

**NATIONAL PARK SERVICE**  
Wrangell-St. Elias National Park & Preserve  
Mile 106.8 Richardson Hwy. P.O. Box 439  
Copper Center, AK 99573-0439  
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## **Winter 2021 Fisheries Report**

**Dave Sarafin, Fisheries Biologist**

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

#### ***Tanada Creek Salmon Weir and Upper Yukon Burbot Assessments***

The park Fisheries Program plans on performing work during the 2021 field season on two projects funded through the Fisheries Resource Monitoring Program (FRMP); the Tanada Creek salmon weir and a Burbot population assessment in Ptarmigan Lake of the Upper Yukon River Drainage. Neither of these projects operated during 2020, as both projects were impacted by risk mitigation measures associated with the Covid-19 pandemic.

One particular challenge we had during 2020 was recruiting a full crew of local residents to work on the Tanada Creek weir project. This project is based out of Slana which has typically provided a very limited pool of applicants interested in these seasonal positions. For the 2021 season we are attempting to recruit locally, but may consider applicants from outside of the local community. Please help inform any potential applicants of these upcoming employment opportunities; local hire announcements should be posted on the park website in late January to early February.



**Tanada Creek weir site.**

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

As part of a collaborative project between NPS and the U.S. Geological Survey (USGS), the WRST Fisheries Program is planning to assist with field activities to support a study investigating the tracing of Mercury (Hg) in Lake Trout food webs. This study was prompted by findings of elevated Hg levels in muscle tissue of Lake Trout residing in certain lakes of WRST. Three lakes in the park are intended to be studied, including: Copper Lake, Tanada Lake, and one other lake (yet to be determined).

## UPPER COPPER RIVER FEDERAL SUBSISTENCE FISHERIES

### *2020 Season Summary*

The Federal subsistence salmon fisheries of the upper Copper River were open from May 15 through September 30. Through the Office of Subsistence Management (OSM) Federal subsistence permit website 216 Chitina Subdistrict permits, 377 Glennallen Subdistrict permits, and 1 Batzulnetas area permits were issued. Tables 1 through 4 (pages 4 to 7) show historical reported and expanded harvests for the Federal subsistence fisheries in each subdistrict. Overall harvest by Federal subsistence users during 2020 is estimated to be 16,144 fish, which is 72% of the 5-year average historical harvest of 22,570 fish and 77% of the 10-year average historical harvest of 21,076 fish.

### *2020 Copper River Salmon Run Strength and Management Actions*

During 2020, The commercial fishery in the Copper River District was limited in response to a weak salmon return. Total commercial harvest reported for the season was 98,266 Sockeye Salmon and 5,850 Chinook Salmon. The Alaska Department of Fish and Game (ADFG) reported the total season harvest (through July 28) to be the 4th lowest commercial harvest in the last 50 years for the district.

The ADFG sonar at Miles Lake (located just downstream of the Million Dollar Bridge in the Copper River) recorded salmon passage from May 19 through July 28; providing a season total estimate of 530,313 salmon migrating upstream. This estimate is 85% of the cumulative management objective of 624,709 salmon for this date. The ADFG reported this to be the 12<sup>th</sup> lowest season estimate on record (1978-2020).

Performance in the commercial fishery and in-river sonar salmon passage estimates are the primary in-season assessments of the salmon return to the Copper River. The overall returns of both Sockeye and Chinook Salmon were weak. In-river assessments of the Chinook Salmon return, along with assumptions of up-river harvests, indicate that the sustainable escapement goal (SEG) of 24,000 fish was likely not met for this season. As well, the minimum threshold 360,000 fish of the wild stock Sockeye Salmon SEG range of 360,000 to 750,000 may not have been achieved this season. This includes assumptions of the additional factors of up-river harvests, hatchery stock contribution, and the non-Sockeye Salmon component of the sonar passage estimates. These factors will be further assessed during the post-season to provide a final escapement estimate.

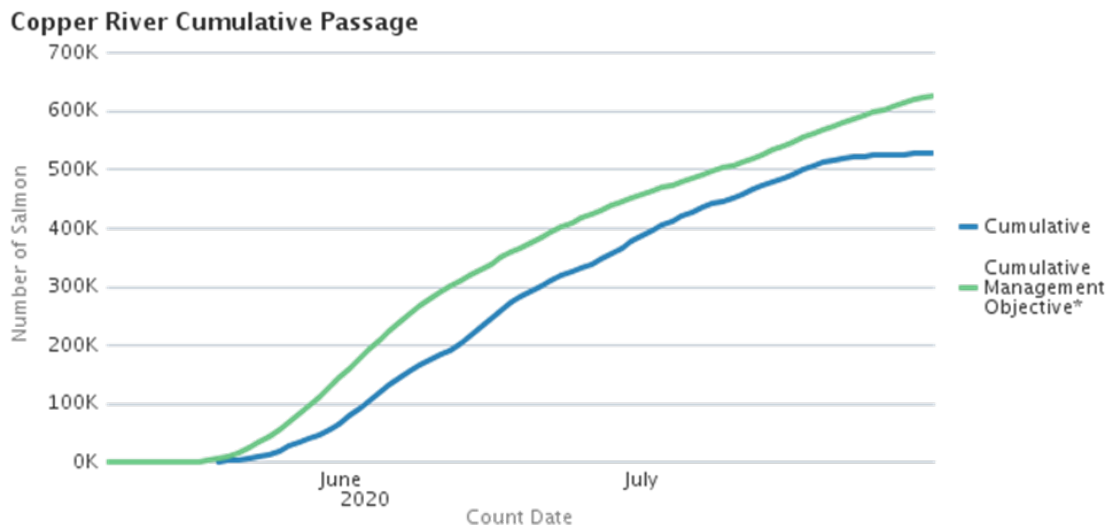
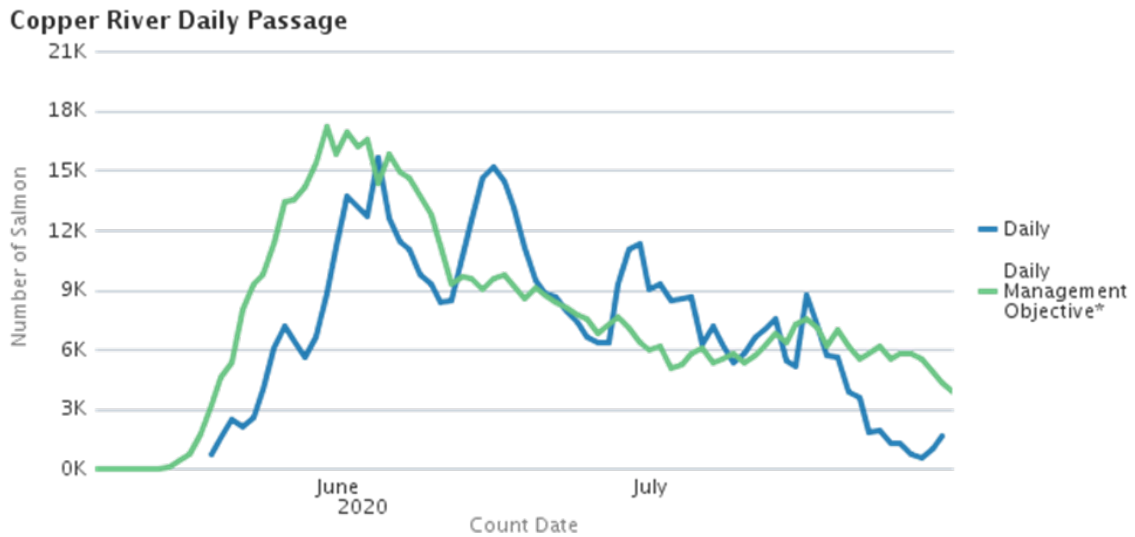
The State subsistence fishery in the Glennallen Subdistrict was open from June 1 through September 30. Effective June 20, the State sport fishery annual limit was reduced from 4 to 1 Chinook Salmon for the Upper Copper River drainage. Effective August 3, the Sockeye Salmon sport fisheries of the Upper Copper River drainage closed for the remainder of the season. Effective June 22, the Chitina personal use fishery was closed to the retention of Chinook Salmon. The personal use fishery in the Chitina Subdistrict was closed for most of August to conserve Sockeye Salmon for escapement; it re-opened September 1 to provide Coho Salmon harvest opportunity.

No Federal Special Actions were issued by the in-season manager this season.

### **2021 Preseason Copper River Salmon Forecast:**

The Alaska Department of Fish and Game forecast was not available at the time of preparing this report.

## 2020 Copper River Salmon Passage at Miles Lake Sonar.



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

### 2021 Early Season Management Strategy for Federal Subsistence Fisheries

Unless in-season 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 2021 season.

**Table 1. Federal Subsistence Expanded Fish Harvests in the Upper Copper River District, including Harvests by Gear Type.**

Year	Expanded Harvest Estimates <sup>2</sup>						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	10,644	745	100	77	N.A.	11,567						
2003	17,220	687	268	16	N.A.	18,191						
2004	24,035	815	216	15	N.A.	25,082						
2005	24,781	412	55	7	37	25,292						
2006	20,737	507	55	17	37	21,353						
2007	19,107	704	85	7	25	19,928						
2008	14,864	892	268	21	54	16,099						
2009	14,821	590	52	22	36	15,521						
2010	17,050	362	111	46	25	17,594	85.3%	15,114	14.6%	2,586	0.1%	23
2011	18,201	814	70	6	283	19,373	88.2%	17,091	11.6%	2,244	0.2%	39
2012	17,146	410	93	45	113	17,806	90.5%	16,111	9.3%	1,651	0.3%	45
2013	19,988	391	36	8	81	20,503	86.1%	17,654	13.9%	2,849	0.0%	0
2014	25,525	454	97	14	57	26,148	89.5%	23,407	10.5%	2,738	0.0%	2
2015	29,157	430	29	15	218	29,849	90.2%	26,911	9.6%	2,871	0.2%	67
2016	21,106	465	52	6	406	22,035	89.7%	19,768	10.2%	2,248	0.1%	17
2017	20,243	483	10	8	549	21,294	89.7%	19,104	10.2%	2,171	0.1%	19
2018	20,166	2,763	31	4	45	23,008	83.4%	19,202	16.5%	3,791	0.1%	19
2019	22,177	1,029	22	3	59	23,291	79.2%	18,401	20.8%	4,825	0.1%	16
2020	16,144	729	29	8	62	16,972	69.7%	11,829	30.3%	5,142	0.0%	0
5-yr. Avg. 2015- 2019	22,570	1,034	29	7	255	23,895	86.4%	20,677	13.4%	3,181	0.1%	27
10-yr. Avg. 2010- 2019	21,076	760	55	16	184	22,090	87.2%	19,276	12.7%	2,797	0.1%	25

<sup>1</sup> This table reflects entries to the online database from 2011 through 1/13/2021. 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	21,614	23,889	397	439	23	25	10	11	52	57	24,422
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	89.8	15,873	17,677	849	945	0	0	3	3	53	59	18,685
2020	377	79.0	9,729	12,308	504	638	0	0	6	8	49	62	13,015
5-yr. Avg. 2015- 2019	332	88.3	17,486	19,752	887	988	5	5	5	6	219	254	21,005
10-yr. Avg. 2010- 2019	307	88.8	16,635	18,695	653	729	27	30	13	14	158	182	19,650

<sup>1</sup> This table reflects entries to the online database from 2011 through **1/13/2021**. 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>
		Reported	Harvest	Estimate <sup>2</sup>	Harvest	Estimate <sup>2</sup>	Harvest	Estimate <sup>2</sup>	Harvest	Estimate <sup>2</sup>	Harvest	Estimate <sup>2</sup>	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	90.1	4,053	4,501	75	83	20	22	0	0	0	0	4,606
2020	216	80.6	3,090	3,836	74	92	23	29	0	0	0	0	3,956
5-yr. Avg. 2015-2019	137	86.9	2,486	2,818	42	47	20	24	1	2	1	1	2,890
10-yr. Avg. 2010-2019	116	88.5	2,114	2,381	28	31	23	25	1	1	1	2	2,440

<sup>1</sup> This table reflects entries to the online database from 2011 through **1/13/2021**. 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 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
5-yr. Avg. 2015-2020	1	100.0	186	166	0	0	0	0
10-yr. Avg. 2010-2019	2	92.6	216	221	1	1	1	1

<sup>1</sup> This table reflects entries to the online database from 2011 through 1/13/2021. 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



# United States Department of the Interior

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## WRANGELL-ST. ELIAS NATIONAL PARK AND PRESERVE WILDLIFE REPORT

Spring 2021

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### Chisana Caribou Herd

ADF&G deployed 4 GPS/Iridium and 2 VHF radiocollars on April 13 and 15, 2020. Additional radiocollars were deployed October 12 and 13, 2020 by ADF&G in cooperation with WRST. We deployed 7 GPS/Iridium and 15 VHF radiocollars on 18 adults and 4 calves. This brings the total GPS/Iridium collars to 11 and VHF collars to 15 on the Alaska side of the range. The Yukon Department of Environment will deploy an equal amount of GPS/Iridium and VHF collars in spring of 2021.

During the captures, hair, nasal swabs, and blood were collected from 20 animals while fecal samples were collected from 17 animals. The NPS Alaska Subsistence Advisory Council will provide funding for laboratory analyses of a majority of these samples. Results will be available at the fall meeting.

### Moose

We completed a minimum moose count in the upper Copper River trend count area in mid-November 2020. Snow and survey conditions were excellent. Survey results are presented for this trend count area between 2003-2009 and 2019-2020 (Table 1). The 2019 and 2020 trend count area is larger and within the black boundary depicted in Figure 1. The trend count area was smaller during surveys conducted between 2003-2009 as depicted by the area south of the red line.

The 2019 survey was conducted under less than ideal conditions with incomplete snow cover in some areas. It was also conducted in mid-December, approximately one month later than the 2020 survey. We observed the highest calf:cow and bull:cow ratios in 2020 than in previous years.



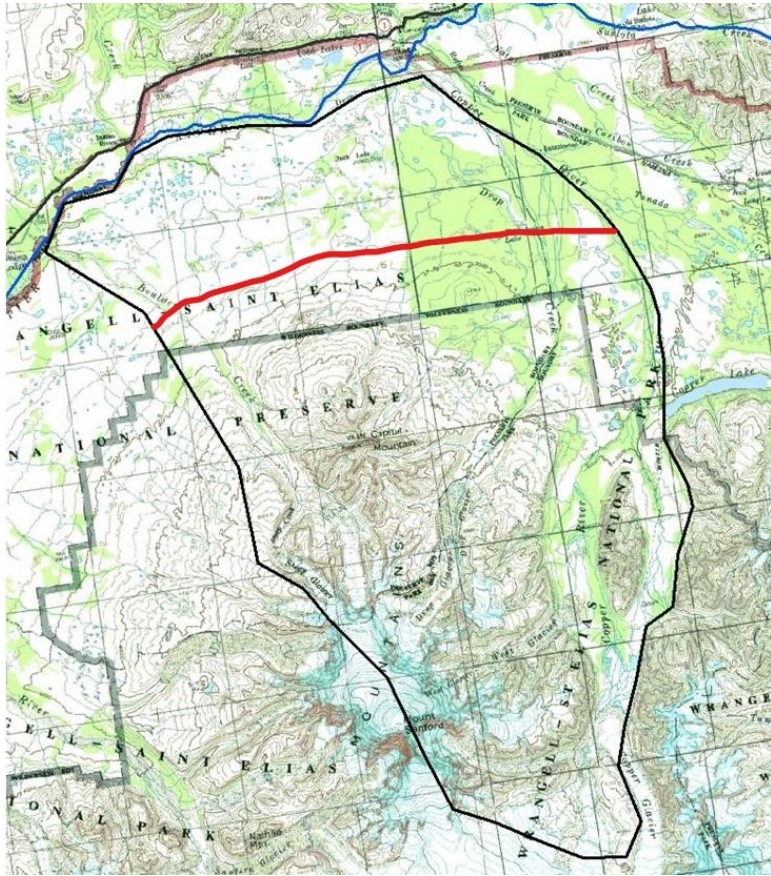


Figure 1. Upper Copper River trend count area, Wrangell-St. Elias National Park & Preserve.

Table 1. Moose surveys conducted in the upper Copper River trend count area, 2003-2009 and 2019-2020, Wrangell-St. Elias National Park & Preserve.

Year	Cow	Calf	Yrlg Bull	Med Bull	Large Bull	Total Bull	Total Moose	Calves: 100 Cows	Bulls: 100 Cows
2003	215	21	25	43	29	97	333	10	45
2004	142	25	15	33	30	78	245	18	55
2005	183	11	21	39	32	92	286	6	50
2006	218	31	11	39	36	86	335	14	39
2008	186	22	-	-	-	77	285	12	41
2009	131	16	12	25	32	69	216	12	53
2019	132	5	8	22	24	54	191	4	41
2020	119	25	17	41	34	92	236	21	77



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**WRANGELL-ST. ELIAS NATIONAL PARK AND PRESERVE**  
**SUBSISTENCE AND ANTHROPOLOGY REPORT**

Winter/Spring 2021

Barbara Cellarius, Cultural Anthropologist and Subsistence Coordinator  
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**Federal Subsistence Hunting Permits**

During fall 2021, park staff in Chitina, Copper Center, McCarthy/Kennecott, and Slana along with staff from Tetlin National Wildlife Refuge had issued 249 federal registration permits for goat, moose, and sheep hunts in Unit 11 and for sheep and caribou hunts taking place primarily in Wrangell-St. Elias portion of Unit 12 as of January 12, 2021. See Table 1 for a summary of the permits issued for these hunts. The table does not include 25 Unit 13 moose permits and 58 Unit 13 caribou permits issued at the Slana Ranger Station, and numerous joint state/federal permits (RM291) issued by Wrangell-St. Elias staff for the moose hunt for portions of Units 11 and 12 in the northern part of the park. Permit and harvest numbers for the RM291 hunt area are shown in Table 2.

**Chisana caribou herd hunt:** The Chisana caribou herd hunt takes place in Unit 12 east of the Nabesna River and Glacier and south of the Winter Trail. Consistent with the management plan for the herd, the 2020 harvest quota was set at 7 bull caribou. A total of 7 permits were issued, 4 people reported hunting, and 3 animals were harvested during the 2020 season.

**South Unit 11 winter moose hunt:** A winter moose hunt in the southern portion of Unit 11 was established in 2014. The season is November 20 to January 20. The quota for the 2020-21 season was 7 bull moose. As of January 12, 2020, 8 permits have been issued for the hunt, and 1 moose was reported harvested. Note that the season was still open when this report was written.

**Table 1. Federal Subsistence Registration Permits in Wrangell-St. Elias NPP, 2010-2020**

**Unit 11 Moose -- Fall Hunt, since 2012 remainder only (FM1106)\*\***

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
Permits Issued	244	217	189	146	123	128	138	132	144	107	156
Individuals Hunting	151	131	75	78	70	70	75	72	85	45	68
Animals Harvested	20	27	9	12	10	13	16	13	12	10	15
Success Rate (%)	13.2	20.6	12.0	15.4	14.3	18.6	21.3	18.1	14.1	22.2	22.1

**Unit 11 Moose -- Winter Hunt in southern part of unit (FM1107)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
Permits Issued	-	-	-	-	32	17	20	14	11	8	8
Individuals Hunting	-	-	-	-	3	3	4	4	2	2	1
Animals Harvested	-	-	-	-	0	0	1	0	0	0	1
Success Rate (%)	-	-	-	-	0.0	0.0	25.0	0.0	0.0	0.0	100.0

**Unit 11 Goat (FG1101)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
Permits Issued	39	53	42	30	31	29	22	26	30	27	27
Individuals Hunting	7	14	6	7	10	6	4	3	8	8	4
Animals Harvested	1	1	0	0	0	0	0	0	0	1	0
Success Rate (%)	14.3	7.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0

**Unit 11 Elder Sheep (FS1104)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
Permits Issued	19	23	32	20	25	25	32	34	38	34	38
Individuals Hunting	5	10	11	5	10	8	12	13	18	14	12
Animals Harvested	0	0	1	0	1	3	3	4	1	1	1
Success Rate (%)	0.0	0.0	9.1	0.0	10.0	37.5	25.0	30.8	5.6	7.1	8.3

**Unit 11 Elder/Junior Sheep (FS1103)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
Permits Issued	0	2	1	0	0	0	1	2	1	0	1
Individuals Hunting		1	0				1	2	0		0
Animals Harvested		0	0				0	0	0		
Success Rate (%)		0.0	-				0.0	0.0	-		

**Unit 12 Elder Sheep (FS1201)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
Permits Issued	13	9	13	9	9	7	11	12	14	14	12
Individuals Hunting	3	3	3	3	5	3	6	4	8	6	4
Animals Harvested	0	0	0	0	1	0	1	1	0	0	1
Success Rate (%)	0.0	0.0	0.0	0.0	20.0	0.0	16.7	25.0	0.0	0.0	25.0

**Table 1. Federal Subsistence Registration Permits in Wrangell-St. Elias NPP, 2010-2020 (cont.)**

**Unit 12 Elder/Junior Sheep (FS1204)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
Permits Issued	1	1	1	0	0	0	0	0	0	0	0
Individuals Hunting	0	1	0								
Animals Harvested	0	0	0								
Success Rate (%)	-	-	-								

**Unit 12 Elder/Junior Sheep (FS1204)**

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020*
Permits Issued	-	-	9	9	11	11	8	8	6	4	7
Individuals Hunting	-	-	8	7	8	7	8	3	3	3	4
Animals Harvested	-	-	2	3	2	0	1	0	2	1	3
Success Rate (%)	-	-	25.0	42.9	25.0	--	12.5	0.0	66.7	33.3	75.0

Source: Federal Subsistence Permit Database.

\* 2020 data as of 1/12/2021. The season for the Unit 11 winter moose hunt was still open when this report was written.

\*\* From 2012 forward, the federal Unit 11 moose permit is for Unit 11 remainder only.

Notes: Success rate is calculated based on the number of individuals hunting, not total permits issued.

**Table 2. Joint State-Federal Permits for the Fall Moose Hunt in Portions of Units 11 and 12 (RM291), 2012-2020**

**All Hunters**

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Permits Issued	253	246	296	250	277	244	250	277	316
Individuals Hunting	164	151	191	142	179	145	155	159	180
Total Animals Harvested	23	19	20	20	23	19	23	21	26
<i>Unit 11 Harvest</i>	16	10	11	9	17	15	17	14	10
<i>Unit 12 Harvest</i>	7	9	9	11	6	4	6	7	14
Success Rate (%)	14.0	12.6	10.5	14.1	12.8	13.1	14.8	13.2	14.4

**Federally Qualified Subsistence Users**

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Permits Issued	158	135	154	168	176	155	171	172	173
Individuals Hunting	94	74	92	89	106	88	108	103	106
Animals Harvested	19	15	15	14	18	15	19	21	15
Success Rate (%)	20.2	20.3	16.3	15.7	17.0	17.0	17.6	20.4	14.2

Source: Emails from ADF&G Tok and RC012 from 2018 Alaska Board of Game Central/Southwest Region Meeting.

Notes: (1) Hunt was established in 2012.

(2) 2020 figures are as of 1/13/2021. Some hunters have not yet submitted harvest reports.

(3) Success rate is calculated based on the number of individuals hunting, not the number of permits issued.

(4) Data for Federally Qualified Subsistence Users excludes records with ambiguous residency (e.g., urban mailing address and rural resident community or local mailing address and non-local resident community).

## **Traditional Knowledge, Ethnographic, and Subsistence Access Projects:**

Work is underway on several ethnographic and subsistence projects. All projects are being supervised by the Wrangell-St. Elias cultural anthropologist, with much of the work being carried out either by other park staff or by various project partners through cooperative agreements.

**An Ethnohistory of the Chisana River Basin:** A manuscript on the ethnohistory of the Chisana River Basin was drafted a decade ago, but never finalized for publication. In this project, park staff are revising the manuscript for publication, with the assistance of the original author from Yukon College (now Yukon University) in Whitehorse, Yukon Territory. In addition to providing a view of the Chisana gold rush from the lens of Alaska Native involvement, the report is important for documenting traditional uses of an area that is the borderland between the Upper Tanana and Upper Ahtna Athabascans. Editing of the report is complete, and a graphic artist is working on the publication design. It is scheduled to be available as both a printed report and an electronic document by summer/fall 2021.

**Ahtna Ethnographic Overview and Assessment (EOA):** This project will produce a report documenting Ahtna Athabaskan connections to Wrangell-St. Elias. An EOA is a baseline cultural anthropological study that aims to document traditional associations between distinct cultural communities and landscapes, places or resources. This EOA will consist of an annotated inventory of ethnographic and related materials relevant to the Ahtna Athabascans; a narrative synopsis of our current understanding of these materials, with a focus on connections to Wrangell-St. Elias; and an analysis of data gaps and additional research needs. This project is being completed through a cooperative agreement with the Ahtna Intertribal Resource Commission. Park staff recently reviewed and commented on an initial draft of the report, and outreach to local communities about it is planned for spring/summer 2021. The report is scheduled to be completed in mid-2022.

**Documenting Traditional Ecological Knowledge about Historic Dynamics of Caribou Herds Associated with Wrangell-St. Elias:** The goals of this project are to conduct a literature review/data mining regarding traditional ecological knowledge (TEK) and historic information (e.g., seasonal movement patterns; and herd sizes, interactions, and habitat relations) of the three caribou herds (Chisana, Mentasta and Nelchina) that spend time in Wrangell-St. Elias as well as to conduct new traditional knowledge interviews about caribou with knowledgeable long-term residents. Topics to be covered in the traditional knowledge interviews may include long-term knowledge about seasonal movement patterns, herd sizes, and observations regarding caribou in relation to the larger ecosystem and the other caribou herds. The information will be summarized in a report designed to inform management decisions about caribou. This project is being completed through a cooperative agreement with the Ahtna Intertribal Resource Commission.

**Local Knowledge of Winter Environmental Conditions and Their Impacts on Subsistence Access:** The goals of this project are to document local knowledge of changing environmental conditions, and to evaluate implications for winter subsistence access. This will be accomplished by interviewing trappers and possibly other Copper Basin residents who are out on the landscape during the winter about ambient environmental conditions (e.g., temperatures, snow and ice conditions), how conditions have changed over their lifetimes/careers, other traditional ecological knowledge about winter environmental conditions, and the way in which these conditions have impacted access to subsistence resources. The information gathered during the interviews will be summarized in a report. This project is being completed through a cooperative agreement with the Ahtna Intertribal Resource Commission.

**Quantify Changing Environmental Conditions to Inform Decisions about Allowed Means of Winter Access to Subsistence Resources:** This project will quantify temporal and spatial patterns of river freeze-up, winter ice conditions, and break-up using remote sensing data and evaluate the implications of changing environmental conditions for temporal and spatial patterns of winter subsistence access in the park. The analysis will focus on the Copper and Chitina Rivers. In addition to peer reviewed journal publications, interpretive products for the general public will be produced. This project is being completed through a cooperative agreement with the University of Alaska Fairbanks, Institute of Arctic Biology. Work has begun on preparing the remote sensing data for analysis. In addition, four time-lapse cameras were installed in September 2020 to collect daily images of the Copper River during winter 2020-2021 that will help with the interpretation and validation of the satellite imagery. Three of the cameras are game cameras where images are stored locally, and one is a satellite-linked camera that uploads real-time images online (<http://fresheyesonice.org/realtime-data/river-ice-camera/>), accessible to the public.