

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE



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Date Issued: November 27, 2013

2013 Yukon River Fall Season Summary

Introduction

This news release provides a preliminary summary of the 2013 Yukon Area fall season including fall chum and coho salmon harvests and escapement. All reported harvest and project results are preliminary and subject to revision.

2013 Fall Season Outlook

A formal fall chum salmon run forecast was made using brood year analysis in March of 2013. A preseason run projection was made in mid-July based on the historical relationship between summer and fall chum salmon run sizes. The 2013 fall chum salmon forecast was a point estimate of 1.0 million fish with a range of 900,000 to 1.2 million fish. The mid-July preseason projection was for a run size greater than 800,000 fish. The post season preliminary 2013 run size estimate of greater than 1.1 million fall chum salmon is near the upper end of the preseason forecast range.

Informal outlooks are made for coho salmon runs based on parent year escapement and assuming no changes in productivity. The major contributor to the 2013 coho salmon run was the 4-year-old fish returning from the 2009 parent year. Run reconstruction based on Pilot Station sonar passage estimates cannot be used for evaluating coho salmon in 2009. A coho salmon index developed for the Yukon River from 1995 to 2012 (excluding 1996 and 2009) suggests that the average run size is 197,000 fish while the average escapement is 145,000 fish. In 2009 both commercial and subsistence harvests and most of the monitored escapements in the Tanana River drainage were below average when compared to the recent 5 years. Assuming average survival, the 2013 coho salmon run was anticipated to be below average to average. The preliminary 2013 coho run size estimate is 137,000 and the escapement is estimated to be 51,000 fish.

2013 Preseason Management Strategy

Based on the preseason run projection of greater than 800,000 fall chum salmon it was anticipated that escapement and subsistence needs would be met while providing a limited commercial harvest. The preseason management strategy included the following components:

- All Yukon Area districts and subdistricts were placed on full regulatory subsistence fishing schedule upon transitioning to fall season management;
- Commercial salmon fishing continued on a 2 days a week schedule in Districts 1 and 2 during the summer-to-fall management transition.

2013 Run Assessment

The department monitored a suite of assessment projects that provided salmon run timing, relative abundance, and stock composition information. Projects included a lower river test fishery, sonar passage estimates, subsistence and commercial harvest information, and age, sex, and length information. Genetic samples collected from fall chum salmon at Pilot Station sonar provided run stock composition information. Additional projects were operated in the upper Yukon River tributaries and the upper mainstem of the Yukon River. These projects provided additional run timing and escapement information. Data from these projects were analyzed collectively inseason to verify collaboration which in turn provided an indication that each project was working properly.

By regulation the fall season began in District 1 after July 15. Chum salmon captured in the Lower Yukon River test fisheries after that date were considered fall chum salmon. The subsequent transition of upriver districts and subdistricts to the fall season was based on the migration timing of fall chum salmon. Pilot Station sonar began counting chum salmon as fall chum salmon after July 18. Although all chum salmon entering the Yukon River after July 15 were considered fall chum salmon, both summer and fall chum salmon enter Yukon River through late July.

From July 16 through the end of July, fall chum salmon entry into Yukon River was steady with daily and cumulative passages past Pilot Station sonar comparable to historical medians. However, by the end of July (the median first quarter point) fall chum salmon passage did not gain as expected and had a cumulative passage of 132,000, a number below the historical median passage of 139,000 fish. Moving into August daily fall chum salmon passages past Pilot Station sonar continued to be below historical medians. The cumulative fall chum salmon passage past Pilot Station sonar on August 11 was 220,000 fish, below the historical median for that date of 311,000 fish. During this time no commercial fishing periods were announced in Districts 1 and 2 to ensure enough fall chum salmon were getting upriver for escapement and subsistence use.

Although several relatively small groups of fall chum salmon entered Yukon River through mid-August, the first substantial pulse of fall chum salmon did not pass Pilot Station sonar until August 14. This pulse was 2 days in duration and approximately 195,000 fall chum salmon in size. After this pulse passed the sonar, cumulative counts rose above historical medians. Commercial fishing resumed in Districts 1 and 2 and continued through the end of August. Unseasonably hot, dry, and calm weather in conjunction with above average water temperature in the Lower Yukon River may have contributed to the delay of substantial pulses until mid-August. A second pulse of fall chum salmon passed the sonar beginning August 18 and was 5 days in duration and was estimated to be approximately 174,000 fall chum salmon. By August

23, the cumulative fall chum passage past Pilot Station sonar of 600,000 fish was above the historical median of 467,500 fish. A third pulse passed the sonar beginning August 25 and was 3 days in duration and was estimated to be approximately 65,000 fall chum salmon.

Commercial openings were announced in Subdistricts 5-B and 5-C from mid-August through the first week in October, and commercial fishing occurred in District 6 from mid-August through the end of September.

An estimated total of 717,000 fall chum salmon passed Pilot Station sonar from July 19 through September 7, 2013. Because of the magnitude of the largest pulse, the overall median timing was six days late. This year's quarter points were August 7, 15 and 20 compared to median dates of July 30, August 9 and August 17 respectively. This was the second latest median point in 26 years of estimates of fall chum salmon from Pilot Station sonar (latest occurred August 17, 1998).

Coho salmon passage was below average the entire season with only three individual daily peaks surpassing the average mark (Figure 3 shows the daily passage of coho salmon past Pilot Station sonar). The largest peak occurred on August 15 and the second largest occurred on August 27 (both peaks approximately 10,000 coho salmon each) and overall timing of coho salmon passage was average. Based on Lower Yukon Test Fishery which operated until September 20, no additional pulses were observed.

Coho salmon were harvested incidentally in fall chum salmon directed commercial openings. Because of their high incidental commercial harvest, coupled with below average passage based on test fisheries and Pilot Station sonar estimates, a coho salmon directed commercial fishery in the lower river in September was not prosecuted in 2013.

Subsistence Fisheries

All districts and subdistricts returned to their regulatory subsistence fishing schedules commensurate with switching over to fall management based on timing of fish migrating up river. In addition, upon switching to fall season management, subsistence fishermen were allowed to use up to 7.5 inch mesh gear. The schedules were as follows: commercial fishing continued in Districts 1 and 2 and subsistence fishing was open 7 days a week except for 12 hours before, during, and 12 hours after commercial openings. District 3 also went to a 7 day a week schedule because no commercial periods were to be announced. The Innoko River opened to 7 days a week on July 14. The entire District 4 was on a 5 day per week schedule by August 4. Subdistricts 5-A, 5-B, and 5-C went to a 5 day per week schedule effective August 6 (commercial salmon fishing periods were announced in Subdistricts 5-B and 5-C throughout the fall season), and District 6 remained on their two 42-hour periods per week for the entire fall season. The Koyukuk River went to 7 days per week on July 26 and the Old Minto area went to their 5 day per week schedule on August 2. Finally the entire Subdistrict 5-D was returned to a 7 days per week schedule by August 14.

Commercial Fishing Summary

There were a total of 43 commercial periods during the fall season in 2013 (Table 1 provides a summary of the 2013 Yukon Area fall season commercial salmon harvest by district). The majority of fall season commercial harvest occurred in the lower river districts (a regular schedule of commercial fishing periods was established in Districts 4-6, but limited markets resulted in low fishing effort and relatively small harvests). The total commercial harvest for the

Yukon River fall season in the Alaska portion of the drainage in 2013 was 238,051 fall chum and 66,199 coho salmon. Both species harvested were above their respective most recent 5-year (2008–2012) and 10-year (2003–2012) averages (Table 2 shows historical commercial fall chum salmon harvest by district and Table 3 shows historical commercial coho salmon harvest by district). The fall chum salmon harvest was the fifth largest since 1990 and the coho salmon harvest was the fourth largest since 1990. All salmon were sold in the round and no salmon roe was sold separately. The exvessel value of the total harvest was \$1,641,060 (Table 4); \$1,179,947 for fall chum and \$461,113 for coho salmon. All values were above the most recent 5-year (2008–2012) averages. A total of 443 individual permit holders participated in the fall chum and coho salmon fishery: 436 in Districts 1 and 2 combined and 7 in Districts 4, 5, and 6 combined (Table 5 shows how permit holder participation in 2013 compared to historical numbers).

Subsistence/Personal Use Fishing Summary

A comprehensive estimate of the 2013 subsistence harvest based on household surveys and permit harvest information for salmon and nonsalmon species is not available at this time, but is anticipated to be available by late spring of 2014. Subsistence and personal use harvests are expected to be similar to 2012 which were estimated to be approximately 97,000 fall chum salmon and 13,000 coho salmon.

Salmon Escapement

Total run size, based on an adjusted Pilot Station sonar abundance estimate and the addition of estimated commercial and average subsistence harvests downstream of the sonar site (including test fisheries), was 964,000 fall chum salmon. Based on the location of the project, at river mile 123, the abundance estimate includes Koyukuk River drainage stocks which turn off at river mile 508.

Calculating total run size postseason is based on individually monitored spawning escapements (primarily above river mile 695), including estimated U.S. and Canadian harvests. Escapements were monitored in the Chandalar, the upper Porcupine River in Canada and the Canadian mainstem Yukon rivers using sonars. Sheenjek River was not monitored for the first time in 39 years and was estimated based on a relationship of the two bank operations compared to Fishing Branch River weir. Assessment of Tanana River stocks is preliminary at this time and was based on the relationship with the Canadian upper Yukon River. A second corroborative estimate, based on the relationship to the Delta River will be conducted after the population estimate for that system is completed in December. Genetic apportionment of adjusted Pilot Station sonar estimates of chum salmon (both summer and fall Tanana River stocks passing after July 19) resulted in an estimate of greater than 350,000 Tanana River bound chum salmon which is consistent with the overall run size and contributions of approximately 30% for this system. In 2013, estimating run size based on the various projects resulted in a preliminary estimate of slightly greater than 1.1 million fall chum salmon. Estimates of run size derived from individual projects are typically higher than those based on the sonar project at Pilot Station in part because of 1) apportionment of small stocks and 2) advancement of technologies used to enumerate fish in the upriver monitoring projects. The preliminary drainagewide escapement estimate of fall chum salmon is estimated to be approximately 866,000 fish which exceeds the upper end of the SEG range of 300,000 to 600,000 fish.

The fall chum salmon escapement of 253,000 into Chandalar River exceeded the upper end of the BEG range of 74,000 to 152,000 fish. The estimated run size of 109,000 fall chum salmon in

the Sheenjek River would suggest that the escapement based on the right bank only would have been within the BEG range of 50,000 to 104,000 fish (Table 6 shows historical escapements to selected spawning areas in the Yukon Area). The estimate of 30,000 chum salmon escapement for the upper Porcupine River was based on the sonar counts minus preliminary harvests in Old Crow Yukon Territory. Assuming the majority of these fish were headed to the Fishing Branch River spawning area would suggest that escapement was within the IMEG of 22,000–49,000 fish for that portion of the system. The fall chum salmon escapement was estimated to be 199,800 fish for the mainstem Yukon River in Canada which exceeded the interim management escapement goal range of 70,000 to 104,000 fish and provided for harvest sharing agreement. The Tanana River preliminary estimate of escapement of 274,000 fall chum salmon exceeds the upper end of the BEG range of 61,000 to 136,000 fall chum salmon.

Stock composition estimates were provided by USFWS Conservation Genetics Laboratory using tissue samples (fin clips) collected from chum salmon captured in the Pilot Station sonar test net fishery. Chum salmon genetic samples processed from five strata between July 19 and September 7 (fall season) indicated that stocks represented approximately 11% summer, 23% BorderU.S. (Chandalar/Sheenjek), 32% Canadian, and 34% Tanana.

In 2013, the proportion of age-3 fall chum salmon (<1%) was below average, age-4 fish (65%) was near average (66%), age-5 fish (34%) was slightly above average (32%), and age-6 (1%) was average based on samples collected at the Lower Yukon Test Fishery using 6 inch mesh drift gillnets. Females contributed 57% to the samples and were average. Fall chum salmon length samples in 2013 averaged 584 mm compared to the 1981-2012 average of 596 mm.

There are few coho salmon spawning escapement assessment projects in the Yukon River drainage because of funding limitations and late timing relative to onset of winter. The sonar at Pilot Station was through September 7 with an estimated passage of 84,800 coho salmon which is below the historical average of 141,000 fish (Table 7 showing historical escapements to selected spawning areas in the Yukon Area). The Delta Clearwater River (DCR) has the only established escapement goal for coho salmon, a SEG of 5,200–17,000 fish. A boat survey conducted in the Delta Clearwater River in late October observed 6,222 coho salmon therefore the lower end of the goal was achieved. Fall season aerial surveys for the Nenana River drainage and the south bank Tanana River from Fairbanks to Delta Junction were below the long term averages however the Richardson Clearwater and the Clearwater Lake and Outlet were slightly above the recent 5-year average (2008-2012).

In 2013, the proportion of age-3 coho salmon (18%) was slightly above average (15%), age-4 fish (74%) was slightly below average (77%), and age-5 fish (8%) was slightly above average (5%), based on samples collected at the Lower Yukon Test Fishery using 6 inch mesh drift gillnets. Females contributed 40% to the samples which was slightly below average (44%). Coho salmon length samples in 2013 averaged 570 mm compared to the 1981-2012 average of 580 mm, this was much improved over the second smallest lengths observed in 2012 (559 mm).

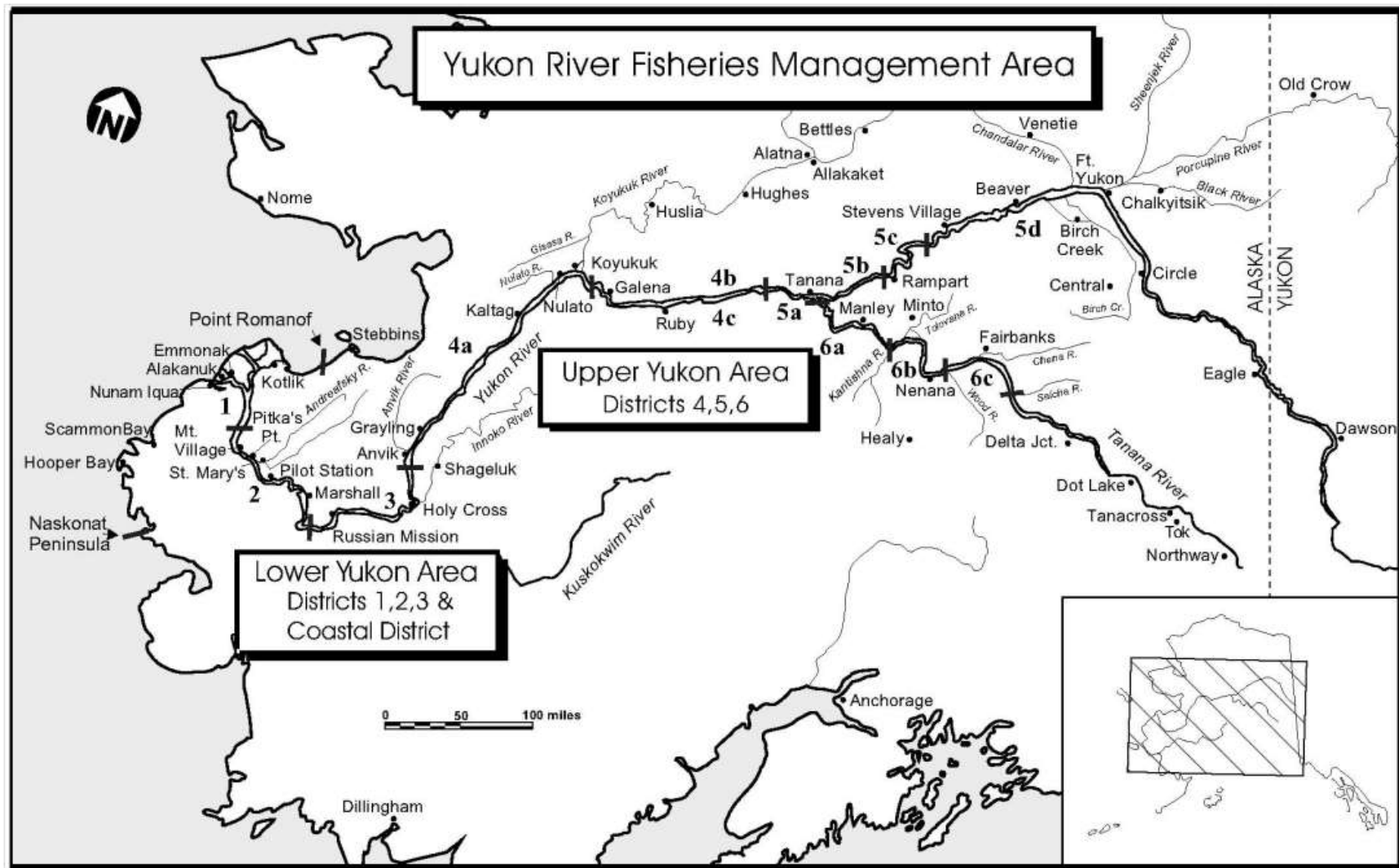


Figure 1.—Alaskan portion of the Yukon River drainage showing fishing districts and communities.

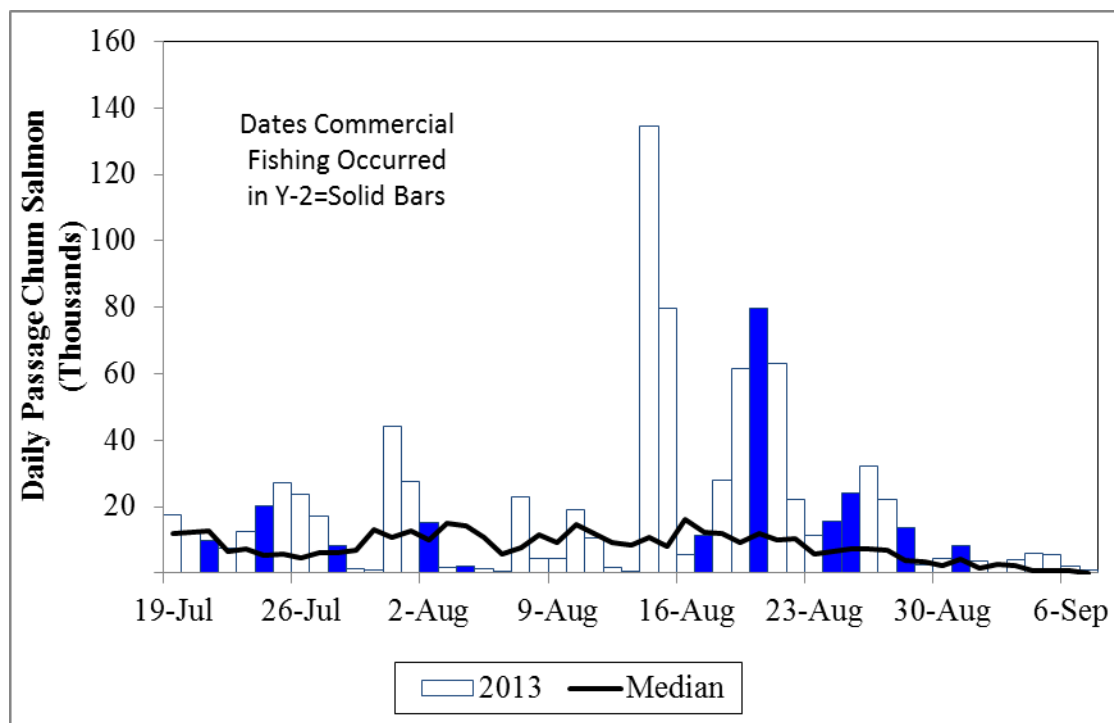


Figure 2.—Daily fall chum salmon passage counts, based on run reconstruction, at Pilot Station sonar in 2013 compared to historical median.

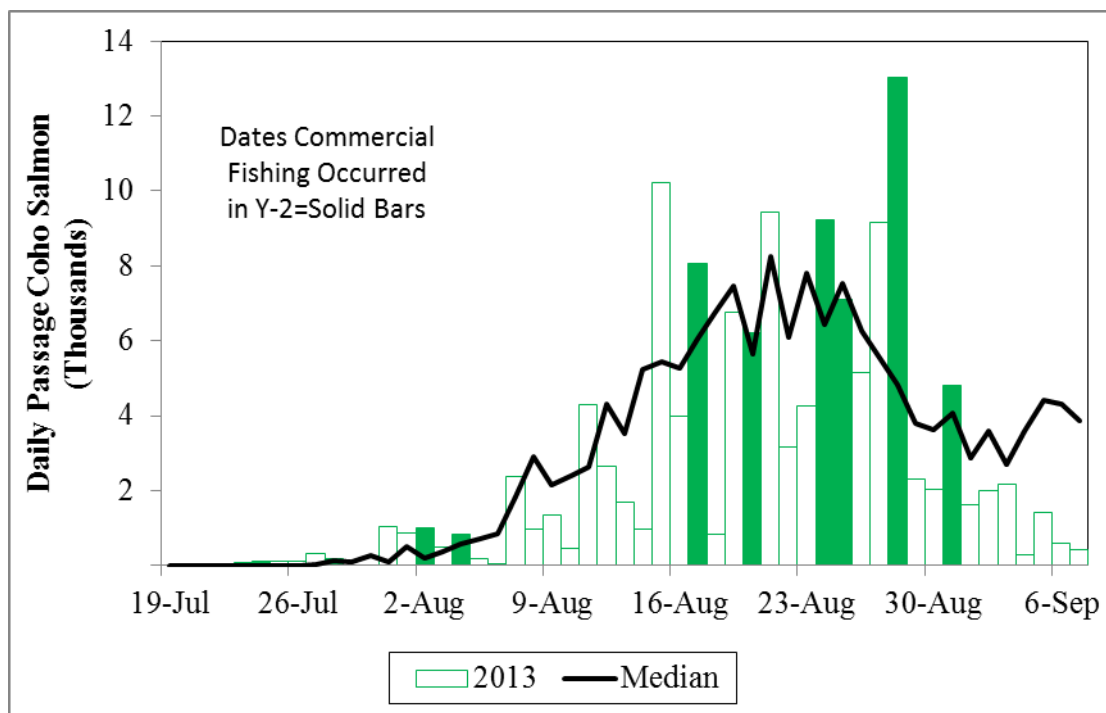


Figure 3.—Daily coho salmon passage counts, based on run reconstruction, at Pilot Station sonar in 2013 compared to historical median.

Table 1.—Preliminary summary of the fall season commercial salmon harvest, by district, Yukon Area, 2013.

District	Periods	Permits	Fall Chum Salmon			Coho Salmon		
			Number	Pounds	Average Weight ^a	Number	Pounds	Average Weight ^a
1	11	251	106,588	777,279	7.3	27,304	193,077	7.1
2	11	197	106,274	760,846	7.2	31,456	220,230	7.0
3			No commercial openings					
4			No commercial openings					
5 ^b	8	1	1,041	6,921	6.7	0	0	0.0
6	13	6	24,148	150,009	6.2	7,439	41,504	5.6
TOTAL	43	443	238,051	1,695,055	7.1	66,199	454,811	6.9

^a Average weight is weighted based on individual periods.^b Commercial fishing occurred in Subdistricts 5-B and 5-C.

Table 2.—Fall chum salmon commercial harvest by district, Yukon Area, 1993–2013.

Year ^a	<i>Lower Yukon</i>				<i>Upper Yukon ^b</i>				Yukon Total
	District 1	District 2	District 3	<i>Subtotal</i>	District 4	District 5	District 6	<i>Subtotal</i>	
1993	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	3,630	4,369	7,999	7,999
1995	79,345	90,831	-	170,176	8,731	30,033	74,117	112,881	283,057
1996	33,629	29,651	-	63,280	2,918	20,376	17,574	40,868	104,148
1997	27,483	24,326	-	51,809	2,458	3,640	-	6,098	57,907
1998	-	-	-	-	-	-	-	-	-
1999	9,987	9,703	-	19,690	681	-	-	681	20,371
2000	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-
2003	5,586	-	-	5,586	1,315	-	4,095	5,410	10,996
2004	660	-	-	660	-	-	3,450	3,450	4,110
2005	130,525	-	-	130,525	-	-	49,637	49,637	180,162
2006	101,254	39,905	-	141,159	-	1,667	23,353	25,020	166,179
2007	38,852	35,826	-	74,678	-	427	15,572	15,999	90,677
2008	67,704	41,270	-	108,974	-	4,556	5,967	10,523	119,497
2009	11,911	12,072	-	23,983	-	-	1,893	1,893	25,876
2010	545	270	-	815	-	-	1,735	1,735	2,550
2011	127,735	100,731	-	228,466	-	1,246	10,917	12,163	240,629
2012	139,842	129,284	-	269,126	811	2,419	17,336	20,566	289,692
2013	106,588	106,274	-	212,862	-	1,041	24,148	25,189	238,051
Average 2008-2012									
	34,774	28,363	-	126,273	-	2,740	7,570	5,209	135,649

Note: Endash indicates no commercial fishing occurred.

^a Number of fish harvested are based on reports from the State TIX, Zephyr, and OceanAK programs.

^b Estimated harvest is the number of fish sold in the round plus the estimated number of females to produce the roe sold.

Table 3.—Coho salmon commercial harvest by district, Yukon River, 1993–2013.

Year ^a	<i>Lower Yukon</i>				<i>Upper Yukon ^b</i>				Yukon Total
	District 1	District 2	District 3	<i>Subtotal</i>	District 4	District 5	District 6	<i>Subtotal</i>	
1993	-	-	-	-	-	-	-	-	-
1994	-	-	-	-	-	-	4,451	4,451	4,451
1995	21,625	18,488	-	40,113	0	-	6,900	6,900	47,013
1996	27,705	20,974	-	48,679	161	-	7,142	7,303	55,982
1997	21,450	13,056	-	34,506	814	-	-	814	35,320
1998	-	-	-	-	-	-	-	-	-
1999	855	746	-	1,601	-	-	-	-	1,601
2000	-	-	-	-	-	-	-	-	-
2001	-	-	-	-	-	-	-	-	-
2002	-	-	-	-	-	-	-	-	-
2003	9,757	-	-	9,757	-	-	15,119	15,119	24,876
2004	1,583	-	-	1,583	-	-	18,649	18,649	20,232
2005	36,533	-	-	36,533	-	-	21,778	21,778	58,311
2006	39,323	14,482	-	53,805	-	-	11,137	11,137	64,942
2007	21,720	21,487	-	43,207	-	-	1,368	1,368	44,575
2008	13,946	19,248	-	33,194	-	91	2,408	2,499	35,693
2009	5,992	1,577	-	7,569	-	-	742	742	8,311
2010	1,027	1,023	-	2,050	-	-	1,700	1,700	3,750
2011	45,335	24,184	-	69,519	-	-	7,502	7,502	77,021
2012	39,757	29,063	-	68,820	0	634	5,335	5,969	74,789
2013	27,304	31,456	-	58,760	-	-	7,439	7,439	66,199
Average 2008–2012	21,211	15,019	-	36,230	-	363	2,948	3,069	39,913

Note: Endash indicates no commercial fishing occurred.

^a Numbers of fish harvested are based on reports from the State TIX, Zephyr, and OceanAK programs.

^b Estimated harvest is the number of fish sold in the round plus the estimated number of females to produce the roe sold.

Table 4.—Exvessel value of fall chum and coho salmon commercial salmon fishery, 1993–2013.

Year	Fall Chum					Coho							Value by Species		Value by Area		
	Lower Yukon		Upper Yukon			Lower Yukon			Upper Yukon								
	\$/lb	Value	\$/lb	\$/lb Roe	Value	\$/lb	\$/lb Roe	Value	\$/lb	\$/lb Roe	Value	Fall Chum	Coho	Lower	Upper	Total	
1993	-	-	-		-	-		-		-		-	-	-	-	-	
1994	-	-	0.16	1.50	8,517	-		-	0.48	1.50	8,739	-	8,739	-	17,256	17,256	
1995	0.15	185,036	0.13	2.96	167,571	0.29		80,019	0.14	2.51	11,292	352,607	91,311	265,055	178,863	443,918	
1996	0.10	48,579	0.13	1.71	45,438	0.26	2.96	96,795	0.09	2.16	13,020	94,017	109,815	145,374	58,458	203,832	
1997	0.22	86,526	0.17	1.75	7,252	0.32		79,973	0.20		1,062	93,778	81,035	166,499	8,314	174,813	
1998	-	-	-		-	-		-	-		-	-	-	-	-	-	
1999	0.25	35,639	0.20		876	0.35		3,620	-		-	36,515	-	39,259	876	40,135	
2000	-	-	-		-	-		-	-		-	-	-	-	-	-	
2001	-	-	-		-	-		-	-		-	-	-	-	-	-	
2002	-	-	-		-	-		-	-		-	-	-	-	-	-	
2003	0.15	5,993	0.10		3,398	0.25		18,168	0.05		5,095	9,391	23,263	24,161	8,493	32,654	
2004	0.25	1,126	0.05		848	0.25		2,774	0.06		6,372	1,974	9,146	3,900	7,220	11,120	
2005	0.32	316,698	0.14		48,159	0.32		83,793	0.12		19,182	364,857	102,975	400,491	67,341	467,832	
2006	0.20	202,637	0.14		33,806	0.20		50,299	0.19		11,137	236,443	61,436	252,936	44,943	297,879	
2007	0.27	144,256	0.20		16,907	0.39		127,869	0.20		1,368	161,163	129,237	272,125	18,275	290,400	
2008	0.55	428,969	0.27		22,089	0.97		216,777	0.20		3,717	451,058	220,494	645,746	25,806	671,552	
2009	0.70	108,778	0.19		1,286	1.00		52,176	0.15		457	110,064	52,633	160,954	1,743	162,697	
2010	1.00	5,428	0.23		2,761	1.50		20,535	0.26		442	8,189	20,977	25,963	3,203	29,166	
2011	1.00	1,627,575	0.22		16,114	1.00		472,168	0.15		6,792	1,643,689	478,960	2,099,743	22,906	2,122,649	
2012	0.75	1,385,550	0.22		28,354	1.25		534,523	0.22		7,428	1,413,904	541,951	1,920,073	35,782	1,955,855	
2013	0.75	1,154,203	0.16		25,744	1.10		453,998	0.17		7,115	1,179,947	461,113	1,608,201	32,859	1,641,060	
Average 2008–2012																	
	0.80	711,260	0.23		14,121	1.14		259,236	0.20		3,767	725,381	263,003	970,496	17,888	988,384	

Table 5.—Number of permit holders participating in fall season commercial salmon fisheries, by district, Yukon Area, 1993–2013.

Year	Lower Yukon Area				Upper Yukon Area				Yukon Area	
	District 1	District 2	District 3	Subtotal ^b	District 4	District 5	District 6	Subtotal ^c	Total	
1993	0	0	0	0	0	0	0	0	0	
1994	0	0	0	0	-	-	11	11	12	
1995	189	172	0	361	4	12	20	36	397	
1996	158	109	0	263	-	17	-	17	280	
1997	176	130	0	304	3	8	0	11	315	
1998	0	0	0	0	0	0	0	0	0	
1999	146	110	0	254	4	0	0	4	258	
2000	0	0	0	0	0	0	0	0	0	
2001	0	0	0	0	0	0	0	0	0	
2002	0	0	0	0	0	0	0	0	0	
2003	75	0	0	75	-	-	5	5	80	
2004	26	0	0	26	0	0	6	6	32	
2005	177	0	0	177	0	0	7	7	184	
2006	219	71	0	286	0	4	11	15	301	
2007	181	122	0	300	-	-	8	8	308	
2008	251	177	0	428	0	3	8	11	439	
2009	165	130	0	292	-	-	-	-	292	
2010	72	18	0	90	0	0	4	4	94	
2011	234	169	0	395	-	-	-	7	402	
2012	266	201	-	457	4	3	5	12	469	
2013	251	197	-	436	-	1	6	7	443	
Average										
2003-2012	167	89	0	253	1	2	7	8	260	
2008-2012	198	139	0	332	1	2	6	9	339	

Note: Endash indicates fewer than three commercial permits were fished during the season and are confidential.

^a Number of permit holders which made at least one delivery.

^b The Lower Yukon Area Subtotal is the unique number of permits fished in Districts 1, 2, and 3 as fishermen may transfer between districts during the season.

^c The sum of Districts 4, 5, and 6 averages may not equal Upper Yukon Area district Subtotal due to rounding error.

Table 6.—Fall chum salmon passage estimates or escapement estimates for selected spawning areas, Yukon River drainage, 1993 to 2013.

Alaska										Canada			
Tanana River Drainage										Upper Yukon River Drainage			
Yukon River Mainstem										Fishing Branch		Mainstem	
Year	Sonar Estimate	Delta River	Bluff Cabin Slough	Tanana River Estimate	Chandalar River	Sheenjek River			River	Escapement Estimate			
1993		19,857 ^h	5,550 ⁱ			42,922			28,707	29,743			
1994		23,777	2,277 ⁱ			150,565			65,247	98,358			
1995	1,053,248	20,587 ^h	19,460	230,643	280,999	241,855			51,971 ^j	158,092			
1996		19,758	7,074	132,922	208,170	246,889			77,302	122,429			
1997	506,621	7,705	5,707	88,641	199,874	80,423 ^k			27,031	85,419			
1998	372,927	7,804	3,549	82,475	75,811	33,058			13,687	46,252			
1999	379,493	16,534	7,037	109,309	88,662	14,229			12,958	58,552			
2000	247,935	3,001	1,595	55,983	65,894	30,084 ^l			5,057	53,732			
2001	376,182	8,103	1,808 ⁱ	116,012	110,971	53,932			21,737	33,491			
2002	326,858	11,992	3,116	163,421	89,850	31,642			13,600	98,679			
2003	889,778	22,582	10,600 ⁱ	263,302	214,416	44,047 ^m			29,713	143,133			
2004	594,060	25,073	10,270 ⁱ	187,409	136,706	37,878			20,417	154,080			
2005	1,813,589	28,132	11,964 ⁱ	372,758	496,484	561,863 ⁿ			119,058	437,733			
2006	790,563	14,055		233,193	245,090	160,178 ⁿ			30,954	220,898			
2007	684,011	18,610		357,016	228,056	65,435 ⁿ			32,150	236,987			
2008	615,127	23,055	1,198	264,200 ^o	178,278	50,353 ⁿ			19,086	167,898 ^p			
2009	233,169 ^q	13,492	2,900 ⁱ	159,828 ^o	150,000 ^r	54,126 ⁿ			25,828	93,626 ^p			
2010	393,326	17,993	1,610 ⁱ	212,660 ^o	157,998	22,053			15,440	118,272 ^p			
2011	764,194	23,639	2,655 ⁱ	270,846 ^o	295,335	97,976 ⁿ			13,085	205,566 ^p			
2012	682,510	9,377 ^b		102,096 ^o	205,404	104,701 ⁿ			22,399	137,662 ^p			
2013 ^s	716,158	20,666 ^b	5,554 ⁱ	274,456 ^t	253,041	109,000 ^u			30,000	199,791 ^p			
All Years													
Average	659,210 ^q	16,942	5,774	193,535	193,759	106,343			32,179	138,114			
5 Year Average													
2008–2012	613,789 ^q	17,511	2,091	201,926	197,480	65,842			19,234	144,605			
BEG Range	300,000 ^v	6,000		61,000	74,000	50,000			50,000	> 80,000 ^w			
	600,000	13,000		136,000	152,000	104,000			120,000				
Interim Escapement Objective									22,000-49,000 ^x	70,000-104,000 ^y			

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Table 6.–Page 2 of 2.

- ^a Population estimate generated from replicate foot surveys and stream life data using AUC (area-under-curve) method unless otherwise indicated.
- ^b Peak counts from foot surveys unless otherwise noted.
- ^c Fall chum salmon passage estimate based on mark-recapture projects operated from 1995–2007 on the upper Tanana River and from 1999–2007 on the Kantishna River minus harvests, unless otherwise noted.
- ^d Split beam sonar estimate (1995 to 2006). DIDSON sonar (2007–present).
- ^e Single beam sonar estimate (1993–2002), split beam sonar estimate (2003–2004), DIDSON sonar (2005–2012).
- ^f Located within the Canadian portion of the Porcupine River drainage. Weir count, unless otherwise indicated. Late season adjustments have been made for the period when weir was not operating for most years.
- ^g Estimated mainstem Yukon River Canadian escapement derived from mark-recapture project minus Canadian mainstem harvest and excluding Canadian Porcupine River drainage escapement, unless otherwise noted.
- ^h Total escapement estimate generated from the migratory time density curve method.
- ⁱ Peak aerial survey counts.
- ^j Minimal count because weir was closed while submerged due to high water, during the period August 31 to September 8, 1995.
- ^k The passage estimate includes an additional 15,134 salmon that were estimated to have passed during 127 hours that the sonar was inoperable due to high water from August 29 until September 3, 1997.
- ^l Project ended early, sonar passage estimate was 18,652 (62% of normal run timing). The total sonar passage estimate, 30,083, was expanded to reflect the 1986–1999 average run timing through September 24.
- ^m Project ended on peak daily passage due to late run timing, estimate was expanded based on run timing (87%) at Rapids.
- ⁿ BEG based on right bank only. Inseason right bank counts include 266,963, 106,397, 39,548, 35,912, 28,480, 49,080, and 57,823 in 2005 through 2009 and 2011 to 2012 respectively.
- ^o Tanana River estimate for 2008–2011 is based on regression of Delta River 1995–2006 with estimate for Tanana River (Kantishna 1999–2007 and Upper Tanana 1995–2007 based on mark–recapture).
- ^p Estimated mainstem Yukon River Canadian escapement is derived from Eagle sonar estimate (expanded through October 18; 2008 to present) minus harvest from Eagle community upstream including Canadian harvests.
- ^q Excludes 2009 because of problems with apportionment during extremely low water operations.
- ^r Project ended early, estimate based on regression of Chandalar to Fishing Branch River plus Mainstem Yukon River Border from 1995–2009.
- ^s Preliminary data.
- ^t Preliminary estimate based on regression of Tanana with mainstem Yukon River Canada from 1995 to 2012 excluding 2005.
- ^u Preliminary estimate based on regression of Fishing Branch River weir counts (1985–2012) to Sheenjek estimates from two bank operations in 1985–1987, 2005 to 2009, and 2011 to 2012 and remaining years were expanded using average 36% for second bank operations.
- ^v Yukon River drainagewide sustainable escapement goal is assessed inseason using Pilot Station sonar estimates minus upstream estimated harvests. Post season run reconstruction using harvest and escapements is used to measure whether the goal was achieved.
- ^w The escapement goal after rebuilding is greater than 80,000 fish. Since 2008 has been based on Eagle sonar counts.
- ^x Interim Management Escapement Goal (IMEG) established 2008. Based on Bue and Hasbrock SEG method.
- ^y IMEG of 70,000 to 104,000 was established for 2010 to present is based on Canadian stock Ricker model which was to be reviewed after the 2005 returns were completed.

Table 7.—Coho salmon passage estimates or escapement estimates for selected spawning areas, Yukon River drainage, 1993 to 2013.

	Yukon River Mainstem	Nenana River Drainage				Upper Tanana River Drainage		
	Sonar Estimate	Lost Slough	Nenana Mainstem	Wood Creek	Seventeen Mile Slough	Delta Clearwater River	Clearwater Lake and Outlet	Richardson Clearwater River
Year	^a		^c			^d		
1993		350 (f)	419 (f)	666 (w) ^e	581 (h)	10,875 (b)	3,525 (b)	
1994		944 (h)	1,648 (h)	1,317 (w) ⁱ	2,909 (h)	62,675 (b)	3,425 (b)	5,800 (f)
1995	101,806	4,169 (f)	2,218 (h)	500 (w)	1,512 (h)	20,100 (b)	3,625 (b)	
1996		2,040 (h)	2,171 (h)	201 (u) ^j	3,668 (g/b)	14,075 (b)	1,125 (b) ^j	
1997	104,343	1,524 (h)	1,446 (h)	^k	1,996 (h)	11,525 (b)	2,775 (b)	
1998	136,906	1,360 (h) ^j	2,771 (h) ^j	^k	1,413 (g/b)	11,100 (b)	2,775 (b)	
1999	62,521	1,002 (h) ^j	745 (h) ^j	370 (h)	662 (h) ^j	10,975 (b)		
2000	175,421	55 (h) ^j	68 (h) ^j	^k	879 (h) ^j	9,225 (b)	1,025 (b)	2,175 (h)
2001	137,769	242 (h)	859 (h)	699 (h)	3,753 (h)	27,500 (b)	4,425 (b)	1,531 (f)
2002	122,566	0 (h)	328 (h)	935 (h)	1,910 (h)	38,625 (b)	5,900 (b)	874 (f)
2003	269,081	85 (h)	658 (h)	3,055 (h)	4,535 (h)	102,800 (b)	8,800 (b)	6,232 (h)
2004	188,350	220 (h)	450 (h)	840 (h)	3,370 (h)	37,550 (b)	2,925 (b)	8,626 (h)
2005	184,718	430 (h)	325 (h)	1,030 (h)	3,890 (h)	34,293 (b)	2,100 (b)	2,024 (h)
2006	131,919	194 (h)	160 (h)	634 (h)	1,916 (h)	16,748 (b)	4,375 (b)	271 (h)
2007	173,289	63 (h)	520 (h)	605 (h)	1,733 (h)	14,650 (b)	2,075 (b)	553 (h)
2008	135,570	1,342 (h)	1,539 (h)	578 (h)	1,652 (h)	7,500 (b)	1,275 (b)	265 (h)
2009	206,620 ^l	410 (h)		470 (h)	680 (h)	16,850 (b)	5,450 (b)	155 (h)
2010	155,784	1,110 (h)	280 (h)	340 (h)	720 (h)	5,867 (b)	813 (b)	1,002 (h)
2011	124,931	369 (h)			912 (h)	6,180 (b)	2,092 (b)	575 (h)
2012	106,782		106 (h)		405 (h)	5,230 (b)	396 (h)	515 (h)
2013	84,795 ^m	721 (h)		55 (h)	425 (h)	6,222 (b)	2,221 (h)	647 (h)
SEG ⁿ						5,200- 17,000 ⁿ		
All Years								
Average	140,974 ^l	832	928	768	1,882	22,408	3,056	2,083
5 Year Average								
2008-2012	130,767 ^l	808	642	463	874	8,325	2,005	502

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Table 7.–Page 2 of 2.

Note: Only peak counts presented. Survey rating is fair to good, unless otherwise noted. Denotations of survey methods include: (b)=boat, (f)=fixed wing, (g)=ground/foot, (h)=helicopter, and (u)=undocumented.

- ^a Passage estimates for coho salmon are incomplete. The sonar project is terminated prior to the end of the coho salmon run.
- ^c Index area includes mainstem Nenana River between confluence's of Lost Slough and Teklanika River.
- ^d Index area is lower 17.5 miles of system.
- ^e Poor survey.
- ⁱ Weir project terminated on October 4, 1993. Weir normally operated until mid to late October.
- ^j Weir project terminated September 27, 1994. Weir normally operated until mid-October.
- ^k No survey of Wood Creek due to obstructions in creek.
- ^l Pilot Station sonar project encountered record low water levels during the fall season causing difficulties with species apportionment and catchability. Coho salmon are suspected of being over estimated therefore this value should not be used in averages or run reconstructions.
- ^m Data preliminary.
- ⁿ Sustainable escapement goal (SEG) established January 2004, (replaces BEG of greater than 9,000 fish established March, 1993) based on boat survey counts of coho salmon in the lower 17.5 river miles during the period October 21 through 27.