

2010 Kuskokwim Area Management Report

by

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H_A
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	e
hectare	ha	at	@	catch per unit effort	CPUE
kilogram	kg	compass directions:		coefficient of variation	CV
kilometer	km	east	E	common test statistics	(F, t, χ^2 , etc.)
liter	L	north	N	confidence interval	CI
meter	m	south	S	correlation coefficient	
milliliter	mL	west	W	(multiple)	R
millimeter	mm	copyright	©	correlation coefficient	
		corporate suffixes:		(simple)	r
Weights and measures (English)		Company	Co.	covariance	cov
cubic feet per second	ft ³ /s	Corporation	Corp.	degree (angular)	°
foot	ft	Incorporated	Inc.	degrees of freedom	df
gallon	gal	Limited	Ltd.	expected value	E
inch	in	District of Columbia	D.C.	greater than	>
mile	mi	et alii (and others)	et al.	greater than or equal to	≥
nautical mile	nmi	et cetera (and so forth)	etc.	harvest per unit effort	HPUE
ounce	oz	exempli gratia		less than	<
pound	lb	(for example)	e.g.	less than or equal to	≤
quart	qt	Federal Information Code	FIC	logarithm (natural)	ln
yard	yd	id est (that is)	i.e.	logarithm (base 10)	log
		latitude or longitude	lat. or long.	logarithm (specify base)	log ₂ , etc.
Time and temperature		monetary symbols		minute (angular)	'
day	d	(U.S.)	\$, ¢	not significant	NS
degrees Celsius	°C	months (tables and figures): first three letters	Jan, ..., Dec	null hypothesis	H_0
degrees Fahrenheit	°F	registered trademark	®	percent	%
degrees kelvin	K	trademark	™	probability	P
hour	h	United States	U.S.	probability of a type I error	
minute	min	(adjective)		(rejection of the null hypothesis when true)	α
second	s	United States of America (noun)	USA	probability of a type II error	
		U.S.C.	United States Code	(acceptance of the null hypothesis when false)	β
Physics and chemistry		U.S. state	use two-letter abbreviations (e.g., AK, WA)	second (angular)	"
all atomic symbols				standard deviation	SD
alternating current	AC			standard error	SE
ampere	A			variance	
calorie	cal			population	Var
direct current	DC			sample	var
hertz	Hz				
horsepower	hp				
hydrogen ion activity	pH				
(negative log of)					
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

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2010 KUSKOKWIM AREA MANAGEMENT REPORT

by

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Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

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ABSTRACT

The 2010 Kuskokwim Area Management Report is an annual volume reporting on management activities of the Alaska Department of Fish and Game, Division of Commercial Fisheries staff in the Kuskokwim River and Bay. The report emphasizes a descriptive account of the information, decisions, and rationale used to manage the Kuskokwim River and Bay commercial salmon (Chinook, *Oncorhynchus tshawytscha*, chum *O. keta*, sockeye *O. nerka*, coho, *O. kisutch*), subsistence, and Pacific herring *Clupea pallasii* fisheries, and outlines basic management objectives and procedures. We have included all information deemed necessary to fully explain the rationale behind management decisions in 2010. All narrative and data tabulations in this volume are combined in four sections, salmon, subsistence, herring, and miscellaneous fisheries, to aid in the use of the document as a reference source. The extensive set of tables has been updated to record previously unlisted data for easy reference. Fisheries data in this report supersedes information in previous reports. Corrections or comments should be directed to the Anchorage office. Attention Editor, Charles Brazil, Kuskokwim Area Management Biologist, 333 Raspberry Road, Anchorage, Alaska, 99518.

Keywords: Kuskokwim River, Kuskokwim Bay, subsistence fisheries, commercial fisheries, Pacific salmon *Oncorhynchus* spp., Chinook salmon, *Oncorhynchus tshawytscha*, chum *O. keta*, sockeye *O. nerka*, coho, *O. kisutch*, Pacific herring, *Clupea pallasii*, subsistence, Annual Management Report (AMR).

INTRODUCTION

MANAGEMENT AREA DESCRIPTION

The Kuskokwim Management 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).

There are 38 communities consisting of approximately 4,500 households within the Kuskokwim Area. Of those households, approximately 75% are situated within the drainage of the Kuskokwim River (Fall et al. 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, Cheforak and Mekoryuk, situated near the Bering Sea Coast, harvest salmon from coastal waters as well as local tributaries. There are over 40 fish species present in the Kuskokwim Management Area (Appendix A1).

There are 4 commercial salmon fishing Districts in Kuskokwim Area: 1, 2, 4, and 5 (5 AAC 07.200 Fishing districts, subdistricts, and sections). District 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 the Alaska Department of Fish and Game (ADF&G) regulatory markers located at Bogus Creek, about 9 miles above the Tuluksak River (Figure 2). The downstream boundary has been in effect since 1986, and the upstream boundary was established in 1994 (Appendix A2). 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 and includes Statistical Areas 335-13 and 335-14. Subdistrict 1B consists of that portion of District 1 downstream from the Steamboat Slough regulatory markers and includes Statistical Areas 335-11 and 335-12. Subdistrict

registration requirements are in effect in District 1 (5 AAC 07.370 Registration and reregistration requirements for District 1 of the Kuskokwim Area).

District 2, Middle Kuskokwim River, consists of 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 A2).

The District 4 commercial salmon fishery was established in 1960 (Appendix A2). The district's boundaries extend from the northern-most edge of the mouth of Weelung Creek to the southern-most tip of the south mouth of Arolik River and expand 3 miles from the coast into Kuskokwim Bay (Figure 4). During 2001 to 2004, the northern boundary of District 4 was the northern most edge of Oyak Creek. 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 (Figure 5; Appendix A2). The current boundaries were established in 2004 and extend east of a line from ADF&G regulatory markers located approximately 2 miles south and 2 miles north on the seaward side of the entrance of Goodnews Bay, expanding east to a line between 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.

COMMERCIAL SALMON FISHERY

RUN STRENGTH INDICATORS

Salmon managers require timely inseason assessment of salmon run abundance. In the Kuskokwim River, escapement projects provide limited usefulness in this regard because of the great distances between the areas of harvest and the project locations. Consequently, managers rely on test fisheries, commercial catch statistics, and informal reports from subsistence and sport fishermen to augment escapement data.

In the Kuskokwim Bay escapement monitoring projects are much closer to the commercial fishing districts, so escapement data can be effectively used for inseason management. Kuskokwim Bay managers also make use of commercial catch statistics and information from subsistence and sport fishermen. Catch statistics are especially important in District 4 where reliable escapement monitoring has been historically lacking.

Bethel Test Fishery

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, and methods used for the project can be found in Bue (2005). From early June through late August the test fish crew conducts three or four systematic gillnet drifts beginning one 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, 1 net is hung with $5\frac{3}{8}$ 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 July 10 when Chinook,

sockeye, and chum salmon all occur in relatively good abundance. The 8 inch mesh is discontinued after about 10 July when Chinook salmon 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 sold to a local fish buyer or distributed to charities. Catch statistics for Chinook, sockeye, chum and coho salmon are presented as daily catch per unit effort (CPUE) 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 from between years, and even within years.

Historically, other test fisheries have been attempted in the Kuskokwim River: Kwegooyuk test fishery, 1966–1983 (Baxter 1970; Huttunen 1984); Eek test fishery, 1988–1994; Kuskokwim River subsistence test fishery, 1988–1990 (Kuskokwim Fishermen’s Cooperative, 1991); Aniak test fishery, 1992–1995; Chuathbaluk test fishery, 1992–1993; and the Lower Kuskokwim River test fishery, 1995. 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, consistency problems, difficulties with catch disposition, and ambiguous results.

Inseason Subsistence Catch Monitoring

Inseason interviews of subsistence fishermen have been conducted in the Bethel area by Orutsararmiut Native Council (ONC) technicians, in cooperation with ADF&G since 2001. The Fisheries Information Services (FIS) Division of the U.S. Fish and Wildlife Service (USFWS) Office of Subsistence Management (OSM) provides funding for this cooperative program under the *Kuskokwim River Salmon Inseason Subsistence Catch Monitoring* project (FIS 10-354). Information from the interviews, in combination with other fisheries information, is used to assess salmon run timing and relative abundance. Together, this information assists fishery managers in making decisions to achieve salmon escapement goals, to provide fishermen subsistence fishing opportunity, and to provide opportunity for commercial and sport fisheries if enough salmon are available. Additionally, this program provides timely insight into the progress of the subsistence fishery; a relative index of catches based on those interviewed; and allows an avenue for local user input into the management process. Comparisons of inseason interview responses can be made among weeks, within a year, and between years to help identify differences in salmon run timing, abundance, and gain insight into the fishery (gear usage or inseason harvest indices). Summaries of interview responses are presented to the Kuskokwim River Salmon Management Working Group (Working Group), throughout the subsistence fishing season (Holly Carroll, Commercial Fisheries Biologist, ADF&G, Anchorage; personal communication). Fishery managers and the Working Group use these summaries in the decision-making process for the Kuskokwim River subsistence salmon fishery.

Commercial Catch Statistics

Comparison of commercial catch statistics with historical information is another common method for assessing run strength. However, the usefulness of this approach can be confounded by inconsistencies in the number of participating fishermen, the duration of commercial fishing periods, water levels, and other variables that might influence catch or the effort applied by fishermen.

MANAGEMENT

Background

The overall goal of Kuskokwim Area research and management programs is to manage salmon runs for sustained yield by policies set forth by the Alaska Board of Fisheries (BOF) including: the *Policy for the Management of Mixed Stock Salmon Fisheries* (Mixed Stock Policy: 5 AAC 39.220); *Policy for the Management of Sustainable Salmon Fisheries* (Sustainable Salmon Policy: 5 AAC 39.222); and *Policy for Statewide Salmon Escapement Goals* (Escapement Goal Policy: 5 AAC 39.223). 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 Subsistence use and allocation of fish and game).

Kuskokwim River and Kuskokwim Bay salmon fisheries compose the Kuskokwim Area salmon fisheries. The immense size of the Kuskokwim drainage and the distances between the commercial and subsistence fisheries, and the escapement monitoring projects throughout the drainage (Appendix A3) adds complexity to the management of Kuskokwim River salmon fisheries. Chinook salmon begin entry into the Kuskokwim River in late May, while chum and sockeye salmon begin their entry in mid-June. Chinook and sockeye salmon runs decline rapidly in early July. Chum salmon run entry begins to decline in late July when coho salmon run entry begins. Coho salmon entry to the river declines in late August to early September. Fishery management information on run size and timing by species is limited until the salmon are distributed throughout the drainage and on the spawning grounds hundreds of miles from and months after the lower river fishery has been initiated. Kuskokwim Bay salmon have similar run timing into the Kanektok, Goodnews and Arolik rivers. These are small drainages in comparison to Kuskokwim River. Although evaluation of run size and timing in Kuskokwim Bay Rivers is not immediate, it is much timelier than for Kuskokwim River and 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.

Kuskokwim River Chinook salmon are harvested primarily for subsistence use. Directed Chinook salmon commercial fishing in the Kuskokwim River was discontinued in 1987 by regulation (Francisco et al. 1988). Commercial salmon fishing is restricted to 6 inch mesh; however, in District 1, ADF&G may open fishing periods during which gillnet mesh size may not exceed 8 inches. Chinook salmon continued to be harvested in chum salmon directed commercial fisheries during late June and July under a guideline harvest range of 0–50,000 fish. Directed Chinook salmon fisheries do occur in Districts 4 (targeting Chinook salmon bound for the Kanektok and Arolik rivers) and 5 (targeting fish bound for the Goodnews River drainage). Although Chinook salmon are targeted because of timing of the fishery, only 6 inch or smaller mesh size gillnets are allowed in Districts 4 and 5. The harvest of sockeye salmon was considered incidental to chum salmon harvest in Kuskokwim River from 1987 to 2003. However, beginning in 2004, a guideline harvest level of 0–50,000 sockeye salmon was established. Kuskokwim Districts 4 and 5 commercial fisheries target sockeye salmon. Coho salmon are targeted in all 3 area commercial fishing districts, with directed fisheries being prosecuted in late July, throughout August and in early September.

The Kuskokwim Area commercial fishery was generally stable from 1985 to 1996 (Appendices A4–A15) with the harvests ranging from 800,000 fish to 2.3 million fish (Appendix A5). Effort ranged from 724 to 813 permits fished, and the exvessel value of the fishery ranged from \$2.9

million to \$12.7 million (Appendices A4 and A5). Beginning in 1997, the value of salmon, particularly for chum salmon began to decline, which led to a decreasing trend in fishing effort (Appendix A4), number of fish harvested (Appendix A5), and the exvessel value of the fishery (Appendix A4). From 1997 through 2002, commercial salmon harvests in the area ranged from 185,000 fish in 2002 to 758,000 fish in 1998 (Appendix A5). Effort ranged from 407 permits in 2002 to 707 permits in 1998, and the exvessel value of the fishery ranged from \$324,000 in 2002 to \$1.6 million in 1998 (Appendix A4). Furthermore, poor Chinook and chum salmon returns during 1999 through 2001 resulted in the Kuskokwim River having limited commercial salmon fishing opportunity in June and July (Appendices A6–8).

As Kuskokwim River Chinook and chum salmon abundances rebounded in the mid-2000s, poor market conditions for chum salmon, in concert with limited processing capacity, continued to limit commercial salmon fishing opportunity in District 1 during June and July (Appendices A6–8). Likewise, the same factors limited commercial fishing opportunity during July in both Districts 4 (Appendices C1–C4) and 5 (Appendices D1–D4), and led to registered buyers imposing harvest limits on fishermen during early July (Appendix A2). Since 2003, commercial salmon harvests in the area have ranged from 442,000 fish to 707,800 fish (Appendix A5). Effort ranged from 434 permit holders to 722 permit holders, and the exvessel value of salmon in the Kuskokwim Area has rebound from the early 2000s with the exvessel value ranging from \$893,000 to \$2.8 million (Appendix A4). A new fish processing plant located in Platinum began operation in 2009 and has improved processing capacity in the area. Also, there are indications of an improving chum salmon market. Both factors in part led to increased fishing opportunity since 2009.

Kuskokwim River Chinook salmon are harvested primarily for subsistence use, with well below historic average commercial harvests since 1996 (Appendix A9). Since 2005, Chinook salmon harvests have contributed nearly 7% of the exvessel value of the total District 1 commercial salmon fishery (Appendix A7). Preliminary run reconstruction (Estensen et al. 2009) information indicates the most recent 10-year average exploitation rate of Chinook salmon is approximately 30%, with the majority of the harvest attributed to the subsistence fishery.

Historically, Kuskokwim River chum salmon, though an important subsistence species, have been primarily targeted for commercial use (Appendix A10). However, since the late 1990s, that fishery has been constrained by low market interest in chum salmon and limited processing capacity (Appendix A10). Since 2005, commercial chum salmon harvests have contributed about 9% to the total exvessel value of the District 1 commercial salmon fishery (Appendix A7). Preliminary run reconstruction information (Estensen et al. 2009) indicates the recent 10-year average exploitation rate of chum salmon is approximately 9%.

Kuskokwim River sockeye salmon are also targeted in District 1 commercial fisheries (Appendix A11). Kuskokwim River commercial sockeye salmon harvests make up about 15% of the district's total exvessel value (Appendix A7). Based on preliminary run reconstruction information (Estensen et al. 2009), the recent 10-year average sockeye salmon exploitation rate is approximately 35%.

Kuskokwim River coho salmon are harvested primarily in the commercial fishery (Appendix A16). Kuskokwim River coho salmon commercial fishing in recent years has accounted for the largest number of salmon harvested of greatest value, accounting for over half of the District 1 exvessel value (Appendix A7). Based on preliminary run reconstruction information (Estensen et al. 2009), the recent 10-year average exploitation rate of coho salmon is approximately 30%.

In Kuskokwim Bay commercial fisheries, the greatest harvest in terms of number is sockeye salmon followed by coho, chum, and Chinook salmon (Appendices C5–C8 and Appendices D5–D8). Sockeye salmon have the greatest exvessel value (Appendices C4 and D4). Although many more coho salmon are harvested than Chinook salmon, total harvest value for each species is similar. Chum salmon harvest has the lowest value of targeted salmon species in the area. Pink salmon are the least valuable species in Kuskokwim Area commercial fisheries and have not been purchased by Area fish buyers in recent years.

The average weights and price paid per pound for each salmon species in the Kuskokwim Area since 1967 can be found in Appendix A13, and the average income per permit holder from commercial salmon fishing can be found in Appendix A14.

Local Kuskokwim Area residents owned the majority (703) of the 740 commercial permits renewed in 2009, while non-area residents held 32, and non-Alaskan residents owned 5 permits (Appendix A15).

Salmon Stock Status

Salmon returns to the majority of Western Alaskan Rivers (including Kuskokwim River) were generally below average from 1997 to 2001. However, these declines were not as evident in Kuskokwim Bay Rivers. Kuskokwim Management 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 A2). In 2000, both Chinook and chum salmon were designated stocks of yield concern by the BOF.

The precise causes for the 1997 to 2001 production failures are not known, but it is hypothesized that poor marine conditions had a large effect on ocean survival of these stocks. Likely factors that have received the most attention to date include the effects of El Niño, ocean and climate regime shifts, and competition relative to ocean carrying capacity (JTC 2005).

In 2002, Chinook and chum salmon returns to the Kuskokwim River began to rebound and reached near record abundances from 2004 through 2007 (Estensen et al. 2009). This led to the BOF discontinuing stock of concern status for both species in winter 2007. Since 2007, Chinook and chum salmon abundance have returned to near average to average levels, while sockeye salmon abundance has been average to above average. Coho salmon abundance has mostly been average.

Alaska Board of Fisheries

Kuskokwim Area fisheries are governed by regulations of Title 5 of the Alaska Administrative Code (AAC). 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 for Kuskokwim Area fisheries occurs within the established BOF process. Public input concerning regulation changes and allocation issues is provided for in this process through various means including submission of proposals, direct testimony to the board, and through public participation by local Fish and Game Advisory

Committees and the 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 2010. There was one regulatory proposal to repeal the commercial fishing regulation that could allow use of up to 8 inch mesh size by emergency order (Estensen et al. 2009). This proposal failed. The next regularly scheduled BOF meeting to address Kuskokwim Area finfish issues is scheduled for January 2013.

Management Plan

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 (Appendix A2; Burkey et al. 2000) and amended in January 2004 (Bergstrom and Whitmore 2004) and again in 2007 (Linderman and Bergstrom 2006). The purpose of this 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, provide amounts reasonably necessary for subsistence, and provide for fisheries other than subsistence. Additionally, subsistence-fishing closures are scheduled by emergency order 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 this 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. Regulations do provide for subsistence fishing closures prior to, during and after commercial fishing periods. There is no specific management plan for the Goodnews River fishery (District 5); however, the fishery is managed similar to District 4 except that commercial fishing is delayed until late June to increase Chinook salmon escapements into the Goodnews River drainage.

Subsistence

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 BOF made a positive finding for customary and traditional use for all salmon in the entire Kuskokwim Area (Appendices A2 and A16–A19). 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 (Bergstrom and Whitmore 2004). The ANS ranges 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.

Cooperative Management Process

The Working Group was formed in 1988 by the Alaska Board of Fisheries in response to requests from stakeholders in the Kuskokwim Area that sought a more active role in the management of salmon fishery resources (Francisco et al. 1989). The Working Group has become the forum through which inseason management decisions are made regarding Kuskokwim River subsistence, commercial and sport salmon fisheries. Pre- and postseason Working Group activity provides the opportunity to participate in the regulatory processes that establish fishery management policies and regulations. In 2001, the Working Group modified their bylaws in order to more effectively address federal subsistence management views by including seats for member representatives from the Kuskokwim River Coordinating Fisheries Committee of the Yukon–Kuskokwim Delta and Western Interior Federal Subsistence Regional Advisory Councils (RAC). The Working Group further modified their bylaws in 2005 to include representation from communities at the headwaters of the drainage, which had not previously had a voice on the Working Group.

Participation in the Working Group process requires a great deal of time from its members and agency staff. The Working Group typically meets first in the spring each calendar year, conducts intensive and frequent meetings during the summer, and holds a wrap-up session in the fall or early winter. Funding provided by Office of Subsistence Management (OSM) is an essential part of enhancing the Working Group process. This funding allows ADF&G staff to more effectively prepare for meetings through better and more frequent distribution of updated fishery status information in a standardized format. The funding also provided travel for Working Group members to participate in meetings relevant to issues concerning Kuskokwim River fisheries, such as the postseason meeting in Anchorage and Kuskokwim Area interagency meetings. State general funds provide additional salary for ADF&G staff that coordinates the Working Group. The combined Federal and State funds have further strengthened the Working Group process.

Working Group representative participation in meetings in Bethel and outside the Kuskokwim River drainage allows for an exchange of information between members and fishery assessment project leaders and research planners. Representatives were also able to testify at regulatory meetings in support of Working Group positions. The relationship among Working Group members, project leaders, research planners, and policy makers continues to be fostered, and these interactions are critical to the Working Group process. This relationship ensures that stakeholders remain up-to-date on new information and maintain their direct involvement in the management of the fishery.

From July 2002 through October 2004, funding was available for support of the Working Group process through the U.S. Fish and Wildlife Service (USFWS) OSM project FIS 01-116. OSM funding was discontinued in 2005 and reestablished in 2006 under project FIS 06-307. The current OSM project provides funding through 2012 for Working Group member travel to meetings and conferences; meeting supplies and arrangements; and ADF&G staff time to coordinate the Working Group process and to summarize and distribute information for Working Group members.

The Working Group met 6 times in 2010 (Bradley and Carroll 2010). During these meetings, fishery management information was presented by Working Group members, State and Federal staff, Tribal organizations, fishery partners, and the public. The Working Group discussed subsistence and commercial fishing reports from members and the public, the lower Kuskokwim

River inseason subsistence harvest report, test fish project summaries, and reports from weir, tagging, sonar, and aerial survey programs.

HARVEST AND EXVESSEL VALUE SUMMARY

Emergency orders are used to prosecute the commercial salmon fisheries in the Kuskokwim Area. A complete listing of the emergencies orders issued for commercial salmon fishing in 2010 can be found in Table 1.

Kuskokwim River

A total of 16 commercial fishing periods occurred in District 1 between June 25 and August 12 (Table 1). There were 2 registered buyers that purchased fish in the Kuskokwim Area in 2010. Processing capacity limited commercial fishing to alternating subdistrict openings. Processing capacity coupled with alternating subdistrict openings did allow four 2-hour extensions of fishing time in the Lower Section of Subdistrict 1-B. A total of 2 direct marketers registered as catcher/sellers in 2010. On average 123 permit holders participated in each commercial opening. Chinook salmon catch rates from late June through early July were below average. Chum and sockeye salmon catch rates from late June through mid-July were average to above average. Coho salmon catch rates from late July through August 12 were below average.

The District 1 commercial harvest was 2,731 Chinook; 22,428 sockeye; 58,031 coho; and 93,148 chum salmon (Table 3). The Chinook, sockeye, and chum salmon harvests were above their respective most recent (2000–2009) 10-year average harvests while the coho salmon harvest was below its most recent (2000–2009) 10-year average harvest. The total exvessel value of the District 1 commercial salmon fishery was \$765,606, above the recent 10-year average value of \$478,468 (Appendix A7). A total of 433 individual permit holders recorded landings in District 1 during the 2010 season (Table 3), a number above the most recent 10-year (2000–2009) average of 387 permit holders (Appendix A4). District 2 has not had a commercial fishery since 2000 (Appendix A8).

Kuskokwim Bay

The District 4 commercial salmon fishing season opened June 15. District 4 opened with management directed toward the harvest of Chinook salmon that allowed for 2 commercial fishing periods per week, provided abundance and processing capacity were adequate. Because of late Chinook salmon run timing and abundance concerns, commercial fishing opportunity was reduced in District 4 during the first week of the commercial fishing season (Table 4). District 5 opened on June 28 (Table 2), which is about one week later than normal due to concerns for Chinook salmon abundance. Chinook salmon harvests and catch rates were below average to average throughout the season in both districts. By July 2, sockeye salmon harvest in both districts had exceeded Chinook salmon harvest and by regulation management was directed toward sockeye salmon. Under sockeye salmon management, 3 commercial fishing periods per week are allowed, provided abundance and processing capacity are adequate. Because of high sockeye salmon abundance additional fishing time was provided in both districts between July 7 and 17. Both District 4 sockeye and chum salmon harvests in 2010 were the highest on record, while the sockeye and chum salmon harvests in District 5 were above average. The coho salmon harvest exceeded the sockeye salmon harvest in District 4 on August 2 and August 6 in District 5. On those dates, by regulation, both districts shifted to coho salmon management which also allows 3 commercial periods a week provided abundance is adequate. From August 2

to the last commercial fishing period on August 18, fishing opportunity was reduced in both districts to 2 periods per week due to low coho salmon abundance. Coho salmon harvests and catch rates were below average throughout the season in both districts.

In 2010, 241 individual permit holders recorded landings during 24 commercial periods in District 4 (Table 4). The total commercial harvest of 272,892 fish was comprised of 14,230 Chinook, 138,362 sockeye, 106,610 chum, and 13,690 coho salmon. The exvessel value of the District 4 commercial fishery was estimated to be \$1,655,321 (Table 5). Fishing effort was the highest since 1997 (Appendices C1 and C2). Total commercial salmon harvest was the third largest on record with the highest exvessel value since 1990 (Appendices C3–C8).

A total of 48 individual permit holders recorded landings in District 5 during 22 commercial periods (Table 2). The District 5 total commercial harvest of 74,640 fish was comprised of 1,752 Chinook, 41,074 sockeye, 26,914 chum, and 4,900 coho salmon. The exvessel value of the District 5 commercial fishery was estimated to be \$473,661 (Table 5). Fishing effort was the highest since 1999 (Appendices D1 and D2) and highest exvessel value since 1994 (Appendices D3–D8).

SUBSISTENCE SALMON FISHERY

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. 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 area annually harvest salmon for subsistence use (Tables 6 and 7, Appendices A9–A12 and A16–A19). 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). Studies conducted by the Division of Subsistence 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). Harvest of salmon for subsistence use is as much as 650 pounds per capita in some Kuskokwim River communities (Coffing et al. 2001).

REGULATIONS

Subsistence salmon fishing season is open unless a subsistence fishing schedule closure is imposed (*Kuskokwim River Salmon Rebuilding Management Plan* (5 AAC 07.365)), (these types of closures have not occurred since 2006), or if closures to the fishery are implemented by emergency order prior to, during and after commercial fishing periods (5 AAC 01.260). Salmon may be taken for subsistence purposes by gillnet, beach seine, hook and line attached to a rod or pole, 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 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.

FEDERAL SUBSISTENCE PROGRAM

The Alaska National Interest Lands Conservation Act (ANILCA) of 1980 provides a priority for rural Alaska residents for taking fish and wildlife on Federal public lands and called for creation of RACs to provide rural resident's input into the Federal Subsistence Program (16 U.S.C.A 3114). On October 1, 1999, the Secretaries of Interior and Agriculture published regulations to expand Federal involvement in subsistence fisheries to waters in which the Federal government claims a federal reserved water right (applicable waters). The Secretary of Interior and the Secretary of Agriculture delegated their authority in Alaska to the Federal Subsistence Board (FSB) to ensure rural residents receive a priority for subsistence taking on Federal public lands and applicable waters. Federal subsistence fishing regulations are adopted by the FSB. 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 on Federal public lands and applicable waters if necessary to ensure a priority for federally qualified rural subsistence users.

Federal subsistence fishing schedules, openings, closings, and fishing methods are established in regulation (Department of Interior 2009–2011 summary of 36 CFR Part 242 and 50 CFR Part 100). In general, these 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. For example, subsistence fishing is closed for a set amount of time before, during, and after commercial fishing periods under Federal regulations, but it is handled by emergency order under State regulations. In 2010, the USFWS took special action, Emergency Order No. 3-KS-01-10, for conservation of Chinook salmon in Federal waters of the Tuluksak and Kwethluk rivers closing them to subsistence fishing using gillnets greater than 4 inches mesh and longer than 60 feet and to subsistence fishing for Chinook salmon using all subsistence gear types including hook and line from July 10, 2010 until July 31, 2010.

SUBSISTENCE SURVEY

ADF&G conducts annual household surveys to collect information about the harvest and use of salmon in the Kuskokwim Area (Tables 6 and 7, Appendices A9–A12 and A16–A19). Prior to statehood, subsistence salmon harvest information was collected periodically by various federal departments and bureaus. Beginning in 1960, Division of Commercial Fisheries collected subsistence salmon harvest information along the Kuskokwim River drainage by surveying fishermen at their fish camps 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. In 1988, the Division of Subsistence took over the annual subsistence salmon harvest survey project from Division of Commercial Fisheries, and collected and analyzed harvest data through 2007. Division of Subsistence made several changes to the methodology, including starting the data collection in October, well after the summer and fall salmon harvest was completed. This was done primarily to improve estimates of the subsistence coho salmon harvest (for detailed Division of Subsistence harvest monitoring methods, see Walker and Coffing 1993). In 2008, Division of Commercial Fisheries resumed responsibility for the annual postseason harvest survey project in the Kuskokwim Area, and dedicated a full-time Fishery Biologist II, based in Anchorage, as the project leader, and a seasonal Fishery Technician III as the crew leader, based in Bethel. The project methodology remains similar to that used by Division of Subsistence since 1989 except that instead of attempting a 100% survey

of each community, a stratified random sampling method is used in order to sample communities most effectively within budget constraints on a yearly basis (Toshihide Hamazaki, Commercial Fisheries Biometrician, ADF&G, Anchorage; personal communication). Analysis of the stratified sampling compared with the 100% attempted sampling, as well as adjusted historical salmon harvest estimates from 1989 to 2007 are reported in Hamazaki (2011).

ADF&G collaborates with local tribal organizations including the ONC in Bethel and KNA in Aniak to complete the annual postseason harvest surveys. The Fisheries Information Services (FIS) Division of the U.S. Fish and Wildlife Service (USFWS) Office of Subsistence Management (OSM) provides funding for this cooperative program under the *Kuskokwim Area Postseason Subsistence Harvest Surveys* project (FIS 08-352). Subsistence surveys have been aimed at primarily 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. Data for subsistence pink salmon harvests have not been consistently collected during the annual fall survey efforts, and though data have been collected on pink salmon beginning in 2008, those harvests are not reported here. Other Division of Subsistence community baseline studies conducted in the region also include pink salmon harvest data.

SUBSISTENCE HARVEST

Because of changes in the project methodology in 2008 discussed above, all data reported here will be considered preliminary, and comparisons between 2008, 2009 and historical harvest estimates should be avoided. The final report for the *Postseason Subsistence Harvest Survey Project* should be consulted for detailed methods and finalized data.

Subsistence harvests of salmon have remained relatively stable for the past 15 years with the exception of the 2000 Chinook salmon harvest, the result of a poor run (Appendices A5 and A9–A12).

Information regarding subsistence harvest in 2010 is not yet available. The 2009 total subsistence salmon harvest preliminary estimates for the Kuskokwim Area were 82,100 Chinook; 45,199 chum; 37,971 sockeye; and 32,090 coho salmon (Tables 6 and 7). Residents of communities in the lower Kuskokwim River (from Tuluksak downstream to Eek), took 77% of the overall subsistence salmon harvest with 30% of the total harvest occurring in Bethel. The lower river communities are relatively densely populated, with approximately 65% of the total number of households in the Kuskokwim Area.

ESCAPEMENT

The vast size, remoteness, and geomorphic diversity of the Kuskokwim Area present challenges to monitoring salmon escapements and assessing salmon run abundance. For the past two decades, efforts have been taken to expand coverage and apply new technologies toward the goal of improving estimation of salmon run timing and run strength monitoring by comparison of current year to historic information. Aerial spawning ground surveys have been the most cost-effective means of monitoring salmon escapements, but their usefulness and reliability are limited. The more thorough and rigorous ground based projects such as weirs, counting towers, and sonar have been operated in only a few locations because of costs and limited budgets. Since 2000 the number of escapement projects in the Kuskokwim Area has increased through cooperative partnerships with federal agencies and local organizations (Appendix B1). These

cooperative efforts have added substantially to our ability to monitor salmon escapements and to evaluate the effectiveness of inseason management actions.

There are currently 25 established escapement goals for 14 Chinook, 4 chum, 3 coho, and 4 sockeye salmon stocks (Appendix B2). Comprehensive reviews of escapement data for most Kuskokwim Area stocks were conducted in 2004 (ADF&G 2004), in 2007 (Molyneaux and Brannian 2006), and again in 2009 (Volk et al. 2009). Two new goals were established in 2010: a coho salmon lower bound sustainable escapement goal (SEG) of >19,000 fish at the Kwethluk River weir, and a sockeye salmon SEG range of 4,400 to 17,000 fish at the Kogrukluk River weir.

Throughout the Kuskokwim Management Area in 2010, chum and sockeye salmon abundance was very good while coho salmon abundance was average to below average and Chinook salmon abundance was poor. Sockeye, chum, and coho salmon escapements were achieved in all systems with established escapement goals. Chinook salmon escapements were achieved in only 2 of 5 systems with goals that are monitored by weir, the Kogrukluk and Middle Fork Goodnews River.

GROUND BASED

Numerous ground based escapement assessment projects exist throughout the Kuskokwim River drainage and Kuskokwim Bay drainages (Figure 6). Below is a summary of salmon escapement at each project for 2010. Please refer to each project's annual report for specifics such as methods, daily passage counts, climate and hydrological information, and escapement age, sex, and length (ASL) information. The *Kuskokwim Area ASL Catalog* (Molyneaux et al. 2010) contains historical as well as current ASL information from the various escapement monitoring projects (past and present), as well information from the area commercial and subsistence harvests.

Kuskokwim River

Kwethluk River Weir

The 2010 Kwethluk River salmon escapements included 1,693 Chinook; 4,264 sockeye; and 18,835 chum salmon during the June 25 through 1 September operational period, coho salmon counts were incomplete (Appendix B3; Miller and Harper 2010a). In 2010, Chinook salmon failed to achieve the lower end of their SEG range (6,000 to 11,000 fish), the third time since 2007. An escapement goal for coho salmon was established in 2010 and set as a lower bound SEG of >19,000 fish (Volk et al. 2009).

Tuluksak River Weir

The 2010 Tuluksak River salmon escapements included 239 Chinook; 476 sockeye; 13,424 chum; and 1,478 coho salmon during the June 26 through September 2 operational period (Appendix B4; Miller and Harper 2010b). The 2010 Chinook salmon escapement did not achieve the lower end of their SEG range (1,000 to 2,100 fish), the fourth time since 2006.

Aniak River Sonar

In 2010, total estimated fish passage at the Aniak River sonar site was 429,643 chum salmon, during the 26 June through 31 July operational period (Appendix B5; Malcolm McEwen, Commercial Fisheries Biologist, ADF&G, Fairbanks; personal communication). In 2010 chum salmon escapement was near the upper end of their SEG range of 220,000 to 480,000 fish. Chum salmon escapements have achieved or exceeded their SEG range every year except one since 2000.

George River Weir

The 2010 George River salmon escapements included 1,500 Chinook; 115 sockeye; 26,154 chum; and 12,961 coho salmon during the 15 June through 20 September operational period (Appendix B6; Clark et al. 2010). The Chinook salmon escapement in 2010 did not achieve the lower end of the SEG range (3,100 to 7,900 fish). Chinook salmon have achieved their goal twice since 2007.

Kogrukluk River Weir

The 2010 Kogrukluk River salmon escapements included 5,690 Chinook; 13,995 sockeye; 65,583 chum; and 13,971 coho salmon during the 25 June through 22 September operational period (Appendix B7; Williams and Shelden 2010). In 2010, Chinook, chum, and coho salmon either achieved or exceeded their respective SEG goals.

Tatlawiksuk River Weir

In 2010, Tatlawiksuk River weir salmon escapements included 567 Chinook; 33 sockeye; 36,701 chum; and 3,520 coho salmon during the 15 June to 20 September operational period (Appendix B8; Smith and Shelden 2010). The 2010 Chinook and coho salmon escapements were some of the lowest annual escapement on record while the chum salmon escapement was the third highest.

Takotna River Weir

The 2010 Takotna River salmon escapements included 178 Chinook; 4,062 chum; and 3,217 coho salmon during the 24 June through 20 September operational period (Appendix B9; Stewart et al. 2010). The 2010 Chinook salmon escapement was the second lowest annual escapement. Chum and coho salmon escapements were below average.

Telaquana River Weir

The 2010 Telaquana River salmon escapements included 88 Chinook; 72,021 sockeye; 99 chum; and 5 coho salmon during the 29 June through 20 September operational period (Appendix B10; Stewart et al. 2010). This was the first year of operation for this project.

Kuskokwim Bay

Kanektok River Weir

Kanektok River drainage is the primary salmon producing drainage in District 4. Fish passage through the Kanektok River weir during its operation from 28 June through 5 August was estimated to be 5,800 Chinook; 202,643 sockeye; 62,567 chum; 344 coho; and 114,074 pink salmon (Appendix C9) (T. Elison, Commercial Fisheries Biologist, ADF&G, Anchorage; personal communication). Escapement estimates for coho and pink salmon are incomplete because the project does not operate through the entire coho and pink salmon runs. No formal escapement goals for any species have been established at the weir.

Middle Fork Goodnews River Weir

The Goodnews River drainage is the primary salmon producing drainage in District 5. Fish passage through the Middle Fork Goodnews River was estimated to be 2,244 Chinook; 35,762 sockeye; 26,687 chum; 23,898 coho; and 3,444 pink salmon (Appendix D9) (T. Elison, Commercial Fisheries Biologist, ADF&G, Anchorage; personal communication). The weir was

operational from June 25 through September 18 except for two inoperable periods caused by high water from July 29 to August 4 and from August 14 to 26. Chinook salmon achieved the lower end of the escapement goal range while sockeye salmon exceeded the upper bound of the escapement goal, and chum and coho salmon exceeded the lower bound of their respective escapement thresholds.

AERIAL SURVEYS

Aerial survey based escapement goals do not represent the entire spawning populations in the respective streams. The surveys are mostly conducted one time each season during a window of a few days when the maximum numbers of fish are expected to be on the spawning grounds. The escapement goals developed from these surveys are based on the raw, unexpanded counts; therefore, each count serves as an index of abundance rather than a complete census.

Aerial surveys are ordinarily restricted to clear water streams and lakes, the distribution of which is geographically skewed toward the lower Kuskokwim River basin and coastal streams. Tributaries in the middle and upper Kuskokwim River are often stained from organics or clouded by glacier runoff, both of which markedly reduce the visibility of fish. Escapement assessment through aerial surveys is also subject to a high degree of variability depending on viewing conditions and the experience of staff conducting the surveys.

Aerial surveys are best directed at indexing spawning populations of sockeye and Chinook salmon because these fish are typically more visible than chum and coho salmon. In addition, chum salmon have protracted run timing, and coho salmon are frequently difficult to survey because of weather conditions.

Kuskokwim River

Lower Kuskokwim River

Aerial surveys for Chinook salmon were conducted over lower river tributaries (Figure 7) in 2010, but poor weather conditions throughout the survey season hampered efforts to collect useable index estimates (Appendix B11). The Kisaralik River aerial survey goal was not achieved in 2010 and the index estimate was the lowest on record.

Middle Kuskokwim River

In 2010 aerial surveys for Chinook salmon were conducted over the Holokuk and Holitna rivers (Figure 7; Appendix B11). Escapement goals have been established for Aniak, Salmon, Holitna, and Krogukluk Rivers. In 2010 poor survey conditions prevented staff from flying a majority of the systems in this section of the drainage. Index estimates from the Holitna River were well below the established aerial SEG.

Upper Kuskokwim River

Aerial surveys were conducted over the Gagarayah and Salmon Rivers (Figure 7; Appendix B11). Aerial survey SEGs have been established for Gagarayah, Cheeneetuk, and Salmon rivers. Both the Gagarayah and Salmon rivers were well below their respective goals, while the Cheeneetuk River was not surveyed due to poor conditions.

Kuskokwim Bay

Kuskokwim Bay

Kanektok River (Figures 7 and 8) Chinook, sockeye, and chum salmon have established aerial survey SEGs (Appendix C10). The North Fork Goodnews River (Figures 7 and 9) Chinook and sockeye salmon also have established SEGs (Appendix D10). An aerial survey rated as fair for survey conditions was conducted on the Kanektok River on 2 August 2010 to estimate Chinook and sockeye salmon escapements. The estimate of Chinook salmon was below the established SEG and the estimate of sockeye salmon was within the established SEG (Appendix D10). No aerial surveys were flown over the Goodnews River drainage in 2010 because of poor weather. Except for 2010 and since 2005, in years when surveys were flown, both Kanektok River and Goodnews River Chinook and sockeye salmon have either achieved or exceeded their SEG. Aerial surveys for chum salmon have not been flown since 2003 (Appendix D10).

2011 KUSKOKWIM AREA SALMON OUTLOOK

KUSKOKWIM RIVER SALMON OUTLOOK

The Kuskokwim Area has no formal forecast for salmon returns. Broad expectations are developed based on parent-year escapements and recent year trends. The 2011 Chinook, sockeye, and coho salmon abundance is expected to be similar to 2010, while chum salmon returns are expected to exceed the 2010 abundance. Anticipated available surpluses for commercial harvest will range from 0 to 10,000 Chinook; 20,000 to 30,000 sockeye; 200,000 to 300,000 chum; and 60,000 to 150,000 coho salmon. Markets and processing capacity are expected to be similar to last year.

2011 KUSKOKWIM MANAGEMENT STRATEGY

State and federal fishery management staff will continue to follow guidelines outlined in the *Kuskokwim River Salmon Management Plan 5 ACC 07.365*, to the extent possible, to achieve escapement goals, provide for subsistence use, and allow commercial fishing on available harvestable surpluses. A subsistence fishing schedule will not be in effect at the start of the 2011 season.

However, it is anticipated that preseason management actions will be taken and jointly recommended by the ADF&G and USFWS in an attempt to conserve and achieve Chinook salmon escapement goals. After public input, a separate news release in May will describe the 2011 Chinook salmon management strategy. Additional inseason management actions may be implemented in response to weaker than anticipated return to the Kuskokwim River drainage.

Subsistence Fishery

Subsistence fishing is anticipated to be open 7 days per week with the exception of closures 6 hours before, during, and 3 hours after each commercial fishing period, unless superseded by Emergency Order. In District 1, when one subdistrict is open to commercial fishing, subsistence fishing will be allowed in the majority of the other subdistricts. During closed periods, subsistence fishing for species other than salmon will be allowed with gillnets not exceeding 60 feet in length and a mesh size of 4 inches or less.

Subsistence hook and line fishing for any species of salmon will be allowed 7 days per week, unless superseded by Emergency Order. Bag and possession limits for Aniak River upstream of

Doestock Creek are 10 fish per day. Of those fish, the daily bag and possession limit for salmon is 3, of which 2 can be Chinook salmon 20 inches or greater in length.

Commercial Fishery

District 1

As directed by the *Kuskokwim River Salmon Management Plan*, a commercial fishery may be prosecuted in June and July if salmon abundance is above the amounts necessary to meet escapement goals and subsistence use. Processing capacity will limit commercial openings in District 1 to alternating subdistrict openings. Commercial openings may be announced when no large scale buyers are available to provide opportunity for permit holders operating as catcher/sellers or catcher/processors. Contact the ADF&G office in Bethel for more information about the catcher/seller or catcher/processor programs.

All commercial fishing periods will be limited to gillnets with 6 inch or smaller mesh size. As in 2010, there is the potential for opening the Lower Section of Subdistrict 1B for 2 additional hours during commercial openings, dependent on salmon abundance and processor capacity.

Chinook salmon abundance, escapement and subsistence needs may limit commercial harvest of chum and sockeye salmon in late June early July. A commercial fishery directed at coho salmon is anticipated in late July and August.

Sport Fishery

Within the management plan, the sport fisheries for Chinook and chum salmon are to be managed based on abundance. It is anticipated that preseason management actions on sport fishing will be taken to conserve and achieve Chinook salmon escapement goals.

Additional inseason restrictions may be implemented in response to weaker than anticipated salmon runs in other Kuskokwim River tributaries as necessary. The Kuskokwim River drainage Chinook salmon sport fishing season will close by regulation on July 26.

Inseason Assessment and Research

Inseason indicators of salmon run strength include the Bethel Test Fishery, subsistence catch reports, commercial catch statistics, aerial surveys, sonar, weirs, and additional tributary escapement monitoring projects operated by an assortment of partnerships between State, Federal, and Tribal organizations. Staff from Orutsarmiut Native Council will survey Bethel Area subsistence fishermen to assess salmon run timing and abundance.

2011 KUSKOKWIM BAY OUTLOOK

The Kuskokwim Bay has no formal forecast for salmon returns. Broad expectations are developed based on parent-year escapements and recent year trends. It is expected that salmon harvest in 2011 will be similar to 2010. Anticipated available surpluses for commercial harvest are expected to range from 10,000 to 17,000 Chinook; 80,000 to 160,000 sockeye; 90,000 to 140,000 chum; and 20,000 to 60,000 coho salmon. Harvest may be affected by salmon abundance, participation, market conditions, and processor capacity.

2011 KUSKOKWIM BAY MANAGEMENT STRATEGY

Subsistence Fishery

ADF&G staff will be in contact with Kuskokwim Bay subsistence fishermen to determine if subsistence needs will be met. Subsistence fishing will be allowed 7 days per week prior to the commercial salmon fishing season. Once the commercial fishing season begins, subsistence fishery closures will be reduced by emergency order from 16 hours before, during, and 6 hours after, to 8 hours before, during, and 4 hours after each commercial fishing period.

Commercial Fishery

District 4

ADF&G intends to meet with Quinhagak residents prior to the commercial fishing season. The District 4 commercial fishery will be managed in accordance with the *District 4 Salmon Management Plan 5 ACC 07.367*. By regulation, the commercial salmon fishery is to open prior to June 16. Commercial fishing periods are established by emergency order. The department shall allow for at least one 12-hour period per week unless a serious conservation problem develops. Additional commercial fishing periods may be announced if salmon abundance warrants. District 4 will open under Chinook salmon directed management. Once the sockeye salmon catch comprises more than 50% of the combined sockeye and Chinook salmon commercial catch, the district will be managed based on sockeye salmon abundance. A coho salmon management directed fishery is anticipated to occur late July through August given adequate run strength.

District 5

ADF&G intends to meet with Goodnews Bay area residents prior to the commercial fishing season. It is anticipated the District 5 commercial fishery will open during the last week of June, given adequate Chinook salmon abundance. Commercial fishing periods are established by emergency order and it is anticipated the department will allow for a minimum of one 12-hour period per week. Additional fishing periods may occur provided adequate abundance and processor capacity.

Sport Fishery

Within the *District 4 Salmon Management Plan*, sport fisheries are managed based on abundance and commercial fishery performance. If necessary, additional inseason restrictions will be implemented in accordance with *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 Kuskokwim Bay Chinook salmon sport fishing season will close by regulation July 26.

Inseason Assessment and Research

Inseason indicators of salmon run strength include weir escapement projects, verbal subsistence catch reports, aerial surveys, and commercial catch statistics. Weirs will be operated on the Kanektok and the Middle Fork Goodnews rivers to monitor salmon escapements and collect biological data. It is anticipated that the Kanektok River weir will cease operations in mid-August to address operational concerns caused by high water events common in August and September.

KUSKOKWIM HERRING FISHERY

MANAGEMENT AREA

The Kuskokwim Management Area includes all waters of Alaska that flow into the Bering Sea between Cape Newenham and the Naskonat Peninsula (60° 58.17' N lat, 165° 11' W long) to 3 miles seaward as well as the waters surrounding Nunivak and St. Matthew Islands to 3 miles seaward (5 AAC 27.870) (Figure 10). This area supports 5 Pacific herring *Clupea pallasii* commercial gillnet sac roe districts and a significant subsistence herring fishery.

The Security Cove District includes all waters between the latitude of Cape Newenham and the latitude of the Salmon River (58° 51.83' N lat).

The Goodnews Bay District includes the waters of Goodnews Bay east of a line between the north spit (59° 03.58' N lat, 161° 49.17' W. long.) and south spit (59° 02.92' N lat, 161° 49.08' W long) at the mouth and west of a line between Ukfigag Creek (59° 04.17' N lat, 161° 36' W long) and Tunulik River (59° 00.08' N lat, 161° 00.37' W long).

The Cape Avinof District consists of all waters landward of Kikegtek, Pingurbek and Kwigluk Islands from the longitude of Ishkowik River (162° 44' W long) to the latitude of the Tern Mountain (60° 42' N lat).

The Nelson Island District consists of all waters north of Chinigyak Cape (60° 27' N lat) and east of Atrnak Point (165° 15' W long), and all waters north of Talurarevuk Point (60° 35' N lat) and south of the southernmost tip of Chinit Point (60° 36' N lat) and east of 165° 30' W long and all waters north of the northernmost tip of Chinit Point (60° 37' N lat) and south of Kigigak Island (60° 49' N lat) and east of 165° 30' W long.

The Nunivak Island District includes all waters extending three miles seaward of mean low water along the northern, eastern, and southern sides of Nunivak Island from Kikoojit Rocks (60° 20' N lat, 166° 40' W long) to Cape Mendenhall (59° 45.17' N lat, 166° 07' W long) (5 AAC 27.875).

FISHERY MANAGEMENT

The *Bering Sea Herring Fishery Management Plan* (5 AAC 27.060) requires minimum spawning biomass thresholds for each district before commercial fishing. The thresholds are: Security Cove, 1,200 tons; Goodnews Bay, 1,200 tons; Cape Avinof, 500 tons; Nelson Island, 3,000 tons; and Nunivak Island, 1,500 tons. This plan sets the maximum exploitation rate at 20% of the estimated spawning biomass for Security Cove, Goodnews Bay, Nunivak Island, and Nelson Island. Other regulations further reduce the maximum allowable exploitation rate in the Cape Avinof District to 15% of the estimated available biomass and directs management in the Nelson Island District to include 200 tons of the 20% exploitation rate for subsistence (5 AAC 27.895 Harvest strategy for Kuskokwim Area. (a), (d)).

All commercial herring fisheries are opened and closed by emergency order for an orderly fishery and to 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%).

Commercial Fishery

The Kuskokwim Area commercial herring fishery was initiated in 1977 in 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 Security Cove District, however, since that time the fishery has been limited to gillnets. Spawn-on-kelp fisheries were prohibited in 1978 before fisheries were established. Initially these fisheries were managed through open seasons and guideline harvest levels. In 1981 emergency order authority was established to open and close fisheries to provide for an orderly fishery and periodic assessments of herring biomass. A minimum threshold herring abundance of 800 to 1,000 metric tons or spawning activity was established before implementation of the fishery and the guideline harvest levels were established not to exceed 20% of estimated herring biomass. The length of gillnet was established at 100 fathoms. In 1986 the northern boundary of Security Cove was moved from Carter Spit south to the latitude of Salmon River (58° 52' N lat) to provide spatial separation between Security Cove and Goodnews Bay districts. By 1987 the minimum inseason biomass threshold was established at 1,200 tons and the Goodnews Bay District was designated a superexclusive use area by BOF limiting permit holder and vessel participation in the commercial fishery. In 1997 a moratorium on entry into the Goodnews Bay fishery was initiated limiting participation in the fishery to 182 permits. The Goodnews Bay superexclusive use area designation was later repealed by the BOF in 2004.

In 1985, commercial herring fishing was initiated in Nelson and Nunivak Island districts. Emergency order authority was established to open and close these fisheries to provide for an adequate subsistence harvest, and orderly commercial fishery, and to allow for periodic re-assessments of herring biomass. A minimum threshold herring abundance of 1,100 to 1,700 tons or spawning activity was established before implementation of the fishery with a guideline harvest level set at 10% of estimated returning biomass to provide protection for the subsistence fisheries. Gillnet length was limited to 100 fathoms. In 1986 the waters within Nelson Island District from Atranak Point and Talurarevuk Point, and the waters between the southern and northern edges of Chinit Point were closed by emergency order at the request of local governing groups to prevent interference with the subsistence fishery. By 1988 these waters were closed to commercial herring fishing by regulation. Beginning in 1987, mechanical shakers were eliminated in Nelson and Nunivak Island fisheries and vessel length was limited to 30 feet. Both districts were designated as combined superexclusive use areas. Implementation of the superexclusive use designation with vessel length restrictions and prohibition of mechanical shakers was in response to requests from fishermen living in communities adjacent to the fisheries. These fishermen believed it would be in the best interest of the fisheries to standardize equipment to help prevent over investment and to limit participation by allowing fishermen to only participate in one herring fishery (Whitmore et al. 2005). The combined superexclusive use designation allows for fishermen holding permits for both Nunivak and Nelson Island fisheries to participate in commercial herring fisheries in both districts during the same season. In 1987 the minimum inseason biomass threshold was increased to 2,500 tons, and the commercial guideline harvest level was increased from 10% to a maximum of 15% of estimated biomass in both districts. In December 1997, the BOF adopted a proposal that raised the Nelson Island District harvest level to 20% of the available biomass minus 200 tons allocated for subsistence use and increased the commercial guideline harvest level to 20% of the estimated biomass for the Nunivak Island District. In 1987 the Commercial Fisheries Entry Commission (CFEC) initiated the first steps toward limited entry status in the Nelson Island and Nunivak Island districts and

both districts were given limited entry status in 1990. In the winter of 2000, the BOF adopted regulations to allow for development of a cooperative herring purse seine fishery in Nunivak Island District and made the regulation permanent in 2001. In 2006 the Alaska Supreme Court determined that authorizing cooperative fisheries of any sort was beyond the BOF authority. Consequently, the management plan for gillnet and cooperative purse seine fishery in the Nunivak Island District was repealed by the BOF in 2006 (5 AAC 27.894).

In 1988, commercial herring fishing was initiated in the Cape Avinof District. A minimum threshold herring abundance of 500 tons or spawning activity was established before implementation of the fishery and a guideline harvest level was established not to exceed 15% of the estimated biomass. The commercial herring fishery established the use of gillnets up to 100 fathoms in length, mechanical shakers were prohibited, vessel length was limited to 30 feet, and a superexclusive use designation was established.

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 fishermen harvested 1,400 tons of herring with an average value of \$477,000 in Security Cove and Goodnews Bay districts. Addition of Nelson and Nunivak Island fisheries in 1985 and the Cape Avinof fishery in 1988 resulted in an average of 442 fishermen harvesting an average of 2,200 tons of herring with an average value of \$1.33 million during 1985 to 1989. During the 1990 and 1991 seasons, fishermen 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 when 802 fishermen 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 2006 season, during which 32 fishermen harvested 390 tons of herring valued at \$70,000. The decline in markets for herring sac roe continued through 2010 with no commercial herring harvest occurring in the Kuskokwim Area since 2006 (Appendices E1 and E2).

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, Chefnak, Toksook Bay, Nightmute, Tununak, and Newtok participate in the subsistence fishery. 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 were surveyed and not all fishermen were contacted in those communities. No subsistence herring surveys have been conducted in the 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 (Burkey et al. 1998) (Appendix E1).

STOCK ASSESSMENT

The remoteness of the Kuskokwim Area herring fishing districts present challenges in assessing abundance, implementing fisheries, and monitoring escapement toward sustained yield fishery

management. Although the fisheries typically progress in a northward progression, herring fishery and spawn timing is quite similar.

Occurrence and extent of milt, numbers of fishing vessels and visibility affecting survey quality are also recorded. Due to depressed herring markets and reallocation of funding, the number of surveys flown and the number of districts surveyed has declined in recent years. Survey aircraft are no longer contracted for a block of flight time, but rather chartered locally on an hourly basis and when available. In 2010 the budget allocation allowed for six surveys of Security Cove, 8 surveys of Goodnews Bay, and 3 surveys of the Nelson Island District. An additional \$7,500 for aerial surveys was made available through a cooperative agreement with Coastal Villages Seafoods, LLC (CVS), a subsidiary of Coastal Villages Region Fund (CVRF), one of 6 groups of the Western Alaska Community Development Quota (CDQ) program whose membership includes the coastal communities of the Kuskokwim region. The additional funding was for the purpose of conducting aerial surveys of the Nelson Island and Cape Avinof districts. This money was not utilized due to poor survey conditions late in the herring season.

Aerial survey data collection methods are similar to those used since 1978. Standard conversions of 1.52 tons/538 ft² (water depths less than 16 ft), 2.58 tons/538 ft² (water depths between 16 and 26 ft), and 2.83 tons/538 ft² (water depths greater than 26 ft) were used to convert estimated herring school surface areas to biomass.

In 2010, approximately 11.7 hours were spent conducting aerial surveys in the Kuskokwim Bay Area: 1.7 hours in Security Cove, 5.6 hours in Goodnews Bay, and 2.1 hours at Nelson Island. Survey conditions during the season ranged from unsatisfactory to good. Poor weather in early June limited the number of flights over the Nelson Island District. There were no successful aerial survey flights flown over the Cape Avinof and Nunivak Island districts in 2010.

As a result of the declining interest in the commercial sac roe herring market, the ADF&G test fishing program has been reduced from as many as 6 field camp projects in the 1990s to only 2 test fishing projects in 2010. Test fishing with variable mesh gillnets (VMG) collect samples of herring to determine age, sex, size, and sexual maturity (ASL) of the run, and to note occurrence of other schooling fishes. This sampling program is important for determining herring stock status and for making biomass projections. In 2010, test fishing occurred in the Goodnews Bay and Nelson Island Districts. The last year of data collection from Security Cove District was in 2003, from the Nelson Island District was in 2007, from the Cape Avinof District was in 2001, and from the Nunivak Island District was in 1999. In the absence of data from the Security Cove District VMG data from Goodnews Bay is used to estimate the metrics for the Security Cove District. VMG data from Nelson Island has been used to estimate the metrics for the Nunivak Island and Cape Avinof districts.

Security Cove District

Five aerial surveys were flown in the Security Cove District from 5 May to 25 May in 2010. Low clouds covering the Security Cove portion of the Security Cove District resulted in survey conditions that were primarily poor and unsatisfactory. The first herring were documented on 15 May when an estimated 1,205 tons of herring were observed under poor conditions. On 18 May, an estimated 6,727 tons of herring were observed in the district under poor conditions. The peak biomass was observed on 21 May when an estimated 13,440 tons were observed in the district under unsatisfactory conditions. On 25 May, an estimated 1,799 tons were observed under poor conditions. Herring spawn was observed on 18 May (Table 8).

Goodnews Bay District

Eight aerial surveys were flown in the Goodnews Bay District between 5 May and 4 June in 2010. The first herring were documented on 15 May when an estimated 4,353 tons of herring were observed under poor conditions. The peak biomass was observed on 21 May when an estimated 24,883 tons were observed in the district under poor conditions. On 29 May, an estimated 20,858 tons of herring were observed under good survey conditions. Herring spawn was observed on 18 May (Table 9).

Test fishing with variable mesh gillnets occurred from 17 May to 27 May. The goal for the Goodnews Bay test fish program was to sample a minimum of 850 herring collected over a 21-day period. Age composition of herring collected from the Goodnews Bay test fishery is summarized in (Appendices E3–E5). ASL information was collected from 913 herring. Based on age-by-scale analysis, ages less than 6 comprised 45% of the sample; ages 6–8 accounted for 40%; and ages greater than 8 accounted for 16% of the sample.

Nelson Island District

Three aerial surveys were flown in the Nelson Island District between 26 May and 5 June during the 2010 season. No herring were observed on 26 May under poor conditions caused by ice cover. An estimated 2,171 tons and 2,116 tons of herring were observed on 30 May and 5 June, respectively, under poor survey conditions (Table 10).

ASL information was collected from 1,311 herring. Based on age-by-scale analysis, ages less than 6 comprised 25% of the sample; ages 6-8 accounted for 63%; and ages greater than 8 accounted for 12% of the sample (Appendices E3–E5).

Central Kuskokwim Bay

The Central Kuskokwim Bay area extends from Cripple Creek, north of the entrance to Goodnews Bay, to the Ishkowiik River at the mouth of the Kuskokwim River. No commercial herring fishing districts are located in this area. Eight aerial surveys were flown in this area from 5 May to 4 June. Survey conditions ranged from good to unsatisfactory. The first herring were documented on 18 May when an estimated 8,607 tons were observed under poor survey conditions. An unprecedented peak biomass was observed on 29 May when an estimated 37,444 tons of herring were observed under good conditions. Herring spawn was observed on 29 May (Table 11).

2011 KUSKOKWIM AREA HERRING OUTLOOK

2011 FORECAST SUMMARY

Based on postseason escapement projections, the 2011 estimated spawning biomass for Kuskokwim Area herring stocks (Security Cove to Nunivak Island Districts) will be 60,896 tons. If the return is as anticipated the total allowable harvest could be 11,849 tons (Table 12).

The 2011 AYK Region biomass projection was based on good aerial survey biomass estimates from Security Cove, Goodnews Bay, and Jacksmith Bay. Biomass estimates from previous years were used for Cape Avanof, Nunivak Island, and Nelson Island. In 2010, ADF&G collected herring samples from the test fishery at Goodnews Bay and Nelson Island in Kuskokwim Bay. Samples were analyzed for age class composition, which suggested that the forecasted population will be comprised of herring ages 6-7 (47%), ages 8-9 (32%), ages 10+ (15%), and ages 4–5 (6%).

The actual biomass observed in 2011 may fall above or below the preseason projections based on variability in the quality of aerial biomass assessments and annual fluctuation of survival or recruitment rates. Recruitment events typically occur every eight to ten years, as suggested by the dominant age 5-6 herring and high biomass estimates in Security Cove, Goodnews Bay, and Jacksmith Bay during 2010. The expected low proportion of age 4-5 herring in 2011 may signal that the recruitment period will be complete.

ADF&G will conduct aerial surveys as regularly as possible and monitor catch statistics inseason. Guideline harvest levels, therefore, may be adjusted according to inseason aerial assessments of herring biomass. If aerial surveys are not adequate because of poor weather and water clarity conditions, stock abundance will alternately be assessed using projected biomass, test catches, and spawn deposition observations. In accordance with the AYK Region harvest strategy, any operational commercial fishery will not target newly recruited age classes (age 2 through age 5 herring). The duration of fishing periods and harvests would vary in each district depending on inseason biomass estimates, roe quality, spawning activity, weather conditions, fishing effort, and processor input.

Security Cove District

The 2011 projected biomass for the Security Cove District is 13,119 tons and the minimum biomass threshold is 1,200 tons. A 20% exploitation rate would result in a harvest of 2,624 tons. ADF&G will plan to verify herring biomass inseason to determine if the biomass is large enough to support this level of harvest. Herring ages 6–9 are expected to comprise 80% of the returning biomass (30%, 21%, 13%, and 10%, respectively). Age 10 and older herring are expected to comprise 15% of the biomass.

Goodnews Bay District

The 2011 projected biomass for the Goodnews Bay District is 36,810 tons and the minimum biomass threshold is 1,200 tons. A 20% exploitation rate would result in a harvest of 7,362 tons. This harvest guideline is the largest on record. ADF&G will plan to verify herring biomass inseason to determine if the biomass is large enough to support this level of harvest. Herring ages 6–7 (53%) and ages 8–9 (22%) are expected to dominate the fishery with age 10 and older (15%) and ages 4–5 (6%) are expected to comprise the remaining biomass.

Cape Avinof District

The 2011 projected biomass for the Cape Avinof District is 2,393 tons and the minimum biomass threshold is 500 tons. The exploitation rate will be no greater than 15% because of the limited database for this area and to ensure the subsistence fishing priority, and would potentially result in a harvest of 349 tons. Herring ages 6–9 are expected to comprise 83% of the returning biomass. Age 10 and older herring are expected to comprise approximately 13% of the biomass.

Nelson Island District

The 2011 projected biomass for the Nelson Island District is 5,252 tons and the minimum biomass threshold is 3,000 tons. A 20% exploitation rate would result in a commercial harvest of 850 tons after 200 ton subsistence harvest is accounted for. Herring ages 6–9 are expected to make up 84% of the returning population, contributing 17%, 26%, 23%, and 18% respectively. Herring age 10 and older, 13%, and ages 4–5 (4%) are expected to comprise the remaining biomass.

Nunivak Island District

The 2011 projected biomass for the Nunivak Island District is 3,322 tons and a minimum biomass threshold of 1,500 tons. A 20% exploitation rate would result in a harvest of 664 tons. Ages 6–9 are expected to comprise 83% of the returning biomass, 16%, 26%, 23%, and 18% respectively. Herring age 10 and older, 13%, and ages 4–5 (4%) are expected to comprise the remaining biomass.

MISCELLANEOUS FISHERIES

Several species other than salmon, herring and halibut are used for commercial, subsistence, and recreation purposes in the Kuskokwim Management Area. They are inconnu or sheefish (*Stenodus leucichthys*), whitefish (*Coregonus*) and (*Prosopium*), char (*Salvelinus*), 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 or "Tomcod" (*Eleginus gracilus*).

FRESHWATER COMMERCIAL

The commercial fishery has been sporadic, primarily harvesting whitefish and burbot for local markets. Some of the whitefish harvest occurs under the ice in the winter.

A permit from the Commercial Fisheries Entry Commission is required. A permit from ADF&G to conduct commercial fisheries on whitefish, pike, smelt, burbot and lamprey is also required. Those species may also be taken incidentally to commercial salmon fishing. There were no freshwater permits issued by the Bethel CF office in 2010 for the Kuskokwim Area. The guidelines for permits are:

1. All waters of the area except the Johnson River drainage and Whitefish Lake are open to commercial harvest of freshwater finfish. The heavy subsistence utilization of freshwater species in these areas is the reason for the closure.
2. Only whitefish, cisco, 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 in the subsistence and sport fisheries.
3. All legal commercial gear types are allowed.
4. Gillnets may not be less than 2 ½ or greater than 5 inches stretch mesh. Long lines and set lines must use hooks with a gap between point and shank larger than ¾ inch.

Appendix A20 presents the freshwater finfish fishery catches and value since 1977. No commercial landings of whitefish were documented in 2010.

Stock Status

Limited ADF&G observations, advisory committee recommendations and fishermen interviews give no indication of declining populations in most drainages. However, residents of Kasigluk, Atmautluak and Nunapitchuk have expressed concerns that subsistence fishermen are overexploiting the whitefish stocks in Nunavakpak Lake (near Kasigluk).

SALTWATER COMMERCIAL

A poorly documented commercial fishery on Saffron or "Tomcod" (*Eleginus gracilus*) has occurred in the Kuskokwim Area for some time. These fish were surplus to subsistence needs and fishermen and local stores were, and often still are, unaware of the regulatory requirements. ADF&G has been trying to inform buyers and sellers of these requirements. Since 1988, the department has had information on the sale of fish exported from the coastal villages to Bethel. Sales within the villages remain undocumented. No commercial landings were documented in 2010.

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TABLES AND FIGURES

Table 1.–Commercial fishing emergency order summary, Kuskokwim management area, 2010.

Kuskokwim River Salmon			
EO	Description	Effective Date	Expiration Date
3-S-WR-01-10	Opens the Kuskokwim River to Commercial salmon fishing	12:00 p.m. Friday, June 25, 2010	11:59 p.m. Wednesday September 1, 2010
3-S-WR-02-10	Establishes Subsistence Closures 6 hr before, during, and 3 after commercial in 1-A and 1-B	12:00 p.m. Friday, June 25, 2010	11:59 p.m. Wednesday September 1, 2010
3-S-WR-03-10	Subdistrict 1-A 4 hr opening	12:00 p.m. Friday, June 25, 2010	4:00 p.m. Friday, June 25, 2010
3-S-WR-04-10	Subdistrict 1-B 4 hr opening	12:00 p.m. Monday, June 28, 2010	4:00 p.m. Monday, June 28, 2010
3-S-WR-05-10	Subdistrict 1-A 6 hr opening	12:00 p.m. Tuesday, July 6, 2010	6:00 p.m. Tuesday, July 6, 2010
3-S-WR-06-10	Subdistrict 1-B 4 hr opening	1:00 p.m. Friday, July 9, 2010	5:00 p.m. Friday, July 9, 2010
3-S-WR-07-10	Subdistrict 1-A 2 hr opening	12:00 p.m. Wednesday, July 14, 2010	2:00 p.m. Wednesday, July 14, 2010
3-S-WR-08-10	Upper Section Subdistrict 1-B 2 hr opening	12:00 p.m. Friday, July 16, 2010	2:00 p.m. Friday, July 16, 2010
3-S-WR-09-10	Subdistrict 1-A 4 hr opening	12:00 p.m. Monday, July 19, 2010	4:00 p.m. Monday, July 19, 2010
3-S-WR-10-10	Upper Section Subdistrict 1-B 4 hr opening	1:00 p.m. Wednesday, July 21, 2010	5:00 p.m. Wednesday, July 21, 2010
3-S-WR-11-10	Lower Section Subdistrict 1-B 6 hr opening	11:00 a.m. Wednesday, July 21, 2010	5:00 p.m. Wednesday, July 21, 2010
3-S-WR-12-10	Subdistrict 1-A 4 hr opening	12:00 p.m. Friday, July 23, 2010	4:00 p.m. Friday, July 23, 2010
3-S-WR-13-10	Subdistrict 1-B 6 hr opening	11:00 a.m. Monday, July 26, 2010	5:00 p.m. Monday, July 26, 2010
3-S-WR-14-10	Subdistrict 1-A 6 hr opening	11:00 a.m. Wednesday, July 28, 2010	5:00 p.m. Wednesday, July 28, 2010
3-S-WR-15-10	Subdistrict 1-B 4 hr opening with a 2 hr lower subdistrict extension (10-4)	12:00 p.m. Friday, July 30, 2010	4:00 p.m. Friday, July 30, 2010
3-S-WR-16-10	Subdistrict 1-A 4 hr opening	12:00 p.m. Wed, August 4, 2010	4:00 p.m. Wed, August 4, 2010
3-S-WR-17-10	Subdistrict 1-B 4 hr opening with a 2 hr lower subdistrict extension (10-4)	12:00 p.m. Friday, August 6, 2010	4:00 p.m. Friday, August 6, 2010
3-S-WR-18-10	Subdistrict 1-A 4 hr opening	12:00 p.m. Tuesday, August 10, 2010	4:00 p.m. Tuesday, August 10 2010
3-S-WR-19-10	Subdistrict 1-B 4 hr opening with a 2 hr lower subdistrict extension (10-4)	12:00 p.m. Thurs, August 12, 2010	4:00 p.m. Thursday August 12, 2010

-continued-

Table 1.–Page 2 of 2.

Kuskokwim Bay Salmon			
EO	DESCRIPTION	Effective Date	Expiration Date
3-S-WB-01-10	Opens District W-4 to Commercial salmon fishing	9:00 a.m. Tuesday, June 15, 2010	9:01 p.m. Wednesday, September 8, 2010
3-S-WB-02-10	W-4 12-hr opening	9:00 a.m. Tuesday, June 15, 2010	9:01 p.m. Tuesday, June 15, 2010
3-S-WB-03-10	W-4 12-hr opening	9:00 a.m. Monday, June 21, 2010	9:01 p.m. Monday, June 21, 2010
3-S-WB-04-10	W-4 12-hr opening	9:00 a.m. Friday, June 25, 2010	9:01 p.m. Friday, June 25, 2010,
3-S-WB-05-10	Opens District W-5 to Commercial salmon fishing	9:00 a.m. Monday, June 28, 2010	9:01 p.m. Wednesday September 8, 2010
3-S-WB-05-10	W-5 12-hr opening	9:00 a.m. Monday, June 28, 2010	9:00 p.m. Monday, June 28, 2010
3-S-WB-06-10	W-4 12-hr opening	9:00 a.m. Tuesday, June 29, 2010	9:00 p.m. Tuesday, June 29, 2010
3-S-WB-07-10	W-5 12-hr opening	9:00 a.m. Thursday, July 1, 2010	9:00 p.m. Thursday, July 1, 2010
3-S-WB-08-10	W-4 12-hr opening	9:00 a.m. Friday, July 2, 2010	9:00 p.m. Friday, July 2, 2010
3-S-WB-09-10	W-5 12-hr opening	9:00 a.m. Monday, July 5, 2010	9:00 p.m. Wednesday, July 7, 2010
3-S-WB-10-10	W-4 7/5, 12-hr; W-4 7/7, 12-hr	9:00 a.m. Monday, July 5, 2010	9:00 p.m. Wednesday, July 7, 2010
3-S-WB-11-10	W-4 7/7, 12 hr extension	9:00 p.m. Wednesday, July 7, 2010	9:00 a.m. Thursday, July 8, 2010
3-S-WB-12-10	W-4 & W-5 subsistence closure reduced	4:00 p.m. Thursday, July 8, 2010	11:59 p.m. Wednesday, September 8, 2010
3-S-WB-13-10	W-4 & W-5 12-hr opening	9:00 a.m. Friday, July 9, 2010	9:00 p.m. Friday, July 9, 2010
3-S-WB-14-10	W-4 & W-5 12 hr opening	9:00 a.m. Monday, July 12, 2010	9:00 p.m. Wednesday, July 14, 2010
3-S-WB-15-10	W-4 7/14, 12-hr extension; W-5 7/13, 6-hr opening	8:00 a.m. Tuesday, July 12, 2010	9:00 a.m. Thursday, July 15, 2010
3-S-WB-16-10	W-5 7/13, 2-hr extension	2:00 p.m. Tuesday, July 13, 2010	4:00 p.m. Tuesday, July 13, 2010
3-S-WB-17-10	W-4 & W-5 12-hr opening	9:00 a.m. Friday, July 16, 2010	9:00 p.m. Friday, July 16, 2010
3-S-WB-18-10	W-4 & W-5 12-hr opening	9:00 a.m. Saturday, July 17, 2010	9:00 p.m. Saturday, July 17, 2010
3-S-WB-19-10	W-4 & W-5 12-hr opening	9:00 a.m. Monday, July 19, 2010	9:00 p.m. Monday, July 19, 2010
3-S-WB-20-10	W-4 & W-5 12-hr opening	9:00 a.m. Wednesday, July 21, 2010	9:00 p.m. Wednesday, July 21, 2010
3-S-WB-21-10	W-4 & W-5 12-hr opening	9:00 a.m. Friday, July 23, 2010	9:00 p.m. Friday, July 23, 2010
3-S-WB-22-10	W-4 & W-5 12-hr opening	9:00 a.m. Monday, July 26, 2010	9:00 p.m. Monday, July 26, 2010
3-S-WB-23-10	W-4 & W-5 12-hr opening	9:00 a.m. Wednesday, July 28, 2010	9:00 p.m. Wednesday, July 28, 2010
3-S-WB-24-10	W-4 & W-5 12-hr opening	9:00 a.m. Friday, July 30, 2010	9:00 p.m. Monday, August 2, 2010
3-S-WB-25-10	W-4 & W-5 12-hr opening	9:00 a.m. Friday, August 6, 2010	9:00 p.m. Friday, August 6, 2010
3-S-WB-26-10	W-4 & W-5 12-hr opening	9:00 a.m. Monday, August 9, 2010	9:00 p.m. Monday, August 9, 2010
3-S-WB-27-10	W-4 & W-5 12-hr opening	9:00 a.m. Friday, August 13, 2010	9:00 p.m. Monday, August 16, 2010
3-S-WB-28-10	W-4 & W-5 12-hr opening	9:00 a.m. Wednesday, August 18, 2010	9:00 p.m. Wednesday, August 18, 2010

Table 2.–Commercial salmon harvest, District 5, Goodnews Bay, Kuskokwim management area, 2010.

Period	Date	Permits	Hours	Deliveries	Chinook			Sockeye			Chum			Coho		
					Catch	Lbs	CPUE	Catch	Lbs	CPUE	Catch	Lbs	CPUE	Catch	Lbs	CPUE
1	6/28	24	12	42	279	4,055	1.0	2,615	18,194	9.1	2,054	15,113	7.1	0	0	0.0
2	7/1	30	12	49	506	6,014	1.4	5,060	35,050	14.1	3,516	26,055	9.8	0	0	0.0
3	7/5	37	12	46	269	3,950	0.6	4,771	34,207	10.7	2,143	15,489	4.8	0	0	0.0
4	7/7	33	12	44	183	2,676	0.5	5,913	42,110	14.9	3,452	24,951	8.7	0	0	0.0
5	7/9	30	12	35	100	1,775	0.3	3,616	25,964	10.0	4,807	34,399	13.4	0	0	0.0
6	7/12	26	12	29	103	1,650	0.3	4,387	30,802	14.1	2,945	20,753	9.4	0	0	0.0
7	7/13	23	8	23	38	571	0.2	2,228	16,375	12.1	1,141	8,120	6.2	0	0	0.0
8	7/14	26	12	41	68	1,111	0.2	2,532	17,888	8.1	1,867	13,057	6.0	0	0	0.0
9	7/16	27	12	33	37	648	0.1	2,138	15,005	6.6	1,387	9,541	4.3	0	0	0.0
10	7/17	14	12	17	13	205	0.1	1,052	7,521	6.3	700	4,685	4.2	0	0	0.0
11	7/19	19	12	21	59	886	0.3	1,264	8,650	5.5	909	6,143	4.0	0	0	0.0
12	7/21	18	12	20	24	406	0.1	873	5,960	4.0	763	5,044	3.5	16	117	0.1
13	7/23	8	12	8	16	264	0.2	343	2,413	3.6	350	2,288	3.6	10	70	0.1
14	7/26	14	12	19	6	92	0.0	850	5,768	5.1	365	2,402	2.2	83	580	0.5
15	7/28	13	12	14	12	255	0.1	642	4,286	4.1	167	1,096	1.1	51	370	0.3
16	7/30	15	12	15	15	174	0.1	719	4,766	4.0	114	730	0.6	108	749	0.6
17	8/2	10	12	11	4	74	0.0	546	3,691	4.6	107	725	0.9	284	2,180	2.4
18	8/6	10	12	10	4	95	0.0	403	2,580	3.4	43	266	0.4	497	3,628	4.1
19	8/9	10	12	10	4	77	0.0	296	1,785	2.5	25	163	0.2	460	3,515	3.8
20	8/13	19	12	23	8	157	0.0	496	3,099	2.2	36	243	0.2	1,290	9,687	5.7
21	8/16	12	12	12	2	26	0.0	111	670	0.8	9	62	0.1	723	5,607	5.0
22	8/18	14	12	16	2	20	0.0	219	1,366	1.3	14	86	0.1	1,378	11,484	8.2
Totals		48 ^a	260	538	1,752	25,181	0.1	41,074	288,150	3.3	26,914	191,411	2.2	4,900	37,987	0.4

^a Number of individual permit holders participating for the season.

Table 3.—Commercial salmon harvest, District W-1, Kuskokwim River, Kuskokwim management area, 2010.

Period	Date	Subdistrict	Permits	Hrs	Deliveries	Chinook			Sockeye			Coho			Chum		
						Catch	Lbs	CPUE	Catch	Lbs	CPUE	Catch	Lbs	CPUE	Catch	Lbs	CPUE
1	6/25	1A	114	4	117	542	5,297	1.19	729	5,175	1.60	0	0	0.00	9,703	65,348	21.28
2	6/28	1B	216	4	246	1,181	15,793	1.37	3,536	23,091	4.09	0	0	0.00	21,918	149,657	25.37
3	7/6	1A	87	6	116	290	3,970	0.56	3,554	25,133	6.81	0	0	0.00	17,467	113,342	33.46
4	7/9	1B	146	4	157	176	2,684	0.30	7,303	51,160	12.51	0	0	0.00	15,437	102,975	26.43
5	7/14	1A	51	2	51	95	944	0.93	2,068	14,888	20.27	0	0	0.00	2,830	19,407	27.75
6	7/16	1B	49	2	49	32	467	0.33	747	5,539	7.62	5	42	0.05	2,332	15,801	23.80
7	7/19	1A	54	4	61	68	985	0.31	2,474	18,058	11.45	109	791	0.50	3,918	26,848	18.14
8	7/21	1B	161	4 ^a	164	86	1,353	0.13	894	6,272	1.39	1,321	8,868	2.05	7,283	48,442	11.31
9	7/23	1A	66	4	67	59	1,070	0.22	245	1,842	0.93	1,040	7,032	3.94	3,402	22,986	12.89
10	7/26	1B	160	6	160	81	1,254	0.08	439	3,114	0.46	3,603	24,480	3.75	4,042	26,163	4.21
11	7/28	1A	68	6	68	36	579	0.09	71	516	0.17	2,800	18,993	6.86	2,310	15,023	5.66
12	7/30	1B	149	4 ^a	150	24	390	0.04	160	1,146	0.27	6,049	42,097	10.15	892	5,770	1.50
13	8/4	1A	90	4	90	11	144	0.03	26	185	0.07	4,654	31,040	12.93	477	2,957	1.33
14	8/6	1B	207	4 ^a	218	25	396	0.03	91	603	0.11	17,246	119,040	20.83	609	4,027	0.74
15	8/10	1A	130	4	134	11	207	0.02	32	210	0.06	13,930	98,843	26.79	278	1,724	0.53
16	8/12	1B	226	4 ^a	229	14	211	0.02	59	407	0.07	7,274	50,134	8.05	250	1,568	0.28
Totals			433 ^b	66	2,077	2,731	35,744	0.10	22,428	157,339	0.78	58,031	401,360	2.03	93,148	622,038	3.26

^a Does not include 2-hr extension for the Lower Section of W1-B.

^b Number of individual permit holders participating for the season.

Table 4.–Commercial salmon harvest, District W-4, Quinhagak, Kuskokwim management area, 2010.

Period	Date	Permits	Hours	Deliveries	Chinook			Sockeye			Chum			Coho		
					Catch	Lbs	CPUE	Catch	Lbs	CPUE	Catch	Lbs	CPUE	Catch	Lbs	CPUE
1	6/15	33	12	38	325	3,945	0.8	28	187	0.1	80	574	0.2	0	0	0.0
2	6/21	122	12	178	2,620	33,120	1.8	1,280	9,149	0.9	5,157	36,973	3.5	0	0	0.0
3	6/25	125	12	221	3,404	42,276	2.3	2,566	16,623	1.7	7,051	50,304	4.7	0	0	0.0
4	6/29	137	12	215	1,983	24,487	1.2	5,638	35,654	3.4	10,472	75,482	6.4	0	0	0.0
5	7/2	128	12	250	1,318	18,798	0.9	11,308	74,974	7.4	12,131	83,511	7.9	0	0	0.0
6	7/5	141	12	247	1,128	13,430	0.7	17,975	118,997	10.6	8,661	62,868	5.1	0	0	0.0
7	7/7-8	168	24	374	1,085	14,994	0.3	16,367	107,700	4.1	14,734	102,792	3.7	0	0	0.0
8	7/9	118	12	225	443	5,914	0.3	15,640	106,418	11.0	9,043	64,253	6.4	0	0	0.0
9	7/12	156	12	265	433	6,149	0.2	13,387	89,287	7.2	5,531	38,188	3.0	0	0	0.0
10	7/14-15	172	24	406	658	9,437	0.2	21,410	148,203	5.2	11,929	81,678	2.9	3	23	0.0
11	7/16	152	12	238	206	2,979	0.1	10,038	70,329	5.5	6,146	41,827	3.4	0	0	0.0
12	7/17	103	12	154	198	2,526	0.2	6,932	44,877	5.6	4,070	27,575	3.3	3	11	0.0
13	7/19	63	12	89	86	1,310	0.1	4,644	32,044	6.1	2,248	15,873	3.0	16	114	0.0
14	7/21	70	12	94	119	1,703	0.1	4,658	31,663	5.5	3,337	22,289	4.0	102	684	0.1
15	7/23	68	12	93	55	1,019	0.1	3,731	25,251	4.6	2,446	16,193	3.0	105	694	0.1
16	7/26	53	12	65	54	717	0.1	1,114	7,457	1.8	1,408	9,351	2.2	157	1,019	0.2
17	7/28	25	12	33	17	236	0.1	333	2,213	1.1	677	4,599	2.3	115	780	0.4
18	7/30	30	12	31	30	446	0.1	351	2,415	1.0	533	3,853	1.5	198	1,385	0.6
19	8/2	34	12	38	27	371	0.1	316	2,111	0.8	318	1,997	0.8	994	7,064	2.4
20	8/6	43	12	51	23	244	0.0	251	1,786	0.5	380	2,211	0.7	2,056	14,861	4.0
21	8/9	27	12	31	5	59	0.0	68	477	0.2	43	303	0.1	770	5,800	2.4
22	8/13	83	12	98	8	118	0.0	130	906	0.1	99	610	0.1	2,733	20,492	2.7
23	8/16	66	12	78	5	42	0.0	108	717	0.1	67	414	0.1	3,800	27,496	4.8
24	8/18	82	12	87	0	0	0.0	89	616	0.1	49	320	0.0	2,638	20,285	2.7
Totals		241 ^a	312	3,599	14,230	184,330	0.2	138,362	930,054	1.8	106,610	744,038	1.4	13,690	100,708	0.2

^a Number of individual permit holders participating for the season.

Table 5.–Commercial salmon harvest and exvessel value by district, Kuskokwim management area, 2010.

	Chinook	Sockeye	Coho	Pink	Chum	Total
Lower Kuskokwim River, District W-1						
Fish	2,731	22,428	58,031	0	93,148	176,338
Pounds	35,744	157,339	401,360	0	622,038	1,216,481
Price	\$1.49	\$1.07	\$0.95	\$0.00	\$0.26	
Value	\$53,134	\$167,575	\$382,452	\$0	\$162,445	\$765,606
10-yr Average 2000-2009						
Fish	2,863	11,365	177,034	5	35,051	226,318
Value	\$19,373	\$34,967	\$409,475	\$1	\$14,652	\$504,155
Quinhagak, District W-4						
Fish	14,230	138,362	13,690	0	106,610	272,892
Pounds	184,320	930,054	100,708	0	744,038	1,959,120
Price	\$1.60	\$1.13	\$1.17	\$0.00	\$0.26	
Value	\$294,163	\$1,049,395	\$117,658	\$0	\$194,105	\$1,655,321
Recent 10-yr Average 2000-2009						
Fish	17,599	65,508	46,392	2	39,390	168,891
Value	\$126,235	\$216,380	\$114,229	\$1	\$25,644	\$482,489
Goodnews Bay, District W-5						
Fish	1,752	41,074	4,900	0	26,914	74,640
Pounds	25,181	288,150	37,987	0	191,411	542,729
Price	\$1.78	\$1.16	\$1.18	\$0.00	\$0.26	
Value	\$44,910	\$334,366	\$44,706	\$0	\$49,679	\$473,661
Recent 10-yr Average 2000-2009						
Fish	2,176	27,649	13,342	1	7,560	50,728
Value	\$14,225	\$95,126	\$35,029	\$0	\$5,120	\$149,501
Kuskokwim Area Total						
Fish	18,713	201,864	76,621	0	226,672	523,870
Pounds	245,245	1,375,543	540,055	0	1,557,487	3,718,330
Price	\$0.59	\$0.53	\$0.38	\$0.00	\$0.05	
Value	\$392,207	\$1,551,336	\$544,816	\$0	\$406,229	\$2,894,588
Recent 10-yr Average 2000-2009						
Fish	22,417	102,872	256,871	6	73,867	456,033
Value	\$159,833	\$346,474	\$559,037	\$1	\$45,417	\$1,110,847

Table 6.–Subsistence salmon harvest estimates, Kuskokwim management area, 1989–2009.

Year	Household		Estimated Salmon Harvest				Total
	Total	Surveyed	Chinook	Sockeye	Coho	Chum	
1989	3,422	2,135	85,322	37,088	57,786	145,106	325,287
1990	3,317	1,830	92,675	39,659	50,708	131,470	314,513
1991	3,347	2,024	90,226	56,401	55,620	96,314	298,561
1992	3,314	1,724	68,685	34,158	44,494	99,576	246,914
1993	3,274	1,816	91,722	51,362	35,295	61,724	240,103
1994	3,179	1,821	98,378	39,280	36,504	76,949	251,111
1995	3,652	1,894	100,157	28,622	39,165	68,941	236,885
1996	3,643	1,837	81,597	35,037	34,699	90,239	241,572
1997	3,510	1,831	85,506	41,251	30,717	40,993	198,466
1998	3,495	1,849	86,113	37,579	27,240	67,664	218,595
1999	4,180	2,523	77,660	49,388	27,753	47,612	202,413
2000	4,441	2,750	68,841	44,832	35,670	55,371	204,714
2001	4,483	2,297	77,570	51,965	31,686	51,117	212,338
2002	4,339	2,798	70,219	27,733	34,413	73,234	205,599
2003	4,535	2,375	72,498	36,894	38,791	46,291	194,474
2004	4,670	2,432	85,086	34,892	39,406	55,575	214,959
2005	3,903	1,610	72,174	47,656	36,751	28,838	186,762
2006	4,657	1,514	68,041	34,849	32,809	68,812	204,510
2007	4,618	1,356	72,097	34,578	26,270	53,298	186,243
2008 ^a	4,734	992	103,713	64,183	52,742	71,649	292,287
2009 ^a	4,810	1,699	82,100	37,971	32,090	45,199	197,360
5-Year Average 03 to 07	4,477	1,857	73,979	37,774	34,805	50,563	197,390
10-Year Average 98 to 07	4,332	2,150	75,030	40,037	33,079	54,781	203,061
All Years Average 89 to 07	3,920	2,016	81,069	40,341	36,555	67,445	225,485

Source: 1989 to 2007 from Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.5.

^a Numbers reported here are preliminary estimates generated by the Division of Commercial Fisheries and should be used with caution. See Hamazaki 2011.

Table 7.–Preliminary estimated subsistence salmon harvest by species and community for the Kuskokwim Area, 2009.

Community	Households (HH)			Chinook			Chum			Sockeye			Coho		
	Total N	Total n	% surveyed	Avg harvest/hh	Est. Total harvest	CI (95%)	Avg harvest/hh	Est. Total harvest	CI (95%)	Avg harvest/hh	Est. Total harvest	CI (95%)	Avg harvest/hh	Est. Total harvest	CI (95%)
Kipnuk	148	0	0%												
Kwigillingok	71	0	0%												
Kongiganak	92	40	43%	12.2	1,118	360	14.0	1,285	561	8.8	808	338	6.6	610	235
N. Kuskokwim Bay	311	40	13%	3.6	1,118	360	4.1	1,285	561	2.6	808	338	2.0	610	235
Tuntutuliak	82	31	38%	38.3	3,141	951	41.6	3,411	1,385	11.6	954	351	4.5	368	253
Eek	77	33	43%	25.8	1,983	541	9.9	763	347	14.5	1,115	561	2.5	193	123
Kasigluk	95	43	45%	24.2	2,296	583	17.0	1,618	537	9.8	927	389	6.5	617	286
Nunapitchuk	114	43	38%	28.6	3,256	869	29.8	3,400	1,124	12.8	1,455	470	2.5	281	274
Atmautluak	67	30	45%	24.1	1,615	485	25.5	1,708	889	9.6	641	319	1.0	66	72
Napakiak	100	40	40%	23.3	2,331	780	16.8	1,677	857	9.2	916	406	4.3	428	179
Napaskiak	98	42	43%	57.3	5,618	916	15.6	1,532	469	16.9	1,655	332	8.4	821	261
Oscarville	17	11	65%	44.4	754	267	31.4	534	189	19.6	334	228	3.9	67	50
Bethel	2,005	684	34%	13.1	26,302	2,933	5.2	10,480	1,748	5.7	11,329	1,533	6.5	13,037	2,224
Kwethluk	157	58	37%	42.0	6,601	1,155	21.7	3,410	1,215	14.2	2,228	456	26.2	4,113	3,551
Akiachak	141	55	39%	49.8	7,023	1,496	20.0	2,822	1,264	17.0	2,390	723	11.2	1,581	674
Akiak	80	37	46%	40.6	3,247	950	16.9	1,350	563	16.1	1,290	480	8.3	661	343
Tuluksak	86	35	41%	35.3	3,032	1,415	17.3	1,488	663	18.6	1,601	701	9.8	839	502
Lower Kuskokwim	3,119	1,142	37%	21.5	67,199	4,373	11.0	34,193	3,501	8.6	26,835	2,245	7.4	23,072	4,328
Lower Kalskag	71	25	35%	34.4	2,439	1,158	12.7	899	613	14.2	1,009	886	4.3	307	265
Upper Kalskag	66	30	45%	24.5	1,615	465	4.6	305	133	5.4	355	153	3.4	225	224
Aniak	183	165	90%	11.3	2,062	208	14.3	2,626	574	5.1	941	146	12.4	2,264	387
Chuathbaluk	37	25	68%	24.0	888	335	25.6	948	340	15.5	572	181	2.6	97	57
Middle Kuskokwim	357	245	69%	19.6	7,004	1,309	13.4	4,778	916	8.1	2,877	929	8.1	2,893	522

-continued-

Table 7.–Page 2 of 2.

Community	Households (HH)			Chinook			Chum			Sockeye			Coho		
	Total N	Total n	% surveyed	Avg harvest/ hh	Est. Total harvest	CI (95%)	Avg harvest/ hh	Est. Total harvest	CI (95%)	Avg harvest/ hh	Est. Total harvest	CI (95%)	Avg harvest/ hh	Est. Total harvest	CI (95%)
Crooked Creek	41	27	66%	14.3	586	219	12.7	522	228	7.9	323	114	6.9	282	119
Red Devil	14	5	36%	16.1	226	32	15.3	214	206	29.8	417	236	7.9	111	122
Sleetmute	38	29	76%	18.5	702	207	9.9	375	197	18.2	692	196	10.1	384	124
Stony River	20	12	60%	35.2	704	461	38.6	771	662	48.9	977	713	31.7	634	543
Lime Village ^a	15	0	0%	3.9	59	46	30.1	452	62	78.7	1,180	29	41.6	624	62
McGrath	149	58	39%	4.0	594	361	5.7	842	1,168	6.6	985	1,184	8.3	1,244	1,180
Takotna ^a	25	0	0%	0.0	0	0	0.0	0	0	0.0	0	42	0.0	0	0
Nikolai	32	27	84%	9.3	299	64	9.4	302	115	2.1	66	37	6.4	204	81
Telida	2	0	0%												
Upper Kuskokwim	336	158	47%	9.4	3,170	662	10.4	3,478	1,396	13.8	4,640	1,421	10.4	3,483	1,318
Kuskokwim River															
Total	4,123	1,585	38%	19.0	78,491	4,627	10.6	43,734	3,919	8.5	35,160	2,835	7.3	30,058	4,560
Quinhagak	151	73	48%	19.7	2,982	634	8.6	1,300	336	11.5	1,740	406	11.2	1,692	573
Goodnews Bay	66	27	41%	8.6	566	324	2.1	137	81	13.4	885	427	3.9	259	107
Platinum	17	14	82%	3.6	61	26	1.6	28	13	10.9	186	58	4.8	81	35
S. Kuskokwim Bay	234	114	49%	15.4	3,609	713	6.3	1,465	346	12.0	2,811	592	8.7	2,032	584
Mekoryuk	62	0													
Newtok	79	0													
Nightmute	55	0													
Toksook Bay	114	0													
Tununak	61	0													
Cheformak	82	0													
Bering Sea Coast	453	0													
Total	4,810	1,699	35%	17.1	82,100	4,682	9.4	45,199	3,934	7.9	37,971	2,896	6.7	32,090	4,597

Note: "N" is the total number of households , "n" is the number of households surveyed ; "Kuskokwim River Total" includes Lower, Middle, Upper Kuskokwim areas and North Kuskokwim Bay.

^a These villages were not surveyed in 2009, therefore the total harvest is estimated using bayesian multiple imputation method, T.Hamazaki, personal communication data is unavailable for cells with "-", Bayesian estimation method is not possible for these communities because there is little or no historical data.

Table 8.–Herring aerial survey abundance estimates, Security Cove District, Kuskokwim Bay, 2010.

Date	Flight		Spawn		Biomass Estimates by Index Area ^a						Total
	No.	Hours	No.	Length (mi)	SEC		CGV		SRM		
					Tons	Rating ^b	Tons	Rating ^b	Tons	Rating ^b	
5/5	1	0.3	0	0.0	0	3	0	3	0	4	0
5/15	2	0.5	0	0.0	0	5	696	4	509	3	1,205
5/18	3	0.2	7	6.1	4,560	4	2,141	4	25	5	6,727
5/21	4	0.3	0	0.0	1,751	5	4,866	5	6,824	4	13,440
5/25	5	0.4	0	0.0	n/s		1,737	4	62	3	1,799

Note: n/r= not recorded; 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

^b 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.

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Table 9.–Herring aerial survey abundance estimates, Goodnews Bay District, Kuskokwim Bay, 2010.

Date	Flight		Spawn		Biomass estimates by index area ^a								Total
	No.	Hours	No.	length (mi)	NRM		GBE		GNB		CRB		
					Tons	Rating ^b	Tons	Rating ^b	Tons	Rating ^b	Tons	Rating ^b	
5 May	1	1	0	0.0	0	4	0	3	n/s		n/s		0
10 May	2	0.2	0	0.0	n/s		0	4	n/s		0	5	0
15 May	3	0.4	0	0.0	3,010	3	1,343	3		4	0	5	4,353
18 May	4	0.8	2	1.5	4,369	4	1,405	5	921	5	1,098	4	7,793
21 May	5	1.2	0	0.0	114	5	1,006	4	3,977	4	19,788	4	24,883
25 May	6	0.5	0	0.0	27	3	99	2	255	2	0	5	380
29 May	7	0.9	0	0.0	n/s		0	3	11,117	2	9,742	3	20,858
4 Jun	8	0.6	0	0.0	n/s		0	4	20	5	0	5	20

Note: n/r= not recorded; 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 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 10.–Herring aerial survey abundance estimates, Nelson Island District, Kuskokwim Bay, 2010.

Flight		Spawn		Biomass estimates by index area ^a												Total	
Date	No.	Hours	No.	Length (mi)	CYC		KGB		CPV		TAB		NLK		KIG		
					Tons	Rating ^b	Tons	Rating ^b	Tons	Rating ^b	Tons	Rating ^b	Tons	Rating ^b	Tons	Rating ^b	
5/26	1	0.7	0	0.0	0	5	0	4	0	2	0	2	0	4	0	5	0
5/30	2	0.6	0	0.0	809	3	324	3	1,038	3	0	3	0	4	0	4	2,171
6/5	3	0.8	1	1.6	1175	2	274	3	160	3	255	3	252	4	0	5	2,116

^a Index Areas: CYC = Kolovinarak River to Chinigyak Cape; KGB = Kangirlvar Bay; Chinigyak Cape to Umkumiut; CPV = Cape Vancouver; Umkumiut to Taluwarevuk Point; TAB = Tununak Bay; Taluwarevuk Point to Niliklguk; NLK = Niliklguk to the tundra flats; KIG = Tundra Flats to Kigigak Island.

^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 11.–Herring aerial survey abundance estimates, Central Kuskokwim Bay, 2010.

Flight		Spawn		Biomass Estimates by Index Area ^a						Total
Date	No.	Hours	No.	Length (mi)	CCS		CCN		JSB	
					Tons	Rating ^b	Tons	Rating ^b	Tons	Rating ^b
5/5	1	1	n/a		n/s		n/s		n/s	
5/10	2	0.3	0	0.0	0	5	0	4	0	5
5/15	3	0.2	0	0.0	0	5	0	5	0	3
5/18	4	0.6	0	0.0	832	4	0	5	0	4
5/21	5	0.6	0	0.0	7,678	4	694	4	235	4
5/25	6	0.6	0	0.0	148	3	3,043	2	2,819	2
5/29	7	0.7	1	0.4	5,090	3	4,357	2	27,998	2
6/4	8	0.4	0	0.0	0	5	0	5	0	5

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

^a Index Areas: CCS = Carter Spit to Cripple Creek; CCN = Cripple Creek to Jacksmith Point; JSB = Jacksmith Bay to Quinhagak.

^b 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 12.—Projections of Pacific herring spawning biomass and harvest levels for 2011 season, Kuskokwim Bay, 2010.

District	Projected Biomass (st) ^a	Guideline Harvest (st)	Exploitation Rate (%)	Threshold ^b
Security Cove	13,119	2,624	20	1,200
Goodnews Bay	36,810	7,362	20	1,200
Cape Avinof	2,393	349	15	500
Nelson Island	5,252	850	16 ^c	3,000
Nunivak Island	3,322	664	20	1,500
Kuskokwim Bay Totals	60,896	11,849		

^a Projection may be adjusted based on inseason biomass estimates.

^b Threshold biomass needed to allow commercial fishery (5 AAC 27.060)

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

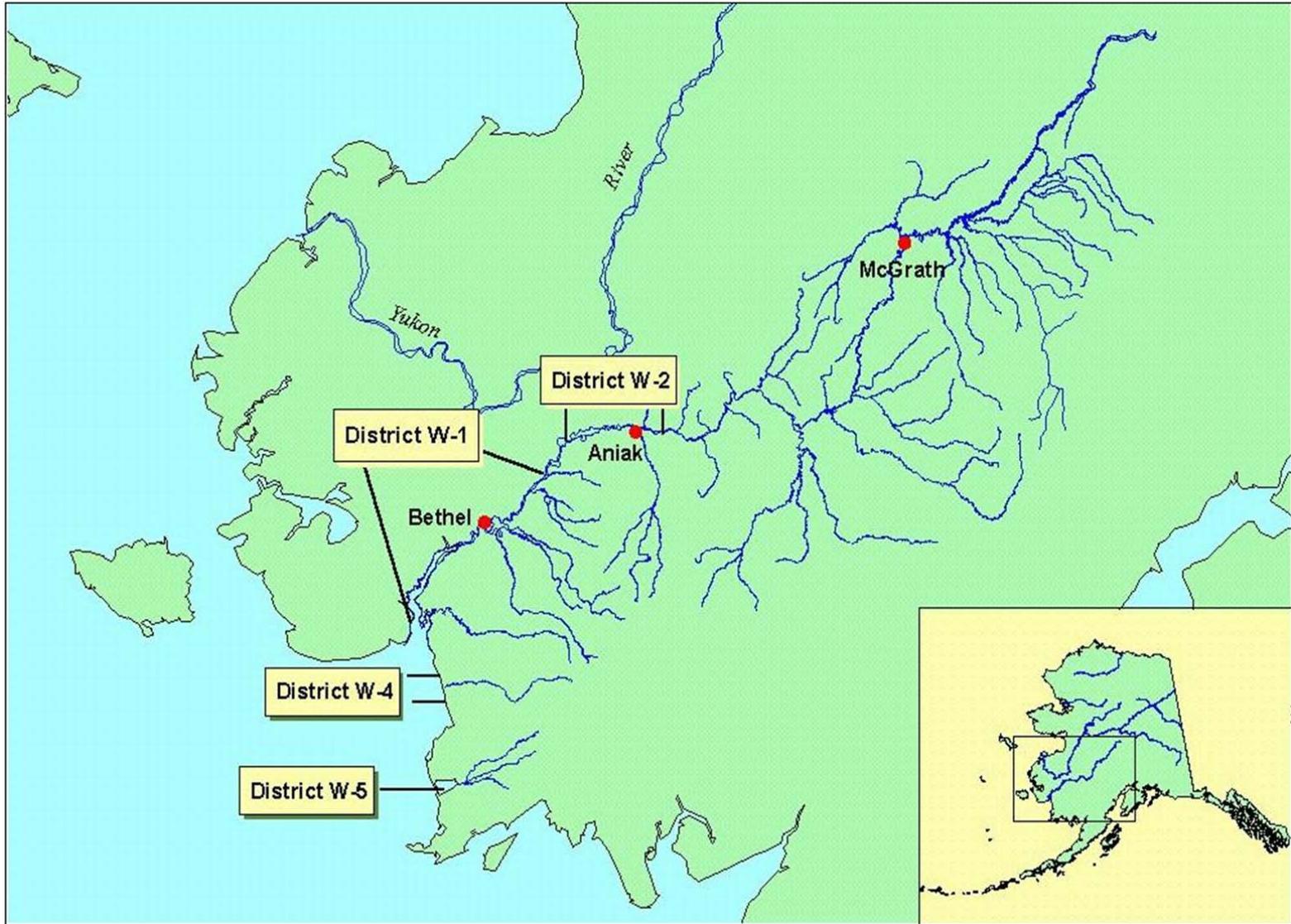


Figure 1.-Map of the Kuskokwim management area.

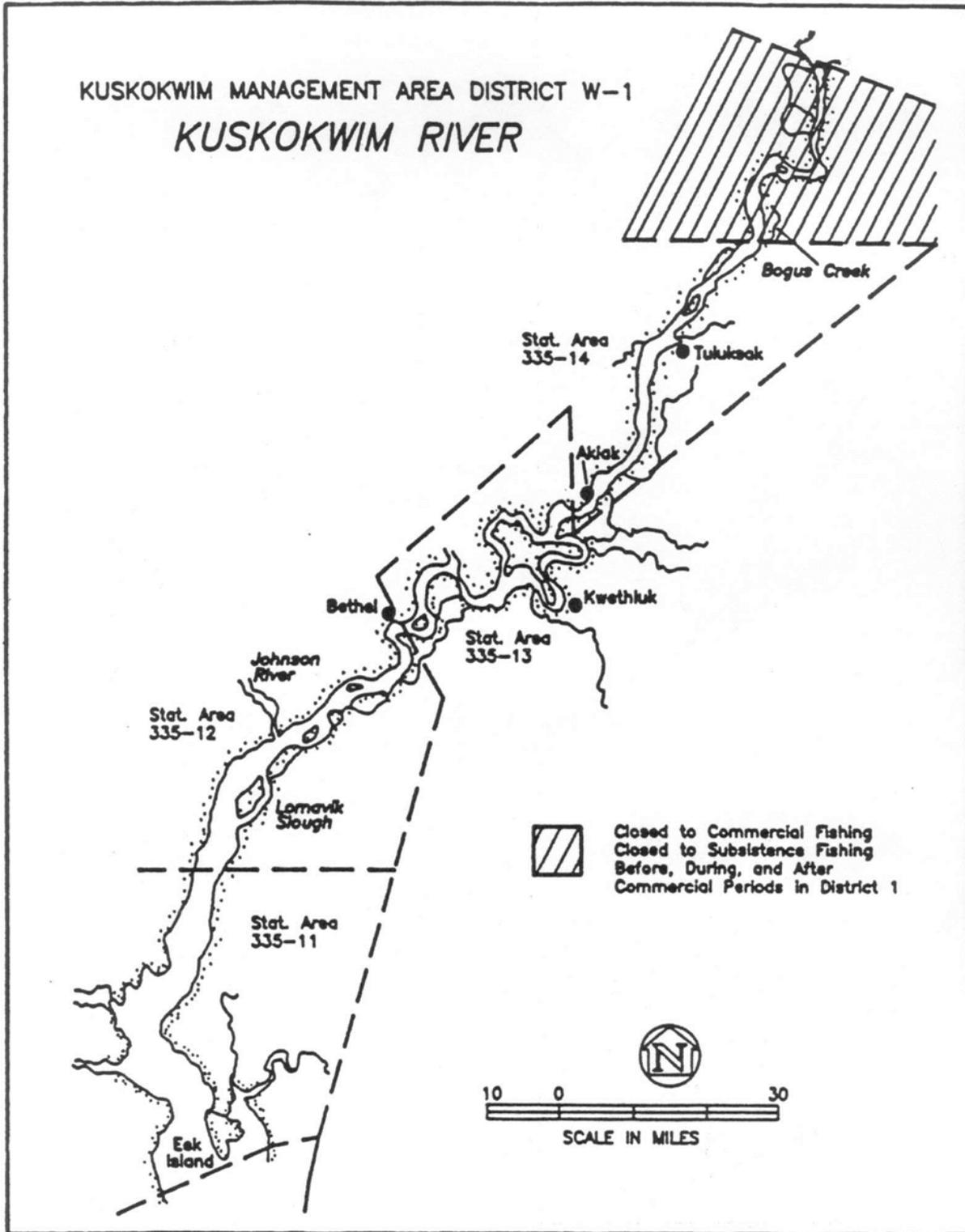


Figure 2.—Map of commercial fishing District W-1, Kuskokwim River, Kuskokwim management area.

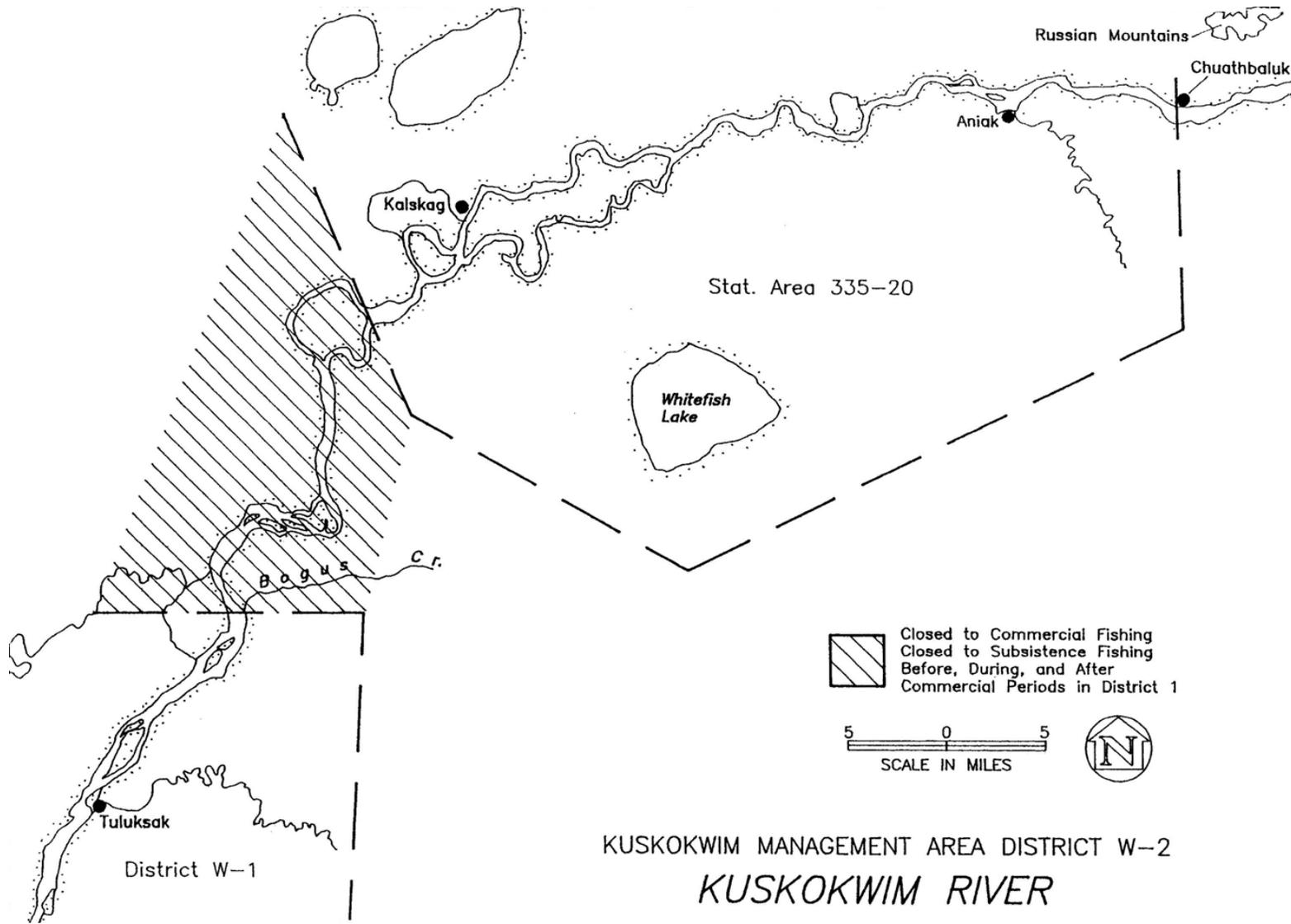


Figure 3.—Map of commercial fishing District W-2, Kuskokwim River, Kuskokwim management area.

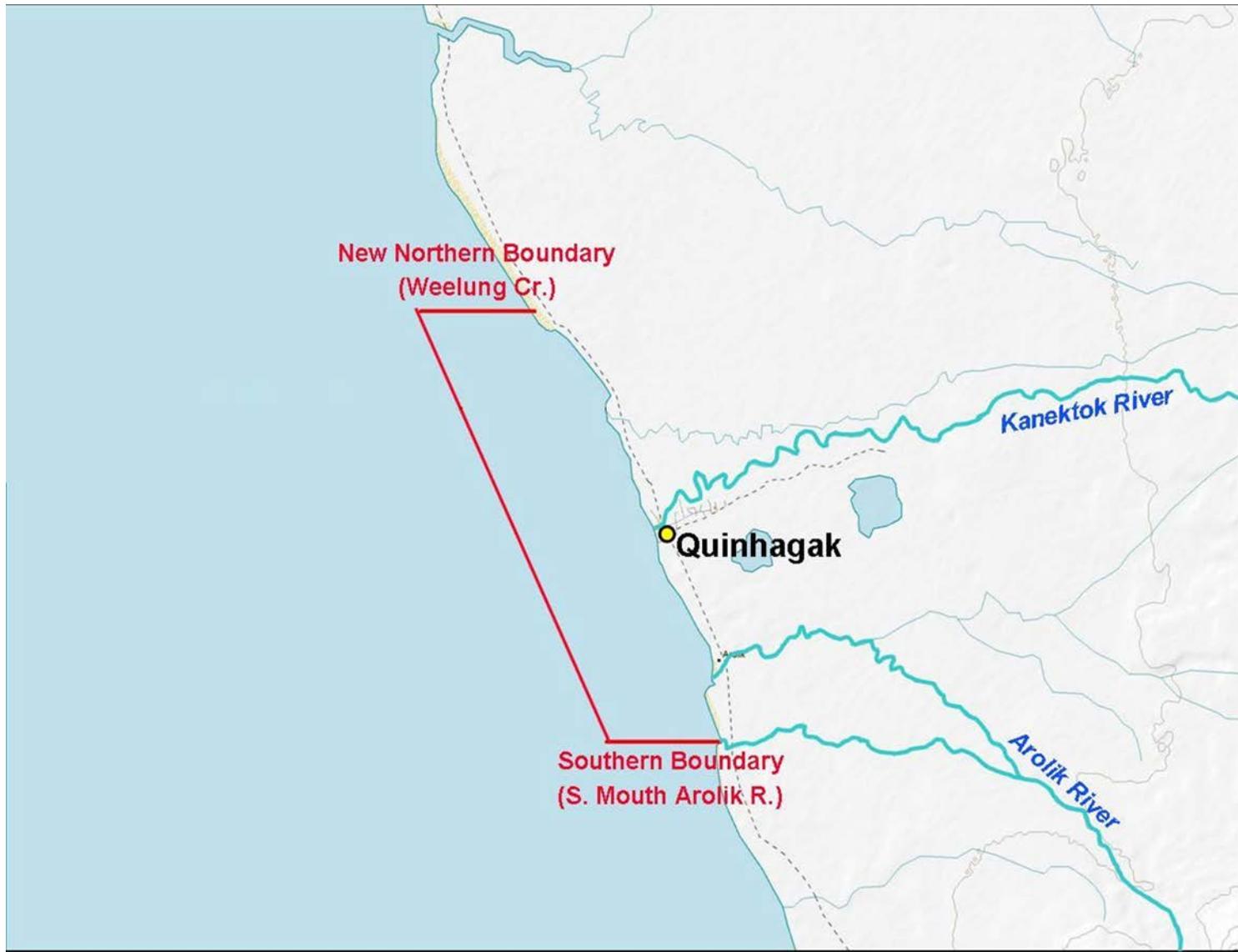


Figure 4.—Map of commercial fishing District W-4, Quinhagak, Kuskokwim management area.

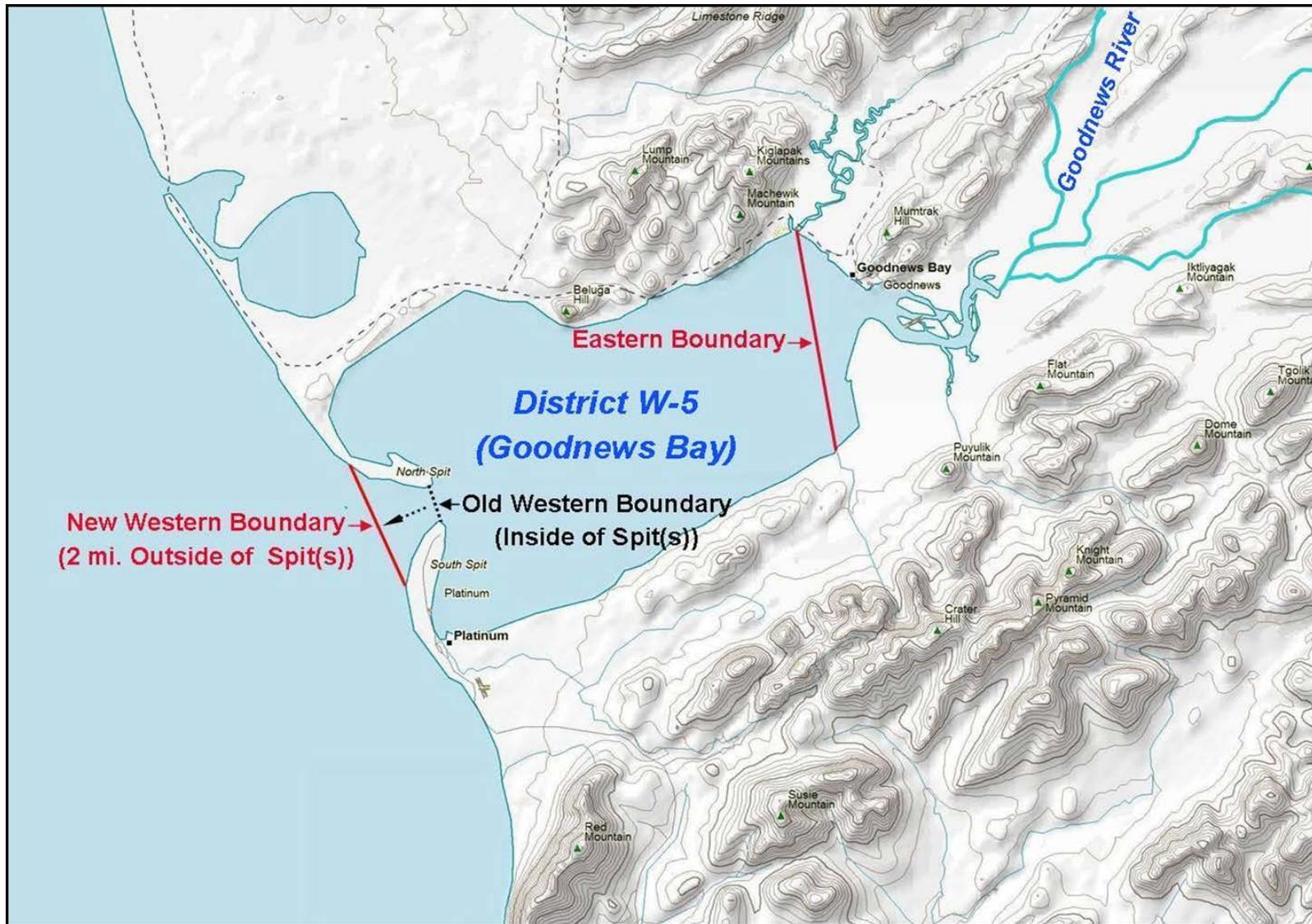


Figure 5.—Map of commercial fishing District W-5, Goodnews Bay, Kuskokwim management area.



Figure 6.—Ground based escapement projects, Kuskokwim management area.

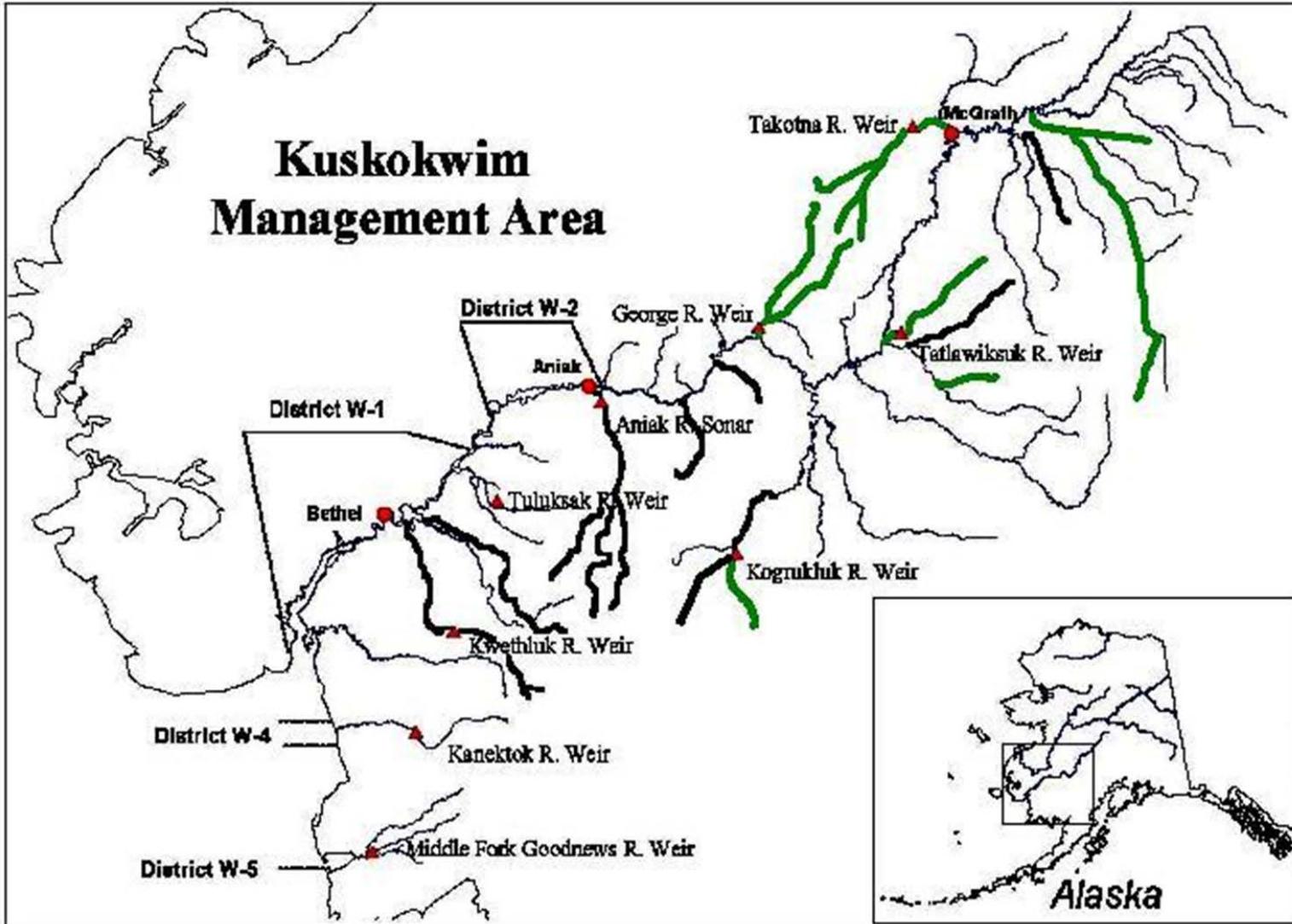


Figure 7.—Map of aerial survey streams, Kuskokwim management area.

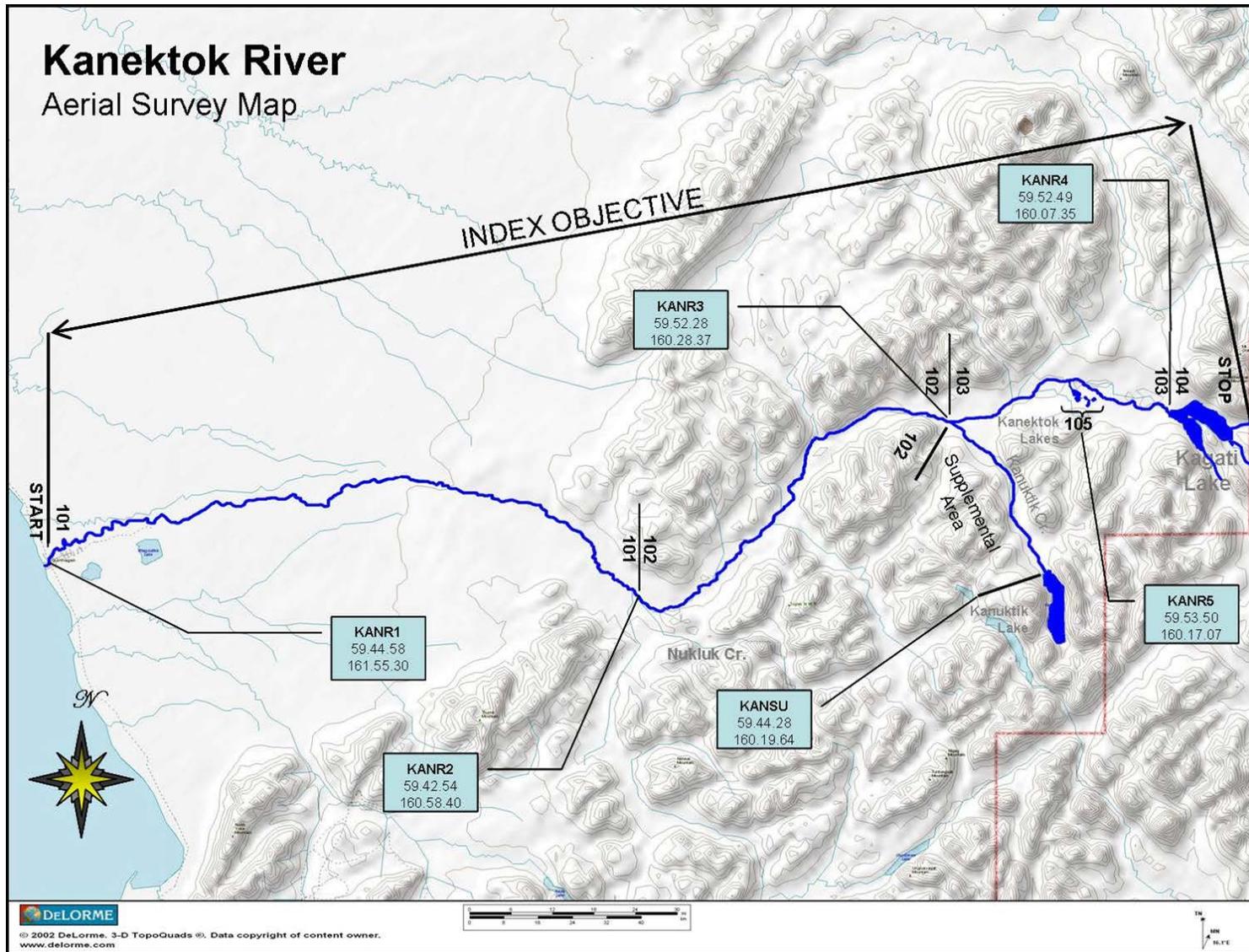


Figure 8.—Aerial survey map of the Kanektok River, Kuskokwim management area.

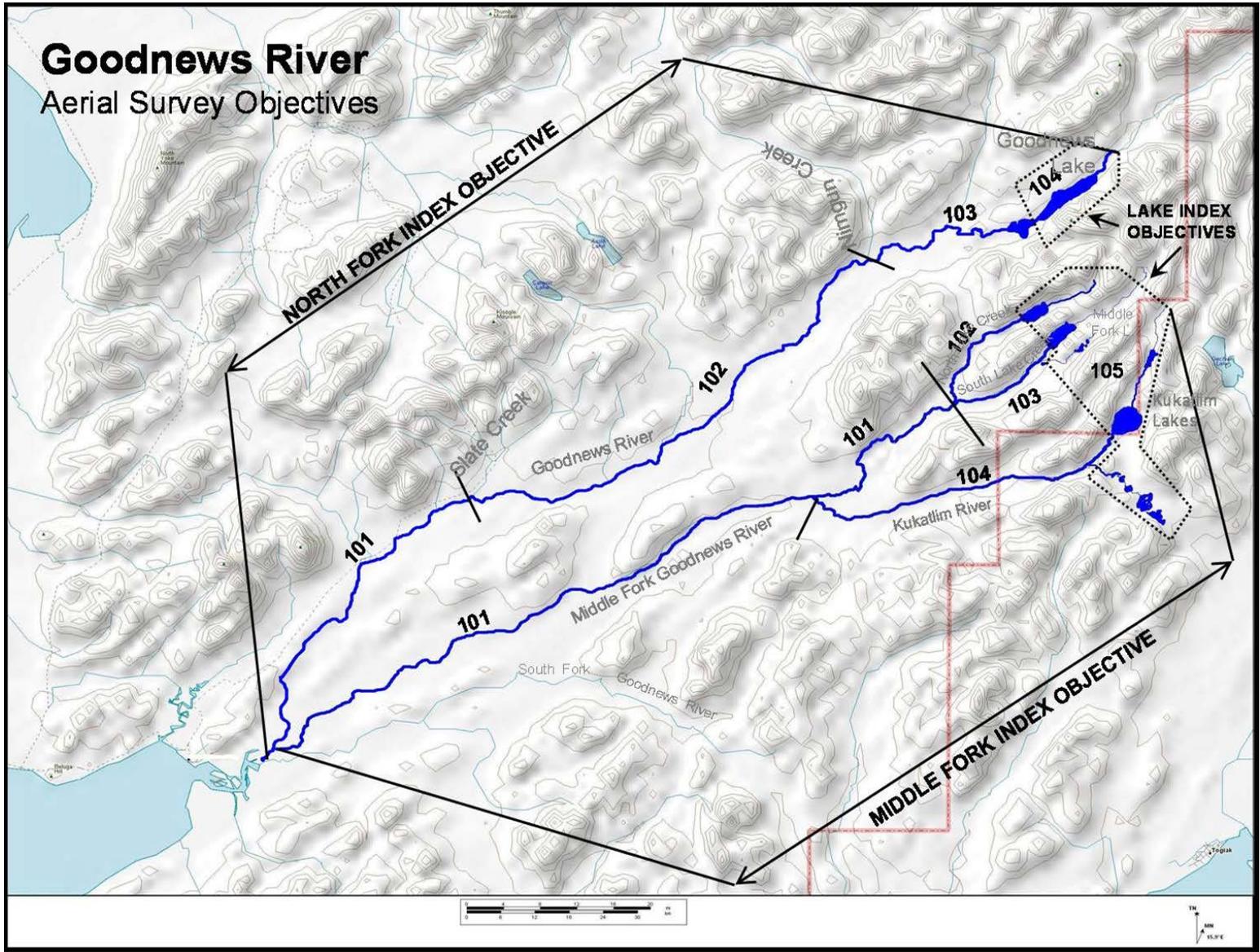


Figure 9.—Aerial survey map of the Goodnews River drainage, Kuskokwim management area.

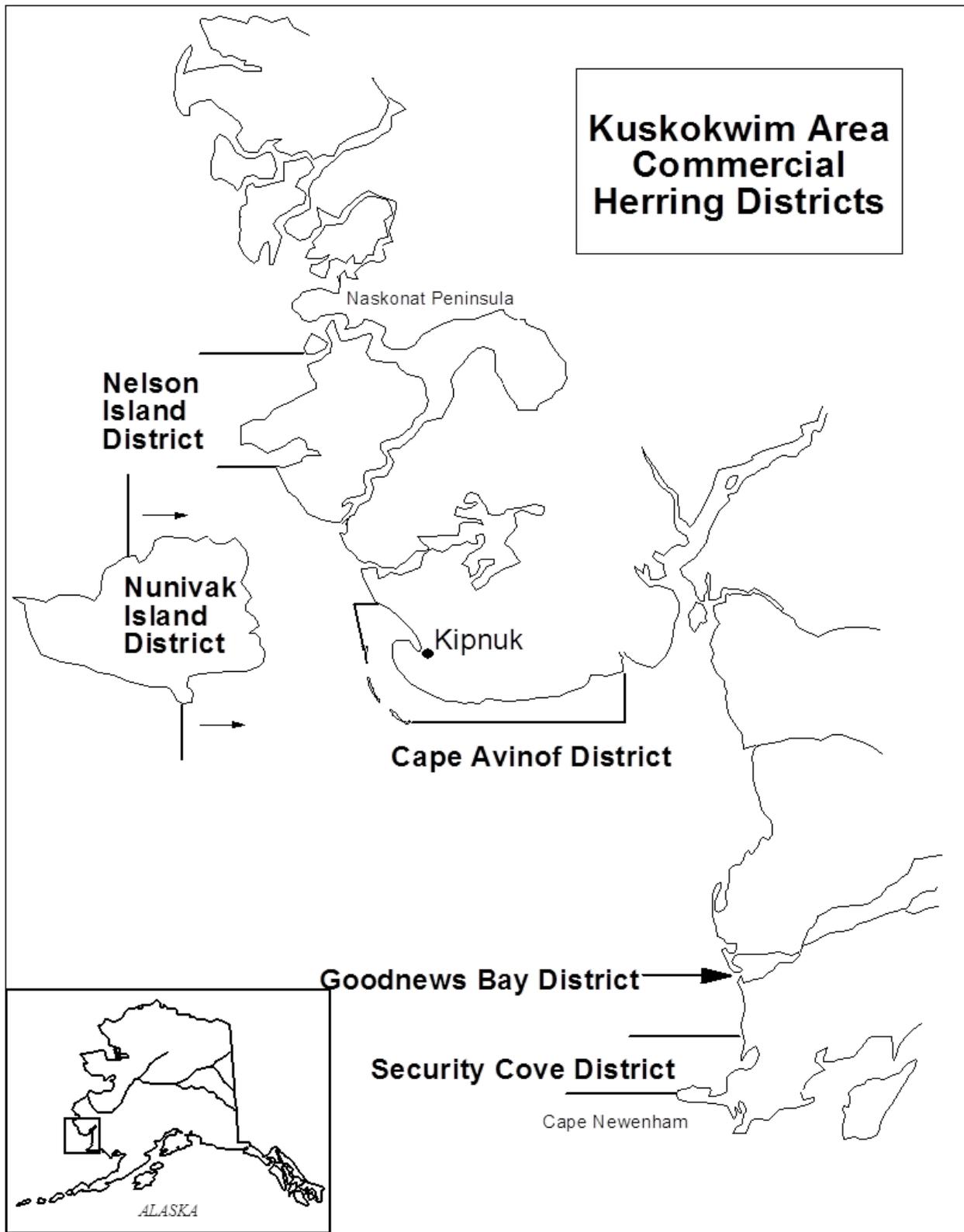


Figure 10.—Commercial herring districts, Kuskokwim management area.

APPENDIX A

Appendix A1.–Fish species commonly found, Kuskokwim management area.

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

Source: Common and Scientific Names of Fishes from the United States and Canada. 1991, fifth edition. American Fisheries Society, Special Publication No. 20, Bethesda, Maryland.

Appendix A2.–Historical events. Kuskokwim management area, 1913–2010.

Year	Event
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. Kogruklu 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).

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Year	Event
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 from 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.

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Year	Event
1987 (cont.)	<p>First fishing period restricted to that portion of District 1, which is downstream of Bethel, due to Chinook conservation concerns.</p> <p>Subsistence fishing in all of District 2 and its tributary streams is closed before, during, and after commercial periods.</p> <p>South peninsula sockeye and chum salmon tagging study.</p>
1988	<p>Review of the estimation of Kuskokwim River annual salmon passage through expansion of the Bethel test fish CPUE.</p> <p>Kuskokwim River sonar project (1988–1995).</p> <p>Kuskokwim River subsistence test fisheries (1988–1990).</p> <p>District 1 upstream boundary extended to Bogus Creek.</p> <p>District 2 reduced in size; downstream boundary moved upstream to High Bluffs, the upstream boundary moved downstream to Chuathbaluk.</p> <p>Portion of Kuskokwim River between Districts 1 and 2 closed to subsistence fishing when District 1 subsistence fishing is closed.</p> <p>Reorganization of District 1 Statistical Areas.</p> <p>District 4 Salmon Management Plan adopted.</p> <p>Establishment of the Kuskokwim River Salmon Management Working Group (1988–present).</p> <p>Eek Test Fishery (1988–1990, 1992–1995).</p>
1989	<p>USFWS conducted genetic sampling throughout the Kuskokwim Area.</p> <p>USFWS conducted Chinook tagging study in the lower Kuskokwim River.</p> <p>Record low temperatures recorded in interior Alaska coupled with shallow snow pack threaten survival of salmon eggs/fry from 1988 spawning.</p>
1990	<p>ADF&G genetic sampling (1990–1996).</p> <p>Reorganization of District 1 statistical areas.</p> <p>Upstream boundary of District 1 moved downstream from Bogus Creek to Big (Nelson) Island.</p> <p>Downstream boundary of District 2 moved upstream to second slough below Kalskag.</p> <p>District 4 northern boundary is extended north to Weelung Creek.</p>
1991	<p>USFWS operates Tuluksak River weir (1991–1994).</p> <p>Weir replaces counting tower on Goodnews River (1991–present).</p>
1992	<p>Aniak and Chuathbaluk test fisheries (1992–1995).</p> <p>Eek test fishery is re-established for the coho season.</p> <p>USFWS operates Kwethluk River weir (1992).</p> <p>Ban on high-seas drift gillnet fishing imposed.</p> <p>Unusual proportion of returning 5-year old chum salmon had reduced growth between the second third annuli.</p>

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Year	Event
1992 (cont.)	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 radiotelemetry 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 Kogruklu 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 ensonification 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 Kogruklu 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).

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Year	Event
1996 (cont.)	<p>Sale of salmon roe is prohibited in Districts 1 and 2 (effective beginning December 1997).</p> <p>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).</p> <p>NVK and ADF&G operate a salmon counting tower on the Kanektok River (1997–1998).</p>
1998	<p>Kuskokwim River declared an economic disaster area for second straight year due to low chum and coho salmon returns, harvests and exvessel prices.</p> <p>KNA and ADF&G operate a salmon weir on the Tatlawiksuk River (1998–present).</p> <p>Second year of anomalous Bering Sea conditions: warm water, odd plankton blooms, sea bird die offs, etc.</p> <p>High water levels severely restrict operational period of many Kuskokwim Area escapement projects.</p> <p>Record low average water temperature measured at the Bethel test fish site.</p>
1999	<p>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.</p> <p>Federal government assumes control of subsistence fishery management in federal waters on October 1.</p> <p>KNA-operated salmon weirs on the Tatlawiksuk and George rivers converted to resistance board (floating) weirs and operations extended through coho run.</p> <p>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.</p>
2000	<p>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 fishermen report that they were unable to meet their Chinook and chum salmon harvest goals.</p> <p>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.</p> <p>ADF&G and Federal Office of Subsistence Management (FOSM) restrict subsistence Chinook salmon fishery.</p> <p>Takotna Community Schools and ADF&G operate a resistance board weir on the Takotna River (2000-present).</p> <p>Kwethluk IRA and USFWS operate a resistance board weir on the Kwethluk River (2000-present).</p> <p>District W-1 divided into Subdistricts W-1A (above Bethel) and W-1B (below Bethel) and fishermen 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.</p> <p>Commercial fishermen required to identify vessels with either ADF&G or CFEC permit number.</p>

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Year	Event
2000 (cont.)	<p>ADF&G Division of Sport Fish creates Lower Yukon-Kuskokwim Management Area and stations Area Management Biologist in Bethel.</p> <p>Line attached to a pole (rod and reel) added to legal gear for subsistence fishing in AVCP area (prior to 2000 fishing season).</p> <p>Use of rod and reel for subsistence extended throughout the Kuskokwim Area (2000–2001 BOF meeting).</p>
2001	<p>Alaska Board of Fisheries designates Kuskokwim River Chinook and chum salmon to be stocks of yield concern based on the Sustainable Fisheries Policy because of poor runs since 1997.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>Native Community of Tuluksak and USFWS operate a resistance board weir on the Tuluksak River.</p> <p>NVK and ADF&G operate a salmon counting weir on the Kanektok River.</p> <p>ADF&G/CF and KNA operate fish wheels at Kalskag and Birch Tree Crossing to tag salmon and then make salmon population estimates.</p>
2002	<p>The State of Alaska declared the Kuskokwim region a disaster area for the fifth year in six because of low salmon prices in the bay and river and a complete lack of buyers during the chum season on the river.</p> <p>ADF&G did not join USFWS and Native groups in issuing a preseason 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.</p> <p>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.</p> <p>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.</p> <p>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.</p>

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Year	Event
2002 (cont.)	<p>ADF&G/SF and KNA operated salmon radiotelemetry projects on the Kuskokwim mainstem and on the Holitna River to estimate salmon abundance.</p> <p>Second consecutive season of no chum salmon (June or July) directed commercial fishery.</p>
2003	<p>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 and chum salmon run developed, the subsistence schedule was lifted on July 3.</p> <p>Third consecutive season of no chum salmon (June or July) directed commercial fishery.</p> <p>ADF&G/SF and KNA operated salmon radiotelemetry projects on the Kuskokwim mainstem and on the Holitna River to estimate salmon abundance.</p> <p>Record high coho salmon escapements throughout the Kuskokwim Area.</p>
2004	<p>The Alaska Board of Fisheries continued the stock of yield concern designation for Kuskokwim River Chinook and chum salmon based on the Sustainable Fisheries Policy. Chinook and chum salmon returns have been improving since 2000; however, a majority of annual returns in the previous five years did not have adequate harvestable surpluses beyond escapement and subsistence needs.</p> <p>The Alaska Board of Fisheries provided a commercial guideline harvest level of 0–50,000 sockeye salmon for the Kuskokwim River.</p> <p>The Alaska Board of Fisheries readopted regulations: 1) to increase subsistence fishing opportunity prior to and after commercial salmon fishing periods, 2) to provide opportunity for subsistence salmon fishing to occur in a portion of the District 1 subdistrict not open to commercial fishing, and 3) modified Kuskokwok Slough subsistence fishing regulations to be consistent with District 1 waters.</p> <p>The northern boundary of District W-4 (Quinhagak) was relocated approximately one mile north from Oyak Creek to the northernmost edge of the mouth of Weelung Creek.</p> <p>The western boundary of District W-5 (Goodnews Bay) was relocated seaward from a line between the northern and southern most points of the North and South spits at the entrance to Goodnews Bay to a line extending from approximately two miles South on the seaward entrance of Goodnews Bay to approximately two miles North on the seaward entrance to Goodnews Bay.</p> <p>Regulations for Districts 4 and 5 were amended to provide emergency order authority to increase gillnet length to 100 fathoms provided run strength was adequate</p> <p>The Goodnews Bay District herring superexclusive use regulations were repealed.</p> <p>Evaluation of AYK Region escapement goals and methodology resulted in revisions of the majority of existing Kuskokwim Area escapement goals to Sustainable Escapement Goal ranges using the Bue-Hasbrouck method (ADF&G 2004, Bue and Hasbrouck 2001).</p> <p>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 above average Chinook salmon run and an average to above average chum salmon run developed, the subsistence schedule was lifted on June 18.</p> <p>A limited chum and sockeye directed commercial fishery was prosecuted in late June and early July for the first time since 2000. Participation and processor capacity was limited compared to previous years.</p>

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Year	Event
2004 (cont.)	Water levels in rivers throughout the Kuskokwim Area were well below average from mid-July through September. Kuskokwim River water level attained a 50-year low during August as measured at the USGS gauging station at Crooked Creek.
2005	<p>Chum escapements were at record highs at nearly all monitoring projects with the exception of George River where escapement was near average.</p> <p>Chinook escapements ranged from above average to record highs at nearly all monitored locations with the exception of George River where the escapement was near average.</p> <p>Commercial salmon fishing opportunity in District 1 reduced in July because of poor chum salmon market conditions.</p> <p>Commercial salmon fishing opportunity in the Kuskokwim Bay districts was reduced during July because of limited processing capacity, and in August because of below average coho salmon abundance.</p>
2006	<p>Commercial salmon fishing opportunity in District 1 reduced in July because of poor chum salmon market conditions.</p> <p>Chum salmon escapements were at record highs at the Kwethluk, George, and Takotna river monitoring projects.</p> <p>During four commercial periods in early July limits were imposed on the number of fish that could be delivered by District 4 and 5 fishermen because of limited capacity to process an above average catch.</p>
2007	<p>The Alaska Board of Fisheries (BOF) discontinued the stock of concern designation for Kuskokwim River Chinook and chum salmon based on at or above the historical average runs each year since 2002.</p> <p>The BOF passed a proposal giving ADF&G authority to allow up to 8-inch mesh gillnets in District 1 by emergency order; otherwise, all commercial openings will continue to be limited to gillnet mesh sizes of 6 inches or less. The BOF's intent in allowing for up to 8-inch mesh gear was not to establish a large mesh gear Chinook salmon commercial fishery, but to provide a management tool that may or may not be used. Additionally, the commercial Chinook salmon fishery closure was discontinued, and the commercial salmon fishery is to be managed based on run strength and harvestable surpluses of Chinook, sockeye, and chum salmon.</p> <p>The BOF passed a proposal giving ADF&G authority to allow the lower portion of Subdistrict 1-B to open to commercial fishing up to two (2) hours earlier than the remainder of Subdistrict 1-B.</p> <p>A lack of processing capacity, commercial interest, and continued poor chum salmon market conditions resulted in no commercial openings in June and July.</p> <p>From late June through mid-July, limits on the number of fish that could be delivered by District 4 and 5 fishermen were imposed because of limited processing capacity.</p>
2008	<p>Commercial salmon fishing opportunity in District 1 reduced in July because of poor chum salmon market conditions.</p> <p>From late June through mid-July, limits on the number of fish that could be delivered by District 4 and 5 fishermen were imposed because of limited processing capacity.</p>

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Year	Event
2010	<p data-bbox="380 296 1430 359">Kuskokwim River Chinook salmon spawning escapements were among the lowest on record and only the Kogrukluuk achieved the lower end of the escapement goal.</p> <p data-bbox="380 373 1430 436">Kuskokwim River Tributaries, Kwethluk and Tuluksak were closed to subsistence and sport harvest of Chinook salmon for most of the season by the USFWS.</p> <p data-bbox="380 451 1078 483">Kuskokwim River chum salmon catch was the largest since 1998.</p> <p data-bbox="380 497 1430 560">Kuskokwim River sockeye salmon run timing was the latest on record for the Bethel Test Fishery with two distinct pulses and an average commercial harvest.</p> <p data-bbox="380 575 997 606">Telaquana Lake weir passed over 70,000 sockeye salmon.</p> <p data-bbox="380 621 1273 653">High water levels were sustained through most of August on the Kuskokwim River.</p> <p data-bbox="380 667 1430 730">Coho salmon fishery closed on August 12th due to low abundance and the commercial catch was the lowest since 1999.</p> <p data-bbox="380 745 1430 808">District W-4 highest exvessel value since 1988, primarily attributed to record sockeye salmon harvest.</p> <p data-bbox="380 823 964 854">District W-5 had its highest exvessel value since 1994.</p>

Appendix A3.–Distance to selected locations from mouth of the Kuskokwim River.

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 Sonar 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

-continued-

Location ^a	Distance from River Mouth ^b		Distance from Bethel	
	Kilometer	Miles	Kilometer	Miles
Holokuk River	362	225	256	159
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
Red Devil (community)	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
Kogruklu River	709	441	603	375
Kogruklu River Weir	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
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
McGrath (community)	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 MapSource¹) of U.S. Geological Survey 1:100,000 scale maps. Routing is as if traveling by boat. Parentheticals around numbers indicate downstream distances from Bethel.

^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 southernmost tip of Eek Island (latitude N 60° 05.569, longitude W 162° 19.054), and is one of three points that define the downstream boundary of District 1.

¹ Product names used in this report are included for scientific completeness, but do not constitute a product endorsement.

Appendix A4.–Estimated exvessel value of the commercial salmon harvest, Kuskokwim Management Area, 1987–2010.

Year	District 1		District 2		District 4		District 5		Total Value	Total Permits
	Value of Catch	Permits Fished ^a								
1980	-	663	-	43	-	169	-	48	-	923
1981	-	679	-	153	-	186	-	48	-	1,066
1982	-	686	-	60	-	177	-	48	-	971
1983	-	679	-	43	-	226	-	79	-	1,027
1984	-	654	-	58	-	263	-	77	-	774
1985	-	654	-	23	-	300	-	69	-	781
1986	-	688	-	43	-	324	\$268,250	86	\$268,250	790
1987	\$4,893,016	705	\$139,049	29	\$858,818	310	\$572,293	116	\$6,463,176	800
1988	\$10,060,427	745	\$246,069	29	\$1,381,661	289	\$1,038,041	125	\$12,726,198	813
1989	\$3,883,321	743	\$131,168	30	\$746,071	227	\$378,962	88	\$5,139,522	824
1990	\$3,385,636	742	\$121,329	22	\$1,013,472	390	\$361,203	82	\$4,881,640	823
1991	\$2,971,767	749	\$111,651	23	\$592,436	346	\$273,795	72	\$3,949,649	819
1992	\$3,764,804	741	\$147,992	22	\$993,664	349	\$439,331	111	\$5,345,791	814
1993	\$2,533,895	737	\$90,906	20	\$898,255	408	\$440,955	114	\$3,964,011	804
1994	\$3,559,114	706	\$129,555	17	\$837,157	307	\$591,903	116	\$5,117,729	793
1995	\$2,776,677	712	\$107,913	21	\$1,047,188	382	\$287,599	87	\$4,219,377	798
1996	\$2,108,418	620	\$11,015	8	\$534,726	218	\$222,388	54	\$2,876,547	714
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	\$167,748	114	\$28,703	30	\$323,659	407
2003	\$453,187	359	\$0	0	\$304,553	114	\$135,287	34	\$893,027	438
2004	\$943,767	390	\$0	0	\$405,344	116	\$135,246	29	\$1,484,357	467
2005	\$448,853	403	\$0	0	\$571,965	145	\$134,295	29	\$1,155,113	484
2006	\$451,390	373	\$0	0	\$551,182	132	\$141,235	24	\$1,143,807	453
2007	\$380,842	366	\$0	0	\$660,865	125	\$223,329	28	\$1,265,036	456
2008	\$538,310	374	\$0	0	\$750,731	146	\$198,070	25	\$1,487,111	462
2009	\$502,848	342	\$0	0	\$747,325	179	\$192,031	39	\$1,442,204	434
2010	\$765,606	433	\$0	0	\$1,655,321	241	\$473,661	48	\$2,894,588	722
10 Yr Avg	\$478,553	387	\$304	0	\$485,489	146	\$149,899	32	\$1,114,245	474

Note: Dashes indicate no information available.

^a Number of permits that made at least one delivery.

Appendix A5.–Commercial and subsistence salmon harvest, Kuskokwim management area, 1913–2010.

Year	Commercial Harvest						Subsistence Harvest						Total Harvest	
	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Sockeye	Chum	Other ^a	Pink	Coho ^b		Subtotal
1913	7,800	-	-	-	-	7,800	-	-	-	-	-	-	-	7,800
1914	-	2,667	-	-	-	2,667	-	-	-	-	-	-	-	2,667
1915	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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
1943	-	-	-	-	-	-	6,400	-	-	325,339	-	-	331,739	331,739
1944	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1945	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1946	2,288	-	-	-	674	2,962	-	-	-	-	-	-	-	2,962
1947	5,356	-	-	-	-	5,356	-	-	-	-	-	-	-	5,356

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Appendix A5.–Page 2 of 4.

Year	Commercial Harvest						Subsistence Harvest						Total Harvest	
	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Sockeye	Chum	Other ^a	Pink	Coho ^b		Subtotal
1948	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1949	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1950	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1951	4,210	-	-	-	-	4,210	-	-	-	-	-	-	-	4,210
1952	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1953	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1954	57	-	-	-	-	57	-	-	-	-	-	-	-	57
1955	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1956	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1957	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1958	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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
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

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Year	Commercial Harvest						Subsistence Harvest							Total Harvest
	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Sockeye	Chum	Other ^a	Pink	Coho ^b	Subtotal	
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 ^c	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 ^c	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 ^{cd}	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 ^c	66,914	82,365	801,355	819	554,411	1,505,864	85,322	37,088	145,091	-	-	57,846	325,347	1,831,211
1990 ^c	84,451	203,919	521,023	16,050	443,783	1,269,226	92,675	39,659	131,470	-	-	50,708	314,512	1,583,738
1991 ^c	48,170	202,441	502,187	522	556,818	1,310,138	90,226	56,401	96,314	-	-	55,620	298,561	1,608,699
1992 ^c	67,597	192,341	436,506	85,978	772,449	1,554,871	68,685	34,158	99,576	-	-	44,494	246,913	1,801,784
1993 ^c	26,636	167,235	94,937	71	686,570	975,449	91,722	51,362	61,724	-	-	35,295	240,103	1,215,552
1994 ^c	27,345	191,169	360,893	84,870	856,100	1,520,377	98,378	39,280	76,949	-	-	36,504	251,111	1,771,488
1995 ^c	72,352	198,045	707,212	318	555,539	1,533,466	100,157	28,622	68,941	-	-	39,165	236,885	1,770,351
1996 ^c	22,959	122,260	301,975	1,663	1,099,865	1,548,722	81,597	35,037	90,239	-	-	34,699	241,572	1,790,294
1997 ^c	47,990	123,002	67,200	7	166,648	404,847	85,506	41,251	40,993	-	-	30,717	198,467	603,314
1998 ^c	44,402	130,074	268,199	2,720	312,517	757,912	86,113	37,579	67,664	-	-	27,240	218,596	976,508
1999 ^c	25,019	81,201	72,659	2	32,251	211,132	77,660	49,388	47,612	-	-	27,753	202,413	413,545
2000 ^c	26,115	109,939	49,574	17	307,439	493,084	68,841	41,783	51,696	-	-	33,786	196,106	689,190
2001 ^c	14,384	59,545	21,893	0	220,804	316,626	77,570	50,065	49,874	-	-	29,504	207,013	523,639
2002 ^c	12,531	24,190	34,951	0	113,199	184,871	70,219	25,499	69,019	-	-	32,780	197,517	382,388
2003 ^c	16,014	63,646	36,225	0	346,555	462,440	72,498	34,452	43,320	-	-	35,240	185,510	647,950
2004 ^c	30,235	63,492	51,965	0	542,206	687,898	85,086	32,433	52,374	-	-	35,735	205,628	893,526
2005 ^c	31,014	120,379	85,236	19	205,762	442,410	72,174	34,129	46,777	-	1,343	27,613	182,036	624,446
2006 ^c	24,853	148,783	94,789	1	224,865	493,291	63,177	30,226	64,206	-	2,710	30,706	191,025	684,316
2007 ^c	22,864	153,762	79,510	0	189,448	445,584	72,097	33,233	51,308	-	-	25,107	181,745	627,329
2008 ^{ce}	23,958	112,580	97,889	15	259,666	494,108	98,521	58,182	69,039	-	-	48,841	274,583	768,691
2009 ^{ce}	22,093	170,370	184,933	2	161,067	538,465	78,491	35,160	43,734	-	-	30,358	187,743	726,208
2010	22,417	201,864	226,672	6	256,871	707,830								
10 -Yr.														
Avg. ^f	22,406	102,669	73,697	5 ^g	257,101	455,878	75,867	37,516	54,135	-	-	32,967	200,891	656,768

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Note: Dashes indicate no information available.

^a Includes sockeye, pink and chum 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 Reported commercial harvests includes personal use catch and Bethel Test Fishery sales and donations.

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

^e Numbers reported here are preliminary estimates generated by the Division of Commercial Fisheries. Methodology to estimate harvest has changed slightly since 2007 with the incorporation of stratified sampling. A revision of historical estimates published by Division of Subsistence from 1990 to 2007 using the current methodology is pending review. Comparison of 2008 and 2009 estimates with years prior should be made cautiously.

^f 10-year average from 1999 to 2008.

^g Even years only.

Appendix A6.—Commercial salmon harvest by period, District W-1, Kuskokwim River, Kuskokwim Management Area, 1996–2010.

Year	Date	No. of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1995	6/22	569	4	2,276	6,895	3.03	4,420	1.94	49,157	21.60	0	0.00
	6/26	568	4	2,272	9,452	4.16	19,449	8.56	93,152	41.00	0	0.00
	6/29	565	4	2,260	4,972	2.20	18,188	8.05	83,580	36.98	0	0.00
	7/3	475	4	1,900	2,847	1.50	17,078	8.99	89,427	47.07	0	0.00
	7/6	481	4	1,924	1,521	0.79	14,765	7.67	81,246	42.23	0	0.00
	7/10	494	4	1,976	906	0.46	7,100	3.59	86,368	43.71	21	0.01
	7/14	435	4	1,740	546	0.31	4,219	2.42	43,137	24.79	221	0.13
	7/18	336	6	2,016	366	0.18	2,482	1.23	37,294	18.50	671	0.33
	7/21	368	4	1,472	202	0.14	940	0.64	21,039	14.29	1,272	0.86
	8/4	234	6	1,404	64	0.05	123	0.09	1,072	0.76	48,665	34.66
	8/8	611	6	3,666	95	0.03	363	0.10	1,229	0.34	98,548	26.88
	8/12	617	6	3,702	50	0.01	359	0.10	899	0.24	102,421	27.67
	8/16	593	6	3,558	52	0.01	147	0.04	208	0.06	65,713	18.47
	8/19	555	6	3,330	28	0.01	87	0.03	133	0.04	41,057	12.33
	8/22	497	6	2,982	16	0.01	113	0.04	157	0.05	43,978	14.75
	8/26	477	6	2,862	25	0.01	117	0.04	101	0.04	29,129	10.18
	8/29	355	6	2,130	15	0.01	45	0.02	39	0.02	17,790	8.35
	9/1	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	6/17	245	2	490	2,045	4.17	1,850	3.78	11,560	23.59	0	0.00
	6/20	283	2	566	2,046	3.61	6,423	11.35	27,442	48.48	0	0.00
	6/24	240	2	360	666	1.85	4,420	12.28	19,438	53.99	0	0.00
	7/2	224	2	448	545	1.22	3,962	8.84	20,915	46.69	0	0.00
	7/5	194	2	388	316	0.81	3,481	8.97	17,651	45.49	2	1.00
	7/8	211	2	422	178	0.42	6,795	16.10	18,801	44.55	24	0.06
	7/12	237	2	474	230	0.49	3,781	7.98	26,468	55.84	1,608	3.39
	7/16	197	2	394	87	0.22	602	1.53	15,192	38.56	4,675	11.87
	7/19	267	3	801	164	0.20	298	0.37	13,390	16.72	14,746	18.41
	7/22	417	6	2,502	183	0.07	639	0.26	14,504	5.80	50,443	20.16
	7/25	487	8	3,896	124	0.03	256	0.07	9,024	2.32	113,637	29.17
	7/29	526	6	3,156	97	0.03	186	0.06	3,828	1.21	144,773	45.87
	7/31	464	6	2,784	52	0.02	92	0.03	1,541	0.55	122,946	44.16
	8/3	541	6	3,246	59	0.02	129	0.04	1,097	0.34	132,540	40.83
	8/7	514	6	3,084	43	0.01	73	0.02	581	0.19	94,332	30.59
	8/10	502	6	3,012	45	0.01	60	0.02	797	0.26	83,653	27.77
	8/13	471	6	2,826	25	0.01	82	0.03	296	0.10	70,053	24.79
	8/16	459	6	2,754	28	0.01	147	0.05	215	0.08	49,012	17.80
	8/20	400	6	2,400	19	0.01	83	0.03	51	0.02	25,870	10.78
	8/23	293	6	1,758	9	0.01	22	0.01	23	0.01	13,133	7.47
	8/26	209	6	1,254	11	0.01	23	0.02	13	0.01	8,684	6.93
Total		620	93	37,015	6,972		33,404		202,827		930,131	

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Year	Date	No. of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1997	6/23	353	6	2,118	10,023	4.73	21,218	10.02	13,090	6.18	0	0.00
	7/31	429	6	2,574	141	0.05	352	0.14	2,060	0.80	14,963	5.81
	8/6	513	6	3,078	145	0.05	229	0.07	1,387	0.45	37,216	12.09
	8/12	507	6	3,042	61	0.02	122	0.04	408	0.13	56,149	18.46
	8/18	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	6/24	338	6	2,028	6,413	3.16	9,043	4.46	32,467	16.01	0	0.00
	6/29	426	6	2,556	6,358	2.49	22,506	8.81	66,789	26.13	0	0.00
	7/3	445	4	1,780	2,277	1.28	15,985	8.98	51,471	28.92	1	0.00
	7/11	417	4	1,668	1,127	0.68	10,172	6.10	29,407	17.63	23	0.01
	7/22	346	6	2,076	460	0.22	1,538	0.74	15,663	7.54	3,633	1.75
	7/27	370	6	2,220	356	0.16	932	0.42	7,500	3.38	18,497	8.33
	8/1	425	6	2,550	156	0.06	235	0.09	2,787	1.09	26,791	10.51
	8/6	496	6	2,976	88	0.03	295	0.10	1,020	0.34	45,128	15.16
	8/11	464	6	2,784	67	0.02	95	0.03	388	0.14	58,426	20.99
	8/17	439	6	2,634	34	0.01	45	0.02	122	0.05	34,640	13.15
	8/22	382	6	2,292	19	0.01	53	0.02	67	0.03	18,936	8.26
	8/29	154	6	924	1	0.00	7	0.01	17	0.02	4,093	4.43
	Total		615	68	26,488	17,356		60,906		207,698		210,168
1999	6/30	409	6	2,454	4,668	1.90	16,772	6.83	22,700	9.25	0	0.00
	8/7	389	6	2,334	37	0.02	204	0.09	306	0.13	23,593	10.11
Total		509	12	4,788	4,705		16,976		23,006		23,593	
2000	7/5 ^a	224	4	896	357	0.40	3,658	4.08	11,026	12.31	0	0.00
	8/1 ^a	248	6	1,488	12	0.01	94	0.06	156	0.10	25,642	17.23
	8/4 ^b	123	6	738	7	0.01	7	0.01	53	0.07	50,260	68.10
	8/5 ^a	270	6	1,620	8	0.00	73	0.05	43	0.03	32,056	19.79
	8/8 ^b	186	6	1,116	9	0.01	26	0.02	55	0.05	26,771	23.99
	8/9 ^a	217	6	1,302	13	0.01	57	0.04	128	0.10	20,905	16.06
	8/12 ^b	189	6	1,134	12	0.01	17	0.01	23	0.02	37,451	33.03
	8/14 ^a	224	6	1,344	6	0.00	75	0.06	33	0.02	16,766	12.47
	8/17 ^b	193	6	1,158	5	0.00	23	0.02	15	0.01	17,916	15.47
	8/18 ^a	199	6	1,194	6	0.01	58	0.05	16	0.01	14,697	12.31
	8/21 ^b	158	6	948	4	0.00	3	0.00	10	0.01	8,577	9.05
	8/22 ^a	143	6	858	1	0.00	32	0.04	4	0.00	4,489	5.23
	8/25 ^{ab}	106	6	636	4	0.01	7	0.01	8	0.01	4,191	6.59
Total		532	76	14,432	444		4,130		11,570		259,721	

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Year	Date	No. of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2001	8/3 ^a	144	4	576	9	0.02	22	0.04	347	0.60	17,174	29.82
	8/6 ^b	108	4	432	8	0.02	5	0.01	101	0.23	20,089	46.50
	8/8 ^{ab}	262	6	1,572	23	0.01	11	0.01	356	0.23	46,369	29.50
	8/11 ^b	175	6	1,050	20	0.02	10	0.01	218	0.21	41,643	39.66
	8/13 ^a	143	4	572	5	0.01	4	0.01	37	0.06	9,647	16.87
	8/15 ^{ab}	296	6	1,776	5	0.00	15	0.01	122	0.07	28,893	16.27
	8/17 ^{ab}	259	6	1,554	12	0.01	9	0.01	65	0.04	11,064	7.12
	8/20 ^{ab}	149	6	894	6	0.01	5	0.01	17	0.02	5,440	6.09
	8/22 ^{ab}	149	6	894	0	0.00	3	0.00	4	0.00	8,149	9.12
	8/25 ^{ab}	118	6	708	2	0.00	0	0.00	5	0.01	4,530	6.40
Total		412	54	10,028	90		84		1,272		192,998	
2002	8/2 ^a	40	2	80	7	0.09	3	0.04	134	1.68	2,492	31.15
	8/5 ^{ab}	175	4	700	18	0.03	41	0.06	573	0.82	11,164	15.95
	8/8 ^b	119	6	714	22	0.03	20	0.03	541	0.76	22,890	32.06
	8/9 ^a	132	6	792	8	0.01	9	0.01	254	0.32	13,749	17.36
	8/12 ^b	136	6	816	9	0.01	8	0.01	292	0.36	22,962	28.14
	8/13 ^a	109	6	654	8	0.01	3	0.00	106	0.16	10,206	15.61
Total		318	30	3,756	72		84		1,900		83,463	
2003	7/31 ^b	57	2	114	11	0.10	13	0.11	405	3.55	7,717	67.69
	8/1 ^a	95	4	380	30	0.08	69	0.18	545	1.43	9,707	25.54
	8/4 ^b	91	4	364	7	0.02	10	0.03	310	0.85	14,308	39.31
	8/5 ^a	119	4	476	13	0.03	69	0.14	214	0.45	12,233	25.70
	8/7 ^b	123	6	738	16	0.02	3	0.00	374	0.51	30,162	40.87
	8/8 ^a	118	4	472	12	0.03	41	0.09	200	0.42	15,800	33.47
	8/11 ^b	130	4	520	9	0.02	9	0.02	208	0.40	31,371	60.33
	8/12 ^a	107	4	428	12	0.03	10	0.02	116	0.27	18,703	43.70
	8/14 ^b	141	4	564	12	0.02	2	0.00	78	0.14	36,537	64.78
	8/15 ^a	116	4	464	15	0.03	12	0.03	67	0.14	16,027	34.54
	8/18 ^b	105	3	315	3	0.01	3	0.01	40	0.13	14,219	45.14
	8/19 ^a	95	4	380	6	0.02	15	0.04	25	0.07	8,720	22.95
	8/21 ^b	111	6	666	2	0.00	3	0.00	27	0.04	18,804	28.23
	8/22 ^a	49	6	294	0	0.00	1	0.00	14	0.05	2,914	9.91
8/25 ^b	109	6	654	1	0.00	5	0.01	32	0.05	12,789	19.56	

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Year	Date	No. of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2003	8/26 ^a	112	6	672	4	0.01	2	0.00	15	0.02	11,434	17.01
	8/28 ^b	100	6	600	3	0.01	7	0.01	40	0.07	8,228	13.71
	8/29 ^b	60	6	360	0	0.00	4	0.01	29	0.08	4,524	12.57
	9/1 ^b	44	8	352	1	0.00	1	0.00	12	0.03	3,504	9.95
	9/2 ^b	37	8	296	0	0.00	0	0.00	7	0.02	3,011	10.17
	9/3 ^b	30	8	240	1	0.00	2	0.01	6	0.03	3,121	13.00
Total		359	107	9,349	158		281		2,764		283,833	
2004	6/30 ^a	52	2	104	522	5.02	1,781	17.13	2,798	26.90	0	0.00
	7/2 ^b	44	3	132	488	3.70	1,900	14.39	2,426	18.38	0	0.00
	7/6 ^b	38	3	114	238	2.09	1,853	16.25	1,946	17.07	3	0.03
	7/7 ^a	50	4	200	384	1.92	1,780	8.90	5,086	25.43	16	0.08
	7/28 ^b	90	4	360	127	0.35	70	0.19	2,343	6.51	6,004	16.68
	7/30 ^a	99	4	396	61	0.15	273	0.69	587	1.48	9,462	23.89
	8/2 ^b	105	6	630	75	0.12	70	0.11	849	1.35	16,267	25.82
	8/3 ^a	115	6	690	68	0.10	192	0.28	646	0.94	23,957	34.72
	8/5 ^b	120	6	720	39	0.05	41	0.06	586	0.81	19,235	26.72
	8/6 ^a	144	6	864	59	0.07	110	0.13	624	0.72	28,638	33.15
	8/9 ^b	139	6	834	54	0.06	168	0.20	504	0.60	47,151	56.54
	8/10 ^a	151	6	906	18	0.02	57	0.06	207	0.23	20,022	22.10
	8/12 ^b	152	6	912	29	0.03	50	0.05	371	0.41	28,751	31.53
	8/13 ^a	91	6	546	16	0.03	8	0.01	95	0.17	20,353	37.28
	8/16 ^b	144	6	864	22	0.03	14	0.02	140	0.16	29,965	34.68
	8/17 ^a	114	6	684	8	0.01	33	0.05	44	0.06	8,491	12.41
	8/19 ^b	118	6	708	5	0.01	9	0.01	110	0.16	6,834	9.65
	8/20 ^a	82	6	492	11	0.02	30	0.06	103	0.21	9,287	18.88
	8/23 ^{ab}	206	8	1,648	26	0.02	23	0.01	223	0.14	32,563	19.76
	8/24 ^{ab}	211	8	1,688	24	0.01	28	0.02	178	0.11	32,156	19.05
	8/27 ^{ab}	224	8	1,792	9	0.01	22	0.01	124	0.07	31,623	17.65
	8/30 ^{ab}	186	8	1,488	9	0.01	13	0.01	85	0.06	23,649	15.89
	9/2 ^{ab}	163	6	978	2	0.00	5	0.01	32	0.03	14,563	14.89
	9/4 ^{ab}	122	6	732	6	0.01	0	0.00	13	0.02	11,986	16.37
	9/6 ^{ab}	115	6	690	2	0.00	2	0.00	15	0.02	8,406	12.18
	9/8 ^{ab}	80	6	480	3	0.01	0	0.00	15	0.03	6,025	12.55
Total		390	148	19,652	2,305		8,532		20,150		435,407	

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Year	Date	No. of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2005	6/24 ^a	188	4	752	2,276	3.03	7,938	10.56	13,553	18.02	0	0.00
	6/28 ^b	51	3	153	405	2.65	2,879	18.82	3,178	20.77	0	0.00
	6/30 ^b	71	4	284	850	2.99	6,290	22.15	7,317	25.76	0	0.00
	7/1 ^a	151	4	604	874	1.45	6,962	11.53	27,901	46.19	0	0.00
	8/2 ^a	125	6	750	94	0.13	1,155	1.54	3,297	4.40	8,666	11.55
	8/4 ^b	75	6	450	47	0.10	303	0.67	4,156	9.24	8,814	19.59
	8/5 ^a	171	6	1,026	88	0.09	790	0.77	3,159	3.08	21,463	20.92
	8/8 ^b	129	6	774	59	0.08	305	0.39	2,971	3.84	25,165	32.51
	8/9 ^a	174	6	1,044	25	0.02	404	0.39	1,389	1.33	20,026	19.18
	8/11 ^b	139	6	834	30	0.04	205	0.25	1,282	1.54	19,686	23.60
	8/15 ^a	127	6	762	16	0.02	179	0.23	274	0.36	7,768	10.19
	8/22 ^b	128	6	768	6	0.01	45	0.06	372	0.48	12,049	15.69
	8/25 ^a	106	6	636	3	0.00	109	0.17	88	0.14	6,549	10.30
	8/29 ^b	103	6	618	5	0.01	22	0.04	121	0.20	7,159	11.58
	9/1 ^{ab}	128	6	768	6	0.01	59	0.08	81	0.11	4,974	6.48
Total		404	81		4,784		27,645		69,139		142,319	
2006	6/26 ^b	74	6	444	1,647	3.71	5,218	11.75	19,694	44.36	0	0.00
	6/28 ^a	99	6	594	846	1.42	6,456	10.87	16,312	27.46	0	0.00
	8/1 ^a	135	6	810	56	0.07	287	0.35	1,098	1.36	10,309	12.73
	8/3 ^b	80	6	480	28	0.06	63	0.13	1,032	2.15	8,872	18.48
	8/4 ^a	128	6	768	24	0.03	49	0.06	1,462	1.90	10,650	13.87
	8/7 ^b	103	6	618	30	0.05	76	0.12	1,361	2.20	12,163	19.68
	8/8 ^a	151	6	906	23	0.03	99	0.11	667	0.74	14,162	15.63
	8/10 ^b	118	6	708	26	0.04	50	0.07	969	1.37	17,139	24.21
	8/11 ^a	157	6	942	20	0.02	96	0.10	400	0.42	23,209	24.64
	8/14 ^b	133	6	798	21	0.03	47	0.06	336	0.42	15,668	19.63
	8/15 ^a	155	6	930	11	0.01	36	0.04	120	0.13	18,253	19.63
	8/17 ^b	130	6	780	11	0.01	32	0.04	240	0.31	18,455	23.66
	8/18 ^a	128	6	768	7	0.01	20	0.03	108	0.14	7,833	10.20
	8/21 ^b	106	6	636	5	0.01	11	0.02	60	0.09	5,678	8.93
	8/22 ^a	113	6	678	5	0.01	23	0.03	52	0.08	6,004	8.86
	8/24 ^b	68	6	408	3	0.01	3	0.01	45	0.11	3,318	8.13
	8/25 ^a	95	6	570	6	0.01	27	0.05	32	0.06	5,427	9.52
8/28 ^{ab}	110	6	660	7	0.01	18	0.03	36	0.05	5,120	7.76	
8/30 ^{ab}	84	6	504	1	0.00	7	0.01	46	0.09	3,338	6.62	
Total		373	114		2,777		12,618		44,070		185,598	

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Year	Date	No. of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2007	8/1 ^a	138	6	828	32	0.04	131	0.16	3,500	4.23	19,133	23.11
	8/3 ^b	107	6	642	41	0.06	62	0.10	2,510	3.91	19,728	30.73
	8/6 ^a	172	6	1,032	28	0.03	153	0.15	1,082	1.05	15,926	15.43
	8/8 ^b	124	6	744	9	0.01	55	0.07	1,208	1.62	14,402	19.36
	8/10 ^a	187	6	1,122	29	0.03	128	0.11	724	0.65	13,059	11.64
	8/13 ^b	125	6	750	10	0.01	13	0.02	463	0.62	12,491	16.65
	8/14 ^a	176	6	1,056	11	0.01	44	0.04	436	0.41	15,411	14.59
	8/16 ^b	121	6	726	3	0.00	17	0.02	316	0.44	7,696	10.60
	8/17 ^a	135	6	810	4	0.00	31	0.04	112	0.14	6,231	7.69
	8/20 ^b	80	6	480	3	0.01	4	0.01	110	0.23	3,266	6.80
	8/22 ^{ab}	141	6	846	8	0.01	24	0.03	154	0.18	7,447	8.80
	8/24 ^{ab}	129	6	774	1	0.00	41	0.05	148	0.19	6,259	8.09
Total		366	72		179		703		10,763		141,049	
2008	6/20 ^a	171	6	1,026	6,415	6.25	8,653	8.43	12,903	12.58	0	0.00
	6/24 ^a	126	3	378	1,372	3.63	2,906	7.69	6,560	17.35	0	0.00
	6/27 ^a	135	3	405	990	2.44	3,842	9.49	7,804	19.27	0	0.00
	7/2 ^{ab}	1	4	4	19	4.75	75	18.75	0	0.00	0	0.00
	7/12 ^{ab}	1	6	6	1	0.17	2	0.33	160	26.67	0	0.00
	7/19 ^{ab}	1	6	6	0	0.00	2	0.33	98	16.33	14	2.33
	7/22 ^{ab}	1	6	6	0	0.00	3	0.50	120	20.00	94	15.67
	7/25 ^{ab}	1	6	6	0	0.00	0	0.00	0	0.00	80	13.33
	7/30 ^{ab}	1	6	6	0	0.00	2	0.33	113	18.83	117	19.50
	8/2 ^{ab}	1	6	6	0	0.00	0	0.00	0	0.00	150	25.00
	8/4 ^b	66	3	198	9	0.05	13	0.07	487	2.46	6,149	31.06
	8/6 ^a	118	4	472	15	0.03	29	0.06	482	1.02	12,013	25.45
	8/8 ^{ab}	224	6	1,344	18	0.01	23	0.02	940	0.70	28,877	21.49
	8/11 ^b	108	4	432	5	0.01	9	0.02	369	0.85	14,991	34.70
	8/13 ^a	167	4	668	6	0.01	17	0.03	143	0.21	19,667	29.44
	8/15 ^a	169	4	676	4	0.01	9	0.01	111	0.16	20,137	29.79
	8/18 ^b	112	4	448	4	0.01	0	0.00	47	0.10	11,513	25.70
8/20 ^a	137	4	548	4	0.01	7	0.01	35	0.06	7,017	12.80	
8/22 ^{ab}	192	6	1,152	1	0.00	8	0.01	84	0.07	11,237	9.75	
8/25 ^{ab}	164	6	984	2	0.00	1	0.00	60	0.06	10,806	10.98	
Total		374	97	8,771	8,865		15,601		30,516		142,862	

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Year	Date	No. of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho		
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE	
2009	6/23	167	4	668	3,003	4.50	8,112	12.14	9,149	13.70	0	0.00	
	6/26	58	4	232	2,552	11.00	6,870	29.61	14,466	62.35	0	0.00	
	7/1	48	3	144	762	5.29	7,798	54.15	18,703	129.88	0	0.00	
	7/11	70	4	280	87	0.31	1,069	3.82	7,500	26.79	0	0.00	
	7/14	39	4	156	26	0.17	810	5.19	4,530	29.04	23	0.15	
	7/18	44	6	264	83	0.31	677	2.56	12,870	48.75	1,340	5.08	
	7/28 ^c	56	4	224	58	0.26	78	0.35	4,982	22.24	14,516	64.80	
	8/1 ^c	73	4	292	24	0.08	80	0.27	1,599	5.48	16,846	57.69	
	8/4 ^c	62	4	248	27	0.11	70	0.28	1,731	6.98	19,334	77.96	
	8/6	2	12	24	0	0.00	0	0.00	31	1.29	377	0.00	
	8/8 ^c	70	4	280	12	0.04	27	0.10	633	2.26	16,224	57.94	
	8/11 ^c	59	6	354	17	0.05	35	0.10	436	1.23	15,569	43.98	
	8/13	49	6	294	3	0.01	18	0.06	58	0.20	3,709	12.62	
	8/16		6		Commercial Opening, no deliveries								
	8/18 ^c	47	6	282	6	0.02	15	0.05	81	0.29	10,189	36.13	
	8/22 ^c	33	6	198	4	0.02	14	0.07	21	0.11	6,419	32.42	
Total		342	83	3,940	6,664		25,673		76,790		104,546		
2010	6/25	114	4	456	542	1.19	729	1.60	9,703	21.28	0	0.00	
	6/28	216	4	864	1,181	1.37	3,536	4.09	21,918	25.37	0	0.00	
	7/6	87	6	522	290	0.56	3,554	6.81	17,467	33.46	0	0.00	
	7/9	146	4	584	176	0.30	7,303	12.51	15,437	26.43	0	0.00	
	7/14	51	2	102	95	0.93	2,068	20.27	2,830	27.75	0	0.00	
	7/16	49	2	98	32	0.33	747	7.62	2,332	23.80	5	0.05	
	7/19	54	4	216	68	0.31	2,474	11.45	3,918	18.14	109	0.50	
	7/21 ^c	161	4	644	86	0.13	894	1.39	7,283	11.31	1,321	2.05	
	7/23	66	4	264	59	0.22	245	0.93	3,402	12.89	1,040	3.94	
	7/26	160	6	960	81	0.08	439	0.46	4,042	4.21	3,603	3.75	
	7/28	68	6	408	36	0.09	71	0.17	2,310	5.66	2,800	6.86	
	7/30 ^c	149	4	596	24	0.04	160	0.27	892	1.50	6,049	10.15	
	8/4	90	4	360	11	0.03	26	0.07	477	1.33	4,654	12.93	
	8/6 ^c	207	4	828	25	0.03	91	0.11	609	0.74	17,246	20.83	
	8/10	130	4	520	11	0.02	32	0.06	278	0.53	13,930	26.79	
	8/12 ^c	226	4	904	14	0.02	59	0.07	250	0.28	7,274	8.05	
Total		433 ^d	66	8,326	2,731		22,428		93,148		58,031		

^a Subdistrict W-1B (below Bethel) opening

^b Subdistrict W-1A (above Bethel) opening

^c Two hours of additional fishing time was allowed in Lower Section of W1-B.

^d Number of individual permit holders participating for the season.

Appendix A7.–Commercial salmon harvest and exvessel value, District W-1, Kuskokwim River, Kuskokwim Management Area, 1993–2010.

Year	Chinook		Sockeye		Pink		Chum		Coho		Total	
	Number	Value	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	664,829	\$2,860,795
1994	16,201	\$126,892	49,362	\$188,691	30,930	\$8,967	269,426	\$381,639	690,369	\$2,875,803	1,056,288	\$3,581,992
1995	28,054	\$280,287	90,026	\$448,530	335	\$50	588,250	\$724,273	455,269	\$1,313,742	1,161,934	\$2,766,882
1996	6,972	\$23,665	33,404	\$97,176	1,621	\$744	202,827	\$170,977	930,131	\$1,824,683	1,174,955	\$2,117,245
1997	10,436	\$36,843	21,988	\$64,922	2	\$1	17,003	\$19,509	129,601	\$2,167,491	179,030	\$2,288,766
1998	17,356	\$74,387	60,906	\$209,860	92	\$55	207,698	\$183,307	210,168	\$516,024	496,220	\$983,633
1999	4,705	\$22,266	16,976	\$86,442	2	\$-	23,006	\$16,428	23,593	\$44,633	68,282	\$169,769
2000	444	\$3,044	4,130	\$14,272	7	\$3	11,570	\$7,967	259,721	\$489,644	275,872	\$514,930
2001	90	\$534	84	\$265	-	\$-	1,272	\$827	192,998	\$422,573	194,444	\$424,199
2002	72	\$212	84	\$196	-	\$-	1,900	\$1,190	83,463	\$124,763	85,519	\$126,361
2003	158	\$846	282	\$803	-	\$-	2,764	\$1,087	284,064	\$450,451	287,268	\$453,187
2004	2,305	\$9,815	8,532	\$19,549	-	\$-	20,150	\$6,611	435,407	\$907,791	466,394	\$943,766
2005	4,784	\$29,040	27,645	\$109,063	-	\$-	69,139	\$23,115	142,319	\$287,635	243,887	\$448,853
2006	2,777	\$16,192	12,618	\$41,891	1	\$1	44,070	\$14,988	185,598	\$378,318	245,064	\$451,390
2007	179	\$1,607	703	\$2,411	-	\$-	10,763	\$3,033	141,049	\$373,789	152,694	\$380,840
2008	8,865	\$70,988	15,601	\$59,777	15	\$4	30,516	\$11,212	142,862	\$396,329	197,859	\$538,310
2009	6,664	\$61,452	25,673	\$101,445	2	\$-	76,790	\$76,494	104,546	\$263,457	213,675	\$502,848
2010	2,731	\$53,134	22,428	\$167,575	-	\$-	93,148	\$162,445	58,031	\$382,452	176,338	\$765,606
10 Yr Avg	2,634	\$19,373	9,535	\$34,967	3	\$1	26,893	\$14,652	197,203	\$409,475	236,268	\$478,468

Appendix A8.—Commercial salmon harvest by period, District W-2, Kuskokwim River, Kuskokwim Management Area, 1994–2010.

Year	Date	Number of Permits	Hours Fished	Chinook		Sockeye		Chum		Coho	
				Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1994	Aug 04	14	6	6	0.07	0	0.00	808	9.62	4,040	48.10
	Aug 09	17	6	3	0.03	0	0.00	350	3.43	5,790	56.76
	Aug 12	17	8	0	0.00	0	0.00	226	1.66	10,539	77.49
	Aug 15	16	8	0	0.00	1	0.01	151	1.18	7,190	56.17
	Aug 18	15	8	1	0.01	0	0.00	106	0.88	2,710	22.58
	Aug 22	12	8	0	0.00	1	0.01	34	0.35	1,855	19.32
	Aug 25	7	8	0	0.00	0	0.00	12	0.21	1,492	26.64
	Aug 27	6	6	0	0.00	1	0.03	2	0.06	677	18.81
Total		20	58	10		3		1,689		34,293	
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	

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Year	Date	Number of Permits	Hours Fished	Chinook		Sockeye		Chum		Coho	
				Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
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 W-2										
2000	Aug 12	4	6							1237	51.54
	Aug 21	2	6							439	36.58
Total		4	12							1,676	
2001	No commercial fishery in W-2										
2002	No commercial fishery in W-2										
2003	No commercial fishery in W-2										
2004	No commercial fishery in W-2										
2005	No commercial fishery in W-2										
2006	No commercial fishery in W-2										
2007	No commercial fishery in W-2										
2008	No commercial fishery in W-2										
2009	No commercial fishery in W-2										
2010	No commercial fishery in W-2										

Appendix A9.—Chinook salmon utilization, Kuskokwim River, Kuskokwim Management Area, 1960–2010.

Year	Commercial Harvest ^a		Subsistence Harvest ^b		Test Fish Harvest	Sport Fish Harvest	Total Utilization	10-yr Avg Utilization ^c
	Annual	10-yr Avg ^c	Annual	10-yr Avg ^c				
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	-	40,617	-	833	-	85,447	-
1970	39,290	22,519	69,612	33,240	857	-	165,517	56,008
1971	40,274	25,851	43,242	38,312	756	-	148,435	70,074
1972	39,454	27,987	40,396	39,743	756	-	148,335	80,132
1973	32,838	30,398	39,093	42,424	577	-	145,330	92,073
1974	18,664	32,480	27,139	42,885	1,236	-	122,404	101,956
1975	22,135	32,632	48,448	42,698	704	-	146,616	109,580
1976	30,735	32,646	58,606	45,073	1,206	-	168,266	119,573
1977	35,830	33,165	56,580	46,001	1,264	33	93,707	128,884
1978	45,641	33,750	36,270	45,668	1,445	116	83,472	129,189
1979	38,966	34,886	56,283	46,000	979	74	96,302	130,753
1980	35,881	34,383	59,892	47,567	1,033	162	96,968	131,839
1981	47,663	34,042	61,329	46,595	1,218	189	110,399	124,984
1982	48,234	34,781	58,018	48,404	542	207	107,001	121,180
1983	33,174	35,659	47,412	50,166	1,139	420	82,145	117,047
1984	31,742	35,692	56,930	50,998	231	273	89,176	110,728
1985	37,889	37,000	43,874	53,977	79	85	81,927	107,405
1986	19,414	38,576	51,019	53,519	130	49	70,612	100,936
1987	36,179	37,443	67,325	52,761	384	355	104,243	91,171
1988	55,716	37,478	70,943 ^d	53,835	576	528	127,763	92,225
1989	43,217	38,486	81,175	57,303	543	1,218	126,153	96,654
1990	53,504	38,911	85,976	59,792	512	394	140,386	99,639
1991	37,778	40,673	85,556	62,400	117	401	123,852	103,981
1992	46,872	39,685	64,794	64,823	1,380	367	113,413	105,326
1993	8,735	39,549	87,513	65,500	2,483	587	99,318	105,967
1994	16,211	37,105	93,243	69,511	1,937	1,139	112,530	107,684
1995	30,846	35,552	96,435	73,142	1,421	541	129,243	110,020
1996	7,419	34,847	78,062	78,398	247	1,432	87,160	114,751
1997	10,441	33,648	81,577	81,102	332	1,227	93,577	116,406
1998	17,359	31,074	81,264	82,527	210	1,434	100,267	115,340
1999	4,705	27,238	73,194	83,560	98	252	78,249	112,590

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Year	Commercial Harvest ^a		Subsistence Harvest ^b		Test Fish Harvest	Sport Fish Harvest	Total Utilization	10-Yr Avg Utilization ^c
	Annual	10-yr Avg ^c	Annual	10-yr Avg ^c				
2000	444	23,387	64,893	82,761	64	105	65,506	107,800
2001	90	18,081	73,610	80,653	86	290	74,076	100,312
2002	72	14,312	66,807	79,459	288	319	67,486	95,334
2003	158	9,632	67,788	79,660	409	401	68,756	90,741
2004	2,305	8,775	80,065	77,687	691	857	83,918	87,685
2005	4,784	7,384	70,393	76,370	557	572	76,306	84,824
2006	2,777	4,778	63,177	73,765	352	444	66,750	79,530
2007	179	4,314	72,097	72,277	305	1,478	74,059	77,489
2008	8,865	3,287	98,521 ^e	71,329	420	708	108,514	75,537
2009	6,664	2,438	78,491 ^e	73,055	470	917	86,542	76,362
2010	2,731	2,634	^f	73,584	292	^f		77,191
10 Yr Avg	2,634	9,639	73,584	76,702	364	609	77,191	87,561

Note: Dashes indicate no data.

^a Districts 1 and 2; also includes harvests in District 3 from 1960 to 1965. Does not include personal use.

^b Estimated subsistence harvest expanded from villages surveyed.

^c Running 10-year average. Does not include most recent year.

^d Beginning in 1988, estimates made using new formula. Data since 1988 is not comparable with previous years.

^e Numbers reported here are preliminary subsistence harvest estimates generated by the Division of Commercial Fisheries. Methodology to estimate harvest has changed slightly since 2007 with the incorporation of stratified sampling. A revision of historical estimates published by Division of Subsistence from 1990 to 2007 using the current methodology is pending review. Comparison of 2008 and 2009 estimates with those prior to 2007 should be done cautiously.

^f Data unavailable at time of publication.

Appendix A10.—Chum salmon utilization, Kuskokwim River, Kuskokwim Management Area, 1960–2010.

Year	Commercial Harvest ^a		Subsistence Harvest ^b		Test Fish Harvest	Sport Fish Harvest	Total Utilization	10-Year Average ^c
	Annual	10-yr Avg ^c	Annual	10-yr Avg ^c				
1960	0	-	301,753 ^d	-	-	-	301,753	-
1961	0	-	179,529 ^d	-	-	-	179,529	-
1962	0	-	161,849 ^d	-	-	-	161,849	-
1963	0	-	137,649 ^d	-	-	-	137,649	-
1964	0	-	190,191 ^d	-	-	-	190,191	-
1965	0	-	250,878 ^d	-	-	-	250,878	-
1966	0	-	175,735 ^d	-	502 ^e	-	176,237	-
1967	148	-	208,445 ^d	-	338	-	208,931	-
1968	187	-	275,008 ^d	-	562	-	275,757	-
1969	7,165	-	204,105 ^d	-	384	-	211,654	-
1970	1,664	750	246,810 ^d	208,514	1,139 ^e	-	458,877	209,443
1971	68,914	916	116,391 ^d	203,020	254	-	389,495	225,155
1972	78,619	7,808	120,316 ^d	196,706	486	-	403,935	246,152
1973	148,746	15,670	179,259 ^d	192,553	675	-	536,903	270,360
1974	171,887	30,544	277,170 ^d	196,714	2,021	-	678,336	310,286
1975	184,171	47,733	176,389 ^d	205,412	1,062	-	614,767	359,100
1976	177,864	66,150	223,792 ^d	197,963	2,101	-	667,870	395,489
1977	248,721	83,937	198,355 ^d	202,769	576	129	447,781	444,652
1978	248,656	108,794	118,809 ^d	201,760	2,153	555	370,173	468,537
1979	261,874	133,641	161,239 ^d	186,140	412	259	423,784	477,979
1980	483,751	159,112	165,172 ^d	181,853	2,058	324	651,305	499,192
1981	418,677	207,320	157,306 ^d	173,689	1,793	598	578,374	518,435
1982	278,306	242,297	190,011 ^d	177,781	504	1,125	469,946	537,323
1983	276,698	262,265	146,876 ^d	184,750	1,069	922	425,565	543,924
1984	423,718	275,061	142,542 ^d	181,512	1,186	520	567,966	532,790
1985	199,478	300,244	94,750	168,049	616	150	294,994	521,753
1986	309,213	301,774	141,931 ^d	159,885	1,693	245	453,082	489,776
1987	574,336	314,909	70,709	151,699	2,302	566	647,913	468,297
1988	1,381,674	347,471	151,967 ^f	138,935	4,379	764	1,538,784	488,310
1989	749,182	460,773	139,672	142,250	2,082	2,023	892,959	605,171
1990	461,624	509,503	126,509	140,094	2,107	533	590,773	652,089
1991	431,802	507,291	93,077	136,227	931	378	526,188	646,036
1992	344,603	508,603	96,491	129,804	15,330	608	457,032	640,817
1993	43,337	515,233	59,394	120,452	8,451	359	111,541	639,526
1994	271,115	491,897	72,022	111,704	11,998	1,280	356,415	608,123
1995	605,918	476,636	67,861	104,652	17,473	226	691,478	586,968
1996	207,877	517,280	88,966	101,963	2,864	280	299,987	626,617
1997	17,026	507,147	39,987	96,667	790	86	57,889	611,307
1998	207,809	451,416	63,537	93,595	1,140	291	272,777	552,305
1999	23,006	334,029	43,601	84,752	562	180	67,349	425,704

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Year	Commercial Harvest ^a		Subsistence Harvest ^b		Test Fish Harvest	Sport Fish Harvest	Total Utilization	10-yr Avg Utilization ^c
	Annual	10-yr Avg ^c	Annual	10-yr Avg ^c				
2000	11,570	261,412	51,696	75,145	1,038	26	64,330	343,143
2001	1,272	216,406	49,874	67,663	1,743	112	53,001	290,499
2002	1,900	173,353	69,019	63,343	2,666	53	73,638	243,180
2003	2,764	139,083	43,320	60,596	1,713	53	47,850	204,841
2004	20,150	135,026	52,374	58,988	1,810	84	74,418	198,471
2005	69,139	109,929	46,777	57,024	4,459	500	120,875	170,272
2006 ^c	44,070	56,251	64,206	54,915	3,547	13	111,836	113,211
2007	10,763	39,871	51,308	52,439	3,237	391	65,699	94,396
2008	30,516	39,871	69,039 ^g	53,571	2,472	121	102,148	95,177
2009	76,790	21,515	43,734 ^g	54,121	2,741	285	123,550	78,114
2010	93,148	26,893	^h	54,135	2,872	^h	^h	83,735
10 Yr Avg	26,893	119,272	54,135	59,780	2,573	164	83,735	183,130

Note: Dashes indicate no information available.

^a Districts 1 and 2 only; no chum harvests were reported in District 3. Does not include personal use.

^b Estimated subsistence harvest expanded from villages surveyed.

^c Running 10-year average. Does not include most recent year.

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

^e Includes small numbers of sockeye.

^f Beginning in 1988, estimates made using new formula. Data since 1988 is not comparable with previous years.

^g Numbers reported here are preliminary subsistence harvest estimates generated by the Division of Commercial Fisheries. Methodology to estimate harvest has changed slightly since 2007 with the incorporation of stratified sampling. A revision of historical and 2009 estimates with those prior to 2007 should be done cautiously.

^h Data unavailable at time of publication.

Appendix A11.—Sockeye salmon utilization, Kuskokwim River, Kuskokwim Management Area, 1969–2010.

Year	Commercial Harvest ^a		Subsistence Harvest ^b		Test Fish Harvest	Sport Fish Harvest	Total Utilization	10-yr Avg Utilization ^c
	Annual	10-yr Avg ^c	Annual	10-yr Avg ^c				
1969	322	-	-	-	-	-	322	-
1970	117	-	-	-	-	-	117	-
1971	2,606	-	-	-	-	-	2,606	-
1972	102	-	-	-	-	-	102	-
1973	369	-	-	-	-	-	369	-
1974	136	-	-	-	-	-	136	-
1975	23	-	-	-	-	-	23	-
1976	2,971	-	-	-	-	-	2,971	-
1977	9,379	-	-	-	-	-	9,379	-
1978	733	-	-	-	-	-	733	-
1979	1,054	1,676	-	-	-	-	2,730	1,676
1980	360	1,749	-	-	-	-	2,109	1,917
1981	48,375	1,773	-	-	-	-	50,148	2,116
1982	33,154	6,350	-	-	-	-	39,504	6,870
1983	68,855	9,655	-	-	-	41	78,551	10,810
1984	48,575	16,504	-	-	-	-	65,079	18,628
1985	106,647	21,348	-	-	-	72	128,067	25,123
1986	95,433	32,010	-	-	-	196	127,639	37,927
1987	136,602	41,257	-	-	-	217	178,076	50,394
1988	92,025	53,979	-	-	-	291	146,295	67,264
1989	42,747	63,108	35,224	-	-	33	98,365	81,820
1990	84,870	67,277	36,274	-	-	61	103,612	91,383
1991	108,946	75,728	52,982	-	-	38	128,748	101,534
1992	92,218	81,785	32,065	-	-	131	113,981	109,394
1993	27,008	87,692	49,347	-	-	348	137,387	116,841
1994	49,365	83,507	37,159	-	-	359	121,025	122,725
1995	92,500	83,586	27,792	-	-	95	111,473	128,320
1996	33,878	82,171	34,214	-	-	315	116,700	126,660
1997	21,989	76,016	40,078	-	-	423	116,517	125,566
1998	60,906	64,555	35,426	-	-	178	100,159	119,410
1999	16,976	61,443	46,677	38,056	-	54	163,206	114,797
2000	4,130	58,866	41,783	39,201	-	46	144,026	121,281
2001	84	50,792	50,065	39,752	510	231	50,890	125,322
2002	84	39,905	25,499	39,461	228	42	25,853	117,536
2003	282	30,692	34,452	38,804	0	140	34,874	108,724
2004	8,532	28,019	32,433	37,315	742	400	42,107	98,472
2005	27,645	23,936	34,129	36,842	1,062	636	63,472	90,580
2006	12,618	17,451	30,226	37,476	519	231	43,594	85,780
2007	703	15,325	33,233	37,077	488	322	34,746	78,470
2008	15,601	13,196	58,182 ^d	36,392	584	273	74,640	70,293
2009	25,673	8,666	35,160 ^d	38,668	515	162	61,510	67,741
2010	22,428	9,535	^e	37,516	495	^f	^e	57,571
10 Yr Avg	9,535	28,685	37,516	38,099	514	248	57,571	96,420

-continued-

Note: Dashes indicate no information available.

- ^a Districts 1 and 2 only. Harvest does not include personal use.
- ^b Estimated subsistence harvest expanded from villages surveyed.
- ^c Running 10-year average. Does not include most recent year.
- ^d Numbers reported here are preliminary subsistence harvest estimates generated by Commercial Fisheries Division. Methodology to estimate harvest has changed slightly since 2007 with the incorporation of stratified sampling. A revision of historical and 2009 estimates with those prior to 2007 should be done cautiously.
- ^e Data unavailable at time of publication.
- ^f Sport fish harvest for 2010 unavailable.

Appendix A12.–Coho salmon utilization, Kuskokwim River, Kuskowkwim Management Area, 1960–2010.

Year	Commercial Harvest ^a		Subsistence Harvest ^b		Test Fish Harvest	Sport Fish Harvest	Total Utilization	10-yr Avg Utilization ^c
	Annual	10-yr Avg ^c	Annual	10-yr Avg ^c				
1960	2,498	-	-	-	-	-	2,498	-
1961	5,044	-	-	-	-	-	5,044	-
1962	12,432	-	-	-	-	-	12,432	-
1963	15,660	-	-	-	-	-	15,660	-
1964	28,613	-	-	-	-	-	28,613	-
1965	12,191	-	-	-	-	-	12,191	-
1966	22,985	-	-	-	-	-	22,985	-
1967	56,313	-	-	-	-	-	56,313	-
1968	127,306	-	-	-	-	-	127,306	-
1969	83,765	-	-	-	-	-	83,765	-
1970	38,601	36,681	-	-	-	-	38,601	-
1971	5,253	40,291	-	-	-	-	5,253	-
1972	22,579	40,312	-	-	-	-	22,579	-
1973	130,876	41,327	-	-	-	-	130,876	-
1974	147,269	52,848	-	-	-	-	147,269	-
1975	81,945	64,714	-	-	-	-	81,945	-
1976	88,501	71,689	-	-	-	-	88,501	-
1977	241,364	78,241	-	-	-	-	241,364	-
1978	213,393	96,746	-	-	-	-	213,393	-
1979	219,060	105,355	-	-	-	-	219,060	-
1980	222,012	118,884	-	-	-	-	222,012	-
1981	211,251	137,225	-	-	-	-	211,251	-
1982	447,117	157,825	-	-	-	-	447,117	-
1983	196,287	200,279	-	-	-	1,375	197,662	-
1984	623,447	206,820	-	-	-	1,442	624,889	-
1985	335,606	254,438	-	-	-	136	335,742	-
1986	659,988	279,804	-	-	-	1,222	661,210	-
1987	399,467	336,953	-	-	-	1,767	401,234	-
1988	524,296	352,763	-	-	-	927	525,223	-
1989	479,856	383,853	52,917	-	-	2,459	482,315	-
1990	410,332	409,933	44,786	-	-	581	410,913	-
1991	500,935	428,765	50,369	-	-	1,003	501,938	-
1992	666,170	457,733	40,167	-	-	1,692	667,862	-
1993	610,739	479,638	31,737	-	-	980	611,719	480,899
1994	724,689	521,084	33,050	-	-	1,925	726,614	522,305
1995	471,461	531,208	36,276	-	-	1,497	472,958	532,477
1996	937,299	544,793	32,742	-	-	3,423	940,722	546,199
1997	130,803	572,524	29,035	-	33,703	2,408	195,949	574,150
1998	210,481	545,658	24,864	-	-	2,419	237,764	553,621
1999	23,593	514,277	25,004	37,594	213	1,998	50,808	524,875
2000	261,379	468,650	33,786	34,803	2,828	1,689	299,682	481,725
2001	192,998	453,755	29,504	33,703	1,723	1,204	225,429	470,602
2002	83,463	422,961	32,780	31,617	2,484	2,030	120,757	442,951
2003	284,064	364,691	35,240	30,878	570	3,244	323,118	388,240
2004	435,407	332,023	35,735	31,228	2,259	4,996	478,397	359,380
2005	142,319	303,095	27,613	31,497	1,499	3,539	174,970	334,558
2006	185,598	270,181	30,706	30,630	1,186	1,474	218,964	304,760
2007	141,049	195,011	25,107	30,427	1,557	2,355	170,068	232,584
2008	142,862	196,035	48,841 ^d	30,034	2,984	3,755	198,442	232,584
2009	104,546	189,273	30,358 ^d	32,432	2,394	3,257 ^e	140,555 ^e	229,996
2010	58,031	197,369	- ^e	32,967	1,020	- ^e	- ^e	226,064
10 Yr Avg	197,369	319,567	32,967	31,725	1,948	2,754	235,038	347,738

-continued-

Note: Dashes indicate no information available.

- ^a Districts 1 and 2 only. Harvest does not include personal use.
- ^b Estimated subsistence harvest expanded from villages surveyed.
- ^c Running 10-year average. Does not include most recent year.
- ^d Numbers reported here are preliminary subsistence harvest estimates generated by Commercial Fisheries Division. Methodology to estimate harvest has changed slightly since 2007 with the incorporation of stratified sampling. A revision of historical and 2009 estimates with those prior to 2007 should be done cautiously.
- ^e Data unavailable at time of publication.

Appendix A13.—Commercial salmon average mean weights and prices paid, Kuskokwim Area, Kuskokwim Management Area, 1967–2010.

Year	Average Weight (lb)					Average Price (\$)				
	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
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	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
2004	12.1	6.6	6.9		^a 6.9	0.35	0.35	0.08		^a 0.32
2005	14.5	6.7	6.7	3.7	7.4	0.59	0.55	0.05	0.05	0.27
2006	13.9	6.4	6.9	4.0	6.3	0.54	0.48	0.05	0.25	0.33
2007	14.1	6.6	6.8		^a 7.2	0.59	0.53	0.05		^a 0.38
2008	12.9	6.7	7.1	4.2	7.1	0.73	0.58	0.05	0.06	0.43
2009	13.1	6.5	6.9	3.5	7.6	0.71	0.56	0.15	0.00	0.35
2010	13.1	6.8	6.9	2.8	7.1	1.60	1.13	0.26	0.00	1.01
10 Yr Avg	14.4	6.8	7.2	3.7	7.2	0.50	0.47	0.09	0.09	0.29

^a Information unavailable.

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

^c Information was not available for District 4.

Appendix A14.—Commercial salmon exvessel value, permits fished and average income, Kuskokwim Management Area, 1964–2010.

Year	Gross Value to Fishermen	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	923	\$2,952
1981	\$3,766,525	1066	\$3,533
1982	\$4,213,954	971	\$4,340
1983	\$2,670,400	1027	\$2,600
1984	\$5,809,000	774	\$7,505
1985	\$3,248,089	781	\$4,159
1986	\$4,746,089	790	\$6,008
1987	\$6,463,176	800	\$8,079
1988	\$12,726,198	813	\$15,653
1989	\$5,139,522	824	\$6,237
1990	\$4,881,640	823	\$5,932
1991	\$3,949,649	819	\$4,823
1992	\$5,345,791	814	\$6,567
1993	\$3,964,011	804	\$4,930
1994	\$5,117,729	793	\$6,454
1995	\$4,219,377	798	\$5,287
1996	\$2,876,547	714	\$4,029
1997	\$1,052,602	702	\$1,499
1998	\$1,635,311	707	\$2,313
1999	\$522,173	604	\$865
2000	\$1,191,529	623	\$1,913
2001	\$756,607	514	\$1,472
2002	\$323,659	407	\$795
2003	\$893,027	438	\$2,039
2004	\$1,484,357	467	\$3,178
2005	\$1,155,113	484	\$2,387
2006	\$1,143,807	453	\$2,525
2007	\$1,265,036	456	\$2,774
2008	\$1,487,111	462	\$3,219
2009	\$1,442,204	434	\$3,323
2010	\$2,128,982	530	\$4,017
10 Yr Avg	\$1,114,245	474	\$2,362

Note: Dashes indicate no information available.

^a Number of permits that made at least one delivery.

Appendix A15.—Commercial salmon fishery entry permits by location, Kuskokwim Management Area, 1994–2010.

Village	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Akiachak	64	64	64	66	67	67	67	67	68	67	68	70	70	69	71	72	72
Akiak	24	24	23	23	24	23	23	23	24	24	22	22	20	20	21	18	18
Aniak	10	11	10	11	11	11	11	11	11	10	10	10	9	9	9	8	5
Atmautluak	27	28	28	28	27	26	27	27	26	26	24	23	22	21	19	17	16
Bethel	163	164	157	162	168	167	161	165	173	171	168	169	168	161	155	152	135
Chefornak	6	5	2	2	3	2	2	2	2	2	2	2	2	3	3	2	2
Chuathbaluk	2	2	2	2	2	2	1	2	2	2	0	1	0	0	0	0	0
Eek	39	39	40	37	37	36	39	38	39	36	37	37	38	37	37	38	37
Goodnews Bay	28	29	27	26	28	28	26	26	25	24	22	22	22	22	22	22	26
Hooper Bay	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0
Kalskags	8	5	8	7	7	7	7	4	3	3	3	3	4	2	2	2	1
Kasigluk	41	45	44	44	43	44	44	45	42	42	41	41	39	39	38	36	35
Kipnuk	17	18	17	16	15	15	15	14	14	13	13	11	11	11	9	9	7
Kongiganak	20	21	21	21	19	20	18	16	15	14	12	12	13	13	13	12	14
Kwethluk	62	57	58	57	55	56	57	55	49	49	49	49	52	49	47	48	44
Kwigillingok	20	20	18	19	18	19	19	17	17	15	15	15	13	12	11	11	10
Mekoryuk	1	2	2	1	1	0	0	0	0	0	0	0	0	0	1	0	0
Napakiak	41	37	39	39	39	39	38	38	35	33	32	34	33	33	32	36	32
Napaskiak	34	33	35	36	36	34	33	33	34	32	30	28	28	29	28	27	24
Newtok	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Nunapitchuk	47	46	48	48	46	46	46	46	46	44	44	42	43	42	41	41	35
Oscarville	3	3	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Platinum	5	5	4	4	4	4	5	4	4	3	3	4	4	4	3	4	6
Quinhagak	76	79	83	82	83	82	84	82	83	82	83	80	77	78	81	82	77
Sleetmute	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Toksook Bay	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0
Tuluksak	27	27	27	27	27	27	27	27	28	26	26	23	23	24	23	22	19
Tuntutuliak	43	43	44	45	43	42	42	43	43	41	41	39	39	41	40	41	44
Tununak	0	1	1	0	1	1	0	0	0	0	0		0	0	0	1	1
<i>Kuskokwim Area Subtotal</i>	<i>809</i>	<i>809</i>	<i>806</i>	<i>806</i>	<i>807</i>	<i>800</i>	<i>794</i>	<i>788</i>	<i>787</i>	<i>763</i>	<i>749</i>	<i>740</i>	<i>733</i>	<i>722</i>	<i>709</i>	<i>703</i>	<i>662</i>

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Village	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Anchorage	10	8	12	11	11	13	16	16	16	17	18	16	18	20	21	18	11
Anchor Point			0	0	0	0	0	0	0	0	0	1	1	1	0	0	0
Atkasuk	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0
Dillingham	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1
Fairbanks	2	3	2	2	1	1	1	1	1	1	1	1	2	2	2	2	1
Juneau	0	0	0	0	0	0	0	0	2	1	2	1	2	3	3	3	0
Kenai	0	0	0	0	0	1	1	2	2	2	1	1	0	0	0	0	0
Manokotak	2	2	2	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Noorvik	0	0	0	0	0	1	1	1	0	1	0	0	0	0	0	0	0
Palmer	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2	1
Sitka	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	1
Stebbins			0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Togiak	1	1	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0
Twin Hills	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
Unalaska	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0
Wasilla	0	0	0	0	1	1	1	1	1	0	1	1	1	1	2	2	1
<i>Non-Local AK Resident Subtotal</i>	<i>16</i>	<i>15</i>	<i>18</i>	<i>16</i>	<i>15</i>	<i>20</i>	<i>23</i>	<i>25</i>	<i>26</i>	<i>25</i>	<i>24</i>	<i>23</i>	<i>29</i>	<i>33</i>	<i>35</i>	<i>32</i>	<i>17</i>
California		2	1	1	1	2	1	1	1	1	1	1	1	0	0	0	0
Oregon		1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0
Washington		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Residents of other States		3	3	3	3	3	3	2	2	2	2	4	4	5	5	4	2
<i>Non-Resident Subtotal</i>	<i>0</i>	<i>7</i>	<i>6</i>	<i>6</i>	<i>6</i>	<i>7</i>	<i>6</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>5</i>	<i>7</i>	<i>6</i>	<i>6</i>	<i>6</i>	<i>5</i>	<i>3</i>
<i>Total Number of Permits</i>	<i>825</i>	<i>831</i>	<i>830</i>	<i>828</i>	<i>828</i>	<i>827</i>	<i>823</i>	<i>818</i>	<i>818</i>	<i>793</i>	<i>778</i>	<i>770</i>	<i>768</i>	<i>761</i>	<i>750</i>	<i>740</i>	<i>682</i>

Appendix A16.—Subsistence Chinook salmon harvest estimates by community, Kuskokwim Management Area, 1989–2008.

Community	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008 ^a
Kipnuk	54	108	80	-	348	150	-	-	-	119	29	170	1	1	-	49	-	-	-	-
Kwigillingok	-	-	-	9	80	7	-	15	-	100	-	-	-	-	-	345	-	-	-	-
Kongiganak	1,412	1,442	778	904	781	1,271	843	830	1,609	1,250	1,320	1,299	1,454	808	1,386	1,478	1,508	1,429	-	2,065
N KUSKO BAY	1,466	1,550	858	913	1,209	1,428	843	845	1,609	1,469	1,349	1,469	1,455	809	1,386	1,872	1,508	1,429	-	2,065
Tuntutuliak	3,781	4,044	4,143	3,524	3,633	4,679	4,023	4,027	3,730	4,008	3,645	2,939	2,993	3,632	3,095	3,402	4,508	3,341	3,295	4,420
Eek	1,580	4,920	2,360	2,232	2,619	2,917	3,535	2,568	2,253	2,131	1,816	2,112	1,728	2,432	2,364	2,636	2,899	272	110	2,826
Kasigluk	2,173	3,167	2,955	94	548	694	392	579	880	541	480	731	588	381	356	1,526	-	157	-	3,442
Nunapitchuk	3,170	3,199	4,106	3,575	3,810	4,746	4,400	3,234	4,086	4,934	4,521	3,354	3,250	3,883	3,763	4,104	3,480	3,357	4,664	4,361
Atmautluak	1,227	2,569	1,784	1,422	1,818	1,819	1,918	1,801	1,768	1,452	1,469	1,174	740	1,282	1,396	1,701	1,720	-	1,364	1,953
Napakiak	3,710	4,158	2,543	3,328	3,972	3,545	3,902	3,784	2,873	3,504	2,380	2,178	2,290	1,931	2,105	2,060	2,695	4,109	2,318	2,313
Napaskiak	4,699	4,972	3,864	4,133	5,671	6,356	4,984	4,453	4,887	5,452	3,827	4,309	4,662	3,856	5,012	3,220	4,262	3,983	4,965	5,064
Oscarville	1,591	898	1,422	122	1,475	1,385	1,438	996	512	981	2,289	-	1,753	953	1,073	998	987	825	1,048	1,423
Bethel	24,655	19,641	28,817	17,196	22,083	24,515	29,568	20,783	21,253	23,963	24,996	22,515	27,209	19,305	21,475	27,504	22,293	23,095	29,548	35,144
Kwethluk	7,562	9,218	7,511	6,504	9,181	9,262	8,931	9,183	6,872	7,940	6,081	4,925	6,127	6,429	4,938	6,119	5,402	5,581	4,924	8,264
Akiachak	5,504	7,168	5,657	4,163	7,231	8,081	6,571	5,209	7,414	6,507	5,373	6,124	6,445	6,860	5,346	6,647	4,611	4,389	7,021	9,475
Akiak	4,811	5,178	3,247	3,207	4,280	4,759	4,118	4,569	3,378	3,311	2,356	2,190	3,369	3,340	3,896	3,653	3,420	3,407	3,463	3,519
Tuluksak	3,791	1,878	3,351	2,382	3,755	4,534	4,333	3,143	5,627	3,701	2,348	2,432	2,451	2,364	3,678	3,117	2,498	830	-	3,539
LOWER KUSKO R.	68,256	71,008	71,761	51,881	70,076	77,293	78,111	64,331	65,533	68,425	61,581	54,983	63,605	56,648	58,497	66,687	58,775	53,346	62,720	85,743
Lower Kalskag	3,337	2,493	3,947	2,269	3,930	3,976	5,321	2,870	3,549	2,041	1,787	1,822	2,181	1,210	2,016	1,918	1,387	2,227	1,043	2,442
Upper Kalskag	1,256	1,558	1,105	1,366	1,679	1,340	1,396	1,351	1,107	1,244	1,688	1,237	1,014	1,420	1,128	2,442	2,225	1,154	407	2,216
Aniak	3,406	3,189	3,261	3,955	4,618	3,413	3,422	3,204	3,794	3,508	2,596	3,117	2,524	2,994	2,077	2,606	1,987	2,011	2,737	3,348
Chuathbaluk	403	1,674	791	933	1,447	1,043	2,615	880	1,290	810	1,110	303	627	663	399	1,041	863	618	147	750
MIDDLE KUSKO R.	8,401	8,914	9,105	8,525	11,675	9,772	12,754	8,304	9,740	7,602	7,181	6,479	6,346	6,287	5,620	8,007	6,462	6,010	4,334	8,756
Crooked Creek	451	929	947	472	771	968	934	864	944	772	681	575	508	790	831	1,003	826	383	12	582
Red Devil	189	273	168	328	487	379	425	337	452	262	161	94	175	248	72	165	191	197	284	152
Sleetmute	420	711	770	801	1,767	1,327	885	1,230	1,171	947	447	430	473	516	685	618	393	582	903	644
Stony River	692	498	586	233	445	359	559	597	863	445	55	21	139	293	111	621	-	250	-	667
Lime Village	105	240	60	0	41	216	144	48	59	241	155	45	262	-	65	66	-	-	-	60
McGrath	418	1,231	880	1,038	567	1,052	800	1,203	974	769	1,295	642	360	700	506	500	54	501	392	561
Takotna	62	62	0	0	0	0	-	0	0	2	0	0	5	9	-	16	-	0	0	0
Nikolai	716	560	421	605	475	449	979	305	232	330	288	155	282	507	15	510	3	479	0	251
Telida	1	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0	-	-
UPPER KUSKO R.	3,053	4,504	3,833	3,476	4,553	4,750	4,726	4,583	4,695	3,768	3,082	1,962	2,204	3,063	2,285	3,499	1,467	2,392	1,591	2,917

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Community	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008 ^a
KUSKO R. TOTAL	81,176	85,976	85,556	64,794	87,513	93,243	96,435	78,062	81,577	81,264	73,194	64,893	73,610	66,807	67,788	80,065	68,212	63,177	68,645	99,481
Quinhagak	3,542	6,013	3,693	3,447	3,368	3,995	2,746	3,075	3,433	4,041	3,167	3,106	2,923	2,475	3,898	3,726	3,083	3,521	3,412	4,383
Goodnews Bay	419	351	894	318	628	712	858	403	437	713	805	601	859	703	649	851	794	630	24	1,135
Platinum	48	188	23	56	80	72	25	12	12	5	66	102	36	154	88	103	74	46	-	42
S KUSKO BAY	4,010	6,552	4,610	3,821	4,076	4,779	3,629	3,490	3,882	4,758	4,038	3,809	3,818	3,332	4,635	4,680	3,951	4,197	3,436	5,560
Mekoryuk	0	0	0	0	0	6	-	0	-	1	15	2	-	12	10	3	2	0	0	-
Newtok	5	1	0	-	0	2	-	-	-	-	-	19	12	13	0	0	0	-	-	-
Nightmute	0	3	20	-	-	8	-	-	-	-	6	8	-	-	4	0	-	-	-	-
Toksook Bay	127	143	25	49	128	341	94	45	47	48	407	58	130	54	51	327	8	667	16	-
Tununak	5	0	15	-	5	0	-	-	-	40	0	52	0	1	5	5	-	-	-	-
Chefornak	-	-	0	21	-	-	-	-	-	2	-	-	-	-	5	6	-	-	-	-
BERING SEA COAST	137	147	60	70	133	357	94	45	47	91	428	139	142	80	75	341	10	667	16	-
TOTAL ESTIMATE	85,323	92,675	90,226	68,685	91,722	98,378	100,157	81,597	85,506	86,113	77,660	68,841	77,570	70,219	72,498	85,086	72,173	68,041	72,097	105,041

Source: 1989 to 2007 from Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.5.

Note: Dashes indicate no information available.

^a Numbers reported here are preliminary estimates generated by the Division of Commercial Fisheries. Methodology to estimate harvest has changed slightly since 2007 with the incorporation of stratified sampling. A revision of historical estimates published by Division of Subsistence from 1990-2007 using the current methodology is pending review. Comparison of 2008 and 2009 estimates with years prior should be made cautiously.

Appendix A17.—Subsistence chum salmon harvest estimates by community, Kuskokwim Management Area, 1989–2008.

Community	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008 ^a
Kipnuk	0	540	205	-	601	214	-	-	-	114	31	269	2	5	-	156	-	-	-	-
Kwigillingok	-	-	-	0	200	5	-	30	-	250	-	-	-	-	-	160	-	-	-	-
Kongiganak	1,967	980	1,036	1,524	811	1,340	1,275	1,331	902	1,643	1,152	1,850	1,998	1,965	970	1,587	1,519	1,990	-	1,576
N KUSKO BAY	1,967	1,520	1,241	1,524	1,612	1,559	1,275	1,361	902	2,007	1,183	2,119	2,000	1,970	970	1,903	1,519	1,990	-	1,576
Tuntutuliak	5,068	6,250	4,755	6,052	2,899	5,232	3,488	5,852	2,877	3,774	1,862	2,735	2,621	3,845	2,514	2,262	3,525	3,410	2,421	4,655
Eek	972	3,090	814	1,397	244	624	815	923	649	787	508	636	347	1,259	621	587	764	169	130	725
Kasigluk	3,007	3,406	3,137	26	374	537	457	1,196	1,278	218	350	930	550	306	297	906	-	103	-	2,033
Nunapitchuk	6,923	5,240	6,055	8,229	4,854	4,587	4,297	5,833	2,794	5,389	4,742	4,694	4,749	6,917	4,139	4,200	3,640	4,266	6,588	5,057
Atmautluak	3,014	4,006	2,394	3,183	1,345	1,455	3,466	2,672	1,484	1,916	1,667	1,819	1,350	2,189	1,539	1,793	1,635	-	1,802	2,538
Napakiak	7,068	8,389	2,340	4,401	2,281	4,096	3,084	4,249	1,458	4,556	1,573	2,987	1,723	2,391	1,384	1,746	2,726	6,781	2,537	1,796
Napaskiak	13,079	8,166	6,582	6,061	3,622	5,605	4,271	4,983	2,589	4,227	2,687	2,848	2,399	3,720	2,893	2,569	1,931	2,989	2,489	2,913
Oscarville	1,341	925	1,141	29	566	676	1,018	1,552	35	420	1,906	-	2,097	1,121	704	855	633	873	725	880
Bethel	25,581	18,436	22,770	14,908	9,172	12,341	15,821	16,403	8,790	12,057	11,163	10,616	11,319	15,082	9,829	12,162	11,794	18,794	15,836	18,627
Kwethluk	10,128	11,102	5,497	7,647	3,491	6,102	6,050	11,870	3,554	4,786	3,449	5,048	4,365	7,434	2,348	3,597	3,897	5,337	4,517	5,835
Akiachak	7,747	9,133	5,994	5,771	3,492	6,286	4,074	4,993	1,768	2,467	2,741	4,589	2,872	5,048	3,943	3,635	2,126	3,179	4,407	4,027
Akiak	13,000	8,235	6,668	5,907	7,549	4,599	1,878	4,640	1,725	2,231	1,202	2,456	2,093	2,527	2,715	3,211	3,193	2,417	3,435	2,958
Tuluksak	9,796	5,845	5,695	4,798	3,834	2,476	2,609	3,167	2,887	3,224	1,566	2,504	1,862	3,042	1,555	2,017	2,108	1,058	-	4,661
LOWER KUSKO R.	106,725	92,225	73,843	68,409	43,722	54,614	51,327	68,333	31,887	46,051	35,417	41,862	38,347	54,881	34,481	39,540	37,972	49,376	44,887	56,705
Lower Kalskag	4,932	4,212	2,886	2,758	3,062	2,758	1,455	3,357	1,487	977	759	1,641	1,316	1,187	1,569	1,225	954	2,821	1,461	2,030
Upper Kalskag	3,427	1,321	2,357	2,843	578	864	1,351	1,621	405	487	665	1,558	1,187	2,333	485	1,559	1,039	1,988	95	1,734
Aniak	10,404	9,089	3,492	7,870	2,900	2,612	3,566	8,447	1,747	5,023	1,764	1,943	1,982	3,002	1,160	2,331	2,539	3,611	3,391	2,739
Chuathbaluk	2,051	4,510	1,912	2,502	2,895	1,615	1,807	2,089	1,244	1,027	729	704	2,338	1,553	2,249	1,815	497	959	123	579
MIDDLE KUSKO R.	20,813	19,131	10,648	15,974	9,435	7,847	8,179	15,514	4,883	7,514	3,916	5,846	6,823	8,075	5,463	6,930	5,029	9,379	5,070	7,082
Crooked Creek	779	2,884	1,367	904	715	649	358	347	311	2,561	806	812	943	1,266	889	1,662	882	926	0	956
Red Devil	1,376	1,466	1,236	1,523	1,004	1,220	882	787	551	565	193	53	335	325	49	103	232	35	160	171
Sleetmute	1,813	1,874	1,862	3,151	681	1,533	1,758	1,215	417	981	367	390	328	1,105	408	863	295	1,106	860	346
Stony River	1,352	1,132	602	1,335	775	932	1,375	443	591	897	358	99	143	560	275	670	-	395	-	1,403
Lime Village	2,100	2,500	715	0	508	2,080	920	500	251	964	1,012	294	683	-	140	189	-	-	-	487
McGrath	1,276	2,839	1,068	2,854	590	1,294	1,486	206	131	1,462	260	161	199	665	610	254	101	745	315	1,233
Takotna	250	56	0	0	0	0	-	10	0	15	0	0	8	1	-	0	-	0	0	0
Nikolai	1,221	882	495	818	353	293	301	249	65	519	89	60	65	171	35	260	8	255	16	59
Telida	15	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0	-	-
UPPER KUSKO R.	10,181	13,633	7,345	10,584	4,625	8,001	7,080	3,758	2,316	7,964	3,085	1,869	2,704	4,093	2,406	4,001	1,518	3,462	1,351	4,655

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Community	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008 ^a
USKO R. TOTAL	139,687	126,509	93,077	96,491	59,394	72,022	67,861	88,966	39,987	63,537	43,601	51,696	49,874	69,019	43,320	52,374	46,038	64,207	51,308	70,018
Quinhagak	1,568	3,234	1,593	1,833	1,008	1,452	686	930	600	1,448	1,810	912	747	1,839	1,129	1,112	915	1,865	1,725	1,805
Goodnews Bay	620	193	144	921	188	425	152	214	133	285	250	280	182	312	126	221	187	544	7	853
Platinum	164	139	5	85	0	45	3	5	0	31	31	84	44	95	50	36	22	104	-	106
S KUSKO BAY	2,352	3,566	1,743	2,838	1,196	1,923	841	1,149	733	1,763	2,092	1,276	973	2,246	1,305	1,369	1,124	2,513	1,732	2,764
Mekoryuk	2,915	1,067	1,178	0	808	2,337	-	0	-	2,176	1,583	2,120	-	1,292	1,484	881	460	0	134	-
Newtok	20	4	0	-	0	0	-	-	-	-	-	16	36	20	9	0	9	-	-	-
Nightmute	30	35	60	-	-	7	-	-	-	-	10	2	-	-	15	0	-	-	-	-
Toksook Bay	86	224	103	246	296	660	239	124	273	171	326	217	234	657	133	938	27	2,092	125	-
Tununak	16	65	150	-	30	0	-	-	-	0	0	44	0	0	10	0	-	-	-	-
Chefornak	-	-	3	1	-	-	-	-	-	17	-	-	-	-	15	13	-	-	-	-
BERING SEA COAST	3,067	1,395	1,494	247	1,134	3,004	239	124	273	2,364	1,919	2,399	270	1,969	1,666	1,832	496	2,092	259	-
TOTAL ESTIMATE	145,106	131,470	96,314	99,576	61,724	76,949	68,941	90,239	40,993	67,664	47,612	55,371	51,117	73,234	46,291	55,575	47,658	68,812	53,299	72,782

Source: 1989 to 2007 from Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.5.

Note: Dashes indicate no information available.

^a Numbers reported here are preliminary estimates generated by the Division of Commercial Fisheries. Methodology to estimate harvest has changed slightly since 2007 with the incorporation of stratified sampling. A revision of historical estimates published by Division of Subsistence from 1990-2007 using the current methodology is pending review. Comparison of 2008 and 2009 estimates with years prior should be made cautiously.

Appendix A18.—Subsistence sockeye salmon harvest estimates by community, Kuskokwim Management Area, 1989–2008.

Community	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008 ^a
Kipnuk	402	175	136	-	90	132	-	-	-	107	54	179	4	11	-	89	-	-	-	-
Kwigillingok	-	-	-	0	140	5	-	10	-	125	-	-	-	-	-	70	-	-	-	-
Kongiganak	658	423	533	905	705	702	530	722	1,128	888	991	1,789	1,460	774	637	876	987	1,191	-	1,333
N KUSKO BAY	1,060	598	669	905	935	839	530	732	1,128	1,120	1,045	1,968	1,464	785	637	1,035	987	1,191	-	1,333
Tuntutuliak	1,173	1,954	1,768	1,894	955	3,185	1,134	1,526	2,048	1,275	2,048	1,236	1,701	972	1,555	1,446	2,102	1,447	1,374	2,226
Eek	170	1,177	489	671	406	461	283	478	584	382	625	878	923	748	714	472	893	119	16	693
Kasigluk	235	810	1,421	81	122	275	165	588	499	53	183	666	320	59	210	336	-	53	-	1,513
Nunapitchuk	1,026	1,097	2,277	2,273	2,545	1,555	882	1,735	2,330	2,250	3,493	2,111	2,583	1,382	2,521	1,381	1,589	1,548	2,124	2,410
Atmautluak	1,143	1,501	881	1,304	1,387	796	1,099	1,456	724	1,050	1,874	1,516	958	1,015	868	874	1,194	-	828	1,470
Napakiak	1,752	1,375	1,176	1,315	1,150	1,627	959	1,083	1,455	1,705	2,115	2,026	1,861	1,201	1,223	1,068	1,803	1,202	1,152	1,683
Napaskiak	721	1,227	2,673	2,428	3,495	1,933	1,605	2,446	2,329	1,617	2,058	2,611	3,428	1,292	2,420	883	1,286	1,170	1,346	2,736
Oscarville	404	153	711	35	932	324	414	212	78	288	2,165	-	1,620	377	700	354	257	545	537	713
Bethel	7,316	6,392	17,669	7,173	10,503	8,563	8,190	7,112	10,868	8,134	13,145	12,536	15,709	7,350	10,542	10,598	12,883	11,775	13,556	17,984
Kwethluk	2,414	4,055	3,723	1,829	3,790	3,742	2,504	4,035	3,581	4,036	3,112	3,685	3,960	1,993	1,776	2,741	2,177	2,134	2,630	4,989
Akiachak	2,420	3,176	4,123	3,095	4,545	3,323	2,019	2,607	3,014	2,654	3,130	3,597	4,300	2,436	3,016	2,894	2,134	1,999	2,896	4,700
Akiak	2,492	1,739	1,708	1,458	3,558	1,786	643	1,449	1,398	1,478	1,145	970	1,916	1,195	1,698	1,162	1,681	1,658	3,107	2,621
Tuluksak	2,314	1,120	3,595	2,034	2,492	1,393	1,244	1,075	1,558	1,490	1,490	2,207	1,759	1,011	1,333	1,397	935	941	-	2,568
LOWER KUSKO R.	23,579	25,775	42,212	25,589	35,878	28,964	21,141	25,803	30,468	26,413	36,584	34,039	41,038	21,031	28,576	25,606	28,934	24,591	29,566	46,306
Lower Kalskag	767	851	1,092	467	2,339	950	681	1,144	1,455	574	605	885	824	247	714	673	409	926	531	1,736
Upper Kalskag	338	287	276	333	349	298	55	294	251	245	614	636	304	485	483	603	825	420	128	952
Aniak	959	1,356	2,031	1,180	1,578	571	975	1,277	1,124	1,151	1,310	1,143	2,223	723	670	867	975	721	953	1,873
Chuathbaluk	215	1,178	1,246	471	823	995	472	661	881	248	460	515	537	337	287	385	353	349	41	362
MIDDLE KUSKO R.	2,279	3,672	4,644	2,451	5,090	2,813	2,183	3,376	3,710	2,218	2,989	3,179	3,888	1,792	2,154	2,528	2,562	2,416	1,653	4,923
Crooked Creek	436	1,556	998	489	831	512	192	304	350	716	690	505	476	413	747	760	596	315	0	764
Red Devil	356	445	426	315	717	311	620	977	697	346	568	107	361	92	289	97	283	432	299	379
Sleetmute	776	1,060	1,164	855	1,609	1,158	1,083	1,304	1,458	1,398	946	759	940	603	668	604	512	828	1,350	1,071
Stony River	1,084	835	1,912	1,462	1,488	802	1,342	1,218	1,607	433	1,230	266	138	460	139	804	-	325	-	1,679
Lime Village	5,653	2,333	956	0	2,800	1,760	700	500	660	2,782	2,550	918	1,516	-	1,000	831	-	-	-	1,191
McGrath	0	0	0	0	0	0	0	0	0	0	74	42	244	323	242	168	0	113	365	1,253
Takotna	0	0	0	0	0	0	-	0	0	0	0	0	0	0	-	0	-	0	0	0
Nikolai	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	17	0	14
Telida	0	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0	-	-
UPPER KUSKO R.	8,306	6,229	5,457	3,121	7,445	4,543	3,937	4,303	4,772	5,675	6,059	2,597	3,675	1,891	3,085	3,264	1,395	2,030	2,014	6,351

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Community	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008 ^a
KUSKO R. TOTAL	35,224	36,274	52,982	32,065	49,347	37,159	27,792	34,214	40,078	35,426	46,677	41,783	50,065	25,499	34,452	32,433	33,878	30,228	33,233	58,913
Quinhagak	633	1,950	1,772	1,264	1,082	1,000	573	400	556	1,490	1,639	1,341	914	855	1,622	1,086	1,633	2,177	1,303	2,875
Goodnews Bay	710	970	1,132	669	784	669	219	411	472	483	770	1,028	921	794	672	805	1,143	947	36	3,665
Platinum	151	153	150	158	51	101	34	7	137	25	102	177	53	256	111	155	90	60	-	157
S KUSKO BAY	1,493	3,074	3,054	2,090	1,917	1,770	826	818	1,165	1,998	2,511	2,546	1,888	1,905	2,405	2,046	2,866	3,184	1,339	6,697
Mekoryuk	0	50	1	0	1	87	-	0	-	21	2	7	-	204	2	8	0	0	0	-
Newtok	10	3	0	-	0	20	-	-	-	-	-	124	0	85	0	0	2	-	-	-
Nightmute	0	10	210	-	-	15	-	-	-	-	5	71	-	-	20	10	-	-	-	-
Toksook Bay	277	242	105	1	66	228	5	5	8	101	193	253	12	32	0	359	5	1,438	5	-
Tununak	83	7	50	-	30	0	-	-	-	20	0	48	0	8	5	10	-	-	-	-
Chefornak	-	-	0	1	-	-	-	-	-	13	-	-	-	-	10	26	-	-	-	-
BERING SEA COAST	370	312	366	2	97	350	5	5	8	155	200	503	12	329	37	413	7	1,438	5	-
TOTAL ESTIMATE	37,088	39,659	56,401	34,158	51,362	39,280	28,622	35,037	41,251	37,579	49,388	44,832	51,965	27,733	36,894	34,892	36,751	34,850	34,577	65,610

Source: 1989 to 2007 from Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.5.

Note: Dashes indicate no information available.

^a Numbers reported here are preliminary estimates generated by the Division of Commercial Fisheries. Methodology to estimate harvest has changed slightly since 2007 with the incorporation of stratified sampling. A revision of historical estimates published by Division of Subsistence from 1990-2007 using the current methodology is pending review. Comparison of 2008 and 2009 estimates with years prior should be made cautiously.

Appendix A19.–Subsistence coho salmon harvest estimates by community, Kuskokwim Management Area, 1989–2008.

Community	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008 ^a
Kipnuk	200	460	30	-	25	185	-	-	-	85	75	223	74	69	-	250	-	-	-	-
Kwigillingok	-	-	-	0	80	0	-	5	-	40	-	-	-	-	-	55	-	-	-	-
Kongiganak	562	413	540	544	502	566	605	421	618	275	222	339	925	596	768	551	781	530	-	545
N KUSKO BAY	762	873	570	544	607	751	605	426	618	400	297	562	999	665	768	856	781	530	-	545
Tuntutuliak	508	1,135	729	761	820	441	365	1,339	669	935	331	3,435	337	1,153	2,329	1,205	1,132	778	443	3,238
Eek	349	1,620	343	531	206	426	347	389	80	306	258	488	207	904	1,493	764	346	11	0	1,307
Kasigluk	772	958	1,769	174	228	387	518	368	518	140	92	1,667	344	142	134	690	-	107	-	1,154
Nunapitchuk	469	573	1,167	2,226	321	781	641	1,310	872	427	391	366	392	790	676	416	716	567	1,765	648
Atmautluak	971	350	254	518	426	411	566	537	531	425	205	224	369	591	407	561	471	-	361	421
Napakiak	1,757	1,700	597	1,237	590	920	390	600	168	749	487	502	644	578	1,098	1,259	628	1,258	906	1,446
Napaskiak	1,130	922	754	866	783	2,012	580	398	658	540	355	889	466	716	1,522	613	598	1,171	521	728
Oscarville	430	43	136	0	0	49	0	19	60	2	970	-	42	119	27	306	86	232	134	65
Bethel	22,390	19,341	28,136	15,902	13,764	12,258	19,906	12,929	15,108	11,294	12,414	13,794	14,949	12,966	13,237	15,068	11,143	17,004	12,787	16,969
Kwethluk	3,736	3,928	2,380	2,325	1,838	1,816	1,304	3,195	1,193	1,731	2,993	3,271	1,688	2,515	1,933	2,907	2,584	980	1,186	7,144
Akiachak	1,890	1,621	2,393	2,108	1,351	1,531	677	850	441	477	663	2,509	1,633	1,620	2,611	2,130	1,572	1,215	2,167	4,098
Akiak	4,959	1,591	2,231	1,137	1,315	1,110	501	972	846	674	254	483	564	1,113	1,135	1,236	1,673	348	1,089	1,384
Tuluksak	1,483	946	1,903	1,544	412	285	531	1,116	434	879	307	523	971	1,181	1,523	870	465	180	-	867
LOWER KUSKO R.	40,843	34,725	42,792	29,328	22,054	22,428	26,325	24,022	21,580	18,579	19,721	28,151	22,606	24,388	28,125	28,025	21,414	23,851	21,359	39,469
Lower Kalskag	981	375	510	469	778	845	718	1,022	652	347	302	428	539	241	375	295	293	759	337	95
Upper Kalskag	688	300	493	931	354	184	167	360	781	812	153	288	416	1,032	605	1,288	508	1,534	107	1,915
Aniak	2,640	1,484	1,143	1,844	1,091	1,682	1,265	2,671	1,494	1,308	1,418	1,922	1,906	2,616	1,552	1,655	1,886	1,101	2,435	2,911
Chuathbaluk	272	813	93	349	366	795	84	395	217	55	137	469	541	607	313	249	311	504	47	530
MIDDLE KUSKO R.	4,581	2,971	2,238	3,593	2,588	3,506	2,234	4,448	3,145	2,522	2,010	3,107	3,402	4,496	2,845	3,487	2,998	3,898	2,926	5,451
Crooked Creek	530	886	277	413	409	581	381	171	261	392	515	132	70	420	430	670	148	318	0	1,825
Red Devil	1,591	866	1,132	1,160	1,812	994	1,557	1,274	1,391	425	455	158	427	413	209	54	345	290	181	335
Sleetmute	1,009	1,023	1,557	1,132	880	649	1,075	846	419	301	226	552	452	689	678	325	463	441	365	210
Stony River	611	423	502	744	512	505	1,083	571	450	429	511	10	347	517	879	612	-	470	-	521
Lime Village	2,025	538	336	300	618	960	246	0	277	776	600	362	590	-	164	220	-	-	-	615
McGrath	537	2,408	882	2,780	1,989	2,558	2,225	919	753	924	553	700	420	1,067	1,099	1,079	309	668	275	176
Takotna	40	0	0	0	0	0	-	0	0	3	0	21	26	20	-	51	-	0	0	0
Nikolai	328	73	83	173	267	119	545	64	141	113	117	31	165	105	43	156	31	240	0	81
Telida	60	-	-	0	-	-	-	-	-	0	-	-	-	-	-	200	-	0	-	-
UPPER KUSKO R.	6,731	6,216	4,768	6,702	6,487	6,366	7,112	3,846	3,692	3,363	2,976	1,966	2,497	3,231	3,502	3,367	1,296	2,427	821	3,763

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Community	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008 ^a
KUSKO R. TOTAL	52,917	44,786	50,369	40,167	31,737	33,050	36,276	32,742	29,035	24,864	25,004	33,786	29,504	32,780	35,240	35,735	26,489	30,706	25,106	49,228
Quinhagak	3,787	4,174	3,232	2,958	2,152	2,739	2,561	1,467	1,264	1,702	2,021	1,088	1,525	1,099	2,047	1,209	1,443	1,019	1,143	2,465
Goodnews Bay	830	1,556	1,789	1,163	1,197	435	296	293	343	312	439	414	508	202	1,110	1,411	615	592	20	1,785
Platinum	77	90	39	190	29	77	9	59	54	19	143	103	108	95	209	206	224	112	-	115
S KUSKO BAY	4,694	5,820	5,060	4,310	3,378	3,251	2,867	1,819	1,661	2,034	2,603	1,605	2,141	1,396	3,366	2,826	2,282	1,723	1,163	4,365
Mekoryuk	106	52	130	2	53	87	-	3	-	178	64	78	-	114	112	126	58	14	0	-
Newtok	15	4	0	-	0	0	-	-	-	-	-	64	0	0	0	0	0	-	-	-
Nightmute	70	0	20	-	-	0	-	-	-	-	0	2	-	-	0	0	-	-	-	-
Toksook Bay	35	46	1	15	57	116	22	135	21	97	83	112	16	74	58	661	11	365	0	-
Tununak	9	0	0	-	70	0	-	-	-	60	0	23	25	49	0	40	-	-	-	-
Chefornak	-	-	39	0	-	-	-	-	-	7	-	-	-	-	15	18	-	-	-	-
BERING SEA COAST	235	102	190	17	180	203	22	138	21	342	147	279	41	237	185	845	69	379	0	-
TOTAL ESTIMATE	57,846	50,708	55,620	44,494	35,295	36,504	39,165	34,699	30,717	27,240	27,753	35,670	31,686	34,413	38,791	39,406	28,840	32,808	26,269	53,593

Source: 1989 to 2007 from Alaska Department of Fish and Game, Division of Subsistence, Alaska Subsistence Fisheries Database, Version 3.5.

Note: Dashes indicate no information available.

^a Numbers reported here are preliminary estimates generated by the Division of Commercial Fisheries. Methodology to estimate harvest has changed slightly since 2007 with the incorporation of stratified sampling. A revision of historical estimates published by Division of Subsistence from 1990 to 2007 using the current methodology can be found in Hamazaki 2011. Comparison of 2008 and 2009 estimates with years prior should be made cautiously.

Appendix A20.–Commercial freshwater finfish harvest, Kuskokwim Management Area, 1977–2010.

Year	Number of Fishermen ^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	339
2003	1	646	0	1,163	0	1,192	0	1,192
2004	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0
2010	1	0	0	0	0	0	0	0

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

^b Does not include fishermen who delivered catches incidental to the commercial salmon fishery.

^c Includes cisco, pike, and blackfish.

^d Data not available.

APPENDIX B

Appendix B1.–Salmon assessment programs, Kuskokwim Management Area, 2010.

Project Name	Location		Duration	Agency	Responsibility
Salmon Management	Kuskokwim Area	- develop a comprehensive plan for managing salmon stocks of the Kuskokwim Area. - define goals and objectives. - identify potential opportunities and concerns. - recommend appropriate procedures. - evaluate priorities. - provide sustained yield fishery Management	All Year	ADFG/CF ADFG/SF OSM KRSMWG	all aspects all aspects monitor regulations and inseason actions make recommendations
Postseason Subsistence Catch and Effort Assessment	Kuskokwim Area	- document and estimate the catch and associated effort of the subsistence salmon fisheries via interviews, catch calendars, mail-out questionnaires and telephone interviews.	Post-season	ADFG/S	all aspects
		- Household surveys in Bethel		ONC	survey crew
		- Household surveys in Aniak.		KNA	survey crew
				OSM	funding - Bethel & Aniak
Age-Sex-Length (ASL) Processing and Reporting	Kuskokwim Area	- scale aging, sample processing and reporting for salmon age, sex and length information about of Chinook, sockeye, chum and coho salmon from escapement, and commercial and subsistence fisheries.	All Year	ADFG/CF OSM	all aspects funding
Subsistence (ASL) Sampling	Lower Kuskokwim Area	- sample collection for age, sex and length information about of Chinook, and coho salmon from tributary spawning populations monitored with weir or sonar.	June -July	ADFG/CF	all aspects
			Sept	OSM OSM	funding
Aerial Surveys	Kuskokwim Area	- index relative abundance of Chinook salmon spawning escapement in selected streams throughout the Kuskokwim Area. - index relative abundance of sockeye salmon spawning escapement in the Kanektok and Goodnews Rivers. - September reconnaissance flights in the upper Kuskokwim river for fall chum salmon	July - Aug	ADFG/CF NMFS	all aspects Funding - Upper Kusko
Sport Catch, Harvest and Effort Assessment	Kuskokwim Area	- statewide mail-out survey to estimate sport catch, harvest and effort	post-season	ADFG/SF	all aspects
Salmon Baseline Genetics sampling.	Kuskokwim Area	-Opportunistic collection of Baseline Genetics samples from all species at locations throughout the drainage. -2010 emphasis on Goodnews and Kanektok River Sockeye Salmon	August	ADFG	All Aspects
Commercial Catch and Effort Assessment	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 - Sept	ADFG/CF	all aspects

-continued-

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Project Name	Location		Duration	Agency	Responsibility
Commercial Catch ASL Sampling	Districts 1, 4 and 5	- determine age, sex, and length of salmon harvested in the commercial fisheries.	June - Aug	ADFG/CF	all aspects
Kuskokwim River Inseason Subsistence Harvest Monitoring	Lower Kuskokwim River	- weekly interviews with subsistence fishers in lower Kuskokwim River to assess adequacy and quality of harvest - collect age-sex-length samples from subsistence caught Chinook salmon in the lower Kuskokwim River to determine composition of Kuskokwim River subsistence harvest.	June- August	ADFG/S	all aspects
				ADFG/CF	Chinook ASL collection
			ONC	all aspects - Bethel	
			OSM	funding	
Kuskokwim River Fall Chum Salmon Investigation	Kuskokwim River	- describe the distribution, morphology, and biology of adult fall chum salmon in comparison to summer chum salmon; assess the run timing and relative abundance	June - Sept	ADFG/CF AYK SSI	all aspects funding
Kuskokwim River Mark-Recapture	RM. 179	- Spaghetti tags were deployed on sockeye, chum, and coho salmon caught near Kalskag in the mainstem Kuskokwim River and recovered upstream in the mainstem and at several tributaries to determine stock-specific run timing, stock-specific travel speed, and to	June 7- Sept 10.	ADFG/CF	all aspects
				ADFG/SF	crew support
				KNA	crew support, tag recovery
				USFWS	crew support
				OSM	funding
Kuskokwim River Radio Telemetry	RM. 221	- estimate escapement and distribution of Chinook salmon passing upstream of Kalskag	June - Sept	ADFG/S	all aspects
				KNA	crew support
				ADFG/CF	tag recovery
				OSM	funding
Bethel Bethel Test Fishery	Bethel Area RM. 80	- index relative run timing of Chinook, sockeye, chum, and coho salmon using drift gillnets - index relative run abundance of Chinook, sockeye, chum, and coho salmon using CPUE derived from drift gillnet catches.	June - Aug	ADFG/CF	all aspects
				ONC	crew support
			OSM	funding ONC crew	
Kwethluk River Weir	mile 55 Kwethluk River RM. 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 - Sept	USFWS	all aspects
				ADFG/CF	inseason data mgt.
				OVK	crew support
				ONC	funding
Tuluksak River Weir	mile 47 Tuluksak River RM. 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 - Sept	USFWS	all aspects
				ADFG/CF	inseason data mgt.
				TUTC	crew support
				OSM	funding
Aniak River Sonar	mile 12 Aniak River RM. 225	- estimate daily escapement of salmon into the Aniak River. - estimate age, sex and length composition of chum salmon escapement	June - July	ADFG/CF	all aspects

-continued-

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Project Name	Location		Duration	Agency	Responsibility
George River Weir	mile 4 George River RM. 309	- estimate daily escapement of Chinook, sockeye, chum, pink, 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 - Sept	KNA	all aspects
				ADFG/CF	all aspects
				OSM OSM CVRF	funding
Kogrukluk River Weir	mile 136 Holitna River Drainage RM. 335	- 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 - Sept	ADFG/CF	all aspects
				KNA	crew support
				SOA OSM	funding
Tatlawiksuk River Weir	mile 2.5 Tatlawiksuk River RM. 383	- estimate daily escapement of Chinook, sockeye, chum, pink, 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 - Sept	KNA	all aspects
				ADFG/CF	all aspects
				OSM CVRF OSM	funding
Takotna River Weir	mile 52 Takotna River RM. 507	- 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 - Sept	TTC	all aspects
				ADFG/CF	planning & supplies
				CVRF NMFS OSM	funding
Kanektok River Weir	_ mile 13 Kanektok River Kuskokwim Bay	- estimate daily escapement of Chinook, sockeye, chum, pink, and coho salmon into the Kanektok River. - estimate age, sex and length composition of Chinook and chum salmon escapement.	June - Sept	NVK	all aspects
				ADFG/CF	planning & supplies
				OSM BSFA	funding funding
Middle Fork Goodnews River Weir	_ mile 5 Middle Fork Goodnews River Kuskokwim Bay	- 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 - Sept	ADFG/CF	all aspects
				OSM	funding for coho extension

Note: ADFG/CF = Division of Commercial Fisheries, Alaska Department of Fish and Game
ADFG/S = Division of Subsistence, Alaska Department of Fish and Game
ADFG/SF = Division of Sport Fish, Alaska Department of Fish and Game
AVCP = Association of Village Council Presidents
BIA = Bureau of Indian Affairs
BSFA = Bering Sea Fishermen's Association
DEC = Department of Environmental Conservation
KNA = Kuskokwim River Native Association

Appendix B2.–Salmon spawning escapement objectives, Kuskokwim Management Area, 2010.

Area	Escapement Objectives ^a							
	Chinook		Sockeye		Coho		Chum	
	Goal	Enumeration Method	Goal	Enumeration Method	Goal	Enumeration Method	Goal	Enumeration Method
Kuskokwim River								
Kwethluk River	6,000-11,000	Weir	-	-	>19,000 ^b	Weir	-	-
Kisaralik River	400-1,200	Aerial Survey	-	-	-	-	-	-
Salmon River (Aniak)	330-1,200	Aerial Survey	-	-	-	-	-	-
Aniak River	1,200-2,300	Aerial Survey	-	-	-	-	210,000-480,000	Sonar
George River	3,100-7,900	Weir	-	-	-	-	-	-
Holitna River	970-2,100	Aerial Survey	-	-	-	-	-	-
Kogrukluk Weir	5,300-14,000	Weir	4,400-17,000	Weir	13,000-28,000 ^b	Aerial Survey	15,000-49,000	Weir
Cheneetnuk River	340-1,300	Aerial Survey	-	-	-	-	-	-
Tuluksak River	1,000-2,100	Weir	-	-	-	-	-	-
Gagaraya River	300-830	Aerial Survey	-	-	-	-	-	-
Pitka Fork (Salmon River)	470-1,600	Aerial Survey	-	-	-	-	-	-
Kuskokwim Bay								
Kanektok River to Kagati Lake	3,500-8,000	Aerial Survey	14,000-34,000	Aerial Survey	-	-	>5,200	Aerial Survey
Goodnews River (mainstem)	640-3,300	Aerial Survey	5,500-19,500	Aerial Survey	-	-	-	-
Middle Fork Goodnews River	1,500-2,900	Weir	18,000-40,000	Weir	>12,000	Weir	>12,000	Weir

Source: Volk et al. 2009.

Note: Dashes indicate goal not established.

^a All goals are SEGs except for BEGs established for Chinook and sockeye salmon at Middle Fork Goodnews River.

^b Goal went into effect during the 2010 season.

Appendix B3.—Salmon spawning escapement estimates, Kwethluk River, Kuskokwim River drainage, 1992–2010.

Year	Operating Period ^a	Kwethluk River				
		Chinook	Sockeye	Chum	Pink ^b	Coho
<i>Weir</i>						
1992	06/20 to 09/12	9,675	1,316	30,595	45,952	45,605
<i>Counting Tower</i>						
1996	06/21 to 07/27	7,415	^c	^c	^c	^c
1997	06/20 to 08/12	10,395	1,374	10,659	^c	^c
1998	07/24 to 08/18	^c	^c	^c	^c	^c
1999	07/15 to 08/18	^c	^c	^c	^c	^c
<i>Weir</i>						
2000	06/22 to 09/15	3,547	358	11,691	1,407	25,610
2001	08/12 to 09/15	^c	^c	^c	^c	21,596
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
2004	06/25 to 09/10	28,605	3,490	38,646	3,054	64,216
2005	Weir did not operate					
2006	06/20 to 09/19	17,619	6,732 ^d	47,490	1,685	25,664 ^d
2007	6/20 to 09/10	13,267	5,262	57,230	628	19,473
2008	6/15 to 09/10	5,312	2,451	20,048	335	49,973
2009	6/29 to 09/9	5,710	4,385	32,028	1,118	21,911
2010	6/25 to 9/1	1,693 ^e	4,264 ^e	18,835 ^e	632 ^e	^{c,e}
SEG		6,000-11,000				>19,000 ^f

^a The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 20% of the total annual escapement is estimated.

^b Pink salmon numbers are not estimated or underestimated, weirs pickets are not tight enough to keep pink salmon from going through.

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

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

^e Preliminary

^f Goal went into effect during the 2010 season.

Appendix B4.–Salmon spawning escapement estimates, Tuluksak River, Kuskokwim River drainage, 1991–2010.

Year	Operating Period ^a	Tuluksak River Weir				
		Chinook	Sockeye	Chum	Pink ^b	Coho
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 ^c
2001	06/29 to 09/10	997 ^c	137	19,321	48	23,768 ^c
2002	06/10 to 09/10	1,346	82	9,958	27	11,487
2003	06/16 to 09/14	1,064	288	11,724	662	41,071
2004	06/20 to 09/10	1,475	136	11,796	496	20,336
2005	06/24 to 09/09	2,653	642	35,696	2475	11,324
2006	06/24 to 09/10	1,044	985	25,648	2445	5,438 ^c
2007	06/20 to 09/10	374	352	17,286	64	2,807
2008	06/20 to 09/13	665	185	12,518	111	7,457
2009	06/26 to 09/09	404	708	13,658	49	8,137
2010	06/26 to 09/2	239 ^d	476 ^d	13,424 ^d	94 ^d	1,478 ^c
SEG		1,000-2,100				

^a The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 20% of the total annual escapement is estimated.

^b Pink salmon numbers are not estimated or underestimated, weirs pickets are not tight enough to keep pink salmon from going through.

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

^d Preliminary.

Appendix B5.—Salmon spawning escapement estimates, Aniak River, Kuskokwim River drainage, 1980–2010.

Year	Operating Period ^a	Chinook	Chum	Coho
Aniak River Sonar ^b				
Escapement Goal:			250,000	
Non user-configurable, one-bank expanded estimates				
1980	06/22 to 07/31	56,469	1,600,032	-
	08/16 to 09/12			81,556
1981	06/15 to 08/05	42,060	649,849	-
1982	06/21 to 08/01	33,864	529,758	-
1983	06/19 to 07/31	4,911	166,452	-
1984	06/19 to 07/31	-	317,688	-
1985	06/22 to 07/31	-	273,306	-
1986	06/25 to 07/31	-	219,770	-
1987	06/21 to 07/31	-	204,834	-
1988	06/23 to 07/31	-	485,077	-
1989	06/23 to 07/31	-	295,993	-
1990	06/23 to 08/04	-	246,813	-
1991	6/22 to 08/05	-	366,687	-
1992	06/15 to 08/06	-	87,467	-
1993	06/15 to 08/06	-	15,278	-
1994	06/26 to 08/06	-	474,356	-
1995	06/23 to 07/23	-	- ^c	-
User-configurable biosonics, two-bank estimates				
1996	06/21 to 07/31	-	402,195	-
1997	06/16 to 08/03	-	289,654	-
1998	06/24 to 07/31	-	351,792	-
1999	06/26 to 08/03	-	214,429	-
2000	06/26 to 07/31	-	177,384	-
2001	06/26 to 07/31	-	408,830	-
2002	06/26 to 07/31	-	472,346	-
2003	06/26 to 07/31	-	477,544	-
2004	06/25 to 07/31	-	672,931	-
2005	06/22 to 07/31	-	1,151,505	-
2006	06/26 to 07/31	-	1,108,626	-
2007	06/24 to 07/31	-	696,801	-
2008	06/26 to 07/31	-	427,911	-
2009	06/26 to 07/31	-	479,531	-
2010	06/26 to 07/31	-	429,643	-
SEG			220,000-480,000	

Note: Dashes indicate no information available.

^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 B6.—Salmon spawning escapement estimates, George River, Kuskokwim River drainage, 1996–2010.

Year	Operating Period ^a	Chinook	Sockeye	Chum	Pink ^b	Coho
George River Weir						
1996	06/15 to 09/20	7,716	98 ^c	19,393	644	^d
1997	06/09 to 09/20	7,823	445	5,907	17	9,210
1998	06/15 to 09/20	^d	^d	^d	4	^d
1999	06/15 to 09/25	3,548 ^c	39	11,552 ^c	97	8,914
2000	06/15 to 09/20	2,960	22	3,492	61	11,262
2001	06/15 to 09/22	3,309	24	11,601	83	14,398 ^c
2002	06/15 to 09/20	2,444	17	6,543	630	6,759
2003	06/15 to 09/20	4,693 ^c	16	33,666 ^c	158	33,280
2004	06/15 to 09/24	5,207	177	14,409	36	12,499
2005	06/15 to 09/20	3,845	276	14,828	79	8,200
2006	06/15 to 09/20	4,357	164	41,467	1,232	11,296
2007	06/14 to 09/20	4,883	74	55,842 ^c	325	29,317
2008	06/15 to 09/22	2,698	94	29,978	2,444	21,931
2009	06/17 to 09/20	3,663	54	7,941	318	12,573
2010	06/15 to 09/20	1,500	115	26,154	869	12,961
SEG		3,100- 7,900				

^a The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 20% of the total annual escapement is estimated.

^b Pink salmon numbers are not estimated or underestimated, weirs pickets are not tight enough to keep pink salmon from going through.

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

^d Field operations were incomplete and no total annual escapement was estimated.

Appendix B7.–Salmon spawning escapement estimates, Kogrukluk River, Kuskokwim River drainage, 1969–2010.

Year	Operating Period ^a	Chinook	Sockeye	Chum	Pink ^b	Coho
Kogrukluk River Tower ^c						
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	^d	^d	^d	^d	^d
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						
1976	06/29 to 07/31	5,600	2,326	8,117	0	
1977	07/14 to 07/27	^d	^d	^d	2	
1978	06/28 to 07/31	13,667	1,670	48,125	2	
1979	07/01 to 07/24	11,338	2,628	18,599 ^e	1	
1980	07/01 to 07/11	6,572 ^e	3,200 ^e	41,777 ^e	0	
1981	06/27 to 10/05	16,809	18,077	57,374	5	11,455 ^f
1982	07/09 to 09/14	10,993 ^e	17,297 ^e	64,077 ^e	17	37,796
1983	06/23 to 09/27	3,025 ^e	1,176 ^e	9,416 ^e	0	8,538
1984	06/19 to 09/15	4,928	4,133	41,484	17	27,595
1985	07/06 to 09/24	4,625	4,359	15,005	7	16,441
1986	06/29 to 09/07	5,038 ^e	4,247 ^e	14,693	10	22,506 ^e
1987	07/15 to 09/24	4,063 ^e	973 ^e	17,422 ^e	1	22,821
1988	07/05 to 09/17	8,520	4,402	39,543 ^e	23	13,512
1989	07/07 to 08/24	11,940 ^e	5,810 ^e	39,547 ^e	2	1,272
1990	06/28 to 09/07	10,214	8,407	26,765	1	6,132 ^e
1991	07/04 to 09/15	7,850 ^e	16,455	24,188	2	9,964 ^e
1992	07/01 to 08/21	6,755	7,539	34,104	10	26,057 ^e
1993	07/02 to 09/06	12,333	29,366	31,901	1	20,517 ^e
1994	07/02 to 09/14	15,227 ^e	14,192 ^e	46,635 ^e	2	34,695 ^e
1995	07/02 to 09/06	20,651	10,996	31,265	9	27,862 ^e
1996	06/29 to 09/15	14,199	15,386	48,494	1	50,555

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Year	Operating Period ^a	Chinook	Sockeye	Chum	Pink ^b	Coho
1997	06/28 to 09/21	13,285	13,078	7,958	0	12,238
1998	07/18 to 09/19	12,107 ^e	16,773 ^e	36,441 ^e	0	24,348
1999	07/06 to 09/18	5,570	5,864	13,820	0	12,609
2000	07/02 to 09/20	3,310	2,865	11,491	0	33,135
2001	06/21 to 09/25	9,298 ^e	8,776 ^e	30,570 ^e	9	19,387
2002	06/26 to 09/24	10,104	4,050	51,570	0	14,516
2003	06/15 to 09/20	11,771	9,164	23,413	3	74,604
2004	06/21 to 09/18	19,651	6,775	24,201	16	27,041
2005	06/22 to 09/22	22,000	37,939	197,723	114	24,116
2006	06/28 to 09/14	19,414	60,807	180,594	1676 ^e	17,011 ^e
2007	06/26 to 09/23	13,029 ^e	16,525 ^e	49,505 ^e	48 ^e	27,033
2008	07/03 to 09/30	9,730	19,675	44,978	1081	29,661
2009	06/25 to 09/27	9,702	23,785	84,940	60	22,981
2010	06/27 to 09/22	5,690	13,995	63,583	148	13,971
		5,300- 14,000		15,000- 49,000		13,000- 28,000
SEG						

^a The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 20% of the total annual escapement is estimated.

^b Pink salmon numbers are not estimated or underestimated, weirs pickets are not tight enough to keep pink salmon from going through.

^c The Kogrukluk River tower was located approximately 6 miles upstream of the current Kogrukluk River weir, and upstream of Shotgun Creek.

^d Field operations were incomplete and no total annual escapement was estimated.

^e Field operations were incomplete; sum of daily counts is an underestimate of total escapement, but considered reasonable. Additional estimates were not made.

^f First year operations extended to include the coho salmon run.

Appendix B8.–Salmon spawning escapement estimates, Tatlawiksuk River, Kuskokwim River drainage, 1998–2010.

Year	Operating Period ^a	Chinook	Sockeye	Chum	Pink ^b	Coho
Tatlawiksuk River Weir						
1998	06/15 to 09/20	^c	^c	^c	^c	^c
1999	06/15 to 09/20	1,490	6	9,599	1	3,455
2000	06/15 to 09/20	810	0	6,965	^c	^c
2001	06/15 to 09/20	2,010	3	23,718	3 ^d	10,539 ^d
2002	06/15 to 09/22	2,237	1	24,542	1	11,345
2003	06/15 to 09/20	1,683 ^d	^c	^c	^c	^c
2004	06/15 to 09/20	2,833	10	21,245	0	16,410
2005	06/12 to 09/22	2,918	77	55,720	1	7,495
2006	06/15 to 09/20	1,700	41	32,301	20	9,453 ^d
2007	06/14 to 09/20	2,061	27	83,246	7	8,685
2008	06/15 to 09/20	1,071	39	30,896	19	11,065
2009	06/15 to 09/20	1,071	39	19,975	3	10,148
2010	06/15 to 09/20	567	33	36,701	22	3,520 ^d

^a The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 20% of the total annual escapement is estimated.

^b Pink salmon numbers are not estimated or underestimated, weirs pickets are not small enough to keep pinks from going through.

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

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

Appendix B9.—Salmon spawning escapement estimates, Takotna River, Kuskokwim River drainage, 1998–2010.

Year	Operating Period ^a	Chinook	Sockeye	Chum	Coho
Takotna River Tower					
1995	06/24 to 09/20	156 ^b	-	1,685 ^b	-
1996	06/15 to 09/20	422	-	2,872	-
1997	06/17 to 09/20	1,197	-	1,839	-
1998	06/24 to 09/20	^c	-	^c	-
Takotna River Weir					
2000	06/24 to 09/20	345	4	1,254	3,957
2001	06/23 to 09/20	721	1	5,414	2,606
2002	06/23 to 09/22	316	1	4,377	3,984
2003	06/24 to 09/20	378	4	3,393	7,171
2004	06/23 to 09/20	461	17	1,630	3,207
2005	06/10 to 09/20	499	35	6,467	2,216
2006	06/16 to 09/22	539	60	12,598	5,548
2007	06/20 to 09/20	418	14	8,900	2,853
2008	06/20 to 09/23	413	13	5,691	2,817
2009	06/24 to 09/25	311	4	2,487	2,708
2010	06/24 to 09/20	178	- ^c	4,062	3,217

Note: Dashes denote that no information available.

^a The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 20% of the total annual escapement is estimated.

^b Field operations were incomplete and numbers here do not account for missed passage.

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

Appendix B10.—Salmon spawning escapement estimates, Telaquana River, Kuskokwim River drainage, 2010.

Year	Operating Period	Chinook	Sockeye	Chum	Pink	Coho
2010	6/29-9/20	88	72,021	99	1	5

Appendix B11.—Chinook salmon spawning aerial survey index estimates, Kuskokwim River Drainage, Kuskokwim Management Area, 1979–2010.

Year	Lower Kuskokwim River ^a				Middle Kuskokwim River ^a					Upper Kuskokwim River ^a			
	Eek	Kwethluk Canyon C.	Kisaralik	Tuluksak	Aniak	Kipchuk	Salmon	Hokokuk	Oskawalik	Holitna	Gagarayah	Cheeneetnuk	Salmon (Pitka)
1975					202	94							
1976		997								2,571	663		
1977		1,116		439				60			897	1,407	1,940
1978		1,722	2,417	403			322			2,766	504		1,100
1979								45					682
1980	2,378			1,035			1,186						1,450
1981		2,034	672		9,074								1,439
1982		471	81					42		521			413
1983	188			202	1,909		231	33		1,069			572
1984												1,177	545
1985	1,118	51	63	142				135				1,002	620
1986					424		336	100		650		317	
1987	1,739					193	516	210	193		205		
1988	2,255		869	188	954		244		80				473
1989	1,042	610	152		2,109	994	631						452
1990			631	200	1,255	537	596	157	113				
1991	1,312		217	358	1,564	885	583						
1992					2,284	670	335	64	91	2,022	328	1,050	2,536
1993					2,687	1,248	1,082	114	103	1,573	419	678	1,010
1994			1,243			1,520	1,218				807	1,206	1,010
1995			1,243		3,171	1,215	1,446	181	326	1,887	1,193	1,565	1,911
1996							985	85					
1997					2,187	855	980	165	1,470	2,093		345	
1998	522	126	457		1,930	443	557						
1999								18	98				

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Year	Lower Kuskokwim River ^a				Middle Kuskokwim River ^a					Upper Kuskokwim River ^a			
	Kwethluk				Aniak	Kipchuk	Salmon	Holokuk	Oskawalik	Holitna	Gagarayah	Cheeneetnuk	Salmon (Pitka)
	Eek	Canyon C.	Kisaralik	Tuluksak									
2000					714	182	238	42		301		362	
2001							598		186	1,130	143	1,033	
2002		1,795	1,727			1,615	1,236	186	295	1,578	452	1,255	
2003	1,236	2,628	654	94	3,514	1,493	1,242	528	844		1,095	810	1,241
2004	4,653	6,801	6,913	1,196	5,569	1,868	2,177	539	293	4,842	670	918	1,138
2005		5,059	4,112	672		1,944	4,097	510	582	2,795	788	1,155	1,809
2006			4,734		5,639	1,618		705	386	3,924	531	1,015	928
2007			1,373	173	3,984	2,147	1,458	146			1,035		1,014
2008		487	1,493		3,222	1,061	589	418	213	832	177	290	1,305
2009								565	378		303	323	632
2010			235					229		587	62		150
Escapement Goal:			400-		1,200-		330-			970-	300-	340-	470-
			1,200		2,300		1,200			2,100	830	1,300	1,600
10-yr avg	2,945	3,354		534		1,491		404		397			

^a Estimates are from aerial surveys conducted during peak spawning periods under 'good' or 'fair' survey conditions.

APPENDIX C

Appendix C1.–Commercial salmon fishing periods, hours, and permits fished, District 4 Quinhagak, Kuskokwim Bay, 1970–2010.

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	114
2003	24	288	114
2004	24	288	116
2005	23	276	145
2006	29	348	132
2007	33	396	125
2008	31	372	146
2009	29	342	179
2010	24	312	241
10 Yr Avg (99-08)	26	316	146
Hist Avg (70-08)	28	385	214

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

Appendix C2.–Commercial salmon harvest by period, District 4, Quinhagak, Kuskokwim Bay, 1994–2010.

Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1994	Jun 15	111	12	1,332	1,165	0.87	62	0.05	253	0.19	0	0.00
	Jun 20	95	12	1,140	746	0.65	187	0.16	286	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	19	0.02
	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	300	36	0.12	447	1.49	190	0.63	712	2.37
	Aug 1	49	12	588	51	0.09	368	0.63	334	0.57	2,577	4.38
	Aug 3	51	12	612	23	0.04	288	0.47	268	0.44	1,294	2.11
	Aug 5	48	12	576	25	0.04	183	0.32	277	0.48	3,103	5.39
	Aug 8	72	12	864	15	0.02	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	1	0.00	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	26,580	8,564		72,314		61,301		83,912	
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 3	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

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1995	Jul 26	52	12	624	71	0.11	1,404	2.25	1,279	2.05	116	0.19
(cont.)	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
	Aug 30	67	12	804	9	0.01	58	0.07	18	0.02	2,193	2.73
	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	8,573	10.61	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		81,505		118,718	

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
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	159	12	1,908	2,523	1.32	9,717	5.09	2,488	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
	Jul 28	47	12	564	45	0.08	645	1.14	714	1.27	71	0.13
	Jul 30	46	12	552	78	0.14	483	0.88	718	1.30	335	0.61
	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	28,836	35,492		69,508		38,435		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	3,122	3.83	1,682	2.06	2,230	2.73	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	79	12	948	1,699	1.79	3,445	3.63	5,211	5.50	10	0.01
	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	223	0.36	1,661	2.71	1,128	1.84	42	0.07
	Jul 24	54	12	648	252	0.39	1,266	1.95	1,123	1.73	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	538	0.86	763	1.22
	Jul 31	40	12	480	63	0.13	282	0.59	259	0.54	602	1.25

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1998	Aug 3	40	12	480	68	0.14	167	0.35	341	0.71	2,657	5.54
(cont.)	Aug 5	46	12	552	75	0.14	159	0.29	174	0.32	4,011	7.27
	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	5,954	11.81
	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	
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	

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
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	1,257	2.05
	Jul 31	46	12	552	30	0.05	548	0.99	222	0.40	2,533	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	
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

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2001	Aug 01	28	12	336	34	0.10	180	0.54	278	0.83	1,005	2.99
(cont.)	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	28	0.10	21	0.07	955	3.32
	Aug 24	15	12	180	6	0.03	15	0.08	5	0.03	432	2.40
Total			231	10,689	12,775		33,807		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	602	0.90	2,806	4.18	3,183	4.74	0	0.00
	Jul 8	59	12	708	601	0.85	2,530	3.57	3,754	5.30	0	0.00
	Jul 10	52	12	624	569	0.91	2,081	3.33	1,883	3.02	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	168	0.44	888	2.31	1,036	2.70	0	0.00
	Jul 19	19	12	228	71	0.31	701	3.07	832	3.65	0	0.00
	Aug 1	24	12	288	32	0.11	114	0.40	162	0.56	360	1.25
	Aug 5	25	12	300	20	0.07	85	0.28	164	0.55	1,610	5.37
	Aug 7	32	12	384	32	0.08	59	0.15	130	0.34	2,719	7.08
	Aug 9	32	12	384	15	0.04	53	0.14	110	0.29	2,317	6.03
	Aug 12	37	12	444	15	0.03	35	0.08	58	0.13	3,260	7.34
	Aug 14	38	12	456	10	0.02	27	0.06	51	0.11	2,649	5.81
	Aug 16	49	12	588	13	0.02	26	0.04	40	0.07	4,516	7.68
	Aug 19	30	12	360	3	0.01	8	0.02	25	0.07	3,156	8.77
	Aug 21	34	12	408	7	0.02	7	0.02	13	0.03	2,490	6.10
	Aug 23	29	12	348	6	0.02	10	0.03	18	0.05	2,495	7.17
	Aug 26	28	12	336	1	0.00	3	0.01	9	0.03	1,123	3.34
Total			288	11,892	11,486		17,820		29,319		26,695	

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	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	3,065	4.1196	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	2,607	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	
2004	Jun 15	40	12	480	3,788	7.89	124	0.26	203	0.42	0	0.00
	Jun 17	44	12	528	3,079	5.83	258	0.49	619	1.17	0	0.00
	Jun 22	50	12	600	2,625	4.38	1,508	2.51	1,404	2.34	0	0.00
	Jun 24	72	12	864	3,429	3.97	2,565	2.97	3,104	3.59	0	0.00
	Jun 29	59	12	708	3,424	4.84	2,897	4.09	1,678	2.37	0	0.00
	Jul 1	45	12	540	1,959	3.63	3,156	5.84	1,908	3.53	0	0.00
	Jul 5	63	12	756	2,269	3.00	6,099	8.07	2,876	3.80	0	0.00
Jul 7	54	12	648	1,562	2.41	4,742	7.32	1,909	2.95	0	0.00	

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Year	Date	Permits		Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
		Fished	Hours			Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2004	Jul 9	56	12	672	811	1.21	4,806	7.15	2,549	3.79	0	0.00	
(cont.)	Jul 12	53	12	636	699	1.10	3,045	4.79	3,367	5.29	0	0.00	
	Jul 14	41	12	492	881	1.79	2,533	5.15	3,243	6.59	0	0.00	
	Jul 16	31	12	372	412	1.11	1,454	3.91	1,562	4.20	0	0.00	
	Aug 2	35	12	420	89	0.21	375	0.89	447	1.06	4,131	9.84	
	Aug 4	36	12	432	83	0.19	223	0.52	318	0.74	4,756	11.01	
	Aug 6	36	12	432	38	0.09	177	0.41	202	0.47	2,654	6.14	
	Aug 9	44	12	528	50	0.09	133	0.25	118	0.22	8,977	17.00	
	Aug 11	41	12	492	44	0.09	103	0.21	96	0.20	10,267	20.87	
	Aug 13	30	12	360	31	0.09	56	0.16	26	0.07	5,618	15.61	
	Aug 16	53	12	636	28	0.04	49	0.08	48	0.08	9,861	15.50	
	Aug 18	53	12	636	21	0.03	63	0.10	63	0.10	9,123	14.34	
	Aug 20	46	12	552	14	0.03	36	0.07	51	0.09	6,792	12.30	
	Aug 23	37	12	444	9	0.02	17	0.04	19	0.04	7,281	16.40	
	Aug 25	44	12	528	9	0.02	12	0.02	28	0.05	6,113	11.58	
	Aug 27	39	12	468	11	0.02	6	0.01	12	0.03	7,137	15.25	
Total			288	13,224	25,365		34,437		25,850		82,710		
2005	Jun 14	67	12	804	3,366	4.19	496	0.62	47	0.06	0	0.00	
	Jun 16	85	12	1,020	2,554	2.50	564	0.55	51	0.05	0	0.00	
	Jun 21	90	12	1,080	5,850	5.42	3,537	3.28	512	0.47	0	0.00	
	Jun 23	100	12	1,200	3,826	3.19	2,907	2.42	564	0.47	0	0.00	
	Jun 28	82	12	984	2,700	2.74	9,920	10.08	3,239	3.29	0	0.00	
	Jun 30	79	12	948	1,681	1.77	7,350	7.75	289	0.30	0	0.00	
	Jul 5	77	12	924	1,480	1.60	10,587	11.46	480	0.52	0	0.00	
	Jul 7	70	12	840	743	0.88	8,661	10.31	1,328	1.58	0	0.00	
	Jul 12	63	12	756	705	0.93	8,760	11.59	1,672	2.21	0	0.00	
	Jul 14	58	12	696	416	0.60	6,209	8.92	1,354	1.95	0	0.00	
	Jul 19	44	12	528	317	0.60	4,199	7.95	1,187	2.25	0	0.00	
	Aug 1	53	12	636	114	0.18	1,488	2.34	688	1.08	957	1.50	
	Aug 3	46	12	552	115	0.21	1,059	1.92	567	1.03	1,888	3.42	
	Aug 5	46	12	552	64	0.12	650	1.18	382	0.69	2,625	4.76	
	Aug 8	55	12	660	69	0.10	716	1.08	444	0.67	5,505	8.34	
	Aug 10	54	12	648	48	0.07	383	0.59	145	0.22	4,361	6.73	
	Aug 12	65	12	780	44	0.06	415	0.53	209	0.27	5,721	7.33	
	Aug 15	46	12	552	25	0.05	240	0.43	127	0.23	5,307	9.61	
	Aug 17	60	12	720	31	0.04	202	0.28	85	0.12	7,786	10.81	
	Aug 19	65	12	780	20	0.03	240	0.31	76	0.10	7,642	9.80	
	Aug 22	56	12	672	10	0.01	94	0.14	46	0.07	5,035	7.49	
	Aug 26	42	12	504	13	0.03	81	0.16	31	0.06	3,332	6.61	
	Aug 30	29	12	348	4	0.01	43	0.12	6	0.02	1,549	4.45	
Total			276	17,184	24,195		68,801		13,529		51,708		
2006	Jun 15	69	12	828	2,940	3.55	188	0.23	2,192	2.65	0	0.00	
	Jun 20	87	12	1,044	4,246	4.07	993	0.95	5,091	4.88	0	0.00	
	Jun 22	87	12	1,044	3,947	3.78	2,038	1.95	4,261	4.08	0	0.00	
	Jun 27	59	12	708	1,381	1.95	4,838	6.83	3,039	4.29	0	0.00	
	Jun 30	80	12	960	1,796	1.87	17,074	17.79	4,507	4.69	0	0.00	
	Jul 3	77	12	924	1,162	1.26	10,445	11.30	2,063	2.23	0	0.00	
	Jul 5	80	12	960	791	0.82	10,202	10.63	1,681	1.75	0	0.00	

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho		
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE	
2006	Jul 7	90	12	1,080	855	0.79	14,061	13.02	1,514	1.40	23	0.02	
(cont.)	Jul 10	99	12	1,188	722	0.61	12,537	10.55	2,348	1.98	26	0.02	
	Jul 17	73	12	876	286	0.33	8,012	9.15	1,983	2.26	48	0.05	
	Jul 19	80	12	960	327	0.34	8,043	8.38	2,089	2.18	29	0.03	
	Jul 21	67	12	804	236	0.29	7,508	9.34	2,041	2.54	47	0.06	
	Jul 24	63	12	756	175	0.23	3,886	5.14	2,438	3.22	146	0.19	
	Jul 26	37	12	444	82	0.18	1,979	4.46	1,243	2.80	323	0.73	
	Jul 31	36	12	432	59	0.14	1,189	2.75	940	2.18	965	2.23	
	Aug 2	30	12	360	29	0.08	737	2.05	435	1.21	452	1.26	
	Aug 4	27	12	324	21	0.06	684	2.11	296	0.91	522	1.61	
	Aug 7	34	12	408	19	0.05	447	1.10	283	0.69	1,631	4.00	
	Aug 9	30	12	360	23	0.06	168	0.47	114	0.32	1,968	5.47	
	Aug 11	43	12	516	25	0.05	334	0.65	206	0.40	4,208	8.16	
	Aug 14	57	12	684	20	0.03	207	0.30	102	0.15	3,323	4.86	
	Aug 16	36	12	432	7	0.02	188	0.44	48	0.11	1,628	3.77	
	Aug 18	32	12	384	8	0.02	136	0.35	60	0.16	2,881	7.50	
	Aug 21	36	12	432	9	0.02	98	0.23	64	0.15	1,804	4.18	
	Aug 23	34	12	408	7	0.02	75	0.18	36	0.09	1,646	4.03	
	Aug 25	30	12	360	2	0.01	96	0.27	32	0.09	2,027	5.63	
	Aug 28	30	12	360	3	0.01	55	0.15	25	0.07	1,342	3.73	
	Aug 30	19	12	228	1	0.00	38	0.17	11	0.05	823	3.61	
	Sep 1	16	12	192	5	0.03	52	0.27	9	0.05	969	5.05	
Total			348	18,456	19,184		106,308		39,151		26,831		
2007	Jun 14	88	12	1,056	1,308	1.24	66	0.06	250	0.24	0	0.00	
	Jun 19	82	12	984	2,267	2.30	349	0.35	1,275	1.30	0	0.00	
	Jun 21	80	12	960	3,356	3.50	1,533	1.60	2,530	2.64	0	0.00	
	Jun 26	97	12	1,164	3,749	3.22	1,940	1.67	4,260	3.66	0	0.00	
	Jun 28	87	12	1,044	2,375	2.27	5,150	4.93	1,186	1.14	0	0.00	
	Jul 2	94	12	1,128	1,781	1.58	7,633	6.77	3,582	3.18	0	0.00	
	Jul 4	85	12	1,020	971	0.95	8,970	8.79	2,723	2.67	0	0.00	
	Jul 6	93	12	1,116	896	0.80	8,228	7.37	2,885	2.59	0	0.00	
	Jul 8	49	12	588	382	0.65	7,494	12.74	1,109	1.89	0	0.00	
	Jul 10	89	12	1,068	722	0.68	10,548	9.88	2,539	2.38	0	0.00	
	Jul 12	89	12	1,068	489	0.46	13,170	12.33	2,292	2.15	0	0.00	
	Jul 14	87	12	1,044	370	0.35	13,589	13.02	1,624	1.56	8	0.01	
	Jul 16	82	12	984	250	0.25	9,483	9.64	1,584	1.61	40	0.04	
	Jul 18	72	12	864	145	0.17	5,545	6.42	2,310	2.67	91	0.11	
	Jul 20	69	12	828	183	0.22	5,077	6.13	6,109	7.38	117	0.14	
	Jul 22	0	12	0			Commercial Opening, Processor not able to buy						
	Jul 24	54	12	648	96	0.15	3,608	5.57	6,333	9.77	477	0.74	
	Jul 26	49	12	588	64	0.11	2,579	4.39	6,903	11.74	792	1.35	

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho		
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE	
2007	Jul 31	48	12	576	31	0.05	821	1.43	3,462	6.01	2,207	3.83	
(cont.)	Aug 2	51	12	612	40	0.07	788	1.29	3,597	5.88	2,142	3.50	
	Aug 4	53	12	636	22	0.03	354	0.56	1,628	2.56	1,714	2.69	
	Aug 6	50	12	600	16	0.03	608	1.01	1,370	2.28	2,443	4.07	
	Aug 8	50	12	600	14	0.02	301	0.50	766	1.28	2,849	4.75	
	Aug 10	47	12	564	13	0.02	326	0.58	502	0.89	3,275	5.81	
	Aug 13	46	12	552	9	0.02	225	0.41	433	0.78	3,298	5.97	
	Aug 15	52	12	624	5	0.01	234	0.38	313	0.50	2,839	4.55	
	Aug 17	40	12	480	7	0.01	187	0.39	194	0.40	2,394	4.99	
	Aug 20	43	12	516	4	0.01	144	0.28	142	0.28	2,544	4.93	
	Aug 22	45	12	540	1	0.00	151	0.28	73	0.14	2,353	4.36	
	Aug 24	38	12	456	6	0.01	167	0.37	108	0.24	2,267	4.97	
	Aug 27	37	12	444	2	0.00	105	0.24	51	0.11	1,103	2.48	
	Aug 29	30	12	360	1	0.00	79	0.22	55	0.15	1,065	2.96	
	Aug 31	22	12	264	0	0.00	65	0.25	44	0.17	692	2.62	
Total			396	23,976	19,575	109,517		62,232		34,710			
2008	Jun 14	102	12	1,224	1,322	1.08	91	0.07	345	0.28	0	0.00	
	Jun 17	99	12	1,188	1,293	1.09	354	0.30	640	0.54	0	0.00	
	Jun 24	91	12	1,092	2,891	2.65	1,946	1.78	3,941	3.61	0	0.00	
	Jun 26	101	12	1,212	3,359	2.77	2,150	1.77	4,430	3.66	0	0.00	
	July 1	105	12	1,260	1,544	1.23	6,782	5.38	6,285	4.99	0	0.00	
	July 5	99	12	1,188	1,015	0.85	6,484	5.46	3,018	2.54	0	0.00	
	July 8	81	12	972	391	0.40	5,494	5.65	3,242	3.34	0	0.00	
	July 10	86	12	1,032	340	0.33	7,361	7.13	2,901	2.81	1	0.00	
	July 12	83	12	996	340	0.34	8,322	8.36	3,452	3.47	7	0.01	
	July 14	89	12	1,068	368	0.34	10,141	9.50	6,246	5.85	61	0.06	
	July 16	78	12	936	236	0.25	5,557	5.94	3,325	3.55	110	0.12	
	July 18	88	12	1,056	225	0.21	5,368	5.08	4,032	3.82	122	0.12	
	July 21	76	12	912	158	0.17	3,041	3.33	4,917	5.39	746	0.82	
	July 23	61	12	732	94	0.13	2,029	2.77	3,434	4.69	764	1.04	
	July 25	54	12	648	58	0.09	1,140	1.76	2,216	3.42	1,453	2.24	
	July 28	46	12	552	32	0.06	793	1.44	1,073	1.94	1,827	3.31	
	July 30	56	12	672	38	0.06	800	1.19	1,291	1.92	4,332	6.45	
	Aug 1	53	12	636	21	0.03	484	0.76	707	1.11	4,095	6.44	
	Aug 4	55	12	660	20	0.03	287	0.43	436	0.66	4,805	7.28	
	Aug 6	53	12	636	12	0.02	222	0.35	312	0.49	4,762	7.49	
	Aug 8	50	12	600	12	0.02	174	0.29	186	0.31	3,549	5.92	
	Aug 10	30	12	360	5	0.01	139	0.39	130	0.36	3,645	10.13	
	Aug 12	66	12	792	10	0.01	127	0.16	134	0.17	8,209	10.36	
	Aug 14	65	12	780	4	0.01	101	0.13	62	0.08	13,540	17.36	
	Aug 16	77	12	924	8	0.01	121	0.13	80	0.09	10,175	11.01	
	Aug 18	66	12	792	7	0.01	82	0.10	56	0.07	9,377	11.84	
	Aug 20	65	12	780	2	0.00	65	0.08	43	0.06	9,568	12.27	
	Aug 22	56	12	672	2	0.00	28	0.04	34	0.05	3,242	4.82	
	Aug 25	38	12	456	2	0.00	42	0.09	27	0.06	3,204	7.03	
	Aug 27	39	12	468	1	0.00	11	0.02	19	0.04	2,553	5.46	
	Aug 29	40	12	480	2	0.00	7	0.01	19	0.04	4,110	8.56	
Total			372	25,776	13,812	69,743		57,033		94,257			

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2009	Jun 15	79	12	948	1,608	2.1	142	3.1	231	2.7	0	0.0
	Jun 17	73	12	876	1,878	1.5	245	9.3	183	5.7	0	0.0
	Jun 22	110	12	1,320	3,482	0.8	1,892	12.1	2,005	7.6	0	0.0
	Jun 25	120	12	1,440	2,849	0.4	4,753	11.5	3,931	7.9	0	0.0
	Jun 30	122	12	1,464	1,302	0.2	10,329	12.3	7,391	5.8	0	0.0
	Jul 6	120	12	1,440	723	0.2	14,406	8.1	6,171	4.0	0	0.0
	Jul 8	131	12	1,572	798	0.1	12,919	6.0	10,633	5.1	0	0.0
	Jul 10	122	12	1,464	382	0.1	14,274	8.0	11,026	6.0	2	0.0
	Jul 13	95	12	1,140	133	0.1	7,810	8.0	7,256	5.9	0	0.0
	Jul 15	111	12	1,332	137	0.1	8,623	5.4	6,323	5.0	3	0.0
	Jul 16	77	6	462	72	0.1	6,946	4.2	4,579	3.2	4	0.0
	Jul 17	80	12	960	135	0.1	6,561	8.8	6,732	2.8	3	0.1
	Jul 20	70	12	840	92	0.0	6,877	6.7	4,557	1.8	110	0.1
	Jul 22	73	12	876	81	0.1	6,898	6.5	4,710	1.8	211	0.1
	Jul 24	79	12	948	74	0.0	4,048	4.0	4,268	0.9	548	0.2
	Jul 25	61	12	732	42	0.0	1,960	1.1	3,794	0.3	610	0.2
	Jul 27	41	12	492	27	0.0	837	3.8	1,868	1.0	618	1.3
	Jul 29	19	12	228	3	0.0	134	3.6	284	0.7	209	1.1
	Jul 31	38	12	456	17	0.0	847	3.4	2,240	0.5	2,289	2.1
	Aug 3	53	12	636	22	0.0	470	3.3	866	0.3	3,733	1.6
	Aug 5	56	12	672	8	0.0	245	3.9	639	0.2	4,254	2.4
	Aug 7	69	12	828	11	0.0	239	2.8	562	0.1	4,952	4.1
	Aug 10	70	12	840	8	0.0	235	3.3	374	0.1	4,572	5.4
	Aug 12	58	12	696	4	0.0	92	2.2	169	0.1	4,076	9.8
	Aug 14	64	12	768	8	0.0	131	1.3	146	0.0	5,973	7.7
	Aug 17	66	12	792	9	0.0	96	0.6	99	0.0	5,507	4.7
	Aug 19	66	12	792	4	0.0	77	0.6	66	0.0	5,181	4.7
	Aug 21	56	12	672	5	0.0	51	0.6	31	0.0	3,930	4.7
	Aug 24	45	12	540	6	0.0	16	0.6	24	0.0	1,330	4.7
Total			342	26,226	13,920		112,153		91,158		48,115	
2010	Jun 15	33	12	396	325	0.8	28	0.1	80	0.2	0	0.0
	Jun 21	122	12	1464	2,620	1.8	1,280	0.9	5,157	3.5	0	0.0
	Jun 25	125	12	1500	3,404	2.3	2,566	1.7	7,051	4.7	0	0.0
	Jun 29	137	12	1644	1,983	1.2	5,638	3.4	10,472	6.4	0	0.0
	Jul 2	128	12	1536	1,318	0.9	11,308	7.4	12,131	7.9	0	0.0
	Jul 5	141	12	1692	1,128	0.7	17,975	10.6	8,661	5.1	0	0.0
	Jul 7-8	168	24	4032	1,085	0.3	16,367	4.1	14,734	3.7	0	0.0
	Jul 9	118	12	1416	443	0.3	15,640	11.0	9,043	6.4	0	0.0
	Jul 12	156	12	1872	433	0.2	13,387	7.2	5,531	3.0	0	0.0
	Jul 14-15	172	24	4128	658	0.2	21,410	5.2	11,929	2.9	3	0.0
	Jul 16	152	12	1824	206	0.1	10,038	5.5	6,146	3.4	0	0.0
	Jul 17	103	12	1236	198	0.2	6,932	5.6	4,070	3.3	3	0.0
	Jul 19	63	12	756	86	0.1	4,644	6.1	2,248	3.0	16	0.0
	Jul 21	70	12	840	119	0.1	4,658	5.5	3,337	4.0	102	0.1
	Jul 23	68	12	816	55	0.1	3,731	4.6	2,446	3.0	105	0.1
	Jul 26	53	12	636	54	0.1	1,114	1.8	1,408	2.2	157	0.2
	Jul 28	25	12	300	17	0.1	333	1.1	677	2.3	115	0.4
	Jul 30	30	12	360	30	0.1	351	1.0	533	1.5	198	0.6

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Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2010	Aug 2	34	12	408	27	0.1	316	0.8	318	0.8	994	2.4
(cont.)	Aug 6	43	12	516	23	0.0	251	0.5	380	0.7	2,056	4.0
	Aug 9	27	12	324	5	0.0	68	0.2	43	0.1	770	2.4
	Aug 13	83	12	996	8	0.0	130	0.1	99	0.1	2,733	2.7
	Aug 16	66	12	792	5	0.0	108	0.1	67	0.1	3,800	4.8
	Aug 18	82	12	984	0	0.0	89	0.1	49	0.0	2,638	2.7
Total			312	30,468	14,230		138,362		106,610		13,690	
10 Yr Avg												
(99-08)			307	18,115	17,674		63,309		39,272		42,737	

Appendix C3.–Commercial salmon harvest District 4, Quinhagak, Kuskokwim Bay, 1960–2010.

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	21,311	29,220	154,575
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
2004	25,462	34,627	82,398	0	25,820	168,307
2005	24,195	68,801	51,780	19	13,529	158,324
2006	19,184	106,308	26,831	0	39,151	191,474
2007	19,573	109,343	34,710	0	61,228	224,854
2008	13,812	69,743	94,257	0	57,033	234,845
2009	13,920	112,153	48,115	0	91,158	265,346
2010	14,230	138,362	13,690	0	106,610	272,892
10 Yr Avg (00-09)	17,607	65,508	46,368	2	39,280	168,766
Hist Avg (60-09)	16,154	31,441	37,070	8,361	35,030	128,056

^a Estimate of chum roe included.

Appendix C4.–Commercial salmon fishing exvessel value, District 4, Quinhagak, Kuskokwim Bay, 1990–2010.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1990	\$253,562	\$542,485	\$123,936	\$4,146	\$89,343	\$1,013,472
1991	\$94,950	\$246,734	\$144,379	\$52	\$106,321	\$592,436
1992	\$166,471	\$368,310	\$303,740	\$15,875	\$139,268	\$993,664
1993	\$143,506	\$402,763	\$246,746	\$4	\$105,236	\$898,255
1994	\$67,584	\$253,922	\$420,802	\$10,454	\$84,395	\$837,157
1995	\$418,067	\$323,104	\$201,413	\$81	\$104,523	\$1,047,188
1996	\$61,004	\$165,100	\$246,930	\$6	\$61,686	\$534,726
1997	\$171,688	\$204,190	\$91,584	\$-	\$29,609	\$497,071
1998	\$82,168	\$150,631	\$197,676	\$871	\$36,497	\$467,843
1999	\$94,880	\$140,846	\$14,997	\$-	\$28,368	\$279,091
2000	\$131,351	\$249,382	\$31,898	\$1	\$23,929	\$436,561
2001	\$93,697	\$89,334	\$32,577	\$-	\$13,007	\$228,615
2002	\$56,356	\$40,368	\$47,651	\$-	\$23,374	\$167,749
2003	\$69,201	\$107,287	\$108,804	\$-	\$19,261	\$304,553
2004	\$107,700	\$77,394	\$201,879	\$-	\$18,372	\$405,345
2005	\$221,854	\$241,478	\$101,776	\$4	\$6,853	\$571,965
2006	\$147,802	\$327,917	\$61,433	\$-	\$14,030	\$551,182
2007	\$163,248	\$374,004	\$102,569	\$-	\$21,044	\$660,865
2008	\$140,580	\$272,427	\$317,143	\$-	\$20,581	\$750,731
2009	\$130,561	\$384,209	\$136,562	\$-	\$95,993	\$747,325
2010	\$294,163	\$1,049,395	\$117,658	\$-	\$194,105	\$1,655,321
10 Yr Avg (99-08)	\$126,235	\$216,380	\$114,229	\$1	\$25,644	\$435,666
Hist Avg (90-08)	\$140,812	\$248,094	\$156,725	\$1,575	\$52,085	\$591,498

Appendix C5.–Chinook salmon total utilization, District 4 Quinhagak, Kuskokwim Bay, 1960–2010.

Year	Commercial Harvest ^a		Subsistence Harvest ^b		Sport Fish		Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg	Annual	10-yr Avg		
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						16,802	
1970	18,269	4,943					18,269	
1971	4,185	6,769					4,185	7,180
1972	15,880	6,755					15,880	7,166
1973	14,993	7,791					14,993	8,201
1974	8,704	8,634					8,704	9,045
1975	3,928	9,097					3,928	9,507
1976	14,110	9,192					14,110	9,602
1977	19,090	10,575	2,012				21,102	10,986
1978	12,335	12,484	2,328				14,663	12,961
1979	11,144	12,830	1,420				12,564	13,264
1980	10,387	12,264	1,940				12,327	12,840
1981	24,524	11,476	2,562				27,086	12,246
1982	22,106	13,510	2,402				24,508	14,536
1983	46,385	14,132	2,542		1,511		50,438	15,399
1984	33,663	17,271	3,109		922		37,694	18,943
1985	30,401	19,767	2,341		672		33,414	21,842
1986	22,835	22,415	2,682		938		26,455	24,791
1987	26,022	23,287	3,663	2,334	508		30,193	26,025
1988	13,883	23,980	3,690 ^c	2,499	1,910		19,483	26,934
1989	20,820	24,135	3,542	2,635	884		25,246	27,416
1990	27,644	25,103	6,013	2,847	503		34,160	28,684
1991	9,480	26,828	3,693	3,255	316		13,489	30,868
1992	17,197	25,324	3,447	3,368	656		21,300	29,508
1993	15,784	24,833	3,368	3,472	1,006	882	20,158	29,187
1994	8,564	21,773	3,995	3,555	751	832	13,310	26,159
1995	38,584	19,263	2,746	3,643	739	814	42,069	23,721
1996	14,165	20,081	3,075	3,684	689	821	17,929	24,586
1997	35,510	19,214	3,433	3,723	1,632	796	40,575	23,734
1998	23,158	20,163	4,041	3,700	1,475	909	28,674	24,772

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Year	Commercial Harvest ^a		Subsistence Harvest ^b		Sport Fish		Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg	Annual	10-yr Avg		
1999	18,426	21,091	3,167	3,735	854	865	22,447	25,691
2000	21,229	20,851	3,106	3,698	833	862	25,168	25,411
2001	12,775	20,210	2,923	3,407	947	895	16,645	24,512
2002	11,480	20,539	2,475	3,330	779	958	14,734	24,828
2003	14,444	19,968	3,898	3,233	323	971	18,665	24,171
2004	25,465	19,834	3,726	3,286	228	902	29,419	24,022
2005	24,195	21,524	3,083	3,259	520	850	27,798	25,633
2006	19,184	20,085	3,521	3,293	754	828	23,459	24,205
2007	19,573	20,587	d	3,337	633	835		24,758
2008	13,812	18,993	d		220	735		
2009	13,920	18,058	d		400	609		
2010	14,230	17,608	d		d	564		
10-yr Avg	17,608 ^e		3,337 ^f		564 ^e		24,758 ^f	

^a District 4 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 Estimates are not available at this time due to review of data analysis.

^e 10-yr Avg (2000–2009).

^f 10-yr Avg (1997–2006).

Appendix C6.–Sockeye salmon total utilization, District 4 Quinhagak, Kuskokwim Bay, 1960–2010.

Year	Commercial Harvest ^a		Subsistence Harvest ^b		Sport Fish		Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg	Annual	10-yr Avg		
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						3,784	
1970	5,393	4,493					5,393	4,493
1971	3,118	4,467					3,118	4,467
1972	3,286	4,548					3,286	4,548
1973	2,783	3,846					2,783	3,846
1974	19,510	4,124					19,510	4,124
1975	8,584	4,733					8,584	4,733
1976	6,090	5,402					6,090	5,402
1977	5,519	5,908					5,519	5,908
1978	7,589	6,395					7,589	6,395
1979	18,828	6,566					18,828	6,566
1980	13,221	8,070					13,221	8,070
1981	17,292	8,853					17,292	8,853
1982	25,685	10,270					25,685	10,270
1983	10,263	12,510					10,263	12,510
1984	17,255	13,258			143		17,398	13,258
1985	7,876	13,033	106		12		7,994	13,047
1986	21,484	12,962	423		200		22,107	12,988
1987	6,489	14,501	1,067		153		7,709	14,590
1988	21,556	14,598	1,261 ^c		109		22,926	14,809
1989	20,582	15,995	633		101		21,316	16,342
1990	83,681	16,170	1,950		462		86,093	16,591
1991	53,657	23,216	1,772		88		55,517	23,878
1992	60,929	26,853	1,264		66		62,259	27,701
1993	80,934	30,377	1,082		331		82,347	31,358
1994	72,314	37,444	1,000		313	167	73,627	38,567
1995	68,194	42,950	573	1,056	148	184	68,915	44,190
1996	57,665 ^d	48,982	1,467	1,103	335	197	59,467	50,282
1997	69,562	52,600	1,264	1,207	607	211	71,433	54,018
1998	41,382	58,907	1,702	1,227	942	256	44,026	60,390

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Year	Commercial Harvest ^a		Subsistence Harvest ^b		Sport Fish		Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg	Annual	10-yr Avg		
1999	41,315	60,890	2,021	1,271	496	339	43,832	62,500
2000	68,557	62,963	1,088	1,410	694	379	70,339	64,752
2001	33,807	61,451	1,525	1,323	83	402	35,415	63,176
2002	17,802	59,466	1,099	1,299	73	402	18,974	61,166
2003	33,941	55,153	1,622	1,282	107	402	35,670	56,838
2004	34,627	50,454	1,086	1,336	112	380	35,825	52,170
2005	68,801	46,685	1,633	1,345	156	360	70,590	48,390
2006	106,308	46,746	2,177	1,451	523	361	109,008	48,557
2007	109,343	51,610		^d 1,522	385	379		53,511
2008	69,743	55,588		^d	654	357		
2009	112,153	58,424		^d	75	328		
2010	138,362	65,508		^d		^d 286		
10 Yr Avg	65,508 ^e		1,522 ^f		286 ^e		53,511 ^f	

^a District 4 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 Estimates are not available at this time due to review of data analysis.

^e 10-yr Avg (2000–2009)

^f 10-yr Avg (1997–2006)

Appendix C7.—Chum salmon total utilization, District 4 Quinhagak, Kuskokwim Bay, 1960–2010.

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

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Year	Commercial Harvest ^a		Subsistence Harvest ^b		Sport Fish		Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg	Annual	10-yr Avg		
2000	30,553	56,394	912	1,459	231	200	31,696	58,053
2001	17,209	54,677	747	1,227	43	203	17,999	56,108
2002	29,252	50,949	1,839	1,143	446	200	31,537	52,291
2003	27,868	46,536	1,129	1,143	14	219	29,011	47,898
2004	25,820	45,228	1,112	1,155	33	202	26,965	46,586
2005	13,529	41,680	915	1,121	108	190	14,552	42,991
2006	39,151	34,887	1,865	1,144	145	179	41,161	36,210
2007	61,228	30,501	d	1,238	15	174		31,913
2008	57,033	32,780	d		48	154		
2009	91,158	33,973	d		44	138		
2010	106,610	39,280	d		d	113		
10-yr Avg	39,280 ^e		1,238 ^f		113 ^e		31,913 ^f	

^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 Estimates are not available at this time due to review of data analysis.

^e 10-yr Avg (2000–2009).

^f 10-yr Avg (1997–2006).

Appendix C8.–Coho salmon total utilization, District 4 Quinhagak, Kuskokwim Bay, 1960–2010.

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

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Year	Commercial Harvest ^a		Subsistence Harvest ^b		Sport Fish		Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg	Annual	10-yr Avg		
2000	30,529	63,650	1,088	2,427	799	759	32,416	63,164
2001	18,531	60,338	1,525	2,118	2,448	775	22,504	63,232
2002	26,695	57,934	1,099	1,948	1,784	984	29,578	60,866
2003	49,833	51,963	2,047	1,762	1,076	1,135	52,956	54,860
2004	82,398	51,365	1,209	1,751	1,362	1,169	84,969	54,285
2005	51,780	51,214	1,443	1,598	1,006	1,238	54,229	54,050
2006	26,831	49,771	1,019	1,487	1,742	1,241	29,592	52,499
2007	34,710	40,583	^d	1,442	1,087	1,328		43,352
2008	94,257	40,767	^d		1,541	1,315		
2009	48,115	42,175	^d		876	1,394		
2010	13,690	46,368	^d		^d	1,372		
10-yr Avg	46,368 ^e		1,442 ^f		1,372 ^e		43,352 ^f	

^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 Estimates are not available at this time due to review of data analysis.

^e 10-yr Avg (2000–2009).

^f 10-yr Avg (1997–2006).

Appendix C9.—Salmon spawning escapement, Kanektok River, Kuskokwim Bay, 1996–2010.

Year	Operating Period ^a	Chinook	Sockeye	Chum	Pink ^b	Coho
<u>Kanektok River</u>						
<i>Counting Tower</i>						
1996	7/2-7/13; 7/20-7/25	c	c	c		
1997	06/11 to 08/21	16,731	96,348	51,180	7,872	c
1998	07/23 to 08/17	c	c	c	c	c
1999		Not Operational				
2000		Not Operational				
<i>Weir</i>						
2001	08/10 to 10/03	132 ^c	739 ^c	1,056 ^c	19	35,650
2002	07/01 to 09/20	5,343 ^d	58,326 ^d	42,009 ^d	87,031	24,840
2003	06/24 to 09/18	8,231	127,471	40,066	2,443	72,448
2004	06/29 to 09/20	19,528	102,867	46,444	98,060	87,828
2005	06/25 to 09/18	14,331	242,208	53,580	3,530	26,343 ^e
2006		Not Operational				
2007	06/19 to 09/18	14,120	307,750	133,215	3,075	30,471
2008	07/17 to 08/21	6,578 ^d	141,388 ^e	54,024 ^d	142,430	24,490 ^d
2009	07/05 to 08/11	6,841	272,483 ^d	51,652 ^d	1,246	2,336 ^c
2010	06/28 to 08/05	5,800	202,643	62,567	114,074	344 ^c

^a The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 20% of the total annual escapement is estimated.

^b Pink salmon numbers represent actual counts. No estimates of missed escapement, due to picket spacing allowing unmonitored for small pink salmon.

^c Field operations were incomplete and total annual escapement was not estimated.

^d Field operations were incomplete; sum of daily counts is an underestimate of total escapement, but considered reasonable. Additional estimates were not made.

^e Field operations were incomplete; more than 20% of the total estimate is based on daily passage estimates.

Appendix C10.—Salmon spawning aerial survey index estimates, Kanektok River, Kuskokwim Bay drainage, 1962–2010.

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
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
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
2004	27,873	7,838	a	a
2005	13,926	110,730	a	a

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Year	Chinook	Sockeye	Coho	Chum
2006	4,875	367,300	a	a
2007	a	a	a	a
2008	3,659	43,900	a	a
2009	a	a	a	a
2010	1,228	16,950	a	a
SEG	3,500-8,000	14,000-34,000		>5,200

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

APPENDIX D

Appendix D1.—Commercial salmon fishing periods, hours, and permits fished, District W-5 Goodnews Bay, Kuskokwim Bay, 1970–2010.

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
2004	21	252	29
2005	21	252	29
2006	27	324	24
2007	33	396	28
2008	30	360	25
2009	26	306	39
2010	22	260	48
10 yr avg (00-09)	23	273	32
Hist avg (70-09)	26	336	56

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

Appendix D2.–Commercial salmon harvest by period, District W-5 Goodnews Bay, Kuskokwim Bay, 1994–2010.

Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
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	349	0.55	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	36	3,168	313	0.10	16,753	5.29	5,498	1.74	1	0.00
	Jul 15	78	36	2,808	138	0.05	8,860	3.16	3,296	1.17	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
	Aug 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
	Aug 15	31	12	372	14	0.04	422	1.13	23	0.06	3,724	10.01
	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			408	16,188	2,570		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 3	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	67	36	2,412	182	0.08	4,291	1.78	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

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Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1995	Jul 24	26	12	312	54	0.17	829	2.66	355	1.14	4	0.01
(cont.)	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	14,808	2,922		37,351		19,832		17,875	
1996	Jun 28	26	7	182	307	1.69	2,008	11.03	1,605	8.82	0	0.00
	Jul 02	31	12	372	223	0.60	4,777	12.84	2,208	5.94	0	0.00
	Jul 05	26	12	312	154	0.49	4,900	15.71	1,717	5.50	0	0.00
	Jul 08	40	12	480	125	0.26	4,366	9.10	1,809	3.77	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	12	420	65	0.15	3,080	7.33	1,279	3.05	13	0.03
	Jul 18	34	12	408	78	0.19	1,962	4.81	709	1.74	18	0.04
	Jul 20	0	12	0			Commercial Opening, processor not able to buy					
	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
	Aug 05	25	12	300	17	0.06	301	1.00	54	0.18	2,069	6.90
	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	5,628	16.75
	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			247	6,518	1,375		30,717		11,093		43,836	

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho		
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE	
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	0	0.00	
	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 18	0	12	0	Commercial Opening, processor not able to buy								
	Aug 20	21	12	252	11	0.04	214	0.85	4	0.02	828	3.29	
	Aug 22	18	12	216	6	0.03	155	0.72	4	0.02	629	2.91	
	Aug 25	17	12	204	3	0.01	152	0.75	7	0.03	468	2.29	
Total			276	5,832	2,039		31,451		11,729		2,983		
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	1,451	3.78	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	
	Jul 31	19	12	228	20	0.09	364	1.60	54	0.24	162	0.71	
	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	

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Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1998	Aug 7	16	12	192	8	0.04	138	0.72	16	0.08	755	3.93
(cont.)	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	0	0.00
	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		2,474	
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
	Jul 19	0	12	0			Commercial Opening, processor not able to buy					

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Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2000 (cont.)	Jul 21	19	12	228	24	0.11	1,936	8.49	225	0.99	6	0.03
	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 02	0	12	0	Commercial Opening, processor not able to buy							
	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	427	1.62	13	0.05	2,349	8.90
	Aug 14	29	12	348	2	0.01	409	1.18	7	0.02	3,205	9.21
	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			300	5,808	4,442		37,252		7,450		15,531
2001	Jun 29	17	12	204	1,022	5.01	4,286	21.01	680	3.33	0	0.00
	Jul 3	0	12	0	Commercial Opening, processor not able to buy							
	Jul 6	26	12	312	147	0.47	6,790	21.76	925	2.96	0	0.00
	Jul 10	25	6	150	132	0.88	4,039	26.93	300	2.00	0	0.00
	Jul 13	26	9	234	60	0.26	5,014	21.43	702	3.00	0	0.00
	Jul 20	15	12	180	59	0.33	1,236	6.87	337	1.87	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 20	0	12	0	Commercial Opening, poor weather prevented fishing							
	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			183	2,700	1,519		25,654		3,412		9,275	
2002	Jun 27	19	12	228	584	2.56	836	3.67	853	3.74	0	0.00
	Jul 1	18	12	216	148	0.69	958	4.44	816	3.78	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	17	0.20	41	0.49
	Aug 7	7	12	84	3	0.04	135	1.61	13	0.15	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	1,632	979		6,304		3,799		3,041	

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Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho		
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE	
2003	Jun 24	0	12	0	Commercial Opening, processor not able to buy								
	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	2.43	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 11	0	12	0	Commercial Opening, processor not able to buy								
	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 18	0	12	0	Commercial Opening, processor not able to buy								
	Aug 20	16	12	192	9	0.05	149	0.78	5	0.03	3,534	18.41	
	Aug 22	0	12	0	Commercial Opening, processor not able to buy								
	Aug 25	14	12	168	1	0.01	90	0.54	3	0.02	2,396	14.26	
	Aug 28	0	12	0	Commercial Opening, processor not able to buy								
Total			252	3,648	1,412		29,423		5,593		12,658		
2004	Jun 24	19	12	228	791	3.47	1,873	8.21	788	3.46	0	0.00	
	Jun 29	21	12	252	373	1.48	2,938	11.66	668	2.65	0	0.00	
	Jul 1	19	12	228	310	1.36	3,512	15.40	1,060	4.65	0	0.00	
	Jul 5	21	12	252	265	1.05	3,098	12.29	710	2.82	0	0.00	
	Jul 7	21	12	252	206	0.82	2,133	8.46	522	2.07	0	0.00	
	Jul 9	20	12	240	159	0.66	2,021	8.42	455	1.90	0	0.00	
	Jul 12	20	12	240	112	0.47	1,395	5.81	1,016	4.23	0	0.00	
	Jul 14	14	12	168	104	0.62	1,063	6.33	414	2.46	0	0.00	
	Jul 16	10	12	120	78	0.65	347	2.89	161	1.34	0	0.00	
	Aug 2	10	12	120	35	0.29	400	3.33	51	0.43	194	1.62	
	Aug 4	12	12	144	39	0.27	305	2.12	48	0.33	311	2.16	
	Aug 6	13	12	156	24	0.15	295	1.89	9	0.06	428	2.74	
	Aug 9	14	12	168	12	0.07	167	0.99	14	0.08	804	4.79	
	Aug 11	14	12	168	22	0.13	193	1.15	21	0.13	1,429	8.51	
	Aug 13	0	12	0	Commercial Opening, processor not able to buy								
	Aug 16	19	12	228	8	0.04	255	1.12	10	0.04	2,752	12.07	
	Aug 18	18	12	216	7	0.03	160	0.74	4	0.02	2,918	13.51	
	Aug 20	18	12	216	8	0.04	162	0.75	11	0.05	3,240	15.00	
	Aug 23	17	12	204	2	0.01	56	0.27	0	0.00	2,860	14.02	
	Aug 25	18	12	216	7	0.03	81	0.38	3	0.01	4,623	21.40	
	Aug 27	19	12	228	3	0.01	69	0.30	0	0.00	4,530	19.87	
Total			252	4,044	2,565		20,523		5,965		24,089		

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho		
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE	
2005	Jun 21	16	12	192	584	3.04	1,196	6.23	237	1.23	0	0.00	
	Jun 23	16	12	192	481	2.51	2,229	11.61	395	2.06	0	0.00	
	Jun 28	21	12	252	332	1.32	3,756	14.90	790	3.13	0	0.00	
	Jun 30	0	12	0	Commercial Opening, processor not able to buy								
	Jul 5	19	12	228	122	0.54	3,080	13.51	96	0.42	0	0.00	
	Jul 7	19	12	228	76	0.33	2,805	12.30	61	0.27	0	0.00	
	Jul 12	18	12	216	71	0.33	2,991	13.85	239	1.11	0	0.00	
	Jul 14	19	12	228	82	0.36	3,059	13.42	232	1.02	0	0.00	
	Jul 19	20	12	240	60	0.25	1,456	6.07	215	0.90	1	0.00	
	Aug 1	16	12	192	34	0.18	580	3.02	84	0.44	54	0.28	
	Aug 3	16	12	192	44	0.23	495	2.58	84	0.44	191	0.99	
	Aug 5	14	12	168	27	0.16	462	2.75	28	0.17	248	1.48	
	Aug 8	16	12	192	21	0.11	341	1.78	17	0.09	503	2.62	
	Aug 10	13	12	156	16	0.10	188	1.21	15	0.10	712	4.56	
	Aug 12	16	12	192	24	0.13	285	1.48	24	0.13	994	5.18	
	Aug 15	17	12	204	12	0.06	225	1.10	5	0.02	791	3.88	
	Aug 17	16	12	192	11	0.06	253	1.32	8	0.04	1,469	7.65	
	Aug 19	18	12	216	11	0.05	231	1.07	22	0.10	2,461	11.39	
	Aug 22	15	12	180	10	0.06	104	0.58	5	0.03	1,852	10.29	
	Aug 26	16	12	192	14	0.07	143	0.74	9	0.05	2,015	10.49	
	Aug 30	11	12	132	3	0.02	54	0.41	2	0.02	444	3.36	
Total			252	3,984	2,035			23,933			2,568	11,735	
2006	Jun 22	14	12	168	767	4.57	959	5.71	2,169	12.91	0	0.00	
	Jun 27	16	12	192	477	2.48	2,509	13.07	2,282	11.89	0	0.00	
	Jun 30	16	12	192	734	3.82	3,477	18.11	2,401	12.51	0	0.00	
	Jul 3	17	12	204	154	0.75	2,864	14.04	244	1.20	0	0.00	
	Jul 5	17	12	204	105	0.51	2,611	12.80	389	1.91	0	0.00	
	Jul 7	16	12	192	124	0.65	2,773	14.44	487	2.54	0	0.00	
	Jul 10	17	12	204	125	0.61	2,915	14.29	403	1.98	0	0.00	
	Jul 17	12	12	144	34	0.24	1,596	11.08	266	1.85	3	0.02	
	Jul 19	17	12	204	99	0.49	2,750	13.48	828	4.06	5	0.02	
	Jul 21	18	12	216	86	0.40	2,494	11.55	894	4.14	7	0.03	
	Jul 24	14	12	168	49	0.29	1,402	8.35	457	2.72	21	0.13	
	Jul 26	10	12	120	24	0.20	605	5.04	253	2.11	13	0.11	
	Jul 31	8	12	96	17	0.18	263	2.74	81	0.84	119	1.24	
	Aug 2	6	12	72	13	0.18	182	2.53	53	0.74	131	1.82	
	Aug 4	8	12	96	10	0.10	373	3.89	95	0.99	197	2.05	
	Aug 7	11	12	132	10	0.08	289	2.19	60	0.45	480	3.64	
	Aug 9	11	12	132	5	0.04	193	1.46	51	0.39	582	4.41	
	Aug 11	10	12	120	8	0.07	225	1.88	40	0.33	1,321	11.01	
	Aug 14	14	12	168	6	0.04	124	0.74	28	0.17	1,508	8.98	
	Aug 16	14	12	168	8	0.05	171	1.02	28	0.17	1,280	7.62	
	Aug 18	10	12	120	3	0.03	93	0.78	13	0.11	858	7.15	
	Aug 21	16	12	192	6	0.03	145	0.76	5	0.03	817	4.26	
	Aug 23	15	12	180	11	0.06	217	1.21	10	0.06	1,526	8.48	
	Aug 25	15	12	180	4	0.02	197	1.09	6	0.03	985	5.47	
	Aug 28	15	12	180	7	0.04	202	1.12	11	0.06	1,001	5.56	
	Aug 30	12	12	144	3	0.02	136	0.94	7	0.05	917	6.37	
	Sep 1	11	12	132	3	0.02	92	0.70	7	0.05	665	5.04	
Total			324	4,320	2,892			29,857			11,568	12,436	

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Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2007	Jun 19	13	12	156	324	2.08	426	2.73	322	2.06	0	0.00
	Jun 21	16	12	192	362	1.89	936	4.88	480	2.50	0	0.00
	Jun 25	21	12	252	647	2.57	2,818	11.18	674	2.67	0	0.00
	Jun 27	20	12	240	506	2.11	2,888	12.03	944	3.93	0	0.00
	Jun 29	20	12	240	312	1.30	2,224	9.27	201	0.84	0	0.00
	Jul 2	18	12	216	149	0.69	2,530	11.71	116	0.54	1	0.00
	Jul 4	16	12	192	63	0.33	1,940	10.10	355	1.85	0	0.00
	Jul 6	19	12	228	112	0.49	2,341	10.27	384	1.68	0	0.00
	Jul 8	20	12	240	95	0.40	3,012	12.55	387	1.61	0	0.00
	Jul 10	18	12	216	108	0.50	2,895	13.40	385	1.78	1	0.00
	Jul 12	19	12	228	59	0.26	2,911	12.77	327	1.43	2	0.01
	Jul 14	18	12	216	102	0.47	3,039	14.07	262	1.21	5	0.02
	Jul 16	18	12	216	62	0.29	2,359	10.92	470	2.18	7	0.03
	Jul 18	18	12	216	33	0.15	2,070	9.58	381	1.76	10	0.05
	Jul 20	16	12	192	46	0.24	1,685	8.78	599	3.12	25	0.13
	Jul 22	0	12	0			Commercial Opening, Processor not able to buy					
	Jul 24	16	12	192	44	0.23	1,704	8.88	443	2.31	133	0.69
	Jul 26	18	12	216	22	0.10	1,874	8.68	448	2.07	217	1.00
	Jul 31	16	12	192	19	0.10	806	4.20	222	1.16	419	2.18
	Aug 2	13	12	156	8	0.05	340	2.18	98	0.63	296	1.90
	Aug 4	0	12	0			Commercial Opening, Processor not able to buy					
	Aug 6	12	12	144	9	0.06	371	2.58	95	0.66	852	5.92
	Aug 8	15	12	180	21	0.12	586	3.26	78	0.43	1,129	6.27
	Aug 10	16	12	192	6	0.03	686	3.57	40	0.21	1,686	8.78
	Aug 13	15	12	180	3	0.02	401	2.23	24	0.13	1,161	6.45
	Aug 15	0	12	0			Commercial Opening, Processor not able to buy					
	Aug 17	15	12	180	2	0.01	334	1.86	21	0.12	1,269	7.05
	Aug 20	14	12	168	4	0.02	506	3.01	16	0.10	1,246	7.42
	Aug 22	15	12	180	3	0.02	438	2.43	14	0.08	1,221	6.78
	Aug 24	14	12	168	1	0.01	509	3.03	9	0.05	1,643	9.78
	Aug 27	15	12	180	3	0.02	523	2.91	21	0.12	1,102	6.12
	Aug 29	12	12	144	1	0.01	354	2.46	23	0.16	797	5.53
	Aug 31	12	12	144	0	0.00	260	1.81	14	0.10	475	3.30
Total			396	5,856	3,126		43,766		7,853		13,697	

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Year	Date	Permits	Hours	Permit	Chinook		Sockeye		Chum		Coho	
		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2008	Jun 19	18	12	216	170	0.79	873	4.04	399	1.85	0	0.00
	Jun 24	18	12	216	310	1.44	1,368	6.33	1,337	6.19	0	0.00
	Jun 26	19	12	228	290	1.27	2,533	11.11	1,762	7.73	0	0.00
	Jul 1	20	12	240	115	0.48	2,490	10.38	1,716	7.15	0	0.00
	Jul 5	20	12	240	52	0.22	2,314	9.64	101	0.42	0	0.00
	Jul 8	19	12	228	67	0.29	2,363	10.36	278	1.22	0	0.00
	Jul 10	16	12	192	39	0.20	1,809	9.42	301	1.57	0	0.00
	Jul 12	0	12	0	Commercial Opening, Processor not able to buy							
	Jul 14	21	12	252	60	0.24	3,070	12.18	1,277	5.07	0	0.00
	Jul 16	16	12	192	39	0.20	1,609	8.38	374	1.95	0	0.00
	Jul 18	0	12	0	Commercial Opening, Processor not able to buy							
	Jul 21	19	12	228	30	0.13	1,971	8.64	785	3.44	27	0.12
	Jul 23	18	12	216	22	0.10	1,610	7.45	625	2.89	57	0.26
	Jul 25	15	12	180	10	0.06	870	4.83	431	2.39	69	0.38
	Jul 28	16	12	192	15	0.08	872	4.54	352	1.83	235	1.22
	Jul 30	12	12	144	8	0.06	724	5.03	247	1.72	281	1.95
	Aug 1	14	12	168	12	0.07	570	3.39	150	0.89	386	2.30
	Aug 4	16	12	192	6	0.03	513	2.67	68	0.35	392	2.04
	Aug 6	13	12	156	5	0.03	242	1.55	36	0.23	452	2.90
	Aug 8	12	12	144	3	0.02	311	2.16	27	0.19	426	2.96
	Aug 10	13	12	156	7	0.04	307	1.97	21	0.13	1,050	6.73
	Aug 12	14	12	168	3	0.02	159	0.95	29	0.17	1,582	9.42
	Aug 14	16	12	192	7	0.04	144	0.75	14	0.07	2,009	10.46
	Aug 16	15	12	180	6	0.03	108	0.60	12	0.07	3,203	17.79
	Aug 18	17	12	204	1	0.00	134	0.66	27	0.13	3,102	15.21
	Aug 20	16	12	192	0	0.00	68	0.35	6	0.03	2,271	11.83
	Aug 22	15	12	180	3	0.02	66	0.37	6	0.03	2,027	11.26
	Aug 25	13	12	156	0	0.00	55	0.35	13	0.08	1,161	7.44
Aug 27	12	12	144	0	0.00	27	0.19	7	0.05	2,648	18.39	
2009	Jun 22	20	12	240	511	2.13	736	3.07	658	2.74	0	0.00
	Jun 25	20	12	240	361	1.50	2,243	9.35	1,374	5.73	0	0.00
	Jun 30	22	12	264	221	0.84	3,207	12.15	1,996	7.56	0	0.00
	Aug 29	14	12	168	1	0.01	57	0.34	7	0.04	1,169	6.96
Total			396	6108	2,374		33,423		14,436		22,547	

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Year	Date	Permits Fished	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
2009 (cont.)	Jul 6	26	12	312	110	0.35	3,578	11.47	2,466	7.90	0	0.00
	Jul 8	24	12	288	53	0.18	3,545	12.31	1,680	5.83	0	0.00
	Jul 10	31	12	372	63	0.17	3,001	8.07	1,506	4.05	0	0.00
	Jul 13	24	12	288	21	0.07	1,719	5.97	1,477	5.13	1	0.00
	Jul 15	23	12	276	30	0.11	2195	7.95	1654	5.99	0	0.00
	Jul 16	17	6	102	10	0.10	814	7.98	600	5.88	0	0.00
	Jul 17	22	12	264	31	0.12	1,413	5.35	1,313	4.97	0	0.00
	Jul 20	16	12	192	20	0.10	815	4.24	606	3.16	9	0.05
	Jul 22	13	12	156	17	0.11	1,368	8.77	432	2.77	15	0.10
	Jul 24	14	12	168	6	0.04	1,120	6.67	309	1.84	13	0.08
	Jul 25	14	12	168	10	0.06	1,095	6.52	304	1.81	25	0.15
	Jul 27	12	12	144	7	0.05	583	4.05	125	0.87	28	0.19
	Jul 29	6	12	72	1	0.01	79	1.10	24	0.33	15	0.21
	Jul 31	10	12	120	4	0.03	456	3.80	119	0.99	153	1.28
	Aug 3	11	12	132	4	0.03	481	3.64	86	0.65	151	1.14
	Aug 5	15	12	180	5	0.03	614	3.41	83	0.46	376	2.09
	Aug 7	16	12	192	9	0.05	624	3.25	61	0.32	314	1.64
	Aug 20	15	12	180	0	0.00	693	3.85	43	0.24	427	2.37
	Aug 12	16	12	192	5	0.03	536	2.79	22	0.11	796	4.15
	Aug 14	19	12	228	1	0.00	746	3.27	25	0.11	1,229	5.39
	Aug 19	17	12	204	5	0.02	440	2.16	12	0.06	1,991	9.76
	Aug 21	20	12	240	2	0.01	303	1.26	3	0.01	1,840	7.67
	Aug 24	18	12	216	2	0.01	140	0.65	7	0.03	1,023	4.74
	Total			714	11706	3,884		66,024		31,428		32,122
2010	Jun 28	24	12	288	279	0.97	2,615	9.08	2,054	7.13	0	0.00
	Jul 1	30	12	360	506	1.41	5,060	14.06	3,516	9.77	0	0.00
	Jul 5	37	12	444	269	0.61	4,771	10.75	2,143	4.83	0	0.00
	Jul 7	33	12	396	183	0.46	5,913	14.93	3,452	8.72	0	0.00
	Jul 9	30	12	360	100	0.28	3,616	10.04	4,807	13.35	0	0.00
	Jul 12	26	12	312	103	0.33	4,387	14.06	2,945	9.44	0	0.00
	Jul 13	23	8	184	38	0.21	2,228	12.11	1,141	6.20	0	0.00
	Jul 14	26	12	312	68	0.22	2,532	8.12	1,867	5.98	0	0.00
	Jul 16	27	12	324	37	0.11	2,138	6.60	1,387	4.28	0	0.00
	Jul 17	14	12	168	13	0.08	1,052	6.26	700	4.17	0	0.00
	Jul 19	19	12	228	59	0.26	1,264	5.54	909	3.99	0	0.00
	Jul 21	18	12	216	24	0.11	873	4.04	763	3.53	16	0.07
	Jul 23	8	12	96	16	0.17	343	3.57	350	3.65	10	0.10
	Jul 26	14	12	168	6	0.04	850	5.06	365	2.17	83	0.49
	Jul 28	13	12	156	12	0.08	642	4.12	167	1.07	51	0.33
	Jul 30	15	12	180	15	0.08	719	3.99	114	0.63	108	0.60
	Aug 2	10	12	120	4	0.03	546	4.55	107	0.89	284	2.37
	Aug 6	10	12	120	4	0.03	403	3.36	43	0.36	497	4.14
	Aug 9	10	12	120	4	0.03	296	2.47	25	0.21	460	3.83
	Aug 13	19	12	228	8	0.04	496	2.18	36	0.16	1,290	5.66
Aug 16	12	12	144	2	0.01	111	0.77	9	0.06	723	5.02	
Aug 18	14	12	168	2	0.01	219	1.30	14	0.08	1,378	8.20	
Total			260	5092	1752		41074		26914		4900	
10 Yr Avg (99-09)			321	4,981	2,523		31,616		9,407		15,713	

Appendix D3.–Commercial salmon harvests, District W-5 Goodnews Bay, Kuskokwim Bay, 1968–2010.

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	4,439	10,356	62,008
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
2004	2,565	20,523	24,089	0	5,965	53,142
2005	2,035	23,933	11,735	0	2,568	40,271
2006	2,892	29,857	12,436	0	11,568	56,753
2007	3,126	43,766	13,697	6	7,853	68,448
2008	1,281	27,237	22,547	0	10,408	61,473
2009	1,509	32,544	8,406	0	16,985	59,444
2010	1,752	41,074	4,900	0	26,914	74,640
10 Yr Avg	2,176	27,649	13,342	1	7,560	50,728
Hist Avg	3,529	24,132	19,246	2,640	11,162	59,721

^a No harvest information available.

Appendix D4.—Commercial salmon fishing exvessel value, District W-5 Goodnews Bay, Kuskokwim Bay, 1990–2010.

Year	Chinook	Sockeye	Coho	Pink	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
2004	\$10,857	\$49,741	\$70,404	\$0	\$4,244	\$135,246
2005	\$16,696	\$91,135	\$25,010	\$0	\$1,454	\$134,295
2006	\$21,314	\$87,996	\$27,587	\$0	\$4,368	\$141,265
2007	\$23,951	\$156,802	\$38,796	\$0	\$2,781	\$222,330
2008	\$13,181	\$104,296	\$76,683	\$0	\$3,910	\$198,070
2009	\$13,333	\$134,244	\$25,456	\$0	\$18,998	\$192,031
2010	\$44,910	\$334,366	\$44,706	\$0	\$46,679	\$470,661
10 Yr Avg (99-09)	\$14,225	\$95,126	\$35,029	\$0	\$5,120	\$149,501
Hist Avg (90-09)	\$16,369	\$140,053	\$56,655	\$441	\$13,817	\$227,335

Appendix D5.—Chinook salmon total utilization, District W-5 Goodnews Bay, Kuskokwim Bay, 1969–2010.

Year	Commercial Harvest ^a		Subsistence Harvest ^b		Sport Fish		Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg	Annual	10-yr Avg		
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						5,218	
1979	3,204	3,385	338				3,542	3,443
1980	2,331	3,308	690				3,021	3,399
1981	7,190	2,825	1,409				8,599	2,985
1982	9,476	3,496	1,236				10,712	3,797
1983	14,117	4,417	1,066		31		15,214	4,842
1984	8,612	5,475	629				9,241	6,009
1985	5,793	6,006	426		323		6,542	6,603
1986	2,723	6,369	555				3,278	7,042
1987	3,357	6,200	816	769			4,173	6,928
1988	4,964	6,202	310 ^d	796			5,274	6,954
1989	2,966	6,177	468	748	68		3,502	6,960
1990	3,303	6,153	539	761			3,842	6,956
1991	912	6,250	917	745	26		1,855	7,038
1992	3,528	5,622	374	696	23		3,925	6,363
1993	2,117	5,028	708	610	81	94	2,906	5,685
1994	2,570	3,828	784	574	163	104	3,517	4,454
1995	2,922	3,223	883	590	41	114	3,846	3,881
1996	1,375	2,936	415	635	157	67	1,947	3,612
1997	2,039	2,801	449	621	86	80	2,574	3,479
1998	3,675	2,670	718	585	431	81	4,824	3,319
1999	1,888	2,541	871	626	223	120	2,982	3,274
2000	4,442	2,433	703	666	243	137	5,388	3,222
2001	1,519	2,547	895	682	147	147	2,561	3,376
2002	979	2,608	857	680	224	160	2,060	3,447
2003	1,412	2,353	737	728	10	180	2,159	3,261
2004	2,565	2,282	954	731	100	173	3,619	3,186
2005	2,035	2,282	868	748	0	166	2,903	3,196
2006	2,892	2,193	676	747	79	162	3,647	3,102
2007	3,126	2,345	^e	773	177	154		3,272
2008	1,281	2,453	^e		78	163		
2009	1,509	2,214	^e		31	128		
2010	1,752	2,176	^e		^e	109		
10-yr Avg	2,176 ^f		773 ^g		109 ^f		3,272 ^g	

^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.

^e Estimates are not available at this time due to review of data analysis.

^f 10-yr Avg (2000–2009).

^g 10-yr Avg (1997–2006).

Appendix D6.—Sockeye salmon total utilization, District W-5 Goodnews Bay, Kuskokwim Bay, 1969–2010.

Year	Commercial Harvest ^a		Subsistence Harvest ^b		Sport Fish		Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg	Annual	10-yr Avg		
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						5,412	
1979	19,581	4,989					19,581	4,989
1980	28,632	6,322					28,632	6,322
1981	40,273	8,470					40,273	8,470
1982	38,877	12,465					38,877	12,465
1983	11,716	16,260			14		11,730	16,260
1984	15,474	17,224					15,474	17,226
1985	6,698	17,836	704		75		7,477	17,838
1986	25,112	17,596	943		122		26,177	17,675
1987	27,758	19,550	955		266		28,979	19,736
1988	36,368	21,953	1,065 ^c				37,433	22,261
1989	19,299	25,049	861		146		20,306	25,463
1990	35,823	25,021	1,123				36,946	25,536
1991	39,838	25,740	1,282		63		41,183	26,367
1992	39,194	25,696	826		8		40,028	26,458
1993	59,293	25,728	836		53	99	60,182	26,573
1994	69,490	30,486	770		70	105	70,330	31,419
1995	37,351	35,887	253	937	34	100	37,638	36,904
1996	30,717	38,953	418	891	87	95	31,222	39,920
1997	31,451	39,513	609	839	61	91	32,121	40,425
1998	27,161	39,882	508	804	502	65	28,171	40,739
1999	22,910	38,962	872	749	561	114	24,343	39,813
2000	37,252	39,323	1,205	750	82	160	38,539	40,216
2001	25,654	39,466	974	758	108	152	26,736	40,376
2002	6,304	38,047	1,050	727	149	157	7,503	38,931
2003	29,423	34,758	783	750	42	171	30,248	35,679
2004	20,523	31,771	960	744	0	170	21,483	32,685
2005	23,933	26,875	1,233	763	0	163	25,166	27,800
2006	29,857	25,533	1,007	861	98	159	30,962	26,553
2007	43,766	25,447	^d	920	84	160		26,527
2008	27,236	26,678	^d		104	163		
2009	32,544	26,686	^d		111	123		
2010	41,074	27,649	^d		^d	78		
10 Yr Avg	27,649 ^e		920 ^f		78 ^e		26,527 ^f	

^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.

^d Estimates are not available at this time due to review of data analysis.

^e 10-yr Avg (2000–2009).

^f 10-yr Avg (1997–2006).

Appendix D7.–Chum salmon total utilization, District W-5 Goodnews Bay, Kuskokwim Bay, 1969–2010.

Year	Commercial Harvest ^a		Subsistence Harvest ^b		Sport Fish		Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg	Annual	10-yr Avg		
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						8,590	
1979	9,298	7,509					9,298	7,509
1980	11,748	7,938					11,748	7,938
1981	13,642	7,878					13,642	7,878
1982	13,829	9,212					13,829	9,212
1983	6,766	10,462			10		6,776	10,462
1984	14,340	9,560					14,340	9,561
1985	4,784	10,100	348		124		5,256	10,101
1986	10,356	9,988	191				10,547	10,036
1987	20,381	9,988	578				20,959	10,056
1988	33,059	11,373	448 ^c				33,507	11,499
1989	13,622	13,820	784		0		14,406	13,990
1990	13,194	14,253	332				13,526	14,501
1991	15,892	14,397	149		189		16,230	14,679
1992	18,520	14,622	1,006		0		19,526	14,938
1993	10,657	15,091	188		156	65	11,001	15,507
1994	28,477	15,481	470		15	94	28,962	15,930
1995	19,832	16,894	156	449	0	81	19,988	17,392
1996	11,093	18,399	219	430	0	60	11,312	18,865
1997	11,729	18,473	133	433	24	51	11,886	18,942
1998	14,155	17,608	316	389	50	48	14,521	18,034
1999	11,562	15,717	281	375	47	48	11,890	16,136
2000	7,450	15,511	364	325	12	53	7,826	15,884
2001	3,412	14,937	226	328	21	49	3,659	15,314
2002	3,799	13,689	407	336	99	33	4,305	14,057
2003	5,593	12,217	176	276	14	42	5,783	12,535
2004	5,965	11,710	257	275	0	28	6,222	12,013
2005	2,568	9,459	209	254	0	27	2,777	9,739
2006	11,568	7,733	648	259	0	27	12,216	8,018
2007	7,853	7,780	^d	302	0	27		8,109
2008	10,408	7,393	^d		26	24		
2009	16,985	7,018	^d		22	22		
2010	26,914	7,560	^d		^d	19		
10-yr Avg	7,560 ^e		302 ^f		19 ^e		8,109 ^f	

^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.

^d Estimates are not available at this time due to review of data analysis.

^e 10-yr Avg (2000–2009).

^f 10-yr Avg (1997–2006).

Appendix D8.—Coho salmon total utilization, District W-5 Goodnews Bay, Kuskokwim Bay, 1969–2010.

Year	Commercial Harvest ^a		Subsistence Harvest ^b		Sport Fish		Total Utilization	10-Year Average
	Annual	10-yr Avg	Annual	10-yr Avg	Annual	10-yr Avg		
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						13,335	
1978	13,764	9,401					13,764	9,401
1979	42,098	10,232					42,098	10,232
1980	43,256	13,279					43,256	13,279
1981	19,749	16,925					19,749	16,925
1982	46,683	18,723					46,683	18,723
1983	19,660	23,298			168		19,828	23,298
1984	71,176	24,763					71,176	24,779
1985	16,498	29,746	221		386		17,105	29,763
1986	19,378	29,607	8 ^c				19,386	29,685
1987	29,057	30,560	43 ^c				29,100	30,638
1988	30,832	32,132	1,162 ^d				31,994	32,215
1989	31,849	33,839	907		224		32,980	34,038
1990	7,804	32,814	1,646				9,450	33,126
1991	13,312	29,269	1,828		297		15,437	29,745
1992	19,875	28,625	1,353		138		21,366	29,314
1993	20,014	25,944	1,226		189	243	21,429	26,782
1994	47,499	25,980	512		170	247	48,181	26,942
1995	17,875	23,612	306	891	114	234	18,295	24,643
1996	43,836	23,750	352	899	466	189	44,654	24,762
1997	2,983	26,195	397	934	855	228	4,235	27,289
1998	21,246	23,588	331	969	574	307	22,151	24,802
1999	2,474	22,629	582	886	789	336	3,845	23,818
2000	15,531	19,692	517	853	795	399	16,843	20,904
2001	9,275	20,465	616	740	822	439	10,713	21,644
2002	3,041	20,061	297	619	429	491	3,767	21,171
2003	12,658	18,377	1,319	514	42	520	14,019	19,411
2004	24,089	17,642	1,617	523	622	506	26,328	18,670
2005	11,735	15,301	839	633	1,046	551	13,620	16,485
2006	12,436	14,687	704	687	553	644	13,693	16,018
2007	13,697	11,547	^e	722	211	653		12,921
2008	22,547	12,618	^e		220	588		
2009	8,406	12,748	^e		284	553		
2010	4,900	13,342	^e		^e	502		
10-yr Avg	13,342 ^f		722 ^g		502 ^f		12,921 ^g	

^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.

^e Estimates are not available at this time due to review of data analysis.

^f 10-yr Avg (2000–2009).

^g 10-yr Avg (1997–2006).

Appendix D9.–Salmon spawning escapement, Middle Fork Goodnews River, Kuskokwim Bay drainage, 1981–2010.

Year	Operating Period ^a	Chinook	Sockeye	Chum	Pink ^b	Coho
Middle Fork Goodnews River						
BEG:		1,500-2,900	18,000-40,000			
SEG:				>12,000		>12,000
<i>Counting Tower</i>						
1981	06/13 to 08/15	3,688	49,108	21,827	1,327	^c
1982	06/23 to 08/03	1,395	56,255	6,767	13,855	^c
1983	06/11 to 07/28	6,027	25,816	15,548	102	^c
1984	06/15 to 07/31	3,260	32,053	19,003	13,744	^c
1985	06/27 to 07/31	2,831	24,131	10,367	144	^c
1986	06/16 to 07/24	2,080	51,069	14,764	8,134	^c
1987	06/22 to 07/30	2,272	28,871	17,517	71	^c
1988	06/23 to 07/30	2,712	15,799	20,799	6,781	^c
1989	06/29 to 07/31	1,915	21,186	10,380	246	^c
1990	06/19 to 07/24	3,636	31,679	6,410	3,378	^c
<i>Weir</i>						
1991	06/29 to 08/24	1,952	47,397 ^d	31,644	1,694	^c
1992	06/29 to 08/25	1,905 ^d	27,268	22,023	22,155	^c
1993	06/22 to 08/18	2,349	26,452 ^e	14,952	318	^c
1994	06/23 to 08/08	3,856	50,801	34,849 ^d	38,710	^c
1995	06/19 to 08/28	4,836	39,009	33,699	322	^c
1996	06/19 to 08/23	2,931 ^d	58,290	40,450 ^d	20,105	^c
1997	06/11 to 09/17	2,937	35,530	17,369	970	13,413
1998	07/04 to 09/13	4,584	49,513 ^d	28,832	10,376	36,596
1999	06/26 to 09/26	3,221	48,205	19,513	914	11,545
2000	07/02 to 09/22	3,295 ^e	32,341 ^e	13,791 ^e	2,529	13,907 ^e
2001	06/26 to 09/30	5,391 ^e	21,024 ^e	26,829 ^e	1,328	19,626 ^e
2002	06/22 to 09/18	3,085	22,101	30,300	3,034	27,364
2003	06/18 to 09/18	2,389	44,387	21,637	1,881	52,810
2004	06/21 to 09/20	4,388	55,926	31,616	21,633	47,916
2005	06/26 to 09/20	4,633	113,809	26,690	5,926	15,683
2006	06/26 to 09/18	4,559	126,772	54,699	18,432	15,969
2007	06/25 to 09/18	3,852	72,282	48,285	4,919	20,975 ^d
2008	07/02 to 09/15	2,158	51,763 ^d	44,310 ^d	9,807	36,663
2009	06/28 to 09/21	1,630	25,465	19,715	767	19,992
2010	06/25 to 09/18	2,244	35,762	26,687	3,444	23,898 ^d

^a The operational period is inclusive of days when passage was estimated; unless noted otherwise, less than 20% of the total annual escapement is estimated.

^b Pink salmon passage is not estimated because they are small enough to pass between weir pickets.

^c Field operations were incomplete and total annual escapement was not estimated.

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

^e Field operations were incomplete; sum of daily counts is an underestimate of total escapement, but considered reasonable. Additional estimates were not made.

Appendix D10.–Salmon spawning aerial survey index estimates, Goodnews rivers and lakes, Kuskokwim Bay drainage, 1980–2010.

Year	Goodnews River and Lakes				Middle Fork Goodnews River and Lakes			
	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	3,561	29,340	7,330	a	2,799	12,383	6,945	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
2004	7,462	31,695	a	a	2,617	33,670	a	a
2005	a	a	a	a	a	a	a	a
2006	4,159	78,100	a	a	1,342	a	a	a
2007	a	a	a	a	a	a	a	a
2008	2,371	32,500			1,940	13,935		
2009	a	a	a	a	a	a	a	a
2010	a	a	a	a	a	a	a	a
SEG	640 - 3,300	5,500 - 19,500	b	b	b	b	b	b

^a Survey was either not flown or not rated as acceptable.

^b Aerial survey escapement goal was discontinued in 2004.

APPENDIX E

Appendix E1.–Commercial harvest, effort and value of Pacific herring in Kuskokwim Area fishing districts, Alaska, 1981–2010.

Year	District	Harvest (st)	Number of permits	Hours fished	CPUE (st)	Estimated Value ^a	Average Income Per Permit
2010	Security Cove	0	0	0		\$0	\$0
	Goodnews Bay	0	0	0		\$0	\$0
	Cape Avinof	0	0	0		\$0	\$0
	Nelson Is.	0	0	0		\$0	\$0
	Nunivak Is.	0	0	0		\$0	\$0
2009	Security Cove	0	0	0		\$0	\$0
	Goodnews Bay	0	0	0		\$0	\$0
	Cape Avinof	0	0	0		\$0	\$0
	Nelson Is.	0	0	0		\$0	\$0
	Nunivak Is.	0	0	0		\$0	\$0
2008	Security Cove	0	0	0		\$0	\$0
	Goodnews Bay	0	0	0		\$0	\$0
	Cape Avinof	0	0	0		\$0	\$0
	Nelson Is.	0	0	0		\$0	\$0
	Nunivak Is.	0	0	0		\$0	\$0
2007	Security Cove	0	0	0		\$0	\$0
	Goodnews Bay	0	0	0		\$0	\$0
	Cape Avinof	0	0	0		\$0	\$0
	Nelson Is.	0	0	0		\$0	\$0
	Nunivak Is.	0	0	0		\$0	\$0
2006	Security Cove	64	2	156		\$7,878	\$3,939
	Goodnews Bay	64	5	96		\$8,935	\$1,787
	Cape Avinof	0	0	0		\$0	\$0
	Nelson Is.	262	25	169		\$53,225	\$2,129
	Nunivak Is.	0	0	0		\$0	\$0
2005	Security Cove	2,031	30	198		\$317,153	\$10,572
	Goodnews Bay	49	6	123		\$4,321	\$720
	Cape Avinof	149	14	160		\$37,631	\$2,688
	Nelson Is.	665	27	277		\$119,193	\$4,415
	Nunivak Is.	0	0	0.0		\$0	\$0
2004	Security Cove	0	0	0		\$0	\$0
	Goodnews Bay	34	10	96.0		\$3,600	\$360
	Cape Avinof	63	23	288.5		\$10,900	\$474
	Nelson Is.	825	39	194.5		\$165,300	\$4,238
	Nunivak Is.	0	0	816.0		\$0	\$0
2003	Security Cove	0	0	0		\$0	\$0
	Goodnews Bay	36	12	50.5		\$4,600	\$383
	Cape Avinof	176	22	74.5		\$36,100	\$1,641
	Nelson Is.	816	44	78.0		\$187,500	\$4,261
	Nunivak Is.	229	19	204.0		\$7,200	\$379
2002	Security Cove	109	25	17.0		\$10,000	\$400
	Goodnews Bay	13	5	28.5		\$1,000	\$200
	Cape Avinof	79	37	97.0		\$8,000	\$216
	Nelson Is.	950	54	80.5		\$101,000	\$1,870
	Nunivak Is.	175	29	243.0		\$19,000	\$655
2001	Security Cove	1,024	56	17.5		\$110,000	\$1,964
	Goodnews Bay	45	23	16.0		\$6,000	\$261
	Cape Avinof	231	45	63.0		\$23,000	\$511
	Nelson Is.	678	49	25.5		\$66,000	\$1,347
	Nunivak Is.	0	0	0		\$0	\$0

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Year	District	Harvest (st)	Number of permits	Hours fished	CPUE (st)	Estimated Value ^a	Average Income Per Permit
2000	Security Cove	284	79	16.0		\$54,386	\$688
	Goodnews Bay	20	57	27.0		\$3,318	\$58
	Cape Avinof	366	86	59.0		\$68,532	\$797
	Nelson Is.	813	86	20.0		\$154,280	\$1,794
	Nunivak Is.	40	34	93.0		\$11,880	\$349
1999	Security Cove	1,072	97	9.0		\$338,000	\$3,485
	Goodnews Bay	1,366	94	49.0		\$301,000	\$3,202
	Cape Avinof	533	117	51.0		\$185,000	\$1,581
	Nelson Is.	1,366	94	22.0		\$430,000	\$4,574
	Nunivak Is.	0	0	0		\$0	\$0
1998	Security Cove	1,012	78	28.5		\$202,340	\$2,594
	Goodnews Bay	831	84	79.0		\$166,220	\$1,979
	Cape Avinof	656	109	44.0		\$131,120	\$1,203
	Nelson Is.	1,250	86	76.0		\$235,900	\$2,743
	Nunivak Is.	202	7	6.0		\$440	\$63
1997	Security Cove	892	222	10.5		\$221,000	\$995
	Goodnews Bay	805	139	65.0		\$228,000	\$1,640
	Cape Avinof	687	145	26.0		\$157,000	\$1,083
	Nelson Is.	778	105	10.0		\$198,000	\$1,886
	Nunivak Is.	0	12	70.0		\$0	\$0
1996	Security Cove	1,859	326	5.5		\$1,252,270	\$3,841
	Goodnews Bay	1,204	182	45.0		\$893,900	\$4,912
	Cape Avinof	820	161	57.0		\$659,280	\$4,095
	Nelson Is.	1,031	109	25.0		\$676,624	\$6,208
	Nunivak Is.	101	24	256.0		\$38,234	\$1,593
1995	Security Cove	1,292	106	12.0		\$956,000	\$9,019
	Goodnews Bay	1,054	127	56.0		\$848,000	\$6,677
	Cape Avinof	485	93	48.0		\$363,000	\$3,903
	Nelson Is.	1,113	100	28.0		\$710,000	\$7,100
	Nunivak Is.	41	13	387.0		\$22,000	\$1,692
1994	Security Cove	0	0	0		\$0	\$0
	Goodnews Bay	1,062	103	38.0		\$391,000	\$3,796
	Cape Avinof	427	85	62.0		\$156,000	\$1,835
	Nelson Is.	717	104	26.0		\$235,000	\$2,260
	Nunivak Is.	14	12	6.0		\$4,000	\$333
1993	Security Cove	5	9	24.5		\$2,000	\$222
	Goodnews Bay	954	63	123.0		\$293,000	\$4,651
	Cape Avinof	215	97	106.0		\$75,000	\$773
	Nelson Is.	739	73	63.5		\$198,000	\$2,712
	Nunivak Is.	0	0	0		\$0	\$0
1992	Security Cove	834	58	34.0		\$285,000	\$4,914
	Goodnews Bay	740	78	29.0		\$286,000	\$3,667
	Cape Avinof	452	121	12.0		\$178,000	\$1,471
	Nelson Is.	246	85	10.0		\$78,000	\$918
	Nunivak Is.	27	14	6.0		\$4,000	\$286
1991	Security Cove	570	52	12.0		\$208,000	\$4,000
	Goodnews Bay	263	103	4.0		\$93,000	\$903
	Cape Avinof	267	137	28.0		\$94,000	\$686
	Nelson Is.	0	0	0		\$0	\$0
	Nunivak Is.	59	17	12.0		\$9,000	\$529

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Year	District	Harvest (st)	Number of permits	Hours fished	CPUE (st)	Estimated Value ^a	Average Income Per Permit
1990	Security Cove	234	52	7.0		\$94,000	\$1,808
	Goodnews Bay	455	126	32.0		\$314,000	\$2,492
	Cape Avinof	50	101	3.0		\$35,000	\$347
	Nelson Is.	0	0	0		\$0	\$0
	Nunivak Is.	0	0	0		\$0	\$0
1989	Security Cove	554	104	4.0		\$256,000	\$2,462
	Goodnews Bay	616	138	50.0		\$335,000	\$2,428
	Cape Avinof	129	147	194.0		\$54,000	\$367
	Nelson Is.	233	162	15.0		\$57,000	\$352
	Nunivak Is.	116	45	186.0		\$42,000	\$933
1988	Security Cove	324	31	23.5		\$362,000	\$11,677
	Goodnews Bay	483	60	40.0		\$463,000	\$7,717
	Cape Avinof	348	98	88.5		\$264,000	\$2,694
	Nelson Is.	775	174	7.5		\$713,000	\$4,098
	Nunivak Is.	0	0	0		\$0	\$0
1987	Security Cove	313	65	13.0		\$242,000	\$3,723
	Goodnews Bay	321	117	11.0		\$133,000	\$1,137
	Nelson Is.	923	235	6.0		\$661,000	\$2,813
	Nunivak Is.	414	61	39.0		\$231,000	\$3,787
1986	Security Cove	751	88	73.0		\$535,000	\$6,080
	Goodnews Bay	557	104	53.0		\$325,000	\$3,125
	Nelson Is.	886	163	40.0		\$428,000	\$2,626
	Nunivak Is.	511	36	156.0		\$213,000	\$5,917
1985	Security Cove	733	107	125.0		\$335,000	\$3,131
	Goodnews Bay	724	83	130.0		\$309,000	\$3,723
	Nelson Is.	977	143	44.0		\$527,000	\$3,685
	Nunivak Is.	358	37	228.0		\$146,000	\$3,946
1984	Security Cove	335	38	345.0		\$110,000	\$2,895
	Goodnews Bay	717	130	139.0		\$168,000	\$1,292
1983	Security Cove	1,073	94	87.0		\$443,000	\$4,713
	Goodnews Bay	435	84	278.0		\$185,000	\$2,202
1982	Security Cove	813	107	302.0		\$271,000	\$2,533
	Goodnews Bay	486	84	314.0		\$188,000	\$2,238
1981	Security Cove	1,173	113	90.0		\$347,000	\$3,071
	Goodnews Bay	657	175	133.0		\$196,000	\$1,120

^a Purse seine harvest is not a reflection of permit holder effort.

Appendix E2.–Herring aerial survey estimated biomass and commercial harvest, Kuskokwim Area, 1995–2010.

District	Estimated Biomass (st)	Harvest				Roe %	Estimated Value (\$1000s)	Exploitation Rate (%)
		Sac-roe	Bait	Waste	Total			
2010								
Security Cove	13,440	0	0	0	0	0.0	0	0.0
Goodnews Bay	33,490 ^b	0	0	0	0	0.0	0	0.0
Cape Avinof	2,393 ^a	0	0	0	0	0.0	0	0.0
Nelson Is.	5,449 ^a	0	0	0	0	0.0	0	0.0
Nunivak Is.	31,141 ^a	0	0	0	0	0.0	0	0.0
Total	85,913	0	0	0	0	0.0	0	0.0
2009								
Security Cove	5,686 ^a	0	0	0	0	0.0	0	0.0
Goodnews Bay	6,143	0	0	0	0	0.0	0	0.0
Cape Avinof	2,251 ^a	0	0	0	0	0.0	0	0.0
Nelson Is.	5,152 ^a	0	0	0	0	0.0	0	0.0
Nunivak Is.	3,141 ^a	0	0	0	0	0.0	0	0.0
Total	22,373	0	0	0	0	0.0	0	0.0
2008								
Security Cove	6,442	0	0	0	0	0.0	0	0.0
Goodnews Bay	3,259	0	0	0	0	0.0	0	0.0
Cape Avinof	806	0	0	0	0	0.0	0	0.0
Nelson Is.	3,424	0	0	0	0	0.0	0	0.0
Nunivak Is.	3,688	0	0	0	0	0.0	0	0.0
Total	17,619	0	0	0	0	0.0	0	0.0
2007								
Security Cove	7,081	0	0	0	0	0.0	0	0.0
Goodnews Bay	3,683	0	0	0	0	0.0	0	0.0
Cape Avinof	878	0	0	0	0	0.0	0	0.0
Nelson Is.	3,614	0	0	0	0	0.0	0	0.0
Nunivak Is.	4,054	0	0	0	0	0.0	0	0.0
Total	19,310	0	0	0	0	0.0	0	0.0
2006								
Security Cove	7,477	59	5	0	64	10.8	9	0.9
Goodnews Bay	4,111	64	0	0	64	9.8	9	1.6
Cape Avinof	702	0	0	0	0	0.0	0	0.0
Nelson Is.	3,809	262	0	0	262	11.1	53	6.9
Nunivak Is.	4,260	0	0	0	0	0.0	0	0.0
Total	20,359	385	5	0	390	10.8	71	1.9

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District	Estimated Biomass (st)	Harvest				Roe%	Estimated Value (\$1000s)	Exploitation Rate (%)
		Sac-roe	Bait	Waste	Total			
2005								
Security Cove	18,192	2,031	0	0	2,031	10.9	317	11.2
Goodnews Bay	13,410	49	0	0	49	8.8	4	0.4
Cape Avinof	3,377	149	0	0	149	11.5	38	4.4
Nelson Is.	4,440	665	0	0	665	10.5	119	15.0
Nunivak Is.	4,782	0	0	0	0	0.0	0	0.0
Total	44,201	2,894	0	0	2,894	10.8	478	6.5
2004								
Security Cove	9,698	0	0	0	0	0.0	0	0.0
Goodnews Bay	7,744	34	0	0	34	8.9	4	0.4
Cape Avinof	3,369	63	0	0	63	15.5	11	1.9
Nelson Is.	5,085	825	0	0	825	10.9	165	16.2
Nunivak Is.	4,739	0	0	0	0	0.0	0	0.0
Total	30,635	922	0	0	922	11.1	180	3.0
2003								
Security Cove	10,600	0	0	0	0	0.0	0	0.0
Goodnews Bay	8,300	36	0	0	36	9.0	5	4.0
Cape Avinof	3,812	176	0	0	176	10.5	36	4.6
Nelson Is.	6,130	816	0	0	816	10.8	187	13.3
Nunivak Is.	5,182	229	0	0	229	8.4	7	4.4
Total	34,024	1,257	0	0	1,257	10.3	235	26.3
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	9.9	139	5.2

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District	Estimated Biomass (st)	Harvest				Roe%	Estimated Value (\$1000s)	Exploitation Rate (%)
		Sac-roe	Bait	Waste	Total			
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	0	0	0.0	0	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	0	0	0.0	0	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
1997								
Security Cove	4,640	884	3	5	892	12.5	221	19.2
Goodnews Bay	4,752	805	0	0	805	14.2	228	16.9
Cape Avinof	4,616	687	0	0	687	11.5	157	14.9
Nelson Is.	7,909	778	0	0	778	12.7	198	9.8
Nunivak Is.	3,801	0	0	0	0	0.0	0	0.0
Total	25,718	3,154	3	5	3,163	12.7	804	12.3

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District	Estimated Biomass (st)	Harvest				Roe%	Estimated Value (\$1000s)	Exploitation Rate (%)
		Sac-roe	Bait	Waste	Total			
1996								
Security Cove	6,867	1,795	59	5	1,859	11.6	1,251	27.1
Goodnews Bay	6,315	1,191	13	0	1,204	12.5	895	19.1
Cape Avinof	4,500	820	0	0	820	13.4	659	18.2
Nelson Is.	6,638	986	44	0	1,030	11.4	679	15.5
Nunivak Is.	4,197	61	40	0	101	9.9	39	2.4
Total	28,517	4,854	156	5	5,014	12.0	3,523	17.6
1995								
Security Cove	6,702	1,292	0	0	1,292	12.3	956	19.3
Goodnews Bay	4,224	1,051	0	3	1,054	13.5	848	25.0
Cape Avinof	3,627	485	0	0	485	12.5	363	13.4
Nelson Is.	7,754	1,113	0	0	1,113	10.6	711	14.4
Nunivak Is.	4,579	33	7	0	41	11.0	22	0.9
Total	26,886	3,975	7	3	3,985	12.2	2,900	14.8
1994								
Security Cove	7,638	0	0	0	0	0.0	0	0.0
Goodnews Bay	5,679	1,061	0	1	1,062	12.3	391	18.7
Cape Avinof	2,827	427	0	0	427	12.2	156	15.1
Nelson Is.	5,564	713	4	0	717	11.0	235	12.9
Nunivak Is.	4,921	14	0	0	14	8.6	4	0.3
Total	26,629	2,215	4	1	2,220	11.8	786	8.3
1993								
Security Cove	6,995	5	0	0	5	12.8	2	0.1
Goodnews Bay	6,211	945	9	0	954	10.3	293	15.4
Cape Avinof	2,837	206	9	0	215	12.0	75	7.6
Nelson Is.	4,944	613	52	74	739	10.6	198	14.9
Nunivak Is.	5,176	0	0	0	0	0.0	0	0.0
Total	26,163	1,769	70	74	1,913	10.6	568	7.3

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District	Estimated Biomass (st)	Harvest				Roe%	Estimated Value (\$1000's)	Exploitation Rate (%)
		Sac-roe	Bait	Waste	Total			
1992								
Security Cove	7,773	697	127	10	834	9.2	285	10.7
Goodnews Bay	5,572	711	29	0	740	9.5	286	13.3
Cape Avinof	3,446	443	9	0	452	9.9	178	13.1
Nelson Is.	5,275	188	52	6	246	8.3	78	4.7
Nunivak Is.	5,703	7	20	0	27	8.5	4	0.5
Total	27,769	2,046	237	16	2,299	9.4	830	8.3
1991								
Security Cove	4,434	561	9	0	570	9.3	208	12.9
Goodnews Bay	4,387	259	4	0	263	8.9	93	6.0
Cape Avinof	2,083	240	27	0	267	9.5	94	12.8
Nelson Is.	2,385	0	0	0	0	0.0	0	0.0
Nunivak Is.	3,903	17	42	0	59	7.5	9	0.0
Total	17,192	1,077	82	0	1,159	9.2	404	6.7
1990								
Security Cove	2,650	174	60	0	234	8.7	94	8.8
Goodnews Bay	2,577	427	28	0	455	12.2	314	17.7
Cape Avinof	2,020	49	1	0	50	12.0	35	2.5
Nelson Is.	2,705	0	0	0	0	0.0	0	0.0
Nunivak Is.	422	0	0	0	0	0.0	0	0.0
Total	10,374	650	89	0	739	11.2	443	7.1
1989								
Security Cove	2,830	544	10	0	554	9.4	256	19.6
Goodnews Bay	4,044	453	162	0	616	8.4	335	15.2
Cape Avinof	2,777	90	39	0	129	8.0	54	4.6
Nelson Is.	3,316	122	100	11	233	8.5	57	7.0
Nunivak Is.	617	79	37	0	116	9.4	42	18.8
Total	13,584	1,289	347	11	1,647	8.9	744	12.1
1988								
Security Cove	4,906	324	0	0	324	9.3	362	6.6
Goodnews Bay	4,479	473	10	0	483	8.0	463	10.8
Cape Avinof	4,108	348	0	0	348	8.6	264	8.5
Nelson Is.	7,152	760	15	0	775	9.2	713	10.8
Nunivak Is.	2,800	0	0	0	0	0.0	0	0.0
Total	23,445	1,905	25	0	1,930	8.8	1,802	8.2

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District	Estimated Biomass (st)	Harvest				Roe%	Estimated Value (\$1000's)	Exploitation Rate (%)
		Sac-roe	Bait	Waste	Total			
1987								
Security Cove	2,300	312	1	0	313	9.7	242	13.6
Goodnews Bay	2,000	179	142	0	321	7.3	133	16.1
Nelson Is.	8,100	915	8	0	923	9.2	661	11.4
Nunivak Is.	4,400	254	160	0	414	7.8	231	9.4
Total	16,800	1,660	311	0	1,971	8.9	1,267	11.7
1986								
Security Cove	3,700	747	4	0	751	11.2	535	20.3
Goodnews Bay	3,000	554	3	0	557	10.4	325	18.6
Nelson Is.	7,300	852	34	0	886	10.3	428	12.1
Nunivak Is.	6,000	469	42	0	511	10.1	213	8.5
Total	20,000	2,622	83	0	2,705	10.5	1,501	13.5
1985								
Security Cove	4,900	703	0	30	733	10.1	355	15.0
Goodnews Bay	4,300	711	0	13	724	8.7	309	16.8
Nelson Is.	9,500	967	10	0	977	10.6	527	10.3
Nunivak Is.	5,700	349	9	0	358	8.9	146	6.3
Total	24,400	2,730	19	43	2,792	9.8	1,337	11.4
1984								
Security Cove	5,100	325	0	10	335	11.8	110	6.6
Goodnews Bay	4,100	667	0	50	717	10.1	168	17.5
Total	9,200	992	0	60	1,052	10.7	278	11.4
1983								
Security Cove	6,400	966	107	0	1,073	9.4	443	16.8
Goodnews Bay	3,200	426	9	0	435	9.4	185	13.6
Total	9,600	1,392	116	0	1,508	9.4	628	15.7
1982								
Security Cove	5,100	707	106	0	813	9.3	271	15.9
Goodnews Bay	2,600	437	49	0	486	9.5	188	18.7
Total	7,700	1,144	155	0	1,299	9.4	459	16.9
1981								
Security Cove	8,300	1,150	23	0	1,173	8.1	347	14.1
Goodnews Bay	4,300	558	99	0	657	7.7	196	15.3
Total	12,600	1,708	122	0	1,830	8.0	543	14.5

^a Estimated biomass is the projection. Aerial surveys were inadequate or not flown.

^b Biomass estimate from Goodnews Bay include Jacksmith Bay aerial survey estimates conducted on the same day.

Appendix E3.–Age class composition of biomass from samples collected by ADF&G variable mesh gillnet test fisheries, Goodnews Bay and Nelson Island Districts, Kuskokwim Bay, 2010.

Age	Goodnews Bay			Nelson Island		
	No. in sample	% by weight	tons	No. in sample	% by weight	tons
3	7	-	269	7	0.6	32
4	79	9.1	3,041	51	4.2	231
5	303	34.8	11,664	244	20.3	1,107
6	173	19.9	6,660	301	25.1	1,366
7	97	11.1	3,734	256	21.3	1,161
8	75	8.6	2,887	198	16.5	898
9	45	5.2	1,732	64	5.3	290
10	35	4.0	1,347	40	3.3	181
11	15	1.7	577	17	1.4	77
12	25	2.9	962	15	1.2	68
13+	16	1.8	616	8	0.7	36
Total	870		33,489 ^a	1,201		5,447 ^a

^a Differences in total tons and estimated biomass is attributed to rounding error.

Appendix E4.–The age composition of Pacific herring sampled from the ADF&G variable mesh gillnet (VMG) test fisheries, Goodnews Bay and Nelson Island Districts, Kuskokwim Bay, 2010.

District	Fishery	Aged Samples Collected	Aged Sample Size	Age Composition					
				< 6		6-8		> 8	
				No. of Fish	%	No. of Fish	%	No. of Fish	%
Goodnews Bay	test fishery (VMG)	913	870	389	44.7	345	39.7	136	15.6
Nelson Island	test fishery (VMG)	1311	1201	302	25.1	754	62.8	144	12.0

Appendix E5.–Length and weight composition by age of Pacific herring caught by ADF&G variable mesh gillnet (VMG) test fisheries, Goodnews Bay and Nelson Island Districts, Kuskokwim Bay, 2010.

District	Fishery	Age Class								
		< 6			6 - 8			> 8		
		Length (millimeters)								
		min	avg	max	min	avg	max	min	avg	max
Goodnews Bay	test fishery (VMG)	134	235	294	223	270	346	208	304	340
Nelson Island	test fishery (VMG)	160	231	292	209	269	333	242	294	321

District	Fishery	Age Class								
		< 6			6 - 8			> 8		
		Weight (grams)								
		min	avg	max	min	avg	max	min	avg	max
Goodnews Bay	test fishery (VMG)	84	176	366	145	276	446	206	408	605
Nelson Island	test fishery (VMG)	68	167	341	121	284	482	208	374	561