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Advisory Announcement

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Kuskokwim River Salmon Fishery Announcement #14

2021 Preliminary Kuskokwim Area Season Summary

This is an announcement from the Alaska Department of Fish and Game (department) for fishers in the Kuskokwim Area.

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 *Districts 4 and 5 Salmon Management Plan* (5 AAC 07.367).

Kuskokwim River

Preseason Forecast

The 2021 Kuskokwim River Chinook salmon forecast was for a range of 94,000–155,000 fish. The drainage-wide Chinook salmon escapement goal is 65,000–120,000 fish. If the run came back as projected, the drainage-wide and tributary escapement goals were expected to be achieved with a limited subsistence harvest. The 2021 season was managed in accordance with the *Kuskokwim River Salmon Management Plan* (5 AAC 07.365) with input from the Kuskokwim River Salmon Management Working Group (Working Group). It was the intent of the department to manage all Kuskokwim River salmon stocks in a conservative manner, consistent with the *Policy for the Management of Sustainable Salmon Fisheries* under 5 AAC 39.222, to meet escapement goals and the subsistence priority.

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.

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

Between June 1 and July 22, a Federal Special Action (FSA) closed the Kuskokwim River gillnet fishery to non-Federally qualified users within the boundary of the YDNWR (Subsistence Sections 1–3). During the FSA, USFWS offered 6-inch setnet opportunities running concurrently to the 6-inch opportunities offered by the department on June 2, 5, and 9. Additionally, USFWS offered six 12-hour gillnet fishing periods on June 12, 15, 19 and July 2, 9, and 16 with 6-inch or less mesh, 25 fathoms in length above the Johnson River mouth and 50

fathoms in length below the Johnson River mouth. USFWS offered two 48-hour set gillnet fishing periods on July 10 and 17. On June 19, USFWS opened those waters between the Kalskag Bluffs to the YDNWR boundary at Aniak to subsistence fishing until further notice with 6-inch or less mesh, 25 fathoms in length gillnets. The department concurrently offered the same management actions within Subsistence Sections 1–3 with an additional opportunity provided on June 28, 2021. A 16-hour gillnet fishing period was provided on July 23 and a 50-hour setnet period was provided July 23–25 after the FSA was rescinded.

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

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

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

Postseason subsistence harvest surveys are presently being conducted. An assessment of subsistence salmon harvest in 2021 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 2022.

2021 District 1 Commercial Fishery

There were no commercial buyers or processors operating in the Kuskokwim River districts. Therefore, commercial fishing opportunities were limited to individuals registered with the department as catcher/sellers who had secured their own markets. A single catcher/seller applied for and received a commissioner's permit to harvest sockeye salmon with dipnet gear. This experimental fishery was intended to provide an opportunity to harvest abundant sockeye salmon while allowing live release of chum and Chinook salmon. Stipulations of the commissioner's permit required that all Chinook and chum salmon captured during dipnet fishing periods must be returned to the water unharmed. Between July 10–24, a total of ten 14-hour commercial dipnet periods were provided in District 1 of the Kuskokwim River. No fish were harvested during the dipnet fishing periods. A total of five commercial gillnet fishing periods (directed at coho salmon) were provided in District 1 of the Kuskokwim River between August 12–20 for a single catcher/seller. Due to the small number of participants in these gillnet fishing periods, 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, the department 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), species ratios, 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

The Kuskokwim River Sonar operated from June 1–August 26. 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 operates a test fishery for species apportionment using a series of six gillnets (8 1/2", 7 1/2", 6 1/2", 5 1/4", 4", and 2 3/4" mesh). The sonar program generates daily species-specific passage 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 532, which was similar to the 2008–2020 average of 568. The estimated midpoint of the Chinook salmon run was June 25 (3 days later than average).

The cumulative Chinook salmon passage estimate at the sonar was 102,552 fish (95% CI = 84,436–120,668 fish).

Sockeye Salmon

The cumulative sockeye salmon CPUE at the BTF was 1,694, which was slightly below the 2008–2020 average of 1,779. The estimated midpoint of the sockeye salmon run was July 6 (7 days later than average).

The cumulative sockeye salmon passage estimate at the sonar was 745,037 fish (95% CI = 696,236–793,838).

Chum Salmon

The cumulative chum salmon CPUE at the BTF was 327, which was the lowest on record and well below the 2008–2020 average of 5,980. The estimated midpoint of the chum salmon run was July 11 (6 days later than average).

The cumulative chum salmon passage estimate at the sonar was 25,689 fish (95% CI = 14,549–36,829).

Coho Salmon

Cumulative BTF CPUE and sonar passage estimates are incomplete because the coho salmon run was still progressing after BTF and Kuskokwim River Sonar ceased operations on August 24 and August 26, respectively. Escapements at weir projects provides a more complete picture of coho salmon run strength than the BTF or Kuskokwim River Sonar. That in mind, as of August 24, the cumulative CPUE for coho salmon at BTF was 1,696, which was below the 2008–2020 average of 3,289.

The cumulative coho salmon passage estimate at the sonar was 237,285 fish (95% CI = 209,317–265,253). This was the second 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 823,091 fish (95% CI = 728,039–918,143). The cumulative broad whitefish passage estimate at the sonar was 22,859 fish (95% CI = 8,646–37,072). The cumulative humpback whitefish passage estimate at the sonar was 667,285 fish (95% CI 570,108–764,462). The cumulative sheefish passage estimate at the sonar was 20,731 fish (95% CI = 9,350–32,112).

Salmon Escapement – Kuskokwim River Drainage

Chinook Salmon

A run reconstruction model was used to estimate the preliminary total run and escapement for Chinook salmon in 2021. The preliminary Kuskokwim River total run estimate is 129,000 Chinook salmon (95% CI = 94,000–178,000) and an estimated 101,000 Chinook salmon (95% CI = 66,000–150,000) escaped Kuskokwim River fisheries, which met the drainage-wide Sustainable Escapement Goal (SEG) range of 65,000–120,000 fish. All weir-based escapement goals for Chinook salmon assessed in 2021 were met within the Kuskokwim River drainage (Table 1). The established SEG range of 4,800–8,800 fish at Kogrukluk River weir was met (6,969 fish), as was the SEG range of 1,800–3,300 fish at George River (2,920 fish). Aerial surveys were not conducted in 2021 due to weather and pilot availability (see Table 2 for historical data).

Sockeye Salmon

Sockeye salmon escapement was mixed throughout the drainage with above average lake-type sockeye escapement and near average to slightly below average river-type sockeye salmon escapement (Table 3). The preliminary Kogrukluk River weir escapement of 13,534 sockeye salmon met the established SEG range of 4,400–17,000 fish. The Telaquana River weir observed the fifth highest escapement of sockeye salmon since the project was established in 2010 with a count of 123,958 fish (Table 3).

Chum Salmon

Chum salmon escapement at all weir projects were the lowest on record (Table 4). The preliminary escapement count of 4,153 fish at the Kogrukluk River weir did not meet the established SEG range of 15,000–49,000 fish, and passage at all other weir projects was well below average.

Coho Salmon

Coho salmon escapement was evaluated at two middle Kuskokwim River weirs in 2021. The George River weir coho salmon escapement of 31,491 fish was above the most recent 10-year average (2011–2020) of 22,462 fish (Table 5). At the Kogrukluk River weir, 14,373 coho salmon were counted, which met the SEG range of 13,000–28,000 fish (Table 5).

Kuskokwim Bay

District 4 (Quinhagak)

The 2021 District 4 commercial fishing season began on July 2 and ended on August 13. There were 24 commercial fishing periods (Table 6). The commercial fishing season was delayed from the normal start of June 15 to allow for Chinook salmon escapement. Additionally, for the first five periods (Table 6), area restrictions were enacted near the mouth of the Kanektok River to allow for Chinook salmon escapement.

Since 1987, an average of 223 permit holders (range 67–408) fished per year in District 4. Participation in 2021 was the second lowest on record (2020 was lowest) with a total of 74 individual permit holders making at least one recorded landing in the commercial fishery (Table 7). On average, 29 permit holders participated per period (range 1–54; Table 6).

A total of 2,468 Chinook, 78,462 sockeye, 13,012 coho, and 5,310 chum salmon were commercially harvested in District 4 (Table 7). Catch rates for sockeye salmon ranked second highest on record (2020 was highest) compared to available standardized catch rate data: 1981 to 2020. Sockeye salmon catch rates during the first five periods were highest on record since 1981. These catch rates remained above average for the following nine periods and then alternated between above-to-below average for the duration of the season. Chinook and chum salmon catch rates were mostly below average the entire season, while coho salmon catch rates were below average for all except one period (August 6). Sockeye salmon harvest was the eighth highest since 1960 and approximately 5,000 fish greater the most recent 10-year harvest average (2007–2020; *Note, 2007–2020 data used for most recent 10-year average comparisons because there was no fishery during 2016–2019*; Table 7). Chinook, chum, and coho salmon harvests were below the most recent 10-year averages (2007–2020). Chinook salmon harvest ranked third lowest since 1968, while chum salmon harvest was the lowest observed since 1967. Coho salmon harvest was the

lowest observed since 1999. A total of 29 pink salmon were purchased during 2021 in District 4; these were the first pink salmon purchased since 2005.

Chinook, sockeye, coho, chum, and pink salmon were purchased for \$0.80, \$0.60, \$0.50, \$0.15, and \$0.05 per pound, respectively. Total exvessel value of the fishery was \$357,273, approximately \$482,000 below the most recent 10-year average (2007–2020; Table 7).

District 4 Salmon Escapement

An aerial survey was flown for the Kanektok River on July 25 (Table 8). Although within the standardized peak spawning abundance date range of July 17 to August 5, this survey was deemed early as both Chinook and sockeye salmon were not in full spawning colorations and fewer redds were noticeable than expected. Therefore, counts reported here are considered minimum estimates of spawning escapement. Additionally, intense wind and glare in Kagati Lake created poor visibility, meaning sockeye salmon were undoubtedly missed. For this reason, the sockeye salmon survey was rated as poor. Although poor, 53,690 sockeye salmon were counted, which exceeded the aerial survey SEG range of 15,300–41,000 fish. The Chinook salmon survey was rated as fair because wind and glare was not as intense in the river reaches where they spawn. The Chinook salmon aerial survey SEG (range 3,900–12,000 fish) was achieved with a count of 4,115 fish.

District 5 (Goodnews Bay)

The 2021 District 5 commercial fishing season began on July 2 and ended on August 13. There were 32 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 2021 season saw the fewest permits fished in District 5 on record. Since 1980, an average of 61 permit holders (range 17–125) fished per year in District 5. During the 2021 season, a total of 13 individual permit holders made at least one recorded landing in the commercial fishery. On average, six permit holders participated per period (range 1–12; Table 9).

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

Chinook, sockeye, coho, and chum salmon were purchased for \$0.80, \$0.60, \$0.50, and \$0.15 per pound, respectively. Total exvessel value of the fishery was \$136,186, which was approximately \$198,000 below the most recent 10-year average (2007–2020; Table 10).

District 5 Salmon Escapement

The North Fork Goodnews River aerial survey was flown on July 24 and weather conditions were optimal, thus the survey was rated as good. Although flown within the standardized peak spawning abundance date range of July 17 to August 5, this survey was deemed early as both Chinook and sockeye salmon were not in full spawning colorations. Therefore, counts reported here are considered minimum estimates of spawning escapement. The Chinook salmon aerial SEG range of 640–3,300 fish was met with a count of 2,273 fish. The sockeye salmon SEG of 9,600–18,000 was exceeded with 95,020 fish counted (Table 11).

For additional information concerning this advisory announcement:
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Table 1.—Chinook salmon spawning weir escapement, Kuskokwim River drainage, Kuskokwim Management Area 2011–2021.

Chinook Salmon Escapement						
Year	Kwethluk	Salmon (Aniak)	George	Kogrukluk	Takotna	Salmon (Pitka)
2011	4,056	a	1,605	6,926	149	a
2012	b	b	2,362	b	238	a
2013	b	711	1,267	1,919	104	a
2014	3,191	1,722	2,988	3,726	a	a
2015	8,163	2,401	2,301	8,333	a	7,156
2016	b	b	2,218	7,034	a	6,371
2017	7,207	2,611	3,669	7,787	318	8,298
2018	b	2,252	3,322	6,292	205	5,354
2019	8,505	a	3,828	10,301	554	4,823
2020	a	1,228	2,418	5,645	357	4,854
2021 ^c	a	1,303	2,920	6,969	233	4,014
SEG	4,100– 7,500		1,800– 3,300	4,800– 8,800		
Average 2011–2020	6,224	1,747	2,627	6,493	270	5,839

^a Weir did not operate.

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

^c Preliminary numbers subject to change.

Table 2.—Chinook salmon spawning aerial survey index estimates, Kuskokwim River Drainage, Kuskokwim Management Area, 2011–2021.

	Kuskokwim River ^a												
	Lower		Middle						Upper				
Year	Kwethluk	Kisaralik	Aniak	Kipchuk	Salmon (Aniak)	Holokuk	Oskawalik	Holitna	Gagarayah	Cheeneetnuk	Bear (Pitka)	Salmon (Pitka)	Upper Pitka Fork
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
2021	b	b	b	b	b	b	b	b	b	b	b	b	b
Escapement Goal Range:		400– 1,200	1,200– 2,300		330– 1,200				300– 830	340– 1,300		470– 1,600	
Average 2011–2020	943	632	1,773	768	408	144	163	1,020	279	462	509	1,253	256

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

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

Table 3.—Sockeye salmon spawning weir escapement, Kuskokwim River drainage, Kuskokwim Management Area 2011–2021.

Year	Sockeye Salmon Escapement				
	Kwethluk	Salmon (Aniak)	George	Kogruklu	Telaquana
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	^a	234	281	9,923	177,509
2021	^b	^a	907	937	13,534
SEG	4,400–17,000				
Average 2011–2020	17,655	1,062	1,018	15,243	100,737

^a Weir did not operate, or counts were incomplete.

^b Preliminary numbers subject to change.

Table 4.—Chum salmon spawning weir escapement, Kuskokwim River drainage, Kuskokwim Management Area 2011–2021.

Year	Chum Salmon Escapement				
	Kwethluk	Salmon (Aniak)	George	KogrukluK	Takotna
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	^a	1,995	8,943	19,032	^a
2021	^b	^a	537	1,371	4,153
SEG				15,000– 49,000	
Average 2011–2020	27,626	6,883	31,159	53,343	6,550

^a Project did not operate, or counts were incomplete.

^b Preliminary numbers subject to change.

^c Observed escapement only. No estimate of missed passage included; therefore, the number presented is to be considered a minimum.

Table 5.—Coho salmon spawning weir escapement, Kuskokwim River drainage, Kuskokwim Management Area, 2011–2021.

Year	Coho Salmon Escapement		
	Kwethluk	George	Kogrukluk
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	a	21,426	9,856 ^c
2021 ^b	a	31,491	14,373
SEG	>19,000		13,000– 28,000
Average 2011–2020	36,727	22,462	24,393

^a Weir did not operate, or counts were incomplete.

^b Preliminary numbers subject to change.

^c Observed escapement only. No estimate of missed passage included; therefore, the number presented is to be considered a minimum.

Table 6.—Commercial harvest by period in the District 4, Kuskokwim Bay, 2021.

		Permits	Hours	Permit	Chinook		Sockeye		Coho		Chum	
Date		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
Jul 2		37	12	444	479	1.1	9,448	21.3	0	0.0	150	0.3
Jul 4		35	12	420	297	0.7	9,788	23.3	0	0.0	117	0.3
Jul 6		31	12	372	244	0.7	8,104	21.8	0	0.0	99	0.3
Jul 8		36	12	432	192	0.4	8,609	19.9	0	0.0	260	0.6
Jul 10		54	12	648	311	0.5	10,009	15.4	0	0.0	474	0.7
Jul 13		45	12	540	245	0.5	6,980	12.9	0	0.0	465	0.9
Jul 15		52	12	624	177	0.3	6,686	10.7	0	0.0	450	0.7
Jul 17		51	12	612	150	0.2	4,562	7.5	0	0.0	501	0.8
Jul 19		29	12	348	61	0.2	2,997	8.6	0	0.0	330	0.9
Jul 21		35	12	420	131	0.3	3,808	9.1	0	0.0	661	1.6
Jul 23		33	12	396	79	0.2	2,326	5.9	7	0.0	524	1.3
Jul 25		12	12	144	18	0.1	1,316	9.1	17	0.1	327	2.3
Jul 27		7	12	84	8	0.1	468	5.6	42	0.5	91	1.1
Jul 29	^a	0	12	0	0	-	0	-	0	-	0	-
Jul 30		11	12	132	15	0.1	553	4.2	129	1.0	104	0.8
Jul 31		1	12	12	2	0.2	9	0.8	11	0.9	7	0.6
Aug 2		7	12	84	4	0.0	340	4.0	188	2.2	54	0.6
Aug 3		16	12	192	18	0.1	668	3.5	540	2.8	186	1.0
Aug 5		22	12	264	7	0.0	399	1.5	1,340	5.1	108	0.4
Aug 6		19	12	228	12	0.1	482	2.1	1,627	7.1	91	0.4
Aug 9		38	12	456	8	0.0	319	0.7	2,599	5.7	114	0.3
Aug 10		29	12	348	3	0.0	295	0.8	1,827	5.3	89	0.3
Aug 12		34	12	408	7	0.0	169	0.4	2,611	6.4	76	0.2
Aug 13		27	12	324	3	0.0	127	0.4	2,074	6.4	32	0.1

^a No permit holders participated in this period.

Table 7.—Commercial salmon harvest District 4, Quinhagak, Kuskokwim Bay, 2007–2021.

Year	Chinook	Sockeye	Coho	Chum	Pink	Value	Permits ^a
2007	19,573	109,343	34,710	61,228	0	\$660,865	125
2008	13,812	69,743	94,257	57,033	0	\$750,731	146
2009	13,920	112,153	48,115	91,158	0	\$747,325	179
2010	14,230	138,362	13,690	106,610	0	\$1,655,321	241
2011	15,387	38,543	30,457	104,959	0	\$1,176,436	219
2012	6,675	37,688	31,214	61,140	0	\$824,435	179
2013	2,054	26,393	58,079	21,126	0	\$761,537	197
2014	2,265	58,879	52,317	14,563	0	\$858,638	194
2015	7,547	30,269	76,285	16,051	0	\$489,564	189
2020	4,345	113,849	29,374	6,531	0	\$468,074	67
2021	2,468	78,462	13,012	5,310	29	\$357,273	74
Average							
2007–2020	9,981	73,522	46,850	54,040	0	\$839,293	174

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

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

Table 8.—Kanektok River salmon spawning escapement estimates, 2011–2021.

Year	Aerial Survey Escapement	
	Chinook	Sockeye
2011	^a	^a
2012	^a	^a
2013	2,277	53,002
2014	1,840	136,400
2015	4,919	39,970
2016	5,631	80,160
2017	^a	^a
2018	4,246	326,200
2019	7,212	349,073
2020	4,405 ^b	52,886 ^b
2021	4,115	53,690 ^c
SEG	3,900– 12,000	15,300– 41,000
Average 2011– 2020	4,361	148,242

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

^b 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.

^c Survey was flown under poor weather conditions which hindered visibility in upper index regions. Therefore, counts are underestimates of spawning escapement.

Table 9.—Commercial harvest by period in the District 5, Kuskokwim Bay, 2021.

		Permits	Hours	Permit	Chinook		Sockeye		Coho		Chum	
Date		Fished	Fished	Hours	Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
Jul	2	6	12	72	32	0.4	1,883	26.2	0	0.0	26	0.4
Jul	4	7	12	84	8	0.1	2,554	30.4	0	0.0	33	0.4
Jul	5	3	12	36	0	0.0	924	25.7	0	0.0	17	0.5
Jul	6	5	12	60	2	0.0	1,471	24.5	0	0.0	23	0.4
Jul	7	7	12	84	2	0.0	2,478	29.5	0	0.0	6	0.1
Jul	8	6	12	72	3	0.0	851	11.8	0	0.0	8	0.1
Jul	9	7	12	84	1	0.0	2,847	33.9	0	0.0	42	0.5
Jul	10	12	12	144	0	0.0	1,818	12.6	0	0.0	3	0.0
Jul	14	8	12	96	3	0.0	663	6.9	0	0.0	0	0.0
Jul	15	10	12	120	3	0.0	1,607	13.4	0	0.0	9	0.1
Jul	16	8	12	96	5	0.1	1,628	17.0	0	0.0	32	0.3
Jul	19	9	12	108	6	0.1	2,172	20.1	0	0.0	42	0.4
Jul	20	7	12	84	5	0.1	1,461	17.4	0	0.0	31	0.4
Jul	21	7	12	84	2	0.0	1,471	17.5	0	0.0	45	0.5
Jul	22	6	12	72	4	0.1	1,062	14.8	0	0.0	23	0.3
Jul	23	8	12	96	15	0.2	2,441	25.4	0	0.0	59	0.6
Jul	25	7	12	84	5	0.1	1,404	16.7	5	0.1	30	0.4
Jul	26	7	12	84	3	0.0	897	10.7	8	0.1	26	0.3
Jul	27	1	12	12	0	0.0	72	6.0	0	0.0	3	0.3
Jul	28	1	12	12	0	0.0	176	14.7	0	0.0	9	0.8
Jul	29 ^a	0	12	0	0	-	0	-	0	-	0	-
Jul	30	5	12	60	1	0.0	473	7.9	7	0.1	6	0.1
Aug	2 ^a	0	12	0	0	-	0	-	0	-	0	-
Aug	3	4	12	48	3	0.1	683	14.2	46	1.0	6	0.1
Aug	4	3	12	36	2	0.1	688	19.1	16	0.4	8	0.2
Aug	5	4	12	48	2	0.0	286	6.0	9	0.2	0	0.0
Aug	6	4	12	48	0	0.0	722	15.0	112	2.3	7	0.1
Aug	9	6	12	72	2	0.0	692	9.6	164	2.3	20	0.3
Aug	10	5	12	60	2	0.0	919	15.3	151	2.5	9	0.2
Aug	11	5	12	60	2	0.0	659	11.0	274	4.6	7	0.1
Aug	12	5	12	60	0	0.0	545	9.1	236	3.9	5	0.1
Aug	13	5	12	60	1	0.0	416	6.9	164	2.7	0	0.0

^a No permit holders participated in this period.

Table 10.—Commercial salmon harvests, District 5 Goodnews Bay, Kuskokwim Bay, 2007–2021.

Year	Chinook	Sockeye	Coho	Chum	Value	Permits ^a
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
2021	114	35,963	1,192	535	\$136,186	13
Average 2007–2020	1,315	31,960	18,212	12,344	\$334,400	46

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

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

Table 11.—Salmon spawning escapement estimates, Goodnews River, Kuskokwim Bay, 2011–2021.

Year	Middle Fork Goodnews R. Weir Escapement				North Fork Goodnews R. Aerial Escapement	
	Chinook	Sockeye	Coho	Chum	Chinook	Sockeye
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	^a	^a
2014	^b 750	41,473	7,594	11,518	630	^a
2015	^b 1,494	57,809	15,084	11,517	991	38,390
2016	^c 3,767	170,574		41,815	1,120	90,060
2017	^c 6,881	179,897		54,799	^a	^a
2018	^d				^a	^a
2019	^c 6,421	167,105		38,177	2,462	162,930
2020	^d				1,098	55,110
2021	^d				2,273	95,020
SEG	1,500– 2,900	18,000– 40,000	>12,000	>12,000	640–3,300	9,600–18,000
Average 2011–2020	2,884	86,197	11,981	26,818	1,076	62,890

^a Survey was either not flown or did not meet acceptable survey criteria.^b Weir operations ended Aug 31^c Weir operation ended July 31.^d Weir did not operate, or counts were incomplete.

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