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**Kuskokwim River Salmon Stock Status and
Kuskokwim Area Fisheries, 2019: A Report to the
Alaska Board of Fisheries**

by

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and

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December 2018

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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

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AREA FISHERIES, 2019: A REPORT TO THE ALASKA BOARD OF
FISHERIES**

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TABLE OF CONTENTS

	Page
LIST OF TABLES.....	ii
LIST OF FIGURES.....	ii
ABSTRACT.....	1
INTRODUCTION.....	1
FISHERIES AND SALMON STOCK STATUS.....	2
Fisheries.....	2
Subsistence.....	2
Commercial.....	3
Salmon Assessment Projects.....	3
Bethel Test Fishery.....	3
Kwethluk River Weir.....	4
Tuluksak River Weir.....	4
Salmon River Weir (Aniak).....	4
George River Weir.....	4
Kogruklu River Weir.....	4
Telaquana River Weir.....	5
Tatlawiksuk River Weir.....	5
Salmon River Weir (Pitka Fork).....	5
Kanektok River Weir.....	5
Middle Fork Goodnews River Weir.....	5
Aerial Surveys.....	5
Stock Status.....	6
Kuskokwim River.....	6
King Salmon.....	6
Escapement.....	6
Harvest.....	7
Chum Salmon.....	8
Escapement.....	8
Harvest.....	8
Sockeye Salmon.....	8
Escapement.....	8
Harvest.....	9
Coho Salmon.....	9
Escapement.....	9
Harvest.....	9
Kuskokwim Bay.....	10
Quinhagak (District 4).....	10
Escapement.....	10
Harvest.....	10
Goodnews Bay (District 5).....	10
Escapement.....	10
Harvest.....	11
REFERENCES CITED.....	12
TABLES AND FIGURES.....	13

LIST OF TABLES

Table	Page
1. Kuskokwim River king salmon estimated total run and estimated escapement, 1980–2018.	14
2. Kuskokwim River king salmon weir-based escapement estimates, 1990–2018.	15
3. King salmon spawning aerial survey index estimates, Kuskokwim River drainage, 1975–2018.	16
4. Estimated subsistence king salmon harvest in the Kuskokwim Area, 1990–2014.	18
5. Commercial salmon harvest and exvessel value, District W-1, Kuskokwim River, Kuskokwim Management Area, 1993–2015.	21
6. Kuskokwim River chum salmon weir-based escapement estimates, 1990–2018.	22
7. Estimated subsistence chum salmon harvest in the Kuskokwim Area, 1990–2018.	23
8. Kuskokwim River sockeye salmon weir-based escapement estimates, 1990–2018.	26
9. Estimated subsistence sockeye salmon harvest in the Kuskokwim Area, 1990–2018.	27
10. Kuskokwim River coho salmon weir-based escapement estimates, 1990–2018.	30
11. Estimated subsistence coho salmon harvest in the Kuskokwim Area, 1990–2018.	31
12. Weir-based salmon spawning escapement, Kanektok River, Kuskokwim Bay, 2001–2018.	34
13. Salmon spawning aerial survey index estimates, Kanektok River, Kuskokwim Bay, 1977–2018.	35
14. Commercial salmon fishing exvessel value, District 4, Quinhagak, Kuskokwim Bay, 1990–2018.	36
15. Weir-based salmon spawning escapement, Middle Fork Goodnews River, Kuskokwim Bay, 1991– 2015.	37
16. Salmon spawning aerial survey index estimates, Goodnews River and lakes, Kuskokwim Bay, 1980– 2018.	38
17. Commercial salmon fishing exvessel value, District W-5 Goodnews Bay, Kuskokwim Bay, 1990– 2018.	39

LIST OF FIGURES

Figure	Page
1. Map of the Kuskokwim Area commercial fishing districts and escapement assessment projects.	40
2. Historical moving 5-day average daily Bethel test fishery CPUE indices as a graphical representation of Kuskokwim River salmon run timing past the Bethel test fishery site.	41

ABSTRACT

This report provides the Alaska Board of Fisheries with information on Kuskokwim Area Pacific salmon *Oncorhynchus* spp. stock status including escapement and harvest data for the January 2019 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 but commercial salmon fishing is restricted to 4 districts within the Kuskokwim Area. Commercial fishing 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. Chinook salmon (*O. tshawytscha*, known locally as king salmon) runs to the Kuskokwim River have been low since 2010, which led to severe restrictions in 2014–2018 and federal special actions within the Yukon Delta National Wildlife Refuge to conserve king salmon. Since 2014, subsistence harvest of king salmon has been well below established amounts reasonably necessary for subsistence (ANS) and commercial and sport fisheries have been closed during the king salmon run. This report presents an overview of Kuskokwim Area abundance, escapement, harvest trends, and fishery management for king, sockeye *O. nerka*, chum *O. keta*, and coho *O. kisutch* salmon since 2016.

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

INTRODUCTION

The Alaska Department of Fish and Game (department) is responsible for managing Kuskokwim Area (KMA) salmon *Oncorhynchus* spp 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 Goals* (5 AAC 39.223). For all statewide fisheries, the Alaska State Legislature has designated subsistence fishing as the highest priority among beneficial uses of the resource (AS 16.05.258; Subsistence use and allocation of fish and game).

The KMA includes the Kuskokwim River drainage, all waters of Alaska that flow into the Bering Sea between Cape Newenham and the Naskonat Peninsula, and Nunivak and St. Matthew Islands (Figure 1). There are 38 communities consisting of approximately 4,800 households within the KMA. Of those households, approximately 75% are situated within the drainage of the Kuskokwim River (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 River systems. 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 1). 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, respectively. While sport fishing effort and harvests do occur, the harvest is much smaller and is covered in a separate report by Division of Sport Fish (Alaska Sport Fishing Survey database¹).

¹ Alaska Sport Fishing Survey database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited October 30, 2016). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>

Management of Kuskokwim River salmon fisheries is complex due to the large size of the drainage; multiple species with overlapping run timing; and the large distances between where fisheries and escapement monitoring occur. Chinook (known locally as king 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. King and sockeye salmon runs decline in early July, while the chum salmon run begins to decline in late July when coho salmon *O. kisutch* run entry begins (Figure 2). Coho salmon entry to the river 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 the Kanektok River weir from annual operations and reduced the operational period of the Middle Fork Goodnews weir.

Salmon abundance in the KMA is primarily assessed with weirs and aerial surveys. Salmon escapements are evaluated by weirs on 9 tributary streams. Aerial surveys are flown during peak spawning abundances in up to 16 tributaries for king salmon and in 2 tributaries for sockeye salmon. In addition, drainagewide run reconstructions are completed for king salmon.

FISHERIES AND SALMON STOCK STATUS

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 king 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 revised the amounts reasonably necessary for subsistence (ANS) in 2013 to include: 67,200–109,800 king

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*.

Historically, the subsistence fishery on the Kuskokwim River has largely been unrestricted. Beginning in 2012, subsistence fishing activity has been reduced significantly due to management restrictions in response to low king salmon abundances and subsequent conservation measures. Harvest restrictions have persisted annually through the king salmon run and have not been relaxed until chum and sockeye salmon abundance exceeds that of king salmon to allow for a predominately chum and sockeye salmon harvest opportunity.

Commercial

The KMA commercial fishery was relatively stable from 1987–1996 with harvests ranging from 740,000 to 2.3 million fish, participation between 714 and 824 permits fished, and exvessel value ranging from \$2.9 to 12.7 million (Poetter and Tiernan 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 fished in 1998 to 407 permits in 2002, and subsequent exvessel value of the fishery decreasing from \$1.6 million in 1998 to \$324,000 in 2002. Poor king 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 king 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 fishermen (Poetter and Tiernan 2017). A fish processing plant located in Platinum began operation in 2009 and improved processing capacity in the area. From 2013–2015, commercial fishing opportunity was considerably reduced due to the poor king and chum salmon runs and the increased dependence on other salmon species for subsistence uses. Since 2016, there has been 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 (Lipka and Tiernan 2018).

SALMON ASSESSMENT PROJECTS

Salmon abundance in the KMA is primarily assessed with weirs, test fisheries, aerial surveys, and a statistical run reconstruction specifically for king salmon. Additional assessment projects include a recently developed sonar project, postseason subsistence harvest surveys, inseason subsistence harvest reports, as well as local and traditional knowledge. Salmon escapements are evaluated by weirs on 9 tributary streams. Weir operations are facilitated through cooperative partnerships with various federal, tribal, and regional non-government organizations (Head and Smith 2018). Aerial surveys are flown during peak spawning abundances in up to 16 tributaries for king 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 one 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 with 8-inch mesh. Both mesh sizes are operated from early June through July 15 when king, sockeye, and chum salmon all occur in relatively high abundance. The 8-inch mesh gillnet is discontinued on July 16 when king 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 king, 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.

Kwethluk River Weir

The Kwethluk River weir (Figure 1) is operated by USFWS from approximately June 25–September 10 to assess king, sockeye, coho, and chum salmon. The Kwethluk River weir was operated in 1992 and then again from 2000–2018 (Head and Smith 2018).

Tuluksak River Weir

The Tuluksak River weir was operated by the U.S. Fish and Wildlife Service (USFWS) from approximately June 25–September 10 to assess king, sockeye, chum, and coho salmon. The Tuluksak River weir was in operation from 1991–1994 and then from 2001–2017 (Head and Smith 2018).

Salmon River Weir (Aniak)

The Salmon River (Aniak) weir is operated from approximately June 15–August 15 to assess king, chum, coho, and sockeye salmon as an index for the Aniak River drainage. The Salmon River weir was first operated from 2006–2009 and was reinitiated in 2012 (Head and Smith 2018).

George River Weir

The George River weir is operated from approximately June 15–September 20 to monitor king, chum, and coho salmon. Due to the project's proximity to the confluence with the Kuskokwim River, the weir accounts for nearly all salmon migrating upstream to spawning habitat within the George River drainage. The George River weir has been in operation since 1996 (Head and Smith 2018).

Kogrukluk River Weir

The Kogrukluk River weir is operated from approximately June 26–September 25 to enumerate king, chum, coho, and sockeye salmon. The Kogrukluk River weir has been operated annually since 1976 and is the department's longest standing 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 (Head and Smith 2018).

Telaquana River Weir

The Telaquana River weir is operated from July 3–August 26 and has operated annually since 2010. The weir is located 2/3 of a mile downstream of the Telaquana Lake outlet. While 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 was operated to encompass only the period of 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 (Head and Smith 2018).

Tatlawiksuk River Weir

The Tatlawiksuk River weir is operated from approximately June 15–September 20 to enumerate king, sockeye, chum, and coho salmon. The weir was operated annually from 1998–2017 (Head and Smith 2018). The project was discontinued following the 2017 project year.

Salmon River Weir (Pitka Fork)

The Salmon River (Pitka Fork) weir began operations in 2015 to assess king salmon escapement and is operated from approximately June 20–August 15 each season (Head and Smith 2018).

Kanektok River Weir

The Kanektok River weir enumerated king, sockeye, and chum salmon during the June 25–August 15 operational period. 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 for the entire season. Due to loss of funding and the absence of a commercial fishery the weir has not been operated since 2016 (Head and Smith 2018).

Middle Fork Goodnews River Weir

The Middle Fork Goodnews River weir assesses king, sockeye, chum, and coho salmon during the June 25–July 31 operational period. The Goodnews River weir has been in operation from 1991–2017. The weir was not installed in 2018 due to high water that persisted throughout the operational period (Head and Smith 2018).

Aerial Surveys

Aerial survey-based escapement assessments do not represent the entire spawning population in the respective streams. The surveys are conducted once each season during a window of time when the maximum numbers of fish are expected to be on the spawning grounds. There are 12 aerial surveys that have been identified as priority for the KMA king 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 glacial runoff, both of which markedly affect the ability to enumerate fish. Aerial surveys are best directed at indexing spawning populations of king and sockeye salmon because these fish are typically more visible than chum and coho salmon.

STOCK STATUS

Kuskokwim River

King Salmon

A sharp decline in king salmon abundance in the Kuskokwim River occurred in 2010 (Table 1). The 2012–2014 king salmon runs to the Kuskokwim River were the lowest estimated total runs on record. King salmon runs from 2015–2018 showed improvement and have remained consistent, but they were still well below the historical average. 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 king salmon. Kuskokwim River king salmon subsistence harvest has been below the established ANS since 2011. Analysis of the Kuskokwim River king salmon stock indicates that while recent escapement levels are generally within the established sustainable escapement goals (SEGs), and these escapements have the highest potential to meet future escapement and harvest needs.

Escapement

King salmon escapement is monitored with weirs operated in 7 tributary streams (Figure 1), and peak aerial survey counts at up to 16 tributaries distributed throughout the drainage. In 2013, the total run of king salmon to the Kuskokwim River, for the years 1976–2011, was estimated (reconstructed) using a model developed for data-limited situations (Bue et al. 2012). This model was modified in 2018, incorporating results from a multiyear mark/recapture study conducted by the department from 2014–2017. The analysis found that previous estimates had overestimated the abundance of king salmon, thus total run and escapement estimates from 1976–2018 were adjusted (Table 1) (Liller et al. 2018). From the king salmon run reconstruction work, a king salmon drainagewide SEG of 65,000–120,000 was established and 3 weir-based tributary SEGs were revised in 2013. The drainage wide SEG has been achieved every year since 2014, with the past 4 years of escapements in the upper 25% of the escapement goal range. The drainagewide SEG for king salmon is considered to be the most appropriate SEG for evaluation of the king salmon stock. There are concerns about the appropriateness of using the tributary-based goals to evaluate drainage wide stock status (Liller et al. 2018). Since 2016, the 3 weir based SEGs at the Kwethluk, George, and Kogruklu Rivers have been achieved or exceeded, except in 2016 when the George River failed to meet the lower end of the SEG (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). Assessment of these goals over the past 3 years has shown approximately 80% of the SEGs were achieved or exceeded.

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

Stock unit	Enumeration method	Current escapement goal		
		Goal	Type	Year established
King salmon				
	Run			
Kuskokwim River	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
Holitna River	Aerial survey	970–2,100	SEG	2005
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 king salmon on the Kuskokwim River since 2000. The average annual subsistence harvest from 2008–2017 was approximately 44,200 fish (Table 4). It is important to recognize that since 2012, subsistence fishing opportunity for king salmon has been heavily restricted with the exception of 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 2016–2018 that prompted a very conservative management approach to the king salmon fishery. Restrictions to the subsistence fishery included: an early season subsistence fishing closure through June 11; limiting the use of gillnets to 4-inch mesh gillnets of 60 feet or less in length for targeting non-salmon species; gillnet closures in specific tributaries; the requirement of live release of king 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 king salmon was also closed areawide for the entire season.

Each year since 2014, Federal Special Actions have restricted subsistence fishing to federally qualified users within the Yukon Delta National Wildlife Refuge which established the United States Fish and Wildlife Service (USFWS) as the lead management agency for the king salmon subsistence fishery. Subsistence harvests of king salmon from 2016 and 2017 were well below average due to the low runs and extensive restrictions placed on the subsistence fishery (Table 4). Because of subsistence restrictions in 2018, this harvest is also expected to be well below average but similar to 2017²

King salmon are harvested incidentally in the mixed-species chum salmon-directed commercial fishery during late June and July under a guideline harvest range of 0–50,000 fish (Figure 2). The majority of the king salmon caught in the commercial fishery from 2013 through 2015 were not

² Data on file with the Kuskokwim Management Group, ADF&G Division of Commercial Fisheries, Anchorage.

sold as buyers agreed to not purchase them (Table 5). From 2016 to 2018, no king salmon were bought or sold in the limited catcher/seller commercial fishing opportunities provided.

Chum Salmon

Kuskokwim River chum salmon escapements have been average to above average since 2016 and the only escapement goal has been met or exceeded within the Kuskokwim River. Exploitation from commercial harvest has been limited due to king salmon conservation measures and the lack of a commercial processor in the last 5 years.

Escapement

Chum salmon escapement is monitored with weirs operated in 6 tributary streams (Figure 1). The only chum salmon escapement goal in the Kuskokwim River drainage is at the Kogruklu River weir, which was established in 2005. This goal, an SEG range of 15,000–49,000 established in 2005, has been annually achieved or exceeded in all of the last 10 years (Table 6). In 2012, the Kogruklu River weir was not operational for a majority of the run and no estimate was attained. The department does not currently estimate total chum salmon run size or escapement for the Kuskokwim River (Head and Smith 2018).

Harvest

Since the late 1990s, this fishery has been constrained by low market interest in chum salmon, limited processing capacity, and more recently, reduced opportunities due to king salmon conservation measures. Beginning in 2016, the Kuskokwim Area no longer had a large scale commercial processor operating in the area, 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 from 1990–2017 averaged approximately 67,000 fish and the ANS for chum salmon is 41,200–116,400 fish (Table 7). The subsistence harvests in 2015, 2016, and 2017 were 40,872; 44,858; and 52,589 chum salmon respectively; which were below average in light of the restrictions due to king salmon conservation. Subsistence harvest information from 2018 was still in the process of being collected at the time this report was prepared.

Sockeye Salmon

Understanding of sockeye salmon abundance in the Kuskokwim River has recently changed with incorporation of a monitoring project at Telaquana Lake. This project monitors the lake-type life history of sockeye salmon while all other weir projects monitor mostly river-type (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 (Table 8).

Escapement

Sockeye salmon escapements are monitored at 6 of the tributary weir projects operated throughout the Kuskokwim River drainage (Figure 1), although they are only prominent in Kwethluk River, Kogruklu River, and Telaquana Lake. The only escapement goal for sockeye salmon is at Kogruklu River weir, an SEG range of 4,400–17,000 established in 2010, which has been achieved or exceeded each of the last 10 years. Kogruklu River weir estimates for 2012 are unavailable because it was inoperable for a large portion of the sockeye salmon run

(Table 8). The department does not currently generate estimated total sockeye salmon run size or escapement for the Kuskokwim River (Head and Smith 2018).

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. Beginning in 2016, the Kuskokwim Area no longer had a large-scale commercial processor operating in the area 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 1990–2017 was approximately 43,000 fish and the ANS for sockeye salmon is 32,200–58,700 fish (Table 9). The subsistence harvests in 2015, 2016, and 2017³ were 36,781; 51,580; and 48,462 sockeye salmon, respectively, and were above average despite restrictions on king salmon harvest opportunity (Poetter and Tiernan 2017).

Coho Salmon

Recent advances in estimating Kuskokwim River coho salmon run size are ongoing and preliminary. Bethel test fish and weir data indicate that the coho salmon run was average to above average in 2016 and 2017. The 2018 coho salmon run was not fully assessed at BTF due to operational difficulties that ended the project early. Weir escapements are still being finalized and the numbers presented are preliminary, but indicators point to a below average run in 2018.

Escapement

Coho salmon escapement is monitored with weirs operated in 6 tributary streams (Figure 1). The Kogruklu River escapement goal (SEG: 13,000–28,000 fish) has been annually achieved or exceeded every year from 1999–2015. The goal was not assessed in 2016 or 2017 where more than 40% of the run was missed due to high water or operational difficulties (Table 10). The Kwethluk River escapement goal (SEG: >19,000 fish) was achieved in 2016 and 2017. The 2018 preliminary Kogruklu and Kwethluk rivers escapement estimates indicate their respective escapement goals were not achieved (Head and Smith 2018).

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 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 subsistence harvest from 1990–2017 averaged approximately 37,000 coho salmon, with an ANS for coho salmon of 27,400–57,600 fish (Table 11). The subsistence harvests in 2015, 2016 and 2017 were 33,939, 36,787 and 37,786 coho salmon, respectively.

³ Data on file with the Kuskokwim Management Group, ADF&G Division of Commercial Fisheries, Anchorage.

KUSKOKWIM BAY

Quinhagak (District 4)

Escapement

A salmon enumeration weir was operated on Kanektok River until 2016 at river mile 45 from approximately June 25–August 15 (Table 12). No escapement goals have been developed for this weir because the data series is too short. (Table 12). Comparison of escapement among years is problematic because a substantial number of king, chum, and coho salmon spawn downstream of the weir site. Since the weir project ceased operations in mid-August, coho salmon counts were not complete.

Aerial survey escapement goals have been established for Kanektok River king and sockeye salmon (Table 13). Sockeye salmon escapement goals (SEG: 14,000–34,000 fish) have been achieved or exceeded in each of the last 10 years that aerial survey data are available with 2018 having the second highest escapement estimate on record. Aerial survey data for king salmon are available in 5 of the last 10 years with the escapement goal (SEG: 3,500–8,000) being met in 2015, 2016, and 2018 (Head and Smith 2018). The aerial survey goal was not assessed in 2017 due to inclement weather preventing surveys from being conducted.

Harvest

There has been no commercial fishery harvest in District 4 since 2015 when the single processor in the area ceased operations (Table 14). Subsistence harvests of these stocks are small with king salmon making up the largest portion of subsistence harvest with an average annual harvest of approximately 3,500 king salmon from 1990 through 2017 (Tables 4, 7, 9, and 11). Annual subsistence harvest for king salmon has increased in recent years while subsistence harvests of all other species of salmon has remained consistent over the past 5 years.

Goodnews Bay (District 5)

Escapement

Salmon escapement into the Goodnews River drainage is assessed by a weir on the Middle Fork Goodnews River and by aerial surveys. Weir-based escapement goals have been established for king, sockeye, chum, and coho salmon (Table 15). Sockeye salmon have consistently met or exceeded the goal since the goal was established. King and chum salmon achieved their respective goals in 2016 and 2017. The weir did not operate in 2018 due to abnormally high water that persisted through the operational period. The coho salmon escapement is no longer assessed due to changes in weir operational dates. For years with available data, sockeye salmon consistently achieve or exceed the aerial survey goal, while king salmon escapements are variable, with both species goals being achieved in 2016. Aerial surveys were not conducted in 2017 and 2018 due to weather constraints (Table 16) (Head and Smith 2018).

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

Stock unit	Enumeration method	Current escapement goal		
		Goal	Type	Year amended or established
King Salmon				
Goodnews River (Main Fork)	Aerial survey	640–3,300	SEG	2005
Middle Fork Goodnews River	Weir	1,500–2,900	BEG	2005
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	5,500–19,500	SEG	2005
Middle Fork Goodnews River	Weir	18,000–40,000	BEG	2007

Harvest

There has been no commercial fishery harvest in District 5 since 2015 when the single processor in the area ceased operations (Table 17). Subsistence harvests of these stocks are small with sockeye salmon making up the largest portion of subsistence harvest with an average annual harvest of approximately 540 sockeye salmon from 1990–2017 (Tables 4, 7, 9, and 11).

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TABLES AND FIGURES

Table 1.–Kuskokwim River king salmon estimated total run and estimated escapement, 1980–2018.

Year	Estimated total run	Estimated escapement
1980	358,857	261,889
1981	308,304	197,905
1982	172,481	65,480
1983	148,332	66,187
1984	172,410	83,234
1985	143,797	61,870
1986	123,869	53,257
1987	185,810	81,567
1988	205,050	77,287
1989	213,985	87,832
1990	266,721	102,535
1991	210,936	97,788
1992	259,295	128,022
1993	274,721	175,210
1994	409,634	287,004
1995	371,420	236,502
1996	309,601	204,090
1997	296,061	204,680
1998	184,499	84,283
1999	159,197	81,367
2000	129,141	60,908
2001	205,325	126,850
2002	226,122	144,461
2003	232,294	164,192
2004	366,843	266,202
2005	326,962	235,959
2006	326,146	232,488
2007	244,625	146,508
2008	219,696	111,600
2009	189,386	103,117
2010	112,928	43,494
2011	113,555	49,524
2012	79,179	55,687
2013	84,429	36,941
2014	84,419	72,653
2015	125,101	108,497
2016	128,694	97,479
2017	133,190	116,520
2018 ^a	140,891	110,426
10-year avg (2008–2017)	127,058	79,551

^a Data are preliminary.

Table 2.–Kuskokwim River king salmon weir-based escapement estimates, 1990–2018.

Year	Kwethluk River	Tuluksak River	George River	Kogrukluk River	Tatlawiksuk River	Salmon River (Aniak)	Salmon River (Pitka)
1990	-	-	-	10,093	-	-	-
1991	-	697	-	6,835	-	-	-
1992	9,675	1,083	-	6,563	-	-	-
1993	-	2,218	-	12,377	-	-	-
1994	-	2,916	-	-	-	-	-
1995	-	-	-	20,662	-	-	-
1996	-	-	7,770	13,771	-	-	-
1997	-	-	7,810	13,190	-	-	-
1998	-	-	^a	-	^a	-	-
1999	-	-	^a	5,543	1,484	-	-
2000	3,547	-	2,959	3,242	807	-	-
2001	- ^a	954	3,277	7,475	1,978	-	-
2002	8,963	1,346	2,443	10,025	2,237	-	-
2003	14,474	1,064	^a	12,008	^a	-	-
2004	29,111	1,475	5,488	19,819	2,833	-	-
2005	-	2,653	3,845	21,819	2,864	-	-
2006	19,899	1,033	4,355	20,205	1,700	7,075	-
2007	14,438	377	4,011	^a	2,032	6,255	-
2008	6,300	683	2,563	9,750	1,075	2,376	-
2009	5,828	362	3,663	9,528	1,071	1,656	-
2010	1,772	207	1,498	5,812	546	^a	-
2011	4,217	287	1,547	6,731	992	^a	-
2012	^a	542	2,201	^a	1,116	^a	-
2013	^a	194	1,292	1,819	495	625	-
2014	3,213	338	2,993	3,732	1,904	1,757	-
2015	8,163	711	2,281	7,639	2,095	2,285	6,736
2016	^a	909	1,663	7,056	2,494	^a	6,326
2017	7,345	645	3,671	9,984	2,174	2,446	8,003
2018 ^b	^a	-	3,421	5,757	-	2,277	5,317
SEG:	4,100–7,500		1,800–3,300	4,400–17,000			

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

^b Preliminary numbers, subject to change.

Table 3.–King salmon spawning aerial survey index estimates, Kuskokwim River drainage, 1975–2018.

Year	Lower Kuskokwim River ^a		Middle Kuskokwim River ^a							Upper Kuskokwim River ^a		
	Kwethluk Canyon C.	Kisaralik	Aniak	Kipchuk	Salmon (Aniak)	Holokuk	Oskawalik	Holitna	Gagarayah	Cheeneetnuk	Bear (Pitka)	Salmon (Pitka)
1975	-	-	-	-	-	-	-	-	-	-	36	-
1976	-	-	-	-	-	-	-	2,571	-	-	182	-
1977	2,075	-	-	-	-	-	-	-	897	2,407	-	1,930
1978	1,722	2,417	-	-	289	-	-	2,766	504	268	-	1,100
1979	-	-	-	-	-	-	-	-	-	-	227	682
1980	-	-	-	-	1,186	-	-	-	-	-	-	-
1981	-	-	9,074	-	-	-	-	-	-	-	93	-
1982	-	81	-	-	126	-	-	521	-	-	127	413
1983	471	-	1,909	-	231	-	-	1,069	-	173	-	572
1984	-	-	-	-	-	-	-	-	-	1,177	-	545
1985	-	63	-	-	-	-	-	-	-	1,002	-	620
1986	-	-	424	-	336	-	-	650	-	-	-	-
1987	-	-	-	193	516	-	193	-	-	317	-	-
1988	622	869	954	-	244	-	80	-	-	-	-	474
1989	1,157	152	2,109	1,598	631	-	-	-	-	-	-	452
1990	-	631	1,255	537	596	-	113	-	-	-	-	-
1991	-	217	1,564	885	583	-	-	-	-	-	-	-
1992	-	-	2,284	670	335	-	91	2,022	328	1,050	-	2,536
1993	-	-	2,687	1,248	1,082	233	103	1,573	419	678	-	1,010
1994	-	1,243	-	1,520	1,218	-	-	-	807	1,206	-	1,010
1995	-	1,243	3,171	1,215	1,446	-	326	1,887	1,193	1,565	-	1,911
1996	-	-	-	-	985	-	-	-	-	-	-	-
1997	-	439	2,187	855	980	-	1,470	2,093	364	345	-	-
1998	-	457	1,930	443	425	-	-	-	-	-	-	-
1999	-	-	-	-	-	-	98	741	-	-	-	-

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Table 3.–Page 2 of 2.

Year	Lower Kuskokwim River ^a		Middle Kuskokwim River ^a							Upper Kuskokwim River ^a		
	Kwethluk Canyon C.	Kisaralik	Aniak	Kipchuk	Salmon (Aniak)	Holokuk	Oskawalik	Holitna	Gagarayah	Cheeneetnuk	Bear (Pitka)	Salmon (Pitka)
2000	-	-	714	182	238	-	-	301	-	-	-	362
2001	-	-	-	-	598	52	-	4,156	143	-	175	1,033
2002	1,795	1,727	-	1,615	1,236	513	295	733	452	730	211	1,255
2003	2,661	654	3,514	1,493	1,242	1,096	844	-	1,093	810	176	1,242
2004	6,801	5,157	5,362	1,868	2,177	539	293	4,051	670	918	206	1,138
2005	5,059	2,206	-	1,679	4,097	510	582	1,760	788	1,155	367	1,801
2006	-	4,734	5,639	1,618	-	705	386	1,866	531	1,015	347	862
2007	-	692	3,984	2,147	1,458	-	-	-	1,035	-	165	943
2008	487	1,074	3,222	1,061	589	418	213	-	177	290	245	1,033
2009	-	-	-	-	-	565	379	-	303	323	209	632
2010	-	235	-	-	-	229	-	587	62	-	75	135
2011	-	-	-	116	79	61	26	-	96	249	145	767
2012	-	588	-	193	49	36	51	-	178	229	-	670
2013	1,165	599	754	261	154	-	38	532	74	138	64	469
2014	-	622	3,201	1,220	497	80	200	-	359	340	-	1,865
2015	-	709	-	917	810	77	-	662	19	-	1,381	2,016
2016	-	622	718	898	-	100	47	1,157	135	217	580	1,578
2017	-	-	1,781	889	423	140	136	676	453	660	492	687
2018	-	584	1,534	1,123	442	162	-	980	438	565	550	1,399
SEG		400–	1,200–		330–			970–	300–	340–		470–
		1,200	2,300		1,200			2,100	830	1,300		1,600
10-yr avg.	2,237	1,344	3,360	1,037	989	326	234	1,186	360	467	202	918

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

Table 4.—Estimated subsistence king salmon harvest in the Kuskokwim Area, 1990–2014.

Community	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Kongiganak	1,559	729	929	680	1,281	1,095	1,108	1,376	1,128	1,153
N. Kuskokwim Bay	1,559	729	929	680	1,281	1,095	1,108	1,376	1,128	1,153
Tuntutuliak	4,174	4,156	3,750	3,905	5,019	3,928	4,256	3,159	3,797	3,412
Eek	4,923	2,617	2,057	2,496	2,976	3,679	2,786	2,009	2,215	1,730
Kasigluk	3,300	2,875	3,150	3,609	3,351	3,208	3,294	3,480	2,617	5,473
Nunapitchuk	4,192	4,004	4,123	3,852	4,580	4,543	3,479	3,605	4,502	4,215
Atmautluak	2,895	1,661	1,239	1,715	1,856	2,016	1,752	1,648	1,397	1,372
Napakiak	4,427	2,573	4,147	3,822	3,355	3,515	3,842	2,908	3,436	2,265
Napaskiak	6,586	4,008	5,299	5,566	6,521	4,862	5,261	4,756	4,901	3,633
Oscarville	1,263	1,476	1,501	1,496	1,390	1,046	995	1,056	754	1,543
Bethel	34,925	18,041	22,220	19,800	31,251	32,463	32,116	20,100	24,877	22,751
Kwethluk	10,657	7,298	6,949	9,280	9,546	9,907	9,786	6,319	7,502	6,366
Akiachak	8,395	5,607	8,130	7,678	7,622	6,410	5,689	6,699	6,026	5,210
Akiak	5,966	3,168	3,452	4,478	4,653	4,401	4,851	3,196	2,943	2,377
Tuluksak	2,022	3,114	2,330	3,662	4,414	4,175	3,309	5,456	3,554	2,239
Lower Kuskokwim River	93,725	60,598	68,347	71,359	86,534	84,153	81,416	64,391	68,521	62,586
Lower Kalskag	2,946	4,022	2,338	3,603	4,087	4,541	3,513	3,103	1,954	1,726
Upper Kalskag	1,618	1,031	1,321	1,682	1,297	1,447	1,304	941	1,394	1,670
Aniak	3,589	3,562	3,976	4,651	3,714	3,506	3,343	3,640	3,466	2,603
Chuathbaluk	1,718	998	986	1,443	1,013	2,461	914	1,204	730	1,035
Middle Kuskokwim River	9,871	9,613	8,621	11,379	10,111	11,955	9,074	8,888	7,544	7,034
Crooked Creek	971	916	583	707	1,126	874	890	963	768	702
Red Devil	297	154	400	449	409	412	359	404	243	141
Sleetsmute	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	114,219	79,445	87,490	92,129	107,540	105,598	100,417	82,975	85,535	77,181

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Table 4.–Page 2 of 3.

Community	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
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 3.

Community	2010	2011	2012	2013	2014	2015	2016	2017
Kongiganak	1,456	1,208	287	<i>641</i>	<i>964</i>	-	-	-
N. Kuskokwim Bay	1,456	1,208	287	<i>641</i>	<i>964</i>	-	-	-
Tuntutuliak	3,261	3,032	1,123	2,448	<i>574</i>	1,668	1,963	1,459
Eek	1,761	1,378	1,004	1,188	665	850	1,460	825
Kasigluk	3,014	2,823	552	2,919	205	438	951	791
Nunapitchuk	2,548	3,559	845	2,563	287	1,051	1,695	761
Atmautluak	1,088	1,236	234	1,592	108	514	763	195
Napakiak	1,674	1,963	457	1,588	311	917	1,151	505
Napaskiak	4,333	3,360	1,108	2,939	422	816	1,535	858
Oscarville	618	694	51	585	68	120	208	122
Bethel	26,157	25,093	7,321	17,246	3,089	4,918	9,462	5,336
Kwethluk	4,440	2,467	1,709	3,192	959	900	1,731	1,019
Akiachak	4,470	3,852	2,862	3,585	1,033	1,103	3,438	1,415
Akiak	3,625	2,455	<i>1,218</i>	1,449	530	610	1,274	694
Tuluksak	2,057	1,230	651	732	404	231	709	511
Lower Kuskokwim River	59,046	53,142	19,135	42,026	8,655	14,136	26,340	14,491
Lower Kalskag	1,030	1260	459	744	283	351	578	260
Upper Kalskag	1,496	1772	562	1,317	258	334	838	190
Aniak	2,262	2214	993	1,440	344	542	1,293	718
Chuathbaluk	551	409	103	155	90	90	203	100
Middle Kuskokwim River	5,339	5,655	2,117	3,656	975	1,317	2,912	1,268
Crooked Creek	240	402	124	<i>145</i>	35	78	384	110
Red Devil	33	186	225	<i>77</i>	83	52	69	38
Sleetmute	272	242	132	96	58	137	169	36
Stony River	189	134	<i>151</i>	51	24	25	33	109
Lime Village	47	<i>118</i>	29	<i>43</i>	32	-	35	33
McGrath	262	829	68	95	173	75	384	118
Takotna	0	0	0	0	0	3	0	0
Nikolai	402	450	276	283	235	301	367	177
Telida	-	-	-	-	-	-	-	-
Upper Kuskokwim River	1,445	2,361	1,005	790	609	671	1,441	620
Kuskokwim River Total	67,286	62,366	22,544	47,113	11,203	16,124	30,693	16,379
Quinhagak	2,793	2,588	2,396	3,143	3,723	3,082	4,822	5,217
Goodnews Bay	480	834	389	413	431	220	654	457
Platinum	17	62	24	39	46	11	99	96
South Kuskokwim Bay	3,290	3,484	2,809	3,595	4,200	3,313	5,575	5,770
Total estimate	70,576	65,850	25,353	50,708	15,403	19,437	36,268	22,149

Note: Dashes indicate that harvest was not estimated and numbers in italic are Bayesian inputted estimates.

Table 5.–Commercial salmon harvest and exvessel value, District W-1, Kuskokwim River, Kuskokwim Management Area, 1993–2015.

Year	King		Sockeye		Coho		Pink		Chum		Total	
	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	1,272	\$827	194,444	\$424,199
2002	72	\$212	84	\$196	83,463	\$124,763	-	\$0	1,900	\$1,190	85,519	\$126,361
2003	158	\$846	282	\$803	284,064	\$450,451	-	\$0	2,764	\$1,087	287,268	\$453,187
2004	2,305	\$9,815	8,532	\$19,549	435,407	\$907,791	-	\$0	20,150	\$6,611	466,394	\$943,766
2005	4,784	\$29,040	27,645	\$109,063	142,319	\$287,635	-	\$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	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	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	65,171	\$257,932	154,431	\$597,998
2013	1	\$6	768	\$5,226	114,069	\$833,327	-	\$0	52,236	\$346,288	167,074	\$1,184,847
2014	-	\$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	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
Average												
2008–2017	2,291	\$23,278	10,457	\$56,236	95,328	\$441,200	3	\$0	56,963	\$159,703	165,042	\$680,417

^a Harvest information confidential.

Table 6.–Kuskokwim River chum salmon weir-based escapement estimates, 1990–2018.

Year	Kwethluk River	Tuluksak River	George River	Kogruklu River	Tatlawiksuk River	Salmon River (Aniak)	
1990	-	-	-	26,556	-	-	
1991	-	7,675	-	23,093	-	-	
1992	30,595	11,183	-	42,569	-	-	
1993	-	13,804	-	30,163	-	-	
1994	-	15,723	-	-	-	-	
1995	-	-	-	32,967	-	-	
1996	-	-	24,214	48,238	-	-	
1997	-	-	5,906	7,975	-	-	
1998	-	-	^a	^a	^a	-	
1999	-	-	8,684	14,134	9,739	-	
2000	11,691	-	3,507	11,416	7,076	-	
2001	^a	19,310	11,287	31,587	23,863	-	
2002	35,854	9,958	6,534	52,973	24,539	-	
2003	41,812	11,725	33,648	23,779	^a	-	
2004	38,646	11,796	15,012	24,405	21,245	-	
2005	^a	35,696	14,834	194,887	55,599	-	
2006	47,491	25,652	42,318	188,003	32,776	42,825	
2007	54,913	17,286	61,531	52,961	83,484	25,340	
2008	20,030	12,550	29,396	44,744	30,129	9,459	
2009	32,191	13,671	7,944	82,483	19,975	9,392	
2010	19,222	13,042	26,275	69,258	37,737	-	
2011	18,329	10,011	46,650	76,823	88,202	-	
2012	^a	16,981	33,310	^a	44,569	-	
2013	22,381 ^a	12,911	37,879	65,664	32,249	7,723	
2014	17,941	8,726	17,148	30,763	12,455	2,890	
2015	23,039	6,337	17,551	33,201	10,379	5,657	
2016	22,914	5,868	20,834	45,329	10,564	817	
2017	53,745	22,405	40,028	94,387	29,876	10,173	
2018	^b	29,245	- ^a	45,195	45,230	- ^a	18,922
Escapement goal:				15,000–49,000			

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

^b Preliminary numbers, subject to change.

Table 7.—Estimated subsistence chum salmon harvest in the Kuskokwim Area, 1990–2018.

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 3.

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 3.

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

Note: Dashes indicate that harvest was not estimated and numbers in italic are Bayesian inputted estimates.

Table 8.–Kuskokwim River sockeye salmon weir-based escapement estimates, 1990–2018.

Year	Kwethluk River	Tuluksak River	George River	KogrukluK River	Telaquana River	Salmon River (Aniak)
1990	-	-	-	8,383	-	-
1991	-	34	-	15,542	-	-
1992	1,316	129	-	7,833	-	-
1993	-	88	-	27,973	-	-
1994	-	82	-	^a	-	-
1995	-	-	-	11,145	-	-
1996	-	-	86	15,176	-	-
1997	-	-	445	13,144	-	-
1998	-	-	^a	6,036	-	-
1999	-	-	39	5,893	-	-
2000	1,049	-	22	2,895	-	-
2001	^a	137	24	7,177	-	-
2002	272	82	17	4,084	-	-
2003	2,928	288	14	9,302	-	-
2004	3,490	136	177	6,895	-	-
2005	^a	642	272	37,787	-	-
2006	6,733	985	146	61,382	-	7,086
2007	5,148	352	65	17,211	-	2,189
2008	2,451	188	92	19,675	-	1,181
2009	4,230	686	54	22,826	-	1,366
2010	4,188	437	113	17,139	71,932	^a
2011	2,031	130	43	7,974	35,102	^a
2012	^a	189	79	^a	23,005	924
2013	746	394	150	7,808	28,050	966
2014	3,778	514	156	6,413	24,293	894
2015	8,975	824	159	6,411	95,516	1,669
2016	20,495	1,509	2,807	20,087	82,706	254
2017	29,940	4,094	912	27,315	145,287	^a
2018 ^b	6,174	-	1,558	18,934	197,324	2,656
Escapement goal:	4,400–17,000					

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

^b Preliminary numbers, subject to change.

Table 9.—Estimated subsistence sockeye salmon harvest in the Kuskokwim Area, 1990–2018.

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 3.

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
Sleetsmute	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 3.

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

Note: Dashes indicate that harvest was not estimated and numbers in italic are Bayesian inputted estimates.

Table 10.–Kuskokwim River coho salmon weir-based escapement estimates, 1990–2018.

Year	Kwethluk River	Tuluksak River	George River	Kogrukluks River	Tatlawiksuk River	Salmon River (Aniak)
1990	-	-	-	3,446	-	-
1991	-	4,651	-	7,206	-	-
1992	45,605	7,501	-	a	-	-
1993	-	8,328	-	a	-	-
1994	-	7,952	-	28,110	-	-
1995	-	-	-	a	-	-
1996	-	-	a	50,003	-	-
1997	-	-	9,392	11,883	-	-
1998	-	-	a	22,987	a	-
1999	-	-	8,914	10,908	3,621	-
2000	25,610	a	11,269	33,063	a	-
2001	20,725	23,768	16,724	19,983	a	-
2002	23,298	11,487	6,759	14,515	11,156	-
2003	107,789	41,071	32,873	74,915	a	-
2004	64,216	20,336	12,499	26,078	16,446	-
2005	a	11,324	8,294	25,407	7,076	-
2006	25,667	6,111	12,705	16,268	a	a
2007	19,473	2,807	28,398	26,423	8,500	a
2008	48,049	7,457	21,931	29,237	11,022	10,974
2009	21,911	8,137	12,490	22,289	10,148	6,351
2010	a	1,525	12,639	14,689	3,773	a
2011	a	a	29,120	21,800	14,184	a
2012	20,895	4,407	14,478	13,421	8,015	a
2013	a	6,490	15,308	21,207	12,764	2,797
2014	43,945	13,797	35,771	52,975	19,814	8,254
2015	22,443	6,611	35,812	32,457	17,701	a
2016	28,852	1,857	a	a	11,897	560
2017	46,594	28,922	25,384	a	a	a
2018	b	5,589	8,993	7,700	-	a
Escapement goal:	>19,000			13,000–28,000		

Note: Blank cells represent no data.

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

^b Preliminary numbers, subject to change.

Table 11.—Estimated subsistence coho salmon harvest in the Kuskokwim Area, 1990–2018.

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 3.

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 3.

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

Note: Dashes indicate that harvest was not estimated and numbers in italic are Bayesian inputted estimates.

Table 12.—Weir-based salmon spawning escapement, Kanektok River, Kuskokwim Bay, 2001–2018.

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

Note: Blank cells represent no data.

- ^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, 1977–2018.

Year	King	Sockeye
1979		a
1980	6,172	112,501
1981		a
1982		a
1983	8,890	
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
1991		a
1992		a
1993		a
1994	7,386	
1995		a
1996		a
1997		a
1998		a
1999		a
2000		a
2001		a
2002		a
2003	6,206	21,335
2004	28,375	77,780
2005	12,780	95,900
2006		a
2007		a
2008		a
2009		a
2010	1,208	16,180
2011		a
2012		a
2013	2,277	51,517
2014	1,840	136,400
2015	4,919	39,970
2016	5,631	80,160
2017		a
2018	4,246	326,200

^a Survey was either not flown or did not meet acceptable criteria.

Table 14.—Commercial salmon fishing exvessel value, District 4, Quinhagak, Kuskokwim Bay, 1990–2018.

Year	King		Sockeye		Coho		Pink		Chum		Total	
	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
10-Yr Avg.	11,465	\$122,462	72,768	\$347,627	42,900	\$194,055	0	\$0	60,997	\$182,260	188,130	\$846,405

^a No commercial processor operating in the Kuskokwim Area.

Table 15.—Weir-based salmon spawning escapement, Middle Fork Goodnews River, Kuskokwim Bay, 1991–2015.

Year	King	Sockeye	Coho	Pink	Chum
1991	2,080	41,656	b	1,428 ^a	27,632
1992	1,445	b	b	21,523 ^a	21,096
1993	2,132	24,957	b	318 ^a	14,581
1994	3,061	56,503	b	38,710 ^a	35,652
1995	4,678	37,776	b	312 ^a	33,559
1996	b	b	b	14,509 ^a	b
1997	2,897	34,322	13,404	940 ^a	17,151
1998	3,553	38,493	33,368	10,376 ^a	26,996
1999	3,703	49,321	11,320	907 ^a	21,818
2000	2,670	40,828	b	2,524 ^a	14,405
2001	5,351	21,194	18,300	1,323 ^a	26,820
2002	3,025	21,329	27,643	3,034 ^a	29,905
2003	2,248	37,933	52,504	1,864 ^a	21,778
2004	4,438	54,035	42,049	21,584 ^a	32,442
2005	4,781	118,969	20,168	5,926 ^a	26,501
2006	4,572	127,245	26,909	18,432 ^a	54,689
2007	3,914	73,768	19,442	4,919 ^a	50,232
2008	2,223	43,879	37,690	9,807 ^a	39,548
2009	1,669	27,494	19,123	714 ^a	19,236
2010	2,176	36,574	26,287	3,444 ^a	24,789
2011	2,045	19,643	24,668	1,394 ^a	19,974
2012	524	29,531	b	6,316 ^a	9,065
2013	1,187	23,545	b	530 ^a	27,682
2014	750	41,473	5,294 ^c	9,287 ^a	11,518
2015	1,494	57,809	15,084 ^c	1,159 ^a	11,517
2016 ^d	3,767	170,574	b	— ^a	41,815
2017 ^d	6,881	179,897	b	— ^a	54,799
2018	e	e	e	e	e
Escapement goal:	1,500–2,900	18,000–40,000	>12,000		>12,000

^a Pink salmon passage is not estimated because they are small enough to pass 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 River and lakes, Kuskokwim Bay, 1980–2018.

Year	Goodnews River and lakes	
	King	Sockeye
1980	1,228	75,639
1981		a
1982		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
1989	651	
1990	658	27,689
1991		a
1992	875	
1993		a
1994		a
1995	3,314	
1996		a
1997		a
1998	578	3,497
1999		a
2000		a
2001		a
2002	1,470	
2003	3,935	50,140
2004	7,482	31,695
2005		a
2006		a
2007		a
2008	2,155	32,500
2009		a
2010		a
2011	853	14,140
2012	378	16,710
2013		a
2014	630	
2015	991	38,390
2016	1,120	90,060
2017		a
2018		a
Escapement goal:	640–3,300	5,500–19,500

Note: Estimates are from aerial surveys conducted during peak spawning periods under 'good' or 'fair' survey conditions. Blank cells represents no data, because the survey was either not flown or did not meet acceptable criteria.

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

Table 17.—Commercial salmon fishing exvessel value, District W-5 Goodnews Bay, Kuskokwim Bay, 1990–2018.

Year	King		Sockeye		Coho		Pink		Chum		Total	
	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
10-Yr Avg.	1,692	\$18,473	31,865	\$167,114	18,833	\$108,755	1	\$0	13,003	\$40,816	65,394	\$335,158

^a No commercial processor operating in the Kuskokwim Area.

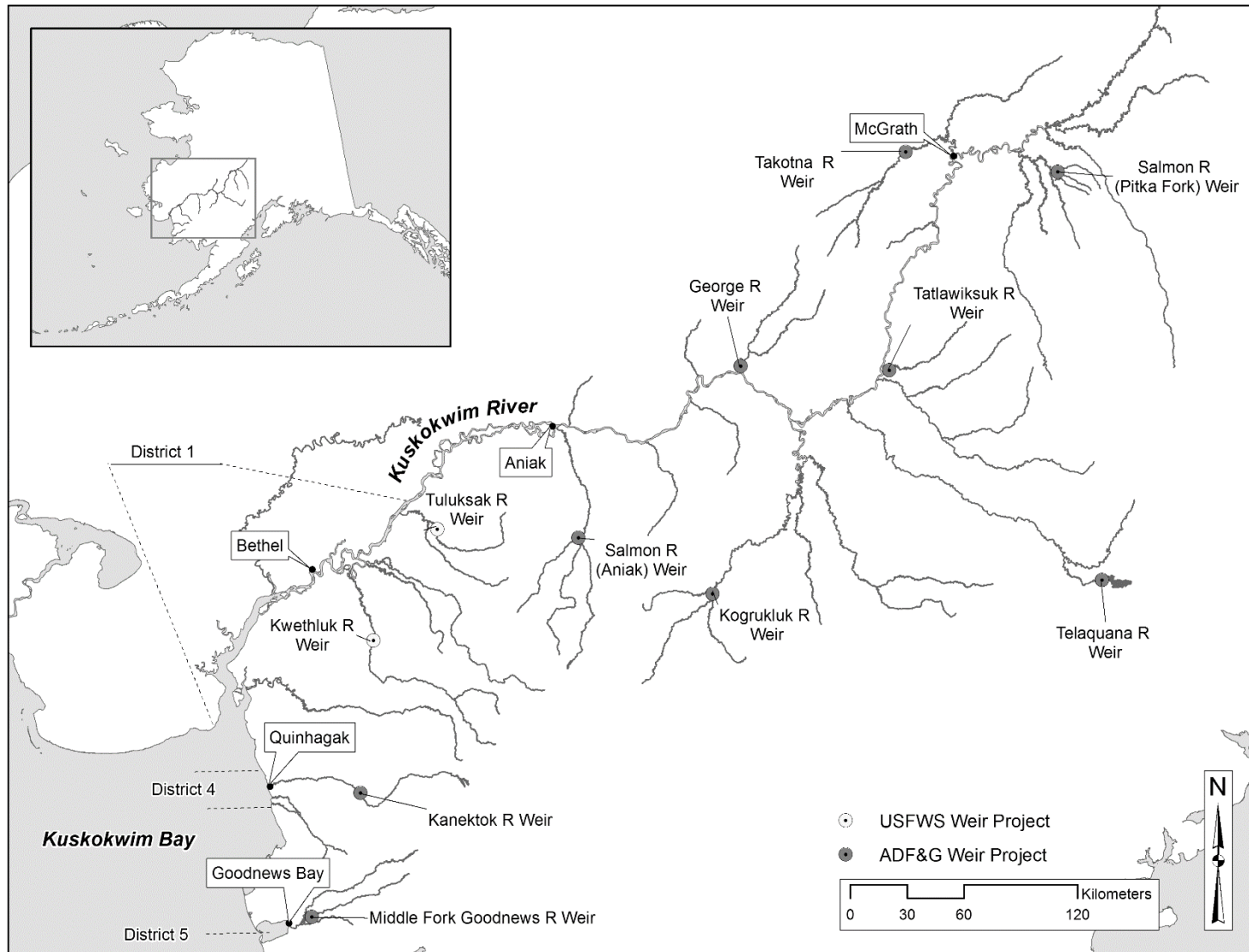


Figure 1.—Map of the Kuskokwim Area commercial fishing districts and escapement assessment projects.

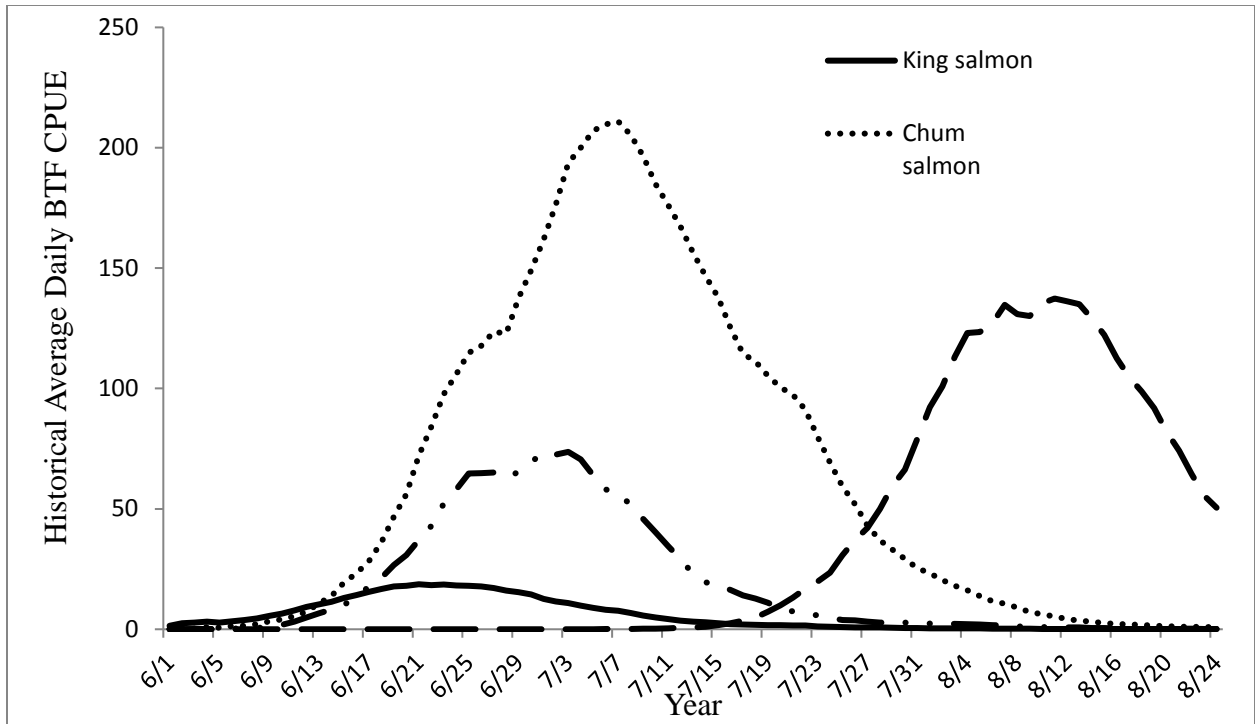


Figure 2.—Historical moving 5-day average daily Bethel test fishery CPUE indices as a graphical representation of Kuskokwim River salmon run timing past the Bethel test fishery site.