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## **Winter/Spring 2023 Fisheries Report**

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### **SUMMARY OF KEY UPDATES**

- Tanada Creek Weir at Batzulnetas documented a passage of 29,350 Sockeye Salmon (preliminary minimal count estimate, pending additional video review), which is above the historical count average of 17,520
- 2 Copper River salmon research projects began this season; one evaluating the use of genetic stock identification (GSI) for inseason management decision making and one looking at factors affecting migratory success
- 2022 Copper River salmon run began weak, then increased in strength as season progressed, harvest opportunities continued throughout the season and it appears likely that sustainable escapement goals were met
- Miles Lake sonar provided a season total passage estimate of 785,509 salmon, which is 27% above management objective
- Upper Copper River Federal subsistence fishery permits issued were: 177 Chitina Subdistrict, 297 Glennallen Subdistrict, and 2 Batzulnetas
- Historical Federal subsistence harvests in the Upper Copper River through 2021, along with preliminary estimates for 2022 are provided in Tables 1-4; the 2022 season harvest was below average for Sockeye Salmon and near average for Chinook Salmon
- New Federal subsistence fishery in the Lower Copper River was open from June 1 through September 30; 69 permits were issued and total reported harvest (preliminary) for the season was 111 Sockeye Salmon and 3 Chinook Salmon
- ADFG has forecast 2023 Copper River total run returns of 1,646,000 Sockeye Salmon (14% below 10-yr. average) and 53,000 Chinook Salmon (15% above 10-yr. average)

### **FISHERIES RESEARCH AND MONITORING PROJECTS**

#### ***Tanada Creek Salmon Weir***

With funding through the Fisheries Resource Monitoring Program (FRMP), the Wrangell-St. Elias National Park and Preserve (WRST) Fisheries Program operated the Tanada Creek salmon weir located at Batzulnetas. This was the first year of operation since the 2018 season. Weir installation was completed on June 24. The first salmon was documented passing the weir on June 28. Preliminary inseason review of video recorded fish passage provided partial count estimates of 29,350 Sockeye Salmon and 10 Chinook Salmon recorded in passage for the season. Additional video review will be conducted this spring to provide a final count estimate. The Sockeye Salmon preliminary count is above the historical season count average of 17,520, and is on track to be the third highest escapement count documented to this system in 24 years of weir operations. The timing of these stocks passing the weir was later than normal throughout the season, with over 50% of the run passing the weir after August 10. The weir is scheduled to operate during the coming seasons of 2023 through 2025.



**Photo of Tanada Creek Salmon Weir and Crew, 2022**



**Underwater Image of Sockeye Salmon Passing the Tanada Creek Weir, 2022**

### ***Upper Yukon Burbot Assessments***

The Fisheries Program has one year of FRMP funds remaining to perform a Burbot population assessment project in lakes of the Upper Yukon/Tanana/White River drainages. This project has not been performed during the past three seasons due to limitations of risk mitigation guidelines associated with Covid-19. The project has also been impacted by the loss of a key staffing position within the Fisheries Program that occurred in 2017, after the project began. For the 2023 season, we again hope to complete this project; with a likely destination of Ptarmigan Lake. We are presently exploring possibilities of collaborating with staff of the Alaska Department of Fish and Game (ADFG).

### ***Tracing Mercury in Lake Trout Food Webs***

As part of a collaborative project between NPS and the U.S. Geological Survey (USGS), researchers performed field sampling in Copper Lake and Tanada Lake in late June. This study intends to trace Mercury (Hg) in Lake Trout food webs and was prompted by findings of elevated Hg levels in muscle tissue of Lake Trout residing in certain lakes of Alaska parks. One additional lake (yet to be determined) may be sampled in the 2023 field season.

### ***Copper River Sockeye Salmon Research Projects***

WRST has recently collaborated with researchers of other agencies in the development of successfully funded proposals for Copper River salmon research. These projects seek to gain information which may be applied to management decision making for long-term sustainability. Some of this work began

in 2022 with the collection of genetic tissue samples from harvested Sockeye Salmon, to be analyzed for stock composition.

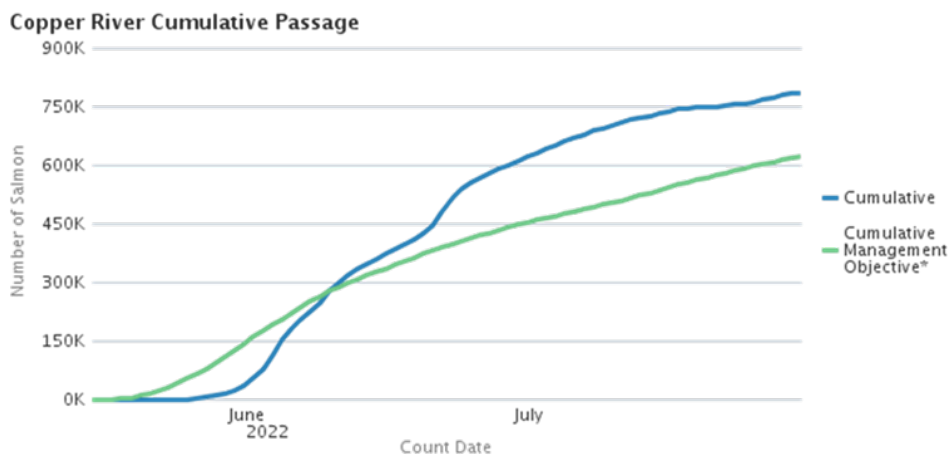
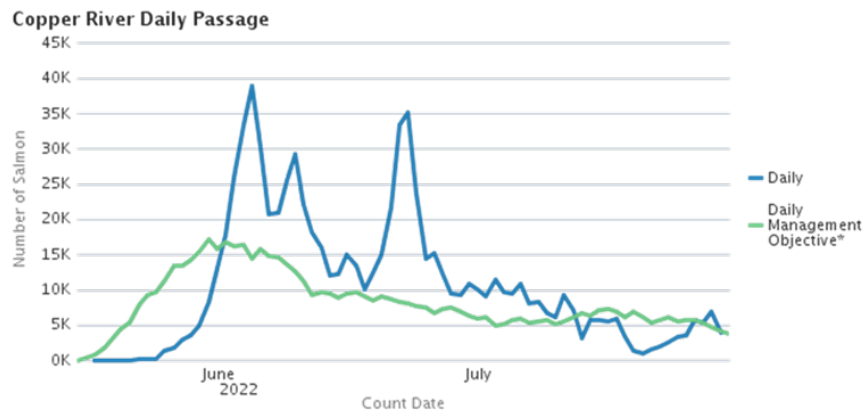
## UPPER COPPER RIVER FISHERIES

### *2022 Copper River Salmon Run Strength and Management Actions*

Management actions of the ADFG limited early season commercial fishing opportunities in the Copper River District in response to low numbers of returning salmon at the start of the season. As the run developed, fishing opportunities were expanded during the season. The season total commercial harvest for the Copper River District through August 30 is reported to include 591,987 Sockeye Salmon and 11,629 Chinook Salmon.

The ADFG sonar at Miles Lake (located just downstream of the Million Dollar Bridge in the Copper River) began limited operation of the sonar on May 17 and became fully operational on May 25. The project operated through July 28, providing a season total estimate of 785,509 salmon passing the site. This estimate is 27% above the management objective of 620,039 salmon for that date of the season.

### **2022 Copper River Salmon Passage at Miles Lake Sonar.**



\*Management objectives are based on historical run-timing to achieve the in-river goal.

Source: [http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareacopperriver.salmon\\_escapement](http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareacopperriver.salmon_escapement)

In-river sonar salmon passage estimates provide the primary assessment of Sockeye Salmon returning to the Copper River. After a relatively slow start, the run improved substantially by early June. For the season, the overall assessment of the in-river salmon run exceeded ADFG management objectives. These objectives are designed to provide harvest opportunities to both Federal subsistence and other State users, as well as to achieve sustainable escapement goal's (SEG's).

As with Sockeye Salmon, fisheries managers monitor assessments of the Chinook Salmon run strength; the primary inseason indicator are data from the Chinook Salmon in-river abundance project operated by the Native Village of Eyak. Additional insight is gained from the recent application of updated technology at the Miles Lake sonar site to provide species apportionment data. Although concerns of a potentially weak Chinook Salmon run existed in early season, which prompted temporary closure of Chinook Salmon retention in the State sport and personal use fisheries (June 20 through June 26), subsequent assessments indicated a stronger run that may have been delayed in timing. Managers believe that the in-river return should meet the lower bound of the SEG. This will be further evaluated post season after the return of harvest reports.

Federal managers monitored run strength indices throughout the season to evaluate the need for appropriate fisheries management actions in the Federal waters of the Copper River Drainage. No Federal Special Action was issued by the inseason manager in the fisheries of the Upper Copper River.

Although Federal actions were not taken, during the period of concern for the Chinook Salmon run, the inseason manager prepared and distributed an advisory announcement intended to inform subsistence users of this potential concern. This announcement was sent to all Upper Copper River District Federal subsistence fishing permit holders with email addresses on record. The announcement requested that users consider voluntarily releasing healthy Chinook Salmon that may be beyond their subsistence needs.

### ***2022 Upper Copper River Federal Subsistence Fishing Season, Permits, and Historical Harvests***

The Federal subsistence salmon fisheries of the Upper Copper River were open from May 15 through September 30. For the season, WRST issued 177 Chitina Subdistrict permits, 297 Glennallen Subdistrict permits, and 2 Batzulnetas permits. Tables 1 through 4 show historical reported and expanded harvests for the Federal subsistence fisheries in each subdistrict through the 2021 season, along with preliminary estimates for 2022. The overall season harvest levels during 2022 may have been hindered by both high water levels in the Copper River and delayed run timing of salmon stocks.

### ***2022 Lower Copper River Federal Subsistence Fishery***

In April 2022, the Federal Subsistence Board (Board) adopted a proposal to allow subsistence salmon harvest opportunities in the Lower Copper River near Cordova. The season was adopted to be open from June 1 through September 30. As regulations of this new fishery would not be in effect until later in the year when the Federal Register was published, a Fisheries Special Action Request, was considered and adopted by the Board on May 19 which put these regulations in place temporarily for the 2022 season. This fishery opened on June 1. Permits were made available at the Cordova Ranger Station (Chugach National Forest). Salmon harvest is only allowed in the Copper River within ½ mile of the Copper River Highway, only by dip net or rod and reel, dip netting from boats is prohibited, and all salmon harvest must be reported within 48 hours of harvest.

The Cordova Ranger Station issued 69 permits for the season. The annual deadline for returning Lower Copper River permits to WRST is January 15. Reports are still in process of being received and entered to the online database. Based upon harvest reports received through January 25, 2023,

preliminary season harvest estimates for this new fishery are 111 Sockeye Salmon and 3 Chinook Salmon.

### ***2023 Preseason Copper River Salmon Forecast***

The ADFG has forecast a return of 53,000 Copper River Chinook Salmon. This is 15% above the recent 10-year average of 46,000 fish. Their forecast for wild production Sockeye Salmon is for 1,646,000 fish. The Gulkana Hatchery is forecast to contribute an additional 49,000 Sockeye Salmon. Their 2023 pre-season forecast for the total Sockeye Salmon return is 1,695,000 fish which is 14% below the recent 10-year average wild stock return of 1,956,000 fish. The inseason management of State fisheries is anticipated to be based on the strength of salmon abundance indices; primarily sonar estimates and fishery performance.

### ***2023 Early Season Management Strategy for Federal Subsistence Fisheries***

Unless inseason run abundance indices prompt concerns of meeting salmon escapement goals, we anticipate all Federal subsistence salmon fisheries of the Upper Copper River to be open continuously from May 15 through September 30 during the 2023 season and for the Lower Copper River to be open continuously from June 1 through September 30.



**Table 1. Federal Subsistence Fish Harvest in All Upper Copper River Fisheries, including Harvest by Gear Type<sup>1</sup>**

Year	Expanded Harvest Estimates <sup>2</sup>						All Species, Approximate Harvest by Gear Type					
	Sockeye	Chinook	Coho	Steelhead /Rainbow Trout	Other Species	Total Harvest	Fish Wheel %	Fish Wheel Total	Dip Net %	Dip Net Total	Rod and Reel %	Rod and Reel Total
2002	10,852	745	100	77	N.A.	11,775						
2003	17,384	687	268	16	N.A.	18,355						
2004	24,217	815	216	15	N.A.	25,264						
2005	24,781	412	55	7	37	25,292						
2006	20,737	507	55	17	37	21,353						
2007	19,108	704	85	7	25	19,929						
2008	14,865	892	268	21	54	16,100						
2009	14,821	590	52	22	36	15,521						
2010	17,156	362	111	46	25	17,700	90.3%	15,978	9.6%	1,697	0.1%	25
2011	18,214	814	70	6	283	19,387	88.4%	17,142	11.4%	2,206	0.2%	39
2012	17,297	410	93	45	113	17,958	90.4%	16,228	9.4%	1,684	0.3%	45
2013	20,850	396	36	8	93	21,382	85.9%	18,369	14.1%	3,013	0.0%	0
2014	25,659	456	97	14	57	26,284	89.3%	23,458	10.8%	2,825	0.0%	3
2015	29,157	430	29	15	218	29,849	90.1%	26,900	9.7%	2,883	0.2%	66
2016	21,106	465	52	6	406	22,035	90.0%	19,820	10.0%	2,197	0.1%	18
2017	20,497	485	10	8	549	21,550	96.2%	20,724	3.7%	804	0.1%	19
2018	20,634	2,763	31	4	45	23,476	83.4%	19,579	16.5%	3,878	0.1%	19
2019	22,302	1,025	22	3	59	23,411	79.0%	18,485	21.0%	4,909	0.1%	16
2020	16,337	837	26	7	60	17,266	75.9%	13,098	24.1%	4,159	0.1%	9
2021	20,481	610	3	6	32	21,132	70.8%	14,951	29.2%	6,175	0.0%	6
2022	17,268	943	43	17	58	18,330	78.3%	14,356	21.7%	3,970	0.0%	4
5-yr. Avg. 2017-2021	20,050	1,144	18	6	149	21,367	81.0%	17,368	18.9%	3,985	0.1%	14
10-yr. Avg. 2012-2021	21,432	788	40	12	163	22,434	85.1%	19,161	14.8%	3,253	0.1%	20

<sup>1</sup> This table reflects entries to the online database from 2011 through **01/25/2023**. Data prior to 2011 relies on NPS records. Data for all years subject to changes resulting from entry error corrections.

<sup>2</sup> Expanded Harvest estimate derived from a basic, direct ratio expansion based on the percentage of permits that reported.

**Table 2. Glennallen Subdistrict Federal Reported and Expanded Subsistence Fishery Harvests<sup>1</sup>**

Year	Percentage		Sockeye		Chinook		Coho		Steelhead/Rainbow Trout		Other Species		All Species
	Permits Issued	of Permits Reported	Reported Harvest	Harvest Estimate <sup>2</sup>	Reported Harvest	Harvest Estimate <sup>2</sup>	Reported Harvest	Harvest Estimate <sup>2</sup>	Reported Harvest	Harvest Estimate <sup>2</sup>	Reported Harvest	Harvest Estimate <sup>2</sup>	Total Harvest
													Estimate <sup>2</sup>
2002	201	80.6	7,944	9,856	564	700	81	100	62	77	35	43	10,777
2003	221	83.3	13,616	16,346	554	665	152	182	13	16	20	24	17,233
2004	261	78.9	17,704	22,439	636	806	152	193	12	15	12	15	23,468
2005	267	85.8	19,973	23,279	331	386	47	55	6	7	32	37	23,763
2006	254	87.4	16,711	19,120	430	492	28	32	15	17	32	37	19,698
2007	281	84.3	15,225	18,060	569	675	34	40	6	7	21	25	18,808
2008	269	81.4	11,347	13,940	705	866	148	182	17	21	44	54	15,063
2009	274	85.0	11,836	13,925	494	581	34	40	19	22	31	36	14,605
2010	269	87.7	12,849	14,651	300	342	64	73	39	44	22	25	15,136
2011	277	87.7	14,163	16,145	701	799	53	60	5	6	248	283	17,293
2012	275	92.0	14,461	15,718	371	403	78	85	40	43	104	113	16,363
2013	273	89.0	15,834	17,789	331	372	24	27	6	7	62	70	18,264
2014	315	90.5	21,603	23,877	399	441	23	25	10	11	52	57	24,412
2015	325	92.3	24,695	26,753	384	416	13	14	7	8	201	218	27,408
2016	320	82.8	15,884	19,181	369	446	9	11	5	6	332	401	20,044
2017	338	85.2	15,691	18,415	399	468	1	1	7	8	468	549	19,442
2018	335	91.3	15,287	16,736	2,432	2,662	0	0	4	4	41	45	19,448
2019	343	90.1	15,873	17,620	849	942	0	0	3	3	53	59	18,624
2020	376	90.7	11,456	12,632	682	752	0	0	6	7	54	60	13,450
2021	355	86.5	13,117	15,168	434	502	0	0	5	6	28	32	15,708
2022	297	78.5	11,204	14,281	661	843	0	0	13	17	44	56	15,197
5-yr. Avg. 2017-2021	349	88.8	14,285	16,114	959	1,065	0	0	5	6	129	149	17,334
10-yr. Avg. 2012-2021	326	89.0	16,390	18,389	665	740	15	16	9	10	140	160	19,316

<sup>1</sup> This table reflects entries to the online database from 2011 through **01/25/2023**. Data prior to 2011 relies on NPS records. Data for all years subject to changes resulting from entry error corrections.

<sup>2</sup> Expanded Harvest estimate derived from a basic, direct ratio expansion based on the percentage of permits that reported.



**Table 3. Chitina Subdistrict Federal Reported and Expanded Subsistence Fishery Harvests<sup>1</sup>**

Year	Sockeye		Chinook		Coho		Steelhead/Rainbow Trout		Other Species		All Species		
	Permits Issued	Percentage of Permits Reported	Reported Harvest	Harvest Estimate <sup>2</sup>	Reported Harvest	Harvest Estimate <sup>2</sup>	Reported Harvest	Harvest Estimate <sup>2</sup>	Reported Harvest	Harvest Estimate <sup>2</sup>	Reported Harvest	Harvest Estimate <sup>2</sup>	Total Harvest Estimate <sup>2</sup>
2002	122	73.0	575	788	33	45	0	0	0	0	N.A.	N.A.	833
2003	100	82.0	717	874	18	22	70	85	0	0	N.A.	N.A.	982
2004	109	76.1	1,215	1,597	7	9	18	24	0	0	N.A.	N.A.	1,629
2005	76	84.2	1,265	1,502	22	26	0	0	0	0	0	0	1,529
2006	75	85.3	1,379	1,617	13	15	20	23	0	0	0	0	1,655
2007	98	88.8	929	1,046	26	29	40	45	0	0	0	0	1,120
2008	82	85.4	789	924	22	26	74	87	0	0	0	0	1,036
2009	68	91.2	817	896	8	9	11	12	0	0	0	0	917
2010	92	85.9	2,061	2,399	17	20	33	38	1	1	0	0	2,459
2011	85	85.9	1,766	2,056	13	15	8	9	0	0	0	0	2,081
2012	89	93.3	1,332	1,427	6	6	8	9	1	1	0	0	1,443
2013	99	90.9	1,999	2,199	17	19	8	9	1	1	10	11	2,239
2014	113	94.7	1,549	1,636	14	15	68	72	3	3	0	0	1,726
2015	111	92.8	2,231	2,404	13	14	14	15	7	8	0	0	2,441
2016	128	80.5	1,549	1,925	16	20	33	41	0	0	4	5	1,991
2017	132	79.5	1,454	1,828	12	15	7	9	0	0	0	0	1,852
2018	132	91.7	3,144	3,430	92	100	28	31	0	0	0	0	3,561
2019	181	90.6	4,053	4,473	75	83	20	22	0	0	0	0	4,578
2020	215	89.3	3,249	3,638	76	85	23	26	0	0	0	0	3,749
2021	194	91.8	4,765	5,193	99	108	3	3	0	0	0	0	5,304
2022	177	85.3	2,548	2,987	86	101	37	43	0	0	2	2	3,133
5-yr. Avg. 2017-2021	171	88.6	3,333	3,712	71	78	16	18	0	0	0	0	3,809
10-yr. Avg. 2012-2021	139	89.5	2,533	2,815	42	47	21	24	1	1	1	2	2,888

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<sup>2</sup> Expanded Harvest estimate derived from a basic, direct ratio expansion based on the percentage of permits that reported.

**Table 4. Batzulnetas Federal Reported and Expanded Subsistence Fishery Harvests<sup>1</sup>**

Year	Percentage		Sockeye		Chinook		Other Species	
	Permits Issued	of Permits Reported	Reported Harvest	Harvest Estimate <sup>2</sup>	Reported Harvest	Harvest Estimate <sup>2</sup>	Reported Harvest	Harvest Estimate <sup>2</sup>
2002	1	100.0	208	208	0	0	0	0
2003	1	100.0	164	164	0	0	0	0
2004	1	100.0	182	182	0	0	0	0
2005	1	100.0	0	0	0	0	0	0
2006	0	N.A.	0	0	0	0	0	0
2007	1	100.0	1	1	0	0	0	0
2008	1	100.0	1	1	0	0	0	0
2009	0	N.A.	0	0	0	0	0	0
2010	3	100.0	106	106	0	0	0	0
2011	3	66.7	9	14	0	0	0	0
2012	3	66.7	101	152	0	0	0	0
2013	3	100.0	862	862	5	5	12	12
2014	2	100.0	146	146	0	0	0	0
2015	4	100.0	0	0	0	0	0	0
2016	0	N.A.	0	0	0	0	0	0
2017	1	100.0	254	254	2	2	0	0
2018	1	100.0	468	468	0	0	0	0
2019	1	100.0	209	209	0	0	0	0
2020	1	100.0	67	67	0	0	0	0
2021	1	100.0	120	120	0	0	0	0
2022	2	100.0	41	41	0	0	0	0
5-yr. Avg. 2017-2021	1	100.0	224	224	0	0	0	0
10-yr. Avg. 2012-2021	2	96.3	223	228	1	1	1	1

<sup>1</sup> This table reflects entries to the online database from 2011 through **01/25/2023**. Data prior to 2011 relies on NPS records. Data for all years subject to changes resulting from entry error corrections.

<sup>2</sup> Expanded Harvest estimate derived from a basic, direct ratio expansion based on the percentage of permits that reported.