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Kuskokwim River Salmon Stock Status and Kuskokwim Area Fisheries, 2022: A Report to the Alaska Board of Fisheries, January 2023

by

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and

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December 2022

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

Symbols and Abbreviations

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

Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Mathematics, statistics

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

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by
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ABSTRACT

This report provides the Alaska Board of Fisheries with information on Kuskokwim Area salmon stock status, including escapement and harvest data for the January 2023 regulatory meeting. The Alaska Department of Fish and Game is responsible for managing Kuskokwim Area salmon stocks for sustained yield. Subsistence fishing occurs throughout the area whereas commercial salmon fishing is restricted to 4 districts within the Kuskokwim Area. Commercial fishing Districts 1 and 2 are within Kuskokwim River; Districts 4 and 5 are in Kuskokwim Bay and target salmon bound for the Kanektok and Goodnews Rivers. Chinook salmon runs to the Kuskokwim River have been low since 2010, which led to severe restrictions to conserve Chinook salmon from 2014–2022 and Federal Special Actions enacted within the Yukon Delta National Wildlife Refuge. Since 2014, subsistence harvest of Chinook salmon has been well below established amounts reasonably necessary for subsistence (ANS), and commercial and sport fisheries have been closed during the Chinook salmon run. Chum salmon runs to the Kuskokwim River have declined to some of the lowest runs on record since 2020. Abundance of coho salmon to the Kuskokwim River have been below average since 2018, with 2022 being the lowest on record. Sockeye salmon abundance from 2016–2020 was average to above average for both lake and river-type life histories. The 2021 and 2022 sockeye salmon runs were mixed throughout the drainage with above-average lake-type abundance and below-average river-type abundance.

Keywords: Kuskokwim Area, Chinook salmon, *Oncorhynchus tshawytscha*, chum salmon, *O. keta*, sockeye salmon, *O. nerka*, coho salmon, *O. kisutch*, subsistence, commercial, fishing, stock status, Alaska Board of Fisheries

INTRODUCTION

The Alaska Department of Fish and Game (department) is responsible for managing Kuskokwim Area (KMA) salmon stocks for sustained yield by policies set forth by the Alaska Board of Fisheries (board), including the *Policy for the Management of Sustainable Salmon Fisheries* (5 AAC 39.222) and *Policy for Statewide Salmon Escapement Goal*s (5 AAC 39.223). For all statewide fisheries, the Alaska State Legislature has designated subsistence fishing as the highest priority among consumptive uses of the resource (AS 16.05.258: *Subsistence use and allocation of fish and game*).

The KMA consists of all waters of Alaska between Cape Newenham and Naskonat Peninsula, including Nunivak and St. Matthew Islands (Figure 1). There are 38 communities consisting of approximately 4,800 households within the KMA. Of those households, approximately 75% are situated within the Kuskokwim River drainage (Shelden et al. 2016). Much of the subsistence salmon fishing effort occurs within the mainstem of the Kuskokwim River; however, subsistence 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 Rivers. Residents of Kipnuk, Kwigillingok, and Kongiganak, located on 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, which are situated near the Bering Sea Coast, harvest salmon from coastal waters and local streams (Figure 1).

There are 4 commercial salmon fishing districts within the KMA (Figure 2). Districts 1 and 2 are within the Kuskokwim River; Districts 4 and 5 are in Kuskokwim Bay and target salmon bound for the Kanektok and Goodnews Rivers. Although sport fishing effort and harvests do occur, harvest is much smaller and is covered in a separate report by the Division of Sport Fish (Chythlook 2022; Alaska Sport Fishing Survey database).

Management of Kuskokwim River salmon fisheries is complex due to the large size of the drainage; multiple species with overlapping run timing; and the vast distances between where fisheries and escapement monitoring occur. Chinook salmon *Oncorhynchus tshawytscha* begin

entry into the Kuskokwim River in late May, whereas sockeye *O. nerka* and chum *O. keta* salmon begin their entry in mid-June. Chinook and sockeye salmon runs decline in early July and the chum salmon run begins to decline in late July when coho salmon *O. kisutch* run entry begins (Figure 3). Coho salmon entry diminishes in late August to early September. Fishery management information on run size and timing by species is limited until the salmon are distributed throughout the drainage and on their spawning grounds, which can be hundreds of miles from where the fisheries have been initiated.

Kuskokwim Bay salmon have similar run timing into the Kanektok, Goodnews, and Arolik Rivers. These are small drainages in comparison to the Kuskokwim River. Although evaluation of run size and timing in Kuskokwim Bay rivers is not immediate, it is much timelier when weirs are operating (typically 2–10 days from time of entry) than that of the Kuskokwim River. In recent years funding reductions have prevented Kanektok River or Middle Fork Goodnews River weirs from operating. More recently, all run size and escapement evaluation has occurred with aerial surveys and commercial catch statistics.

Salmon abundance in the KMA is primarily assessed with weirs and aerial surveys. Salmon escapements are evaluated by weirs on up to 9 tributary streams. Aerial surveys are flown during peak spawning abundances on up to 16 tributaries for Chinook salmon and in 2 tributaries for sockeye salmon. In addition, a drainagewide run reconstruction is used to estimate the total run and escapement of Kuskokwim River Chinook salmon (Larson 2022).

FISHERIES

SUBSISTENCE

The subsistence salmon fishery in the KMA is one of the largest in the state and supports some of the largest subsistence salmon harvests in North America. Many households throughout the region are involved in harvesting, processing, and preserving salmon for subsistence use. The movement of families from permanent winter communities to summer fish camps, situated along rivers and sloughs, is a significant element of annual subsistence harvest efforts. Approximately 2,400 households in the KMA annually harvest salmon for subsistence use (Shelden et al. 2016). Many other households that are not directly involved in catching salmon participate by assisting family and friends with cutting, drying, smoking, and associated preservation activities (salting, canning, and freezing). Since 1994, when the department began acquiring reasonably complete statewide coverage of subsistence harvest survey data, over 50% of Chinook salmon harvested under subsistence regulations have been taken in the KMA, mostly in the Kuskokwim River drainage. Between 2010 and 2014 (study years 2009–2013), the Division of Subsistence conducted comprehensive subsistence harvest and use surveys in 21 KMA communities. Results from these studies indicate that, on average, salmon contribute approximately 43% of the total wild resource harvest (in edible pounds) in lower Kuskokwim River communities, 61% in middle Kuskokwim River communities, and 43% in upper Kuskokwim River communities (Brown et al. 2012, 2013; Ikuta et al. 2014, 2016; Runfola et al. 2017). The board made a positive customary and traditional use finding for each salmon species in the Kuskokwim River drainage and, in 2013, revised the amounts reasonably necessary for subsistence (ANS) to the following: 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 *O. gorbuscha*. The ANS range for District 4 (Quinhagak) and District 5 (Goodnews Bay) is 6,900–17,000 salmon, and the remainder of the Kuskokwim Area is 12,500–14,400 salmon.

Prior to 2012, the Kuskokwim River subsistence fishery was largely unrestricted. Beginning in 2012, subsistence fishing activity has been reduced significantly due to management restrictions in response to low Chinook salmon abundances and subsequent conservation measures. Harvest restrictions have persisted annually through the Chinook salmon run and have not been relaxed until chum and sockeye salmon abundance exceeded that of Chinook salmon to allow for predominantly chum and sockeye salmon harvest opportunities. In 2021 and 2022, severe restrictions continued through July in response to record low chum salmon abundance. In 2022, subsistence fishing was closed on the Kuskokwim River for the first time ever between August 17 and September 15 to conserve coho salmon.

COMMERCIAL

The KMA commercial fishery was relatively stable during 1987–1996 with harvests ranging from 740,000 to 2.3 million fish, 714–824 permits fished, and exvessel values ranging from $2.9 million to $12.7 million (Poetter et al. 2017). Beginning in 1997, salmon markets began to decline, which led to a decreasing trend in fishing effort, number of fish harvested, and the exvessel value of the fishery. From 1997–2002, commercial salmon harvests in the area ranged from 185,000 fish in 2002 to 758,000 fish in 1998. Effort decreased from 707 permits in 1998 to 407 permits in 2002, and the subsequent exvessel value of the fishery decreased from $1.6 million in 1998 to $324,000 in 2002. Poor Chinook and chum salmon runs from 1999 through 2001 resulted in the Kuskokwim River having limited commercial salmon fishing opportunity in June and July (Elison et al. 2015). 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 opportunity in District 1. The same factors limited commercial fishing opportunity during July in both Districts 4 and 5 and led to registered buyers imposing harvest limits on fishers (Poetter et al. 2017). A fish processing plant located in Platinum began operation in 2009 and improved processing capacity in the area until its closing in 2016. From 2013–2015, commercial fishing opportunity was considerably reduced due to the poor Chinook and chum salmon runs and the increased dependence on other salmon species for subsistence uses. Between 2016 and 2019, there was no large-scale commercial fish processor operating in the KMA and commercial harvest consisted of a small number of catcher–seller permits fishing primarily for coho salmon. In 2020 and 2021, a single salmon processor operated within Kuskokwim Bay Districts 4 and 5. Kuskokwim River District 1 commercial fisheries were limited to individuals registered as catcher–sellers in 2020 and 2021(Smith and Gray 2022). There were no large-scale commercial fish processors operating in the KMA in 2022 and commercial fisheries were once again limited to individuals registered as catcher–sellers.

SALMON ASSESSMENT PROJECTS

Salmon abundance in the KMA is primarily assessed with weirs, test fisheries, aerial surveys, and a statistical run reconstruction for Kuskokwim River Chinook salmon. Additional assessment projects include a recently developed sonar project, postseason subsistence harvest surveys, and inseason subsistence harvest reports, as well as local and traditional knowledge. Salmon escapements are evaluated by weirs on up to 11 tributary streams. Weir operations are facilitated through cooperative partnerships with various federal, tribal, and regional nongovernmental organizations (Dickerson et al. 2019). Aerial surveys are flown during peak spawning abundances in up to 16 tributaries for Chinook salmon and in 2 tributaries for sockeye salmon.

BETHEL TEST FISHERY

Daily inseason assessment of Kuskokwim River salmon run strength and timing is assessed from a drift gillnet test fishery operated near Bethel. The Bethel test fishery (BTF) is located at river mile 80 of the Kuskokwim River, which is the midpoint of District 1 (Figure 2). The project began in 1984 and the methodology has remained largely unchanged (Lipka and Poetter 2016). From early June through late August the BTF crew conducts systematic gillnet drifts beginning 1 hour after each high tide. The drifts occur at 3 stations across the width of the channel. Each drift is 20 minutes in duration. Two 50-fathom gillnets are used: one net is 5.375-inch mesh and the other is 8-inch mesh. Both mesh sizes are operated from early June through July 15 when Chinook, sockeye, and chum salmon all occur in relatively high abundance. The 8-inch mesh gillnet is discontinued on July 16 when Chinook salmon abundance diminishes. Test fishing with the 5.375-inch mesh gillnet continues until August 24.

The test fishery catch from each tide is tallied by species and distributed to charities or local area residents. Catch statistics for Chinook, sockeye, chum, and coho salmon are presented as daily catch per unit effort (CPUE) indices and a season cumulative CPUE index by species. Comparisons are made with test fishing results from previous years and relationship to escapement projects to assess relative abundance and run timing. The comparisons are subjective in that managers need to consider variables such as water level, fishing patterns, and changing river morphology when comparing data between or within years.

KUSKOKWIM RIVER SONAR

An emerging Kuskokwim River inseason assessment project is a mainstem sonar project operated 12.5 miles 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 BTF and inseason harvest monitoring.

KWETHLUK RIVER WEIR

The Kwethluk River weir is operated by the United States Fish and Wildlife Service (USFWS) from approximately June 25 to September 10 to assess Chinook, sockeye, coho, and chum salmon. The Kwethluk River weir was operated in 1992 and then again during 2000–2019 and 2022.

TULUKSAK RIVER WEIR

The Tuluksak River weir was operated by USFWS approximately June 25–September 10 to assess Chinook, sockeye, chum, and coho salmon. The Tuluksak River weir was in operation from 1991 to 1994 and then from 2001 to 2017. The project was discontinued after 2017.

SALMON RIVER (ANIAK) WEIR

The Salmon River (Aniak) weir is operated approximately June 15–August 15 to assess Chinook, chum, coho, and sockeye salmon. The Salmon River provides an index of salmon spawning populations for the Aniak River drainage. The Salmon River weir was operated 2006–2009, 2012–2018, and 2020–2022 (Dickerson et al. 2019).

GEORGE RIVER WEIR

The George River weir is operated approximately June 15–September 20 to assess Chinook, chum, and coho salmon. Due to its proximity to the confluence with the Kuskokwim River, the weir accounts for nearly all salmon migrating upstream to spawning habitat within the drainage. The George River weir has been in operation since 1996 (Dickerson et al. 2019).

KOGRUKLUK RIVER WEIR

The Kogrukluk River weir is operated approximately June 26–September 25 to assess Chinook, chum, coho, and sockeye salmon. The Kogrukluk River weir has been operated annually since 1976 and is the department's most longstanding salmon assessment project in the KMA. Beginning in 1981, the weir operations were extended to include coho salmon (Baxter 1982). The Kogrukluk River provides an index of salmon spawning populations for the Holitna River drainage (Dickerson et al. 2019).

TELAQUANA RIVER WEIR

The Telaquana River weir is operated from July 3–August 26 and has operated annually since 2010. The weir is located ⅔ of a mile downstream of the Telaquana Lake outlet. Although all 5 salmon species have been observed at the weir site, only sockeye salmon return to the system in considerable numbers; therefore, the Telaquana River weir operational period was designed to encompass only the sockeye salmon run. Aerial surveys and rafting reconnaissance have indicated that there are no spawning populations of sockeye salmon in the Telaquana River downstream of the weir site (Dickerson et al. 2019).

TATLAWIKSUK RIVER WEIR

The Tatlawiksuk River weir was operated approximately June 15–September 20 to assess Chinook, sockeye, chum, and coho salmon. The weir operated annually 1998–2017 (Dickerson et al. 2019). The project was discontinued after 2017.

SALMON RIVER WEIR (PITKA FORK)

The Salmon River (Pitka Fork) weir began operations in 2015 to assess Chinook salmon escapement and is operated approximately June 20–August 15 each season (Dickerson et al. 2019).

KANEKTOK RIVER WEIR

The Kanektok River weir was operated approximately June 25–August 15 to assess Chinook, sockeye, and chum salmon. Escapement estimates for coho and pink salmon are incomplete because the project did not operate through the entire coho and pink salmon runs. The Kanektok River weir was operated during 2001–2015 except for 2006 when the weir was not operational. The project was discontinued after 2015 due to loss of funding and the absence of a commercial fishery (Dickerson et al. 2019).

MIDDLE FORK GOODNEWS RIVER WEIR

The Middle Fork Goodnews River weir was operated approximately June 25–July 31 to assess Chinook, sockeye, chum, and coho salmon. The Goodnews River weir was in operation 1991–2017 and 2019. The project was discontinued after 2019 due to loss of funding and the absence of a commercial fishery (Dickerson et al. 2019).

AERIAL SURVEYS

Aerial survey-based escapement assessments do not represent the entire spawning population in 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. There are 14 aerial surveys that have been identified as priority for the KMA Chinook salmon assessment program. These surveys have long-term data sets and have been relatively consistent for providing usable data. Aerial surveys serve as an index of abundance that are represented as raw, unexpanded counts.

Aerial surveys are generally conducted on clearwater streams, lakes, and coastal streams throughout the KMA. Some tributaries in the middle and upper Kuskokwim River are sometimes stained from organics or clouded by glacier runoff, both of which markedly affect the ability to enumerate 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.

STOCK STATUS

KUSKOKWIM RIVER

Chinook Salmon

A sharp decline of Kuskokwim River Chinook salmon abundance occurred in 2010 (Table 1). The 2012–2014 Kuskokwim River Chinook salmon runs were the lowest estimated total runs on record. Chinook salmon runs from 2015–2018 showed improvement and have remained consistent, but they were still well below the historical average. The 2019 Chinook salmon total run was near average and was the largest run observed since 2009. Chinook salmon total runs between 2020 and 2022 declined compared to the 2019 run and were like run sizes observed during 2015–2018. These poor runs have resulted in restrictions to subsistence fisheries and delay of chum and sockeye salmon directed subsistence and commercial fisheries to avoid incidental catch of Chinook salmon. Kuskokwim River Chinook salmon subsistence harvest has been below the established ANS since 2011. Fishing restrictions have resulted in escapements that generally fall within all established sustainable escapement goals (SEG), which have the highest potential to meet future escapement and harvest needs.

Escapement

Chinook salmon escapement has been monitored with weirs operated on up to 8 tributary streams (Figure 4; Table 2) and with peak aerial survey counts at up to 16 tributaries distributed throughout the drainage. In 2013, the total run of Chinook salmon to the Kuskokwim River during 1976–2011 was estimated (reconstructed) using a model developed for data-limited situations (Bue et al. 2012). This model was modified in 2018 by incorporating results from a multiyear mark–recapture study conducted by the department from 2014 to 2017. The analysis found that previous estimates had overestimated the abundance of Chinook salmon, and thus total run and escapement estimates

from 1976 to 2018 were adjusted (Table 1; Liller et al. 2018). From the Chinook salmon run reconstruction work, a Chinook salmon drainagewide SEG of 65,000–120,000 fish was established and 3 weir-based tributary SEGs were revised in 2013. The drainagewide SEG has been achieved every year since 2014. The drainagewide SEG for Chinook salmon is considered the most appropriate SEG for evaluation of the Chinook salmon stock. Since 2018, the 3-weir-based SEGs at the Kwethluk, George, and Kogrukluk Rivers have been achieved or exceeded (Table 2). In addition to the drainagewide and weir-based SEGs there are 7 tributary aerial survey-based SEGs within the Kuskokwim River drainage (Table 3). When assessed, approximately 84% of the SEGs were achieved or exceeded since 2018.

Current escapement goals for Kuskokwim River Chinook salmon stocks are as follows:

		Current escapement goal		
Stock unit	Enumeration method	Goal	Type	Year established
Kuskokwim River	Run reconstruction	65,000–120,000	SEG	2013
Aniak River	Aerial survey	1,200–2,300	SEG	2005
Cheneetnuk River	Aerial survey	340–1,300	SEG	2005
Gagaraya River	Aerial survey	300–830	SEG	2005
George River	Weir	1,800–3,300	SEG	2013
Kisaralik River	Aerial survey	400–1,200	SEG	2005
Kogrukluk River	Weir	4,800–8,800	SEG	2013
Kwethluk River	Weir	4,100–7,500	SEG	2013
Pitka Fork Salmon River	Aerial survey	470–1,600	SEG	2005
Salmon River (Aniak Drainage)	Aerial survey	330–1,200	SEG	2005

Harvest

The subsistence fishery has constituted 90–99% of the total harvest of Chinook salmon on the Kuskokwim River since 2000. The average annual subsistence harvest from 2010–2021 was 33,180 fish (Table 4). It is important to recognize that since 2012, subsistence fishing opportunity for Chinook salmon has been heavily restricted except for 2013, which saw subsistence fishing restrictions enacted later in the season when the forecasted run did not materialize as anticipated. Below average runs were projected for 2016–2019 and 2021–2022 that prompted a very conservative management approach to the Chinook salmon fishery. Restrictions to the subsistence fishery included: an early season subsistence fishing closure through June 11; limiting the use of gillnets to 6-inch mesh gillnets of 60–100 feet or less in length for targeting nonsalmon species; gillnet closures in specific tributaries; the requirement of live release of Chinook salmon from fish wheels, dip nets and hook and line; time and area openings; and limiting the length of 6-inch mesh gillnets during the chum and sockeye salmon season. Sport fishing for Chinook salmon was also closed areawide for the entire season.

Since 2014, Federal Special Actions restricted subsistence fishing to federally qualified users within the Yukon Delta National Wildlife Refuge. Subsistence harvests of Chinook salmon since 2014 were well below average due to the low runs and extensive restrictions placed on the subsistence fishery (Table 4). Because of subsistence restrictions in 2022, harvest is also expected to be well below average and similar to 2020 and 2021.

Chinook salmon are harvested incidentally in the chum salmon directed commercial fishery during late June and July under a guideline harvest range of 0–50,000 fish. Most of the Chinook salmon

caught in the commercial fishery during 2013–2015 were not sold because buyers agreed to not purchase them (Table 5). Between 2016 and 2022, the KMA no longer had a large-scale commercial processor operating in the area, so a very limited commercial opportunity was provided for those permit holders registered as catcher–sellers (Table 5). Due to the number of fishery participants, the harvest numbers are confidential and there is no historical comparison to be made.

Chum Salmon

Kuskokwim River chum salmon escapements have varied widely since 2018. The 2020 chum salmon run was well below average, the 2021 chum salmon run was the lowest on record, and the 2022 chum salmon run was the second lowest on record. Exploitation from commercial harvest has been limited due to Chinook and chum salmon conservation measures and the lack of a commercial processor in the last 6 years.

Escapement

Chum salmon escapement has been monitored with weirs operated on up to 7 tributary streams (Figure 4; Table 6). The only chum salmon escapement goal in the Kuskokwim River drainage is at the Kogrukluk River weir (SEG: 15,000–49,000 fish). The goal was established in 2005 and was achieved or exceeded annually from 2013–2020 (Table 6). The escapement goal was not achieved in 2021 or 2022 and all other assessment projects had poor escapements. The department does not currently estimate total chum salmon run size or escapement for the Kuskokwim River (Dickerson et al. 2019).

Harvest

Since the late 1990s, the chum salmon fishery has been constrained by low market interest in chum salmon, limited processing capacity, and, more recently, reduced opportunities due to Chinook salmon conservation measures. Beginning in 2016, the Kuskokwim River no longer had a large-scale commercial processor operating in the area, and thus a very limited commercial opportunity was provided for those permit holders registered as catcher–sellers (Table 5). Due to the number of fishery participants, the harvest numbers are confidential and there is no historical comparison to be made.

Kuskokwim River annual chum salmon subsistence harvest during 1990–2018 averaged approximately 67,000 fish (Table 7). Chum salmon ANS for the Kuskokwim River is 41,200–116,400 fish. Subsistence harvest of chum salmon in 2019 were 34,568, 26,920 in 2020, and 9,621 in 2021. These counts were below average due to fishing restrictions implemented for the conservation of Chinook and chum salmon. Given subsistence fishing restrictions for the protection of Chinook, chum, and coho salmon, total harvest of chum salmon in 2022 is expected to once again be below the 1990–2018 average and ANS.

Sockeye Salmon

Understanding of sockeye salmon abundance in the Kuskokwim River has greatly improved with the incorporation of a monitoring project at Telaquana Lake and the establishment of a mainstem sonar project in the lower Kuskokwim River. The Telaquana Lake weir project monitors the lake-type life history of sockeye salmon, whereas all other weir projects in the Kuskokwim River drainage monitor mostly river-type sockeye salmon (McPhee et al. 2009, Head and Smith 2018). Project results have shown that Telaquana Lake is a major contributor to overall Kuskokwim River sockeye salmon abundance and escapement (Table 8). Kuskokwim River sonar has successfully

enumerated sockeye salmon in the lower Kuskokwim River since 2018. Annual passage estimates at the sonar indicated that the sockeye salmon run has remained relatively stable since 2018.

Escapement

Sockeye salmon escapement has been monitored on up to 6 tributary weir projects operated throughout the Kuskokwim River drainage (Figure 4; Table 8). The only escapement goal for sockeye salmon is at the Kogrukluk River weir (SEG: 4,400–17,000 fish). The escapement goal was established in 2010 and was achieved or exceeded annually since 2010. Escapement goal performance in 2012 is unknown because the weir was inoperable for a large portion of the sockeye salmon run (Table 8). The department does not currently generate estimated total sockeye salmon escapement for the Kuskokwim River (Dickerson et al. 2019).

Harvest

Kuskokwim River sockeye salmon are targeted in subsistence and commercial fisheries. In 2004, the board established a commercial guideline harvest level of 0–50,000 sockeye salmon. Between 2016 and 2022, the KMA no longer had a large-scale commercial processor operating in the area, and thus a very limited commercial opportunity was provided for those permit holders registered as catcher–sellers (Table 5). Due to the number of fishery participants, the harvest numbers are confidential and there is no historical comparison to be made.

Average annual subsistence harvest from 1990–2018 was approximately 43,000 fish and ANS is 32,200–58,700 sockeye salmon (Table 9). The subsistence harvests of sockeye salmon were 48,745 in 2019, 43,499 in 2020, and 44,264 in 2021. These counts were near average despite restrictions on Chinook and chum salmon harvest opportunity. Total harvest of sockeye salmon in 2022 is expected to be near 2019–2021 levels.

Coho Salmon

Advances in estimating Kuskokwim River coho salmon run size are ongoing. Bethel test fish and weir data indicate that coho salmon runs have been below average since 2018. Additionally, assessment indicated that the 2022 coho salmon run may have been one of the lowest on record. Kuskokwim River sonar has successfully enumerated most of the coho salmon run in the lower Kuskokwim River since 2020. Coho salmon sonar passage in 2022 was the lowest since 2020; however, additional years of data are needed to better understand coho salmon passage estimates as they relate to run size.

Escapement

Coho salmon escapement has been monitored with weirs operated on up to 6 tributary streams (Figure 4: Table 10). The Kogrukluk River escapement goal (SEG: 13,000–28,000 fish) has been achieved or exceeded every year it was assessed from 1999 to 2017 (Table 10). The Kogrukluk River escapement goal was not met in 2018, met in 2019 and 2021, and not assessed in 2020 or 2022. The Kwethluk River escapement goal (SEG: >19,000 fish) was achieved or exceeded every year it was assessed during 2000–2019 (Table 10). The 2022 preliminary Kwethluk River escapement estimate indicates that the escapement goal was not achieved.

Harvest

Kuskokwim River coho salmon have historically been harvested primarily in the commercial fishery, which has ranged from 23,593 to 937,299 fish. Beginning in 2016, the Kuskokwim Area no longer had a large-scale commercial processor operating in the area, so a very limited

commercial opportunity was provided for those permit holders registered as catcher/sellers (Table 5). Due to the number of commercial fishery participants, the harvest numbers are confidential and there is no historical comparison to be made.

Kuskokwim River annual subsistence harvest from 1990–2018 averaged approximately 36,000 coho salmon, with ANS being 27,400–57,600 fish (Table 11). Subsistence harvests of coho salmon were 31,167 in 2019, 31,958 in 2020 and 22,555 in 2021. Harvest in 2022 is expected to be well below the 1990–2018 average because subsistence fishing restrictions were implemented in August and September to conserve coho salmon.

KUSKOKWIM BAY

Quinhagak (District 4)

Escapement

A salmon enumeration weir was operated on Kanektok River between 2001 and 2015 at river mile 45 from approximately June 25–August 15 (Table 12). Given the relatively short data series, no formal escapement goals for any species were developed for this weir. Comparison of escapement among years is problematic because a substantial number of Chinook, chum, and coho salmon spawn downstream of the weir site. Since the weir project ceased operations in mid-August, coho salmon total abundance counts were incomplete.

Aerial survey escapement goals have been established for Chinook and sockeye salmon (Table 13). Sockeye salmon escapement goals (SEG: 15,300–41,000 fish) have been achieved or exceeded in each of the last 10 years that aerial survey data are available with 2019 having the highest escapement estimate on record since 1980 (Table 13). Aerial survey data for Chinook salmon are available in 8 of the last 10 years with the escapement goal (SEG: 3,900–12,000) being met every year except 2013 and 2014 (Table 13). The aerial survey goal was not assessed in 2017 and 2022 due to inclement weather preventing surveys from being conducted.

Harvest

Commercial fishing did not occur in District 4 during 2016–2019 due to no commercial processor operating within the KMA. In 2020 and 2021, a single salmon processor operated within Kuskokwim Bay. Participation in the fishery was low and harvest of Chinook, coho, and chum salmon were all similar to or below the 10-year (2012–2021) average (Table 14). Sockeye salmon harvest was above the 10-year average in both 2020 and 2021, with harvests of 78,462 fish in 2020 and 113,849 fish in 2021 (Table 14). In 2022, a processor did not return to the area and no commercial fishing occurred.

Subsistence harvest of Kuskokwim Bay stocks remain relatively small and stable. Since 2018, Chinook salmon continue to make up the largest portion of subsistence harvest followed by sockeye, coho, and chum salmon (Tables 4, 7, 9, and 11). Additionally, approximately 9,400 salmon of all species have been harvested on average annually since 2018, within the range of ANS (6,900–17,000 fish).

Goodnews Bay (District 5)

Escapement

Salmon escapement into the Goodnews River drainage was previously assessed by a weir on the Middle Fork Goodnews River. Weir-based escapement goals were established for Chinook, sockeye, chum, and coho salmon (Table 15). Goodnews River weir has not operated since 2019 due to funding limitations. Currently, aerial surveys are the only method of assessment for escapement in the Goodnews Area. Since 2018, for years when aerial surveys were flown and met acceptable survey criteria (2019–2021), Chinook salmon were within the escapement goal each year and sockeye salmon exceeded the escapement goal annually (Table 16). Aerial surveys were not conducted in 2022 due to inclement weather and pilot availability.

Current escapement goals for Goodnews River salmon stocks are as follows:

	Enumeration	Current escapement goal		
Stock unit	method	Goal	Type	Year amended or established
Chinook salmon				
Goodnews River (Main Fork)	Aerial survey	640–3,300	SEG	2005
Middle Fork Goodnews River	Weir	1,500–3,600	SEG	2019
Chum salmon				
Middle Fork Goodnews River	Weir	>12,000	SEG	2005
Coho salmon				
Middle Fork Goodnews River	Weir	>12,000	SEG	2005
Sockeye salmon				
Goodnews River (Main Fork)	Aerial survey	9,600–18,000	SEG	2016
Middle Fork Goodnews River	Weir	22,000–43,000	SEG	2019

Harvest

Similar to District 4, commercial fisheries occurred in District 5 in 2020 and 2021 with the return of a single salmon processor to Kuskokwim Bay. During these years, harvest of Chinook, coho, and chum salmon were all below the 10-year average, whereas sockeye salmon harvest was comparable to the 10-year average with harvests of 28,859 fish in 2020 and 35,963 fish in 2021 (Table 17). The total exvessel value for each year of commercial fishing was well below the historical average (Table 17).

Subsistence harvest in District 5 includes the communities of Goodnews Bay and Platinum. Subsistence harvest of salmon species in these communities has been relatively stable since 2018, with sockeye salmon making up the largest portion of harvest followed by Chinook, coho, and chum salmon (Tables 4, 7, 9, and 11).

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TABLES AND FIGURES

Table 1.–Kuskokwim River Chinook salmon estimated total run and estimated escapement, 1976–2022.

Year	Estimated total run	Estimated escapement
1976	206,497	115,950
1977	326,456	232,749
1978	238,287	154,815
1979	237,200	140,898
1980	364,886	267,918
1981	311,648	201,249
1982	143,792	36,791
1983	148,623	66,478
1984	175,387	86,211
1985	145,221	63,294
1986	124,380	53,768
1987	183,056	78,813
1988	207,428	79,665
1989	215,158	89,005
1990	268,544	104,358
1991	216,118	102,970
1992	261,317	130,217
1993	273,777	174,110
1994	399,365	277,261
1995	372,332	237,603
1996	341,902	236,327
1997	262,761	171,427
1998	255,174	155,202
1999	160,752	82,159
2000	122,487	54,278
2001	192,752	114,112
2002	238,306	156,458
2003	231,909	163,204
2004	365,032	264,391
2005	327,044	235,268
2006	323,372	228,987
2007	248,471	151,611
2008	214,922	116,017
2009	194,718	106,784
2010	116,026	45,362
2011	115,858	51,829
2012	75,242	51,750
2013	88,498	41,010
2014	82,133	70,367
2015	125,767	109,163
2016	130,678	99,460
2017	131,643	114,973
2018	135,711	112,980
2019	226,224	187,720
2020	124,540	88,339
2021	129,751	101,000
2022[a]	143,622	105,744
10-year avg (2012–2021)	125,019	97,676

[a] Data are preliminary.

Table 2.–Kuskokwim River Chinook salmon weir-based escapement estimates, 1990–2022.

Year	Kwethluk River	Tuluksak River	George River	Kogrukluk River	Tatlawiksuk River	Salmon River (Aniak)	Salmon River (Pitka)	Takotna River
1990	[a]	[a]	[a]	10,093	[a]	[a]	[a]	[a]
1991	[a]	697	[a]	7,602	[a]	[a]	[a]	[a]
1992	9,675	1,083	[a]	6,471	[a]	[a]	[a]	[a]
1993	[a]	2,218	[a]	12,157	[a]	[a]	[a]	[a]
1994	[a]	2,932	[a]	[b]	[a]	[a]	[a]	[a]
1995	[a]	[a]	[a]	20,249	[a]	[a]	[a]	[a]
1996	[a]	[a]	7,501	13,900	[a]	[a]	[a]	423
1997	[a]	[a]	7,810	13,116	[a]	[a]	[a]	1,197
1998	[a]	[a]	[b]	[b]	[b]	[a]	[a]	[a]
1999	[a]	[a]	[b]	5,567	1,484	[a]	[a]	[a]
2000	3,547	[a]	2,956	3,254	808	[a]	[a]	[a]
2001	[b]	924	3,313	8,151	2,013	[a]	[a]	345
2002	8,963	1,346	2,445	9,830	2,237	[a]	[a]	718
2003	14,475	1,067	[b]	11,751	[b]	[a]	[a]	326
2004	28,801	1,475	5,392	19,880	2,833	[a]	[a]	378
2005	[a]	2,653	3,845	21,686	2,858	[a]	[a]	461
2006	17,019	1,008	4,359	19,305	1,700	6,901	[a]	499
2007	15,112	374	4,972	[a]	2,058	6,214	[a]	537
2008	5,642	707	3,383	9,740	1,194	2,376	[a]	412
2009	5,826	362	3,664	9,201	1,071	1,823	[a]	413
2010	1,716	201	1,500	5,160	554	[a]	[a]	311
2011	4,056	284	1,605	6,926	1,011	[a]	[a]	183
2012	[b]	559	2,362	[b]	1,116	[b]	[a]	149
2013	[b]	198	1,267	1,919	495	711	[a]	238
2014	3,191	325	2,988	3,726	2,050	1,722	[a]	104
2015	8,163	711	2,301	8,333	2,131	2,401	7,156	[a]
2016	[b]	909	2,218	7,062	2,693	[b]	6,371	[a]
2017	7,207	648	3,669	7,787	2,146	2,611	8,298	318
2018	[b]	[a]	3,322	6,292	[a]	2,252	5,354	205
2019	8,505	[a]	3,828	10,301	[a]	[a]	4,823	554
2020	[a]	[a]	2,418	5,645	[a]	1,228	4,825	357
2021	[a]	[a]	2,920	6,969	[a]	1,303	4,014	323
2022[c]	6,808	[a]	4,318	5,837	[a]	1,620	1,332	[b]
SEG:	4,100–7,500		1,800–3,300	4,800–8,800				

[a] Weir did not operate

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

[c] Preliminary numbers, subject to change.

Table 3.–Chinook salmon spawning aerial survey index estimates, Kuskokwim River drainage, 2000–2022.

	Lower Kuskokwim River [a]		Middle Kuskokwim River [a]								Upper Kuskokwim River [a]		
Year	Kwethluk Canyon C.	Kisaralik	Aniak	Kipchuk	Salmon (Aniak)	Holokuk	Oskawalik	Holitna	Gagarayah	Cheeneetnuk	Bear (Pitka)	Salmon (Pitka)	Upper Pitka Fork
2000	[b]	[b]	714	182	238	[b]	[b]	301	[b]	[b]	[b]	362	151
2001	[b]	[b]	[b]	[b]	598	52	[b]	4,156	143	[b]	175	1,033	[b]
2002	1,795	1,727	[b]	1,615	1,236	513	295	733	452	730	211	1,255	165
2003	2,661	654	3,514	1,493	1,242	1,096	844	[b]	1,093	810	176	[b]	197
2004	6,801	5,157	5,362	1,868	2,177	539	293	4,051	670	918	206	1,138	290
2005	5,059	2,206	[b]	1,679	4,097	510	582	1,760	788	1,155	367	1,801	744
2006	[b]	4,734	5,639	1,618	[b]	705	386	1,866	531	1,015	347	862	170
2007	[b]	692	3,984	2,147	1,458	[b]	[b]	[b]	1,035	[b]	165	943	131
2008	487	1,074	3,222	1,061	589	418	213	[b]	177	290	245	1,033	248
2009	[b]	[b]	[b]	[b]	[b]	565	379	[b]	303	323	209	632	187
2010	[b]	235	[b]	[b]	[b]	229	b	587	62	[b]	75	135	67
2011	[b]	b	b	116	79	61	26	[b]	96	249	145	767	85
2012	[b]	588	b	193	49	36	51	[b]	178	229	[b]	670	[b]
2013	1,165	599	754	261	154	b	38	532	74	138	64	469	[b]
2014	[b]	622	3,201	1,220	497	80	200	b	359	340	[b]	1,865	[b]
2015	[b]	709	[b]	917	810	77	b	662	19	[b]	1,381	2,016	[b]
2016	[b]	622	718	898	b	100	47	1,157	135	217	580	1,578	[b]
2017	[b]	[b]	1,781	889	423	140	136	676	453	660	492	687	234
2018	[b]	584	1,534	1,123	442	162	[b]	980	438	565	550	1,399	471
2019	[b]	1063	3160	1344	950	719	638	1377	760	1345	542	1,918	330
2020	721	350	1264	723	269	99	169	854	[b]	419	321	1,150	160
2021	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
2022	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]	[b]
SEG		400–1,200	1,200–2,300		330–1,200				300–830	340–1,300		470–1,600	
10-year avg. (2012–2021)	943	642	1,773	841	449	177	183	891	302	489	561	1,306	299

[a] Estimates are from aerial surveys conducted during peak spawning periods under ‘good’ or ‘fair’ survey conditions.

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

Table 4.–Estimated subsistence Chinook salmon harvest in the Kuskokwim Area, 1990–2021.

Community	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Kipnuk	–	–	–	–	–	–	–	–	–	–
Kwigillingok	–	–	–	–	–	–	–	–	–	–
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 4.–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 4.–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 4.–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 dashes (–) indicate that harvest was not estimated. Bold numbers indicate Bayesian estimates.

Table 5.–Commercial salmon harvest and exvessel value, District W-1, Kuskokwim River, Kuskokwim Management Area, 1998–2022.

	Chinook		Sockeye		Coho		Pink		Chum		Total	
Year	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
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	$0	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	0	$0	1,272	$827	194,444	$424,199
2002	72	$212	84	$196	83,463	$124,763	0	$0	1,900	$1,190	85,519	$126,361
2003	158	$846	282	$803	284,064	$450,451	0	$0	2,764	$1,087	287,268	$453,187
2004	2,305	$9,815	8,532	$19,549	435,407	$907,791	0	$0	20,150	$6,611	466,394	$943,766
2005	4,784	$29,040	27,645	$109,063	142,319	$287,635	0	$0	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	0	$0	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	$0	76,790	$76,494	213,675	$502,848
2010	2,731	$53,134	22,428	$167,575	58,031	$382,452	0	$0	93,148	$162,445	176,338	$765,606
2011	49	$411	13,482	$79,370	74,108	$334,452	1	$0	118,256	$350,124	205,896	$764,357
2012	14	$225	2,857	$16,154	86,389	$323,687	0	$0	65,171	$257,932	154,431	$597,998
2013	1	$6	768	$5,226	114,069	$833,327	0	$0	52,236	$346,288	167,074	$1,184,847
2014	0	$0	2,720	$19,943	117,588	$751,850	3	$0	19,080	$71,563	139,391	$843,356
2015	2	$9	130	$395	65,034	$244,045	0	$0	507	$1,567	65,673	$246,016
2016	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2017	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2018	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2019	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2020	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2021	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2022	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
Average 2006–2015	2,128	20,402	9,698	49,419	108,927	428,171	2	0	51,054	129,565	171,810	627,557

[a] Harvest information confidential

Table 6.–Kuskokwim River chum salmon weir-based escapement estimates, 1990–2022.

Year	Kwethluk River	Tuluksak River	George River	Kogrukluk River	Tatlawiksuk River	Salmon River (Aniak)	Takotna River
1990	[a]	[a]	[a]	26,556	[a]	[a]	[a]
1991	[a]	7,675	[a]	22,999	[a]	[a]	[a]
1992	30,595	11,183	[a]	36,085	[a]	[a]	[a]
1993	[a]	13,804	[a]	30,021	[a]	[a]	[a]
1994	[a]	15,658	[a]	[b]	[a]	[a]	[a]
1995	[a]	[a]	[a]	32,466	[a]	[a]	[a]
1996	[a]	[a]	19,368	48,225	[a]	[a]	2,873
1997	[a]	[a]	5,906	7,957	[a]	[a]	1,839
1998	[a]	[a]	[b]	[b]	[b]	[a]	[a]
1999	[a]	[a]	9,834	14,140	9,454	[a]	[a]
2000	11,708	[a]	3,486	11,426	6,982	[a]	1,265
2001	[b]	17,783	11,298	31,481	24,118	[a]	5,403
2002	34,714	9,957	6,530	52,912	24,539	[a]	4,454
2003	41,813	11,713	30,944	23,708	[b]	[a]	3,292
2004	38,759	11,796	14,172	24,429	21,245	[a]	1,633
2005	[a]	35,696	14,847	194,896	55,432	[a]	6,488
2006	48,257	24,049	41,596	183,743	32,303	41,159	12,643
2007	62,456	16,579	62,681	53,064	82,821	25,228	8,906
2008	20,757	12,492	29,616	44,717	30,354	9,459	5,704
2009	32,226	13,671	7,940	81,829	19,975	9,336	2,528
2010	18,919	13,047	26,187	63,612	36,710	[a]	3,995
2011	17,552	10,011	45,257	76,649	85,723	[a]	8,562
2012	[b]	16,684	33,277	[b]	44,573	[b]	6,039
2013	16,271	12,896	37,945	65,648	32,253	7,685	6,516
2014	17,942	8,728	17,183	30,697	12,453	2,777	[a]
2015	23,071	6,362	17,554	33,091	10,382	5,511	[a]
2016	31,666	5,871	19,469	45,234	10,849	1,691	[a]
2017	52,202	22,757	39,971	85,793	30,174	9,754	6,557
2018	[b]	[a]	48,915	52,937	[a]	18,770	6,007
2019	33,100	[a]	43,072	71,006	[a]	[b]	5,618
2020	[a]	[a]	8,943	19,020	[a]	1,995	[b]
2021	[a]	[a]	1,371	4,153	[a]	537	[b]
2022[c]	8,563	[a]	8,429	13,471	[a]	1,051	[b]
Escapement Goal:				15,000–49,000			

[a] Weir did not operate.

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

[c] Preliminary numbers, subject to change.

Table 7.–Estimated subsistence chum salmon harvest in the Kuskokwim 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 7.–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 7.–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

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Table 7.–Page 4 of 4.

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 dashes (–) indicate that harvest was not estimated. Bold numbers indicate Bayesian estimates.

Table 8.–Kuskokwim River sockeye salmon weir-based escapement estimates, 1990–2022.

Year	Kwethluk River	Tuluksak River	George River	Kogrukluk River	Telaquana River	Salmon River (Aniak)
1990	[a]	[a]	[a]	8,383	[a]	[a]
1991	[a]	34	[a]	15,542	[a]	[a]
1992	1,318	129	[a]	7,833	[a]	[a]
1993	[a]	88	[a]	27,973	[a]	[a]
1994	[a]	82	[a]	[b]	[a]	[a]
1995	[a]	[a]	[a]	11,145	[a]	[a]
1996	[a]	[a]	86	15,176	[a]	[a]
1997	[a]	[a]	445	13,144	[a]	[a]
1998	[a]	[a]	[b]	6,036	[a]	[a]
1999	[a]	[a]	39	5,893	[a]	[a]
2000	1,050	[a]	22	2,895	[a]	[a]
2001	[b]	148	24	7,177	[a]	[a]
2002	1,061	82	17	4,084	[a]	[a]
2003	2,930	285	14	9,203	[a]	[a]
2004	3,607	136	177	6,895	[a]	[a]
2005	[a]	642	272	37,684	[a]	[a]
2006	[b]	932	146	60,507	[a]	5,190
2007	5,805	349	65	16,798	[a]	2,114
2008	[b]	192	92	19,663	[a]	1,181
2009	4,577	686	54	22,216	[a]	1,366
2010	4,336	442	113	13,306	71,932	[a]
2011	[b]	136	43	8,079	35,099	[a]
2012	[b]	195	79	[b]	23,002	950
2013	677	394	150	7,793	28,058	966
2014	3,880	514	156	6,479	24,292	934
2015	8,998	831	159	6,647	95,570	1,504
2016	21,618	1,512	2,807	20,108	82,710	310
2017	28,806	4,210	912	24,696	145,281	[b]
2018	19,554	[a]	1,615	21,343	197,368	2,537
2019	42,212	[a]	3,973	32,116	198,485	[a]
2020	[a]	[a]	281	9,923	177,509	234
2021	[a]	[a]	937	13,534	123,958	907
2022[c]	8,350	[a]	510	10,278	152,737	1,414
Escapement goal:				4,400–17,000		

[a] Weir did not operate.

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

[c] Preliminary numbers, subject to change.

Table 9.–Estimated subsistence sockeye salmon harvest in the Kuskokwim 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 9.–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 9.–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 9.–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 dashes (–) indicate that harvest was not estimated. Bold numbers indicate Bayesian estimates.

Table 10.–Kuskokwim River coho salmon weir-based escapement estimates, 1990–2022.

Year	Kwethluk River	Tuluksak River	George River	Kogrukluk River	Tatlawiksuk River	Salmon River (Aniak)
1990	[a]	[a]	[a]	3,480	[a]	[a]
1991	[a]	4,726	[a]	7,903	[a]	[a]
1992	46,713	7,908	[a]	[b]	[a]	[a]
1993	[a]	9,207	[a]	[b]	[a]	[a]
1994	[a]	7,899	[a]	28,044	[a]	[a]
1995	[a]	[a]	[a]	[b]	[a]	[a]
1996	[a]	[a]	[a]	50,486	[a]	[a]
1997	[a]	[a]	9,483	11,895	[a]	[a]
1998	[a]	[a]	[b]	22,991	[b]	[a]
1999	[a]	[a]	8,914	11,048	[b]	[a]
2000	26,859	[a]	11,280	33,100	[b]	[a]
2001	23,442	19,402	15,224	19,926	[b]	[a]
2002	23,401	14,243	6,759	14,516	11,192	[a]
2003	111,059	42,868	33,741	74,903	[b]	[a]
2004	87,448	20,646	12,499	26,078	16,448	[a]
2005	[a]	11,830	8,296	25,313	7,294	[a]
2006	14,320	6,841	12,693	22,300	[b]	[b]
2007	22,758	2,947	28,513	26,798	8,434	[b]
2008	53,582	7,470	21,931	29,300	11,037	10,974
2009	23,939	9,071	12,491	22,544	10,148	6,351
2010	[b]	1,798	12,866	14,558	3,940	[a]
2011	[b]	4,613	31,900	21,950	15,635	[a]
2012	20,627	6,331	14,844	13,462	8,001	[b]
2013	[b]	14,022	14,823	23,800	12,724	2,834
2014	48,478	12,366	35,771	54,001	19,822	8,189
2015	32,124	3,903	35,790	32,900	17,669	[b]
2016	38,152	76,854	[b]	[b]	11,719	[b]
2017	55,722	[a]	25,338	[b]	[a]	[b]
2018	[b]	[a]	8,993	8,169	[a]	[b]
2019	34,561	[a]	13,277	16,470	[a]	[a]
2020	[a]	[a]	21,426	[b]	[a]	[b]
2021	[a]	[a]	31,491	14,373	[a]	[b]
2022[c]	8,702	[a]	9,934	[b]	[a]	[b]
Escapement goal:	>19,000			13,000–28,000		

[a] Weir did not operate

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

[c] Preliminary numbers, subject to change.

Table 11.–Estimated subsistence coho salmon harvest in the Kuskokwim 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 11.–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 11.–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 11.–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 dashes (–) indicate that harvest was not estimated. Bold numbers indicate Bayesian estimates.

Table 12.–Weir-based salmon spawning escapement, Kanektok River, Kuskokwim Bay, 2001–2022.

Year	Chinook	Sockeye	Chum	Pink[a]	Coho
2001	[b]	[b]	[b]	14	32,720[c]
2002	5,304	60,228	41,912	85,057	24,840[c]
2003	8,211	128,030	40,086	2,301	72,448[c]
2004	19,569	105,135	46,008	89,138	87,827[c]
2005	14,177	268,537	55,340	3,511	13,700[c]
2006	[f]	[f]	[f]	[f]	[f]
2007	13,965	304,086	131,000	3,032	26,452[c]
2008	[b]	[b]	[b]	140,468	24,490[d]
2009	7,065	305,756	55,846	1,246	2,336[e]
2010	6,537	204,954	68,186	114,074	330[e]
2011	5,170	88,177	53,050	530	5,779[e]
2012	1,561	115,021	28,726	62,141	4,248[e]
2013	3,569	128,761	43,040	532	3,116[e]
2014	3,594	259,406	18,602	25,141	4,786[e]
2015	10,416	106,751	15,048	1,058	2,493[e]
2016	[f]	[f]	[f]	[f]	[f]
2017	[f]	[f]	[f]	[f]	[f]
2018	[f]	[f]	[f]	[f]	[f]
2019	[f]	[f]	[f]	[f]	[f]
2020	[f]	[f]	[f]	[f]	[f]
2021	[f]	[f]	[f]	[f]	[f]
2022	[f]	[f]	[f]	[f]	[f]

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

[b] Field operations were incomplete; greater than 40% of the run was missed based on historical run timing. Estimates were not made.

[c] Sum of daily counts is an underestimate of total escapement. Additional estimates were not made.

[d] Weir was pulled on August 21. Sum of daily counts is an underestimate of total escapement.

[e] Weir was pulled on August 15. Sum of daily counts is an underestimate of total escapement.

[f] Weir did not operate.

Table 13.–Salmon spawning aerial survey index estimates, Kanektok River, Kuskokwim Bay, 1980–2022.

Year	Chinook	Sockeye
1980	6,172	112,501
1981	[a]	[a]
1982	[a]	[a]
1983	8,890	[a]
1984	12,182	30,840
1985	13,465	15,570
1986	3,643	12,090
1987	4,213	51,753
1988	11,180	30,440
1989	7,914	14,735
1990	[a]	[a]
1991	[a]	[a]
1992	[a]	[a]
1993	[a]	[a]
1994	7,386	[a]
1995	[a]	[a]
1996	[a]	[a]
1997	[a]	[a]
1998	[a]	[a]
1999	[a]	[a]
2000	[a]	[a]
2001	[a]	[a]
2002	[a]	[a]
2003	6,206	21,335
2004	28,375	77,780
2005	12,780	95,900
2006	[a]	[a]
2007	[a]	[a]
2008	[a]	[a]
2009	[a]	[a]
2010	1,208	16,180
2011	[a]	[a]
2012	[a]	[a]
2013	2,277	51,517
2014	1,840	136,400
2015	4,919	39,970
2016	5,631	80,160
2017	[a]	[a]
2018	4,246	326,200
2019	7,212	349,073
2020	4,405	52,886
2021	4,115	53,960
2022	[a]	[a]
Escapement goal:	3,900–12,000	15,300–41,000

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

Table 14.–Commercial salmon harvest and exvessel value, District 4, Quinhagak, Kuskokwim Bay, 1990–2022.

	Chinook		Sockeye		Coho		Pink		Chum		Total	
Year	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
1990	27,644	$253,562	83,681	$542,485	26,926	$123,936	12,056	$4,146	47,717	$89,343	198,024	$1,013,472
1991	9,480	$94,950	53,657	$246,734	42,571	$144,379	115	$52	54,493	$106,321	160,316	$592,436
1992	17,197	$166,471	60,929	$368,310	86,404	$303,740	64,217	$15,875	73,383	$139,268	302,130	$993,664
1993	15,784	$143,506	80,934	$402,763	55,817	$246,746	7	$4	40,943	$105,236	193,485	$898,255
1994	8,564	$67,584	72,314	$253,922	83,912	$420,802	35,904	$10,454	61,301	$84,395	261,995	$837,157
1995	38,584	$418,067	68,194	$323,104	66,203	$201,413	186	$81	81,462	$104,523	254,629	$1,047,188
1996	14,165	$61,004	57,665	$165,100	118,718	$246,930	20	$6	83,005	$61,686	273,573	$534,726
1997	35,510	$171,688	69,562	$204,190	32,862	$91,584	5	$0	38,445	$29,609	176,384	$497,071
1998	23,158	$82,168	41,382	$150,631	80,183	$197,676	2,217	$871	45,095	$36,497	192,035	$467,843
1999	18,426	$94,880	41,315	$140,846	6,184	$14,997	0	$0	38,091	$28,368	104,016	$279,091
2000	21,229	$131,351	68,557	$249,382	30,529	$31,898	3	$1	30,553	$23,929	150,871	$436,561
2001	12,775	$93,697	33,807	$89,334	18,531	$32,577	0	$0	17,209	$13,007	82,322	$228,615
2002	11,480	$56,356	17,802	$40,368	26,695	$47,651	0	$0	29,252	$23,374	85,229	$167,749
2003	14,444	$69,201	33,941	$107,287	49,833	$108,804	0	$0	27,868	$19,261	126,086	$304,553
2004	25,465	$107,700	34,627	$77,394	82,398	$201,879	0	$0	25,820	$18,372	168,310	$405,345
2005	24,195	$221,854	68,801	$241,478	51,780	$101,776	19	$4	13,529	$6,853	158,324	$571,965
2006	19,184	$147,802	106,308	$327,917	26,831	$61,433	0	$0	39,151	$14,030	191,474	$551,182
2007	19,573	$163,248	109,343	$374,004	34,710	$102,569	0	$0	61,228	$21,044	224,854	$660,865
2008	13,812	$140,580	69,743	$272,427	94,257	$317,143	0	$0	57,033	$20,581	234,845	$750,731
2009	13,920	$130,561	112,153	$384,209	48,115	$136,562	0	$0	91,158	$95,993	265,346	$747,325
2010	14,230	$294,163	138,362	$1,049,395	13,690	$117,658	0	$0	106,610	$194,105	272,892	$1,655,321
2011	15,387	$166,606	38,543	$207,642	30,457	$198,333	0	$0	104,959	$603,855	189,346	$1,176,436
2012	6,675	$85,934	37,688	$208,023	31,214	$167,638	0	$0	61,140	$362,840	136,717	$824,435
2013	2,054	$35,126	26,393	$154,135	21,126	$172,739	0	$0	58,079	$399,537	107,652	$761,537
2014	2,265	$22,940	58,879	$408,358	52,317	$353,551	0	$0	14,563	$59,885	128,024	$844,734
2015	7,547	$37,659	30,269	$90,164	76,285	$312,926	0	$0	16,051	$50,732	130,152	$491,481
2016	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2017	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2018	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2019	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2020	4,345	$23,715	113,849	$327,784	29,374	$107,906	0	$0	6,531	$8,669	154,099	$468,074
2021	2,468	$22,345	78,462	$283,670	13,012	$45,320	29	$7	5,310	$5,932	99,281	$357,274
2022	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
10-year avg. (2012–2021)	4,226	$37,953	57,590	$245,356	37,221	$193,347	5	$1	26,946	$147,933	125,988	$624,589

[a] No commercial processor operating in the Kuskokwim Area.

Table 15.–Weir-based salmon spawning escapement, Middle Fork Goodnews River, Kuskokwim Bay, 1991–2022.

Year	Chinook	Sockeye	Coho	Pink[a]	Chum
1991	2,080	41,656	[b]	1,428	27,632
1992	1,445	[b]	[b]	21,523	21,096
1993	2,132	24,957	[b]	318	14,581
1994	3,061	56,503	[b]	38,710	35,652
1995	4,678	37,776	[b]	312	33,559
1996	[b]	[b]	[b]	14,509	[b]
1997	2,897	34,322	13,404	940	17,151
1998	3,553	38,493	33,368	10,376	26,996
1999	3,703	49,321	11,320	907	21,818
2000	2,670	40,828	[b]	2,524	14,405
2001	5,351	21,194	18,300	1,323	26,820
2002	3,025	21,329	27,643	3,034	29,905
2003	2,248	37,933	52,504	1,864	21,778
2004	4,438	54,035	42,049	21,584	32,442
2005	4,781	118,969	20,168	5,926	26,501
2006	4,572	127,245	26,909	18,432	54,689
2007	3,914	73,768	19,442	4,919	50,232
2008	2,223	43,879	37,690	9,807	39,548
2009	1,669	27,494	19,123	714	19,236
2010	2,176	36,574	26,287	3,444	24,789
2011	2,045	19,643	24,668	1,394	19,974
2012	524	29,531	[b]	6,316	9,065
2013	1,187	23,545	[b]	530	27,682
2014	750	41,473	5,294[c]	9,287	11,518
2015	1,494	57,809	15,084[c]	1,159	11,517
2016[d]	3,767	170,574	[b]	11,267	41,815
2017[d]	6,881	179,897	[b]	8,921	54,799
2018	[e]	[e]	[e]	[e]	[e]
2019	6,039	162,711	[b]	3,943	38,072
2020	[e]	[e]	[e]	[e]	[e]
2021	[e]	[e]	[e]	[e]	[e]
2022	[e]	[e]	[e]	[e]	[e]
Escapement goal:	1,500–3,600	22,000–43,000	>12,000	[a]	>12,000

[a] Pink salmon passage is not estimated because they are small enough to pass in between weir pickets.

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

[c] Field operations were completed on August 30. Sum of daily counts is an underestimate of total escapement.

[d] Weir operation ended July 31 and total annual escapement was estimated.

[e] Weir did not operate.

Table 16.–Salmon spawning aerial survey index estimates, Goodnews Rivers and Lakes, Kuskokwim Bay, 1980–2022.

	Goodnews River and Lakes	
Year	Chinook	Sockeye
1980	1,228	75,639
1981	[a]	[a]
1982	[a]	[a]
1983	2,600	9,650
1984	2,062	12,807
1985	3,535	4,620
1986	1,068	8,960
1987	2,244	19,786
1988	[a]	[a]
1989	651	[a]
1990	658	27,689
1991	[a]	[a]
1992	875	[a]
1993	[a]	[a]
1994	[a]	[a]
1995	3,314	[a]
1996	[a]	[a]
1997	[a]	[a]
1998	578	3,497
1999	[a]	[a]
2000	[a]	[a]
2001	[a]	[a]
2002	1,470	[a]
2003	3,935	50,140
2004	7,482	31,695
2005	[a]	[a]
2006	[a]	[a]
2007	[a]	[a]
2008	2,155	32,500
2009	[a]	[a]
2010	[a]	[a]
2011	853	14,140
2012	378	16,710
2013	[a]	[a]
2014	630	[a]
2015	991	38,390
2016	1,120	90,060
2017	[a]	[a]
2018	[a]	[a]
2019	2,462	162,930
2020	1,098	55,110
2021	2,273	95,020
2022	[a]	[a]
Escapement goal:	640–3,300	9,600–18,000

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

Table 17.–Commercial salmon harvest and exvessel value, District W-5 Goodnews Bay, Kuskokwim Bay, 1990–2022.

	Chinook		Sockeye		Coho		Pink		Chum		Total	
Year	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
1990	3,303	$32,135	35,823	$263,598	7,804	$38,910	629	$254	13,194	$25,767	60,753	$360,664
1991	912	$8,370	39,838	$187,622	13,312	$47,519	29	$14	15,892	$31,394	69,983	$274,919
1992	3,528	$30,688	39,194	$257,457	19,875	$75,278	14,310	$2,913	18,520	$39,111	95,427	$405,447
1993	2,117	$21,351	59,293	$296,437	20,014	$95,043	0	$0	10,657	$28,304	92,081	$441,135
1994	2,570	$21,732	69,490	$309,577	47,499	$271,687	18,017	$5,442	28,477	$41,309	166,053	$649,747
1995	2,922	$31,339	37,351	$175,552	17,875	$58,061	39	$19	19,832	$21,427	78,019	$286,398
1996	1,375	$5,952	30,717	$87,427	43,836	$120,191	22	$4	11,093	$9,015	87,043	$222,589
1997	2,039	$10,867	31,451	$93,146	2,983	$9,497	0	$0	11,729	$9,358	48,202	$122,868
1998	3,675	$13,685	27,161	$100,171	21,246	$59,102	411	$174	14,155	$11,133	66,648	$184,265
1999	1,888	$9,020	22,910	$78,800	2,474	$7,515	0	$0	11,562	$8,327	38,834	$103,662
2000	4,442	$25,614	37,252	$146,708	15,531	$34,689	7	$2	7,450	$6,001	64,682	$213,014
2001	1,519	$10,496	25,654	$68,678	9,275	$17,089	0	$0	3,412	$2,586	39,860	$98,849
2002	979	$343	6,304	$15,846	3,041	$5,634	0	$0	3,799	$2,979	14,123	$24,802
2003	1,412	$6,461	29,423	$95,818	12,658	$28,945	0	$0	5,593	$3,883	49,086	$135,107
2004	2,565	$10,857	20,523	$49,741	24,089	$70,404	0	$0	5,965	$4,244	53,142	$135,246
2005	2,035	$16,696	23,933	$91,135	11,735	$25,010	0	$0	2,568	$1,454	40,271	$134,295
2006	2,892	$21,314	29,857	$87,996	12,436	$27,587	0	$0	11,568	$4,368	56,753	$141,265
2007	3,126	$23,951	43,766	$156,802	13,697	$38,796	6	$0	7,853	$2,781	68,448	$222,330
2008	1,281	$13,181	27,236	$104,296	22,547	$76,683	0	$0	10,408	$3,910	61,472	$198,070
2009	1,509	$13,333	32,544	$134,244	8,406	$25,456	0	$0	16,985	$18,998	59,444	$192,031
2010	1,752	$44,910	41,074	$334,366	4,900	$44,706	0	$0	26,914	$46,679	74,640	$470,661
2011	2,092	$19,224	24,573	$141,347	15,358	$106,471	0	$0	13,191	$78,980	55,214	$346,022
2012	1,531	$20,509	50,635	$299,187	25,515	$150,668	0	$0	24,487	$147,401	102,168	$617,765
2013	495	$8,546	24,521	$169,318	21,581	$185,332	0	$0	12,651	$89,455	59,248	$452,651
2014	205	$3,065	20,515	$152,446	52,158	$406,843	0	$0	3,403	$14,134	76,281	$576,488
2015	705	$3,823	25,861	$81,851	7,030	$30,737	0	$0	4,510	$15,205	38,106	$131,616
2016	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2017	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2018	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2019	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
2020	442	$2,257	28,859	$87,602	10,928	$35,312	0	$0	3,037	$3,025	43,266	$128,196
2021	114	$954	35,963	$131,140	1,192	$3,571	0	$0	535	$521	37,804	$136,186
2022	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]	[a]
10-year avg. (2012–2021)	582	$6,526	31,059	$153,591	19,734	$135,411	0	$0	8,104	$44,957	59,479	$340,484

[a] No commercial processor operating in the Kuskokwim Area.

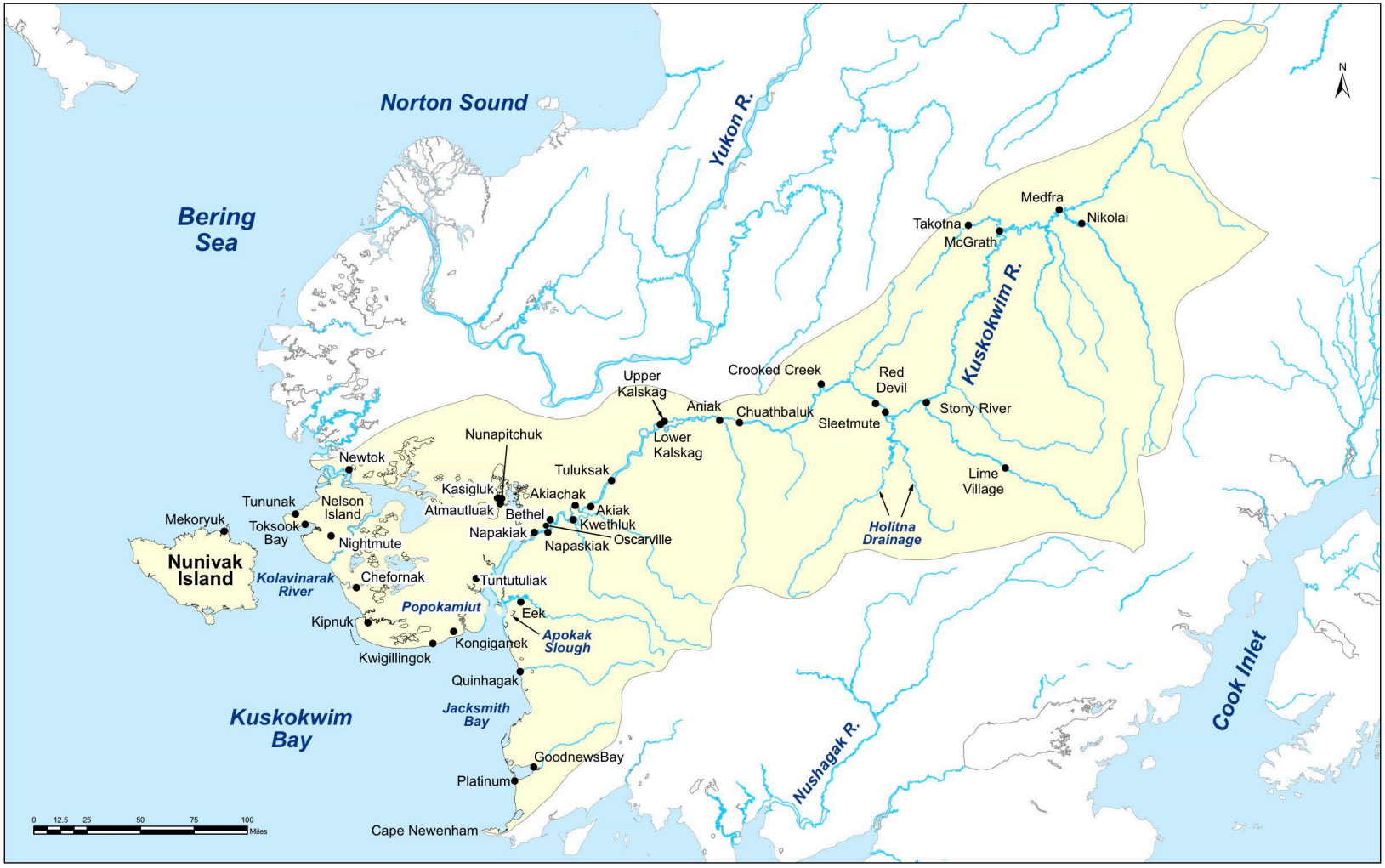

Figure 1.–Map of Kuskokwim Area commercial fishing districts and escapement assessment projects.

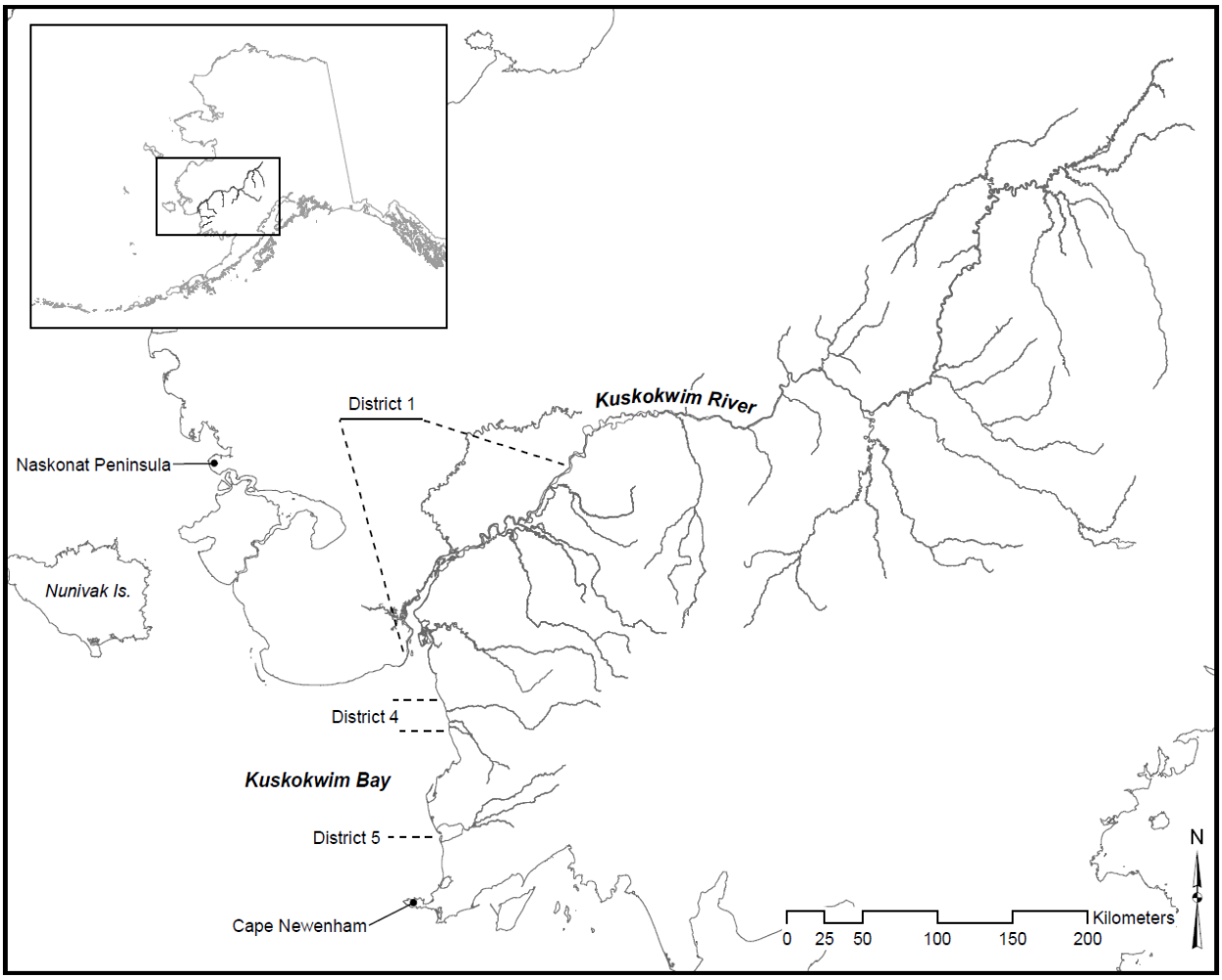

Figure 2.–Kuskokwim Management Area commercial fishing districts.

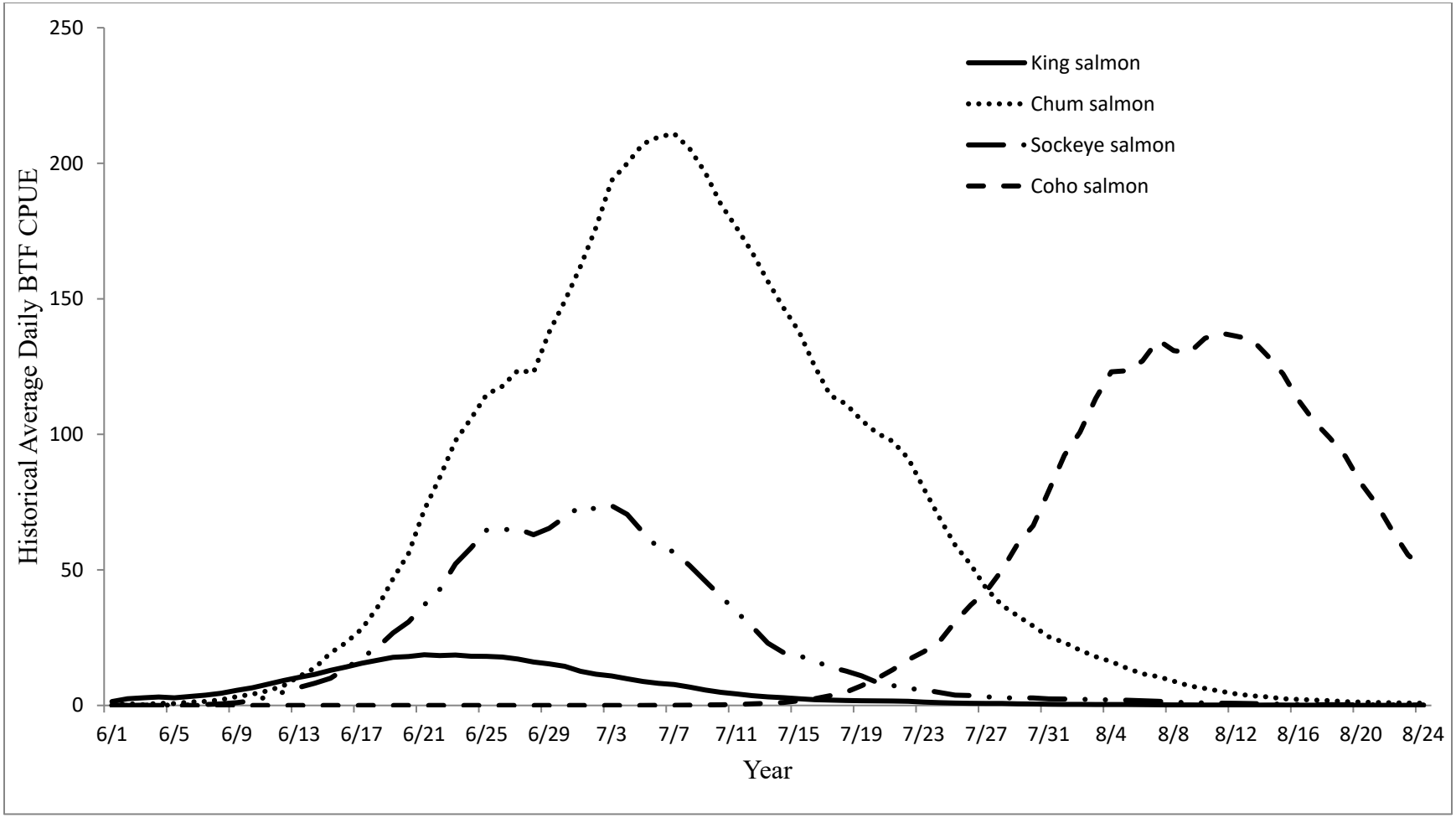

Figure 3.–Historical moving 5-day average daily Bethel test fishery (BTF) CPUE indices as a graphical representation of Kuskokwim River salmon run timing past the BTF site.

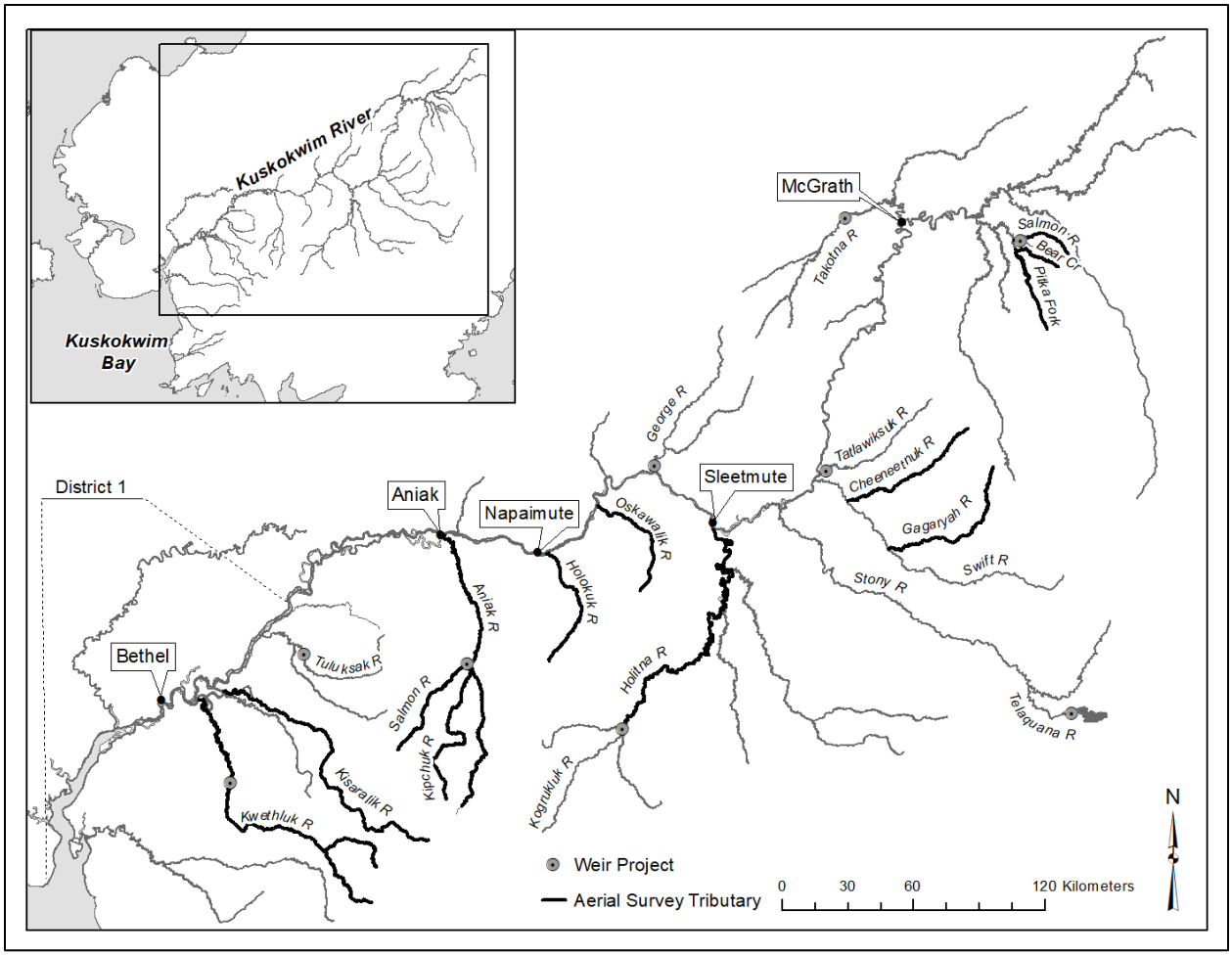

Figure 4.–Map of Kuskokwim River escapement monitoring projects.

Note: Weirs on the Tuluksak and Tatlawiksuk Rivers have been discontinued.