,878
1981	13,642	9,212					13,642	9,212
1982	13,829	10,462					13,829	10,462
1983	6,766	9,560			10		6,776	9,561
1984	14,340	10,100					14,340	10,101
1985	4,784	9,988	348		124		5,256	10,036
1986	10,355	9,988	191				10,546	10,056
1987	20,381	11,373	578				20,959	11,498
1988	33,059	13,820	448 [c]				33,507	13,990
1989	13,622	14,253	784		0		14,406	14,501
1990	13,194	14,397	332				13,526	14,679
1991	15,892	14,622	149		189		16,230	14,938
1992	18,520	15,091	1,006		0		19,526	15,507
1993	10,657	15,480	188		156		11,001	15,930
1994	28,477	16,894	470	449	15		28,962	17,392
1995	19,832	18,399	155	430	0		19,987	18,865
1996	11,093	18,473	219	433	0		11,312	18,942
1997	11,729	17,608	133	388	24		11,886	18,034
1998	14,155	15,717	316	375	50		14,521	16,136
1999	11,562	15,511	281	325	47		11,890	15,884
2000	7,450	14,937	364	328	12	49	7,826	15,314
2001	3,412	13,689	226	336	21	33	3,659	14,057
2002	3,799	12,217	407	276	99	42	4,305	12,535
2003	5,593	11,710	176	275	0	27	5,769	12,012
10-Yr. Ave. (93-02)	12,217		276		42		12,535	

[a] District 5, Goodnews Bay commercial harvest.

[b] Subsistence harvest by the communities of Goodnews Bay and Platinum.

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

Appendix D3.–Sockeye salmon total utilization, District 5, Goodnews Bay, Kuskokwim Bay, 1969–2003.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
1969	6,256						6,256	
1970	7,144						7,144	
1971	330						330	
1972	924						924	
1973	2,072						2,072	
1974	9,357						9,357	
1975	9,098						9,098	
1976	5,575						5,575	
1977	3,723						3,723	
1978	5,412	4,989					5,412	4,989
1979	19,581	6,322					19,581	6,322
1980	28,632	8,470					28,632	8,470
1981	40,273	12,465					40,273	12,465
1982	38,877	16,260					38,877	16,260
1983	11,716	17,224			14		11,730	17,226
1984	15,474	17,836					15,474	17,838
1985	6,698	17,596	704		75		7,477	17,675
1986	25,112	19,550	943		122		26,177	19,736
1987	27,758	21,953	955		266		28,979	22,261
1988	36,368	25,049	1,065 [c]				37,433	25,463
1989	19,299	25,021	861		146		20,306	25,536
1990	35,823	25,740	1,123				36,946	26,367
1991	39,838	25,696	1,282		63		41,183	26,458
1992	39,194	25,728	827		8		40,029	26,573
1993	59,293	30,486	835		53		60,181	31,419
1994	69,490	35,887	770	937	70		70,330	36,904
1995	37,351	38,953	253	891	34		37,638	39,920
1996	30,717	39,513	352	832	87		31,156	40,418
1997	31,451	39,882	397	777	61		31,909	40,711
1998	27,161	38,962	331	703	502		27,994	39,767
1999	22,910	39,323	582	675	561		24,053	40,142
2000	37,252	39,466	517	615	82	152	37,851	40,232
2001	25,654	38,047	616	548	108	157	26,378	38,752
2002	6,304	34,758	297	495	149	171	6,750	35,424
2003	29,423	31,771	783	490	42	170	30,248	32,431
10-Yr. Ave. (93-02)	34,758		495		171		35,424	

[a] District 5, Goodnews Bay commercial harvest.

[b] Subsistence harvest by the communities of Goodnews Bay and Platinum.

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

Appendix D4.–Coho salmon total utilization, District 5, Goodnews Bay, Kuskokwim Bay, 1968–2003.

Year	Commercial Harvest[a]		Subsistence Harvest[b]		Sport Fish		Total	10-Year
	Annual	10-yr Ave	Annual	10-yr Ave	Annual	10-yr Ave	Utilization	Average
1968	5,458						5,458	
1969	11,631						11,631	
1970	6,794						6,794	
1971	1,771						1,771	
1972	925						925	
1973	5,017						5,017	
1974	21,340						21,340	
1975	17,889						17,889	
1976	9,852						9,852	
1977	13,335	9,401					13,335	9,401
1978	13,764	10,232					13,764	10,232
1979	42,098	13,279					42,098	13,279
1980	43,256	16,925					43,256	16,925
1981	19,749	18,723					19,749	18,723
1982	46,683	23,298					46,683	23,298
1983	19,660	24,763			168		19,828	24,779
1984	71,176	29,746					71,176	29,763
1985	16,498	29,607	221		386		17,105	29,685
1986	19,378	30,560	8 [c]				19,386	30,638
1987	29,057	32,132	43 [c]				29,100	32,215
1988	30,832	33,839	1,162 [d]				31,994	34,038
1989	31,849	32,814	907		224		32,980	33,126
1990	7,804	29,269	1,646				9,450	29,745
1991	13,312	28,625	1,828		297		15,437	29,314
1992	19,875	25,944	1,353		138		21,366	26,782
1993	20,014	25,980	1,226		189		21,429	26,942
1994	47,499	23,612	512	891	170		48,181	24,643
1995	17,875	23,750	305	899	114		18,294	24,762
1996	43,836	26,195	352	933	466		44,654	27,289
1997	2,983	23,588	397	969	855		4,235	24,802
1998	21,246	22,629	331	886	574		22,151	23,818
1999	2,474	19,692	582	853	789		3,845	20,904
2000	15,531	20,465	517	740	795	439	16,843	21,644
2001	9,275	20,061	616	619	822	491	10,713	21,171
2002	3,041	18,377	297	514	429	520	3,767	19,411
2003	12,658	17,642	1,319	523	681	570	14,658	18,734
10-Yr. Ave. (93-02)	18,377		514		520		19,411	

[a] District 5, Goodnews Bay commercial harvest.

[b] Subsistence harvest by the communities of Goodnews Bay and Platinum.

[c] Subsistence harvest estimates are for the community of Platinum only.

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

Appendix D5.–Chinook, sockeye, chum, and coho salmon run size and exploitation rate, Goodnews River drainage, Kuskokwim Bay, 1994–2003.

Year	Species	MFGR Tower/weir Estimate[a]	Goodnews River Escapement	Subsistence Harvest	Commercial Harvest	Sport Harvest[b]	Total Run Size	Exploitation[c] (%)
1994	Chinook	3,856	7,866[d]	657	2,570	175	15,124	22
	Sockeye	55,751	115,405[d]	652	69,490	80	241,378	29
	Chum	34,849	91,653[d]	402	28,477	34	155,415	19
1995	Chinook	4,836	9,865[d]	552	2,922	55	18,230	19
	Sockeye	39,009	80,749[d]	787	37,351	53	157,949	24
	Chum	33,699	88,628[d]	329	19,832	16	142,504	14
1996	Chinook	2,930	5,977[d]	526	1,375	213	11,021	19
	Sockeye	58,264	120,606[d]	763	30,717	143	210493	15
	Chum	40,450	106,384[d]	326	11,093	18	158,271	7
1997	Chinook	2,937	7,216	449	2,039	164	12,641	20
	Sockeye	35,530	23,462	609	31,451	142	91,052	35
	Chum	17,296	45,488[d]	133	11,729	80	74,646	16
	Coho	9,611	[f]	397	2,983	855	13,846	
1998	Chinook	4,584	3,797	718	3,675	590	13,364	37
	Sockeye	47,951	14,693	508	27,161	672	90,985	31
	Chum	28,905	24,940	316	14,155	198	68,514	21
	Coho	34,441	[f]	331	21,246	574	56,592	
1999	Chinook	3,221	6,565[d]	871	1,888	414	12,959	24
	Sockeye	48,205	99,727[d]	872	22,910	661	172,375	14
	Chum	19,533	51,361[d]	281	11,562	425	83,162	15
	Coho	11,545	[f]	582	2,474	789	15,390	
2000	Chinook	3,295	6,458[d]	601	4,442	319	15,115	35
	Sockeye	42,197	73,845[d]	1,028	37,252	132	154,454	25
	Chum	14,720	35,475[d]	280	7,450	224	58,149	14
	Coho	19,676	[f]	517	15,531	795	36,519	
2001	Chinook	5,404	8,128	853	1,519	285	16,189	16
	Sockeye	22,495	137,364	914	25,654	164	186,591	14
	Chum	26,829	33,902	181	3,412	130	64,454	6
	Coho	19,626	[f]	616	9,275	822	30,339	
2002	Chinook	3,076	4,096	857	979	224	9,008	20[h]
	Sockeye	21,127	31,476	1,050	6,304	149	59,957	12[h]
	Chum	29,905	110,215	407	3,799	99	144,326	3[h]
	Coho	27,364	[f]	297	3,041	429	30,702	
2003	Chinook	2,389	4,985	737	1,412	10	9,523	n/a
	Sockeye	44,387	55,877	783	29,423	42	130,470	n/a
	Chum	21,637	33,039	176	5,593	0	60,445	n/a
	Coho	52,810	[f]	1,319	12,658	681	66,787	n/a

[a] Goodnews Tower Project changed to weir project in 1991.

[b] Sport fish harvest is the number of fish harvested plus 5 % of the total fish caught, to account for a 5 % delayed mortality.

[c] Commercial, subsistence, and sport harvest exploitation.

[d] Average Middle Fork/Goodnews River escapement estimate ratio for 1983–1989 used to estimate Goodnews River escapement in years when no aerial survey of the Goodnews River was flown.

[e] Subsistence caught chum salmon is included in subsistence sockeye salmon harvest.

[f] Survey was not flown for coho salmon.

[g] Unavailable at the time of publication.

Appendix D6.–Commercial salmon harvests, District 5, Goodnews Bay, Kuskokwim Bay, 1968–2003.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1968	a	a	5,458	a	a	5,458
1969	3,978	6,256	11,631	298	5,006	27,169
1970	7,163	7,144	6,794	12,183	12,346	45,630
1971	477	330	1,771	0	301	2,879
1972	264	924	925	66	1,331	3,510
1973	3,543	2,072	5,017	324	15,781	26,737
1974	3,302	9,357	21,340	16,373	8,942	59,314
1975	2,156	9,098	17,889	419	5,904	35,466
1976	4,417	5,575	9,852	8,453	10,354	38,651
1977	3,336	3,723	13,335	29	6,531	26,954
1978	5,218	5,412	13,764	9,103	8,590	42,087
1979	3,204	19,581	42,098	201	9,298	74,382
1980	2,331	28,632	43,256	7,832	11,748	93,799
1981	7,190	40,273	19,749	11	13,642	80,865
1982	9,476	38,877	46,683	4,673	13,829	113,538
1983	14,117	11,716	19,660	0	6,766	52,259
1984	8,612	15,474	71,176	4,711	14,340	114,313
1985	5,793	6,698	16,498	8	4,784	33,781
1986	2,723	25,112	19,378	4,447	10,355	62,015
1987	3,357	27,758	29,057	54	20,381	80,607
1988	4,964	36,368	30,832	5,509	33,059	110,732
1989	2,966	19,299	31,849	82	13,622	67,818
1990	3,303	35,823	7,804	629	13,194	60,753
1991	912	39,838	13,312	29	15,892	69,983
1992	3,528	39,194	19,875	14,310	18,520	95,427
1993	2,117	59,293	20,014	0	10,657	92,081
1994	2,570	69,490	47,499	18,017	28,477	166,053
1995	2,922	37,351	17,875	39	19,832	78,019
1996	1,375	30,717	43,836	22	11,093	87,043
1997	2,039	31,451	2,983	0	11,729	48,202
1998	3,675	27,161	21,246	411	14,155	66,648
1999	1,888	22,910	2,474	0	11,562	38,834
2000	4,442	37,252	15,531	7	7,450	64,682
2001	1,519	25,654	9,275	0	3,412	39,860
2002	979	6,304	3,041	0	3,799	14,123
2003	1,412	29,423	12,658	0	5,593	49,086
10-year avg. (93-02)	2,353	34,758	18,377	1,850 b	12,217	69,555
Historical avg (68-02)	3,819	23,003	20,079	3,184 b	11,667	60,562

[a] No harvest information available.

[b] Average of even years only.

Appendix D7.–Commercial salmon fishing periods, hours, and permits fished, District 5, Goodnews Bay, Kuskokwim Bay, 1970–2003.

Year	Number of Periods	Fishing Hours	Permits Fished[a]
1970	28	624	35
1971	3	156	16
1972	8	186	14
1973	24	288	21
1974	30	360	49
1975	24	288	50
1976	32	384	40
1977	24	288	34
1978	36	432	35
1979	36	432	30
1980	38	456	48
1981	34	492	48
1982	34	540	48
1983	28	336	79
1984	31	372	77
1985	22	264	69
1986	30	360	86
1987	21	252	69
1988	30	360	125
1989	28	336	88
1990	28	396	82
1991	27	432	72
1992	26	396	111
1993	28	336	114
1994	32	432	116
1995	25	396	118
1996	21	247	53
1997	23	276	54
1998	29	348	50
1999	20	240	73
2000	25	300	46
2001	16	183	32
2002	12	144	30
2003	23	216	34
10-year avg (93-02)	23	290	69
Historical avg (70-02)	26	343	61

[a] Permits that made at least one delivery during the year.

Appendix D8.–Commercial salmon fishing ex vessel value, District 5, Goodnews Bay, Kuskokwim Bay, 1990–2003.

Year	Chinook	Sockeye	Coho	Pink [a]	Chum	Total
1990	32,135	263,598	38,910	254	25,767	360,664
1991	8,370	187,622	47,519	14	31,394	274,919
1992	30,688	257,457	75,278	2,913	39,111	405,447
1993	21,351	296,437	95,043	0	28,304	441,135
1994	21,732	309,577	271,687	5,442	41,309	649,747
1995	31,339	175,552	58,061	19	21,427	286,398
1996	5,952	87,427	120,191	4	9,015	222,589
1997	10,867	93,146	9,497	0	9,358	122,868
1998	13,685	100,171	59,102	174	11,133	184,265
1999	9,020	78,800	7,515	0	8,327	103,662
2000	25,614	146,708	34,689	2	6,001	213,014
2001	10,496	68,678	17,089	0	2,586	98,849
2002	343	15,846	5,634	0	2,979	24,802
2003	6,461	95,818	28,945	0	3,883	135,107
10-year avg (93-02)	$15,040	$137,234	$67,851	$1,124	$14,044	$234,733
Historical avg (93-02)	$17,046	$160,078	$64,632	$679	$18,209	$260,643

[a] Even years only.

Appendix D9.–Commercial salmon harvest by period, District 5, Goodnews Bay, Kuskokwim Bay, 1993–2003.

		Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
Year	Date	Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1993	Jun 28	34	12	408	567	1.39	4,163	10.20	526	1.29	0	0.00
	Jun 30	37	12	444	242	0.55	6,089	13.71	1,093	2.46	0	0.00
	Jul 2	35	12	420	166	0.40	4,684	11.15	565	1.35	0	0.00
	Jul 5	46	12	552	128	0.23	5,195	9.41	927	1.68	0	0.00
	Jul 7	65	12	780	132	0.17	6,283	8.06	1,036	1.33	0	0.00
	Jul 9	76	12	912	99	0.11	4,518	4.95	1,024	1.12	0	0.00
	Jul 12	73	12	876	145	0.17	5,009	5.72	1,501	1.71	0	0.00
	Jul 14	76	12	912	130	0.14	4,876	5.35	1,372	1.50	0	0.00
	Jul 16	80	12	960	138	0.14	3,653	3.81	1,105	1.15	0	0.00
	Jul 19	57	12	684	61	0.09	2,830	4.14	459	0.67	0	0.00
	Jul 21	54	12	648	62	0.10	2,559	3.95	348	0.54	1	0.00
	Jul 23	38	12	456	39	0.09	1,949	4.27	228	0.50	1	0.00
	Jul 26	22	12	264	32	0.12	1,804	6.83	117	0.44	4	0.02
	Jul 28	23	12	276	22	0.08	893	3.24	89	0.32	4	0.01
	Jul 30	20	12	240	26	0.11	1,256	5.23	56	0.23	28	0.12
	Aug 2	27	12	324	27	0.08	872	2.69	85	0.26	105	0.32
	Aug 4	27	12	324	23	0.07	739	2.28	60	0.19	285	0.88
	Aug 6	21	12	252	10	0.04	312	1.24	24	0.10	420	1.67
	Aug 9	27	12	324	21	0.06	485	1.50	13	0.04	891	2.75
	Aug 13	33	12	396	5	0.01	347	0.88	9	0.02	2,717	6.86
	Aug 16	33	12	396	16	0.04	322	0.81	8	0.02	2,936	7.41
	Aug 18	10	12	120	4	0.03	33	0.28	1	0.01	1,033	8.61
	Aug 23	40	12	480	9	0.02	193	0.40	4	0.01	3,659	7.62
	Aug 26	38	12	456	4	0.01	75	0.16	4	0.01	2,769	6.07
	Aug 28	44	12	528	5	0.01	51	0.10	1	0.00	1,992	3.77
	Sept 1	30	12	360	2	0.01	54	0.15	2	0.01	2,002	5.56
	Sept 3	27	12	324	2	0.01	49	0.15	0	0.00	1,167	3.60
Total			324	13,116	2,117		59,293		10,657		20,014	
1994	Jun 27	41	12	492	388	0.79	2,795	5.68	2,364	4.80	0	0.00
	Jun 30	53	12	636	39	0.06	4,651	7.31	2,907	4.57	0	0.00
	Jul 4	40	12	480	637	1.33	7,674	15.99	4,075	8.49	0	0.00
	Jul 6	43	12	516	243	0.47	7,886	15.28	4,076	7.90	0	0.00
	Jul 8	52	12	624	139	0.22	6,261	10.03	2,669	4.28	0	0.00
	Jul 12	88	12	1,056	313	0.30	16,753	15.86	5,498	5.21	1	0.00
	Jul 15	78	12	936	138	0.15	8,860	9.47	3,296	3.52	2	0.00
	Jul 19	42	12	504	71	0.14	2,693	5.34	1,470	2.92	11	0.02
	Jul 21	29	12	348	53	0.15	2,385	6.85	563	1.62	9	0.03
	Jul 23	27	12	324	26	0.08	1,273	3.93	446	1.38	19	0.06
	Jul 25	25	12	300	16	0.05	1,206	4.02	281	0.94	188	0.63
	Jul 27	18	12	216	19	0.09	1,057	4.89	138	0.64	96	0.44
	Jul 29	24	12	288	26	0.09	810	2.81	166	0.58	343	1.19
	Jul 2	31	12	372	13	0.03	969	2.60	153	0.41	1,491	4.01
	Aug 3	25	12	300	18	0.06	761	2.54	100	0.33	1,136	3.79
	Aug 5	28	12	336	19	0.06	849	2.53	77	0.23	1,146	3.41
	Aug 8	35	12	420	13	0.03	749	1.78	60	0.14	3,090	7.36
	Aug 10	31	12	372	14	0.04	391	1.05	44	0.12	1,854	4.98
	Aug 12	24	12	288	26	0.09	288	1.00	31	0.11	2,699	9.37

-Continued-

Appendix D9.–Page 2 of 6

Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
1994	Aug 15	31	12	372	14	0.04	422	1.13	23	0.06	3,724	10.01
(cont.)	Aug 17	29	12	348	7	0.02	151	0.43	11	0.03	4,248	12.21
	Aug 19	29	12	348	8	0.02	195	0.56	11	0.03	4,522	12.99
	Aug 22	33	12	396	6	0.02	131	0.33	2	0.01	6,126	15.47
	Aug 24	32	12	384	2	0.01	41	0.11	0	0.00	5,520	14.38
	Aug 26	2	12	24	0	0.00	1	0.04	0	0.00	147	6.13
	Aug 29	30	12	360	9	0.03	90	0.25	5	0.01	2,557	7.10
	Aug 31	24	12	288	0	0.00	50	0.17	4	0.01	3,097	10.75
	Sept 2	29	12	348	0	0.00	44	0.13	2	0.01	2,149	6.18
	Sept 5	21	12	252	2	0.01	37	0.15	4	0.02	1,014	4.02
	Sept 7	23	12	276	1	0.00	17	0.06	1	0.00	2,310	8.37
Total			360	12,204	2,260		69,490		28,477		47,499	
1995	Jun 29	30	12	360	914	2.54	1,412	3.92	1,242	3.45	0	0.00
	Jul 03	32	12	384	264	0.69	1,427	3.72	2,540	6.61	0	0.00
	Jul 5	33	12	396	229	0.58	2,380	6.01	1,324	3.34	0	0.00
	Jul 7	38	12	456	274	0.60	2,476	5.43	2,207	4.84	0	0.00
	Jul 8	43	12	516	202	0.39	4,362	8.45	2,090	4.05	0	0.00
	Jul 10	59	36	2,124	326	0.15	8,140	3.83	4,835	2.28	0	0.00
	Jul 13	68	36	2,448	182	0.07	4,291	1.75	1,361	0.56	0	0.00
	Jul 17	57	36	2,052	156	0.08	3,642	1.77	2,115	1.03	0	0.00
	Jul 20	36	36	1,296	109	0.08	2,601	2.01	1,187	0.92	1	0.00
	Jul 24	26	12	312	54	0.17	829	2.66	355	1.14	4	0.01
	Jul 26	30	12	360	41	0.11	852	2.37	226	0.63	6	0.02
	Jul 28	16	12	192	22	0.11	578	3.01	81	0.42	3	0.02
	Jul 31	23	12	276	17	0.06	667	2.42	77	0.28	30	0.11
	Aug 2	23	12	276	20	0.07	634	2.30	66	0.24	109	0.39
	Aug 7	23	12	276	17	0.06	692	2.51	62	0.22	520	1.88
	Aug 11	21	12	252	20	0.08	146	0.58	11	0.04	1,289	5.12
	Aug 14	26	12	312	13	0.04	353	1.13	15	0.05	2,455	7.87
	Aug 16	29	12	348	17	0.05	310	0.89	14	0.04	1,290	3.71
	Aug 18	30	12	360	10	0.03	318	0.88	9	0.03	2,378	6.61
	Aug 21	34	12	408	11	0.03	373	0.91	5	0.01	2,147	5.26
	Aug 25	35	12	420	11	0.03	353	0.84	8	0.02	2,039	4.85
	Aug 28	29	12	348	11	0.03	186	0.53	1	0.00	2,322	6.67
	Aug 30	31	12	372	1	0.00	171	0.46	0	0.00	2,173	5.84
	Sept 1	25	12	300	1	0.00	158	0.53	1	0.00	1,109	3.70
Total			384	14,844	2,922		37,351		19,832		17,875	
1996	Jun 28	26	12	312	307	0.98	2,008	6.44	1,605	5.14	0	0.00
	Jul 02	31	8	248	223	0.90	4,777	19.26	2,208	8.90	0	0.00
	Jul 05	26	4	104	154	1.48	4,900	47.12	1,717	16.51	0	0.00
	Jul 08	40	6	240	125	0.52	4,366	18.19	1,809	7.54	0	0.00
	Jul 11	32	12	384	187	0.49	3,651	9.51	1,009	2.63	0	0.00
	Jul 15	35	8	280	65	0.23	3,080	11.00	1,279	4.57	13	0.05
	Jul 18	34	12	408	78	0.19	1,962	4.81	709	1.74	18	0.04
	Jul 25	28	12	336	53	0.16	1,678	4.99	262	0.78	632	1.88
	Jul 27	25	12	300	74	0.25	1,271	4.24	173	0.58	715	2.38
	Jul 30	19	12	228	19	0.08	790	3.46	116	0.51	1,461	6.41

-Continued-

Appendix D9.–Page 3 of 6

Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
1996	Aug 05	25	12	300	17	0.06	301	1.00	54	0.18	2,069	6.90
(cont.)	Aug 08	23	12	276	13	0.05	307	1.11	44	0.16	1,978	7.17
	Aug 10	26	12	312	14	0.04	218	0.70	16	0.05	3,169	10.16
	Aug 12	29	12	348	10	0.03	458	1.32	50	0.14	6,488	18.64
	Aug 14	28	12	336	7	0.02	234	0.70	17	0.05	4,644	13.82
	Aug 16	30	12	360	7	0.02	223	0.62	10	0.03	7,321	20.34
	Aug 19	28	12	336	3	0.01	173	0.51	4	0.01	4,628	13.77
	Aug 21	29	12	348	9	0.03	119	0.34	3	0.01	4,967	14.27
	Aug 23	27	12	324	5	0.02	135	0.42	8	0.02	2,824	8.72
	Aug 26	13	12	156	5	0.03	66	0.42	0	0.00	1,909	12.24
Total			218	5,936	1,375		30,717		11,093		42,836	
1997	Jun 27	25	12	300	359	1.20	1,664	5.55	540	1.80	0	0.00
	Jun 30	22	12	264	299	1.13	4,290	16.25	997	3.78	0	0.00
	Jul 2	26	12	312	292	0.94	4,325	13.86	1,284	4.12	0	0.00
	Jul 4	22	12	264	177	0.67	2,154	8.16	798	3.02	0	0.00
	Jul 7	29	12	348	145	0.42	2,868	8.24	1,389	3.99	0	0.00
	Jul 9	36	12	432	128	0.30	2,994	6.93	1,180	2.73	0	0.00
	Jul 11	38	12	456	162	0.36	3,285	7.20	1,036	2.27	0	0.00
	Jul 14	42	12	504	125	0.25	2,812	5.58	1,180	2.34	0	0.00
	Jul 16	22	12	264	74	0.28	1,262	4.78	582	2.20	0	0.00
	Jul 18	32	12	384	74	0.19	1,673	4.36	824	2.15	2	0.01
	Jul 21	30	12	360	68	0.19	1,300	3.61	820	2.28	1	0.00
	Jul 23	23	12	276	34	0.12	767	2.78	591	2.14	3	0.01
	Jul 25	17	12	204	23	0.11	411	2.01	206	1.01	0	0.00
	Jul 28	9	12	108	9	0.08	254	2.35	94	0.87	5	0.05
	Aug 1	12	12	144	12	0.08	245	1.70	108	0.75	19	0.13
	Aug 4	7	12	84	8	0.10	142	1.69	41	0.49	35	0.42
	Aug 8	11	12	132	16	0.12	174	1.32	17	0.13	97	0.73
	Aug 11	10	12	120	7	0.06	100	0.83	14	0.12	163	1.36
	Aug 15	17	12	204	7	0.03	210	1.03	13	0.06	735	3.60
	Aug 20	24	12	288	11	0.04	214	0.74	4	0.01	828	2.88
	Aug 22	19	12	228	6	0.03	155	0.68	4	0.02	629	2.76
	Aug 25	20	12	240	3	0.01	152	0.63	7	0.03	468	1.95
Total			264	5,916	2,039		31,451		11,729		2,985	
1998	Jun 30	27	12	324	924	2.85	2,156	6.65	1,641	5.06	0	0.00
	Jul 3	26	12	312	1,065	3.41	2,541	8.14	2,485	7.96	0	0.00
	Jul 6	26	12	312	496	1.59	2,952	9.46	1,500	4.81	0	0.00
	Jul 8	27	12	324	302	0.93	2,652	8.19	1,894	5.85	0	0.00
	Jul 10	33	12	396	233	0.59	3,119	7.88	2,063	5.21	0	0.00
	Jul 13	37	12	444	126	0.28	2,785	6.27	1,423	3.20	0	0.00
	Jul 15	34	12	408	90	0.22	2,801	6.87	1,088	2.67	1	0.00
	Jul 17	34	12	408	76	0.19	1,598	3.92	680	1.67	0	0.00
	Jul 20	32	12	384	81	0.21	1,435	3.74	507	1.32	2	0.01
	Jul 22	27	12	324	52	0.16	1,604	4.95	308	0.95	4	0.01
	Jul 24	26	12	312	44	0.14	1,106	3.54	164	0.53	19	0.06
	Jul 27	21	12	252	28	0.11	534	2.12	132	0.52	56	0.22
	Jul 29	15	12	180	20	0.11	342	1.90	54	0.30	58	0.32

-Continued-

Appendix D9.–Page 4 of 6

Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
1998	Jul 31	19	12	228	20	0.09	380	1.67	54	0.24	162	0.71
(cont.)	Aug 3	18	12	216	39	0.18	271	1.25	61	0.28	421	1.95
	Aug 5	17	12	204	17	0.08	162	0.79	36	0.18	954	4.68
	Aug 7	16	12	192	8	0.04	138	0.72	16	0.08	755	3.93
	Aug 10	20	12	240	20	0.08	197	0.82	12	0.05	1,095	4.56
	Aug 12	21	12	252	9	0.04	85	0.34	14	0.06	1,573	6.24
	Aug 14	23	12	276	7	0.03	72	0.26	9	0.03	1,819	6.59
	Aug 18	26	12	312	9	0.03	72	0.23	6	0.02	2,038	6.53
	Aug 21	20	12	240	0	0.00	27	0.11	0	0.00	1,862	7.76
	Aug 24	15	12	180	0	0.00	18	0.10	0	0.00	2,290	12.72
	Aug 26	23	12	276	3	0.01	23	0.08	0	0.00	1,629	5.90
	Aug 28	16	12	192	0	0.00	17	0.09	1	0.01	1,260	6.56
	Aug 31	15	12	180	1	0.01	13	0.07	4	0.02	1,727	9.59
	Sept 2	17	12	204	1	0.00	18	0.09	1	0.00	1,616	7.92
	Sept 4	14	12	168	4	0.02	19	0.11	2	0.01	1,044	6.21
	Sept 7	13	12	156	0	0.00	24	0.15	0	0.00	861	5.52
Total			348	7,896	3,675		27,161		14,155		21,246	
1999	Jul 2	28	12	336	672	2.00	2,026	6.03	2,324	6.92	0	0.00
	Jul 7	47	12	564	352	0.62	4,588	8.13	1,917	3.40	0	0.00
	Jul 9	42	12	504	248	0.49	3,566	7.08	1,620	3.21	0	0.00
	Jul 12	58	12	696	107	0.15	2,762	3.97	1,801	2.59	0	0.00
	Jul 14	48	12	576	178	0.31	2,969	5.15	1,127	1.96	0	0.00
	Jul 16	35	12	420	93	0.22	1,809	4.31	1,102	2.62	0	0.00
	Jul 19	14	12	168	33	0.20	888	5.29	270	1.61	0	0.00
	Jul 21	25	12	300	48	0.16	974	3.25	377	1.26	0	0.00
	Jul 23	26	12	312	52	0.17	1,314	4.21	517	1.66	1	0.00
	Jul 26	19	12	228	26	0.11	533	2.34	184	0.81	29	0.13
	Jul 28	6	12	72	7	0.10	338	4.69	81	1.13	3	0.04
	Jul 30	11	12	132	17	0.13	272	2.06	61	0.46	1	0.01
	Aug 2	10	12	120	15	0.13	222	1.85	45	0.38	13	0.11
	Aug 4	2	12	24	3	0.13	59	2.46	10	0.42	2	0.08
	Aug 6	9	12	108	4	0.04	148	1.37	47	0.44	23	0.21
	Aug 9	12	12	144	9	0.06	110	0.76	39	0.27	108	0.75
	Aug 11	8	12	96	6	0.06	62	0.65	14	0.15	127	1.32
	Aug 16	13	12	156	6	0.04	80	0.51	11	0.07	336	2.15
	Aug 18	15	12	180	6	0.03	101	0.56	11	0.06	455	2.53
	Aug 25	24	12	288	6	0.02	89	0.31	4	0.01	1,405	4.88
Total			240	5,424	1,888		22,910		11,562		2,503	
2000	Jun 26	16	12	192	1,247	6.49	1,984	10.33	1,174	6.11	0	0.00
	Jun 29	21	12	252	1,857	7.37	3,552	14.10	1,362	5.40	0	0.00
	Jul 03	28	12	336	475	1.41	4,712	14.02	1,222	3.64	0	0.00
	Jul 06	25	12	300	120	0.40	3,430	11.43	634	2.11	0	0.00
	Jul 08	26	12	312	393	1.26	4,655	14.92	1,330	4.26	0	0.00
	Jul 11	27	12	324	90	0.28	3,247	10.02	444	1.37	0	0.00
	Jul 13	28	12	336	65	0.19	1,954	5.82	483	1.44	0	0.00
	Jul 15	2	12	24	2	0.08	39	1.63	0	0.00	0	0.00
	Jul 17	19	12	228	41	0.18	1,777	7.79	201	0.88	0	0.00

-Continued-

Appendix D9.–Page 5 of 6

Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
2000	Jul 21	19	12	228	24	0.11	1,936	8.49	225	0.99	6	0.03
(cont.)	Jul 24	19	12	228	36	0.16	2,138	9.38	133	0.58	17	0.07
	Jul 26	20	12	240	15	0.06	1,550	6.46	66	0.28	65	0.27
	Jul 28	20	12	240	14	0.06	1,743	7.26	41	0.17	142	0.59
	Jul 31	20	12	240	19	0.08	1,180	4.92	50	0.21	335	1.40
	Aug 05	18	12	216	4	0.02	479	2.22	29	0.13	593	2.75
	Aug 07	12	12	144	9	0.06	382	2.65	13	0.09	881	6.12
	Aug 10	22	12	264	9	0.03	529	2.00	12	0.05	2,138	8.10
	Aug 12	22	12	264	4	0.02	414	1.57	174	0.66	2,188	8.29
	Aug 14	29	12	348	2	0.01	409	1.18	90	0.26	3,122	8.97
	Aug 16	23	12	276	5	0.02	395	1.43	4	0.01	1,539	5.58
	Aug 18	19	12	228	3	0.01	229	1.00	3	0.01	1,309	5.74
	Aug 21	27	12	324	6	0.02	207	0.64	2	0.01	1,361	4.20
	Aug 24	22	12	264	2	0.01	298	1.13	2	0.01	1,591	6.03
Total			276	5,808	4,442		37,239		7,694		15,287	
2001	Jun 29	17	12	204	1,022	5.01	4,286	21.01	680	3.33	0	0.00
	Jul 6	26	12	312	147	0.47	6,790	21.76	925	2.96	0	0.00
	Jul 10	25	12	300	132	0.44	4,039	13.46	300	1.00	0	0.00
	Jul 13	26	6	156	60	0.38	5,014	32.14	702	4.50	0	0.00
	Jul 20	15	9	135	59	0.44	1,236	9.16	337	2.50	0	0.00
	Jul 23	18	12	216	36	0.17	1,635	7.57	341	1.58	4	0.02
	Aug 1	12	12	144	23	0.16	859	5.97	72	0.50	326	2.26
	Aug 6	14	12	168	10	0.06	518	3.08	18	0.11	497	2.96
	Aug 08	9	12	108	6	0.06	407	3.77	8	0.07	596	5.52
	Aug 10	14	12	168	7	0.04	377	2.24	8	0.05	671	3.99
	Aug 15	22	12	264	4	0.02	225	0.85	14	0.05	2,468	9.35
	Aug 18	18	12	216	3	0.01	144	0.67	3	0.01	2,637	12.21
	Aug 22	15	12	180	7	0.04	68	0.38	1	0.01	1,085	6.03
	Aug 24	13	12	156	3	0.02	56	0.36	3	0.02	991	6.35
Total			159	2,727	1,519		25,654		3,412		9,275	
2002	Jun 27	19	12	228	598	2.62	892	3.91	948	4.16	0	0.00
	Jul 1	17	12	204	134	0.66	902	4.42	721	3.53	0	0.00
	Jul 5	15	12	180	103	0.57	1,373	7.63	978	5.43	0	0.00
	Jul 10	19	12	228	71	0.31	1,435	6.29	821	3.60	0	0.00
	Jul 12	19	12	228	57	0.25	891	3.91	289	1.27	0	0.00
	Aug 1	7	12	84	8	0.10	357	4.25	102	1.21	41	0.49
	Aug 7	7	12	84	3	0.04	135	1.61	98	1.17	451	5.37
	Aug 10	6	12	72	1	0.01	103	1.43	0	0.00	253	3.51
	Aug 15	5	12	60	1	0.02	75	1.25	5	0.08	578	9.63
	Aug 17	8	12	96	1	0.01	44	0.46	2	0.02	404	4.21
	Aug 20	6	12	72	2	0.03	49	0.68	4	0.06	518	7.19
	Aug 24	7	12	84	0	0.00	48	0.57	1	0.01	796	9.48
Total			144	1,620	979		6,304		3,969		3,041	

-Continued-

Appendix D9.–Page 6 of 6

Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook Catch	Chinook CPUE	Sockeye Catch	Sockeye CPUE	Chum Catch	Chum CPUE	Coho Catch	Coho CPUE
2003	Jun 26	13	12	156	389	2.49	2,726	17.47	342	2.19	0	0.00
	Jun 30	19	12	228	186	0.82	4,718	20.69	468	2.05	0	0.00
	Jul 2	10	12	120	64	0.53	2,002	16.68	344	2.87	0	0.00
	Jul 4	23	12	276	114	0.41	3,727	13.50	617	2.24	0	0.00
	Jul 7	27	12	324	123	0.38	4,082	12.60	432	1.33	0	0.00
	Jul 9	26	12	312	118	0.38	3,230	10.35	759	2.433	0	0.00
	Jul 11	28	12	336	176	0.52	2,652	7.89	1,209	3.60	2	0.01
	Jul 14	25	12	300	84	0.28	2,048	6.83	826	2.75	5	0.02
	Jul 16	15	12	180	47	0.26	1,127	6.26	391	2.17	3	0.02
	Jul 18	3	12	36	5	0.14	144	4.00	44	1.22	0	0.00
	Aug 1	15	12	180	41	0.23	898	4.99	73	0.41	546	3.03
	Aug 4	13	12	156	18	0.12	904	5.79	26	0.17	548	3.51
	Aug 6	12	12	144	8	0.06	321	2.23	19	0.13	490	3.40
	Aug 8	13	12	156	20	0.13	394	2.53	31	0.20	1,213	7.78
	Aug 13	16	12	192	8	0.04	176	0.92	4	0.02	2,182	11.36
	Aug 15	16	12	192	1	0.01	35	0.18	0	0.00	1,739	9.06
	Aug 20	16	12	192	9	0.05	149	0.78	5	0.03	3,534	18.41
	Aug 25	14	12	168	1	0.01	90	0.54	3	0.02	2,396	14.26
Total			216	3,648	1,412		29,423		5,593		12,658	
Ten Year Average (1993 - 2002)					2,111		31,597		11,144		16,596	

Appendix D10.–Salmon spawning escapement, Middle Fork Goodnews River, Kuskokwim Bay drainage, 1981–2003.

Year	Operating Period [a]	Chinook	Sockeye	Chum	Pink	Coho
Middle Fork Goodnews River						
Escapement Goal:		**3,500**	**25,000**	**15,000**		
Counting Tower						
1981	06/13 to 08/15	3,688	49,108	21,827	1,327 [b]	356 [b]
1982	06/23 to 08/03	1,395	56,255	6,767	13,855 [b]	91 [b]
1983	06/11 to 07/28	6,022	25,813	15,548	34 [b]	0 [b]
1984	06/15 to 07/31	3,260	32,053	19,003	13,744 [b]	249 [b]
1985	06/27 to 07/31	2,831	24,131	10,367	144 [b]	282 [b]
1986	06/16 to 07/24	2,092	51,069	14,764	8,133 [b]	163 [b]
1987	06/22 to 07/30	2,272	28,871	17,517	62 [b]	62 [b]
1988	06/23 to 07/30	2,712	15,799	20,799	6,781 [b]	6 [b]
1989	06/29 to 07/31	1,915	21,186	10,380	24b [b]	1,212 [b]
1990	06/19 to 07/24	3,636	31,679	6,410	3,378 [b]	0 [b]
Weir						
1991	06/29 to 08/24	1,952	47,397	27,525	1,694 [b]	1,978 [b]
1992	06/29 to 08/25	1,903	27,268	22,023	23,030 [b]	150 [b]
1993	06/22 to 08/18	2,317	26,044	14,472	253 [b]	1,374 [b]
1994	06/23 to 08/08	3,856	55,751	34,849	38,705 [b]	309 [b]
1995	06/19 to 08/28	4,836	39,009	33,699	330 [b]	5,415 [b]
1996	06/19 to 08/23	2,930	58,264	40,450	14,509 [b]	9,699 [b]
1997	06/11 to 09/17	2,937	35,530	17,296	940	9,619
1998	07/04 to 09/13	4,584	47,951	28,905	10,367	35,441
1999	06/26 to 09/26	3,221	48,205	19,533	914	11,545
2000	07/02 to 09/22	3,295	42,197	14,720	2,530	19,676
2001	06/26 to 09/30	5,398	22,487	26,829	1,323	19,630
2002	06/25 to 09/18	3,076	22,019	30,233	1,328	27,364
2003	06/18 to 09/18	2,389	44,387	21,637	1,917	54,477

[a] The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 10% of the total annual escapement is estimated.

[b] Field operations were incomplete and total annual escapement was not estimated.

Appendix D11.–Salmon spawning aerial survey index estimates, Goodnews rivers and lakes, Kuskokwim Bay drainage, 1980–2003.

	Goodnews River and Lakes				Middle Fork Goodnews River and Lakes			
Year	Chinook	Sockeye	Chum	Coho	Chinook	Sockeye	Chum	Coho
1980	1,228	75,639	1,975	[a]	1,164	18,926	3,782	[a]
1981	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1982	1,990	19,160	9,700	[a]	1,546	2,327	6,300	[a]
1983	2,600	9,650	[a]	[a]	2,500	5,900	[a]	[a]
1984	3,245	9,240	17,250	43,925	1,930	12,897	9,172	[a]
1985	3,535	2,843	4,415	[a]	2,050	5,470	3,593	[a]
1986	1,068	8,960	11,850	[a]	1,249	16,990	7,645	[a]
1987	2,234	19,786	12,103	11,122	2,222	34,585	9,696	[a]
1988	637	5,820	3,846	[a]	1,024	5,831	5,814	[a]
1989	651	3,605	[a]	[a]	1,277	8,044	2,922	[a]
1990	626	27,689	[a]	[a]	[a]	[a]	[a]	[a]
1991	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1992	875	10,397	1,950	a	1,012	7,200	3,270	[a]
1993	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1994	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1995	3,314	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1996	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
1997	3,611	12,610	[a]	[a]	1,447	19,843	[a]	[a]
1998	578	3,497	2,743	[a]	731	11,632	3,619	[a]
1999	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2000	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2001	2,799	12,383	6,945	[a]	3,561	29,340	7,330	[a]
2002	1,195	2,626	1,208	[a]	1,470	3,475	3,075	[a]
2003	2,015	27,380	3,370	[a]	1,210	21,760	2,310	[a]
Goal	**1,600**	**15,000**	**17,000**	**15,000**	**800**	**5,000**	**4,000**	**2,000**

[a] Survey was either not flown or not rated as acceptable.

Appendix D12.–Chinook salmon commercial fishery age and sex composition information, District 5, Goodnews Bay, Kuskokwim Bay, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.2 Harvest	1.2 %	1.3 Harvest	1.3 %	1.4 Harvest	1.4 %	1.5 Harvest	1.5 %	Total Harvest	Total %
1993	Season [b]	152	M										
			F										
			Total									2,117	
1994	Season [b]	150	M										
			F										
			Total									2,570	
1995	Season [b]	196	M										
			F										
			Total									2,922	
1996	Season [b]	0	M										
			F										
			Total									1,375	
1997	Season	471	M	908	44.5	215	10.5	233	11.5	9	0.5	1,384	67.9
			F	42	2.1	37	1.8	557	27.3	20	0.9	655	32.1
			Total	950	46.6	252	12.3	790	38.8	29	1.4	2,039	100.0
1998	Season	404	M	594	16.2	1,675	45.6	365	10.0	40	1.1	2,728	74.2
			F	0	0.0	443	12.0	454	12.3	50	1.3	947	25.8
			Total	594	16.2	2,118	57.6	819	22.3	90	2.4	3,675	100.0
1999	Season [b]	312	M										
			F										
			Total									1,888	
2000	Season	376	M	878	19.7	1,102	24.8	140	3.2	25	0.6	2,145	48.3
			F	30	0.7	1,493	33.6	724	16.3	50	1.1	2,297	51.7
			Total	908	20.4	2,595	58.4	864	19.5	75	1.7	4,442	100.0
2001	Season	262	M	153	10.1	159	10.5	282	18.6	9	0.6	606	39.9
			F	37	2.4	181	11.9	677	44.5	18	1.2	913	60.1
			Total	190	12.5	340	22.4	959	63.1	27	1.8	1,519	100.0
2002	Season	164	M	374	38.2	263	26.9	114	11.6	5	0.5	763	78.0
			F	0	0.0	44	4.5	160	16.3	12	1.2	216	22.0
			Total	374	38.2	307	31.4	274	27.9	17	1.7	979	100.0

-Continued-

Appendix D12.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 1.2 Harvest	1.2 %	1.3 Harvest	1.3 %	1.4 Harvest	1.4 %	1.5 Harvest	1.5 %	Total Harvest	Total %
2003	7/2	0	M										
	(6/24-7/2)		F										
			Subtotal									639	
	7/7	90	M	50	21.1	66	27.8	58	24.4	3	1.1	182	76.7
	(7/4-7)		F	0	0.0	13	5.5	39	16.7	2	1.1	55	23.3
			Subtotal	50	21.1	79	33.3	97	41.1	5	2.2	237	100.0
	7/10	52	M	155	28.8	103	19.2	113	21.2	11	1.9	381	71.2
	(7/9-8/28)		F	0	0.0	41	7.7	103	19.2	10	1.9	155	28.8
			Subtotal	155	28.8	144	26.9	216	40.4	21	3.8	536	100.0
	Season [b]	142	M										
			F										
			Total									1,412	
	Grand	1,677	M	2,907	23.0	3,414	27.0	1,134	9.0	88	0.7	7,626	60.3
	Total		F	109	0.9	2,198	17.4	2,572	20.3	150	1.2	5,028	39.7
			Total	3,016	23.8	5,612	44.3	3,706	29.3	238	1.9	12,654	100.0

[a] Age classes representing less than 1% of the Grand Total are excluded, discrepancies in sums are attributed to excluded age classes.

[b] Sampling dates do not meet criteria for estimating harvest percentages for some or all of the strata; Season" is not included in the "Grand Total".

Appendix D13.–Chinook salmon escapement project age and sex composition information, Goodnews Bay, Kuskokwim Bay, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.2 Esc.	1.2 %	1.3 Esc.	1.3 %	1.4 Esc.	1.4 %	1.5 Esc.	1.5 %	Total Esc.	Total %
1993	Season [a]	31	M										
			F										
			Total									2,317	
1994	Season [a]	208	M										
			F										
			Total									3,856	
1995	Season	308	M	842	17.4	665	13.7	1,191	24.6	20	0.4	2,718	56.2
			F	-	0.0	180	3.7	1,918	39.7	20	0.4	2,117	43.8
			Total	842	17.4	844	17.5	3,109	64.3	40	0.8	4,836	100.0
1996	Season [a]	42	M										
			F										
			Total									2,882	
1997	Season	121	M	1,716	58.4	174	5.9	295	10.1	-	0.0	2,202	75.0
			F	56	1.9	95	3.2	585	19.9	-	0.0	735	25.0
			Total	1,772	60.3	269	9.1	880	30.0	-	0.0	2,937	100.0
1998	Season [a]	0	M										
			F										
			Total									4,584	
1999	Season [a]	28	M										
			F										
			Subtotal									3,221	
2000	Season	214	M	298	11.9	1,131	44.9	244	9.7	10	0.4	1,712	68.0
			F	-	0.0	477	19.0	314	12.5	13	0.5	804	32.0
			Total	298	11.9	1,608	63.9	558	22.2	23	0.9	2,516	100.0
2001	Season [a]	39	M										
			F										
			Total									5,351	
2002	Season	199	M	957	31.0	683	22.1	428	13.9	13	0.4	2,091	67.8
			F	-	0.0	48	1.6	839	27.2	118	3.8	994	32.2
			Total	957	31.0	731	23.7	1,267	41.1	131	4.2	3,085	100.0

-Continued-

Appendix D13.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 1.2 Esc.	1.2 %	1.3 Esc.	1.3 %	1.4 Esc.	1.4 %	1.5 Esc.	1.5 %	Total Esc.	Total %
2003	6/22-7/9	73	M	92	11.0	311	37.0	69	8.2	12	1.3	496	58.9
	(6/18-7/9)		F	-	0.0	162	19.2	139	16.5	46	5.5	346	41.1
			Subtotal	92	11.0	473	56.2	208	24.7	58	6.8	842	100.0
	7/13-16	98	M	85	11.2	277	36.7	46	6.1	8	1.0	469	62.2
	(7/10-7/19)		F	-	0.0	100	13.3	162	21.5	23	3.1	285	37.8
			Subtotal	85	11.2	377	50.0	208	27.6	31	4.1	754	100.0
	7/20-28	70	M	147	18.6	135	17.1	124	15.7	12	1.5	429	54.3
	(7/20-9/17)		F	-	0.0	68	8.6	282	35.7	11	1.4	361	45.7
			Subtotal	147	18.6	203	25.7	406	51.4	23	2.9	790	100.0
	Season	241	M	324	13.6	724	30.3	240	10.0	31	1.3	1,394	58.4
			F	-	0.0	329	13.8	582	24.4	80	3.4	992	41.6
			Total	324	13.6	1,053	44.1	822	34.4	111	4.7	2,386	100.0
	Grand	1,083	M	4,137	26.3	3,377	21.4	2,398	15.2	74	0.5	10,117	64.2
	Total		F	56	0.4	1,129	7.2	4,238	26.9	231	1.5	5,642	35.8
			Total	4,193	26.6	4,505	28.6	6,636	42.1	305	1.9	15,760	100.0

Note: Age classes representing less than 1% of the Grand Total are excluded, discrepancies in sums are attributed to excluded age classes.

[a] Sampling dates do not meet criteria for estimating escapement percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix D14.–Chum salmon commercial fishery age and sex composition information, District 5, Goodnews Bay, Kuskokwim Bay, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 0.2 Harvest	0.2 %	0.3 Harvest	0.3 %	0.4 Harvest	0.4 %	0.5 Harvest	0.5 %	Total Harvest	Total %
1993	Season [a]	191	M										
			F										
			Total									10,657	
1994	Season [a]	512	M										
			F										
			Total									28,477	
1995	Season [a]	355	M										
			F										
			Total									19,832	
1996	Season [a]	190	M										
			F										
			Total									11,093	
1997	Season	805	M	72	0.6	1,808	15.4	3,725	31.8	38	0.3	5,643	48.1
			F	0	0.0	1,710	14.6	4,368	37.2	8	0.1	6,086	51.9
			Total	72	0.6	3,518	30.0	8,093	69.0	46	0.4	11,729	100.0
1998	Season	469	M	25	0.2	6,447	45.5	779	5.5	21	0.2	7,272	51.4
			F	46	0.3	5,685	40.2	1,106	7.8	46	0.3	6,883	48.6
			Total	71	0.5	12,132	85.7	1,885	13.3	67	0.5	14,155	100.0
1999	Season	455	M	23	0.2	4,193	36.3	954	8.2	31	0.3	5,200	45.0
			F	0	0.0	4,712	40.7	1,650	14.3	0	0.0	6,362	55.0
			Total	23	0.2	8,905	77.0	2,604	22.5	31	0.3	11,562	100.0
2000	Season	598	M	0	0.0	1,327	17.8	1,614	21.7	9	0.1	2,950	39.6
			F	0	0.0	1,840	24.7	2,639	35.4	22	0.3	4,500	60.4
			Total	0	0.0	3,167	42.5	4,253	57.1	31	0.4	7,450	100.0
2001	Season	647	M	5	0.2	576	19.6	556	18.9	0	0.0	1,138	38.6
			F	0	0.0	1,099	37.3	708	24.0	0	0.0	1,806	61.4
			Total	5	0.2	1,675	56.9	1,264	42.9	0	0.0	2,944	100.0
2002	Season	234	M	12	0.3	949	25.0	697	18.4	12	0.3	1,669	43.9
			F	0	0.0	962	25.3	1,122	29.5	46	1.2	2,130	56.1
			Total	12	0.3	1,911	50.3	1,819	47.9	58	1.5	3,799	100.0

-Continued-

Appendix D14.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 0.2 Harvest	0.2 %	0.3 Harvest	0.3 %	0.4 Harvest	0.4 %	0.5 Harvest	0.5 %	Total Harvest	Total %
2003	7/7	96	M	0	0.0	1,148	52.1	160	7.3	0	0.0	1,308	59.4
	(6/26-7/7)		F	0	0.0	757	34.4	92	4.2	46	2.1	895	40.6
			Subtotal	0	0.0	1,905	86.5	252	11.5	46	2.1	2,203	100.0
	7/9	95	M	0	0.0	973	49.5	104	5.3	62	3.2	1,139	57.9
	(7/9-11)		F	0	0.0	746	37.9	41	2.1	42	2.1	829	42.1
			Subtotal	0	0.0	1,719	87.4	145	7.4	104	5.3	1,968	100.0
	7/14	105	M	0	0.0	623	43.8	54	3.8	0	0.0	677	47.6
	(7/14-8/28)		F	0	0.0	677	47.6	68	4.8	0	0.0	745	52.4
			Subtotal	0	0.0	1,300	91.4	122	8.6	0	0.0	1,422	100.0
	Season	296	M	0	0.0	2,744	49.0	318	5.7	62	1.1	3,125	55.9
			F	0	0.0	2,180	39.0	201	3.6	87	1.6	2,468	44.1
			Total	0	0.0	4,924	88.0	519	9.3	149	2.7	5,593	100.0
	Grand	3,504	M	137	0.2	18,044	31.5	8,643	15.1	173	0.3	26,997	47.2
	Total		F	46	0.1	18,188	31.8	11,794	20.6	209	0.4	30,235	52.8
			Total	183	0.3	36,232	63.3	20,437	35.7	382	0.7	57,232	100.0

[a] Sampling dates do not meet criteria for estimating escapement percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix D15.–Chum salmon escapement project age and sex composition information, Goodnews Bay, Kuskokwim Bay, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 0.2 Esc.	0.2 %	0.3 Esc.	0.3 %	0.4 Esc.	0.4 %	0.5 Esc.	0.5 %	Total Esc.	Total %
1993	Season [a]	236	M										
			F										
			Total									14,472	
1994	Season [a]	207	M										
			F										
			Total									35,134	
1995	Season [a]	280	M										
			F										
			Total									33,699	
1996	Season [a]	311	M										
			F										
			Total									40,125	
1997	Season	526	M	42	0.3	2,836	16.4	6,691	38.7	42	0.2	9,611	55.6
			F	25	0.1	2,619	15.1	5,041	29.1	0	0.0	7,685	44.4
			Total	67	0.4	5,455	31.5	11,732	67.8	42	0.2	17,296	100.0
1998	Season	505	M	54	0.2	12,354	42.7	2,077	7.2	0	0.0	14,485	50.1
			F	35	0.1	12,520	43.3	1,805	6.2	60	0.2	14,420	49.9
			Total	89	0.3	24,874	86.1	3,882	13.4	60	0.2	28,905	100.0
1999	Season	672	M	0	0.0	6,273	32.1	3,462	17.7	55	0.3	9,791	50.1
			F	0	0.0	6,496	33.3	3,247	16.6	0	0.0	9,742	49.9
			Total	0	0.0	12,769	65.4	6,709	34.3	55	0.3	19,533	100.0
2000	Season [a]	418	M										
			F										
			Total									13,803	
2001	Season	768	M	86	0.3	8,300	31.0	3,518	13.1	24	0.1	11,928	44.5
			F	95	0.4	10,628	39.6	4,178	15.6	0	0.0	14,901	55.5
			Total	181	0.7	18,928	70.6	7,696	28.7	24	0.1	26,829	100.0
2002	Season	725	M	475	1.6	4,301	14.2	8,499	28.0	376	1.2	13,650	45.0
			F	399	1.3	6,944	22.9	9,262	30.6	44	0.2	16,650	55.0
			Total	874	2.9	11,245	37.1	17,761	58.6	420	1.4	30,300	100.0

-Continued-

Appendix D15.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 0.2 Esc.	0.2 %	0.3 Esc.	0.3 %	0.4 Esc.	0.4 %	0.5 Esc.	0.5 %	Total Esc.	Total %
2003	6/27-7/7	59	M	0	0.0	653	35.6	218	11.8	93	5.1	963	52.5
	(6/18-7/8)		F	0	0.0	621	33.9	186	10.2	62	3.4	870	47.5
			Total	0	0.0	1,274	69.5	404	22.0	155	8.5	1,833	100.0
2003	7/9-11	155	M	0	0.0	2,112	43.9	559	11.6	155	3.2	2,826	58.7
	(7/9-15)		Subtotal	0	0.0	3,758	78.1	839	17.4	217	4.5	4,814	100.0
	7/17-19	184	M	0	0.0	3,182	54.9	252	4.4	63	1.1	3,498	60.3
	(7/16-22)		F	32	0.5	2,017	34.8	252	4.3	0	0.0	2,300	39.7
			Subtotal	32	0.5	5,199	89.7	504	8.7	63	1.1	5,798	100.0
	7/24-26	168	M	55	0.6	3,502	38.1	875	9.5	55	0.6	4,487	48.8
	(7/23-9/18)		F	54	0.6	4,541	49.4	110	1.2	0	0.0	4,705	51.2
			Subtotal	109	1.2	8,043	87.5	985	10.7	55	0.6	9,192	100.0
	Season	566	M	55	0.3	9,449	43.7	1,904	8.8	366	1.7	11,774	54.4
			F	86	0.4	8,825	40.8	827	3.8	124	0.6	9,863	45.6
			Total	141	0.7	18,274	84.5	2,731	12.6	490	2.3	21,637	100.0
	Grand	3,762	M	712	0.5	43,513	30.1	26,151	18.1	863	0.6	71,239	49.3
	Total		F	640	0.4	48,032	33.2	24,360	16.9	228	0.2	73,261	50.7
			Total	1,352	0.9	91,545	63.4	50,511	35.0	1,091	0.8	144,500	100.0

[a] Sampling dates do not meet criteria for estimating escapement percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix D16.–Sockeye salmon commercial fishery age and sex composition information, Goodnews Bay, Kuskokwim Bay, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.2 Harvest	1.2 %	1.3 Harvest	1.3 %	1.4 Harvest	1.4 %	2.3 Harvest	2.3 %	Total Harvest	Total %
1993	Season	489	M	8,243	13.9	12,888	21.7	496	0.8	2,841	4.8	27,012	45.6
			F	7,666	12.9	18,702	31.5	472	0.8	1,951	3.3	32,283	54.4
			Total	15,908	26.8	31,590	53.3	968	1.6	4,791	8.1	59,293	100.0
1994	Season	485	M	905	1.3	25,844	37.2	878	1.3	2,646	3.8	32,399	46.6
			F	311	0.4	32,136	46.2	363	0.5	2,112	3.0	37,095	53.4
			Total	1,216	1.8	57,980	83.4	1,241	1.8	4,758	6.8	69,490	100.0
1995	Season [a]	369	M										
			F										
			Total									37,351	
1996	Season [a]	343	M										
			F										
			Total									30,717	
1997	Season	833	M	2,618	8.3	8,991	28.6	825	2.6	2,474	7.9	16,156	51.4
			F	1,730	5.5	8,753	27.8	1,312	4.2	2,216	7.0	15,295	48.6
			Total	4,348	13.8	17,744	56.4	2,137	6.8	4,690	14.9	31,451	100.0
1998	Season	740	M	1,317	4.9	10,529	38.8	77	0.3	1,582	5.8	14,741	54.3
			F	1,087	4.0	9,271	34.1	53	0.2	1,241	4.6	12,420	45.7
			Total	2,404	8.9	19,800	72.9	130	0.5	2,823	10.4	27,161	100.0
1999	Season	532	M	2,978	13.0	8,675	37.9	364	1.6	823	3.6	13,442	58.7
			F	1,264	5.5	7,102	31.0	428	1.9	478	2.1	9,468	41.3
			Total	4,242	18.5	15,777	68.9	792	3.5	1,301	5.7	22,910	100.0
2000	Season	715	M	1,634	4.4	18,311	49.1	-	0.0	1,173	3.2	22,271	59.8
			F	1,144	3.1	12,287	33.0	-	0.0	415	1.1	14,981	40.2
			Total	2,778	7.5	30,598	82.1	-	0.0	1,588	4.3	37,252	100.0
2001	Season	576	M	375	1.5	10,937	42.7	360	1.4	839	3.3	12,580	49.0
			F	184	0.7	12,217	47.6	196	0.8	449	1.7	13,074	51.0
			Total	559	2.2	23,154	90.3	556	2.2	1,288	5.0	25,654	100.0
2002	Season	539	M	761	12.1	1,671	26.5	357	5.7	411	6.5	3,570	56.6
			F	460	7.3	1,579	25.1	204	3.2	261	4.2	2,734	43.4
			Total	1,221	19.4	3,250	51.6	561	8.9	672	10.7	6,304	100.0

-Continued-

Appendix D16.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 1.2 Harvest	1.2 %	1.3 Harvest	1.3 %	1.4 Harvest	1.4 %	2.3 Harvest	2.3 %	Total Harvest	Total %
2003	7/7	160	M	755	4.4	8,412	48.8	108	0.7	1,618	9.4	11,216	65.0
	(6/24-7/7)		F	539	3.1	4,098	23.7	108	0.6	1,186	6.9	6,039	35.0
			Subtotal	1,294	7.5	12,510	72.5	216	1.3	2,804	16.3	17,255	100.0
	7/14	84	M	283	3.6	3,965	50.0	94	1.2	944	11.9	5,664	71.4
	(7/9-14)		F	95	1.2	1,983	25.0	0	0.0	189	2.4	2,266	28.6
			Subtotal	378	4.8	5,948	75.0	64	1.2	1,133	14.3	7,930	100.0
	7/16	85	M	299	7.1	1,894	44.7	100	2.4	648	15.3	2,992	70.6
	(7/16-28)		F	150	3.5	798	18.8	0	0.0	299	7.1	1,246	29.4
			Subtotal	449	10.6	2,692	63.5	100	2.4	947	22.4	4,238	100.0
	Season	329	M	1,337	4.5	14,272	48.5	302	1.0	3,210	10.9	19,872	67.5
			F	783	2.7	6,878	23.4	108	0.4	1,674	5.7	9,551	32.5
			Total	2,120	7.2	21,150	71.9	410	1.4	4,884	16.6	29,423	100.0
	Grand	5,238	M	20,168	6.5	112,118	36.3	3,659	1.2	15,999	5.2	162,043	55.1
	Total		F	14,629	4.7	108,925	35.3	3,136	1.0	10,797	3.5	146,901	44.9
			Total	34,797	11.3	221,043	71.5	6,795	2.2	26,795	8.7	308,938	100.0

Note: Age classes representing less than 1% of the Grand Total are excluded, discrepancies in sums are attributed to excluded age classes.

[a] Sampling dates do not meet criteria for estimating escapement percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix D17.–Sockeye salmon escapement project age and sex composition information, Goodnews Bay, Kuskokwim Bay, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.2 Esc.	1.2 %	1.3 Esc.	1.3 %	1.4 Esc.	1.4 %	2.3 Esc.	2.3 %	Total Esc.	Total %
1993	Season [a]	312	M										
			F										
			Total									26,244	
1994	Season [a]	160	M										
			F										
			Total									46,877	
1995	Season	454	M	1,762	4.5	15,844	40.6	797	2.0	508	1.3	19,351	49.6
			F	3,577	9.2	14,132	36.2	256	0.7	965	2.5	19,661	50.4
			Total	5,340	13.7	29,976	76.8	1,053	2.7	1,473	3.8	39,009	100.0
1996	Season [a]	246	M										
			F										
			Total									57,504	
1997	Season	733	M	2,357	6.6	10,920	30.7	367	1.0	1,917	5.4	16,339	46.0
			F	5,081	14.3	11,528	32.5	515	1.5	994	2.8	19,191	54.0
			Total	7,438	20.9	22,448	63.2	882	2.5	2,911	8.2	35,530	100.0
1998	Season [a]	542	M										
			F										
			Total									47,951	
1999	Season	789	M	2,460	5.1	20,220	41.9	594	1.2	1,188	2.5	24,884	51.6
			F	3,117	6.5	17,332	36.0	227	0.5	1,269	2.6	23,321	48.4
			Total	5,577	11.6	37,552	77.9	821	1.7	2,457	5.1	48,205	100.0
2000	Season	607	M	142	0.4	13,511	41.4	324	1.0	658	2.0	14,962	45.9
			F	509	1.6	16,235	49.8	141	0.4	232	0.7	17,670	54.1
			Total	651	2.0	29,746	91.2	465	1.4	890	2.7	32,632	100.0
2001	Season	432	M	196	1.0	8,448	40.7	1,010	4.9	864	4.2	10,612	51.1
			F	231	1.1	7,993	38.5	985	4.7	725	3.5	10,154	48.9
			Total	427	2.1	16,441	79.2	1,995	9.6	1,589	7.7	20,766	100.0
2002	Season	485	M	4,527	20.5	2,905	13.1	390	1.8	875	4.0	9,783	44.3
			F	7,523	34.0	3,200	14.5	185	0.8	322	1.4	12,318	55.7
			Total	12,050	54.5	6,105	27.6	575	2.6	1,197	5.4	22,101	100.0

-Continued-

Appendix D17.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 1.2 Esc.	1.2 %	1.3 Esc.	1.3 %	1.4 Esc.	1.4 %	2.3 Esc.	2.3 %	Total Esc.	Total %
2003	6/22-29	180	M	348	2.2	6,860	43.9	347	2.2	174	1.1	7,816	50.0
	(6/18-29)		F	347	2.2	7,295	46.7	87	0.6	87	0.6	7,815	50.0
			Subtotal	695	4.4	14,155	90.6	434	2.8	261	1.7	15,631	100.0
	7/4	146	M	843	6.1	7,210	52.7	0	0.0	94	0.7	8,240	60.3
	(6/30-7/8)		F	749	5.5	4,401	32.2	94	0.7	187	1.4	5,431	39.7
			Subtotal	1,592	11.6	11,611	84.9	94	0.7	281	2.1	13,671	100.0
	7/11	160	M	0	0.0	3,823	46.3	103	1.3	207	2.5	4,133	50.0
	(7/9-14)		F	568	6.9	3,306	40.0	52	0.6	103	1.3	4,132	50.0
			Subtotal	568	6.9	7,129	86.3	155	1.9	310	3.8	8,265	100.0
	7/17	171	M	239	3.5	3,470	50.9	40	0.6	120	1.7	3,948	57.9
	(7/15-9/18)		F	678	10.0	2,074	30.4	40	0.6	40	0.6	2,872	42.1
			Subtotal	917	13.5	5,544	81.3	80	1.2	160	2.3	6,820	100.0
	Season	657	M	1,429	3.2	21,363	48.1	491	1.1	594	1.3	24,136	54.4
			F	2,343	5.3	17,075	38.5	272	0.6	417	1.0	20,251	45.6
			Total	3,772	8.5	38,438	86.6	763	1.7	1,011	2.3	44,387	100.0
	Grand	4,157	M	12,873	5.3	93,211	38.4	3,973	1.6	6,604	2.7	120,067	49.5
	Total		F	22,381	9.2	87,495	36.1	2,581	1.1	4,924	2.0	122,566	50.5
			Total	35,255	14.5	180,706	74.5	6,554	2.7	11,528	4.8	242,630	100.0

Note: Age classes representing less than 1% of the Grand Total are excluded, discrepancies in sums are attributed to excluded age classes.

[a] Sampling dates do not meet criteria for estimating escapement percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix D18.–Coho salmon commercial fishery age and sex composition information, District 5, Goodnews Bay, Kuskokwim Bay, 1993–2003**.**

Year	Project	Sample Size	Sex	Age Class 1.1 Harvest	1.1 %	2.1 Harvest	2.1 %	3.1 Harvest	3.1 %	Total Harvest	Total %
1993	Season	429	M	346	1.7	8,583	42.9	602	3.0	9,532	47.6
			F	239	1.2	9,925	49.6	320	1.6	10,484	52.4
			Total	585	2.9	18,509	92.5	922	4.6	20,014	100.0
1994	Season	415	M	2,460	5.2	21,064	44.3	1,114	2.3	24,638	51.9
			F	1,803	3.8	20,030	42.2	1,027	2.2	22,860	48.1
			Total	4,263	9.0	41,094	86.5	2,141	4.5	47,499	100.0
1995	Season	299	M	237	1.3	8,542	47.8	237	1.3	9,017	50.4
			F	326	1.8	7,967	44.6	570	3.2	8,862	49.6
			Total	563	3.1	16,509	92.4	808	4.5	17,875	100.0
1996	Season	457	M	1,968	4.5	18,266	41.7	680	1.6	20,913	47.7
			F	803	1.8	21,262	48.5	857	2.0	22,923	52.3
			Total	2,771	6.3	39,528	90.2	1,537	3.5	43,836	100.0
1997	Season [a]	271	M								
			F								
			Total							2,983	
1998	Season	315	M	1,022	4.8	8,743	41.2	330	1.6	10,095	47.5
			F	1,080	5.1	9,880	46.5	191	0.9	11,151	52.5
			Subtotal	2,102	9.9	18,623	87.7	521	2.5	21,246	100.0
1999	Season	205	M	145	5.8	1,101	44.5	47	1.9	1,293	52.3
			F	111	4.5	999	40.4	71	2.9	1,181	47.7
			Total	256	10.3	2,100	84.9	118	4.8	2,474	100.0
2000	Season	439	M	84	0.6	7,270	46.8	84	0.6	7,439	47.9
			F	21	0.1	7,882	50.8	190	1.2	8,092	52.1
			Total	105	0.7	15,152	97.6	274	1.8	15,531	100.0
2001	Season	414	M	118	1.3	4,492	48.4	272	2.9	4,883	52.6
			F	331	3.5	3,823	41.2	239	2.6	4,392	47.4
			Total	449	4.8	8,315	89.6	511	5.5	9,275	100.0
2003	8/1	51	M	63	3.9	1,094	68.6	94	5.9	1,250	78.4
	(7/11-8/6)		F	31	2.0	312	19.6	0	0.0	344	21.6
			Subtotal	94	5.9	1,406	88.2	94	5.9	1,594	100.0
	8/14	58	M	87	1.7	3,275	63.8	87	1.7	3,450	67.2
	(8/8-15)		F	87	1.7	1,417	27.6	180	3.5	1,684	32.8
			Subtotal	175	3.4	4,692	91.4	267	5.2	5,134	100.0

-Continued-

Appendix D18.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 1.1 Harvest	1.1 %	2.1 Harvest	2.1 %	3.1 Harvest	3.1 %	Total Harvest	Total %
2003 (Cont.)	8/25	0	M								
			F								
			Subtotal							5,930	
	Season [a]	109	M								
			F								
			Total							12,658	
	Grand Total	2,973	M	6,380	3.6	78,061	43.9	3,367	1.9	87,810	49.4
			F	4,713	2.7	81,768	46.0	3,465	1.9	89,944	50.6
			Total	11,094	6.2	159,830	89.9	6,831	3.8	177,750	100.0

[a] Sampling dates do not meet criteria for estimating escapement percentages for some or all of the strata; "Season" is not included in the "Grand Total".

Appendix D19.–Coho salmon escapement project age and sex composition information, Goodnews Bay, Kuskokwim Bay, 1993–2003.

Year	Project	Sample Size	Sex	Age Class 1.1 Esc.	1.1 %	2.1 Esc.	2.1 %	3.1 Esc.	3.1 %	Total Esc.	Total %
1995	Season	191	M	117	2.2	2,948	54.4	78	1.4	3,143	58.0
			F	19	0.4	2,136	39.5	117	2.2	2,272	42.0
			Total	136	2.5	5,084	93.9	195	3.6	5,415	100.0
1996	Season [a]	150	M	141	1.3	6,445	59.3	217	2.0	6,880	63.3
			F	76	0.7	3,695	34.0	217	2.0	3,989	36.7
			Total	217	2.0	10,141	93.3	435	4.0	10,869	100.0
1997	Season [a]	0	M								
			F								
			Total							9,619	
1998	Season	429	M	1,208	3.4	13,396	37.8	322	0.9	14,926	42.1
			F	1,779	5.0	18,358	51.8	378	1.1	20,515	57.9
			Total	2,987	8.4	31,574	89.6	700	2.0	35,441	100.0
1999	Season	411	M	653	5.7	4,303	37.3	143	1.2	5,099	44.2
			F	496	4.3	5,858	50.7	92	0.8	6,446	55.8
			Total	1,149	10.0	10,161	88.0	235	2.0	11,545	100.0
2000	Season	419	M	0	0.0	10,215	51.9	0	0.0	10,215	51.9
			F	304	1.5	9,046	46.0	112	0.6	9,461	48.1
			Total	304	1.5	19,261	97.9	112	0.6	19,676	100.0
2001	Season	439	M	1,061	5.4	8,423	42.9	210	1.1	9,694	49.4
			F	327	1.7	9,048	46.1	557	2.8	9,932	50.6
			Total	1,388	7.1	17,471	89.0	767	3.9	19,626	100.0
2002	Season	564	M	207	0.8	14,579	53.3	1,160	4.2	15,947	58.3
			F	178	0.6	10,757	39.3	483	1.8	11,417	41.7
			Total	385	1.4	25,336	92.6	1,643	6.0	27,364	100.0
2003	8/24	52	M	1,078	5.8	9,338	50.0	1,078	5.8	11,494	61.5
	(7/11-8/28)		F	359	1.9	6,106	32.7	718	3.8	7,183	38.5
			Subtotal	1,437	7.7	15,444	82.7	1,796	9.6	18,677	100.0
	9/1	59	M	611	3.4	7,024	39.0	1,222	6.8	8,857	49.2
	(8/29-9/5)		F	305	1.7	8,857	49.1	0	0.0	9,162	50.8
			Subtotal	916	5.1	15,881	88.1	1,222	6.8	18,019	100.0

-Continued-

Appendix D19.–Page 2 of 2

Year	Project	Sample Size	Sex	Age Class 1.1 Esc.	1.1 %	2.1 Esc.	2.1 %	3.1 Esc.	3.1 %	Total Esc.	Total %
2003	9/9	56	M	288	1.8	8,632	53.6	288	1.8	9,208	57.1
(Cont.)	(9/6-18)		F	0	0.0	6,043	37.5	863	5.3	6,906	42.9
			Subtotal	288	1.8	14,675	91.1	1,151	7.1	16,114	100.0
	Season	167	M	1,976	3.7	24,995	47.3	2,587	4.9	29,558	56.0
			F	665	1.3	21,006	39.8	1,581	3.0	23,252	44.0
			Total	2,641	5.0	46,001	87.1	4,168	7.9	52,810	100.0
	Grand	2,620	M	5,222	3.0	78,859	45.9	4,500	2.6	88,582	51.5
	Total		F	3,768	2.2	76,209	44.3	3,320	1.9	83,295	48.5
			Total	8,990	5.2	154,888	90.1	7,820	4.5	171,877	100.0

[a] Sampling dates do not meet criteria for estimating escapement percentages for some or all of the strata; "Season" is not included in the "Grand Total".

APPENDIX E. KUSKOKWIM AREA HERRING

Appendix E1.–Herring aerial survey estimated biomass and commercial harvest, Kuskokwim Area, 1998–2003.

District	Estimated Biomass (st)	Harvest				Roe%	Estimated Value ($1000's)	Exploitation Rate (%)
		Sac-roe	Bait	Waste	Total			
2003								
Security Cove	10,600	-			-		-	-
Goodnews Bay	8,300	36			36	9.0	5	0.4
Cape Avinof	3,812	176			176	10.5	36	4.6
Nelson Is.	6,130	816			816	10.8	187	13.3
Nunivak Is.	5,182	229			229	8.4	7	4.4
Total	34,024	1,257	-	-	1,257	9.7	235	3.7
2002								
Security Cove	4,748	106	3	0	109	10.1	10	2.3
Goodnews Bay	5,529	13	0	0	13	9.7	1	0.2
Cape Avinof	3,491	79	0	0	79	9.6	8	2.3
Nelson Is.	6,130	950	0	0	950	10.4	101	15.5
Nunivak Is.	5,422	176	0	0	175	7.5	19	3.2
Total	25,320	1,324	3	0	1,326	10.0	139	5.2
2001								
Security Cove	5,206	1,024	0	0	1,024	10.7	110	19.7
Goodnews Bay	5,755	45	0	0	45	11.3	6	0.8
Cape Avinof	3,486	231	0	0	231	9.8	23	6.6
Nelson Is.	6,057	678	0	0	678	10.4	71	11.2
Nunivak Is.	5,657	-	-	-	-	-	-	0.0
Total	26,161	1,978	0	0	1,978	10.5	209	7.6
2000								
Security Cove	5,237	284	15	0	299	10.7	62	5.7
Goodnews Bay	6,348	19	1	1	20	9.2	3	0.3
Cape Avinof	3,210	370	7	0	377	9.6	71	11.8
Nelson Is.	4,672	754	52	1	807	9.8	150	17.3
Nunivak Is.	3,487	41	0	0	41	9.9	12	1.2
Total	22,954	1,468	75	2	1,544	9.9	299	6.7
1999								
Security Cove	5,261	1,016	56	1	1,072	11.0	338	20.4
Goodnews Bay	6,896	1,332	33	0	1,366	11.3	301	19.8
Cape Avinof	3,555	516	18	0	533	11.0	185	15.0
Nelson Is.	6,655	1,267	97	2	1,366	11.2	430	20.5
Nunivak Is.	3,319	-	-	-	-	-	-	0.0
Total	25,686	4,131	204	3	4,337	11.1	1,254	16.9
1998								
Security Cove	4,017	1,012	0	0	1,012	11.5	232	25.2
Goodnews Bay	4,064	831	0	0	831	11.3	188	20.5
Cape Avinof	4,287	656	0	0	656	11.6	152	15.3
Nelson Is.	7,136	1,250	0	0	1,250	11.8	296	17.5
Nunivak Is.	3,778	2	0	0	2	9.8	0	0.1
Total	23,282	3,751	0	0	3,751	11.6	868	16.1

Appendix E2.–Commercial herring fishing number of buyer, fishers and deliveries, Kuskokwim Area, 1997–2003.

			Number of Fishers		
Year	District	Number of Buyers	Gilllnet	Purse Seine [a]	Totals
2003	Security Cove	0	0	0	0
	Goodnews Bay	1	12	0	12
	Cape Avinof	1	22	0	22
	Nelson Island	1	44	0	44
	Nunivak Island	1	0	19	19
2002	Security Cove	5	25	0	25
	Goodnews Bay	1	5	0	5
	Cape Avinof	1	37	0	37
	Nelson Island	1	54	0	54
	Nunivak Island	1	0	29	29
2001	Security Cove	6	56	0	56
	Goodnews Bay	1	23	0	23
	Cape Avinof	1	45	0	45
	Nelson Island	1	49	0	49
	Nunivak Island	0	0	0	0
2000	Security Cove	10	79	0	79
	Goodnews Bay	2	57	0	57
	Cape Avinof	1	86	0	86
	Nelson Island	4	86	0	86
	Nunivak Island	1	0	35	35
1999	Security Cove	8	87	0	87
	Goodnews Bay	5	94	0	94
	Cape Avinof	3	117	0	117
	Nelson Island	4	94	0	94
	Nunivak Island	0	0	0	0
1998	Security Cove	9	78	0	78
	Goodnews Bay	2	84	0	84
	Cape Avinof	2	109	0	109
	Nelson Island	2	86	0	86
	Nunivak Island	1	7	1 [b]	8
1997	Security Cove	14	222	0	222
	Goodnews Bay	3	139	0	139
	Cape Avinof	2	145	0	145
	Nelson Island	3	105	0	105
	Nunivak Island	1	12	0	12

[a] In 2000, regulation was adopted for the development of a cooperative purse seine herring fishery only in the Nunivak Island District. Number represents permit holders registered to participate.

[b] Department purse seine fishery feasibility study.

Appendix E3.–Commercial herring fishery harvest, effort and value, Kuskokwim Area, 1996–2003.

Year	District	Harvest (st)	Number of permits	Hours fished	CPUE[a] (st)	Estimated value	Average Income Per Permit
2003	Security Cove	No Commercial Opening					
	Goodnews Bay	36	12	50.5	0.06	$4,600	$383
	Cape Avinof	176	22	74.5	0.11	$36,100	$1,641
	Nelson Is.	816	44	78.0	0.24	$187,500	$4,261
	Nunivak Is.	229	19	204.0	[b]	$7,200	$379
2002	Security Cove	109	25	17.0	0.27	$10,000	$400
	Goodnews Bay	13	5	28.5	0.09	$1,000	$200
	Cape Avinof	79	37	97.0	0.02	$8,000	$216
	Nelson Is.	950	54	80.5	0.22	$101,000	$1,870
	Nunivak Is.	175	29	243.0	[b]	$19,000	$655
2001	Security Cove	1,024	56	17.5	1.04	$110,000	$1,964
	Goodnews Bay	45	23	16.0	0.12	$6,000	$261
	Cape Avinof	231	45	63.0	0.08	$23,000	$511
	Nelson Is.	678	49	25.5	0.54	$66,000	$1,347
	Nunivak Is.	No Commercial Opening					
2000	Security Cove	284	79	16.0	0.22	$54,386	$688
	Goodnews Bay	20	57	27.0	0.01	$3,318	$58
	Cape Avinof	366	86	59.0	0.07	$68,532	$797
	Nelson Is.	813	86	20.0	0.47	$154,280	$1,794
	Nunivak Is.	40	34	93.0	[b]	$11,880	$349
1999	Security Cove	1,072	97	9.0	1.23	$338,000	$3,485
	Goodnews Bay	1,366	94	49.0	0.30	$301,000	$3,202
	Cape Avinof	533	117	51.0	0.09	$185,000	$1,581
	Nelson Is.	1,366	94	22.0	0.66	$430,000	$4,574
	Nunivak Is.	No Commercial Opening					
1998	Security Cove	1,012	78	28.5	0.46	$202,340	$2,594
	Goodnews Bay	831	84	79.0	0.13	$166,220	$1,979
	Cape Avinof	656	109	44.0	0.14	$131,120	$1,203
	Nelson Is.	1,250	86	76.0	0.19	$235,900	$2,743
	Nunivak Is.	202	7	6.0	4.81	$440	$63
1997	Security Cove	892	222	10.5	0.38	$221,000	$995
	Goodnews Bay	805	139	65.0	0.09	$228,000	$1,640
	Cape Avinof	687	145	26.0	0.18	$157,000	$1,083
	Nelson Is.	778	105	10.0	0.74	$198,000	$1,886
	Nunivak Is.	-	12	70.0	0.00	$0	$0
1996	Security Cove	1,859	326	5.5	1.04	$1,252,270	$3,841
	Goodnews Bay	1,204	182	45.0	0.15	$893,900	$4,912
	Cape Avinof	820	161	57.0	0.09	$659,280	$4,095
	Nelson Is.	1,031	109	25.0	0.38	$676,624	$6,208
	Nunivak Is.	101	24	256.0	0.02	$38,234	$1,593

[a] CPUE = catch per permit per hour fished.

[b] Purse seine harvest is not a reflection of permit holder effort.

Appendix E4.–Subsistence herring harvest (tons) and effort data from select Bering Sea areas, Alaska, 1983–2003.

Village	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
								Nelson Island													
Tununak	94	-	43	63	48	49	47	54	21	32	45	42	30	26	-	-	-	-	-	-	-
Umkumiut	-	-	-	-	[c]	[c]	[c]	[c]	[c]	[c]	-	-	-	-	-	-	-	-	-	-	-
Toksook Bay	-	-	46	70	51	58	52	46	40	43	23	53	46	42	-	-	-	-	-	-	-
Nightmute	-	-	3[b]	21	15	16	15	18	8	10	9	13	13	16	-	-	-	-	-	-	-
Newtok	-	-	7[b]	13	10	12	10	8	1	7	6	9	9	12	-	-	-	-	-	-	-
Total	94	-	99	167	124	136	124	126	70	92	82	117	98	95	-	-	-	-	-	-	-
No. Fishing Families	43	-	65[b]	72[b]	96	104	[b]	100	85	97	89	-	91	96	-	-	-	-	-	-	-
								Nunivak Island													
Mekoryuk	-	-	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No. Fishing Families	-	-	11	6[b]	-	-	-	19	20	17	16	-	-	-	-	-	-	-	-	-	-
								Other Kuskokwim Delta													
Chefornak	-	-	13[b]	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kipnuk	-	-	9	-	14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kongiganak	-	-	3	2[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kwigillingok	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	30	2	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
No. Fishing Families	-	-	55[b]	12[b]	49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
								Yukon Delta													
Scammon Bay	3	4	2	2	1	2	1	2	1	1	3	1	1	1	1	<1	6	4	2	<1	3
Chevak	1	3	2	1	1	2	<1	1	<1	<1	<1	2	1	<1	<1	<1	2	1	1	<1	1
Hooper Bay	5	4	4	4	1	4	2	6	2	2	2	3	4	2	2	1	4	1	<1	1	2
Total	9	11	8	6	3	7	3	8	3	4	5	6	6	3	3	2	13	6	3	2	6
No. Fishing Families	37	47	44	40	23	32	24	32	18	30	42	48	42	29	34	15	67	50	23	20	34

[a] Survey results are believed to accurately reflect harvest trends, however, reported catches reflect minimum figures since all fishermen cannot be contacted.

[b] Fishing families were not interviewed or only a portion of fishing families were interviewed as harvest was enumerated while on drying racks.

[c] Umkumiut effort was included with Tununak.