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## **Advisory Announcement**

*For Immediate Release: October 15, 2020*

**Time: 11:59 a.m.**

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## **Kuskokwim River Salmon Fishery Announcement #15**

### **2020 Preliminary Kuskokwim Area Salmon Season Summary**

This is an announcement from the Alaska Department of Fish and Game (ADF&G) for subsistence fishermen in the Kuskokwim River Drainage.

#### **Kuskokwim Area Management**

Kuskokwim River salmon fisheries were managed according to the Kuskokwim River Salmon Management Plan (5 AAC 07.365). The Kuskokwim Bay salmon fisheries were managed according to the District 4 and 5 Salmon Management Plan (5 AAC 07.367).

#### **Kuskokwim River**

##### **Preseason Forecast**

The 2020 Kuskokwim River Chinook salmon forecast was for a range of 193,000–261,000 fish. A run of this magnitude was anticipated to support a full subsistence harvest and achieve the drainage-wide sustainable escapement goal (SEG) of 65,000–120,000 fish. However, since this was the first encouraging Chinook salmon forecast in a decade, the Department’s intent was to take a precautionary management approach during the early part of the 2020 season, with short duration fishing periods, based on input from the Kuskokwim River Salmon Management Working Group (Working Group).

##### **Inseason Subsistence Management**

Preseason management actions that were intended to achieve escapement goals included early season subsistence fishing closures, tributary closures, time and area restrictions, gillnet mesh size and length restrictions, and live release requirements. The Working Group voted to support these management actions.

An early season gillnet subsistence fishing closure (i.e., “front-end closure”) began on June 1, 2020 from the Yukon Delta National Wildlife Refuge (YDNWR) boundary at the mouth of the Kuskokwim River up to the Tuluksak River; June 3 from Tuluksak River up to the Yukon Delta Refuge Boundary at Aniak; June 9 from the Yukon Delta boundary at Aniak up to the Holitna River mouth; and upstream of Holitna River mouth beginning June 11. With the closure came additional restrictions, including tributary closures and required live release of Chinook salmon captured in selective gears. During the front-end closure there were three 24-hr set gillnet opportunities with 6-inch or less mesh to allow subsistence fishers time to harvest non-salmon species. These openings occurred on June 3, 6, and 9.

Between June 1 and July 1, a Federal Special Action closed the Kuskokwim Chinook salmon fishery to non-Federally qualified users within the boundary of the YDNWR. During the Special Action, USFWS offered 6-inch setnet opportunities running concurrently to the 6-inch opportunities offered by the Department on June 3, 6, and 9. Additionally, USFWS offered four 12-hour gillnet fishing periods on June 12, 15, 18, and 24 with 6-inch or less mesh, 25 fathoms in length above the Johnson River mouth and 50 fathoms in length below the Johnson

River mouth. On June 18, USFWS opened those waters between the Kalskag Bluff to the YDNWR boundary at Aniak to subsistence fishing until further notice with 6-inch or less mesh, 25 fathoms in length, gill nets. In coordination with the USFWS inseason manager, the Department concurrently offered the same management actions within waters of the YDNWR to provide Alaska Wildlife Troopers with enforceable regulations. The three setnet and four drift gillnet opportunities offered by USFWS resulted in an estimated harvest of 23,210 Chinook salmon, 6,710 sockeye salmon, and 5,590 chum salmon by Federally qualified users within the YDNWR, excluding the section between Akiak and Aniak (Decossas 2020).

On June 12, ADF&G opened Section 4 (from the refuge boundary at Aniak to the Holitna River mouth) and Section 5 (Holitna River mouth to headwaters) to subsistence fishing until further notice with 6-inch or less mesh, 25 fathoms in length, gill nets. These sections are located outside the YDNWR boundary and not subject to the Federal Special Action.

Inriver abundance of chum and sockeye salmon began to outnumber Chinook salmon abundance in the lower Kuskokwim River on June 27. However, inseason assessment indicated that the Chinook and chum salmon runs were materializing below expectations, and with late run timing. On July 7, after chum and sockeye became the clear dominate species and inseason projections indicated that the drainage-wide Chinook salmon escapement goal and the chum salmon escapement goal on the Kogruklu River would be achieved, ADF&G opened sections 1–3 of the Kuskokwim River (YDNWR boundary at the mouth of the Kuskokwim River upstream to the boundary at Aniak) to 6-inch or less mesh, 25 fathoms in length, gillnets above the Johnson River mouth, with 50 fathom in length gillnets being allowed downstream of the Johnson River mouth. With the issuance of the July 7 Emergency Order, the entirety of the mainstem Kuskokwim River was open to subsistence fishing. The Working Group voted to support these management actions.

Mainstem gear restrictions were rescinded on August 1. Tributary restrictions were rescinded August 31. The tributary restrictions were kept in place beyond the mainstem restrictions for the purpose of conservation while Chinook salmon were on their spawning grounds.

Postseason subsistence harvest surveys are presently being conducted. An assessment of subsistence salmon harvest in 2020 will not be available until after postseason harvest surveys have been completed, data have been analyzed, and preliminary harvest estimates are produced. Final subsistence harvest estimates will be available in Spring 2021.

### **2020 District 1 Commercial Fishery**

There were no commercial buyers or processors in the Kuskokwim River. Therefore, commercial fishing opportunities were limited to individuals registered with the Department as catcher/sellers who had secured their own markets. A total of 14 commercial openers (directed at sockeye, chum, and coho salmon) were provided in District 1 of the Kuskokwim River between July 19 and August 21. Due to the small number of participants in these openers, salmon harvest was well below the historical average and State of Alaska confidentiality requirements prohibits release of the harvest data.

### **Inseason Assessment Overview**

In addition to recommendations and input from the Working Group, ADF&G mainly utilized two lower Kuskokwim River assessment projects to inform inseason management decisions: the Bethel Test Fishery (BTF) and Kuskokwim River Sonar. The BTF provided information about salmon species catch-per-unit-effort (CPUE) and run timing, while the sonar provided daily passage estimates for salmon and other species.

### **Bethel Test Fishery**

BTF operated May 26–31 (early season) and June 1–August 24 (regular season). An hour after each posted high tide, a series of drifts were conducted to determine daily CPUE of salmon species. The area fished has not changed since its inception in 1984; however, gillnet mesh material changed beginning 2008. From the start of the early season to July 15, BTF used 8” and 5 3/8” mesh gillnets (each 50 fathoms in length) for assessment purposes.

After July 15, only the 5 3/8" mesh gillnet was used because most of the Chinook salmon run had migrated upriver past the project site and the primary focus of assessment shifted to sockeye, chum, and coho salmon.

### **Kuskokwim River Sonar**

Kuskokwim River Sonar operated from June 1–August 25. The sonar provides timely information about the abundance of salmon and whitefish species as they migrate up the Kuskokwim River. The Kuskokwim River Sonar program also operates a test fishery and uses a series of six gillnets (8 1/2", 7 1/2", 6 1/2", 5 1/4", 4", and 2 3/4" mesh) for species apportionment; i.e., the proportion of each species captured in the test fishery each day. The sonar program generates daily species-specific abundance estimates using species apportionment and sonar counts. The sonar does not provide total abundance or escapement estimates since some escapement occurs below the sonar and harvest occurs both downriver and upriver from the sonar.

### **CPUE, Run Timing, and Passage Estimates**

#### **Chinook Salmon**

The cumulative Chinook salmon CPUE at the BTF was 487, which was similar to the 2008–2019 average of 575. The estimated midpoint of the Chinook salmon run was June 26 (4 days later than average).

The cumulative Chinook salmon passage estimate at the sonar was 106,152 fish (95% CI = 90,231–122,073 fish).

#### **Sockeye Salmon**

The cumulative sockeye salmon CPUE at the BTF was 1,052, which was below the 2008–2019 average of 1,839. The estimated midpoint of the sockeye salmon run was July 4 (5 days later than average).

The cumulative sockeye salmon passage estimate at the sonar was 575,334 fish (95% CI = 509,693–640,975).

#### **Chum Salmon**

The cumulative chum salmon CPUE at the BTF was 1,440, which was below the 2008–2019 average of 6,657. The estimated midpoint of the chum salmon run was July 9 (4 days later than average).

The cumulative chum salmon passage estimate at the sonar was 76,323 fish (95% CI = 55,945–96,701).

#### **Coho Salmon**

The coho salmon run was still progressing after BTF and Kuskokwim River Sonar ceased operations on August 24 and August 25, respectively. Therefore, cumulative CPUE and passage estimates are incomplete. Coho escapement at the weir projects is a better indicator of the 2020 run than BTF or Kuskokwim River Sonar. That in mind, as of August 24, the cumulative CPUE for coho salmon at BTF was 1,820, which was below the 2008–2019 average of 3,116. Cumulative passage for coho salmon at the sonar on August 25 was 165,546 fish (95% CI = 129,349–201,743). This was the first year that the Kuskokwim River Sonar operated into late August. Prior year operations ended in late July.

#### **Whitefish**

Five species of whitefish were captured by the sonar's test fishery nets (least and Bering cisco, broad and humpback whitefish, and sheefish). The cumulative cisco (least and Bering) passage estimate at the Kuskokwim River Sonar was 1,212,338 fish (95% CI = 1,109,057–1,315,619). The cumulative broad whitefish passage estimate at the sonar was 8,690 fish (95% CI = 1,970–15,410). The cumulative humpback whitefish passage estimate at the sonar was 632,383 fish (95% CI 540,788–721,978). The cumulative sheefish passage estimate at the sonar was 8,207 fish (95% CI = 3,093–13,321).

### **Salmon Escapement – Kuskokwim River Drainage**

#### **Chinook Salmon**

The preliminary Kuskokwim River total run estimate is 116,000 Chinook salmon (95% CI = 95,000–143,000) and an estimated 88,000 Chinook salmon (95% CI = 66,000–114,000) escaped Kuskokwim River fisheries, which met the drainage-wide SEG of 65,000–120,000 fish. Preliminary data suggests that all weir-based escapement goals for Chinook salmon assessed in 2020 were met within the Kuskokwim River drainage (Table 1). The established SEG range of 4,800–8,800 fish at Kogruklu River weir was met (5,645 fish), as was the SEG range

of 1,800–3,300 fish at George River (2,418 fish). Five of the six tributaries with aerial survey SEGs were assessed in 2020. Three of the five aerial survey SEGs were met (Table 2). All aerial surveys were flown under optimal or good survey conditions.

### **Sockeye Salmon**

Overall, sockeye salmon escapement was mixed throughout the drainage with above average lake-type sockeye escapement and below average river-type sockeye salmon escapement (Table 3). The preliminary Kogruklu River weir escapement of 9,923 sockeye salmon met the established SEG range of 4,400–17,000 fish. The Telaquana weir observed the third highest escapement of sockeye salmon since the project was established in 2010 with a count of 177,509 fish (Table 3).

### **Chum Salmon**

Chum salmon escapement at all weir projects was weak but adequate to meet escapement needs (Table 4). The preliminary escapement count of 19,032 fish at the Kogruklu River weir met the established SEG range of 15,000–49,000 fish. Preliminary data indicate that the low escapements at Kuskokwim River assessment projects are due to poor returns of age-4 (2016 spawning event) chum salmon.

### **Coho Salmon**

Coho salmon escapement was evaluated at two middle Kuskokwim River weirs in 2020. The George River weir coho salmon escapement of 21,426 fish was near the most recent 10-year average (2010–2019) of 21,511 fish (Table 5). The Kogruklu River weir experience numerous out of operation events in early September, during the peak of the run, and at this time the escapement goal cannot be assessed. The weir was removed early due to high water in mid-September. Research staff are still determining if estimates of missed passage can be calculated during the out-of-operation periods. Observed escapement at the weir was 9,856 fish and this number is a minimum escapement count since estimates of missed passage are not included.

## **Kuskokwim Bay**

### **District 4 (Quinhagak)**

This year marked the first commercial salmon fishery in District 4 since 2015. The District 4 commercial fishing season began on June 29 and ended on September 2. There were 28 commercial fishing periods (Table 6). The commercial fishing season was delayed from the normal start of June 15 and subsistence mesh size was restricted to 6-inch or less between June 1 and July 15 to allow for Chinook salmon escapement.

The 2020 season saw the fewest permits fished in District 4 on record. Since 1980, an average of 229 permit holders (range 114–409) fished per year in District 4. During the 2020 season, a total of 67 individual permit holders made at least one recorded landing in the commercial fishery (Table 7). On average, 35 permit holders participated per period (range 18–49; Table 6).

A total of 4,345 Chinook, 113,849 sockeye, 29,374 coho, and 6,531 chum salmon were commercially harvested in District 4 (Table 7). Catch rates during the 2020 season for sockeye salmon were the highest on record (compared to available standardized catch rate data; 1981 to 2015), while Chinook, chum, and coho salmon catch rates were below average. Sockeye salmon harvest was the second highest since 1960 and approximately 56% above the most recent 10-year average (2006–2015; Table 7). Chinook, chum, and coho salmon harvests were below the most recent 10-year averages (2006–2015). Chinook salmon harvest ranked third lowest since 1967, while chum salmon harvest was the lowest observed since 1967. Coho salmon harvest was the lowest observed since 2013.

Chinook, sockeye, chum, and coho salmon were purchased for \$0.55, \$0.55, \$0.45, and \$0.15 per pound, respectively. Total exvessel value of the fishery was \$468,074, approximately 45% below the most recent 10-year (2006–2015) average value (Table 7).

## **District 4 Salmon Escapement**

An aerial survey was flown for the Kanektok River on August 13, which was outside of the standardized peak spawning abundance date range of July 17 to August 5. Therefore, counts are underestimates of spawning escapement. The Chinook salmon aerial survey SEG (range 3,900–12,000 fish) was achieved with a count of 4,405 fish, while the sockeye salmon aerial survey SEG (range 15,300–41,000 fish) was exceeded with a count of 52,886 fish (Table 8).

## **District 5 (Goodnews Bay)**

This year marked the first commercial salmon fishery in District 5 since 2015. The District 5 commercial fishing season began on June 29 and ended on September 2. There were 38 commercial fishing periods (Table 9). The commercial fishing season was delayed from the normal start of June 15 to allow for Chinook salmon escapement.

The 2020 season saw the fewest permits fished in District 5 on record. Since 1980, an average of 62 permit holders (range 24–125) fished per year in District 5. During the 2020 season, a total of 17 individual permit holders made at least one recorded landing in the commercial fishery. On average, five permit holders participated per period (range 1–11; Table 9).

A total of 442 Chinook, 28,859 sockeye, 10,928 coho, and 3,037 chum salmon were commercially harvested in District 5 (Table 10). Catch rates during the 2020 season were the second highest for sockeye salmon and the fourth highest for coho salmon. Chinook and chum salmon catch rates were below historical average. Numbers of salmon harvested were below the most recent 10-year averages (2006–2015) for each species. Chinook and chum salmon harvests were the third and fourth lowest on record since 1968, respectively. Sockeye salmon harvest in District 5 was ranked thirtieth out of the 48-year data set and coho salmon harvest was ranked fifteenth.

Chinook, sockeye, coho, and chum salmon were purchased for \$0.55, \$0.55, \$0.45, and \$0.15 per pound, respectively. Total exvessel value of the fishery was \$128,196, which was approximately 62% below the most recent 10-year (2006–2015) average value (Table 10).

## **District 5 Salmon Escapement**

The North Fork Goodnews River aerial survey was flown on August 3. The Chinook salmon aerial SEG of 640–3,300 fish was met with a count of 1,098 fish. The sockeye salmon SEG of 9,600–18,000 was exceeded with 55,110 fish counted (Table 11).

## **Literature Cited:**

Decossas, G. 2020. In-season Harvest and Effort Estimates for the 2020 Kuskokwim River Subsistence Salmon Fisheries During Block Openers. U.S. Department of Interior, Fish and Wildlife Service, Yukon Delta National Wildlife Refuge, Bethel, AK.

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Table 1.—Chinook salmon spawning weir escapement, Kuskokwim River drainage, Kuskokwim Management Area 2010–2020.

Year	Chinook Salmon Escapement					
	Kwethluk	George	Kogrukruk	Salmon (Aniak)	Takotna	Salmon (Pitka)
2010	1,716	1,500	5,160	a	183	a
2011	4,056	1,605	6,926	a	149	a
2012	b	2,362	b	b	238	a
2013	b	1,267	1,919	711	104	a
2014	3,191	2,988	3,726	1,722	a	a
2015	8,163	2,301	8,333	2,401	a	7,156
2016	b	2,218	7,034	b	a	6,371
2017	7,207	3,669	7,787	2,611	318	8,298
2018	b	3,322	6,292	2,252	205	5,354
2019	8,505	3,828	10,301	a	554	4,823
2020	<sup>c</sup> a	2,418	5,645	1,228	357	4,854
SEG	4,100– 7,500	1,800– 3,300	4,800– 8,800			
Average 2010–2019	5,473	2,506	6,386	1,939	250	6,400

<sup>a</sup> Weir did not operate.

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

<sup>c</sup> Preliminary numbers subject to change.

Table 2.—Chinook salmon spawning aerial survey index estimates, Kuskokwim River Drainage, Kuskokwim Management Area, 2010–2020.

Year	Kuskokwim River <sup>a</sup>												
	Lower		Middle						Upper				
	Kwethluk	Kisaralik	Aniak	Kipchuk	Salmon (Aniak)	Holokuk	Oskawalik	Holitna	Gagarayah	Cheeneetnuk	Bear (Pitka)	Salmon (Pitka)	Upper Pitka Fork
2010	b	235	b	b	b	108	b	587	62	b	75	135	67
2011	b	534	b	116	79	20	26	b	96	249	145	767	85
2012	b	610	b	193	49	9	51	b	178	229	b	670	b
2013	1,165	597	754	261	154	29	38	670	74	138	64	475	b
2014	b	622	3,201	1,220	497	80	200	1,785	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	441	162	b	980	438	565	550	1,399	471
2019	b	1,063	3,160	1,344	950	719	638	1,377	760	1,345	542	1,918	330
2020	721	350	1,264	723	269	99	169	854	b	419	321	1,150	160
Escapement Goal Range:		400– 1,200	1,200– 2,300		330– 1,200				300– 830	340– 1,300		470– 1,600	
Average 2010–2019		620	1,858	773	425	144	162	987	257	468	479	1,151	237

<sup>a</sup> Estimates are from aerial surveys conducted during peak spawning periods under 'good' or 'fair' survey conditions.

<sup>b</sup> Survey was either not flown or did not meet acceptable survey criteria.

Table 3.–Sockeye salmon spawning weir escapement, Kuskokwim River drainage, Kuskokwim Management Area 2010–2020.

Year	Sockeye Salmon Escapement				
	Kwethluk	Salmon (Aniak)	George	Kogrukuk	Telaquana
2010	4,336	a	113	13,306	71,932
2011	1,541	a	43	8,079	35,099
2012	a	950	79	a	23,002
2013	a	966	150	7,793	28,058
2014	3,880	934	156	6,479	24,292
2015	8,998	1,504	159	6,647	95,570
2016	20,495	310	2,807	20,108	82,710
2017	28,806	a	912	24,696	145,281
2018	a	2,537	1,615	21,343	197,368
2019	42,212	a	3,973	32,116	198,485
2020	<sup>b</sup> a	234	281	9,923	177,509
SEG				4,400–17,000	
Average 2010–2019	15,753	1,200	1,001	15,619	90,180

<sup>a</sup> Weir did not operate, or counts were incomplete.

<sup>b</sup> Preliminary numbers subject to change.



Table 4.—Chum salmon spawning weir escapement, Kuskokwim River drainage, Kuskokwim Management Area 2010–2020.

Year	Chum Salmon Escapement				
	Kwethluk	Salmon (Aniak)	George	Kogrukuk	Takotna
2010	18,919	a	26,187	63,612	3,995
2011	17,498	a	45,257	76,649	8,562
2012	a	a	33,277	a	6,039
2013	a	7,685	37,945	65,648	6,516
2014	17,942	2,777	17,183	30,697	a
2015	23,071	5,511	17,554	33,091	a
2016	22,914	1,691	19,469	45,234	a
2017	52,202	9,754	39,971	85,793	6,557
2018	a	18,770	48,915	52,937	6,007
2019	32,130	a	43,072	71,006	5,618
2020	<sup>b</sup> a	1,995	8,943	19,032	a
SEG				15,000– 49,000	
Average 2010–2019	26,382	7,698	32,883	58,296	6,185

<sup>a</sup> Project did not operate, or counts were incomplete.

<sup>b</sup> Preliminary numbers subject to change.

Table 5.—Coho salmon spawning weir escapement, Kuskokwim River drainage, Kuskokwim Management Area, 2010–2020.

Year	Coho Salmon Escapement		
	Kwethluk	George	Kogrukluk
2010	a	12,866	14,558
2011	a	31,900	21,950
2012	20,627	14,844	13,462
2013	a	14,823	23,800
2014	48,478	35,771	54,001
2015	32,124	35,790	32,900
2016	28,852	a	a
2017	55,722	25,338	a
2018	a	8,993	8,169
2019	34,561	13,277	16,470
2020	<sup>b</sup> a	21,426	9,856 <sup>c</sup>
SEG	>19,000		13,000– 28,000
Average 2010–2019	36,727	21,511	23,164

<sup>a</sup> Weir did not operate, or counts were incomplete.

<sup>b</sup> Preliminary numbers subject to change.

<sup>c</sup> Observed escapement only. No estimate of missed passed included; therefore, number presented is to be considered a minimum.

Table 6.—Commercial harvest by period in the District 4, Kuskokwim Bay, 2020.

Date	Permits Fished	Hours Fished	Permit Hours	Chinook		Sockeye		Coho		Chum	
				Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
Jun 29	35	12	420	613	1.46	1,364	3.25	0	0	350	0.83
Jul 3	39	12	468	1125	2.4	2,618	5.59	0	0	424	0.91
Jul 8	39	12	468	568	1.21	5,822	12.4	0	0	569	1.22
Jul 10	46	12	552	530	0.96	7,286	13.2	0	0	625	1.13
Jul 13	44	12	528	329	0.62	10,613	20.1	0	0	1,021	1.93
Jul 15	46	12	552	274	0.5	11,908	21.6	0	0	593	1.07
Jul 17	47	12	564	258	0.46	12,217	21.7	0	0	478	0.85
Jul 19	33	12	396	151	0.38	9,111	23	0	0	441	1.11
Jul 21	48	12	576	144	0.25	10,928	19	0	0	433	0.75
Jul 23	49	12	588	144	0.24	11,849	20.2	7	0.01	367	0.62
Jul 25	47	12	564	90	0.16	9,777	17.3	18	0.03	368	0.65
Jul 27	32	12	384	29	0.08	5,834	15.2	17	0.04	158	0.41
Jul 29	26	12	312	28	0.09	4,278	13.7	42	0.13	147	0.47
Jul 31	25	12	300	26	0.09	4,146	13.8	109	0.36	154	0.51
Aug 6	33	12	396	12	0.03	1,678	4.24	586	1.48	103	0.26
Aug 8	25	12	300	4	0.01	1,062	3.54	682	2.27	65	0.22
Aug 10	30	12	360	3	0.01	822	2.28	1,025	2.85	55	0.15
Aug 12	27	12	324	5	0.02	688	2.12	1,077	3.32	46	0.14
Aug 14	28	12	336	4	0.01	432	1.29	2,268	6.75	29	0.09
Aug 17	40	12	480	6	0.01	546	1.14	3,838	8	34	0.07
Aug 19	41	12	492	1	0	358	0.73	3,197	6.5	26	0.05
Aug 21	31	12	372	1	0	149	0.4	3,097	8.33	14	0.04
Aug 23	27	12	324	0	0	95	0.29	2,469	7.62	7	0.02
Aug 25	36	12	432	0	0	124	0.29	2,684	6.21	3	0.01
Aug 27	31	12	372	0	0	51	0.14	1,618	4.35	1	0.01
Aug 29	28	12	336	0	0	39	0.12	2,582	7.68	9	0.03
Sept 1	26	12	312	0	0	37	0.12	2,655	8.51	9	0.03
Sept 2	18	12	216	0	0	17	0.08	1,403	6.5	2	0.01

Table 7.—Commercial salmon harvest District 4, Quinhagak, Kuskokwim Bay, 2006–2020.

Year	Chinook	Sockeye	Coho	Chum	Value	Permits <sup>a</sup>
2006	19,184	106,308	26,831	39,151	\$551,182	132
2007	19,573	109,343	34,710	61,228	\$660,865	125
2008	13,812	69,743	94,257	57,033	\$750,731	146
2009	13,920	112,153	48,115	91,158	\$747,325	179
2010	14,230	138,362	13,690	106,610	\$1,655,321	241
2011	15,387	38,543	30,457	104,959	\$1,176,436	219
2012	6,675	37,688	31,214	61,140	\$824,435	179
2013	2,054	26,393	58,079	21,126	\$761,537	197
2014	2,265	58,879	52,317	14,563	\$858,638	194
2015	7,547	30,269	76,285	16,051	\$489,564	189
2020	4,345	113,849	29,374	6,531	\$468,074	67
Average 2006–2015	11,465	72,768	46,596	57,302	\$847,603	180

Note: No commercial buyer in Kuskokwim Area 2016 to 2019.

<sup>a</sup> Number of permits that made at least one delivery.

Table 8.—Kanektok River salmon spawning escapement estimates, 2010–2020.

Year	Aerial Survey Escapement	
	Chinook	Sockeye
2010	1,228	16,950
2011	<sup>a</sup>	<sup>a</sup>
2012	<sup>a</sup>	<sup>a</sup>
2013	2,346	64,802
2014	1,871	148,800
2015	4,919	39,970
2016	5,631	80,160
2017	<sup>a</sup>	<sup>a</sup>
2018	4,246	326,200
2019	7,212	349,073
2020	4,405 <sup>b</sup>	52,886 <sup>b</sup>
SEG	3,900– 12,000	15,300– 41,000
Average 2010– 2019	3,922	146,565

<sup>a</sup> Survey was either not flown or did not meet acceptable survey criteria.

<sup>b</sup> Survey was flown outside (August 13) of the standardized peak spawning abundance date range of July 17 to August 5. Therefore, counts are underestimates of spawning escapement.

Table 9.—Commercial harvest by period in the District 5, Kuskokwim Bay, 2020.

Date	Permits Fished	Hours Fished	Permit Hours	Chinook		Sockeye		Coho		Chum	
				Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
Jun 29	7	12	84	60	0.71	615	7.32	0	0	194	2.31
Jul 3	9	12	108	93	0.86	1,778	16.5	0	0	403	3.73
Jul 8	10	12	120	63	0.53	2,564	21.4	0	0	325	2.71
Jul 10	8	12	96	44	0.46	3,031	31.6	0	0	250	2.6
Jul 12	7	12	84	28	0.33	2,795	33.3	0	0	309	3.68
Jul 13	9	16	144	51	0.35	3,598	25	0	0	408	2.83
Jul 15	7	16	112	41	0.37	3,681	32.9	0	0	224	2
Jul 17	7	16	112	16	0.14	2,577	23	0	0	179	1.6
Jul 19	11	16	176	19	0.11	2,372	13.5	1	0.01	237	1.35
Jul 20	7	16	112	8	0.07	1,153	10.3	0	0	148	1.32
Jul 21	7	16	112	7	0.06	890	7.95	0	0	133	1.19
Jul 22	4	16	64	3	0.05	547	8.55	0	0	67	1.05
Jul 25	3	16	48	2	0.04	369	7.69	0	0	51	1.06
Jul 27	5	16	80	1	0.01	379	4.74	0	0	23	0.29
Jul 28	3	16	48	1	0.02	292	6.08	0	0	33	0.69
Jul 29 <sup>a</sup>	0	16	0	0	-	0	-	0	-	0	-
Jul 30 <sup>a</sup>	0	16	0	0	-	0	-	0	-	0	-
Jul 31 <sup>a</sup>	0	16	0	0	-	0	-	0	-	0	-
Aug 8	4	16	64	1	0.02	195	3.05	86	1.34	11	0.17
Aug 10	3	16	48	0	0	205	4.27	125	2.6	8	0.17
Aug 11	2	12	24	0	0	105	4.38	75	3.13	1	0.04
Aug 12	3	12	36	0	0	234	6.5	202	5.61	6	0.17
Aug 13	3	12	36	0	0	243	6.75	169	4.69	5	0.14
Aug 14	1	12	12	0	0	83	6.92	144	12	0	0
Aug 17	8	12	96	1	0.01	207	2.16	672	7	2	0.02
Aug 18	4	12	48	1	0.02	151	3.15	634	13.2	6	0.13
Aug 19	7	12	84	1	0.01	178	2.12	965	11.5	1	0.01
Aug 20	6	12	72	0	0	121	1.68	841	11.7	3	0.04
Aug 21	8	12	96	0	0	113	1.18	1129	11.8	3	0.03
Aug 23	7	12	84	0	0	80	0.95	602	7.17	6	0.07
Aug 24	3	12	36	0	0	19	0.53	236	6.56	0	0
Aug 25	5	12	60	0	0	51	0.85	625	10.4	0	0
Aug 26	5	12	60	0	0	61	1.02	795	13.3	0	0
Aug 27	8	12	96	0	0	77	0.8	1521	15.8	1	0.01
Aug 28	5	12	60	1	0.02	35	0.58	767	12.8	0	0
Aug 29 <sup>a</sup>	0	12	0	0	-	0	-	0	-	0	-
Sep 1	4	12	48	0	0	35	0.73	742	15.5	0	0
Sep 2	3	12	36	0	0	25	0.69	597	16.6	0	0

<sup>a</sup> No permit holders participated in this period.

Table 10.—Commercial salmon harvests, District 5 Goodnews Bay, Kuskokwim Bay, 2006–2020.

Year	Chinook	Sockeye	Coho	Chum	Value	Permits <sup>a</sup>
2006	2,899	29,858	12,438	11,678	\$141,265	24
2007	3,126	43,766	13,697	7,853	\$222,330	28
2008	1,281	27,237	22,547	10,408	\$198,070	25
2009	1,509	32,544	8,406	16,985	\$192,031	39
2010	1,759	41,074	4,900	26,914	\$470,661	48
2011	2,092	24,573	15,358	13,191	\$346,022	48
2012	1,536	50,647	25,515	24,487	\$617,765	58
2013	495	24,521	21,582	12,651	\$452,651	71
2014	205	20,515	52,158	3,403	\$584,654	61
2015	705	25,861	7,030	4,510	\$131,616	61
2020	442	28,859	10,928	3,037	\$128,196	17
Average 2006–2015	1,561	32,060	18,363	13,208	\$335,707	46

Note: No commercial buyer in Kuskokwim Area 2016 to 2019.

<sup>a</sup> Number of permits that made at least one delivery.

Table 11.—Salmon spawning escapement estimates, Goodnews River, Kuskokwim Bay, 2010–2020.

Year	Middle Fork Goodnews R. Weir Escapement				North Fork Goodnews R. Aerial Escapement	
	Chinook	Sockeye	Coho	Chum	Chinook	Sockeye
2010	2,176	36,574	26,287	24,789	<sup>a</sup>	<sup>a</sup>
2011	2,045	19,643	24,668	19,974	853	14,140
2012	524	29,531	11,371	9,065	378	16,710
2013	1,187	23,545	1,189	27,682	<sup>a</sup>	<sup>a</sup>
2014	<sup>b</sup> 750	41,473	7,594	11,518	630	<sup>a</sup>
2015	<sup>b</sup> 1,494	57,809	15,084	11,517	991	38,390
2016	<sup>c</sup> 3,767	170,574		41,815	1,120	90,060
2017	<sup>c</sup> 6,881	179,897		54,799	<sup>a</sup>	<sup>a</sup>
2018	<sup>d</sup>				<sup>a</sup>	<sup>a</sup>
2019	<sup>c</sup> 6,421	167,105		38,177	2,462	162,930
2020	<sup>d</sup>				1,098	55,110
SEG	1,500– 2,900	18,000– 40,000	>12,000	>12,000	640–3,300	9,600–18,000
Average 2010–2019	2,805	80,683	14,366	26,593	1,072	64,446

<sup>a</sup> Survey was either not flown or did not meet acceptable survey criteria.

<sup>b</sup> Weir operations ended Aug 31

<sup>c</sup> Weir operation ended July 31.

<sup>d</sup> Weir did not operate, or counts were incomplete

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