

Department of Fish and Game

DIVISIONS OF COMMERCIAL FISHERIES and SPORT FISH Headquarters Office

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MEMORANDUM

TO: Members, Alaska Board of Fisheries DATE: October 7, 2022

FROM: Sam Rabung, Director See SUBJECT: Arctic-Yukon-

Division of Commercial Fisheries

Kuskokwim

Stock of Concern

Recommendations

Division of Sport Fish

This memorandum summarizes the results of the stock of concern evaluation for Arctic-Yukon-Kuskokwim (AYK) Region salmon stocks for the 2023 Board of Fisheries (board) regulatory cycle. The *Policy for the Management of Sustainable Salmon Fisheries* (SSFP; 5 AAC 39.222) directs the Alaska Department of Fish and Game (department) to report to the board on the status of salmon stocks and identify any stocks that present a concern related to yield, management, or conservation during regular board meetings.

Stock of concern status has been evaluated by the department since 2000 and designations were determined by the board based on recommendations by the department. In September 2000, the board designated nine AYK Region salmon stocks as stocks of concern, at either the management or the yield concern level. In 2004, two stocks were removed, and one stock was added (a total of eight stocks designated). In 2007, four stocks were removed from designation (a total of four stocks designated). In 2016, one stock was removed from designation (a total of three stocks designated). In 2019, one stock was removed from designation (a total of two stocks designated). Since 2019, two king salmon stocks (Norton Sound Subdistricts 5 and 6, and Yukon River) continue to be designated as stocks of yield concern.

This evaluation included a review of major salmon stocks in the region to determine if any meet the criteria to be listed, maintained, or discontinued as stocks of concern during the upcoming regulatory cycle. Results of AYK Region salmon stock escapement goals, harvest or 'yield', and harvestable surpluses over the most recent 5-years were evaluated against the stock of concern definitions and criteria established in SSFP. All available 2022 data are preliminary; some 2022 data are unavailable because fisheries and projects are still ongoing. Management plans and associated regulations were developed and adopted based on action plans for all current stocks of concern. The escapement goal review for the AYK Region is complete. Existing escapement goals were used to evaluate stock of concern unless stated otherwise, and proposed changes in escapement goals will not affect the stock of concern recommendations.

The department is not recommending any new stocks of concern. Further information on status of AYK Region salmon stocks, regulatory history, and management plans will be addressed in written and oral reports for the AYK board meeting in January 2023. The following information summarizes the evaluation and recommendations for existing AYK Region stocks of concern.

King Salmon

King salmon in Norton Sound Subdistricts 5 (Shaktoolik) and 6 (Unalakleet), and in the Yukon River have been designated as stocks of yield concern since January 2004. These designations were based on low harvests compared to historical harvests. These stocks were addressed through action plans at prior board meetings; therefore, a management plan already exists. Data considered in this analysis were the most recent 5 years (2018–2022) of escapement, yield, and recent historical information.

Norton Sound Subdistricts 5 (Shaktoolik) and 6 (Unalakleet)

Subdistricts 5 and 6 have been managed as one fishery to achieve escapement goals and provide harvest of king salmon. Past studies have shown salmon bound for these subdistricts intermingle in nearshore marine waters and that stocks originating from both the Shaktoolik and Unalakleet Rivers comprise harvests in each subdistrict.

The North River tower-based SEG range of 1,200–2,600 king salmon, established in 2005, was achieved in two of the last five years, 2018–2022, (Table 1). King salmon escapements were within or exceeded the upper end of the range in 2018 and 2019 as a result of specific management actions (5 AAC 04.395. Subdistricts 5 and 6 of the Norton Sound District and the Unalakleet River King Salmon Management Plan), preseason subsistence and sport fisheries closures, commercial salmon fishing closures, and restrictions on gillnet mesh size (Table 2). Evidence of declining runs has led to more conservative management actions to reduce harvest and achieve escapement goals. Over the last five years this has resulted in harvests within or above recent historical levels (2008–2017).

Yukon River King Salmon

Yukon River king salmon escapement goal performance and yield was inconsistent from 2018–2022. Yukon River king salmon escapement goals were not achieved on all systems where ground-based assessment exist (Table 3), while a few of the aerial survey goals were achieved (Table 3). The ability to meet a subset of escapement goals has been a direct result of specific management actions (5 AAC 05.360. *Yukon River King Salmon Management Plan*) that included restrictions and closures of subsistence, personal use, sport, and commercial fisheries (Table 4). Conservative management actions over the last five years reduced harvest to achieve escapement goals and have resulted in harvests within or below historical levels.

Stock of Concern Recommendation

The department recommends no change to the status of Norton Sound Subdistrict 5 (Shaktoolik) and Subdistrict 6 (Unalakleet), and Yukon River king salmon as stocks of yield concern based on recent evaluation and concern for future yields. All other AYK Region stocks did not meet the criteria for stock of concern designation during this evaluation cycle. Although some AYK Region stocks experienced significant declines in the last 2-3 years, because stock of concern is evaluated on a recent 5-year basis they did not meet the stock of concern criteria established in regulation.

Table 1. King salmon escapement estimates for Norton Sound Subdistricts 5 and 6, 1996–2022.

	Subdistrict 5	Subdistrict 6							
Year	Shaktoolik River Tower	North River Tower	Unalakleet River Weir						
1996		1,197							
1997		4,185							
1998		2,100							
1999		1,639							
2000		1,046							
2001		1,337							
2002		1,484							
2003		1,452							
2004		1,125							
2005		1,015							
2006		906							
2007		1,948							
2008		905							
2009		2,357							
2010		1,256	1,021						
2011		841	1,030						
2012		972	823						
2013		580	667						
2014	2,034	3,454	1,126						
2015	654	1,950	2,789						
2016	354	513	505						
2017	1,272	1,045	2,934						
2018	1,035	2,583	3,650						
2019	2,688	3,315	6,641						
2020	927	1,068							
2021	933	1,013	518						
2022	975	1,119	111						
5-Year Avg (2018-2022)	1,312	1,820	2,730						
Escapement Goal		1,200-2,600							
		SEG							

Table 2. Commercial, subsistence, and sport king salmon harvests for Norton Sound Subdistricts 5 and 6, 1961–2022.

	Shakto	olik (5)	Ţ	Jnalakleet (6)		Combine	Total	
Year	Commercial	Subsistence a	Commercial	Subsistence	b Sport	Commercial	Subsistence a,b	Combined Harves
1961	140		5,160			5,300		5,300
1962	1,738		5,089			6,827		6,827
1963	480		5,941			6,421		6,421
1964	631	77	1,273	488		1,904	565	2,469
1965	127	31	1,321	521		1,448	552	2,000
1966	310	142	1,208	90		1,518	232	1,750
1967	43	262	1,751	490		1,794	752	2,546
1968	61	10	960	186		1,021	196	1,217
1969	33	40	2,276	324		2,309	364	2,673
1970	197	43	1,604	495		1,801	538	2,339
1971	284	87	2,166	911		2,450	998	3,448
1972	419	64	2,235	643		2,654	707	3,361
1973	289	51	1,397	323		1,686	374	2,060
1974	583	93	2,100	313		2,683	406	3,089
1975	651	18	1,638	163		2,289	181	2,470
1976	892	24	1,211	142		2,103	166	2,269
1977	1,521	49	2,691	723		4,212	772	4,984
1978	1,339	81	7,525	1,044	c	8,864	1,125	9,989
1979	2,377	62	6,354	640	c	8,731	702	9,433
1980	1,086	57	4,339	1,046	c	5,425	1,103	6,528
1981	1,484	8	6,157	869	c	7,641	877	8,518
1982	1,677	68	3,768	913	c	5,445	981	6,426
1983	2,742		7,022	1,868	130	9,764		9,894
1984	1,613		6,804	1,650	104	8,417		8,521
1985	5,312	298	12,621	1,397	179	17,933	1,695	19,807
1986	1,075		4,494		850	5,569		6,419
1987	2,214		3,246		417	5,460		5,877
1988	671		2,218		272	2,889		3,161
1989	1,241		4,402		49	5,643		5,692
1990	2,644		5,998	2,476	276	8,642		8,918
1991	1,324		4,534		296	5,858		6,154
1992	1,098		3,409		117	4,507		4,624
1993	2,756		5,944		382	8,700		9,082

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	Shakto	oolik (5)		Ţ	Jnalakleet (6)			Combine	ed Totals	Total
Year	Commercial	Subsistence	a	Commercial	Subsistence	b	Sport	Commercial	Subsistence a,b	Combined Harvest
1994	885	1,175	d	4,400	3,035	d	379	5,285	4,210	9,874
1995	1,239	1,275	d	7,617	3,114	d	259	8,856	4,389	13,504
1996	1,340	1,114	d	3,644	3,023	d	384	4,984	4,137	9,505
1997	2,449	1,146	d	9,067	4,191	d	842	11,516	5,337	17,695
1998	910	982	d	6,413	4,066	d	513	7,323	5,048	12,884
1999	581	818	d	1,927	2,691	d	415	2,508	3,509	6,432
2000	160	440	d	582	2,429	d	345	742	2,869	3,956
2001	90	936	d	116	2,810	d	250	206	3,746	4,202
2002	1	1,230	d	4	2,367	d	544	5	3,597	4,146
2003	2	881	d	10	2,585	d	97	12	3,466	3,575
2004	0	943	e	0	2,829	e	356	0	3,772	4,128
2005	50	807	e	101	2,193	e	216	151	3,000	3,367
2006	0	382	e	11	2,537	e	394	11	2,919	3,324
2007	5	515	e	13	1,665	e	147	18	2,180	2,345
2008	6	422	e	65	1,402	e	580	71	1,824	2,475
2009	4	417	e	80	1,892	e	248	84	2,309	2,641
2010	4	327	e	124	1,257	e	61	128	1,584	1,773
2011	45	235	e	124	607	e	53	169	842	1,064
2012	25	214	e	157	808	e	0	182	1,022	1,204
2013	6	136	e	131	468	e	0	137	604	741
2014	16	158	e	70	442	e	0	86	600	686
2015	49	178	e	384	1,139	e	0	433	1,317	1,750
2016	23	290	e	101	837	e	78	124	1,127	1,329
2017	52	177	e	327	496	e	16	379	673	1,068
2018	27	188	e	281	676	e	19	308	864	1,191
2019	19	162	e	648	810	e	155	667	972	1,794
2020	318	317	e	1,035	1,459	e	0	1,353	1,776	3,129
2021	238		g	491	1,778	e	0	729	1,778	2,507
2022	f 5		g	6	1,479		c	11	1,479	1,490
5-Year Avg	121	222		492	1,240		44	614	1,374	2,022
2018–2022)										

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- ^a Subsistence harvest data are incomplete prior to 1982 and from 1983 to 1993 only one partial survey in 1985.
- ^b Subsistence harvest date are incomplete prior to 1979 and from 1986 to 1993 only one survey in 1990.
- ^c Sport fish harvest estimates are unavailable at time of publication.
- ^d Subsistence harvests were estimated from Division of Subsistence surveys.
- ^e Subsistence harvests were estimated from Division of Commercial Fisheries surveys.
- ^f Data are preliminary.
- g Data not yet available.

Table 3. Yukon River king salmon historical abundance estimates from mainstem sonar and selected tributaries, 1980–2022.

	Sona	r		Ground Based	Projects	A	Aerial Surveys a	
Year	Pilot	Eagle	Chena	Salcha	E.F. Andreafsky	W.F. Andreafsky	Anvik f	Nulato
1980						1,500	1,323	
1981								
1982						851		
1983								1,006
1984						1,993		
1985						2,248		2,780
1986			9,065		1,530	3,158		2,974
1987			6,404	4,771	2,011	3,281	1,160	1,638
1988			3,346	4,562	1,339	1,448	1,788	1,775
1989			2,666	3,294		1,089		
1990			5,603	10,728		1,545	2,222	
1991			3,025	5,608		2,544		2,020
1992			5,230	7,862			1,515	579
1993			12,241	10,007		2,765		3,025
1994			11,877	18,399	7,801			1,795
1995	221,357		9,680	13,643	5,841	1,108	1,996	1,649
1996			7,153	7,570	2,955	624	830	
1997	199,763		13,390	18,514	3,186	1,510	3,939	
1998	108,038		4,745	5,027	4,034			1,053
1999	184,218		6,485	9,198	3,444			
2000	54,560		4,694	4,595	1,609	427		
2001	121,089		9,696	13,328		565	1,420	1,884
2002	151,713		6,967	9,000	b, 4,123	917	1,713	1,584
2003	318,088		11,100	b, 15,500	b, 4,336			
2004	200,761		9,645	15,761	8,045	1,317	3,625	1,321
2005	259,015	81,528		b 6,000	2,239	1,492	2,410	553
2006	228,763	73,691	2,936	10,679	6,463	824		1,292
2007	170,246	41,697	3,806	6,425	4,504	976		2,583

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		Sor	nar			Gro	ound Based	Projec	ets	Aerial Surveys a				
Year	Pilot		Eagle	_ •	Chena		Salcha		E.F. Andreafsky	W.F. Andreafsky	Anvik f	Nulato		
2008	175,046		38,097		3,210		2,731	b	4,242			922		
2009	177,796		69,957		5,253		12,774		3,004	1,678	832	2,260		
2010	145,088		35,074		2,382		6,135		2,413	858	965	711		
2011	148,797		51,271			b		b, e	5,213	1,173	642	1,401		
2012	127,555		34,747		2,219		7,165		2,517		722	1,374		
2013	136,805		30,725		1,860		5,465		1,998	1,090	941	1,118		
2014	163,895		63,482		7,191			b	5,949	1,695	1,051			
2015	146,859		84,015		6,294		6,879		5,474	1,356	2,487	1,564		
2016	176,898		72,329		6,665		2,675	g	2,676					
2017	263,014		73,313		4,201		4,195		2,970	942	1,080	943		
2018	161,831		57,893		6,100		5,178		4,114	455	1,109	870		
2019	219,624		45,560		2,018		4,678		5,111	904	1,432	656		
2020	162,252		33,550		502	b				508	8	459		
2021	124,845		31,796		1,417		2,082		1,425					
2022	44,581	c	12,025	c	355	c	1,130	c			179	60		
5-Year Avg (2018–2022)	142,627		36,165		2,078		3,267		3,550	622	682	511		
Escapement Goals			42,500- 55,000 (IMEG)		2,800- 5,700 (BEG)		3,300- 6,500 (BEG)		2,100-4,900 (SEG)	640-1,600 (SEG)	1,100- 1,700 (SEG)	940-1,900 (SEG)		

Note: blank cells indicate no data.

^aOnly surveys that were complete and had a rating higher than fair are included.

^bIncomplete count, project was not operated or was inoperable for a large portion of the season due to water conditions.

^cPreliminary estimate and subject to change.

^dEstimate includes an expansion for missed counting days based on average run timing.

^eAerial survey indicated escapement of at least 3,500 king salmon.

f Standardized for escapement goal review to include mainstem between sonar and McDonald creek. Also includes Beaver, Swift and Otter creeks.

g This is a minimum count due to high water conditions, based on inriver carcass sampling the lower end of the escapement goal was met at a minimum.

Table 4. Alaska harvest of Yukon River king salmon, 1961–2022.

Year	Commercial	Commercial Related ^a	Total Commercial	Subsistence	b	Personal Use	с	Test Fish Sales	d	Sport Fish	Total
1961	119,664		119,664	21,488							141,152
1962	94,734		94,734	11,110							105,844
1963	117,048		117,048	24,862							141,910
1964	93,587		93,587	16,231							109,818
1965	118,098		118,098	16,608							134,706
1966	93,315		93,315	11,572							104,887
1967	129,656		129,656	16,448							146,104
1968	106,526		106,526	12,106							118,632
1969	91,027		91,027	14,000							105,027
1970	79,145		79,145	13,874							93,019
1971	110,507		110,507	25,684							136,191
1972	92,840		92,840	20,258							113,098
1973	75,353		75,353	24,317							99,670
1974	98,089		98,089	19,964							118,053
1975	63,838		63,838	12,867							76,705
1976	87,776		87,776	17,806							105,582
1977	96,757		96,757	17,581						156	114,494
1978	99,168		99,168	30,785						523	130,476
1979	127,673		127,673	31,005						554	159,232
1980	153,985		153,985	42,724						956	197,665
1981	158,018		158,018	29,690						769	188,477
1982	123,644		123,644	28,158						1,006	152,808
1983	147,910		147,910	49,478						1,048	198,436
1984	119,904		119,904	42,428						351	162,683
1985	146,188		146,188	39,771						1,368	187,327
1986	99,970		99,970	45,238						796	146,004
1987	134,760		134,760	f 55,039		1,706				502	192,007
1988	100,364		100,364	45,495		2,125		1,081		944	150,009
1989	104,198		104,198	48,462		2,616		1,293		1,063	157,632

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Year	Commercial		Commercial Related ^a	Total Commercial		Subsistence	b	Personal Use	c	Test Fish Sales	d	Sport Fish	Total
1990	95,247		413	95,660		48,587		2,594		2,048		544	149,433
1991	104,878		1,538	106,416		46,773				689		773	154,651
1992	120,245		927	121,172		47,077				962		431	169,642
1993	93,550		560	94,110		63,915		426		1,572		1,695	161,718
1994	113,137		703	113,840		53,902				1,631		2,281	171,654
1995	122,728		1,324	124,052		50,620		399		2,152		2,525	179,748
1996	89,671		521	90,192		45,671		215		1,698		3,873	141,649
1997	112,841		769	113,610		57,117		313		2,811		2,174	176,025
1998	43,618		81	43,699		54,124		357		926		654	99,760
1999	69,275		288	69,563		53,305		331		1,205		1,023	125,427
2000	8,518		0	8,518		36,404		75		597		276	45,870
2001	0	g	0	0	g	55,819		122		0		679	56,620
2002	24,128		0	24,128		43,742		126		528		486	69,010
2003	40,438		0	40,438		56,959		204		680		2,252	100,533
2004	56,151		0	56,151		55,713		201		792		1,513	114,370
2005	32,029		0	32,029		53,409		138		310		483	86,369
2006	45,829		0	45,829		48,593		89		817		739	96,067
2007	33,634		0	33,634		55,174		136		849		960	90,753
2008	4,641	g,h	0	4,641	g,h	45,186		126		0		409	50,362
2009	316	g,h	0	316	g,h	33,805		127		0		863	35,111
2010	9,897	g,h	0	9,897	g,h	44,559		162		0		474	55,092
2011	82	g,h	0	82	g,h	40,980		88		0		474	41,624
2012	0	g	0	0	g	30,415		71		0		345	30,831
2013	0	g	0	0	g	12,533		42		0		166	12,741
2014	0	g	0	0	g	3,286		1		0		0	3,287
2015	0	g	0	0	g	7,577		5		0		13	7,595

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Year	Commercial		Commercial Related ^a	Total Commercial		Subsistence	b	Personal Use	c	Test Fish Sales	d	Sport Fish		Total
2016	0	g	0	0	g	21,627		57		0		20		21,704
2017	168	g,h	0	168	g,h	38,036		125		0		18		38,347
2018	0	g	0	0	g	31,812		201		0		200		32,213
2019	3,110	g,h	0	3,110	g,h	48,379		244		0		38		51,771
2020	0	g	0	0	g	21,531		112		0		49		21,692
2021	0	g	0	0	g	1,995		0		0		0		1,995
2022	0	g	0	0	g	1,000	i		i	0			i	1,000
5-Year Avg. (2018– 2022)	622		0	622		20,943		111		0		72		21,734

Note: blank cells indicate no data.

^aRefers to production of salmon roe, including carcasses from subsistence-caught fish. These data are only available since 1990.

^bIncludes harvest from the Coastal District and test fishery harvest that were utilized for subsistence. In 2009, 2011, and 2012, subsistence includes fish commercially caught, but not sold.

^cPrior to 1987, and in 1990, 1991, and 1994, personal use was considered part of subsistence.

^dIncludes only test fishery fish that were sold commercially.

^eSport fish harvest for the Alaskan portion of the Yukon River drainage. Most of this harvest is believed to be taken within the Tanana River drainage.

^fIncludes 653 and 2,136 king salmon illegally sold in districts 5 (Yukon River) and 6 (Tanana River), respectively.

^gNo directed king salmon commercial fishery was conducted.

^hKing salmon sold commercially were incidentally caught in chum directed commercial fishery.

ⁱSubsistence, personal use, and sport fish data are not yet available.