

Fishery Management Report No. 22-26

**2021 Kuskokwim Management Area
Annual Management Report**

by

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and

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November 2022

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	e.g.	less than	<
pound	lb	(for example)		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 (adjective)	U.S.	probability of a type I error	
minute	min	United States of America (noun)	USA	(rejection of the null hypothesis when true)	α
second	s	U.S.C.	United States Code	probability of a type II error	
		U.S. state	use two-letter abbreviations (e.g., AK, WA)	(acceptance of the null hypothesis when false)	β
Physics and chemistry				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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333 Raspberry Road, Anchorage, Alaska, 99518-1565

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ABSTRACT

This report summarizes the 2021 season and historical information regarding subsistence and commercial salmon and herring fisheries within the Kuskokwim Management Area (KMA). These fisheries mainly target 4 species of Pacific salmon (Chinook *Oncorhynchus tshawytscha*, sockeye *O. nerka*, coho *O. kisutch*, and chum salmon *O. keta*). There was a large-scale commercial salmon processor in the KMA in 2021. Within the subsistence fishery, amounts reasonably necessary for subsistence (ANS) were generally achieved throughout the KMA for all salmon species except Chinook salmon in recent years. There are 22 escapement goals for salmon within the KMA; 10 were met or exceeded, 1 was below the lower escapement bound, and 11 were not assessed in 2021. Historically, Pacific herring (*Clupea pallasii*) have been harvested for commercial and subsistence purposes in the KMA. The market for commercial herring has declined, and no commercial harvest has occurred in the KMA since 2013.

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

INTRODUCTION

MANAGEMENT AREA DESCRIPTION

The Kuskokwim Management Area (KMA) consists of all waters of Alaska between Cape Newenham and the Naskonat Peninsula, including Nunivak and St. Matthew Islands (Figure 1). As of 2018, there are 38 communities of approximately 4,400 households within the KMA. Of those households, more than two-thirds are situated within the drainage of the Kuskokwim River (McDevitt et al. 2020). Most 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 empty into Kuskokwim Bay. Residents of Toksook Bay, Nightmute, Tununak, Newtok, Chefornak, and Mekoryuk are situated near the Bering Sea Coast and harvest salmon from coastal waters and local streams.

There are currently 4 commercial salmon fishing districts in the KMA (5 AAC 07.200). Districts 1, 2, 3, and 4 were established in 1960; however, District 3, Upper Kuskokwim River, was removed from regulation in 1966 due to a lack of landings. District 5, Goodnews Bay, was established in 1968. District 1, 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 upstream of the Tuluksak River (Figure 2). District 1 was divided into Subdistricts 1-A and 1-B in 2000. Subdistrict 1-A consists of that portion of District 1 upstream from a line between regulatory markers located at the downstream end of Steamboat Slough. Subdistrict 1-B consists of that portion of District 1 downstream from regulatory markers at Steamboat Slough. 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 most recent District 2 commercial fishing periods were in 2000. District 4, Quinhagak, consists of Kuskokwim Bay waters from the northernmost edge of the mouth of Weelung Creek to the southernmost tip of the south mouth of the Arolik River and extending for 3 miles from the coast (Figure 4). District 5 consists of that portion of Goodnews Bay 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 and west of a line between the mouth of Ukfigag Creek to the mouth of the Tunulik River (Figure 5).

MANAGEMENT

Background

The large size of the Kuskokwim River drainage and the distances between the fisheries and escapement monitoring projects throughout the drainage, coupled with overlapping multispecies runs, adds complexity to the management of the Kuskokwim River. Chinook salmon (*Oncorhynchus tshawytscha*) begin entry into the Kuskokwim River in late May, and sockeye (*O. nerka*) and chum (*O. keta*) salmon begin their entry in mid-June. Chinook and sockeye salmon runs diminish in early July, and the chum salmon run diminishes in late July when the coho salmon (*O. kisutch*) run begins. Coho salmon entry to the Kuskokwim River diminishes in late August to early September. Fishery management information about 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 weeks after the start of the lower river fishery.

Kuskokwim Bay salmon run timings into the Kanektok, Goodnews, and Arolik Rivers are similar to Kuskokwim River run timings. These are small drainages compared to the Kuskokwim River, and although evaluation of run size and timing in Kuskokwim Bay rivers is not immediate, it is timelier than that of the Kuskokwim River. Many of the factors that make Kuskokwim River fisheries management difficult are not present in Kuskokwim Bay fisheries.

The KMA commercial fishery was relatively stable from 1987 to 1996, and harvest ranged between 975,000 to 2.3 million fish (Table 1), effort ranged between 714 and 824 permits fished, and exvessel value ranged between \$2.8 million and \$12.7 million (Table 2). Beginning in 1997, the value of salmon (Table 3), particularly chum salmon, began to decline, which led to a decrease in fishing effort, the number of fish harvested, and the exvessel value of the fishery. From 1997 to 2002, commercial salmon harvests in the area ranged from 755,000 fish in 1998 to 185,000 fish in 2002 (Table 1). Efforts ranged from 707 permits in 1998 to 407 permits in 2002, and the exvessel value of the fishery ranged from \$1.6 million in 1998 to \$324,000 in 2002. Poor Chinook and chum salmon returns from 1999 through 2001 resulted in limited commercial salmon fishing opportunities in the Kuskokwim River in June and July.

As Kuskokwim River Chinook and chum salmon abundances rebounded in the mid-2000s, poor market conditions for chum salmon and limited processing capacity continued to limit commercial salmon fishing opportunities in District 1. These same factors limited commercial fishing opportunities during July in Districts 4 and 5 and led to registered buyers imposing harvest limits on commercial fishing participants. From 2004 to 2015, commercial salmon harvests in the area ranged from 234,000 fish to 688,000 fish (Table 1). Efforts ranged from 396 permit holders to 530 permit holders, and the salmon exvessel value ranged from \$876,000 to \$2.9 million (Table 2). A fish processing plant located in Platinum began operation in 2009 and improved processing capacity in the area until its closing in 2016. Improvements in the chum salmon market and the improved processing capacity led to increased fishing opportunities during this time. The Bethel-based fish processor Kuskokwim Seafoods permanently closed operations in 2013, which limited fish processing in the area to the Coastal Villages Seafood's (CVS) Platinum, Alaska, facility. In 2016, CVS discontinued salmon buying and processing operations, which left the KMA without a large-scale salmon processor for the first time since statehood. Between 2016 and 2019,

commercial fishing within the KMA was limited to individuals registered with ADF&G as catcher–sellers. Because few individuals registered as catcher–sellers, salmon harvests between 2016 and 2019 were below the historical average, and confidentiality requirements prohibits the release of the harvest data. In 2020 and 2021, a single salmon processor operated within Kuskokwim Bay Districts 4 and 5. Kuskokwim River commercial fisheries were once again limited to individuals registered as catcher–sellers in 2020 and 2021.

Kuskokwim River Chinook salmon are harvested primarily for subsistence but have been incidentally harvested during past commercial fishing periods directed at chum and sockeye salmon in late June and July under a guideline harvest range of 0–50,000 sockeye salmon (Table 4). Subsistence harvest of Chinook salmon in the Kuskokwim River averaged 85,160 fish between 1990 and 2010. Poor run sizes of Chinook salmon since 2010 have severely limited subsistence harvests in recent years, and an average of 30,251 fish were harvested between 2011 and 2020. From 2000 to 2015, Chinook salmon commercial harvest contributed between 0% and 4% of the total District 1 harvest and between 0% and 13% of the total District 1 exvessel value (Tables 5 and 6). Chinook salmon run reconstruction information indicates an exploitation rate of Chinook salmon of approximately 33% since 2000, and most of the harvest (98%) was attributed to the subsistence fishery (Table 4; Larson 2022).

Kuskokwim River sockeye salmon are primarily harvested in the subsistence fishery but were also harvested during past District 1 commercial fisheries (Table 7). Subsistence harvest of sockeye salmon in the Kuskokwim River between 1990 and 2020 averaged 42,897 fish annually. Commercial harvest of sockeye salmon was considered incidental to chum salmon harvest in Kuskokwim River from 1987 to 2003; however, a guideline harvest level of 0–50,000 sockeye salmon was established in 2004. Kuskokwim River commercial sockeye salmon harvests made up approximately 6% of the total District 1 harvest and approximately 15% of the total District 1 exvessel value between 1990 and 2015 (Tables 5 and 6).

Prior to the commercial processors leaving the Kuskokwim River, coho salmon accounted for the largest number of commercially harvested salmon (Table 8) and the greatest value, accounting for over half of the District 1 exvessel value (Table 6). Currently, due to the lack of a large-scale commercial fishery, nearly all coho salmon are harvested by subsistence users. Annual subsistence harvest of coho salmon in the Kuskokwim River averaged 35,959 fish between 1990 and 2020.

Kuskokwim River chum salmon are an important subsistence species that have also been targeted for commercial use in the Kuskokwim River (Table 9). Annual subsistence harvest of chum salmon in the Kuskokwim River between 1990 and 2020 averaged 64,259 fish. Since the late 1990s, commercial fishing has been constrained by low market interest in chum salmon and limited processing capacity. From 1996 to 2010, commercial chum salmon harvests contributed less than 18% of the total District 1 harvest. From 2011 to 2015, chum salmon harvests contributed 29% of the total harvest and over 40% of the total exvessel value in District 1 (Tables 5 and 6).

Participation in Kuskokwim Bay subsistence and commercial fisheries is typically much smaller than in the Kuskokwim River. Between 1990 and 2020, annual subsistence harvest of Chinook, sockeye, coho, and chum salmon in the Kuskokwim Bay averaged 4,361 Chinook, 2,773 sockeye, 2,577 coho, and 1,786 chum salmon (Tables 10–13). Trends in commercial catches have changed over time in Districts 4 and 5, largely because of delays in season opener dates due to Chinook salmon conservation. In Districts 4 and 5, Chinook salmon conservation has shifted the primary target species to sockeye, chum, and coho salmon. The 10-year commercial harvest average

(2006–2015) for District 4 indicates sockeye salmon were most harvested, followed by chum, coho, and Chinook salmon (Table 14). This pattern was similar for District 5; however, coho salmon was ranked second most harvested and chum salmon third (Table 15). In both districts, the 10-year exvessel values (2006–2015) indicate that sockeye is the most valuable salmon species harvested, followed by coho, chum, and Chinook salmon (Tables 16 and 17)

Salmon Stock Status

Salmon returns to most Western Alaska rivers, including the Kuskokwim River, were generally below average from 1997 to 2001. However, these declines were not as evident in Kuskokwim Bay rivers. The KMA 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 harvests and exvessel values (Tables 1 and 2). In 2001, Kuskokwim River Chinook and chum salmon were designated stocks of yield concern by the Alaska Board of Fisheries (BOF; Burkey et al. 2000).

In 2002, Chinook and chum salmon returns to the Kuskokwim River began to rebound and reached record or near record abundances from 2004 through 2007 (Linderman and Bergstrom 2006; Estensen et al. 2009). The BOF discontinued the stock of concern status for both species in the winter of 2007. Since 2007, Chinook salmon abundance has decreased, and the Kuskokwim River was declared a fisheries disaster by the State of Alaska because of low Chinook salmon runs in 2011 and 2012. Total run estimates for Kuskokwim River Chinook salmon in 2012, 2013, and 2014 are the 3 lowest on record (Larson 2022). From 2010 through 2013, most tributary escapement goals were not achieved, and the Kuskokwim River drainagewide sustainable escapement goal established in 2013 was not achieved that year. Since 2014, a very conservative management approach has been employed on the Kuskokwim River, which has led to most tributary escapement goals being achieved. Chinook returns from 2016 to 2018 increased compared to those in 2013 and 2014, but were still below the 1976–2010 average. The 2019 Chinook salmon total run was near average and was the largest run observed since 2009. Chinook salmon total run in 2020 and 2021 declined significantly compared to the 2019 run and was similar to run sizes observed between 2015 and 2018.

Lacking total drainagewide run and escapement estimates, Kuskokwim River chum, sockeye, and coho salmon stock status is evaluated using harvest and tributary escapement data. Between 2007 and 2019, chum salmon runs returned to near-average levels. The 2020 chum salmon run was well below average, and the 2021 chum salmon run was the lowest on record. Sockeye salmon abundance since 2016 has varied between average and above average for lake and river life histories. The 2021 sockeye salmon abundance was mixed throughout the drainage with above-average lake-type abundance and below-average river-type abundance. There is limited information about the size and quality of the coho salmon escapement, but available information indicates 2016 to present run sizes have been below average to average.

There are no drainagewide run or escapement estimates for Kuskokwim Bay salmon stocks. Kuskokwim Bay salmon are monitored in the Kanektok River and Goodnews River drainages. Historically, Chinook, sockeye, chum, and coho salmon stocks have been evaluated through some combination of catch monitoring, counting towers, weirs, and aerial surveys. Recent budget constraints have made aerial surveys and inseason commercial catch statistics the primary means of assessing escapement and run strength.

Trends in salmon run timing and escapement are generally similar for the Kanektok and Goodnews River systems. The largest Chinook salmon escapements on record in the Kuskokwim Bay occurred in the early 2000s, and the lowest on record was in the early 2010s. With the absence of a commercial fishery during 2016–2019, there was an increase in the escapement of Chinook salmon to these systems, and goals were consistently met into 2021. Sockeye salmon escapement goals have been consistently met or exceeded in both river systems since 1998. From 2016 to 2019, sockeye salmon aerial escapement goals were vastly exceeded, and some of the largest numbers on record were observed. Sockeye salmon escapements were lower in 2020 and 2021, but escapement goals in both river systems were met or exceeded. Chum salmon escapement monitored at the Goodnews River weir from 2003 to 2019 was above the escapement goal 13 out of 16 years, and the low passage was in 2012, 2014, and 2015. Based on commercial catch statistics, chum salmon run strength in 2020 and 2021 was well below average. Coho salmon escapement has not been fully assessed since 2011 due to variability in run timing, high water conditions during the peak of the run, and loss of funding for weirs or multiple aerial surveys. ADF&G relies on subsistence reports and catch statistics to approximate run strength for this species and these data point towards an average run strength for 2021 and in recent years.

Subsistence

The subsistence salmon fishery in the KMA is one of the largest in the state. Many households throughout the KMA are involved in harvesting, processing, and preserving salmon for subsistence use. From 2014 to 2018, efforts in the subsistence salmon fishery ranged between 1,900 and 2,400 households (Shelden et al. 2016; McDevitt et al. 2020). Households not directly involved in catching salmon participate by assisting family and friends with cutting, drying, smoking, and associated preservation activities (salting, canning, and freezing). Surveys conducted between 2010 and 2014 found that, on average, salmon contributed 40% of the total subsistence resource harvest (in edible pounds) in the lower Kuskokwim River communities, with contributions of salmon averaging 65% and 25% in the middle and upper river communities, respectively (McDevitt et al. 2020).

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 abundant enough to provide for all consumptive uses. In 1993, the BOF made a positive finding for customary and traditional use of all salmon in the entire KMA. In 2001, ADF&G recommended that the BOF amend 5 AAC 01.286 to include a finding of the amounts reasonably necessary for subsistence (ANS) for the KMA using subsistence harvest data through 1999. During the 2013 BOF meeting, ANS ranges for the KMA were revised to 67,200–109,800 Chinook salmon, 41,200–116,400 chum salmon, 32,200–58,700 sockeye salmon, 27,400–57,600 coho salmon, and 500–2,000 pink salmon based on data from 1990 to 2011. The ANS range for District 4 (Quinhagak) and District 5 (Goodnews Bay) is 6,900–17,000 salmon, and the remainder of the KMA is 12,500–14,400 salmon.

COOPERATIVE MANAGEMENT PROCESS

The Kuskokwim River Salmon Management Working Group (Working Group) was formed in 1988 by the BOF in response to requests from stakeholders in the Kuskokwim River that sought a more active role in the management of salmon fishery resources (Francisco et al. 1989). The Working Group is the forum through which inseason management decisions regarding Kuskokwim River subsistence, commercial, and sport salmon fisheries are discussed. Working

Group representative participation in meetings in Bethel and outside the Kuskokwim River drainage allows an exchange of information between members and fishery managers. Representatives can also testify at regulatory meetings in support of Working Group positions.

The Working Group met 11 times in 2021. During these meetings, fishery management information was presented by state and federal staff, Working Group members, Tribal organizations, Kuskokwim River Intertribal Fisheries Commission (KRITFC) representatives, fishery partners, and the public. The Working Group discussed subsistence fishing reports from members and the public; the lower Kuskokwim River inseason subsistence harvest report; test fishery project summaries; and reports from weir, sonar, and aerial survey programs.

FEDERAL SUBSISTENCE PROGRAM

The Alaska National Interest Lands Conservation Act (ANILCA) of 1980 provided a priority for rural Alaska residents for taking fish and wildlife on federal public lands and called for creation of regional advisory councils (RACs) to provide rural residents' input into the Federal Subsistence Program. 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. RACs 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 by issuing a Special Action.

Federal subsistence fishing schedules, openings, closings, and fishing methods are established in regulation (Department of Interior 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 exist in some cases.

SALMON RUN STRENGTH INDICATORS

Bethel Test Fishery

Daily inseason assessments of Kuskokwim River salmon run strength and timing are available from a drift gillnet test fishery operated near Bethel. The project began in 1984, and the methodology has remained largely unchanged (Bue and Lipka 2016). The test fishery catch from each tide is tallied by species and those fish not released alive during sampling are distributed to charities. Catch statistics for Chinook, sockeye, chum, and coho salmon are presented as daily CPUE indices and season cumulative CPUE indices by species. Comparisons are made to test fishery results from previous years; however, these comparisons are subjective because variables such as water level, fishing patterns, and changing river morphology can change year to year.

Historically, other test fisheries have been attempted in the Kuskokwim River: Kwegooyuk test fishery, 1966–1983 (Huttunen 1984); Eek test fishery, 1988–1994; Kuskokwim River subsistence test fishery, 1988–1990 (Kuskokwim Fishermen's Cooperative 1991); Aniak test fishery, 1992–1995 and 2015–2021; 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.

All but the Aniak test fishery was eventually discontinued for a variety of reasons, including ambiguous results, consistency problems, difficulties with catch distribution, and lack of funding.

Bethel Sonar

An emerging Kuskokwim River inseason assessment project is a mainstem sonar project operated 20 km upriver from Bethel near the confluence of the Kuskokwim River and Church slough. A 3-year study was initiated in 2014 to assess the feasibility of using sonar, in combination with drift gillnetting, to estimate salmon abundance in the Kuskokwim River (Brodersen et al. 2016). Between 2017 and 2019, the sonar project operated between June 1 and July 26. This operational period provided timely information about the abundance of Chinook, chum, and sockeye salmon and whitefish species as they migrate up the Kuskokwim River (Birchfield and Smith 2019). The sonar operation end date was extended to August 25 starting in 2020. This extension is intended to provide information about the abundance of Kuskokwim River coho salmon. Abundance information provided from the sonar has been considered ancillary to the Bethel test fishery and inseason harvest monitoring.

Inseason Subsistence Catch Monitoring

Inseason interviews of subsistence fishers 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. Information from the interviews, in combination with other fisheries information, is used to assess salmon run timing and relative abundance. This program can provide timely insight into the subsistence fishery, a relative index of catches based on those interviewed, and an avenue for local user input into the management process. Summaries of interview responses are presented during Working Group meetings throughout the season.

Escapement Projects

In the Kuskokwim River, escapement projects provide limited utility inseason because of the great distances between areas of harvest and project locations. Consequently, managers rely on the Bethel test fishery, Bethel sonar, commercial catch statistics, and informal reports from subsistence and sport fishers to augment escapement data.

In the Kuskokwim Bay, historically operated escapement monitoring projects were much closer to the commercial fishing districts making escapement data more readily available for inseason management of the subsistence and commercial fisheries. Currently, managers use historical commercial catch statistics and inseason aerial surveys, along with inseason information from subsistence and sport fishers for inseason management. Catch statistics are especially important in District 4, where reliable escapement monitoring has been historically lacking.

Postseason Subsistence Survey

Annual household surveys are conducted postseason by ADF&G to collect information about the harvest and use of salmon in the KMA. Methods to estimate the total annual subsistence harvest have been developed by ADF&G in collaboration with local tribal organizations to complete the annual postseason harvest surveys (McDevitt et al. 2020). Subsistence surveys have been aimed at primarily gathering data about the harvest and use of Chinook, chum, sockeye, and coho salmon. Pink salmon are harvested in the KMA but are generally available only during even-numbered

years. Data for subsistence pink salmon harvests have not been consistently collected during the annual fall survey efforts.

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 commercial fishing participants, the duration of commercial fishing periods, water levels, and other variables that might influence catch or the effort applied by commercial fishing participants.

Chinook Salmon Run Reconstruction

The Kuskokwim River Chinook salmon run reconstruction was first published in 2012 (Bue et al. 2012), and subsequent revisions were made in 2014 (Hamazaki and Liller 2015) and 2018 (Liller et al. 2018). Estimates of annual Kuskokwim River Chinook salmon total run and escapement since 1976 are made using a maximum likelihood model developed for use in data-limited situations. The model combines information on subsistence harvest, commercial catch and effort, sport harvest, test fishery harvest and catch per unit of effort at Bethel, mark-recapture estimates of inriver abundance, counts of salmon at 6 weirs, and peak aerial counts from 14 tributaries spread throughout the Kuskokwim River drainage (Larson 2022). Each of these data sources provides an index of total abundance. The model provides an approach to combine and weight available information about Kuskokwim River Chinook salmon abundance to arrive at a scientifically defensible estimate of total run size and escapement. Estimates produced by the model represent the most likely run size given the observed data. Estimates generated from the model have been combined with available age structure of the stock information to reconstruct the total return by age and ultimately develop a brood table. The run reconstruction and brood table were used to conduct a spawner-recruit analysis and develop (Hamazaki et al. 2012) and review (Liller and Savereide 2018) escapement goal recommendations for Kuskokwim River Chinook salmon.

2021 MANAGEMENT PLAN

In January of 2013, after thorough public input, the BOF adopted a new *Kuskokwim River Salmon Management Plan* (5 AAC 07.365), which provides guidelines to manage the Kuskokwim River salmon fishery to meet escapement goals and subsistence use priority.

The BOF met in January 2016 to deliberate Arctic-Yukon-Kuskokwim in-cycle proposals. There were several proposals before the BOF that sought to move Chinook salmon to the middle and upper Kuskokwim River for escapement and subsistence uses. An early-season Chinook salmon subsistence fishing closure, like the approach taken in 2014 and 2015, was suggested and agreed to by a group of Kuskokwim River residents that were in attendance. The BOF passed language that would annually suspend directed subsistence fishing for Chinook salmon in the Kuskokwim River until after June 11. The BOF also passed a proposal that established specifications for beach seine gear used for subsistence fishing. Specifically, a beach seine may not exceed 50 fathoms in length or 100 meshes in depth, and the maximum mesh size is 3.5 inches.

Subsistence salmon fishing permits were discussed at the 2016 BOF meeting, and 2 proposals related to permits were tabled until a later date. This was done to allow more time for the public to discuss subsistence salmon fishing permits in the Kuskokwim River. Then the BOF met in Anchorage in 2017 to discuss the tabled proposals relating to subsistence fishing permits within

the Kuskokwim River. The BOF established a limited permit system in the waters from the Yukon Delta NWR boundary at Aniak upstream to the headwaters of the Kuskokwim River. This permit's first and only implementation was in 2018.

One KMA proposal was deliberated upon at the March 2020 Statewide BOF meeting. Ultimately, a compromise proposal with substitute language was made and passed by the BOF. The substitute language added 6-inch or less bank-oriented set gillnets as a legal gear type in addition to the current 4-inch or less set gillnet gear type. This would only be used after the front-end closure. Second, in the top tier of the management plan, when Chinook salmon abundance is projected to be above the drainagewide escapement goal, the once weekly bank-oriented set gillnet periods during the front-end closure are fished with 6-inch or less mesh. If the projection is within the escapement goal range, the once weekly bank-oriented set net periods during the front-end will still be fished with 4-inch or less mesh.

The Kuskokwim Bay fisheries are managed according to the *District 4 and 5 Management Plan* (5 AAC 07.367). These regulations provide ADF&G guidance about establishing commercial fishing periods.

2021 COMMERCIAL SALMON FISHERY

One salmon processor operated within the KMA during 2021. Commercial operations took place within Districts 4 and 5 only; there were no processors or buyers operating within Districts 1 or 2. Subdistrict 1-A was, however, opened a total of 15 times for registered KMA catcher-sellers. Commercial harvest and exvessel information for Subdistrict 1-A is confidential due to the number of participants (Tables 1 and 2). Additionally, commercial fishery data pertaining to Districts 4 and 5 were confidential during the season due to fewer than 3 processors and/or buyers registered in the KMA. District 4 was opened a total of 24 times, and District 5 was opened 32 times. Within Districts 4 and 5, a total of 87 individual permit holders participated in commercial salmon fishing, which generated an estimated exvessel value of \$493,460. This exvessel value was below the 10-year average value (Table 2).

KUSKOKWIM RIVER

Commercial fishing in Subdistrict 1-A occurred during 2021 on July 19, 21, 23, 25, and 27, as well as August 3, 5, 7, 10, 12, 14, 17, 19, and 21 (Table 18). All July fishing periods were open to those catcher-sellers who also had a valid Commercial Fisheries Entry Commission (CFEC) interim use permit card for dipnets. No salmon were harvested during the July dipnet fishing periods. A total of 3 or fewer permit holders recorded landings in District 1 gillnet periods (Table 18), which falls well below the 10-year average when large-scale processing and buying operations occurred (i.e., an average of 370 permit holders from 2006 to 2015; Table 2). The 2021 commercial fishery was delayed until most of the Chinook and chum salmon had passed through the district to account for Chinook and chum salmon conservation. As a result, commercial fishing occurred after the peak of the Chinook, chum, and sockeye salmon runs, which led to a coho salmon focused fishery.

KUSKOKWIM BAY

The 2021 commercial salmon fishing season in District 4 (Quinhagak) and District 5 (Goodnews Bay) began on July 2 and ended on August 13. The season was delayed from the normal start of June 15 due to concerns related to Chinook salmon conservation. Subsistence fishing was closed

before, during, and after each commercial period as detailed by opener-specific and district-specific emergency orders.

Since 1980, an average of 223 permit holders (range 67–408) fished each year in District 4, and an average of 61 permit holders (range 17–125) fished per year in District 5. Participation in the 2021 District 4 commercial fishery was the second lowest on record (2020 was lowest) and a total of 74 individual permit holders made at least 1 recorded landing (Table 19). Participation in the 2021 District 5 fishery was the lowest on record, and 13 individuals made at least 1 landing (Table 20). On average, 29 permit holders participated per period (range 1–54) in District 4 compared to 6 permit holders per period (range 1–12) in District 5. Reduced participation in the 2021 commercial fishery in Districts 4 and 5 was likely due to processor limitations and the buyer purchasing fish only from permit holders approved by the Independent Fishermen of Quinhagak Cooperative (from Eek, Quinhagak, Platinum, and Goodnews Bay).

In District 4, a total of 2,468 Chinook, 78,462 sockeye, 13,012 coho, and 5,310 chum salmon were commercially harvested (Table 14). Catch rates for sockeye salmon ranked second highest on record (2020 was highest) compared to available standardized catch rate data from 1981 to 2020. Sockeye salmon catch rates during the first 5 periods were the highest on record since 1981. These catch rates remained above average for the following 9 periods and then alternated between above-to-below-average for the duration of the season. Chinook and chum salmon catch rates were mostly below average the entire season, while coho salmon catch rates were below average for all except 1 period (August 6). Sockeye salmon harvest was the eighth highest since 1960, and approximately 5,000 fish more than the 10-year harvest average (2007–2020; Table 14). Chinook, chum, and coho salmon harvests were below the 10-year averages (2007–2020). Chinook salmon harvest ranked third lowest since 1968, while chum salmon harvest was the lowest observed since 1967. Coho salmon harvest was the lowest observed since 1999. A total of 29 pink salmon were purchased during 2021 in District 4; these were the first pink salmon purchased since 2005.

In District 5, a total of 114 Chinook, 35,963 sockeye, 1,192 coho, and 535 chum salmon were commercially harvested (Table 15). Catch rates for sockeye salmon during the 2021 season ranked highest on record compared to available standardized catch rate data from 1981 to 2020. Chinook, coho, and chum salmon catch rates were below their respective historical averages. Sockeye salmon harvest was the 13th-highest since 1968, and approximately 4,000 more fish than the 10-year harvest average (2007–2020). The numbers of Chinook, coho, and chum salmon harvested were below the 10-year averages (2007–2020). Chinook salmon harvests were the lowest on record since 1968, while chum and coho salmon harvests were the second lowest on record during the same period.

In Districts 4 and 5, Chinook, sockeye, chum, and coho salmon were purchased for \$0.80, \$0.60, \$0.45, and \$0.15 per pound, respectively. The total exvessel value of the District 4 fishery was \$357,273, approximately \$482,000 below the 10-year (2007–2020) average value (Table 16). The total exvessel value of the fishery in District 5 was \$136,186, approximately \$198,000 below the 10-year (2007–2020) average value (Table 17).

2021 SUBSISTENCE SALMON FISHERY

KUSKOKWIM RIVER

The 2021 Kuskokwim River Chinook salmon forecast was for a range of 94,000–155,000 fish. A run of this magnitude was anticipated to support a limited subsistence harvest and achieve the drainagewide sustainable escapement goal (SEG) of 65,000–120,000 fish. Preseason management actions that were intended to achieve escapement goals included early-season subsistence fishing closures, tributary closures, time and area restrictions, gillnet mesh size and length restrictions, and live release requirements.

An early season gillnet subsistence fishing closure (i.e., “front-end closure”) began on June 1, 2021, from the Yukon Delta National Wildlife Refuge (YDNWR) boundary at the mouth of the Kuskokwim River upriver to the Yukon Delta Refuge Boundary at Aniak; June 9 from the Yukon Delta boundary at Aniak up to the Holitna River mouth; and upstream of Holitna River mouth beginning June 11. With the closure came additional restrictions, including tributary closures and required live release of Chinook salmon captured in selective gears. During the front-end closure, there were three 16-hour set gillnet opportunities with 6-inch or less mesh to allow subsistence fishers time to harvest nonsalmon species. These openings occurred on June 2, 5, and 9.

Between June 1 and July 22, a Federal Special Action (FSA) closed the Kuskokwim River gillnet fishery to non-Federally qualified users within the boundary of the YDNWR (Subsistence Sections 1–3). During the FSA, USFWS offered 6-inch setnet opportunities running concurrently to the 6-inch opportunities offered by ADF&G on June 2, 5, and 9. Additionally, USFWS offered six 12-hour gillnet fishing periods on June 12, 15, 19, and July 2, 9, and 16 with 6-inch or less mesh, 25 fathoms in length above the Johnson River mouth, and 50 fathoms in length below the Johnson River mouth. USFWS offered two 48-hour set gillnet fishing periods on July 10 and 17. On June 19, USFWS opened those waters between the Kalskag Bluffs to the YDNWR boundary at Aniak to subsistence fishing until further notice with 6-inch or less mesh, 25 fathoms in length gillnets. ADF&G concurrently offered the same management actions within Subsistence Sections 1–3 with an additional opportunity provided on June 28, 2021. A 16-hour gillnet fishing period was provided on July 23, and a 50-hour setnet period was provided July 23–25 after the FSA was rescinded.

Chum salmon abundance was assessed to be extremely low based on Bethel test fishery catches, subsistence harvest reports, and Kuskokwim River sonar passage, whereas sockeye salmon abundance was estimated to be average to above average. Given the poor chum salmon run, continued fishing restrictions and gillnet closures in July were needed for chum salmon protection. Beginning July 2, 2021, the release of chum salmon captured in fish wheels and beach seines was required throughout the Kuskokwim River drainage.

Beginning June 12, 2021, subsistence fishing with the subsistence Chinook salmon permit was implemented in Subsistence Sections 4 and 5 (YDNWR boundary at Aniak upstream to the headwaters of the Kuskokwim River). On June 16, Section 5 (Holitna River mouth to headwaters) was opened to subsistence fishing until further notice with 6-inch or less mesh, 25 fathoms in length gillnets, and all selective gear types. At that time, subsistence Chinook permits were no longer required to subsistence fish in Subsistence Section 5. On June 19, Subsistence Section 4 (from the refuge boundary at Aniak to the Holitna River mouth) was opened to subsistence fishing

until further notice with 6-inch or less mesh, 25 fathoms in length gillnets, and subsistence Chinook permits were no longer required to subsistence fish.

Most salmon fishing restrictions were lifted at the end of July. On July 31, after an average of 99–100% of the Chinook salmon run, 99–100% of the sockeye salmon run, and 96–98% of the chum salmon run passed Bethel, the entire Kuskokwim River was opened to subsistence fishing with gillnets, and most mainstem gear restrictions were rescinded. Tributary restrictions were rescinded on August 31. The tributary restrictions were kept in place beyond the mainstem restrictions for the purpose of conservation while Chinook and chum salmon were on their spawning grounds.

KUSKOKWIM BAY

No subsistence fishing restrictions were implemented in Kuskokwim Bay in 2021.

SUBSISTENCE HARVEST

Subsistence harvests of Chinook, chum, sockeye, and coho salmon remained relatively stable from 1990 to 2011, with an average of 242,994 fish harvested within the KMA. Between 2011 and 2020, total salmon harvest declined to an average of 169,457 fish within the KMA. The areawide decline in salmon harvest is mostly due to reduced Chinook salmon harvest as a result of below-average run sizes and subsistence salmon fishing restrictions (Tables 10–13). The 2021 total subsistence salmon harvest estimate for the KMA was 116,636 fish (Table 21). Residents of communities in the lower Kuskokwim River, from Tuntutuliak to Tuluksak, took approximately 80% of the 2021 subsistence salmon harvest throughout the KMA. The lower river communities are relatively densely populated and include approximately 77% of the total households in the KMA.

2021 BETHEL TEST FISHERY ASSESSMENT

In 2021, the Bethel test fishery (BTF) officially operated from June 1 until August 24 (Table 22). The BTF operated early from May 26 to June 1 for a preseason evaluation in response to early spring and break up. This was an observational period only; any salmon caught were not integrated into the standard operational period indices, and the catch data were not included. BTF data used for comparison and management decisions began on June 1. During the 85-day period, there were 163 high tides in which 575 drifts resulted in cumulative CPUE of 532 Chinook, 1,694 sockeye, 1,696 coho, and 327 chum salmon (Tables 22 and 23). Chinook, sockeye, and chum salmon migrations had primarily all passed the BTF site before the project ended, but catches of coho salmon continued through the final drift session. Seven days during the project's operational period had only 1 high tide. Beginning July 21, drifts occurring during night tides (defined as 11:00 PM to 6:00 AM) were discontinued out of concerns for crew safety. Discontinuing night tides canceled 15 tides, and estimates for those missed tides were made by averaging CPUE values for tides fished before and after the missed high tide.

CHINOOK SALMON

The first Chinook salmon was caught by the BTF on May 26. The peak daily CPUE index of 43 occurred on June 28, and the cumulative daily CPUE index through August 24 was 532. Based on the cumulative index, the central 50% of the run passed the BTF site between June 17 and July 1, and the midpoint occurred on June 25, 3 days later than the average midpoint of June 22 (Table 22).

The season total cumulative index of 532 was below the 10-year average (2011–2020) of 560 (Table 23).

SOCKEYE SALMON

The first sockeye salmon was caught by the BTF on June 9. The peak daily CPUE index of 176 occurred on July 11, and the cumulative CPUE index through August 24 was 1,694. Based on the cumulative CPUE index, the central 50% of the sockeye salmon run passed the BTF site between June 29 and July 10, and the midpoint of passage occurred on July 6 (Table 24). The season total cumulative index was below the 2011–2020 average of 1,853 (Table 23).

CHUM SALMON

The first chum salmon was caught in the BTF on June 13. The peak daily CPUE index of 26 occurred on July 14, and the cumulative CPUE index through August 24 was 327. Based on the cumulative CPUE index, the central 50% of the chum salmon run passed the BTF site between July 3 and July 16, and the midpoint of passage occurred on July 11 (Table 22). The total cumulative CPUE index was the lowest observed on record and was well below the 2011–2020 average of 5,867 (Table 23).

COHO SALMON

The first coho salmon was caught in the BTF on July 8, and catches continued through the last drift session of the season on August 24. The peak daily CPUE index of 177 occurred on August 19, and the cumulative CPUE index through August 24 was 1,696 (Table 22). Based on the cumulative CPUE index, the central 50% of the coho salmon run passed the BTF site between August 4 and August 18, and the midpoint of passage occurred on August 10 (Table 22). The cumulative CPUE index was below the 2011–2020 average of 2,727 (Table 23).

ESCAPEMENT

The large size, remoteness, and geomorphic diversity of the KMA present challenges to monitoring salmon escapements and assessing salmon run abundance. For the last 2 decades, efforts have been taken to expand coverage and apply new technologies to improve estimation of salmon run timing and run strength monitoring by comparing current year to historical information. Aerial spawning ground surveys have been the most cost-effective means of monitoring salmon escapements. The more thorough projects such as weirs, counting towers, and sonar have been operated in only a few locations because of costs and limited utility. Since 2000, the number of escapement projects in the KMA has increased through cooperative partnerships with federal agencies and local organizations. These cooperative efforts have added substantially to ADF&G's ability to monitor salmon escapements and to evaluate the effectiveness of management actions postseason.

There are currently 22 established escapement goals within the KMA, with 14 escapement goals within the Kuskokwim River and 8 escapement goals within Kuskokwim Bay. For Kuskokwim River tributaries, there are 9 Chinook, 1 chum, 2 coho, and 1 sockeye salmon goals (Tables 24–28). Beginning in 2013, a Kuskokwim River drainagewide Chinook salmon escapement goal of 65,000–120,000 fish was established (Table 4). Within Kuskokwim Bay, there are 3 Chinook, 1 chum, 1 coho, and 3 sockeye salmon goals (Tables 29–31). Comprehensive reviews of escapement data for most KMA goals are conducted in unison with the KMA BOF cycle. The last

escapement goal review was completed in 2018 for the 2019 BOF meeting (Liller and Savereide 2018).

2021 ESCAPEMENT ASSESSMENT

As described above, there are numerous escapement assessment projects throughout the Kuskokwim River drainage (Figure 6) and Kuskokwim Bay drainages (Figure 7). Methods, daily passage counts, climate and hydrological information, and escapement age, sex, and length (ASL) information can be found in annual project reports such as Froning and Smith (2020). The AYKDBMS contains current and historical ASL information from the area escapement monitoring projects (past and present), escapement counts, and catch statistics from area commercial and subsistence harvests.¹

Kuskokwim River

Kwethluk River Weir

The Kwethluk River weir did not operate during the 2021 season. Therefore, neither the Chinook salmon escapement SEG range of 4,100–7,500 fish or the coho salmon escapement SEG of 19,000 fish were evaluated (Tables 24–27).

Salmon River (Aniak) Weir

Salmon River (Aniak) weir escapements included 1,303 Chinook, 907 sockeye, and 537 chum salmon (Tables 24, 25, and 27). Weir operations ended prior to the majority of the coho salmon run passing the weir, and no escapement estimates are available.

George River Weir

George River weir escapements included 2,920 Chinook, 937 sockeye, 31,491 coho, and 1,371 chum salmon (Tables 24–27). Chinook salmon escapement was within the SEG range of 1,800–3,300 fish. Sockeye and chum salmon escapement were below the 10-year average (2011–2020), while coho escapement was above the 10-year average.

Kogrukluk River Weir

Kogrukluk River weir escapements included 6,969 Chinook, 13,534 sockeye, 14,373 coho, and 4,153 chum salmon (Tables 24–27). The escapement goals for Chinook salmon (4,800–8,800 fish), sockeye salmon (4,400–17,000 fish), and coho salmon (13,000–28,000 fish) were all met. The chum salmon escapement goal of 15,000–49,000 fish was not met.

Takotna River Weir

Takotna River weir escapements included 323 Chinook (Table 24). Chinook salmon escapement was above the 10-year average (2011–2020). Weir operations ended before most of the chum salmon run passing the weir, and no escapement estimates are available.

Telaquana River Weir

Telaquana River sockeye salmon escapement was 123,958 sockeye salmon (Table 25). This was the fifth-highest observed escapement on record since the weir was established in 2010.

¹ Arctic–Yukon–Kuskokwim Database Management System (AYKDBMS). 2006– . Alaska Department of Fish and Game, Division of Commercial Fisheries. Juneau, AK. https://www.adfg.alaska.gov/CF_R3/external/sites/aykdbms_website/Default.aspx (accessed: July 2022).

Salmon River (Pitka Fork) Weir

Salmon River of the Pitka Fork Chinook salmon escapement was 3,992 fish (Table 24). This was the seventh year of operation for this project. Chinook salmon escapement was the lowest on record since weir operations began in 2015.

Kuskokwim Bay

Kanektok River Weir

The Kanektok River weir has not operated since 2015 due to budgetary constraints (Tiernan and Gray 2020).

Middle Fork Goodnews River Weir

The Middle Fork Goodnews River weir did not operate during the 2021 season due to budgetary constraints (Table 29). Therefore, none of the established escapement goals for Chinook, chum, sockeye, and coho salmon were evaluated.

AERIAL SURVEYS

Aerial survey escapement goals do not represent the entire spawning populations in the respective streams. The surveys are conducted once each season during a window of time when the maximum numbers of fish are expected to be on the spawning grounds (July 17 to August 5). The estimates of salmon observed during aerial surveys represent minimum spawning escapements. 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. All aerial survey counts presented were flown under either optimal or good survey conditions.

Aerial surveys are generally conducted on clear water streams, lakes, and coastal streams throughout the KMA. 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. Aerial surveys are best directed at indexing spawning populations of Chinook and sockeye salmon because these fish are typically more visible than chum and coho salmon.

KUSKOKWIM RIVER AERIAL SURVEYS

Lower, Middle, and Upper Kuskokwim River

Lower, Middle, and Upper Kuskokwim River aerial surveys were not flown during 2021 due to inclement weather, pilot illness, and unavailability of alternative pilots.

KUSKOKWIM BAY

The Kanektok River aerial survey was flown on July 25, 2021 (Table 30). Although within the standardized peak spawning abundance date range, this survey was deemed early as both Chinook and sockeye salmon were not in full spawning colorations, and fewer redds were noticeable than expected. Therefore, the counts reported in this report are underestimates of spawning escapement. Additionally, intense wind and glare acting on Kagati Lake created poor visibility, meaning sockeye salmon were undoubtedly missed. For this reason, the sockeye survey was rated as poor. Although a poor rating was given to this survey, 53,690 sockeye salmon were counted, which exceeded the aerial survey SEG range of 15,300–41,000 fish. The Chinook salmon survey was rated as fair because wind and glare were not as intense in the river reaches where they spawn. The

Chinook salmon aerial survey SEG (range 3,900–12,000 fish) was achieved with a count of 4,115 fish.

The North Fork Goodnews River aerial survey was flown on July 24, 2021, and weather conditions were optimal; thus, the survey was rated as good. This survey was deemed early as both Chinook and sockeye salmon were not in full spawning colorations. Therefore, the counts reported here are underestimates of spawning escapement. That said, the Chinook salmon aerial SEG of 640–3,300 fish was met with a count of 2,273 fish. The sockeye salmon SEG of 9,600–18,000 was exceeded with 95,020 fish counted (Table 31).

KUSKOKWIM HERRING FISHERY

The KMA for herring includes all waters of Alaska that flow into the Bering Sea between Cape Newenham and the Naskonat Peninsula (lat 60°58.17'N, long 165°11'W) to 3 miles seaward as well as the waters surrounding Nunivak and St. Matthew Islands to 3 miles seaward (5 AAC 27.870). This area supports a subsistence Pacific herring *Clupea pallasii* fishery and historically supported 5 commercial herring sac roe districts. Herring stock assessment activities occurred until 2013, when the commercial market left the KMA. Tiernan and Gray (2020) provide a full history of the assessment and harvest of KMA herring.

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TABLES AND FIGURES

Table 1.—Commercial salmon harvest, excluding personal use, Kuskokwim management area, 1960–2021.

Year	Commercial harvest					Total
	Chinook	Sockeye	Coho	Pink	Chum	
1960 ^a	5,969	5,649	5,498	0	0	17,116
1961 ^a	23,246	2,308	5,090	90	18,864	49,598
1962 ^a	20,867	10,313	12,432	4,340	45,707	93,659
1963 ^a	18,571	0	15,660	0	0	34,231
1964 ^a	21,230	13,422	28,992	939	707	65,290
1965 ^a	24,965	1,886	12,191	0	4,242	43,284
1966	25,823	1,030	22,985	268	2,610	52,716
1967	29,986	652	58,239	0	8,235	97,112
1968	43,157	5,884	154,275	75,818	19,684	298,818
1969	64,777	10,362	110,473	1,251	50,377	237,240
1970	64,722	12,654	62,245	27,422	60,566	227,609
1971	44,936	6,054	10,006	13	99,423	160,432
1972	55,598	4,312	23,880	1,952	97,197	182,939
1973	51,374	5,224	152,408	634	184,207	393,847
1974	30,670	29,003	179,588	60,099	196,127	495,487
1975	28,219	17,705	110,576	915	225,308	382,723
1976	49,262	14,636	112,130	39,998	231,877	447,903
1977	58,256	18,621	263,727	434	298,959	639,997
1978	63,194	13,734	247,271	61,968	282,044	668,211
1979	53,314	39,463	308,683	574	297,167	699,201
1980	48,599	42,213	327,878	30,306	560,943	1,009,939
1981	79,377	105,940	278,551	463	485,653	949,984
1982	79,816	97,716	567,452	18,259	326,481	1,089,724
1983	93,676	90,834	248,389	379	306,554	739,832
1984	74,017	81,304	826,774	23,902	488,480	1,494,477
1985	74,083	121,221	382,096	111	224,680	802,191
1986	44,972	142,029	736,910	16,561	349,269	1,289,741
1987	65,558	170,849	478,594	163	603,274	1,318,438
1988	74,563	149,949	623,733	37,645	1,443,953	2,329,843
1989	67,003	82,628	556,312	819	802,199	1,508,961
1990	84,449	203,918	443,783	16,082	520,885	1,269,117
1991	48,170	202,441	556,818	522	502,187	1,310,138
1992	67,597	192,341	772,449	85,978	436,506	1,554,871
1993	26,636	167,235	686,570	71	94,937	975,449
1994	27,345	191,169	856,100	84,870	360,893	1,520,377
1995	72,352	198,045	555,539	318	707,212	1,533,466
1996	22,959	122,260	1,099,853	1,663	301,975	1,548,710
1997	47,990	123,002	166,648	7	67,200	404,847
1998	44,192	129,449	311,910	2,720	267,059	755,330
1999	25,019	81,201	32,251	2	72,659	211,132
2000	26,115	109,939	307,439	17	49,573	493,083
2001	14,384	59,545	220,804	0	21,893	316,626

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Table 1.–Page 2 of 2.

Year	Commercial harvest					
	Chinook	Sockeye	Coho	Pink	Chum	Total
2002	12,531	24,190	113,199	0	34,951	184,871
2003	16,014	63,646	346,555	0	36,225	462,440
2004	30,332	63,682	541,894	0	51,935	687,843
2005	31,014	120,379	205,762	19	85,236	442,410
2006	24,860	148,784	224,905	1	94,981	493,531
2007	22,878	153,812	189,456	6	79,864	446,016
2008	23,958	112,581	259,681	15	98,239	494,474
2009	22,093	170,370	161,073	18	185,099	538,653
2010	18,721	201,869	76,621	7	227,441	524,659
2011	18,226	76,613	119,938	2	236,466	451,245
2012	8,576	91,192	143,123	0	150,822	393,713
2013	2,723	51,682	156,777	1	122,966	334,149
2014	2,470	82,114	222,063	3	37,046	343,696
2015	8,254	56,260	148,349	0	21,068	233,931
2016	b	b	b	b	b	b
2017	b	b	b	b	b	b
2018	b	b	b	b	b	b
2019	b	b	b	b	b	b
2020 ^c	4,787	142,708	40,302	0	9,568	197,365
2021 ^c	2,582	114,425	14,204	29	5,845	137,085
Average 2007–2020	13,269	113,920	151,738	5	116,858	395,790

^a Includes harvests from District 3.

^b Confidential information.

^c Harvest from Districts 4 and 5 only. All other districts confidential.

Table 2.—Estimated exvessel value of the commercial salmon harvest and permits fished, Kuskokwim management area, 1987–2021.

Year	District 1		District 2		District 4		District 5		Total value	Total permits
	Value of catch	Permits fished ^a	Value of catch	Permits fished ^a	Value of catch	Permits fished ^a	Value of catch	Permits fished ^a		
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	\$360,664	82	\$4,881,101	823
1991	\$2,971,767	749	\$111,651	23	\$592,436	346	\$274,919	72	\$3,950,773	819
1992	\$3,764,804	741	\$147,992	22	\$993,664	349	\$405,447	111	\$5,311,907	814
1993	\$2,860,795	737	\$90,906	20	\$898,255	408	\$441,135	114	\$4,291,091	804
1994	\$3,581,992	706	\$129,555	17	\$837,157	307	\$649,747	116	\$5,198,451	793
1995	\$2,766,882	712	\$107,913	21	\$1,047,188	382	\$286,398	87	\$4,208,381	798
1996	\$2,117,245	620	\$11,015	8	\$534,726	218	\$222,589	54	\$2,885,575	714
1997	\$2,288,766	604	\$2,944	4	\$497,071	289	\$122,868	53	\$2,911,649	702
1998	\$983,633	615	\$617	3	\$467,843	203	\$184,265	50	\$1,636,358	707
1999	\$169,769	509	\$0	0	\$279,091	218	\$103,662	73	\$552,522	604
2000	\$514,930	532	\$3,039	4	\$436,561	230	\$213,014	46	\$1,167,544	623

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Table 2.–Page 2 of 2.

Year	District 1		District 2		District 4		District 5		Total value	Total permits
	Value of catch	Permits fished ^a	Value of catch	Permits fished ^a	Value of catch	Permits fished ^a	Value of catch	Permits fished ^a		
2001	\$424,199	412	b	b	\$228,615	159	\$98,849	32	\$751,663	514
2002	\$126,361	318	b	b	\$167,749	114	\$24,802	30	\$318,912	407
2003	\$453,187	359	b	b	\$304,553	114	\$135,107	34	\$892,847	438
2004	\$943,766	390	b	b	\$405,345	116	\$135,246	29	\$1,484,357	467
2005	\$448,853	403	b	b	\$571,965	145	\$134,295	29	\$1,155,113	484
2006	\$451,390	373	b	b	\$551,182	132	\$141,265	24	\$1,143,837	453
2007	\$380,840	366	b	b	\$660,865	125	\$222,330	28	\$1,264,035	456
2008	\$538,310	374	b	b	\$750,731	146	\$198,070	25	\$1,487,111	462
2009	\$502,848	342	b	b	\$747,325	179	\$192,031	39	\$1,442,204	434
2010	\$765,606	433	b	b	\$1,655,321	241	\$470,661	48	\$2,891,588	530
2011	\$764,358	413	b	b	\$1,176,436	219	\$346,022	48	\$2,286,816	510
2012	\$597,998	379	b	b	\$824,435	179	\$617,765	58	\$2,040,198	477
2013	\$1,184,847	378	b	b	\$761,537	197	\$452,651	71	\$2,399,035	469
2014	\$843,356	358	b	b	\$858,638	194	\$584,654	61	\$2,286,648	457
2015	\$246,016	283	b	b	\$498,564	189	\$131,616	61	\$876,196	396
2016	c	c	b	b	b	b	b	b	c	c
2017	c	c	b	b	b	b	b	b	c	c
2018	c	c	b	b	b	b	b	b	c	c
2019	c	c	b	b	b	b	b	b	c	c
2020 ^d	c	c	b	b	\$468,074	67	\$128,196	17	\$596,270	78
2021 ^d	c	c	b	b	\$357,273	74	\$136,186	13	\$493,460	87
Average 2007–2020	\$627,557	370			\$840,193	174	\$334,400	46	\$1,757,010	427

^a Number of permits that made at least 1 delivery.

^b No commercial fishery occurred.

^c Confidential information.

^d Harvest from Districts 4 and 5 only.

Table 3.—Commercially harvested salmon average weights and prices paid, Kuskokwim management area, 1967–2021.

Year	Average weight (lb)					Average price per pound (\$)				
	Chinook	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum
1967	27.8	7.4	5.9	—	7.0	0.13	0.05	0.09	—	0.04
1968	23.8	6.2	7.2	4.0	7.9	0.16	0.10	0.09	0.05	0.04
1969	19.6	6.2	7.3	3.6	5.8	0.19	0.15	0.10	0.06	0.07
1970	18.9	5.4	7.3	3.3	6.1	0.20	0.21	0.14	0.08	0.08
1971	^a 26.2	6.9	6.1	—	6.4	0.17	0.10	0.13	—	0.08
1972	24.7	—	6.4	—	6.5	0.20	—	0.16	—	0.08
1973	26.7	—	5.8	—	6.8	0.25	—	0.26	—	0.19
1974	17.1	6.3	7.5	4.1	6.8	0.46	0.34	0.27	0.23	0.25
1975	14.9	—	8.2	—	6.4	0.54	—	0.31	—	0.26
1976	^b 17.0	6.7	7.8	3.5	7.0	0.64	0.43	0.40	0.25	0.27
1977	22.7	8.3	7.8	3.9	7.3	1.15	0.45	0.65	0.25	0.45
1978	24.2	6.5	7.1	3.9	8.9	0.50	0.49	0.40	0.12	0.32
1979	16.6	6.9	7.9	3.9	7.0	0.66	0.53	0.75	0.11	0.37
1980	14.1	6.7	6.9	3.6	6.4	0.47	0.31	0.64	0.12	0.24
1981	17.8	7.2	6.4	3.5	7.5	0.84	0.61	0.63	0.11	0.23
1982	19.3	7.2	7.3	3.6	7.3	0.82	0.41	0.53	0.05	0.22
1983	18.8	6.8	6.8	3.5	7.4	0.54	0.51	0.39	0.05	0.33
1984	16.4	6.6	7.7	3.2	6.7	0.89	0.52	0.55	0.07	0.28
1985	17.0	7.0	7.5	3.6	7.1	0.71	0.59	0.51	0.05	0.25
1986	17.0	7.2	6.4	3.4	6.8	0.80	0.70	0.60	0.05	0.25
1987	15.2	7.5	7.2	3.7	6.8	1.10	1.30	0.73	0.10	0.27
1988	14.1	7.3	7.2	3.4	6.9	1.30	1.42	1.25	0.15	0.40
1989	16.6	7.2	7.3	3.4	6.8	0.75	1.20	0.55	0.05	0.26
1990	15.1	6.7	6.5	3.2	6.9	0.56	1.05	0.62	0.12	0.26
1991	15.3	6.9	6.5	3.4	6.3	0.56	0.67	0.45	0.12	0.31
1992	13.4	7.0	7.3	3.9	6.8	0.66	0.90	0.45	0.06	0.32
1993	14.3	7.1	6.6	3.4	6.5	0.62	0.70	0.58	0.25	0.40
1994	15.6	6.9	7.6	3.6	6.6	0.51	0.53	0.57	0.08	0.21
1995	17.3	6.9	7.2	3.7	6.9	0.60	0.71	0.41	0.12	0.18
1996	15.7	7.2	8.0	3.8	7.2	0.26	0.40	0.25	0.12	0.11
1997	16.2	7.1	7.5	2.7	7.3	0.28	0.42	0.33	0.10	0.12
1998	14.2	6.8	7.8	3.8	6.9	0.27	0.53	0.32	0.10	0.13

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Table 3.–Page 2 of 2.

Year	Average weight (lb)					Average price per pound (\$)				
	Chinook	Sockeye	Coho	Pink	Chum	Chinook	Sockeye	Coho	Pink	Chum
1999	15.5	6.5	6.6	3.0	7.3	0.32	0.58	0.32	0.05	0.10
2000	15.6	6.8	6.9	3.2	7.6	0.39	0.55	0.28	0.10	0.10
2001	20.0	7.6	7.7	–	7.5	0.36	0.35	0.28	–	0.10
2002	13.9	6.7	7.9	–	7.9	0.35	0.35	0.20	–	0.10
2003	13.6	7.3	6.9	–	8.0	0.35	0.44	0.10	–	0.21
2004	12.1	6.6	6.9	–	6.9	0.35	0.35	0.32	–	0.08
2005	14.5	6.7	7.4	3.7	6.7	0.59	0.55	0.27	0.05	0.05
2006	13.9	6.4	6.3	4.0	6.9	0.54	0.48	0.33	0.25	0.05
2007	14.1	6.6	7.2	–	6.8	0.59	0.53	0.38	–	0.05
2008	12.9	6.7	7.1	4.2	7.1	0.73	0.58	0.43	0.06	0.05
2009	13.1	6.5	7.6	3.5	6.9	0.71	0.56	0.35	0.00	0.15
2010	13.1	6.8	7.1	2.8	6.9	1.60	1.13	1.01	0.00	0.26
2011	12.5	6.5	7.1	4.0	6.4	0.85	0.86	0.75	0.00	0.68
2012	15.3	6.8	6.1	0.0	6.6	0.85	0.85	0.73	0.00	0.77
2013	17.1	6.4	7.6	0.0	6.8	1.00	1.00	1.00	0.00	1.00
2014	10.5	5.7	7.0	4.3	6.6	1.00	1.25	0.96	0.00	0.60
2015	10.1	6.1	8.0	0.0	6.4	0.50	0.50	0.49	0.00	0.50
2016	c	c	c	c	c	c	c	c	c	c
2017	c	c	c	c	c	c	c	c	c	c
2018	c	c	c	c	c	c	c	c	c	c
2019	c	c	c	c	c	c	c	c	c	c
2020 ^d	9.9	5.3	7.9	0.0	8.2	0.55	0.55	0.45	0.00	0.15
2021 ^d	11.3	6.0	6.9	4.7	7.4	0.80	0.60	0.50	0.05	0.15
Average 2007–2020	12.9	6.3	7.3	2.1	6.9	0.8	0.8	0.7	0.0	0.4

Note: En dash means no data.

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

^b Information was not available for District 4.

^c Confidential information.

^d Information available only for Districts 4 and 5.

Table 4.—Estimated total run and escapement of Chinook salmon and harvest utilization Kuskokwim River, 1990–2021.

Year	Estimated total run	Estimated escapement	Harvest				Total
			Subsistence	Commercial ^a	Sport	Test fishery ^b	
1990	266,729	102,543	109,778	53,504	394	257	163,933
1991	210,919	97,771	74,820	37,778	401	149	113,148
1992	259,043	127,943	82,654	46,872	367	518	130,411
1993	274,699	175,032	87,674	8,735	587	2,515	99,511
1994	403,431	281,327	103,343	16,211	1,139	1,850	122,543
1995	371,257	236,528	102,110	30,846	541	1,001	134,498
1996	309,632	204,057	96,413	7,419	1,432	247	105,511
1997	296,105	204,771	79,381	10,441	1,227	332	91,381
1998	184,341	84,369	81,213	17,359	1,434	210	100,216
1999	159,861	81,268	72,775	4,705	252	98	77,830
2000	129,109	60,900	67,620	444	105	60	68,229
2001	205,477	126,837	78,009	90	290	0	78,389
2002	226,323	144,475	80,982	72	319	0	81,373
2003	232,559	163,854	67,134	158	401	0	67,693
2004	366,840	266,199	96,788	2,305	857	19	99,969
2005	327,299	235,523	85,863	4,784	572	2	91,221
2006	326,544	232,159	90,812	2,777	444	0	94,033
2007	244,114	147,254	94,898	179	1,478	0	96,555
2008	210,784	111,879	88,912	8,865	708	0	98,485
2009	190,966	103,032	79,896	6,664	904	0	87,464
2010	114,146	43,482	67,286	2,732	354	0	70,372
2011	113,548	49,519	62,366	747	579	0	63,692
2012	79,210	55,718	22,544	627	0	0	23,171
2013	84,430	36,942	47,113	174	0	0	47,287
2014	84,444	72,678	11,234	35	0	0	11,269
2015	125,106	108,502	16,124	8	0	0	16,132
2016	128,696	97,478	30,693	c	0	0	30,693
2017	133,178	116,508	16,380	c	0	0	16,380
2018	132,312	109,583	22,264	c	0	0	22,264
2019	226,987	188,483	37,941	c	0	0	37,941
2020	124,486	88,285	35,847	c	0	0	35,847
2021	129,751	101,000	28,365	c	0	0	28,365
SEG		65,000–120,000 ^d					
Average 2011–2020	123,240	92,370	30,251	318	-	0	30,276

-continued-

Table 4.–Page 2 of 2.

Note: Total run and escapement values were estimated using the Kuskokwim River Chinook salmon run reconstruction model (Larson 2022).

- ^a Not including personal use.
- ^b Test fishery sales only; does not include community distribution.
- ^c Confidential information.
- ^d Escapement goal established in 2013, prior years should not be compared.

Table 5.—Commercial salmon harvest in Districts 1 and 2 combined including personal use, 1960–2021.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960 ^a	5,969	0	2,498	0	0	8,467
1961 ^a	18,918	0	5,044	0	0	23,962
1962 ^a	15,341	0	12,432	0	0	27,773
1963 ^a	12,016	0	15,660	0	0	27,676
1964 ^a	17,149	0	28,613	0	0	45,762
1965 ^a	21,989	0	12,191	0	0	34,180
1966	25,545	0	22,985	0	0	48,530
1967	29,986	0	56,313	0	148	86,447
1968	34,278	0	127,306	0	187	161,771
1969	43,997	322	83,765	0	7,165	135,249
1970	39,290	117	38,601	44	1,664	79,716
1971	40,274	2,606	5,253	0	68,914	117,047
1972	39,454	102	22,579	8	78,619	140,762
1973	32,838	369	130,876	33	148,746	312,862
1974	18,664	136	147,269	84	171,887	338,040
1975	22,135	23	81,945	10	184,171	288,284
1976	30,735	2,971	88,501	133	177,864	300,204
1977	35,830	9,379	241,364	203	248,721	535,497
1978	45,641	733	213,393	5,832	248,656	514,255
1979	38,966	1,054	219,060	78	261,874	521,032
1980	35,881	360	222,012	803	483,211	742,267
1981	47,663	48,375	211,251	292	418,677	726,258
1982	48,234	33,154	447,117	1,748	278,306	808,559
1983	33,174	68,855	196,287	211	276,698	575,225
1984	31,742	48,575	623,447	2,942	423,718	1,130,424
1985	37,889	106,647	335,606	75	199,478	679,695
1986	19,414	95,433	659,988	3,422	309,213	1,087,470
1987	36,179	136,602	399,467	43	574,336	1,146,627
1988	55,716	92,025	524,296	10,825	1,381,674	2,064,536
1989	43,217	42,747	479,856	464	749,182	1,315,466
1990	53,504	84,414	409,053	3,397	459,974	1,010,342
1991	37,778	108,946	500,935	378	431,802	1,079,839
1992	46,872	92,218	666,170	7,451	344,603	1,157,314
1993	8,735	27,008	610,739	64	43,337	689,883
1994	16,211	49,365	724,689	30,949	271,115	1,092,329
1995	30,846	92,500	471,461	93	605,918	1,200,818
1996	7,419	33,878	937,299	1,621	207,877	1,188,094
1997	10,441	21,989	130,803	2	17,026	180,261
1998	17,359	60,906	210,481	92	207,809	496,647
1999	4,705	16,976	23,593	2	23,006	68,282
2000	444	4,130	261,379	7	11,570	277,530

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Table 5.–Page 2 of 2.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
2001	90	84	192,998	0	1,272	194,444
2002	72	84	83,463	0	1,900	85,519
2003	158	282	284,064	0	2,764	287,268
2004	2,305	8,532	435,407	0	20,150	466,394
2005	4,784	27,645	142,319	0	69,139	243,887
2006	2,777	12,618	185,636	1	44,152	245,184
2007	179	703	141,049	0	10,783	152,714
2008	8,865	15,601	142,877	15	30,798	198,156
2009	6,664	25,673	104,552	18	76,956	213,863
2010	2,732	22,433	58,031	7	93,917	177,120
2011	747	13,497	74,123	2	118,316	206,685
2012	627	2,857	86,394	0	65,195	155,073
2013	174	768	114,069	1	52,236	167,248
2014	35	2,720	117,588	3	19,080	139,426
2015	8	130	65,034	0	507	65,679
2016	b	b	b	b	b	b
2017	b	b	b	b	b	b
2018	b	b	b	b	b	b
2019	b	b	b	b	b	b
2020	b	b	b	b	b	b
2021	b	b	b	b	b	b
Average 2007–2020	2,226	9,376	100,413	5	51,976	163,996

^a Includes harvest from District 3.

^b Confidential information.

Table 6.—District 1 commercial salmon harvest and exvessel value, 1993–2021.

Year	Chinook		Sockeye		Coho		Pink		Chum		Total	
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
1993	8,735	\$72,659	27,008	\$140,000	610,739	\$2,535,321	64	\$59	43,337	\$112,756	689,883	\$2,860,795
1994	16,211	\$126,892	49,365	\$188,691	724,689	\$2,875,803	30,930	\$8,967	271,115	\$381,639	1,092,310	\$3,581,992
1995	30,846	\$280,287	92,500	\$448,530	471,461	\$1,313,742	335	\$50	605,918	\$724,273	1,201,060	\$2,766,882
1996	7,419	\$23,665	33,878	\$97,176	937,299	\$1,824,683	1,621	\$744	207,877	\$170,977	1,188,094	\$2,117,245
1997	10,441	\$36,843	21,989	\$64,922	130,803	\$2,167,491	2	\$1	17,026	\$19,509	180,261	\$2,288,766
1998	17,359	\$74,387	60,906	\$209,860	210,481	\$516,024	92	\$55	207,809	\$183,307	496,647	\$983,633
1999	4,705	\$22,266	16,976	\$86,442	23,593	\$44,633	2	–	23,006	\$16,428	68,282	\$169,769
2000	444	\$3,044	4,130	\$14,272	261,379	\$489,644	7	\$3	11,570	\$7,967	277,530	\$514,930
2001	90	\$534	84	\$265	192,998	\$422,573	–	–	1,272	\$827	194,444	\$424,199
2002	72	\$212	84	\$196	83,463	\$124,763	–	–	1,900	\$1,190	85,519	\$126,361
2003	158	\$846	282	\$803	284,064	\$450,451	–	–	2,764	\$1,087	287,268	\$453,187
2004	2,305	\$9,815	8,532	\$19,549	435,407	\$907,791	–	–	20,150	\$6,611	466,394	\$943,766
2005	4,784	\$29,040	27,645	\$109,063	142,319	\$287,635	–	–	69,139	\$23,115	243,887	\$448,853
2006	2,777	\$16,192	12,618	\$41,891	185,598	\$378,318	1	\$1	44,070	\$14,988	245,064	\$451,390
2007	179	\$1,607	703	\$2,411	141,049	\$373,789	–	–	10,763	\$3,033	152,694	\$380,840
2008	8,865	\$70,988	15,601	\$59,777	142,862	\$396,329	15	\$4	30,516	\$11,212	197,859	\$538,310
2009	6,664	\$61,452	25,673	\$101,445	104,546	\$263,457	2	–	76,790	\$76,494	213,675	\$502,848
2010	2,731	\$53,134	22,428	\$167,575	58,031	\$382,452	–	–	93,148	\$162,445	176,338	\$765,606
2011	49	\$411	13,482	\$79,370	74,108	\$334,452	1	–	118,256	\$350,124	205,896	\$764,357
2012	14	\$225	2,857	\$16,154	86,389	\$323,687	–	–	65,171	\$257,932	154,431	\$597,998
2013	1	\$6	768	\$5,226	114,069	\$833,327	–	–	52,236	\$346,288	167,074	\$1,184,847
2014	–	–	2,720	\$19,943	117,588	\$751,850	3	–	19,080	\$71,563	139,391	\$843,356
2015	2	\$9	130	\$395	65,034	\$244,045	–	–	507	\$1,567	65,673	\$246,016
2016 ^a	–	–	–	–	–	–	–	–	–	–	–	–
2017 ^a	–	–	–	–	–	–	–	–	–	–	–	–
2018 ^a	–	–	–	–	–	–	–	–	–	–	–	–
2019 ^a	–	–	–	–	–	–	–	–	–	–	–	–
2020 ^a	–	–	–	–	–	–	–	–	–	–	–	–
2021 ^a	–	–	–	–	–	–	–	–	–	–	–	–
Average 2007–2020	2,313	\$23,479	9,374	\$50,255	100,408	\$433,710	5	\$2	51,830	\$142,295	163,670	\$647,131

Note: En dash means no data.

^a Confidential information.

Table 7.—Sockeye salmon utilization, Kuskokwim River 1990–2021.

Year	Harvest				Total
	Commercial ^a	Subsistence	Test fish ^b	Sport fish	
1990	84,414 ^c	45,897	456	61	130,828
1991	108,946 ^c	47,370	383	38	156,737
1992	92,218 ^c	43,514	1,264	131	137,127
1993	27,008 ^c	51,616	4,706	348	83,678
1994	49,365 ^c	42,362	2,561	359	94,647
1995	92,500 ^c	30,905	1,992	95	125,492
1996	33,878 ^c	40,591	623	315	75,407
1997	21,989 ^c	38,744	584	423	61,740
1998	60,906	36,103	625	178	97,812
1999	16,976	47,360	562	54	64,952
2000	4,130	45,942	410	46	50,528
2001	84	53,245	510	231	54,070
2002	84	32,296	0	42	32,422
2003	282	32,241	0	140	32,663
2004	8,532 ^c	39,127	44	400	48,103
2005	27,645 ^c	41,885	7	636	70,173
2006	12,618 ^c	43,577	0	231	56,426
2007	703 ^c	46,817	4	322	47,846
2008	15,601 ^c	52,213	0	273	68,087
2009	25,673 ^c	35,747	0	162	61,582
2010	22,428 ^c	38,735	0	419	61,582
2011	13,482 ^c	43,245	0	98	56,825
2012	2,857 ^c	47,396	1	132	50,386
2013	768 ^c	39,382	0	85	40,235
2014	2,720	48,372	0	270	51,362
2015	130	37,419	0	14	37,563
2016	^d	51,552	0	175	51,727
2017	^d	48,462	0	40	48,502
2018	^d	35,448	0	^e	35,448
2019	^d	48,754	0	^e	48,754
2020	^d	43,499	0	^e	43,499
2021	^d	44,264	0	^e	44,264
Average 2011–2020	3,991	44,353	0	116	46,430

^a Not including personal use.

^b Test fishery sales only, does not include donations.

^c Districts 1 and 2.

^d Confidential information.

^e Information not available.

Table 8.–Coho salmon utilization, Kuskokwim River, 1990–2021.

Year	Harvest				Total
	Commercial ^a	Subsistence	Test fish ^b	Sport fish	
1990	409,053 ^c	57,560	1,279	581	468,473
1991	500,935 ^c	39,252	1,188	1,003	542,378
1992	666,170 ^c	52,299	10,109	1,692	730,270
1993	610,739 ^c	28,485	8,084	980	648,288
1994	724,689 ^c	36,609	7,854	1,925	771,077
1995	471,461 ^c	36,823	6,620	1,497	516,401
1996	937,299 ^c	43,173	3,013	3,423	986,908
1997	130,803 ^c	29,816	1,103	2,408	164,130
1998	210,481 ^c	24,667	607	2,419	238,174
1999	23,593	27,409	343	1,998	53,343
2000	261,379 ^c	42,341	2,818	1,689	308,227
2001	192,998	31,089	1,530	1,204	226,821
2002	83,463	42,602	680	2,030	128,775
2003	284,064	33,259	570	3,244	321,137
2004	435,407 ^c	45,450	464	4,996	486,317
2005	142,319 ^c	32,755	454	3,539	179,067
2006	185,598 ^c	41,175	169	1,474	228,416
2007	141,049 ^c	33,766	446	2,355	177,616
2008	142,862 ^c	44,724	0	3,755	191,341
2009	104,546 ^c	29,767	0	3,257	137,570
2010	58,031 ^c	33,580	0	1,482	93,093
2011	74,108 ^c	32,172	0	896	107,176
2012	86,389 ^c	28,200	151	974	115,714
2013	114,069 ^c	26,409	0	1,147	141,625
2014	117,588	49,736	0	1,059	168,383
2015	65,034	33,939	0	1,412	100,385
2016	^d	36,787	0	1,686	38,473
2017	^d	37,786	0	976	38,762
2018	^d	19,981	0	^e	19,981
2019	^d	31,167	0	^e	31,167
2020	^d	31,958	0	^e	31,958
2021	^d	22,555	0	^e	22,555
Average 2011–2020	91,438	32,814	15	1,164	79,362

^a Not including personal use.

^b Test fishery sales only, does not include donations.

^c Districts 1 and 2.

^d Confidential information

^e Information not available.

Table 9.–Chum salmon utilization, Kuskokwim River, 1990–2021.

Year	Harvest				Total
	Commercial ^a	Subsistence	Test fish ^b	Sport fish	
1990	459,974 ^c	153,825	1,650	533	615,982
1991	431,802 ^c	87,237	1,014	378	520,431
1992	344,603 ^c	116,391	12,409	608	474,011
1993	43,337 ^c	59,797	8,365	359	111,858
1994	271,115 ^c	76,937	11,637	1,280	360,969
1995	605,918 ^c	70,977	16,241	226	693,362
1996	207,877 ^c	100,913	2,864	280	311,934
1997	17,026 ^c	37,366	790	86	55,268
1998	207,809 ^c	61,732	1,140	291	270,972
1999	23,006	44,242	363	180	67,791
2000	11,570	56,499	1,033	26	69,128
2001	1,272	56,005	19	112	57,408
2002	1,900	86,381	7	53	88,341
2003	2,764	41,167	0	53	43,984
2004	20,150 ^c	64,140	113	84	84,487
2005	69,139 ^c	58,555	96	500	128,290
2006	44,152 ^c	89,674	0	13	133,839
2007	10,783 ^c	73,560	53	391	84,787
2008	30,798 ^c	63,789	0	121	94,708
2009	76,956 ^c	44,324	0	285	121,565
2010	93,917 ^c	45,089	0	85	139,091
2011	118,316 ^c	54,316	0	83	172,715
2012	65,195 ^c	79,631	93	80	144,999
2013	52,236 ^c	53,627	0	31	105,894
2014	19,080 ^c	68,398	0	36	87,514
2015	507 ^c	42,612	0	102	43,221
2016	d	44,857	0	72	44,929
2017	d	52,589	0	29	52,618
2018	d	45,918	0	e	45,918
2019	d	34,571	0	e	34,571
2020	d	26,920	0	e	26,920
2021	d	9,621	0	e	9,621
Average 2011–2020	51,067	50,344	9	62	75,930

^a Not including personal use.

^b Test fishery sales only, does not include donations.

^c Districts 1 and 2.

^d Confidential Information

^e Information not available.

Table 10.—Subsistence Chinook salmon harvest estimates by community, Kuskokwim management area, 1990–2021.

Community	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Kongiganak	1,559	729	929	680	1,281	1,095	1,108	1,376	1,128	1,153
N. Kuskokwim Bay	1,559	729	929	680	1,281	1,095	1,108	1,376	1,128	1,153
Tuntutuliak	4,174	4,156	3,750	3,905	5,019	3,928	4,256	3,159	3,797	3,412
Eek	4,923	2,617	2,057	2,496	2,976	3,679	2,786	2,009	2,215	1,730
Kasigluk	3,300	2,875	3,150	3,609	3,351	3,208	3,294	3,480	2,617	5,473
Nunapitchuk	4,192	4,004	4,123	3,852	4,580	4,543	3,479	3,605	4,502	4,215
Atmautluak	2,895	1,661	1,239	1,715	1,856	2,016	1,752	1,648	1,397	1,372
Napakiak	4,427	2,573	4,147	3,822	3,355	3,515	3,842	2,908	3,436	2,265
Napaskiak	6,586	4,008	5,299	5,566	6,521	4,862	5,261	4,756	4,901	3,633
Oscarville	1,263	1,476	1,501	1,496	1,390	1,046	995	1,056	754	1,543
Bethel	34,925	18,041	22,220	19,800	31,251	32,463	32,116	20,100	24,877	22,751
Kwethluk	10,657	7,298	6,949	9,280	9,546	9,907	9,786	6,319	7,502	6,366
Akiachak	8,395	5,607	8,130	7,678	7,622	6,410	5,689	6,699	6,026	5,210
Akiak	5,966	3,168	3,452	4,478	4,653	4,401	4,851	3,196	2,943	2,377
Tuluksak	2,022	3,114	2,330	3,662	4,414	4,175	3,309	5,456	3,554	2,239
Lower Kuskokwim River	93,725	60,598	68,347	71,359	86,534	84,153	81,416	64,391	68,521	62,586
Lower Kalskag	2,946	4,022	2,338	3,603	4,087	4,541	3,513	3,103	1,954	1,726
Upper Kalskag	1,618	1,031	1,321	1,682	1,297	1,447	1,304	941	1,394	1,670
Aniak	3,589	3,562	3,976	4,651	3,714	3,506	3,343	3,640	3,466	2,603
Chuathbaluk	1,718	998	986	1,443	1,013	2,461	914	1,204	730	1,035
Middle Kuskokwim River	9,871	9,613	8,621	11,379	10,111	11,955	9,074	8,888	7,544	7,034
Crooked Creek	971	916	583	707	1,126	874	890	963	768	702
Red Devil	297	154	400	449	409	412	359	404	243	141
Sleetmute	777	887	782	1,795	1,295	964	1,265	1,171	978	414
Stony River	574	614	247	445	391	534	596	874	293	46
Lime Village	399	70	162	40	195	180	141	57	241	145
McGrath	896	902	1,586	550	1,026	804	1,223	995	872	1,033
Takotna	74	0	6	0	0	11	7	3	2	0
Nikolai	635	337	818	426	449	938	398	212	380	284
Telida	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	4,623	3,880	4,584	4,412	4,891	4,717	4,879	4,679	3,777	2,765
Kuskokwim River total	109,778	74,820	82,481	87,830	102,817	101,921	96,477	79,334	80,969	73,538
Quinhagak	3,881	3,753	4,394	3,634	3,977	2,864	3,506	3,186	3,774	2,815
Goodnews Bay	358	852	548	590	672	789	392	441	735	759
Platinum	202	20	67	75	74	24	41	14	57	69
South Kuskokwim Bay	4,441	4,625	5,009	4,299	4,723	3,677	3,939	3,641	4,566	3,643
Total estimate	109,778	74,820	82,481	87,830	102,817	101,921	96,477	79,334	80,969	73,538

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Table 10.–Page 2 of 4.

Community	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Kipnuk	3,205	–	–	–	322	–	–	–	–	–
Kwigillingok	–	–	–	–	–	–	–	–	–	–
Kongiganak	1,285	1,612	1,349	2,003	2,663	1,536	1,729	1,865	2,233	1,243
N. Kuskokwim Bay	1,285	1,612	1,349	2,003	2,663	1,536	1,729	1,865	2,233	1,243
Tuntutuliak	2,826	2,958	3,907	2,657	3,912	4,545	4,469	4,614	4,266	3,067
Eek	2,140	2,035	2,514	2,075	2,954	3,133	2,501	2,512	2,966	1,982
Kasigluk	3,857	5,054	4,685	4,711	7,859	5,242	4,905	5,167	2,471	2,464
Nunapitchuk	3,425	3,328	4,503	3,179	4,921	4,103	4,121	4,661	4,234	3,468
Atmautluak	1,191	754	1,479	547	2,153	1,927	1,758	1,890	1,298	1,567
Napakiak	2,073	2,408	2,702	2,438	2,839	3,060	5,125	3,245	1,903	2,387
Napaskiak	4,175	4,596	3,922	3,390	4,058	4,485	5,877	6,392	4,555	5,372
Oscarville	1,259	1,779	1,115	1,153	1,325	1,069	1,052	1,360	1,351	754
Bethel	20,629	24,684	22,892	24,584	29,443	28,293	27,805	30,422	27,800	26,170
Kwethluk	5,174	6,460	6,880	4,206	7,157	6,089	7,258	6,466	8,451	7,130
Akiachak	6,311	6,978	6,946	2,493	7,131	5,411	5,561	7,621	9,719	7,361
Akiak	2,335	3,528	3,390	3,905	3,775	3,860	4,423	4,297	4,090	3,247
Tuluksak	2,464	2,520	2,860	3,286	3,766	2,655	2,372	3,266	2,937	3,212
Lower Kuskokwim River	57,859	67,082	67,795	58,624	81,293	73,872	77,228	81,914	76,040	68,181
Lower Kalskag	1,691	2,432	1,535	1,556	1,991	1,417	3,494	1,937	1,748	2,525
Upper Kalskag	1,234	1,149	1,545	1,328	2,498	2,533	1,569	1,383	2,435	1,696
Aniak	3,100	2,684	4,576	1,837	3,022	1,977	2,412	3,417	3,100	2,130
Chuathbaluk	281	700	505	405	1,460	913	887	973	772	877
Middle Kuskokwim River	6,306	6,965	8,161	5,126	8,971	6,840	8,362	7,710	8,055	7,228
Crooked Creek	592	689	859	582	946	948	736	647	488	608
Red Devil	95	174	293	31	156	181	232	301	148	258
Sleetmute	412	505	604	600	906	522	750	861	933	693
Stony River	178	167	415	118	688	311	288	530	514	704
Lime Village	69	251	178	34	69	171	103	95	29	75
McGrath	656	444	970	395	587	910	689	495	288	600
Takotna	0	5	10	0	16	8	0	10	0	8
Nikolai	144	280	535	224	493	564	696	471	184	298
Telida	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	2,146	2,515	3,864	1,984	3,861	3,615	3,494	3,409	2,584	3,244
Kuskokwim River total	67,596	78,174	81,169	67,737	96,788	85,863	90,812	94,898	88,912	79,896
Quinhagak	3,053	3,177	2,649	2,563	4,563	3,505	5,163	4,686	3,125	3,312
Goodnews Bay	564	863	723	807	863	869	713	647	898	569
Platinum	99	57	154	45	122	74	45	66	42	61
South Kuskokwim Bay	3,716	4,097	3,526	3,415	5,548	4,448	5,921	5,399	4,065	3,942
Total estimate	71,312	82,271	84,695	71,152	102,336	90,311	96,733	100,297	92,977	83,838

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Table 10.–Page 3 of 4.

Community	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Kipnuk	–	–	–	–	–	–	–	–	–	–
Kwigillingok	–	–	–	–	–	–	–	–	–	–
Kongiganak	1,456	1,208	287	641	964	–	–	–	–	–
N. Kuskokwim Bay	1,456	1,208	287	641	964	–	–	–	–	–
Tuntutuliak	3,261	3,032	1,123	2,448	574	1,668	1,963	1,459	2,178	2,102
Eek	1,761	1,378	1,004	1,188	665	850	1,460	825	706	1,323
Kasigluk	3,014	2,823	552	2,919	205	438	951	791	843	1,628
Nunapitchuk	2,548	3,559	845	2,563	287	1,051	1,695	761	1,389	1,975
Atmautluak	1,088	1,236	234	1,592	108	514	763	195	661	1,135
Napakiak	1,674	1,963	457	1,588	311	917	1,151	505	842	948
Napaskiak	4,333	3,360	1,108	2,939	422	816	1,535	858	1,079	2,551
Oscarville	618	694	51	585	68	120	208	122	123	238
Bethel	26,157	25,093	7,321	17,246	3,089	4,918	9,462	5,336	5,469	12,694
Kwethluk	4,440	2,467	1,709	3,192	959	900	1,731	1,019	1,518	2,679
Akiachak	4,470	3,852	2,862	3,585	1,033	1,103	3,438	1,415	2,520	3,443
Akiak	3,625	2,455	1,218	1,449	530	610	1,274	694	1,249	1,454
Tuluksak	2,057	1,230	651	732	404	231	709	511	705	1,026
Lower Kuskokwim River	59,046	53,142	19,135	42,026	8,655	14,136	26,340	14,493	19,282	33,196
Lower Kalskag	1,030	1260	459	744	283	351	578	260	474	1,000
Upper Kalskag	1,496	1772	562	1,317	258	334	838	190	638	746
Aniak	2,262	2214	993	1,440	344	542	1,293	718	803	1,315
Chuathbaluk	551	409	103	155	90	90	203	100	216	340
Middle Kuskokwim River	5,339	5,655	2,117	3,656	975	1,317	2,912	1,268	2,131	3,401
Crooked Creek	240	402	124	145	35	78	384	110	144	289
Red Devil	33	186	225	77	83	52	69	38	10	69
Sleetmute	272	242	132	96	58	137	169	36	76	133
Stony River	189	134	151	51	24	25	33	109	53	90
Lime Village	47	118	29	43	32	–	35	33	10	37
McGrath	262	829	68	95	173	75	384	118	239	375
Takotna	0	0	0	0	0	3	0	0	2	4
Nikolai	402	450	276	283	235	301	367	177	317	346
Telida	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	1,445	2,361	1,005	790	640	671	1,441	620	851	1,343
Kuskokwim River total	67,286	62,366	22,544	47,113	11,234	16,124	30,693	16,380	22,264	37,940
Quinhagak	2,793	2,588	2,396	3,143	3,723	3,082	4,822	5,217	3,592	5,690
Goodnews Bay	480	834	389	413	431	220	654	457	555	864
Platinum	17	62	24	39	46	11	99	96	67	142
South Kuskokwim Bay	3,290	3,484	2,809	3,595	4,200	3,313	5,575	5,770	4,214	6,696
Total estimate	70,576	65,850	25,353	50,708	15,434	19,437	36,268	22,151	26,478	44,636

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Table 10.–Page 4 of 4.

Community	2020	2021
Kipnuk	–	–
Kwigillingok	–	–
Kongiganak	–	–
N. Kuskokwim Bay	–	–
Tuntutuliak	2,322	2,164
Eek	1,999	1,091
Kasigluk	1,908	905
Nunapitchuk	1,750	1,210
Atmautluak	692	654
Napakiak	869	775
Napaskiak	1,036	2,034
Oscarville	360	105
Bethel	13,582	8,511
Kwethluk	1,870	1,862
Akiachak	2,516	2,827
Akiak	1,245	2,052
Tuluksak	919	882
Lower Kuskokwim River	31,068	25,072
Lower Kalskag	685	513
Upper Kalskag	860	454
Aniak	1,544	1,325
Chuathbaluk	317	180
Middle Kuskokwim River	3,406	2,472
Crooked Creek	238	153
Red Devil	45	55
Sleetmute	176	140
Stony River	95	137
Lime Village	6	12
McGrath	439	87
Takotna	7	0
Nikolai	367	237
Telida	–	–
Upper Kuskokwim River	1,373	821
Kuskokwim River total	35,847	28,365
Quinhagak	4,757	2,656
Goodnews Bay	766	388
Platinum	84	78
South Kuskokwim Bay	5,607	3,122
Total estimate	41,454	31,487

Note: En dash means that harvest was not estimated. Bold font indicates Bayesian estimates.

Table 11.—Subsistence sockeye salmon harvest estimates by community, Kuskokwim management area, 1990–2021.

Community	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Kongiganak	552	498	923	583	743	658	951	976	878	908
N. Kuskokwim Bay	552	498	923	583	743	658	951	976	878	908
Tuntutuliak	2,132	1,768	1,846	1,063	3,289	1,082	1,561	1,724	1,227	2,070
Eek	1,293	479	669	363	452	308	526	503	375	595
Kasigluk	843	1,376	1,690	1,608	976	1,179	1,127	1,315	1,012	3,287
Nunapitchuk	1,520	2,193	2,329	2,743	1,633	870	1,877	2,082	2,029	3,258
Atmautluak	1,696	830	1,193	1,313	837	1,173	1,408	681	982	1,743
Napakiak	1,548	1,187	1,663	1,217	1,533	887	1,106	1,526	1,487	2,018
Napaskiak	1,660	2,850	3,116	3,508	1,933	1,573	3,180	2,209	1,457	1,929
Oscarville	287	726	938	957	398	301	208	442	249	1,724
Bethel	11,787	11,428	9,225	9,501	11,370	8,802	10,556	10,233	8,464	12,094
Kwethluk	4,271	3,746	1,958	3,802	3,864	2,536	3,963	3,288	3,785	3,485
Akiachak	3,461	4,029	3,970	4,990	3,241	1,942	2,767	2,737	2,395	3,066
Akiak	1,873	1,696	1,769	3,537	1,740	809	1,544	1,327	1,640	1,151
Tuluksak	1,225	3,427	2,063	2,452	1,390	1,270	1,108	1,514	1,413	1,412
Lower Kuskokwim River	33,596	35,735	32,428	37,054	32,656	22,732	30,931	29,581	26,515	37,832
Lower Kalskag	1,007	1,080	503	2,286	989	679	1,387	1,277	546	583
Upper Kalskag	284	314	354	346	288	82	284	216	238	586
Aniak	1,539	2,073	1,213	1,609	751	955	1,295	1,078	1,132	1,302
Chuathbaluk	1,157	1,471	497	822	924	465	687	796	223	441
Middle Kuskokwim River	3,987	4,938	2,567	5,063	2,952	2,181	3,653	3,367	2,139	2,912
Crooked Creek	1,607	968	738	752	558	177	311	350	717	710
Red Devil	455	391	355	662	336	576	914	637	692	497
Sleetmute	1,153	1,347	794	1,643	1,120	1,109	1,341	1,458	1,282	879
Stony River	933	1,966	1,389	1,485	758	1,281	1,267	1,626	1,023	1,018
Lime Village	2,125	1,110	1,304	2,743	1,733	857	1,225	642	2,782	2,619
McGrath	1,489	416	2,494	1,465	1,501	1,652	111	52	146	0
Takotna	0	0	1	0	0	2	1	1	0	0
Nikolai	0	1	0	5	25	65	23	0	16	43
Telida	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	7,762	6,199	7,075	8,755	6,031	5,719	5,193	4,766	6,658	5,766
Kuskokwim River total	45,897	47,370	42,993	51,455	42,382	31,290	40,728	38,690	36,190	47,418
Quinhagak	1,710	1,818	1,448	1,228	962	597	499	460	1,368	1,433
Goodnews Bay	982	1,061	1,293	733	646	202	387	480	499	715
Platinum	163	134	238	48	90	32	56	143	80	106
South Kuskokwim Bay	2,855	3,013	2,979	2,009	1,698	831	942	1,083	1,947	2,254
Total estimate	48,752	50,383	45,972	53,464	44,080	32,121	41,669	39,773	38,137	49,672

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Table 11.–Page 2 of 4.

Community	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Kongiganak	1,770	1,546	1,347	929	1,809	1,103	1,464	960	1,502	1,018
N. Kuskokwim Bay	1,770	1,546	1,347	929	1,809	1,103	1,464	960	1,502	1,018
Tuntutuliak	1,180	1,702	1,045	1,148	1,620	2,145	1,834	1,763	2,120	932
Eek	883	1,085	759	586	567	1,033	684	558	834	1,019
Kasigluk	3,805	3,213	2,111	2,429	1,668	1,634	2,248	1,786	1,041	1,215
Nunapitchuk	2,194	2,529	1,500	1,714	1,659	1,821	1,871	2,147	2,549	1,538
Atmautluak	1,540	988	1,150	679	1,103	1,444	1,012	1,041	1,250	624
Napakiak	1,916	1,917	1,688	1,453	1,351	2,122	1,845	1,962	1,244	917
Napaskiak	2,525	3,377	1,296	1,643	1,148	1,344	1,784	1,738	2,620	1,579
Oscarville	1,115	1,451	400	806	436	278	778	712	677	332
Bethel	11,613	14,264	8,850	12,198	11,679	14,297	12,816	13,902	15,247	11,272
Kwethluk	3,859	4,191	2,100	1,903	3,302	2,457	2,770	3,536	4,920	2,432
Akiachak	3,687	4,680	2,507	1,607	3,109	2,372	2,661	3,269	4,354	2,407
Akiak	1,036	2,005	1,214	995	1,258	1,920	2,000	3,695	2,881	1,290
Tuluksak	2,201	1,862	1,205	875	1,670	987	2,247	1,845	2,133	1,691
Lower Kuskokwim River	37,554	43,264	25,825	28,036	30,570	33,854	34,550	37,955	41,869	27,248
Lower Kalskag	824	918	347	515	775	439	1,434	780	1,583	1,044
Upper Kalskag	588	319	508	431	686	945	563	417	1,000	369
Aniak	1,136	2,167	1,059	756	996	1,015	692	1,261	1,585	923
Chuathbaluk	476	614	313	274	526	369	508	484	363	564
Middle Kuskokwim River	3,024	4,018	2,227	1,976	2,983	2,768	3,197	2,942	4,531	2,900
Crooked Creek	514	640	449	571	732	693	544	523	220	329
Red Devil	109	360	109	309	88	272	510	318	359	477
Sleetmute	725	1,008	706	504	980	673	1,181	1,303	1,164	684
Stony River	654	163	602	158	896	688	746	1,019	1,476	977
Lime Village	1,409	1,453	1,186	374	874	1,368	1,216	1,406	659	1,080
McGrath	43	273	407	112	194	454	149	375	417	965
Takotna	0	0	0	1	0	1	0	1	3	3
Nikolai	0	0	22	2	1	10	20	14	13	66
Telida	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	3,454	3,897	3,481	2,031	3,765	4,160	4,365	4,960	4,310	4,581
Kuskokwim River total	45,802	52,725	32,880	32,973	39,127	41,885	43,577	46,817	52,213	35,747
Quinhagak	1,368	1,054	909	805	1,375	1,745	3,128	1,755	2,097	1,960
Goodnews Bay	951	908	855	705	873	1,213	995	920	1,739	902
Platinum	188	83	257	64	183	90	63	121	156	186
South Kuskokwim Bay	2,507	2,045	2,021	1,574	2,431	3,048	4,186	2,796	3,992	3,048
Total estimate	48,309	54,770	34,901	34,547	41,558	44,933	47,763	49,613	56,205	38,795

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Table 11.–Page 3 of 4.

Community	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Kongiganak	1,869	1,266	1,307	1,031	1,230	–	–	–	–	–
N. Kuskokwim Bay	1,869	1,266	1,307	1,031	1,230	–	–	–	–	–
Tuntutuliak	2,068	1,274	1,516	1,183	1,774	1,999	1,707	1,438	1,978	1,969
Eek	1,241	664	1,490	1,319	1,450	1,111	888	1,266	1,138	1,048
Kasigluk	1,441	1,269	1,451	1,470	1,990	1,442	1,543	1,703	1,448	2,416
Nunapitchuk	1,902	2,223	2,396	1,806	2,059	2,851	2,508	1,570	1,532	3,273
Atmautluak	731	827	1,623	1,316	1,531	1,173	1,562	1,535	1,621	2,093
Napakiak	1,183	1,351	1,141	1,105	1,573	1,179	2,132	916	1,336	1,688
Napaskiak	1,979	1,587	2,065	2,069	2,514	2,022	2,086	1,404	1,980	3,029
Oscarville	250	228	323	347	679	282	329	260	234	541
Bethel	11,103	16,946	18,282	12,616	14,828	11,951	16,730	17,477	8,127	17,608
Kwethluk	2,534	2,357	2,884	2,705	5,921	1,955	2,464	3,257	2,233	2,381
Akiachak	2,433	2,647	3,443	2,594	3,047	2,551	2,726	3,316	2,848	2,770
Akiak	1,161	2,576	1,818	1,731	2,418	1,855	3,772	3,398	2,757	2,248
Tuluksak	2,483	1,699	1,380	1,541	622	1,037	1,249	1,256	1,231	1,074
Lower Kuskokwim River	30,509	35,648	39,812	31,802	40,406	31,408	39,696	38,796	28,463	42,138
Lower Kalskag	507	802	891	977	1,040	487	284	630	695	348
Upper Kalskag	460	938	770	662	839	718	1,176	509	516	426
Aniak	1,165	1,168	1,375	1,466	1,578	2,407	8,380	5,277	3,500	3,235
Chuathbaluk	403	300	297	480	481	382	210	631	466	328
Middle Kuskokwim River	2,535	3,208	3,333	3,585	3,938	3,994	10,050	7,047	5,177	4,337
Crooked Creek	302	243	234	514	391	303	264	508	297	687
Red Devil	475	502	511	270	151	88	238	206	137	67
Sleetmute	1,024	693	715	362	541	497	458	514	511	638
Stony River	372	303	469	447	137	91	95	138	92	357
Lime Village	932	739	780	831	888	–	541	325	224	420
McGrath	650	630	233	538	451	0	199	892	507	71
Takotna	2	0	2	2	3	0	5	1	0	0
Nikolai	65	13	0	0	236	400	34	35	40	30
Telida	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	3,822	3,123	2,945	2,964	2,798	1,379	1,834	2,619	1,808	2,270
Kuskokwim River total	38,735	43,245	47,396	39,382	48,372	36,781	51,580	48,462	35,448	48,745
Quinhagak	1,719	1,582	2,015	2,158	2,939	1,065	1,691	3,850	2,622	2,537
Goodnews Bay	1,093	1,328	1,197	1,113	1,370	797	975	677	777	1,201
Platinum	175	135	173	181	349	148	381	533	210	409
South Kuskokwim Bay	2,987	3,045	3,385	3,452	4,658	2,010	3,047	5,060	3,609	4,147
Total estimate	41,722	46,290	50,781	42,834	53,030	38,791	54,627	53,522	39,057	52,892

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Table 11.–Page 4 of 4.

Community	2020	2021
Kongiganak	–	–
N. Kuskokwim Bay	–	–
Tuntutuliak	1,839	2,549
Eek	1,422	1,505
Kasigluk	2,701	1,886
Nunapitchuk	2,609	3,238
Atmautluak	1,055	2,424
Napakiak	1,503	1,265
Napaskiak	1,708	3,831
Oscarville	497	212
Bethel	16,855	13,454
Kwethluk	2,540	2,355
Akiachak	2,126	3,836
Akiak	1,595	1,768
Tuluksak	870	1,110
Lower Kuskokwim River	37,320	39,433
Lower Kalskag	427	521
Upper Kalskag	661	217
Aniak	1,723	1,463
Chuathbaluk	280	274
Middle Kuskokwim River	3,091	2,475
Crooked Creek	678	328
Red Devil	118	98
Sleetmute	816	687
Stony River	626	726
Lime Village	549	258
McGrath	291	231
Takotna	0	0
Nikolai	10	28
Telida	–	–
Upper Kuskokwim River	3,088	2,356
Kuskokwim River total	43,499	44,264
Quinhagak	2,000	3,169
Goodnews Bay	941	1,684
Platinum	358	660
South Kuskokwim Bay	3,299	5,513
Total estimate	46,798	49,777

Note: En dash means that harvest was not estimated. Bold font indicates Bayesian estimates.

Table 12.—Subsistence coho salmon harvest estimates by community, Kuskokwim management area, 1990–2021.

Community	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Kongiganak	474	490	605	448	569	662	579	514	204	203
N. Kuskokwim Bay	474	490	605	448	569	662	579	514	204	203
Tuntutuliak	1,287	733	693	820	364	339	1,335	558	858	277
Eek	1,800	387	502	160	399	387	437	63	314	242
Kasigluk	922	1,723	1,388	372	532	90	519	170	330	3,906
Nunapitchuk	746	1,131	2,242	318	749	629	1,444	732	345	368
Atmautluak	398	237	333	380	402	634	534	485	283	190
Napakiak	1,470	599	1,570	586	871	344	602	161	739	459
Napaskiak	1,139	798	1,108	780	2,016	584	506	592	488	316
Oscarville	57	147	151	0	48	0	15	0	0	779
Bethel	32,988	17,677	24,908	12,310	17,082	22,007	21,982	17,077	12,058	11,565
Kwethluk	3,928	2,311	2,419	1,809	1,880	1,690	2,995	1,104	1,583	2,883
Akiachak	1,910	2,337	3,058	1,102	1,281	628	903	383	409	662
Akiak	1,789	2,193	1,072	1,373	1,099	481	920	798	521	259
Tuluksak	978	1,854	1,629	408	223	522	1,175	418	812	298
Lower Kuskokwim River	49,412	32,127	41,074	20,418	26,946	28,335	33,367	22,541	18,740	22,204
Lower Kalskag	445	500	526	823	881	715	1,246	572	345	285
Upper Kalskag	346	527	972	353	178	257	348	661	834	155
Aniak	1,669	1,171	1,933	1,104	1,768	1,244	2,723	1,428	1,284	1,419
Chuathbaluk	826	87	368	366	741	79	409	196	50	138
Middle Kuskokwim River	3,286	2,285	3,799	2,646	3,568	2,295	4,726	2,857	2,513	1,997
Crooked Creek	922	279	712	396	646	358	175	261	394	529
Red Devil	914	1,038	1,284	1,673	1,074	1,539	1,135	1,455	504	424
Sleetmute	1,036	1,588	937	912	626	1,104	870	419	267	210
Stony River	474	513	727	511	477	1,023	529	455	378	423
Lime Village	486	390	345	606	1,467	223	607	270	776	701
McGrath	466	477	2,146	563	998	604	824	745	734	338
Takotna	0	0	4	0	0	6	6	2	3	0
Nikolai	90	65	204	285	94	499	36	130	97	73
Telida	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	4,388	4,350	6,358	4,946	5,382	5,356	4,182	3,737	3,153	2,698
Kuskokwim River total	57,560	39,252	51,836	28,458	36,465	36,648	42,854	29,649	24,611	27,102
Quinhagak	3,799	3,230	3,291	2,029	2,544	2,480	1,734	1,105	1,537	1,781
Goodnews Bay	1,630	1,704	1,671	1,118	428	268	330	348	323	421
Platinum	95	36	290	27	87	11	46	55	75	147
South Kuskokwim Bay	5,524	4,970	5,252	3,174	3,059	2,759	2,110	1,508	1,935	2,349
Total estimate	63,084	44,222	57,088	31,632	39,524	39,407	44,964	31,157	26,546	29,451

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Table 12.–Page 2 of 4.

Community	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Kongiganak	339	919	1,138	236	937	740	657	883	557	561
N. Kuskokwim Bay	339	919	1,138	236	937	740	657	883	557	561
Tuntutuliak	3,264	335	1,239	2,092	1,189	1,074	948	703	1,620	359
Eek	493	241	821	747	1,018	378	773	459	661	176
Kasigluk	9,726	1,058	2,195	1,762	5,034	1,304	3,070	1,753	867	629
Nunapitchuk	355	425	821	627	555	807	692	1,752	508	286
Atmautluak	227	375	612	283	744	530	254	424	262	67
Napakiak	453	667	793	992	1,648	742	2,363	1,244	1,006	420
Napaskiak	836	455	717	983	655	602	1,640	639	903	786
Oscarville	216	90	161	19	304	60	175	180	62	67
Bethel	13,478	14,108	15,489	15,062	17,040	12,994	18,810	12,972	15,839	12,895
Kwethluk	3,435	1,773	2,706	1,787	3,430	3,048	1,245	1,624	7,262	4,333
Akiachak	2,555	1,912	1,690	1,627	2,397	1,817	1,714	2,355	4,311	1,790
Akiak	479	594	1,136	1,094	1,342	1,847	379	1,325	1,358	661
Tuluksak	520	1,136	1,349	921	1,007	484	498	1,131	635	857
Lower Kuskokwim River	36,037	23,169	29,729	27,996	36,363	25,687	32,561	26,561	35,293	23,326
Lower Kalskag	403	597	281	314	368	319	1,415	515	76	318
Upper Kalskag	286	536	1,069	462	1,500	594	1,799	381	2,350	181
Aniak	1,911	2,006	3,737	1,164	2,355	2,032	1,018	3,003	2,883	2,223
Chuathbaluk	462	733	610	259	284	346	727	419	525	96
Middle Kuskokwim River	3,062	3,872	5,697	2,199	4,507	3,291	4,959	4,318	5,834	2,818
Crooked Creek	137	97	440	375	713	312	401	289	952	283
Red Devil	161	426	499	351	65	331	171	193	307	126
Sleetmute	525	428	806	731	505	581	671	360	228	403
Stony River	348	397	662	214	679	468	322	336	552	634
Lime Village	556	559	680	46	231	372	132	443	695	210
McGrath	881	436	1,508	997	1,228	799	894	279	247	1,175
Takotna	20	31	25	6	51	8	0	8	6	28
Nikolai	30	131	93	379	171	166	407	95	53	203
Telida	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	2,658	2,505	4,713	3,099	3,643	3,037	2,998	2,005	3,040	3,062
Kuskokwim River total	42,096	30,465	41,277	33,531	45,450	32,755	41,175	33,766	44,724	29,767
Quinhagak	1,042	1,719	1,133	1,868	1,435	1,558	1,315	1,550	1,869	1,824
Goodnews Bay	380	548	198	1,228	1,542	634	605	468	769	261
Platinum	100	118	96	144	266	223	116	106	114	81
South Kuskokwim Bay	1,522	2,385	1,427	3,240	3,243	2,415	2,036	2,124	2,752	2,166
Total estimate	43,618	32,850	42,704	36,771	48,693	35,170	43,211	35,890	47,476	31,933

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Table 12.–Page 3 of 4.

Community	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Kongiganak	483	613	356	412	561	–	–	–	–	–
N. Kuskokwim Bay	483	613	356	412	561	–	–	–	–	–
Tuntutuliak	698	250	565	450	794	362	456	472	329	163
Eek	315	280	612	483	555	629	410	797	298	367
Kasigluk	1,043	430	303	418	851	446	394	390	422	436
Nunapitchuk	195	407	319	226	1,305	1,154	492	1,103	412	783
Atmautluak	36	263	383	203	176	311	81	415	81	482
Napakiak	877	927	402	634	740	1,117	506	379	597	1,073
Napaskiak	1,029	471	269	772	1,153	1,353	726	1,011	614	566
Oscarville	12	43	38	37	128	25	134	82	58	59
Bethel	20,426	18,141	13,280	12,662	19,364	12,277	16,772	17,852	8,978	15,596
Kwethluk	1,495	1,097	1,013	1,555	4,422	1,677	682	2,361	1,475	1,526
Akiachak	1,181	1,440	714	1,106	1,845	1,924	2,007	1,771	1,343	1,510
Akiak	475	505	455	454	1,501	1,423	2,403	3,566	683	1,768
Tuluksak	330	163	341	473	808	623	482	668	529	453
Lower Kuskokwim River	28,112	24,417	18,694	19,473	33,642	23,321	25,545	30,867	15,819	24,782
Lower Kalskag	96	684	1,107	529	907	419	228	347	430	339
Upper Kalskag	92	998	360	636	938	384	722	188	419	231
Aniak	2,533	2,215	3,365	3,102	9,566	7,705	7,530	4,883	2,107	2,698
Chuathbaluk	76	109	179	319	291	166	149	149	138	119
Middle Kuskokwim River	2,797	4,006	5,011	4,586	11,702	8,674	8,629	5,567	3,094	3,387
Crooked Creek	87	297	149	255	198	275	298	256	138	238
Red Devil	88	130	238	318	792	214	166	106	50	117
Sleetmute	458	426	784	219	993	752	524	61	400	205
Stony River	201	333	358	120	177	77	29	86	23	135
Lime Village	146	596	117	384	226	–	123	81	0	34
McGrath	1,053	1,331	2,257	523	1,189	173	769	663	411	2,260
Takotna	20	3	22	0	0	53	90	0	0	2
Nikolai	135	20	214	119	256	400	614	99	46	7
Telida	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	2,188	3,136	4,139	1,938	3,831	1,944	2,613	1,352	1,068	2,998
Kuskokwim River total	33,580	32,172	28,200	26,409	49,736	33,939	36,787	37,786	19,981	31,167
Quinhagak	1,599	1,369	1,380	1,087	2,240	2,238	2,014	1,734	1,486	1,791
Goodnews Bay	319	259	382	295	371	552	378	289	201	328
Platinum	197	143	124	50	240	87	180	273	254	142
South Kuskokwim Bay	2,115	1,771	1,886	1,432	2,851	2,877	2,572	2,296	1,941	2,261
Total estimate	35,695	33,943	30,086	27,841	52,587	36,816	39,359	40,082	21,922	33,428

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Table 12.–Page 4 of 4.

Community	2020	2021
Kongiganak	–	–
N. Kuskokwim Bay	–	–
Tuntutuliak	423	371
Eek	553	652
Kasigluk	687	166
Nunapitchuk	614	329
Atmautluak	425	301
Napakiak	929	371
Napaskiak	865	1,783
Oscarville	63	81
Bethel	16,613	11,161
Kwethluk	1,963	1,195
Akiachak	1,230	1,613
Akiak	843	1,094
Tuluksak	673	490
Lower Kuskokwim River	25,881	19,607
Lower Kalskag	319	80
Upper Kalskag	390	164
Aniak	3,139	950
Chuathbaluk	126	95
Middle Kuskokwim River	3,974	1,289
Crooked Creek	243	170
Red Devil	30	35
Sleetmute	307	288
Stony River	118	135
Lime Village	32	15
McGrath	1,342	901
Takotna	0	0
Nikolai	31	115
Telida	–	–
Upper Kuskokwim River	2,103	1,659
Kuskokwim River total	31,958	22,555
Quinhagak	1,395	1,103
Goodnews Bay	155	222
Platinum	380	189
South Kuskokwim Bay	1,930	1,514
Total estimate	33,888	24,069

Note: En dash means that harvest was not estimated. Bold font indicates Bayesian estimates.

Table 13.—Subsistence chum salmon harvest estimates by community, Kuskokwim management area, 1990–2021.

Community	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Kongiganak	1,009	978	1,584	708	1,414	1,269	1,763	753	1,579	1,049
N. Kuskokwim Bay	1,009	978	1,584	708	1,414	1,269	1,763	753	1,579	1,049
Tuntutuliak	6,592	4,697	6,245	3,325	5,346	3,509	6,119	2,435	3,640	1,709
Eek	3,014	790	1,324	250	591	899	999	556	795	484
Kasigluk	3,877	3,013	4,076	2,522	2,663	2,774	4,047	1,951	2,543	4,777
Nunapitchuk	6,448	5,840	9,195	4,895	4,560	4,264	6,255	2,465	4,885	4,428
Atmautluak	4,676	2,241	2,614	1,300	1,420	3,768	2,660	1,395	1,875	1,552
Napakiak	9,714	2,351	5,474	2,269	3,819	2,820	4,352	1,430	3,605	1,495
Napaskiak	11,334	6,703	7,817	3,653	5,797	4,137	6,200	2,318	3,771	2,529
Oscarville	1,400	1,147	1,598	561	676	740	1,548	348	378	1,530
Bethel	34,257	16,781	17,231	8,608	15,722	17,416	21,706	8,078	12,522	9,918
Kwethluk	11,451	5,714	8,001	3,499	6,340	6,114	12,043	3,266	4,508	3,582
Akiachak	10,565	5,921	9,532	3,308	5,998	3,992	5,019	1,615	2,218	2,696
Akiak	9,226	6,575	6,679	7,577	4,483	2,007	4,967	1,639	1,894	1,210
Tuluksak	5,863	5,454	4,632	3,774	2,395	2,698	3,208	2,790	3,044	1,480
Lower Kuskokwim River	118,417	67,227	84,418	45,541	59,810	55,138	79,123	30,286	45,678	37,390
Lower Kalskag	4,980	2,958	2,807	2,938	2,856	1,438	4,070	1,298	968	733
Upper Kalskag	1,406	3,139	3,040	591	836	1,326	1,565	349	464	649
Aniak	10,160	3,511	7,687	2,926	2,538	3,454	8,569	1,678	4,964	1,753
Chuathbaluk	4,408	2,138	2,644	2,879	1,495	1,701	2,175	1,135	925	698
Middle Kuskokwim River	20,954	11,746	16,178	9,334	7,725	7,919	16,379	4,460	7,321	3,833
Crooked Creek	2,977	1,326	1,242	664	757	332	355	313	2,527	830
Red Devil	1,613	1,133	1,500	927	1,318	882	727	499	462	169
Sleetmute	2,006	1,880	2,961	692	1,520	1,683	1,250	417	870	340
Stony River	1,234	638	1,165	775	881	1,311	443	600	395	296
Lime Village	2,350	830	1,299	497	1,600	789	306	244	964	1,015
McGrath	2,326	1,083	4,472	578	1,264	1,525	211	138	1,510	242
Takotna	64	0	15	0	6	1	0	0	15	0
Nikolai	875	396	914	334	293	297	229	60	519	87
Telida	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	13,445	7,286	13,568	4,467	7,639	6,820	3,521	2,271	7,262	2,979
Kuskokwim River total	153,825	87,237	115,748	60,050	76,588	71,146	100,786	37,770	61,840	45,251
Quinhagak	3,161	1,631	2,287	1,053	1,401	669	943	572	1,375	1,587
Goodnews Bay	200	136	1,311	177	406	140	221	135	295	232
Platinum	149	4	137	0	51	3	26	0	51	33
South Kuskokwim Bay	3,510	1,771	3,735	1,230	1,858	812	1,190	707	1,721	1,852
Total estimate	157,335	89,008	119,483	61,280	78,446	71,958	101,975	38,477	63,561	47,103

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Table 13.—Page 2 of 4.

Community	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Kongiganak	1,839	2,399	3,247	897	2,958	1,960	2,420	2,353	1,755	1,420
N. Kuskokwim Bay	1,839	2,399	3,247	897	2,958	1,960	2,420	2,353	1,755	1,420
Tuntutuliak	2,622	2,585	4,150	1,288	2,546	3,568	4,024	3,350	3,375	3,330
Eek	636	402	1,228	578	688	877	1,075	783	788	782
Kasigluk	4,689	5,158	5,513	3,581	5,064	4,194	5,461	4,309	1,502	1,857
Nunapitchuk	4,865	4,724	8,002	2,865	5,053	4,167	5,150	6,619	4,705	3,468
Atmautluak	1,848	1,397	2,514	849	2,271	1,940	2,337	2,193	2,177	1,665
Napakiak	2,859	1,793	3,421	1,560	2,328	3,238	8,143	3,628	1,313	1,638
Napaskiak	2,757	2,364	4,010	2,061	2,705	2,205	4,323	3,032	2,400	1,451
Oscarville	1,237	1,831	1,319	804	828	686	1,151	932	847	534
Bethel	10,149	10,757	17,731	11,452	13,448	14,273	20,953	16,540	15,853	10,055
Kwethluk	5,232	4,601	8,019	2,294	4,288	4,328	6,328	6,291	5,729	4,111
Akiachak	4,719	3,170	5,173	2,650	3,880	2,428	4,333	4,782	6,856	2,872
Akiak	2,617	2,240	2,571	2,928	3,499	3,528	3,095	4,141	3,522	1,350
Tuluksak	2,492	2,068	3,719	894	2,433	2,183	3,094	3,202	2,920	1,570
Lower Kuskokwim River	46,722	43,090	67,370	33,804	49,031	47,615	69,466	59,803	51,988	34,683
Lower Kalskag	1,534	1,498	1,445	1,087	1,316	997	4,703	1,997	1,004	930
Upper Kalskag	1,550	1,502	2,460	516	1,656	1,201	2,469	294	2,432	329
Aniak	1,933	1,934	4,367	820	2,535	2,952	3,722	4,108	2,830	2,602
Chuathbaluk	654	2,711	1,458	2,502	2,352	530	1,451	1,541	593	937
Middle Kuskokwim River	5,671	7,645	9,730	4,925	7,859	5,680	12,345	7,940	6,859	4,798
Crooked Creek	809	1,211	1,417	750	1,583	1,064	1,513	813	352	519
Red Devil	54	334	384	63	135	214	41	186	188	244
Sleetmute	371	379	1,293	468	1,054	422	1,475	818	373	367
Stony River	320	172	696	361	754	324	790	540	1,247	771
Lime Village	451	651	869	110	199	573	316	419	297	405
McGrath	188	247	969	513	290	470	999	464	676	825
Takotna	0	10	1	0	0	4	0	0	0	0
Nikolai	56	53	187	191	277	230	308	223	54	292
Telida	—	—	—	—	—	—	—	—	—	—
Upper Kuskokwim River	2,249	3,057	5,816	2,456	4,292	3,301	5,442	3,464	3,187	3,423
Kuskokwim River total	56,480	56,191	86,163	42,082	64,140	58,555	89,674	73,560	63,789	44,324
Quinhagak	895	808	2,011	559	1,383	994	2,754	2,249	1,794	1,557
Goodnews Bay	251	187	349	200	240	192	555	395	586	138
Platinum	82	60	95	19	42	21	108	77	106	28
South Kuskokwim Bay	1,228	1,055	2,455	778	1,665	1,207	3,417	2,720	2,486	1,723
Total estimate	57,708	57,246	88,618	42,860	65,805	59,762	93,091	76,281	66,275	46,047

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Table 13.–Page 3 of 4.

Community	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Kongiganak	2,522	2,809	1,638	1,397	1,915	–	–	–	–	–
N. Kuskokwim Bay	2,522	2,809	1,638	1,397	1,915	–	–	–	–	–
Tuntutuliak	2,439	1,865	2,614	2,180	2,967	2,143	1,673	2,158	2,739	2,290
Eek	721	486	1,552	1,232	1,182	1,023	681	762	809	315
Kasigluk	2,338	2,029	3,261	2,197	3,612	2,080	1,485	2,360	2,312	2,007
Nunapitchuk	3,223	4,257	5,312	2,977	5,213	3,631	2,422	5,035	4,058	2,721
Atmautluak	1,386	1,864	2,701	2,409	3,327	2,165	1,609	2,090	2,509	1,502
Napakiak	1,759	1,546	1,711	1,185	2,392	1,508	2,091	1,726	1,959	1,386
Napaskiak	3,110	1,783	3,216	2,589	3,171	2,173	1,901	2,355	2,402	2,045
Oscarville	352	402	599	490	599	350	240	261	553	386
Bethel	9,575	15,324	26,872	12,506	18,017	10,958	13,471	17,780	9,385	10,493
Kwethluk	3,112	3,484	3,849	3,825	4,318	2,230	2,326	4,501	2,994	1,805
Akiachak	2,856	3,205	4,150	3,417	4,744	2,085	2,176	3,311	3,897	1,652
Akiak	1,163	2,421	2,925	2,212	2,982	2,348	5,803	3,026	3,299	2,033
Tuluksak	3,180	2,697	2,585	3,062	2,274	1,747	2,698	2,408	2,623	1,738
Lower Kuskokwim River	35,214	41,363	61,347	40,281	54,798	34,441	38,576	47,773	39,539	30,373
Lower Kalskag	691	1,643	3,284	1,214	1,458	1,233	624	1,019	1,081	369
Upper Kalskag	391	1,599	1,930	1,534	1,038	642	1,055	204	883	147
Aniak	2,515	2,391	5,667	2,880	4,695	1,395	2,422	1,604	1,822	2,038
Chuathbaluk	535	686	796	935	805	342	347	606	872	190
Middle Kuskokwim River	4,132	6,319	11,677	6,563	7,996	3,612	4,448	3,433	4,658	2,744
Crooked Creek	539	862	610	1,803	391	383	831	374	295	553
Red Devil	122	434	516	981	284	48	129	121	72	23
Sleetmute	524	689	1,004	542	633	337	268	147	142	115
Stony River	338	516	491	27	89	44	14	109	0	128
Lime Village	314	499	419	909	295	–	232	135	175	90
McGrath	944	476	885	598	642	7	150	145	706	518
Takotna	0	0	0	12	0	0	5	0	0	0
Nikolai	440	349	1,044	513	1,356	2,000	205	352	331	24
Telida	–	–	–	–	–	–	–	–	–	–
Upper Kuskokwim River	3,221	3,825	4,970	5,386	3,690	2,819	1,834	1,383	1,721	1,451
Kuskokwim River total	45,089	54,316	79,631	53,627	68,398	40,872	44,858	52,589	45,918	34,568
Quinhagak	1,347	1,255	2,001	1,958	1,959	691	848	1,592	1,575	721
Goodnews Bay	324	349	322	153	268	197	219	90	147	114
Platinum	37	70	76	90	62	16	78	188	203	246
South Kuskokwim Bay	1,708	1,674	2,399	2,201	2,289	904	1,145	1,870	1,925	1,081
Total estimate	46,797	55,990	82,030	55,828	70,687	41,776	46,003	54,459	47,843	35,649

-continued-

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Community	2020	2021
Kongiganak	–	–
N. Kuskokwim Bay	–	–
Tuntutuliak	1,261	727
Eek	475	316
Kasigluk	2,697	661
Nunapitchuk	2,384	495
Atmautluak	957	227
Napakiak	879	210
Napaskiak	1,246	794
Oscarville	502	27
Bethel	7,892	3,153
Kwethluk	1,709	720
Akiachak	1,318	707
Akiak	1,452	649
Tuluksak	987	349
Lower Kuskokwim River	23,759	9,035
Lower Kalskag	624	86
Upper Kalskag	295	89
Aniak	658	235
Chuathbaluk	291	51
Middle Kuskokwim River	1,868	461
Crooked Creek	179	28
Red Devil	25	5
Sleetmute	25	23
Stony River	41	42
Lime Village	128	21
McGrath	864	0
Takotna	0	0
Nikolai	31	6
Telida	–	–
Upper Kuskokwim River	1,293	125
Kuskokwim River total	26,920	9,621
Quinhagak	829	804
Goodnews Bay	146	26
Platinum	69	63
South Kuskokwim Bay	1,044	893
Total estimate	27,964	10,514

Note: En dash means that harvest was not estimated. Bold font indicates Bayesian estimates.

Table 14.—District 4 commercial salmon harvest, including personal use, 1960–2021.

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	13,893	21,574	68,605	21,311	29,247	154,630
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	80,878	55,817	7	40,924	193,410
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 ^a	20	81,505	272,073
1997	35,492	69,508	32,862	5	38,435	176,302
1998	23,158	41,382	80,183	2,217	45,097	192,037
1999	18,426	41,315	6,184	0	38,091	104,016
2000	21,229	68,557	30,529	3	30,553	150,871

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Year	Chinook	Sockeye	Coho	Pink	Chum	Total
2001	12,775	33,807	18,531	0	17,209	82,322
2002	11,486	17,820	26,695	0	29,319	85,320
2003	14,444	33,941	49,833	0	27,868	126,086
2004	25,465	34,661	82,398	0	25,820	168,344
2005	24,195	68,801	51,708	19	13,529	158,252
2006	19,004	106,424	26,831	0	39,151	191,410
2007	19,575	109,517	34,710	0	62,232	226,034
2008	13,812	69,776	95,073	0	57,663	236,324
2009	13,920	112,153	48,115	0	91,158	265,346
2010	14,230	138,362	13,690	0	106,610	272,892
2011	15,387	38,543	30,457	0	104,959	189,346
2012	6,675	37,688	31,214	0	61,140	136,717
2013	2,054	26,393	21,126	0	58,079	107,652
2014	2,265	58,879	52,317	0	14,563	128,024
2015	7,547	30,269	76,285	0	16,051	130,152
2016	b	b	b	b	b	b
2017	b	b	b	b	b	b
2018	b	b	b	b	b	b
2019	b	b	b	b	b	b
2020	4,345	113,849	29,374	0	6,531	154,099
2021	2,468	78,462	13,012	29	5,310	99,281
Average 2007–2020	9,981	73,522	43,188	0	57,735	184,426

^a Estimate of chum salmon roe included.

^b No commercial fishery occurred.

Table 15.—District 5 commercial salmon harvest including personal use, 1968–2021.

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	7,193	40,299	19,749	11	13,679	80,931
1982	9,476	38,337	46,683	4,673	13,825	112,994
1983	14,117	11,716	19,660	0	6,772	52,265
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	10,355	62,007
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	20,922	23,690	0	6,015	53,192
2005	2,035	23,933	11,735	0	2,568	40,271
2006	2,899	29,858	12,561	0	11,678	56,996
2007	3,126	43,766	13,697	6	7,853	68,448
2008	1,278	27,237	22,547	0	10,408	61,470
2009	1,509	32,544	8,406	0	16,985	59,444

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Table 15.–Page 2 of 2.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
2010	1,752	41,074	4,900	0	26,914	74,640
2011	2,092	24,573	15,358	0	13,191	55,214
2012	1,535	50,639	25,515	0	24,487	102,176
2013	495	24,521	21,582	0	12,651	59,249
2014	205	20,515	52,158	0	3,403	76,281
2015	705	25,861	7,030	0	4,510	38,106
2016 ^b	b	b	b	b	b	b
2017 ^b	b	b	b	b	b	b
2018 ^b	b	b	b	b	b	b
2019 ^b	b	b	b	b	b	b
2020	442	28,859	10,928	0	3,037	43,266
2021	114	35,963	1,192	0	535	37,804
Average 2007–2020	1,315	31,960	18,212	1	12,344	63,831

^a No harvest information available.

^b No commercial fishery occurred.

Table 16.—District 4 commercial salmon fishing exvessel value, 1990–2021.

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	\$0	\$29,609	\$497,071
1998	\$82,168	\$150,631	\$197,676	\$871	\$36,497	\$467,843
1999	\$94,880	\$140,846	\$14,997	\$0	\$28,368	\$279,091
2000	\$131,351	\$249,382	\$31,898	\$1	\$23,929	\$436,561
2001	\$93,697	\$89,334	\$32,577	\$0	\$13,007	\$228,615
2002	\$56,356	\$40,368	\$47,651	\$0	\$23,374	\$167,749
2003	\$69,201	\$107,287	\$108,804	\$0	\$19,261	\$304,553
2004	\$107,700	\$77,394	\$201,879	\$0	\$18,372	\$405,345
2005	\$221,854	\$241,478	\$101,776	\$4	\$6,853	\$571,965
2006	\$147,802	\$327,917	\$61,433	\$0	\$14,030	\$551,182
2007	\$163,248	\$374,004	\$102,569	\$0	\$21,044	\$660,865
2008	\$140,580	\$272,427	\$317,143	\$0	\$20,581	\$750,731
2009	\$130,561	\$384,209	\$136,562	\$0	\$95,993	\$747,325
2010	\$294,163	\$1,049,395	\$117,658	\$0	\$194,105	\$1,655,321
2011	\$166,606	\$207,642	\$198,333	\$0	\$603,855	\$1,176,436
2012	\$85,934	\$208,023	\$167,638	\$0	\$362,840	\$824,435
2013	\$35,126	\$154,135	\$172,739	\$0	\$399,537	\$761,537
2014	\$22,940	\$408,008	\$367,817	\$0	\$59,873	\$858,638
2015	\$37,565	\$89,262	\$312,472	\$0	\$50,265	\$489,564
2016	a	a	a	a	a	a
2017	a	a	a	a	a	a
2018	a	a	a	a	a	a
2019	a	a	a	a	a	a
2020	\$23,715	\$327,784	\$107,906	\$0	\$8,669	\$468,074
2021	\$22,345	\$283,670	\$45,320	\$7	\$5,932	\$357,273
Average 2007–2020	\$110,044	\$347,489	\$200,084	\$0	\$181,676	\$839,293

^a No commercial fishery occurred.

Table 17.—District 5 commercial salmon fishing exvessel value, 1990–2021.

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
2011	\$19,224	\$141,347	\$106,471	\$0	\$78,980	\$346,022
2012	\$20,509	\$299,187	\$150,668	\$0	\$147,401	\$617,765
2013	\$8,546	\$169,318	\$185,332	\$0	\$89,455	\$452,651
2014	\$3,065	\$152,446	\$415,009	\$0	\$14,134	\$584,654
2015	\$3,823	\$81,851	\$30,737	\$0	\$15,205	\$131,616
2016	a	a	a	a	a	a
2017	a	a	a	a	a	a
2018	a	a	a	a	a	a
2019	a	a	a	a	a	a
2020	\$2,257	\$87,602	\$35,312	\$0	\$3,025	\$128,196
2021	\$954	\$131,140	\$3,571	\$0	\$521	\$136,186
Average 2007–2020	\$15,280	\$166,146	\$110,917	\$0	\$42,057	\$334,400

^a No commercial fishery occurred.

Table 18.—District W-1 commercial salmon harvest by period, 2021.

Date	Permits	Landings	Subdistrict	Number of salmon				Total
				Chinook	Sockeye	Coho	Chum	
Jul 15 ^a	0	0	1-A	0	0	0	0	0
Jul 16 ^a	0	0	1-A	0	0	0	0	0
Jul 17 ^a	0	0	1-A	0	0	0	0	0
Jul 18 ^a	0	0	1-A	0	0	0	0	0
Jul 19	0	0	1-A	0	0	0	0	0
Jul 20 ^a	0	0	1-A	0	0	0	0	0
Jul 21 ^a	0	0	1-A	0	0	0	0	0
Jul 22 ^a	0	0	1-A	0	0	0	0	0
Jul 23 ^a	0	0	1-A	0	0	0	0	0
Jul 24 ^a	0	0	1-A	0	0	0	0	0
Aug 12	0	0	1-A	b	b	b	b	b
Aug 14	1	1	1-A	b	b	b	b	b
Aug 16	1	1	1-A	b	b	b	b	b
Aug 18	0	0	1-A	b	b	b	b	b
Aug 20	0	0	1-A	b	b	b	b	b
Total	1	2		b	b	b	b	b

^a A valid 2021 CFEC interim use permit card for dipnets was required and individuals needed to be registered with ADF&G as catcher–sellers.

^b The number of salmon harvested is confidential due to the level of participation.

Table 19.—District 4 commercial salmon harvest by period, 2021.

Date	Permits		Number of salmon				Total
	fished	Landings	Chinook	Sockeye	Coho	Chum	
Jul 2	37	69	479	9,448	0	150	10,077
Jul 4	35	68	297	9,788	0	117	10,202
Jul 6	31	51	244	8,104	0	99	8,447
Jul 8	36	60	192	8,609	0	260	9,061
Jul 10	54	89	311	10,009	0	474	10,794
Jul 13	45	57	245	6,980	0	465	7,690
Jul 15	52	64	177	6,686	0	450	7,313
Jul 17	51	58	150	4,562	0	501	5,213
Jul 19	29	36	61	2,997	0	330	3,388
Jul 21	35	46	131	3,808	0	661	4,600
Jul 23	33	36	79	2,326	7	524	2,936
Jul 25	12	18	18	1,316	17	327	1,678
Jul 27	7	7	8	468	42	91	609
Jul 29	a	a	a	a	a	a	a
Jul 30	11	11	15	553	129	104	801
Jul 31	1	1	2	9	11	7	29
Aug 2	7	8	4	340	188	54	586
Aug 3	16	19	18	668	540	186	1,412
Aug 5	22	26	7	399	1,340	108	1,854
Aug 6	19	25	12	482	1,627	91	2,212
Aug 9	38	44	8	319	2,599	114	3,040
Aug 10	29	29	3	295	1,827	89	2,214
Aug 12	34	35	4	169	2,611	76	2,860
Aug 13	27	29	3	127	2,074	32	2,236
Total	74	886	2,468	78,462	13,012	5,310	99,252

^a No permit holders participated in this period.

Table 20.—District 5 commercial salmon harvest by period, 2021.

Date	Permits fished	Landings	Number of salmon				Total
			Chinook	Sockeye	Coho	Chum	
Jul 2	6	11	32	1,883	0	26	1,941
Jul 4	7	11	8	2,554	0	33	2,595
Jul 5	3	4	0	924	0	17	941
Jul 6	5	7	2	1,471	0	23	1,496
Jul 7	7	12	2	2,478	0	6	2,486
Jul 8	6	6	3	851	0	8	862
Jul 9	7	16	1	2,847	0	42	2,890
Jul 10	12	12	0	1,818	0	3	1,821
Jul 14	8	8	3	663	0	0	666
Jul 15	10	12	3	1,607	0	9	1,619
Jul 16	8	10	5	1,628	0	32	1,665
Jul 19	9	15	6	2,172	0	42	2,220
Jul 20	7	10	5	1,461	0	31	1,497
Jul 21	7	10	2	1,471	0	45	1,518
Jul 22	6	8	4	1,062	0	23	1,089
Jul 23	8	15	15	2,441	0	59	2,515
Jul 25	7	9	5	1,404	5	30	1,444
Jul 26	7	9	3	897	8	26	934
Jul 27	1	1	0	72	0	3	75
Jul 28	1	1	0	176	0	9	185
Jul 29	a	a	a	a	a	a	a
Jul 30	5	7	1	473	7	6	487
Aug 2	a	a	a	a	a	a	a
Aug 3	4	6	3	683	46	6	738
Aug 4	3	4	2	688	16	8	714
Aug 5	4	5	2	286	9	0	297
Aug 6	4	6	0	722	112	7	841
Aug 9	6	10	2	692	164	20	878
Aug 10	5	7	2	919	151	9	1,081
Aug 11	5	8	2	659	274	7	942
Aug 12	5	6	0	545	236	5	786
Aug 13	5	6	1	416	164	0	581
Total	13	252	114	35,963	1,192	535	37,804

^a No permit holders participated in this period.

Table 21.—Estimated subsistence salmon harvest by species and community, Kuskokwim management area, 2021.

Community	Households (HH)			Chinook		
	Total <i>N</i>	Total <i>n</i>	% Survey	Average harvest/HH	Estimated total harvest	CI (95%)
Kongiganak ^a	90	0	0%	—	—	—
N. Kuskokwim Bay	90	0	0%	—	—	—
Tuntutuliak	111	70	63%	19.5	2,164	375
Eek	99	54	55%	11.0	1,091	385
Kasigluk	119	56	47%	7.6	905	339
Nunapitchuk	123	62	50%	9.8	1,210	344
Atmautluak	76	38	50%	8.6	654	510
Napakiak	99	50	51%	7.8	775	189
Napaskiak	121	36	30%	16.8	2,034	843
Oscarville	17	15	88%	6.2	105	24
Bethel	1,750	535	31%	4.9	8,511	1,564
Kwethluk	165	95	58%	11.3	1,862	290
Akiachak	176	60	34%	16.1	2,827	988
Akiak	94	43	46%	21.8	2,052	838
Tuluksak	92	50	54%	9.6	882	171
Lower Kuskokwim	3,042	1,164	38%	8.2	25,072	2,367
Lower Kalskag	85	32	38%	6.0	513	229
Upper Kalskag	59	18	31%	7.7	454	228
Aniak	163	64	39%	8.1	1,325	449
Chuathbaluk	32	28	88%	5.6	180	27
Middle Kuskokwim	339	142	42%	7.3	2,472	542
Crooked Creek	39	29	74%	3.9	153	63
Red Devil	7	6	86%	7.9	55	0
Sleetmute	36	25	69%	3.9	140	106
Stony River ^b	18	9	50%	7.6	137	83
Lime Village ^b	5	0	0%	2.4	12	5
McGrath	119	52	44%	0.7	87	48
Takotna	26	18	69%	0.0	0	0
Nikolai	31	24	77%	7.6	237	85
Telida ^a	2	0	0%	—	—	—
Upper Kuskokwim	283	163	58%	2.9	821	167
Kuskokwim R. total	3,664	1,469	40%	18.4	28,365	2,432
Quinhagak	179	100	56%	14.8	2,656	445
Goodnews Bay	87	49	56%	4.5	388	128
Platinum	18	10	56%	4.3	78	6
S. Kuskokwim Bay	284	159	56%	11.0	3,122	460
Total	4,038	1,628	40%	7.8	31,487	2,474

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Community	Chum			Sockeye		
	Average harvest/HH	Estimated total harvest	CI (95%)	Average harvest/HH	Estimated total harvest	CI (95%)
Kongiganak ^a	–	–	–	–	–	–
N. Kuskokwim Bay	–	–	–	–	–	–
Tuntutuliak	6.5	727	164	23.0	2,549	415
Eek	3.2	316	103	15.2	1,505	517
Kasigluk	5.6	661	403	15.8	1,886	649
Nunapitchuk	4.0	495	180	26.3	3,238	1,187
Atmautluak	3.0	227	57	31.9	2,424	1,807
Napakiak	2.1	210	141	12.8	1,265	348
Napaskiak	6.6	794	453	31.7	3,831	1,105
Oscarville	1.6	27	10	12.5	212	68
Bethel	1.8	3,153	1,017	7.7	13,454	2,622
Kwethluk	4.4	720	208	14.3	2,355	449
Akiachak	4.0	707	242	21.8	3,836	2,385
Akiak	6.9	649	579	18.8	1,768	486
Tuluksak	3.8	349	137	12.1	1,110	295
Lower Kuskokwim	3.0	9,035	1,379	13.0	39,433	4,399
Lower Kalskag	1.0	86	42	6.1	521	243
Upper Kalskag	1.5	89	69	3.7	217	143
Aniak	1.4	235	178	9.0	1,463	492
Chuathbaluk	1.6	51	12	8.6	274	38
Middle Kuskokwim	1.4	461	192	7.3	2,475	559
Crooked Creek	0.7	28	23	8.4	328	75
Red Devil	0.7	5	0	14.0	98	0
Sleetmute	0.6	23	3	19.1	687	361
Stony River ^b	2.3	42	21	40.3	726	454
Lime Village ^b	4.1	21	7	51.5	258	4
McGrath	0.0	0	0	1.9	231	111
Takotna	–	0	0	–	0	0
Nikolai	0.2	6	0	0.9	28	30
Telida ^a	–	–	–	–	–	–
Upper Kuskokwim	0.4	125	29	8.3	2,356	543
Kuskokwim R. total	4.8	9,621	1,393	12.1	44,264	4,465
Quinhagak	17.7	804	297	29.5	3,169	909
Goodnews Bay	19.4	26	22	66.7	1,684	709
Platinum	36.7	63	9	1.4	660	244
S. Kuskokwim Bay	19.4	893	297	10.3	5,513	1,162
Total	12.3	10,514	1,423	12.2	49,777	4,611

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Table 21.–Page 3 of 3.

Community	Coho			Pink		
	Average harvest/HH	Estimated total harvest	CI (95%)	Average harvest/HH	Estimated total harvest	CI (95%)
Kongiganak ^a	–	–	–	–	–	–
N. Kuskokwim Bay	–	–	–	–	–	–
Tuntutuliak	3.3	371	129	0.0	0	0
Eek	6.6	652	147	0.2	16	11
Kasigluk	1.4	166	104	0.0	2	3
Nunapitchuk	2.7	329	127	0.1	9	7
Atmautluak	4.0	301	199	0.0	1	1
Napakiak	3.7	371	197	0.0	0	0
Napaskiak	14.7	1,783	778	0.0	4	7
Oscarville	4.8	81	20	0.0	0	0
Bethel	6.4	11,161	2,025	0.3	586	368
Kwethluk	7.2	1,195	334	0.1	14	19
Akiachak	9.2	1,613	686	0.3	56	69
Akiak	11.6	1,094	606	0.0	4	3
Tuluksak	5.3	490	199	0.0	0	0
Lower Kuskokwim	6.4	19,607	2,396	0.2	692	375
Lower Kalskag	0.9	80	49	0.0	0	0
Upper Kalskag	2.8	164	109	0.3	20	0
Aniak	5.8	950	373	0.1	10	9
Chuathbaluk	3.0	95	7	0.0	0	0
Middle Kuskokwim	3.8	1,289	386	0.1	30	9
Crooked Creek	4.4	170	78	0.1	5	0
Red Devil	5.0	35	0	0.0	0	0
Sleetmute	8.0	288	178	0.0	0	0
Stony River ^b	7.5	135	39	0.6	11	13
Lime Village ^b	2.9	15	8	–	–	–
McGrath	7.6	901	11	0.0	0	0
Takotna	–	0	0	–	0	0
Nikolai	3.7	115	104	0.0	0	0
Telida ^a	–	–	–	–	–	–
Upper Kuskokwim	5.9	1,659	214	0.1	16	11
Kuskokwim R. total	16.1	22,555	2,435	0.4	738	375
Quinhagak	6.2	1,103	350	0.2	28	29
Goodnews Bay	2.6	222	103	0.0	6	6
Platinum	10.5	189	91	1.0	18	3
S. Kuskokwim Bay	5.3	1,514	371	0.2	52	30
Total	6.0	24,069	2,463	0.2	790	376

Note: En dashes indicates data are not available. Bold text indicates Bayesian estimates.

^a Community was not surveyed. Harvest was not estimated due to lack of recent data.

^b Bayesian imputation was used to develop estimates.

Table 22.—Daily mean tidal catch per unit effort (CPUE), cumulative mean tidal CPUE, and percent passage for the Bethel test fishery, 2021.

Date	Chinook			Sockeye			Coho			Chum		
	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage
6/1	0	0	0	0	0	0	0	0	0	0	0	0
6/2	2	2	0	0	0	0	0	0	0	0	0	0
6/3	0	2	0	0	0	0	0	0	0	0	0	0
6/4	5	7	1	0	0	0	0	0	0	0	0	0
6/5	2	8	2	0	0	0	0	0	0	0	0	0
6/6	3	11	2	0	0	0	0	0	0	0	0	0
6/7	3	14	3	0	0	0	0	0	0	0	0	0
6/8	5	19	3	0	0	0	0	0	0	0	0	0
6/9	20	38	7	3	3	0	0	0	0	0	0	0
6/10	24	63	12	0	3	0	0	0	0	0	0	0
6/11	12	74	14	3	5	0	0	0	0	0	0	0
6/12	13	87	16	3	8	0	0	0	0	0	0	0
6/13	11	98	19	0	8	0	0	0	0	3	3	1
6/14	12	111	21	0	8	0	0	0	0	5	8	2
6/15	8	119	22	8	16	1	0	0	0	0	8	2
6/16	11	130	24	14	30	2	0	0	0	0	8	2
6/17 ^a	6	135	25	6	36	2	0	0	0	1	9	3
6/18	19	155	29	11	48	3	0	0	0	3	12	4
6/19	15	169	32	9	56	3	0	0	0	3	14	4
6/20	16	185	35	16	72	4	0	0	0	0	14	4
6/21	11	196	37	6	78	5	0	0	0	0	14	4
6/22	11	207	39	15	93	5	0	0	0	0	14	4
6/23	26	232	44	12	105	6	0	0	0	3	17	5
6/24	15	247	46	34	139	8	0	0	0	0	17	5
6/25	19	266	50	47	186	11	0	0	0	8	25	8
6/26	7	273	51	13	200	12	0	0	0	3	28	8
6/27	20	293	55	74	274	16	0	0	0	5	33	10
6/28	43	336	63	58	332	20	0	0	0	11	43	13
6/29	19	355	67	89	421	25	0	0	0	19	62	19
6/30	22	376	71	57	478	28	0	0	0	9	71	22

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Date	Chinook			Sockeye			Coho			Chum		
	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage
7/1	25	401	75	38	516	30	0	0	0	3	73	22
7/2	3	404	76	38	555	33	0	0	0	0	73	22
7/3	10	414	78	39	594	35	0	0	0	6	80	24
7/4	8	422	79	60	654	39	0	0	0	7	87	27
7/5	7	428	81	53	706	42	0	0	0	15	102	31
7/6 ^a	7	435	82	126	832	49	0	0	0	12	113	35
7/7	9	444	83	143	975	58	0	0	0	6	119	36
7/8	11	455	85	131	1,106	65	2	2	0	5	124	38
7/9	10	465	87	69	1,176	69	3	5	0	8	132	40
7/10	11	476	89	52	1,228	73	0	5	0	11	143	44
7/11	16	492	92	176	1,404	83	0	5	0	16	159	49
7/12	8	500	94	54	1,458	86	2	7	0	18	176	54
7/13	5	505	95	27	1,485	88	3	10	1	7	184	56
7/14	7	512	96	28	1,513	89	2	12	1	26	210	64
7/15	5	517	97	19	1,533	90	5	17	1	24	234	72
7/16 ^b	6	523	98	35	1,568	93	0	17	1	11	246	75
7/17	4	527	99	17	1,585	94	0	17	1	10	256	78
7/18	0	527	99	7	1,592	94	2	19	1	2	257	79
7/19	0	527	99	12	1,604	95	0	19	1	3	261	80
7/20	0	527	99	4	1,608	95	5	24	1	4	264	81
7/21 ^a	0	527	99	5	1,613	95	5	29	2	7	271	83
7/22 ^a	0	527	99	5	1,618	96	2	31	2	5	277	85
7/23	2	528	99	17	1,636	97	13	44	3	8	285	87
7/24	2	530	100	7	1,643	97	9	53	3	5	290	89
7/25	0	530	100	11	1,654	98	11	64	4	4	294	90
7/26	0	530	100	2	1,656	98	45	109	6	7	301	92
7/27 ^a	2	532	100	10	1,665	98	31	140	8	6	307	94
7/28 ^a	0	532	100	3	1,668	98	36	176	10	5	312	96
7/29 ^a	0	532	100	1	1,669	99	38	214	13	9	321	98
7/30 ^a	0	532	100	3	1,671	99	39	253	15	3	323	99

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Table 22.–Page 3 of 3.

Date	Chinook			Sockeye			Coho			Chum		
	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage	Daily mean tidal CPUE	Cumulative mean tidal CPUE	Percent passage
7/31	0	532	100	0	1,671	99	36	290	17	0	323	99
8/1 ^a	0	532	100	0	1,671	99	32	322	19	0	323	99
8/2 ^a	0	532	100	0	1,671	99	7	329	19	0	323	99
8/3 ^a	0	532	100	0	1,671	99	19	348	21	0	323	99
8/4 ^a	0	532	100	2	1,674	99	99	447	26	0	323	99
8/5 ^a	0	532	100	1	1,675	99	107	554	33	0	323	99
8/6	0	532	100	0	1,675	99	17	571	34	2	325	99
8/7	0	532	100	2	1,677	99	39	610	36	0	325	99
8/8	0	532	100	0	1,677	99	47	657	39	0	325	99
8/9	0	532	100	0	1,677	99	65	722	43	0	325	99
8/10	0	532	100	0	1,677	99	56	778	46	0	325	99
8/11	0	532	100	8	1,685	99	135	914	54	2	327	100
8/12	0	532	100	2	1,686	100	66	980	58	0	327	100
8/13	0	532	100	0	1,686	100	43	1,022	60	0	327	100
8/14 ^a	0	532	100	2	1,688	100	59	1,081	64	0	327	100
8/15 ^a	0	532	100	5	1,694	100	41	1,122	66	0	327	100
8/16	0	532	100	0	1,694	100	10	1,132	67	0	327	100
8/17 ^a	0	532	100	0	1,694	100	51	1,183	70	0	327	100
8/18 ^a	0	532	100	0	1,694	100	34	1,217	72	0	327	100
8/19 ^a	0	532	100	0	1,694	100	177	1,393	82	0	327	100
8/20 ^a	0	532	100	0	1,694	100	106	1,500	88	0	327	100
8/21 ^a	0	532	100	0	1,694	100	48	1,548	91	0	327	100
8/22 ^a	0	532	100	0	1,694	100	47	1,594	94	0	327	100
8/23	0	532	100	0	1,694	100	49	1,643	97	0	327	100
8/24	0	532	100	0	1,694	100	53	1,696	100	0	327	100
Totals	532			1,694			1,696			327		

Note: The boxes represent the central 50% of the run and the bold represent the median passage date of the run.

^a Estimated catch per unit effort (CPUE) index.

^b The use of the 8-inch mesh gillnet was discontinued after July 15.

Table 23.—Bethel test fishery cumulative catch per unit effort (CPUE), by species, 1984–2021.

Year	Chinook	Sockeye	Coho	Chum
1984	272	579	3,285	2,387
1985	114	1,654	1,790	1,327
1986	201	2,445	4,471	4,066
1987	582	2,762	2,245	4,900
1988	361	1,501	3,441	5,189
1989	523	799	2,624	2,607
1990	445	1,114	2,485	2,722
1991	172	581	1,645	1,262
1992	349	1,109	2,766	3,058
1993	472	1,705	2,765	2,587
1994	362	1,475	3,150	4,797
1995	443	1,367	1,998	3,987
1996	458	1,794	5,699	8,255
1997	478	1,424	2,130	1,959
1998	344	1,455	1,328	2,332
1999	130	1,247	422	548
2000	95	1,048	5,236	2,594
2001	122	1,211	2,914	3,395
2002	410	566	4,289	6,796
2003	649	1,718	4,819	4,815
2004	1,134	2,108	7,183	5,257
2005	883	3,019	3,678	18,192
2006	664	2,136	3,164	13,926
2007	513	1,520	3,328	10,654
2008	623	1,708	5,494	6,746
2009	706	1,521	4,495	8,254
2010	461	1,374	2,024	7,651
2011	578	1,517	3,234	10,028
2012	419	1,171	2,440	6,893
2013	261	1,146	2,865	5,708
2014	650	1,367	4,697	6,343
2015	625	2,158	2,736	2,943
2016	687	2,463	3,530	3,894
2017	376	2,690	3,245	6,785
2018	667	2,273	900	8,203
2019	848	2,685	1,801	6,427
2020	487	1,060	1,822	1,442
2021	532	1,694	1,696	327
Average 2011–2020	560	1,853	3,075	5,511

Table 24.—Chinook salmon escapements at Kuskokwim River weir projects, 2003–2021.

Year	Chinook salmon escapement						Salmon (Pitka Fork)
	Kwethluk	Salmon (Aniak)	George	KogrukluK	Tatlawiksuk	Takotna River	
2003	14,475	a	b	11,751	b	378	a
2004	28,801	a	5,392	19,880	2,833	461	a
2005	a	a	3,845	21,686	2,858	499	a
2006	17,019	6,901	4,359	19,305	1,700	537	a
2007	15,112	6,214	4,972	b	2,058	412	a
2008	5,642	2,376	3,383	9,740	1,194	413	a
2009	5,826	1,823	3,664	9,201	1,071	311	a
2010	1,716	a	1,500	5,160	554	183	a
2011	4,056	a	1,605	6,926	1,011	149	a
2012	b	b	2,362	b	1,116	238	a
2013	b	711	1,267	1,919	495	104	a
2014	3,191	1,722	2,988	3,726	2,050	a	a
2015	8,163	2,401	2,301	8,333	2,131	a	7,156
2016	b	b	2,218	7,062	2,693	a	6,371
2017	7,207	2,611	3,669	7,787	2,146	318	8,298
2018	b	2,252	3,322	6,292	a	205	5,354
2019	8,505	a	3,828	10,301	a	554	4,823
2020	a	1,228	2,418	5,645	a	357	4,825
2021	a	1,303	2,920	6,969	a	323	3,992
SEG	4,100–7,500		1,800–3,300	4,800–8,800			
Average 2011–2020	6,224	1,821	2,598	6,440	1,663	275	6,138

^a Weir did not operate.

^b Historical run timing indicates that more than 40% of the run was missed; annual escapement was not determined.

Table 25.—Sockeye salmon escapements at Kuskokwim River weir projects, 2003–2021.

Year	Sockeye salmon escapement				
	Kwethluk	Salmon (Aniak)	George	Kogrukluk	Telaquana
2003	2,930	a	14	9,203	a
2004	3,607	a	177	6,895	a
2005	a	a	272	37,685	a
2006	b	5,190	146	60,507	a
2007	5,805	2,114	65	16,798	a
2008	b	1,181	92	19,663	a
2009	4,577	1,366	54	22,216	a
2010	4,336	a	113	13,306	71,932
2011	b	a	43	8,079	35,099
2012	a	950	79	b	23,002
2013	a	966	150	7,793	28,058
2014	3,880	934	156	6,479	24,292
2015	8,998	1,504	159	6,647	95,570
2016	21,618	310	2,807	20,108	82,710
2017	28,806	b	912	24,696	145,281
2018	19,544	2,537	1,615	21,343	197,368
2019	42,212	a	3,973	32,116	198,485
2020	a	234	281	9,923	177,509
2021	a	907	937	13,534	123,958
SEG				4,400–17,000	
Average 2011–2020	17,964	1,062	1,018	15,243	100,737

^a Weir did not operate.

^b Historical run timing indicates that more than 40% of the run was missed; annual escapement was not determined.

Table 26.–Coho salmon escapements at Kuskokwim River weir projects, 2003–2021.

Year	Coho salmon escapement			
	Kwethluk	Salmon (Aniak)	George	Kogrukluk
2003	111,059	a	33,741	74,903
2004	87,448	a	12,499	26,078
2005	a	a	8,296	25,313
2006	b	b	12,693	22,300
2007	22,758	b	28,513	26,798
2008	53,582	10,974	21,931	29,300
2009	23,939	6,351	12,491	22,544
2010	b	a	12,866	14,558
2011	b	a	31,900	21,950
2012	20,627	b	14,844	13,462
2013	b	2,834	14,823	23,800
2014	48,478	8,189	35,771	54,001
2015	32,124	b	35,790	32,900
2016	38,152	b	b	b
2017	55,722	b	25,338	b
2018	b	b	8,993	8,169
2019	34,561	a	13,277	16,470
2020	a	b	21,426	b
2021	a	b	31,491	14,373
SEG	>19,000			13,000–28,000
Average 2011–2020	38,277	5,512	22,462	24,393

^a Weir did not operate.

^b Historical run timing indicates that more than 40% of the run was missed; annual escapement was not determined.

Table 27.—Chum salmon escapements at Kuskokwim River weir projects, 2003–2021.

Year	Chum salmon escapement				
	Kwethluk	Salmon (Aniak)	George	Kogrukuk	Takotna River
2003	41,813	a	30,944	23,708	3,292
2004	38,759	a	14,172	24,429	1,633
2005	a	a	14,847	194,896	648
2006	48,257	41,159	41,596	183,743	12,643
2007	62,456	25,228	62,681	53,064	8,906
2008	20,757	9,459	29,616	44,717	5,704
2009	32,226	9,336	7,940	81,829	2,528
2010	18,919	a	26,187	63,612	3,995
2011	17,552	a	45,257	76,649	8,562
2012	a	b	33,277	b	6,039
2013	a	7,685	37,945	65,648	6,516
2014	17,942	2,777	17,183	30,697	a
2015	23,071	5,511	17,554	33,091	a
2016	31,666	1,691	19,469	45,234	a
2017	52,202	9,754	39,971	85,793	6,557
2018	59,150	18,770	48,915	52,937	6,007
2019	33,100	a	43,072	71,006	5,618
2020	a	1,995	8,943	19,020	b
2021	a	537	1,371	4,153	b
SEG				15,000–49,000	
Average 2011–2020	27,401	6,883	31,159	53,342	6,550

^a Weir did not operate.

^b Historical run timing indicates that more than 40% of the run was missed; annual escapement was not determined.

Table 28.—Kuskokwim River drainage Chinook salmon aerial survey estimates, 2003–2021.

Year	Lower Kuskokwim River ^a				Middle Kuskokwim River ^a		Salmon (Aniak)
	Eek	Kwethluk Canyon C.	Kisaralik	Tuluksak	Aniak	Kipchuk	
2003	1,236	2,661	654	94	3,514	1,493	1,242
2004	4,653	6,801	5,157	1,196	5,362	1,868	2,177
2005	b	5,059	2,206	672	b	1,679	4,097
2006	b	b	4,734	b	5,639	1,618	b
2007	b	b	692	173	3,984	2,147	1,458
2008	b	487	1,074	b	3,222	1,061	589
2009	b	b	b	b	b	b	b
2010	b	b	235	b	b	b	b
2011	263	b	534	b	b	116	79
2012	b	b	588	b	b	193	49
2013	240	1,165	599	83	754	261	154
2014	189	b	622	b	3,201	1,220	497
2015	b	b	709	b	b	917	810
2016	b	b	622	b	718	898	b
2017	b	b	b	b	1,781	889	423
2018	b	b	584	b	1,534	1,123	442
2019	b	b	1,063	b	3,160	1,344	950
2020	b	721	350	b	1,264	723	269
2021	b	b	b	b	b	b	b
SEG			400–1200		1,200–2300		330–1200
Average 2011–2020	231	943	630	83	1,773	768	408

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Table 28.–Page 2 of 2.

Year	Middle Kuskokwim River ^a					Upper Kuskokwim River ^a		
	Holokuk	Oskawaluk	Holitna	Gagarayah	Cheeneetnuk	Bear (Pitka)	Salmon (Pitka)	Upper Pitka Fork
2003	1,096	844	b	1,095	810	176	1,242	197
2004	539	293	4,051	670	918	206	1,138	290
2005	510	582	1,760	788	1,155	367	1,801	744
2006	705	386	1,866	531	1,015	347	862	170
2007	b	b	b	1,035	b	165	943	131
2008	418	213	b	177	290	245	1,033	242
2009	565	379	b	303	323	209	632	187
2010	229	b	587	62	b	75	135	67
2011	61	26	b	96	249	145	767	85
2012	36	51	b	178	229	b	670	b
2013	b	38	532	74	138	64	469	b
2014	80	200	b	359	340	b	1,865	b
2015	77	b	662	19	b	1,381	2,016	b
2016	100	47	1,157	135	217	580	1,578	b
2017	140	136	676	453	660	492	687	234
2018	162	b	980	438	565	550	1,399	471
2019	719	638	1,377	760	1,345	542	1,918	330
2020	99	169	854	b	419	321	1,150	160
2021	b	b	b	b	b	b	b	b
SEG				300–830	340–1300		470–1600	
Average 2011–2020	164	163	891	279	462	509	1,252	256

^a Estimates are from aerial surveys conducted during peak spawning periods under good to fair survey conditions. Weir did not operate.

^b Survey was either not flown or did not meet acceptable survey criteria. Historical run timing indicates that more than 40% of the run was missed; annual escapement was not determined.

Table 29.—Middle Fork Goodnews River salmon escapement, 2003–2021.

Year	Chinook	Sockeye	Coho	Chum
2003	2,245	37,882	52,504	21,664
2004	4,550	53,131	42,049	32,447
2005	4,591	115,167	20,168	26,411
2006	4,558	126,734	26,909	54,599
2007	3,874	74,111	19,442	48,973
2008	2,329	41,228	37,690	39,821
2009	1,632	26,197	19,123	18,503
2010	1,968	37,273	26,287	24,794
2011	2,181	20,188	24,668	19,974
2012	1,131	30,352	a	9,512
2013	1,263	24,117	a	27,692
2014	750	41,473	a	11,518
2015	1,543	54,757	a	11,475
2016	1,659	169,544	a	33,671
2017	6,775	182,043	a	44,876
2018	b	b	b	b
2019	6,039	162,711	a	38,072
2020	b	b	b	b
2021	b	b	b	b
SEG	1,500–3,600	22,000–43,000	>12,000	>12,000
Average				
2011–2020	2,668	85,648		24,599

^a Historical run timing indicates that more than 40% of the run was missed; annual escapement was not determined.

^b Weir did not operate.

Table 30.—Kanektok River salmon aerial survey estimates, 1980–2021.

Year	Chinook	Sockeye	Coho	Chum
1980	6,172	112,501	a	a
1981	a	a	25,950	69,325
1982	a	a	71,840	a
1983	8,890	a	a	a
1984	12,182	30,840	9,360	a
1985	13,465	15,570	53,060	46,830
1986	3,643	12,090	14,385	a
1987	4,213	51,753	16,790	a
1988	11,180	30,440	9,420	20,056
1989	7,914	14,735	20,583	a
1990	a	a	6,270	a
1991	a	a	2,475	a
1992	a	a	a	4,330
1993	a	a	25,675	a
1994	7,386	a	1,285	a
1995	a	a	10,000	a
1996	a	a	a	23,656
1997	a	a	a	a
1998	a	a	a	a
1999	a	a	a	a
2000	a	a	a	a
2001	6,510	a	11,440	a
2002	a	a	a	a
2003	6,206	21,335	a	a
2004	28,375	77,780	a	a
2005	12,780	95,900	a	a
2006	a	a	a	a
2007	a	a	a	a
2008	3,659	38,675	a	a
2009	a	a	a	a

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Year	Chinook	Sockeye	Coho	Chum
2010	1,208	16,180	a	a
2011	a	a	a	a
2012	a	a	a	a
2013	2,277	53,002	a	a
2014	1,840	136,400	a	a
2015	4,919	39,970	a	a
2016	5,631	80,160	a	a
2017	a	a	a	a
2018	4,246	326,200	a	a
2019	7,212	349,073	a	a
2020	4,405 ^b	52,886 ^b	a	a
2021	4,115	53,690 ^c	a	a
SEG	3,900–12,000	15,300–41,000		

Note: Aerial surveys are those rated as fair to good, obtained between July 17 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 Survey was flown outside the peak Chinook and sockeye salmon spawning period (July 20 to August 5)
- ^c Survey was flown under poor weather conditions which hindered visibility in upper index reaches.

Table 31.—Goodnews River drainage salmon aerial survey estimates, 1980–2021.

Year	Goodnews River and Lakes			Middle Fork Goodnews River and Lakes		
	Chinook	Sockeye	Chum	Chinook	Sockeye	Chum
1980	1,228	75,639	1,975	1,164	a	3,782
1981	a	a	a	a	a	a
1982	a	a	9,700	a	a	6,300
1983	2,600	9,650	a	a	a	a
1984	3,245	12,807	17,250	1,910	8,546	9,172
1985	3,535	4,620	4,415	2,050	7,401	3,593
1986	1,068	8,960	11,850	1,249	16,990	7,645
1987	2,244	19,786	12,148	2,222	25,340	9,789
1988	a	a	a	a	a	a
1989	651	a	a	1,277	30,382	a
1990	658	27,689	a	a	a	a
1991	a	a	a	a	a	a
1992	875	a	1,950	a	a	3,270
1993	a	a	a	a	a	a
1994	a	a	a	a	a	a
1995	3,314	a	a	a	a	a
1996	a	a	a	a	a	a
1997	a	a	a	a	a	a
1998	578	3,497	2,743	731	11,393	3,619
1999	a	a	a	a	a	a
2000	a	a	a	a	a	a
2001	3,561	a	7,330	2,769	a	6,945
2002	1,470	a	3,075	1,195	2,627	1,208
2003	3,935	50,140	a	2,131	29,150	a
2004	7,462	31,695	a	2,617	33,670	a
2005	a	a	a	a	a	a
2006	a	a	a	a	a	a
2007	a	a	a	a	a	a
2008	2,155	32,500	a	2,190	13,935	a
2009	a	a	a	a	a	a

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Table 31.–Page 2 of 2.

Year	Goodnews River and Lakes			Middle Fork Goodnews River and Lakes		
	Chinook	Sockeye	Chum	Chinook	Sockeye	Chum
2010	a	a	a	a	a	a
2011	853	14,140	a	a	a	a
2012	378	16,710	a	355	a	a
2013	a	a	a	a	a	a
2014	630	a	a	612	12,262	a
2015	991	38,390	a	515	24,780	a
2016	1,120	90,060	a	1,301	68,978	
2017	a	a	a	a	a	a
2018	a	a	a	a	a	a
2019	2,462	162,930	a	a	a	a
2020	1,098	55,110	a	1,402	18,390	a
2021	2,273	95,020	a	4,115	21,410	a
SEG	640–3,300	9,600–18,000	b	b	b	b

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

^b Aerial survey escapement goal was discontinued in 2004.

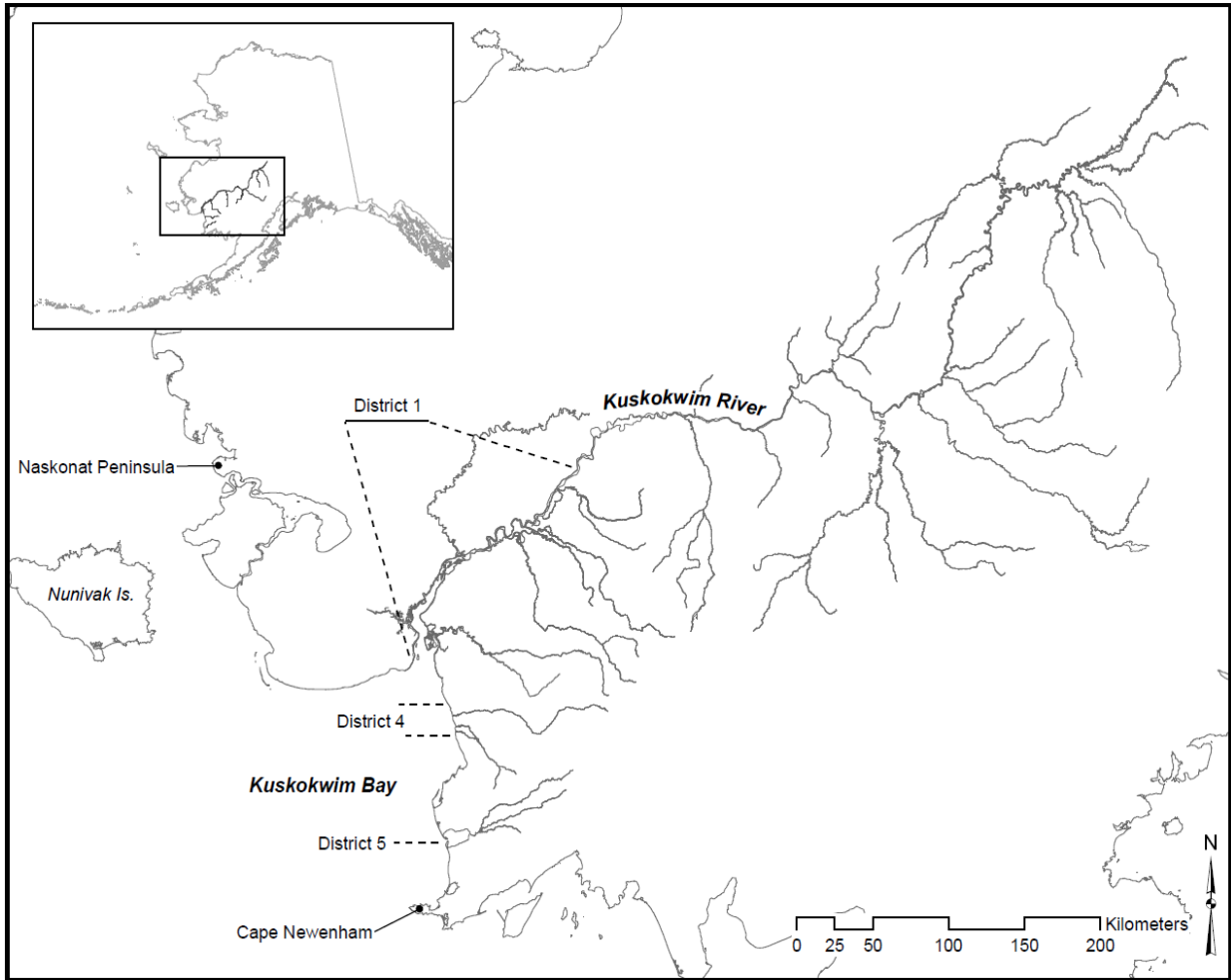


Figure 1.—The Kuskokwim management area and commercial fishing districts.

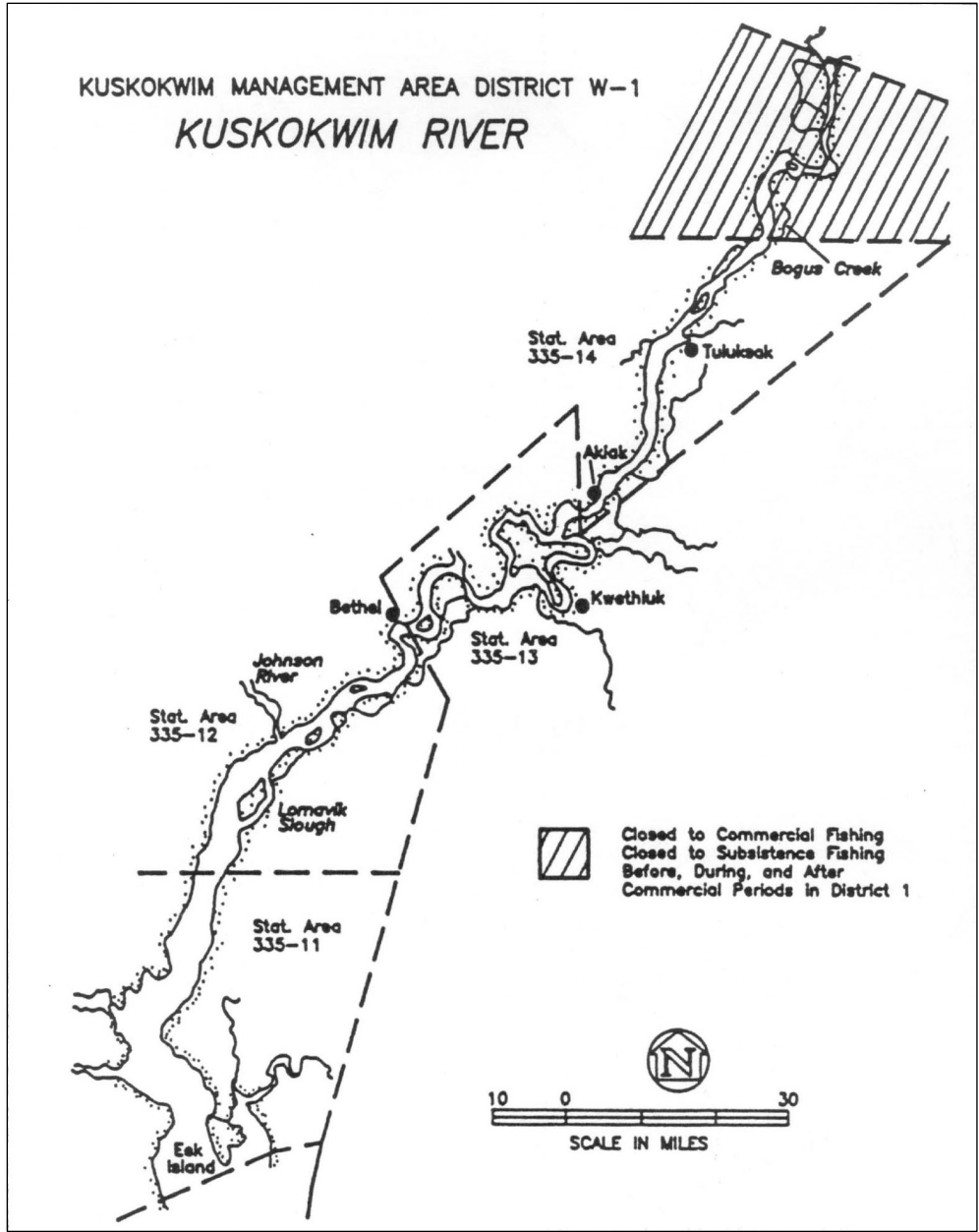


Figure 2.—Map of commercial fishing District W-1, Kuskokwim management area.

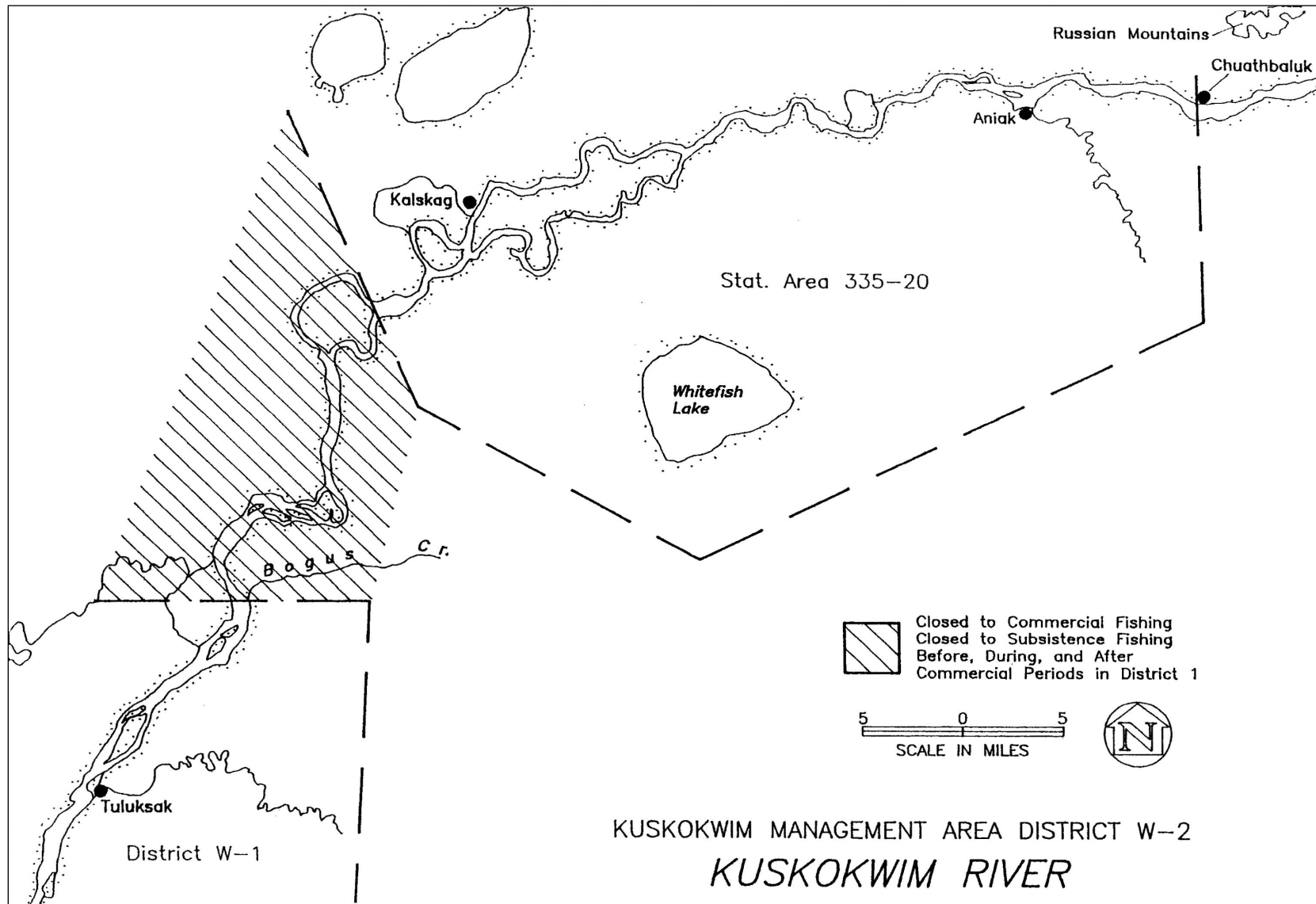


Figure 3.—Map of commercial fishing District W-2, Kuskokwim management area.

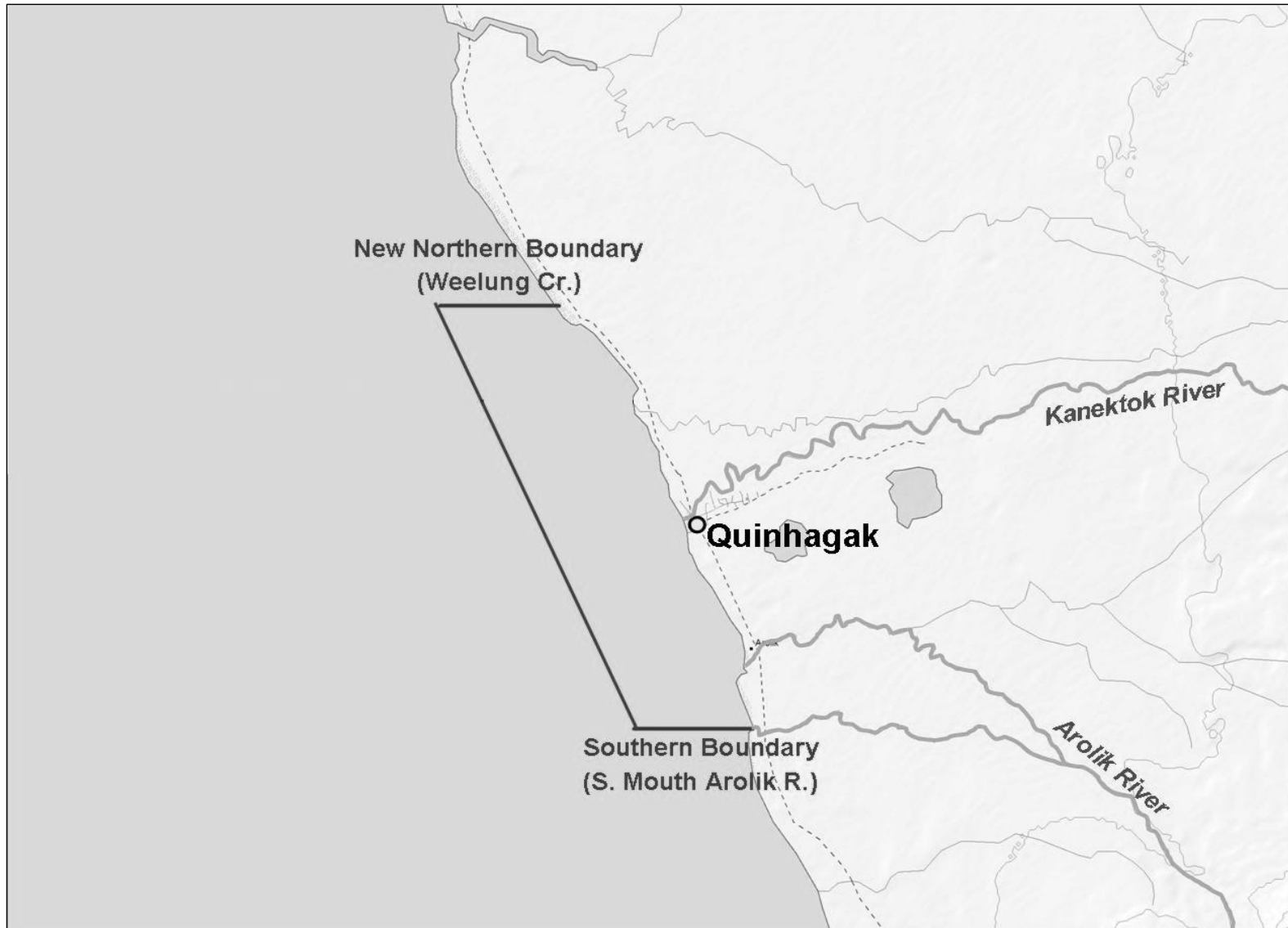


Figure 4.—Map of commercial fishing District W-4, Kuskokwim management area.

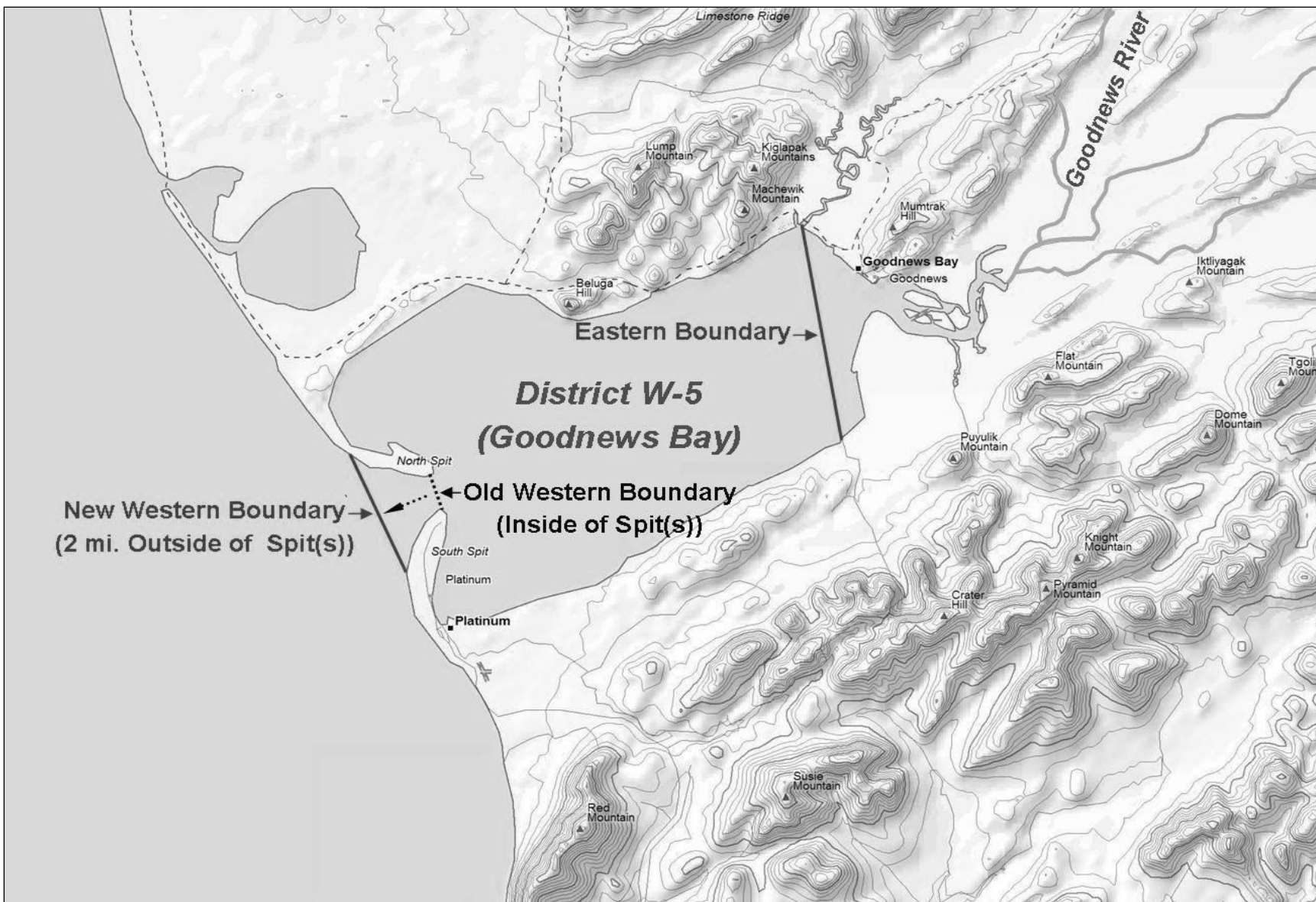


Figure 5.—Map of commercial fishing District W-5, Kuskokwim management area.

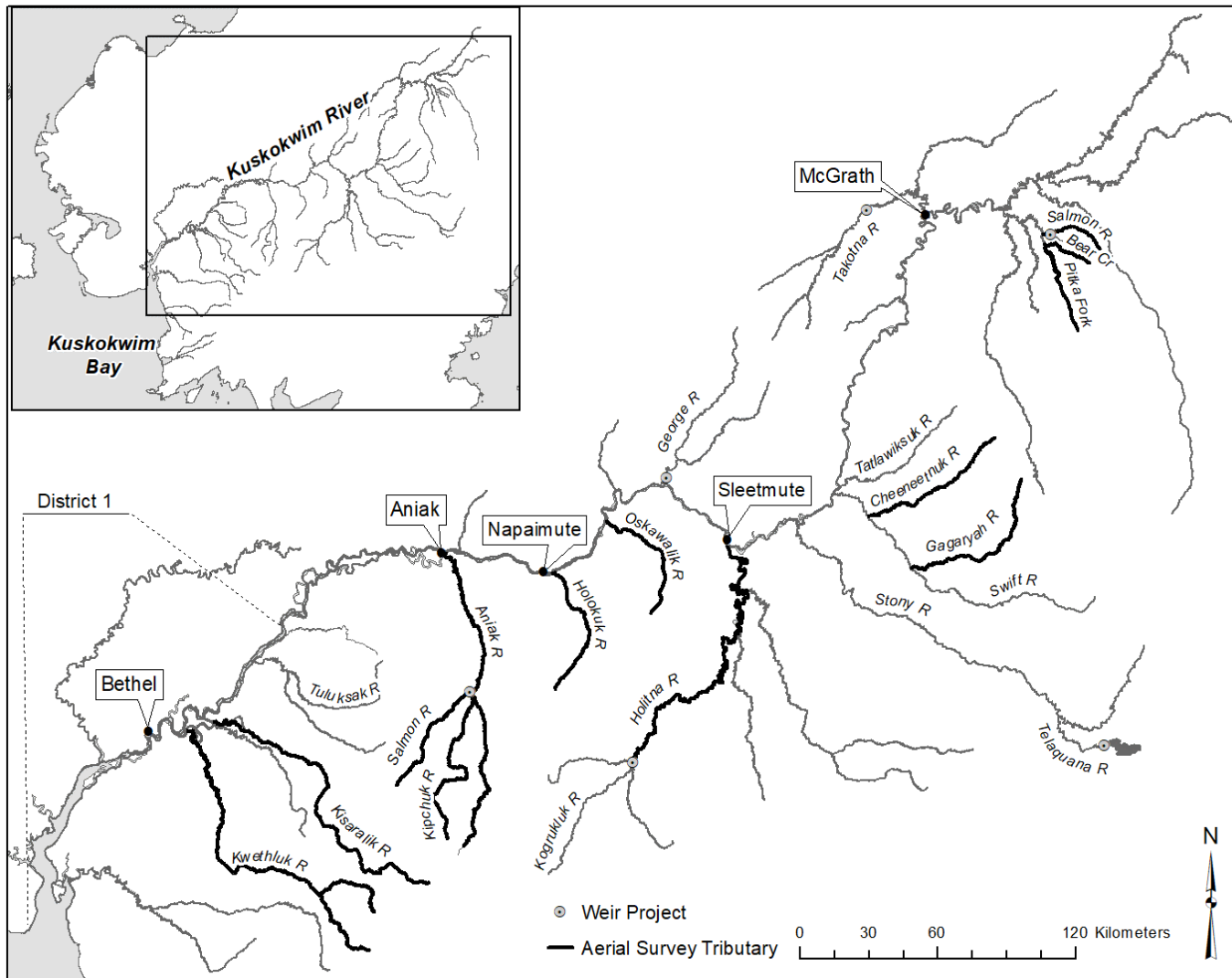


Figure 6.–Kuskokwim River tributaries where salmon escapement was monitored by ADF&G and partners, 2021.

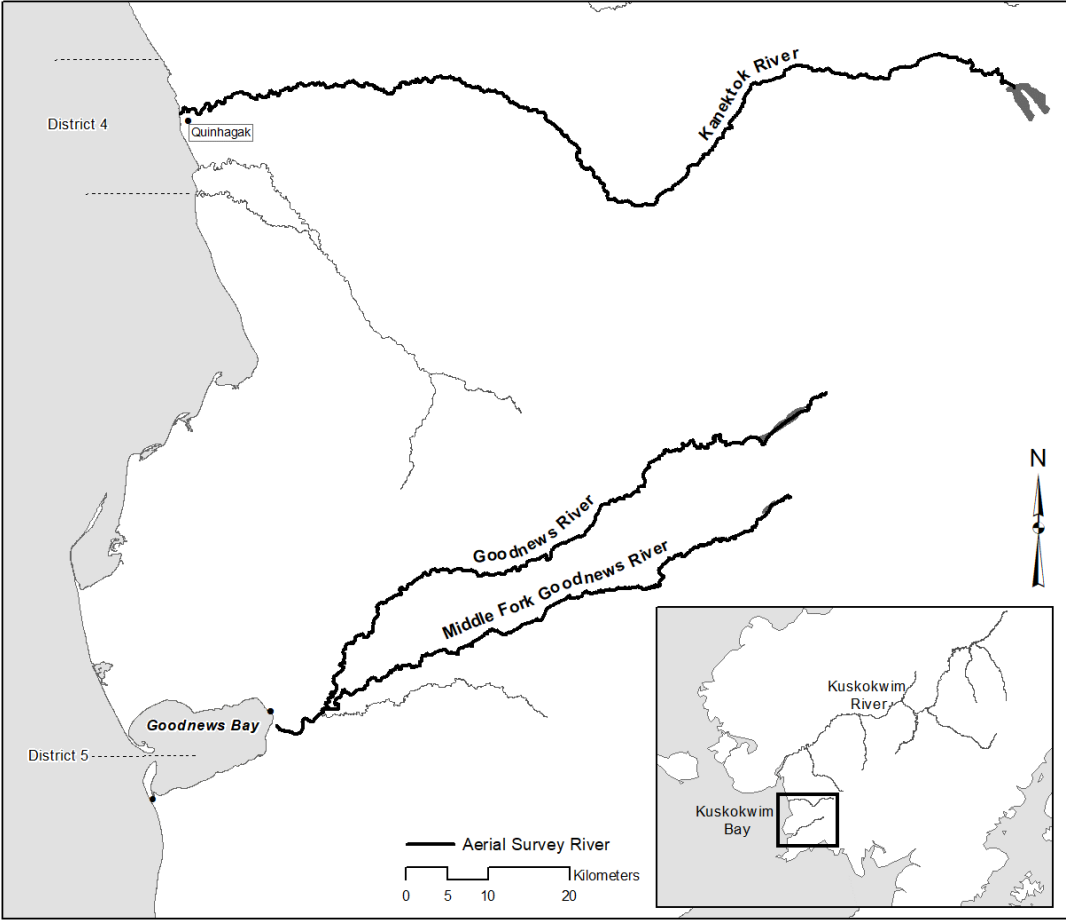


Figure 7.–Kuskokwim Bay rivers where salmon escapement was monitored in 2021.