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

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2016 Yukon Area Fall Season Summary

This news release provides a preliminary summary of the 2016 fall season Yukon River fall chum and coho salmon harvests and escapement. All reported results are preliminary and subject to revision.

2016 Fall Season Outlook

The forecasted fall chum salmon run size, using brood year analysis, was a point estimate of 666,000 fish with a range of 550,000 to 780,000 fish. A preseason run projection was made in mid-July using the historical relationship between summer and fall chum salmon run sizes. Using an estimated summer chum salmon run size of 2.3 million fish, the resulting preseason fall chum salmon projection was a range of 800,000 to 900,000 fish.

Assuming average run survival from the 2012 parent year, the 2016 coho salmon outlook was average to above average. A coho salmon index developed for the Yukon River from 1995 to 2015 (excluding 1996 and 2009) suggests that the median escapement is approximately 199,000 fish.

Preseason Management Strategy

The preseason run projection indicated that the 2016 fall chum salmon run would be sufficient to meet escapement needs, an above average subsistence harvest, and a limited commercial harvest. The preseason management strategy included the following components:

- Concurrent with the fall chum salmon migration upriver, all Yukon Area districts and subdistricts would be placed on their full regulatory subsistence fishing schedule, and the use of gillnets with a mesh size of 7.5 inches or less would be allowed.
- Porcupine River fall chum salmon stock abundances have been low in recent years compared to other stocks in the Yukon River drainage. Fall chum salmon escapements into the Canadian Fishing Branch River, a tributary of the Porcupine River, have fallen short of meeting the escapement objectives agreed upon by U.S. and Canadian

representatives in 4 of the last 6 years. In an attempt to improve fall chum salmon escapement into the spawning grounds in Canada, the department anticipated closing subsistence salmon fishing in the Alaska portion of the mainstem Porcupine River.

- Commercial salmon fishing in Districts 1 and 2 would proceed on a 2 day a week schedule with gillnets restricted to 6-inch or less mesh size. The amount of commercial opportunity would be adjusted based on inseason assessment information. It was anticipated that smaller scale commercial fishing would occur in Subdistricts 5-B and 5-C, and District 6.

2016 Assessment

The department monitored a suite of assessment projects that provided salmon run timing, relative abundance, and stock composition information. Projects operated in the lower river included two drift gillnet test fisheries which provided timing information and relative abundance, a mainstem Yukon River sonar which provided abundance estimates, and harvest information from both subsistence and commercial fisheries. Genetic samples collected from chum salmon at the mainstem sonar (located near Pilot Station) provided stock composition information. Additionally escapement projects were operated in the upper Yukon River tributaries and the upper mainstem of the Yukon River. Assessment projects operated in the upper river included a sonar in the mainstem Yukon River near U.S./Canada border as well as in two tributaries (Chandalar and Upper Porcupine Rivers), and a weir on the Fishing Branch River (Porcupine River headwater). Data from these projects were analyzed collectively inseason and were used to verify collaboration between projects. Age, sex, and length information were also collected at the lower river test fisheries, District 1 commercial fishery, mainstem Yukon River sonar (Eagle), as well as Fishing Branch and Delta Rivers.

By regulation the fall season begins in District 1 on July 16. Chum salmon caught in the Lower Yukon River drift gillnet test fishery (LYTF) after July 16 were considered fall chum salmon. Mountain Village drift gillnet test fishery (MVTF) began operation on July 18, and the mainstem Yukon River sonar operated near Pilot Station began counting chum salmon as fall chum salmon on July 19. The subsequent transition of upriver districts and subdistricts to the fall season was based on the migration timing of fall chum salmon.

The LYTF ceased operations on September 10 (the project was operated by the Yukon Delta Fisheries Development Association after ADF&G ceased operations on August 28) and had a fall chum salmon cumulative catch per unit effort (CPUE) of 1,893 which is below the historical median of 2,099. The MVTF ceased operations after September 12 with a preliminary cumulative CPUE for fall chum salmon of 2,943, which is above the historical median of 2,003. The mainstem Yukon River sonar near Pilot Station ceased operations after August 31. The preliminary fall chum salmon passage estimate at the mainstem sonar project near Pilot Station was 994,760 fish, which is above the historical median of 669,483 fish.

Five pulses of fall chum salmon were detected past the mainstem Yukon River sonar. Pulse three, which was 6 days in duration, finished passing the mainstem sonar on August 20. A potential sixth pulse was detected by an increase in cumulative fall chum salmon passage at LYTF and MVTF during the first week of September. Both the MVTF and the mainstem Yukon River sonar remained above historical medians for the entire season. Inseason run projections remained well above the 550,000 fall chum salmon threshold necessary to allow fall chum

salmon directed commercial fishing. Run timing for fall chum salmon was only slightly late, averaging 2 days late over all the assessment projects.

The preliminary coho salmon passage estimate at the mainstem sonar project near Pilot Station was 168,297 fish, which is below the historical median of 139,929 fish. A portion of the coho salmon run is missed because the mainstem sonar shuts down prior to completion of the run. Run timing for coho salmon was average at the majority of assessment projects.

Subsistence Fisheries

In anticipation that the fall chum salmon run size in 2016 would meet both escapement needs and provide for a commercial surplus, all districts and subdistricts (except the Porcupine River) were placed on their regulatory subsistence fishing schedules and subsequently liberalized to 7 days per week, 24 hours per day, commensurate with transitioning to fall season management. The transition date was based on the fall chum salmon migration timing upriver. Because of the Chinook salmon restrictions put in place in the Yukon Area this season, the department liberalized subsistence fishing schedules to increase the opportunity to harvest fall chum salmon for subsistence use. Finally, upon transitioning subsistence fishermen were allowed to use up to 7.5 inch mesh gear.

The mainstem Porcupine River was closed to subsistence salmon fishing on August 31. Subsistence salmon fishing on Porcupine River tributaries, such as the Sheenjek and Black Rivers, remained open. By September 19, based on favorable projections at the Fishing Branch River weir and upper Porcupine River border sonar projects in Canada, the subsistence fishing closure was relaxed to a reduced fishing schedule of one 72-hour fishing period per week. Finally, by September 30, fall chum salmon passage at the Fishing Branch River weir indicated that the lower end of the escapement objective would be met, and subsistence fishing was allowed 24 hours a day, 7 days a week.

Commercial Fishing Summary

There were a total of 65 commercial periods during the fall season in 2016. Table 1 provides a summary of the 2016 Yukon Area fall season commercial salmon harvest by district. The majority of fall season commercial harvest occurred in the lower river districts. Commercial fishing periods were established in Districts 5 and 6, but limited markets resulted in low fishing effort and relatively small harvests. The total commercial harvest for the Yukon River in the Alaska portion of the drainage was 465,396 fall chum salmon (Table 2) and 201,482 coho salmon (Table 3). The fall chum salmon commercial harvest was the second largest on record falling just short of the record 467,687 fish caught in 1981. The coho salmon harvest was a record harvest for the third consecutive year, eclipsing the previous high of 129,700 fish in 2015 (Table 3). The average weight of fall chum salmon caught commercially in Districts 1 and 2 was 7.0 lbs which was slightly below the 2006–2015 average of 7.1 lbs. The average weight of coho salmon was 6.3 lbs which was below the 2006–2015 average of 6.8 lbs. All fall chum and coho salmon were sold in the round. The exvessel value of the total harvest was $3,274,914 (Table 4); $2,115,530 for fall chum and $1,159,384 for coho salmon. The total harvest value for fall chum and coho salmon combined was a record, eclipsing the previous high value of $2.1 million set in 2011. The fall chum salmon harvest value was a record well above the previous high of $1.9 million set in 1981. The coho salmon harvest value was also a record surpassing the previous high of $0.8 million set in 1988. The average price per pound paid for fall chum salmon in Districts 1 and 2 was $0.68; the average price paid for coho salmon was $1.00. A total of 467

individual permit holders participated in the fall chum and coho salmon fishery: 459 in Districts 1 and 2 combined and 8 in Districts 5 and 6 combined (Table 5). This is the largest number of permits fished since 1992.

Subsistence Fishing Summary

A comprehensive estimate of the 2016 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 early spring of 2017. Subsistence and personal use harvests are expected to be similar to 2015 which were estimated to be approximately 86,600 fall chum salmon and 18,100 coho salmon.

Salmon Escapement

Total run size was estimated to be 1,418,000 fall chum salmon based on the abundance estimate from the mainstem Yukon River sonar operated near Pilot Station, including estimated commercial and average subsistence harvests downstream of the sonar site (including test fisheries). 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 using sonars in the Chandalar River, upper Porcupine River in Canada, and Canadian mainstem Yukon River (near Eagle). The Fishing Branch River weir was operated with a sonar component to combat high water in the headwaters of the Porcupine River in Canada. Sheenjek River was not monitored and was estimated based on a relationship of the two bank operations compared to Fishing Branch River weir. Assessment of Tanana River stocks were based on a relationship with the Canadian mainstem component, similar to the last several years however of note was that this year's estimates based on genetic proportion (both summer and fall Tanana River stocks passing after July 19) were considerably higher. The Delta River escapement estimate was within expected run size values given the independent estimates of Tanana River component and the level of harvest that occurred. In 2016, estimating run size based on the various projects resulted in a preliminary estimate of approximately 1,398,000 fall chum salmon. The estimate based on the mainstem sonar plus estimates of downstream harvest and the independent assessment by escapement projects plus overall harvest are very comparable. The final run reconstruction estimate however will be determined using the Bayesian statistical methods once the subsistence harvest estimates are completed. Using preliminary estimates of harvest the estimated escapement is 840,000 fall chum salmon which is well above the upper end of the sustainable escapement goal (SEG) range of 300,000 to 600,000 fish. The 2016 mainstem Yukon River sonar estimates are based on updated selectivity parameters which may have improved the relationship between inseason and post season results.

The fall chum salmon escapement of 295,000 (includes expansions to the end of the run) into Chandalar River exceeded the upper end of the biological escapement goal (BEG) range of 74,000 to 152,000 fish. The estimated run size of 153,000 fall chum salmon in the Sheenjek River would suggest that the escapement based on the right bank only would have been exceeded. Table 6 shows historical escapements to selected spawning areas in the Yukon Area. The estimate of 51,000 chum salmon escapement for the upper Porcupine River was based on the sonar counts minus preliminary harvests in Old Crow Yukon Territory. The Fishing Branch River weir estimate was approximately 29,000 fall chum salmon which was within the interim

management escapement goal (IMEG) of 22,000–49,000 fish. The fall chum salmon escapement was estimated to be 145,000 fish for the mainstem Yukon River in Canada which exceeded the upper end of the IMEG range of 70,000 to 104,000 fish. The Tanana River preliminary estimate of escapement of 197,000 fall chum salmon exceeded 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 mainstem Yukon River sonar test net fishery. Chum salmon genetic samples processed from five strata between July 19 and August 31 (fall season) indicated that stocks represented approximately 20% summer, 29% Border U.S. (Chandalar/Sheenjek), 27% Canadian, and 24% Tanana.

In 2016, the proportion of age-3 fall chum salmon was average (<3), age-4 fish (84%) was well above average (64%), age-5 fish (13%) was below average, and age-6 fish was average(<1%) based on samples collected at the Lower Yukon Test Fishery using 6 inch mesh drift gillnets. The 2012 brood year appears to be exceptional producing high proportions of age-3 last year followed by high proportions of age-4 fish in this year's run which bolstered the run size well above average. Females contributed 56% of the samples and were slightly below average (58%). Fall chum salmon length samples in 2016 averaged 585 mm compared to the long term 1981-2015 average of 595 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 in the mainstem Yukon River near Pilot Station was operated through August 31 with an estimated passage of 168,300 coho salmon which is the slightly above the historical average of 150,000 fish. Table 7 shows 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 DCR in late October observed 6,767 coho salmon which was within the escapement goal. Two out of six aerial surveys for coho salmon in the Nenana River drainage and the south bank Tanana River from Fairbanks to Delta Junction were above the 1974–2015 average and five were above the 2011–2015 average.

In 2016, age and sex samples were collected from the Lower Yukon test fishery using 6 inch mesh drift gillnets. The sex composition and length data are preliminary and ages are not currently available. Females contributed 48% of the samples which was near average (47%). Coho salmon in 2016 averaged 555 mm in length compared to the 1981–2015 average of 579 mm, overall this was the second smallest in this time series.

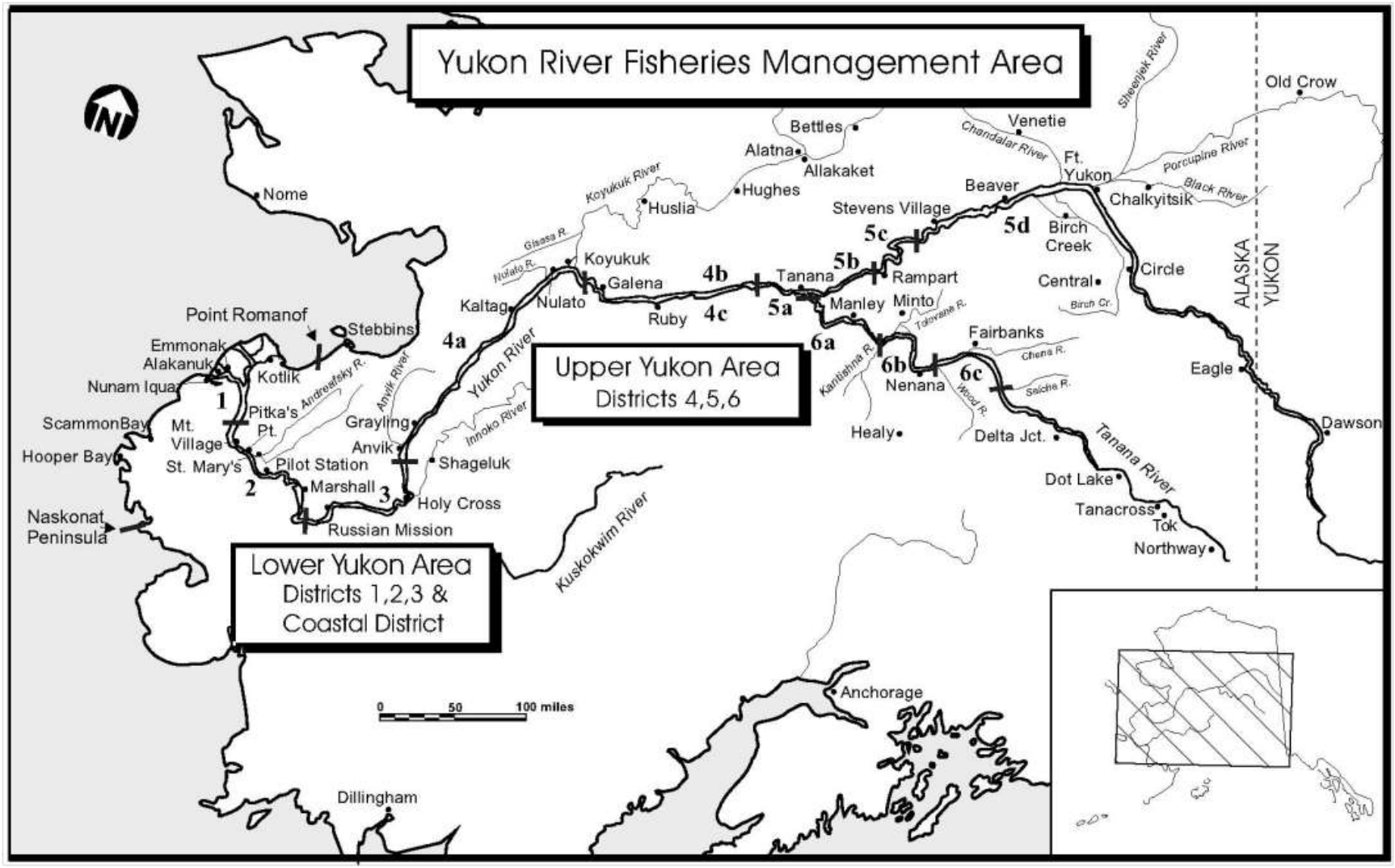

Figure 1.–Alaskan portion of the Yukon River drainage showing fishing districts and communities.

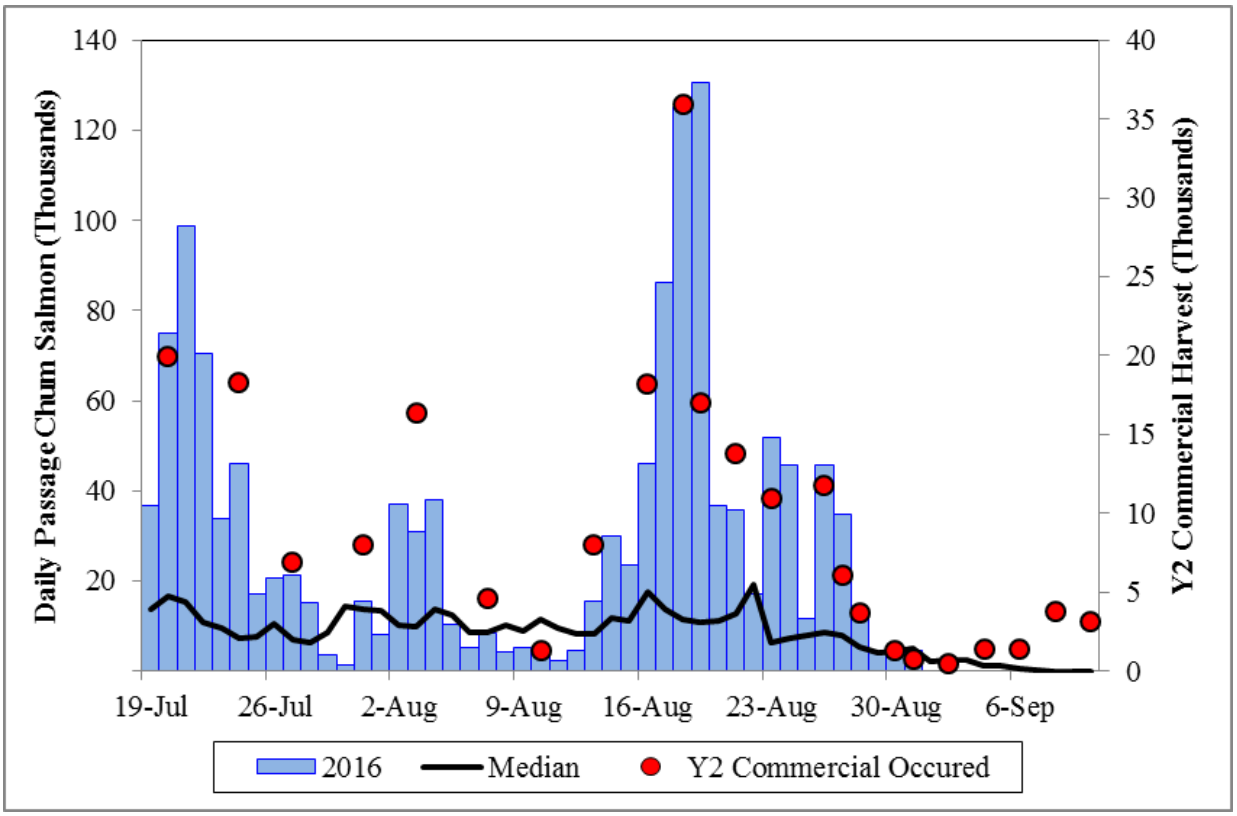

Figure 2.–Run reconstructed daily Yukon River mainstem sonar (Pilot Station) passage estimates attributed to fall chum salmon with commercial periods and harvest indicated 2016, compared to historical median.

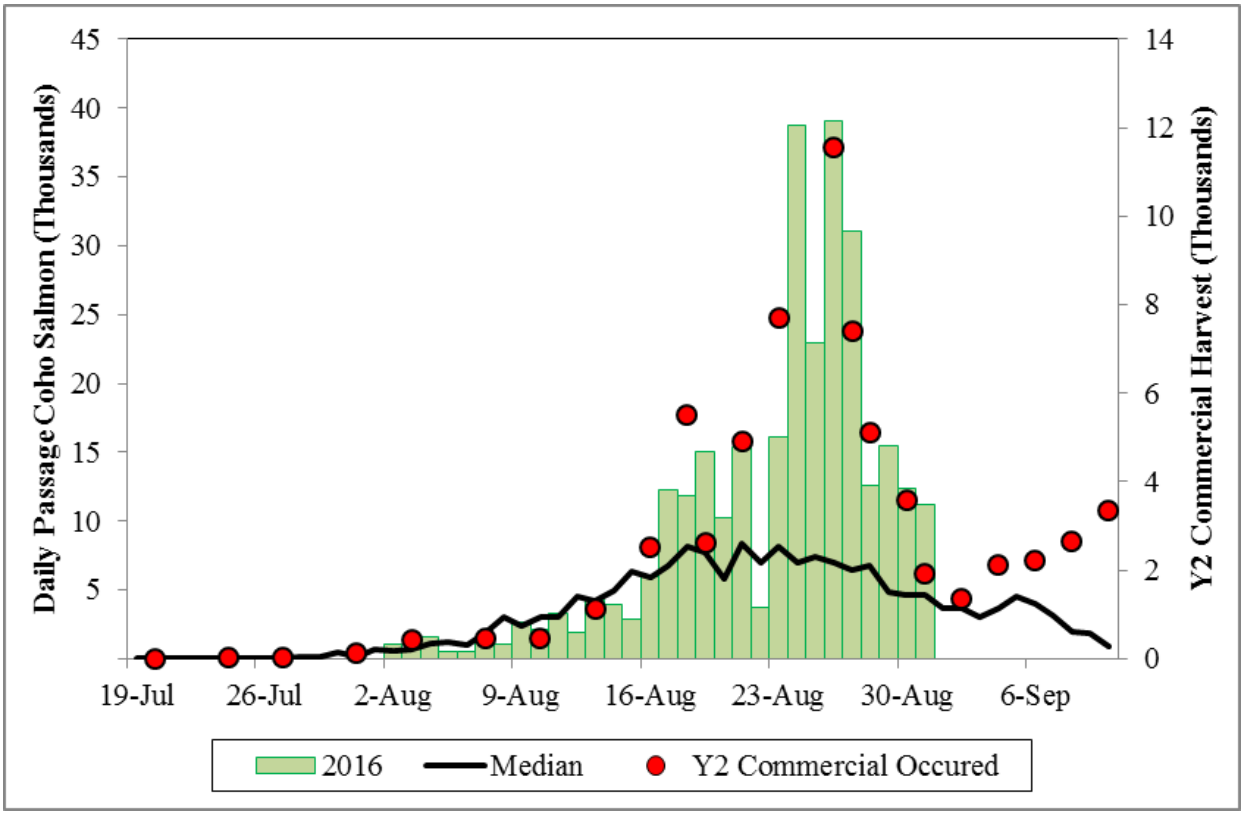

Figure 3.–Run reconstructed daily Yukon River mainstem sonar (Pilot Station) passage estimates attributed to coho salmon with commercial periods and harvest indicated 2016, compared to historical median.

Table 1.–Summary of the fall season commercial salmon harvest, by district, Yukon Area, 2016.

			Fall Chum Salmon			Coho Salmon		
District	Periods	Permits	Number	Pounds	Average Weight [a]	Number	Pounds	Average Weight [a]
1	26	275	226,576	1,595,438	7.0	113,669	722,497	6.4
2	23	197	213,225	1,500,734	7.0	67,208	421,347	6.3
3			No commercial openings					
4			No commercial openings					
5[b]	1	4	7,542	47,290	6.3	54	319	5.9
6	15	4	18,053	113,218	6.3	20,551	121,579	5.9
TOTAL	65	467	465,396	3,256,680	7.0	201,482	1,265,742	5.5

[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, 1996–2016.

	Lower Yukon				*Upper Yukon* [b]				Yukon
Year [a]	District 1	District 2	District 3	*Subtotal*	District 4	District 5	District 6	*Subtotal*	Total
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
2014	51,829	59,138	–	110,967	–	1,264	3,368	4,632	115,599
2015	100,562	74,214	–	174,776	–	1,048	15,646	16,694	191,470
2016	226,576	213,225	–	439,801	–	7,542	18,053	25,595	465,396
Average									
2011-2015	105,311	93,928	–	199,239	811	1,404	14,283	15,849	215,088
2006-2015	74,682	59,898	–	134,581	811	1,709	11,994	13,441	148,022

Note: En dash 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, 1996–2016.

	Lower Yukon				*Upper Yukon* [b]				Yukon
Year [a]	District 1	District 2	District 3	*Subtotal*	District 4	District 5	District 6	*Subtotal*	Total
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
2014	54,804	48,602	–	103,406	–	0	1,286	1,286	104,692
2015	66,029	54,860	–	120,889	–	0	8,811	8,811	129,700
2016	113,669	67,208		180,877	–	54	20,551	20,605	201,482
Average									
2011-2015	46,646	37,633	–	84,279	0	211	6,075	6,201	90,480
2006-2015	31,524	24,598	–	56,122	0	181	4,773	4,845	60,967

Note: En dash 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, 1996–2016.

	Fall Chum					Coho										
	Lower Yukon		Upper Yukon			Lower Yukon			Upper Yukon			Value by Species		Value by Area		
Year	$/lb	Value	$/lb	$/lb Roe	Value	$/lb	$/lb Roe	Value	$/lb	$/lb Roe	Value	Fall Chum	Coho	Lower	Upper	Total
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
2014	0.75	621,975	0.25		8,156	1.00		706,665	0.38		2,380	630,131	709,045	1,328,640	10,536	1,339,176
2015	0.60	762,142	0.14		15,683	0.70		616,617	0.12		6,877	777,825	623,494	1,378,759	22,560	1,401,319
2016	0.68	2,093,053	0.14		22,477	1.00		1,143,844	0.13		15,540	2,115,530	1,159,384	3,236,897	38,017	3,274,914
Average																
2011-2015	0.77	1,110,289	0.20		18,810	1.01		556,794	0.21		6,119	1,129,099	562,913	1,667,083	24,929	1,692,012

Note: En dash indicates no commercial fishing occurred.

Table 5.–Number of permit holders participating in fall season commercial salmon fisheries, by district, Yukon Area, 1996–2016.

	Fall Chum and Coho Salmon Season [a]								
	Lower Yukon Area				Upper Yukon Area				Yukon Area
Year	District 1	District 2	District 3	Subtotal [b]	District 4	District 5	District 6	Subtotal [c]	Total
1996	158	109	0	263	1	17	17	35	298
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	2	0	5	7	82
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	0	2	8	10	310
2008	251	177	0	428	0	3	8	11	439
2009	165	130	0	292	0	0	2	2	294
2010	72	18	0	90	0	0	4	4	94
2011	234	169	0	395	0	2	5	8	403
2012	266	201	0	457	4	3	5	13	462
2013	251	197	0	436	0	1	6	7	443
2014	256	199	0	441	0	2	2	4	445
2015	266	184	0	440	0	1	5	6	446
2016	275	197	0	459	0	4	4	8	467
Average									
2006-2015	216	147	0	357	0	2	6	8	364
2011-2015	255	190	0	434	1	2	5	8	440

[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, 1996 to 2016.

	Alaska						Canada		
		Tanana River Drainage			Upper Yukon River Drainage				
Year	Yukon River Mainstem Sonar Estimate	Delta River [a]	Bluff Cabin Slough [b]	Tanana River Estimate [c]	Chandalar River [d]	Sheenjek River [e]	Fishing Branch River [f]	Porcupine River Sonar [g]	Mainstem Escapement Estimate [h]
1996	– [i]	19,758	7,074	132,922	230,450	246,889	77,302	–	122,429
1997	579,767	7,705	5,707	88,641	211,914	80,423 [j]	27,031	–	85,419
1998	375,222	7,804	3,549	82,475	83,899	33,058	13,687	–	46,252
1999	451,505	16,534	7,037	109,309	92,685	14,229	12,958	–	58,552
2000	273,206	3,001	1,595	55,983	71,048	30,084 [k]	5,057	–	53,732
2001	408,961	8,103	1,808 [l]	116,012	112,664	53,932	21,737	–	33,491
2002	367,886	11,992	3,116	163,421	94,472	31,642	13,600	–	98,679
2003	923,540	22,582	10,600 [l]	263,302	221,343	44,047 [m]	29,713	–	143,133
2004	633,368	25,073	10,270 [l]	187,409	169,848	37,878	20,417	–	154,080
2005	1,894,078	28,132	11,964 [l]	372,758	526,838	561,863 [n]	119,058	–	437,733
2006	964,238	14,055	–	233,193	254,778	160,178 [n]	30,954	–	220,898
2007	740,195	18,610	–	357,016	243,805	65,435 [n]	32,150	–	236,987
2008	636,525	23,055	1,198	264,200 [o]	178,278	50,353 [n]	19,086	–	167,898 [p]
2009	– [i]	13,492	2,900 [l]	159,828 [o]	150,000 [q]	54,126 [n]	25,828	–	93,626 [p]
2010	458,103	17,993	1,610 [l]	212,660 [o]	167,532	22,053	15,773	–	117,789 [p]
2011	873,877	23,639	2,655 [l]	270,846 [o]	298,223	97,976 [n]	13,085	–	205,566 [p]
2012	778,158	9,377 [b]	–	102,096 [o]	205,791	104,701 [n]	22,399	–	137,662 [p]
2013	865,295	31,955	5,554 [l]	275,089 [r]	252,710	110,000 [s]	–	35,615	200,262 [p]
2014	706,630	32,480 [b]	4,095 [l]	215,393 [r]	226,489	43,000 [s]	–	17,698	156,796 [p]
2015	669,483	33,401 [b]	6,020 [l]	149,265 [r]	164,486	55,000 [s]	9,000	21,396	108,611 [p]
2016 [t]	994,760	21,913 [b]	4,936 [l]	197,163 [r]	295,023	153,000 [s]	29,397	54,395	144,304 [p]
All Years Average	715,516 [i]	18,693	5,850	192,710	207,994	104,169	29,510	32,276	144,636
Five Year Average 2011-2015	778,689	26,170	4,581	202,538	229,540	82,135	14,828	24,903	161,779
BEG Range	300,000 [u]	6,000		61,000	74,000	50,000	50,000		> 80,000 [v]
	600,000	13,000		136,000	152,000	104,000	120,000 [v]		
Interim Escapement Objective							22,000-49,000 [w]		70,000-104,000 [x]

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Table 6.–Page 2 of 2.

Note: En dash indicates no data were collected or calculated. Yukon River mainstem sonar historical estimates were revised in 2016, using updated selectivity parameters.

[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). Includes expansions to the end of the run.

[e] Single beam sonar estimate (1993–2002), split beam sonar estimate (2003-2004), DIDSON sonar (2005-2012).

[f] Weir located within the Canadian portion of the Porcupine River drainage. Late season adjustments have been made for the period when weir was not operating for most years.

[g] Porcupine River Sonar is located near Canadian border, downstream of community of Old Crow. Includes expansions to the end of the run.

[h] Estimated mainstem Canadian escapement derived from mark-recapture project minus Canadian mainstem harvest and excluding Canadian Porcupine River drainage escapement, unless otherwise noted.

[I] Project operated all or partial season, estimate was not usable.

[j] 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.

[k] 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.

[l] Peak aerial survey counts.

[m] Project ended on peak daily passage in 2003 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 72,746 in 2005 through 2009 and 2011 to 2012 respectively.

[o] Tanana River estimate 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] Project ended early, estimate based on regression of Chandalar to Fishing Branch River plus Mainstem Border from 1995-2009.

[r] Preliminary estimate based on regression of Tanana with mainstem Yukon River Canada from 1995 to 2012 excluding 2005.

[s] 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.

[t] Data is preliminary.

[u] Yukon River drainagewide sustainable escapement goal is assessed inseason using Pilot Station sonar estimates minus upstream estimated harvests. Post season run reconstruction uses harvest and escapements to determine whether the goal was achieved.

[v] Escapement goal as written in the Pacific Salmon Treaty.

[w] Interim Management Escapement Goal (IMEG) established 2008. Based on Bue and Hasbrock SEG method.

[x] 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 2005 returns were completed.

Table 7.–Coho salmon passage estimates or escapement estimates for selected spawning areas, Yukon River drainage, 1996 to 2016.

	Yukon River Mainstem Sonar		Nenana River Drainage								Upper Tanana River Drainage					
			Lost		Nenana		Wood		Seventeen		Delta Clearwater		Clearwater Lake and		Richardson Clearwater	
Year	Estimate	[a]	Slough		Mainstem [b]		Creek		Mile Slough		River [c]		Outlet		River	
1996	–	[d]	2,040	(h)	2,171	(h)	201	(u) [e]	3,668	(g/b)	14,075	(b)	1,125	(b) [e]	–	
1997	118,065		1,524	(h)	1,446	(h)	–	[f]	1,996	(h)	11,525	(b)	2,775	(b)	–	
1998	146,365		1,360	(h) [e]	2,771	(h) [e]	–	[f]	1,413	(g/b)	11,100	(b)	2,775	(b)	–	
1999	76,174		1,002	(h) [e]	745	(h) [e]	370	(h)	662	(h) [e]	10,975	(b)	–		–	
2000	206,365		55	(h) [e]	68	(h) [e]	–	[f]	879	(h) [e]	9,225	(b)	1,025	(b)	2,175	(h)
2001	160,272		242	(h)	859	(h)	699	(h)	3,753	(h)	27,500	(b)	4,425	(b)	1,531	(f)
2002	137,077		0	(h)	328	(h)	935	(h)	1,910	(h)	38,625	(b)	5,900	(b)	874	(f)
2003	280,552		85	(h)	658	(h)	3055	(h)	4,535	(h)	102,800	(b)	8,800	(b)	6,232	(h)
2004	207,844		220	(h)	450	(h)	840	(h)	3,370	(h)	37,550	(b)	2,925	(b)	8,626	(h)
2005	194,622		430	(h)	325	(h)	1030	(h)	3,890	(h)	34,293	(b)	2,100	(b)	2,024	(h)
2006	163,889		194	(h)	160	(h)	634	(h)	1,916	(h)	16,748	(b)	4,375	(b)	271	(h)
2007	192,406		63	(h)	520	(h)	605	(h)	1,733	(h)	14,650	(b)	2,075	(b)	553	(h)
2008	145,378		1,342	(h)	1,539	(h)	578	(h)	1,652	(h)	7,500	(b)	1,275	(b)	265	(h)
2009	–	[d]	410	(h)	–		470	(h)	680	(h)	16,850	(b)	5,450	(b)	155	(h)
2010	177,724		1,110	(h)	280	(h)	340	(h)	720	(h)	5,867	(b)	813	(b)	1,002	(h)
2011	149,533		369	(h)	–		–		912	(h)	6,180	(b)	2,092	(b)	575	(h)
2012	130,734		–		106	(h)	–		405	(h)	5,230	(b)	396	(h)	515	(h)
2013	110,515		721	(h)	–		55	(h)	425	(h)	6,222	(b)	2,221	(h)	647	(h)
2014	283,421		333	(h)	378	(h)	649	(h)	886	(h)	4,285	(b)	434	(h)	1,941	(h)
2015	121,193		242	(h)	1,789	(h)	1419	(h)	3,890	(h)	19,533	(b)	1,621	(h)	3,742	(h)
2016	168,297	[g]	334	(h)	1,680	(h)	1327	(h)	2,746	(h)	6,767	(b)	1,421	(h)	1,350	(h)
SEG [h]											5,200-17,000					
All Years Average	166,865	[e]	604		904		825		2,002		19,405		2,701		1,910	
Five Year Average 2011-2015	159,079		416		758		708		1,304		8,290		1,353		1,484	

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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. En dash indicates no data available.

[a] Passage estimates for coho salmon are incomplete. The sonar project is terminated prior to the end of the coho salmon run. Yukon River mainstem sonar historical estimates were revised in 2016, using updated selectivity parameters.

[b] Index area includes mainstem Nenana River between confluence's of Lost Slough and Teklanika River.

[c] Index area is lower 17.5 miles of system.

[d] Project operated all or partial season, estimate was not usable.

[e] Poor survey.

[f] No survey of Wood Creek due to obstructions in creek.

[g] Data is preliminary.

[h] 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.