

DRAFT ANALYSIS

FSA20-04

ISSUES

Proposal FSA20-04, submitted by Lucas Borer of Cordova, requests the Federal Subsistence Board allow harvest of salmon in the lower Copper River, from the Million Dollar Bridge to a boundary extending 0.5 mile downriver of road crossings of the mainstem Copper River, east of 27 Mile on the Copper River Highway, by dipnet and rod and reel. This fishery is being requested as a safe alternative during the Covid-19 pandemic, to harvesting salmon through the State subsistence gillnet fishery on the Copper River flats, in which persons from multiple households often fish from the same boats.

DISCUSSION

The intent of this proposal is to offer a safe alternative to harvesting Copper River salmon. Currently, subsistence harvest opportunity for Copper River salmon is limited to the State subsistence gillnet fishery, generally open during commercial fishing open periods and Saturdays, and accessible only by boat. In this fishery, multiple households often join on boats to share expenses and to hand-pull 50 fathom (300 foot) gillnets. Sharing confined spaces with unrelated households violates social-distancing guidelines recommended for reducing the spread of the Covid-19 virus. Offering a Federal subsistence dipnet fishery on the lower Copper River would allow individuals to harvest salmon without compromising health and safety guidelines.

Existing Federal Regulation

For the Chugach National Forest Portion of the Prince William Sound Area permits:

- *In the Chugach National Forest portion of the Prince William Sound Area you must possess a Federal subsistence fishing permit to take salmon, trout, whitefish, Grayling, Dolly Varden, or char. Permits are available from the Cordova Ranger District.*
- *Salmon harvest is not allowed in Eyak Lake and its tributaries, Copper River and its tributaries, and Eyak River upstream from the Copper River Highway bridge.*
- *You must record on your subsistence permit the number of subsistence fish taken. You must record all harvested fish prior to leaving the fishing site, and return the permit by the due date marked on the permit.*
- *You must remove both lobes of the caudal (tail) fin from subsistence-caught salmon before leaving the fishing site.*
- *You may take salmon by rod and reel, dip net, spear, and gaff year round, except as specified in the freshwater streams section on page 74.*

<i>Chugach National Forest portion of Prince William Sound Area permits</i>			
<i>Species</i>	<i>Gear</i>	<i>Incidental Catches</i>	<i>Season</i>
<i>Dolly Varden, Arctic Char, Whitefish, and Grayling</i>	<i>Rod and Reel Spear Gillnet</i>	<i>The maximum incidental gillnet harvest of trout is 10.</i>	<i>You may take Dolly Varden, Arctic Char, Whitefish, and Grayling with rod and reel, and spear year round and with a gillnet from January 1–April 1.</i>
<i>Cutthroat Trout</i>	<i>Rod and Reel Spear Gillnet</i>		<i>You may take Cutthroat Trout with rod and reel, and spear from June 15–April 14th and with a gillnet from January 1–April 1</i>
<i>Rainbow and steelhead trout</i>		<i>You may not retain Rainbow/steelhead trout for subsistence unless taken incidentally in a subsistence gillnet fishery. Rainbow/steelhead trout must be immediately released from a dip net without harm. 2019/2021 Federal Subsistence Fisheries Regulations 2019/2</i>	

<i>Chugach National Forest portion of Prince William Sound Area permits</i>	
<i>Household Size</i>	<i>Annual Harvest Limits and Permit Restrictions</i>
<i>One-person household</i>	<i>15 salmon (other than Pink) may be taken; 5 Cutthroat Trout, with only 2 over 20 inches may be taken; Pink Salmon: see the conditions of the permit.</i>
<i>Household of two or more persons</i>	<i>For a household with two persons, 30 salmon (other than Pink) may be taken, plus an additional 10 salmon for each additional person in a household over two; 5 Cutthroat Trout, with only 2 over 20 inches per each household member with a maximum household limit of 30 Cutthroat Trout; Pink Salmon: see the conditions of the permit.</i>

Proposed Federal Regulation

For the Chugach National Forest Portion of the Prince William Sound Area permits:

- *In the Chugach National Forest portion of the Prince William Sound Area you must possess a Federal subsistence fishing permit to take salmon, trout, whitefish, Grayling, Dolly Varden, or char. Permits are available from the Cordova Ranger District.*
- *Salmon harvest is not allowed in Eyak Lake and its tributaries, ~~Copper River and its tributaries~~, and Eyak River upstream from the Copper River Highway bridge.*
- *You must record on your subsistence permit the number of subsistence fish taken. You must record all harvested fish prior to leaving the fishing site and return the permit by the due date marked on the permit.*
- *You must remove both lobes of the caudal (tail) fin from subsistence-caught salmon before leaving the fishing site.*
- *You may take salmon by rod and reel, dip net, spear, and gaff year round, except as specified in the freshwater streams section on page 74. **In the lower Copper River, from the Million Dollar Bridge to a boundary extending 0.5 mile downriver of road crossings of the mainstem Copper River, east of 27 Mile on the Copper River Highway, you may take salmon only by dip net and rod and reel.***

<i>Chugach National Forest portion of Prince William Sound Area permits</i>			
<i>Species</i>	<i>Gear</i>	<i>Incidental Catches</i>	<i>Season</i>
<i>Dolly Varden, Arctic Char, Whitefish, and Grayling</i>	<i>Rod and Reel Spear Gillnet</i>	<i>The maximum incidental gillnet harvest of trout is 10.</i>	<i>You may take Dolly Varden, Arctic Char, Whitefish, and Grayling with rod and reel, and spear year round and with a gillnet from January 1–April 1.</i>
<i>Cutthroat Trout</i>	<i>Rod and Reel Spear Gillnet</i>		<i>You may take Cutthroat Trout with rod and reel, and spear from June 15–April 14th and with a gillnet from January 1–April 1</i>
<i>Rainbow and</i>		<i>You may not retain Rainbow/steelhead trout for</i>	

<i>steelhead trout</i>		<i>subsistence unless taken incidentally in a subsistence gillnet fishery.</i> <i>Rainbow/steelhead trout must be immediately released from a dip net without harm.</i> <i>2019/2021 Federal Subsistence Fisheries Regulations 2019/2</i>	
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<i>Household of two or more persons</i>	<i>For a household with two persons, 30 salmon (other than Pink) may be taken, plus an additional 10 salmon for each additional person in a household over two; 5 Cutthroat Trout, with only 2 over 20 inches per each household member with a maximum household limit of 30 Cutthroat Trout; Pink Salmon: see the conditions of the permit.</i>

Existing State Regulation

5 AAC 01.005. Subsistence fishing permitted

Finfish other than salmon, rainbow trout, and steelhead trout may be taken for subsistence purposes at any time in any area of the state by any method unless restricted by the subsistence fishing regulations in this chapter. Salmon may be taken for subsistence purposes only as provided in this chapter.

5 AAC 01.600. Description of the Prince William Sound Area

The Prince William Sound Area includes all waters of Alaska between the longitude of Cape Fairfield and the longitude of Caper Suckling south of the Yukon Area described in 5 AAC 05.100, and all waters of the Upper Susitna River drainage upstream of the Susitna River's confluence with the Oshetna River.

5 AAC 01.605. Description of districts and subdistricts

(a) The Upper River Copper District consists of all waters of the mainstem Copper River from the mouth of the Slana River downstream to an east-west line crossing of the Copper River approximately 200 yards upstream of Haley Creek as designated by ADF&G regulatory markers.

(1) The Chitina Subdistrict consists of all waters of the Upper Copper River District downstream of the downstream edge of the Chitina-McCarthy Road Bridge.

(2) The Glennallen Subdistrict consists of all remaining waters of the Upper Copper River District.

(b) Except as specified in (a) of this section, districts are as described in 5 AAC 24.200.

5 AAC 01.625. Waters closed to subsistence fishing

(a) All tributaries of the Copper River and waters of the Copper River that are not in the Upper Copper River District are closed to the taking of salmon.

(b) Salmon may not be taken in any area closed to commercial salmon fishing unless permitted in 5 AAC 01.610 – 5 AAC 01.645.

Extent of Federal Public Lands

For purposes of this discussion, the phrase “Federal public waters” is defined as those waters described under 36 CFR §242.3 and 50 CFR §100.3. Federal public waters under consideration in this analysis include all fresh waters of the Copper River downstream of the Million Dollar Bridge, within and adjacent to the boundaries of the Chugach National Forest, to a boundary extending 0.5 mile downriver of road crossings of the mainstem Copper River, east of 27 Mile on the Copper River Highway.

Customary and Traditional Use Determinations

The Federal customary and traditional use determination for salmon for the Copper River below Haley Creek in the Prince William Sound Area includes all residents of the PWS Area.

Regulatory History

Currently, Federally qualified subsistence users in the Cordova area (i.e. the Copper River Delta or CRD) attempt to fulfill their subsistence needs under a Federal subsistence fisheries permit, a State of Alaska salmon subsistence fishing permit, and Alaska sport fishing regulations. Harvests in freshwater are accomplished under the Federal subsistence permit and State sport fishing regulations. The State subsistence fishing permit allows harvest in marine waters only.

Current Federal subsistence fishing regulations for the PWS Area in the vicinity of Cordova require Federally qualified subsistence users to have a permit to harvest fish, but do not establish seasons, harvest limits, or methods of harvest. Stipulations on the Federal subsistence fishing permit (FFPW01) for the CRD/PWS Area specify permit conditions specific to the methods of harvest and establish harvest limits. The lower Copper River and its tributaries are closed to Federal subsistence harvest of salmon by regulation, but these waters are open for the harvest of other fish with the permit. The Federal subsistence fishing permit within the CRD/PWS Area (**Figure 1**) allows for the harvest of fish in freshwater with rod

and reel year-round, except in Eyak Lake and its tributaries, which are closed to fishing for salmon. The Federal subsistence permit limits the harvest of salmon to 15 fish for a household of one, 30 fish for a household of two, and 10 salmon for each additional person in that household. The Federal and State permit harvest limits may not be added. There is no limit on the number of Chinook Salmon that may be taken on this permit because there are few, if any, Chinook Salmon returning to fresh waters open to subsistence harvest in this area. These permit stipulations came about as the result of public meetings held in Cordova in 2004 and 2006 with users and agency personnel.

Historically, there have been several Board actions on proposals submitted for the harvest of salmon in the Copper River downstream of Haley Creek. In 2006, the Board adopted fisheries proposal FP06-16 to allow the accumulation of harvest limits under State of Alaska sport fishing regulations and Federal subsistence management regulations in the CRD/PWS Area and in the Copper River drainage downstream of Haley Creek, provided that accumulation of harvest limits does not occur during the same day (FSB 2006); however, the Federal subsistence limit cannot be added to the limit for the State Copper River/Bering River/PWS Salmon Subsistence harvest limit.

FP06-17 attempted to establish a fly-fishing only area directly downstream of the Lake Eyak weir (dam). While this proposal was rejected, the discussion led to a change in permit conditions for FFPW01. The discussion noted that no subsistence fishing within 300 yards from a dam is allowed under regulation. To align the conditions of the permit with current regulations “only rod and reel may be used within 200 yards of the Eyak Lake dam” was removed (FSB 2006). “Subsistence fishing in Eyak River allowed only downstream of the Copper River highway bridge” replaced the original condition of the permit.

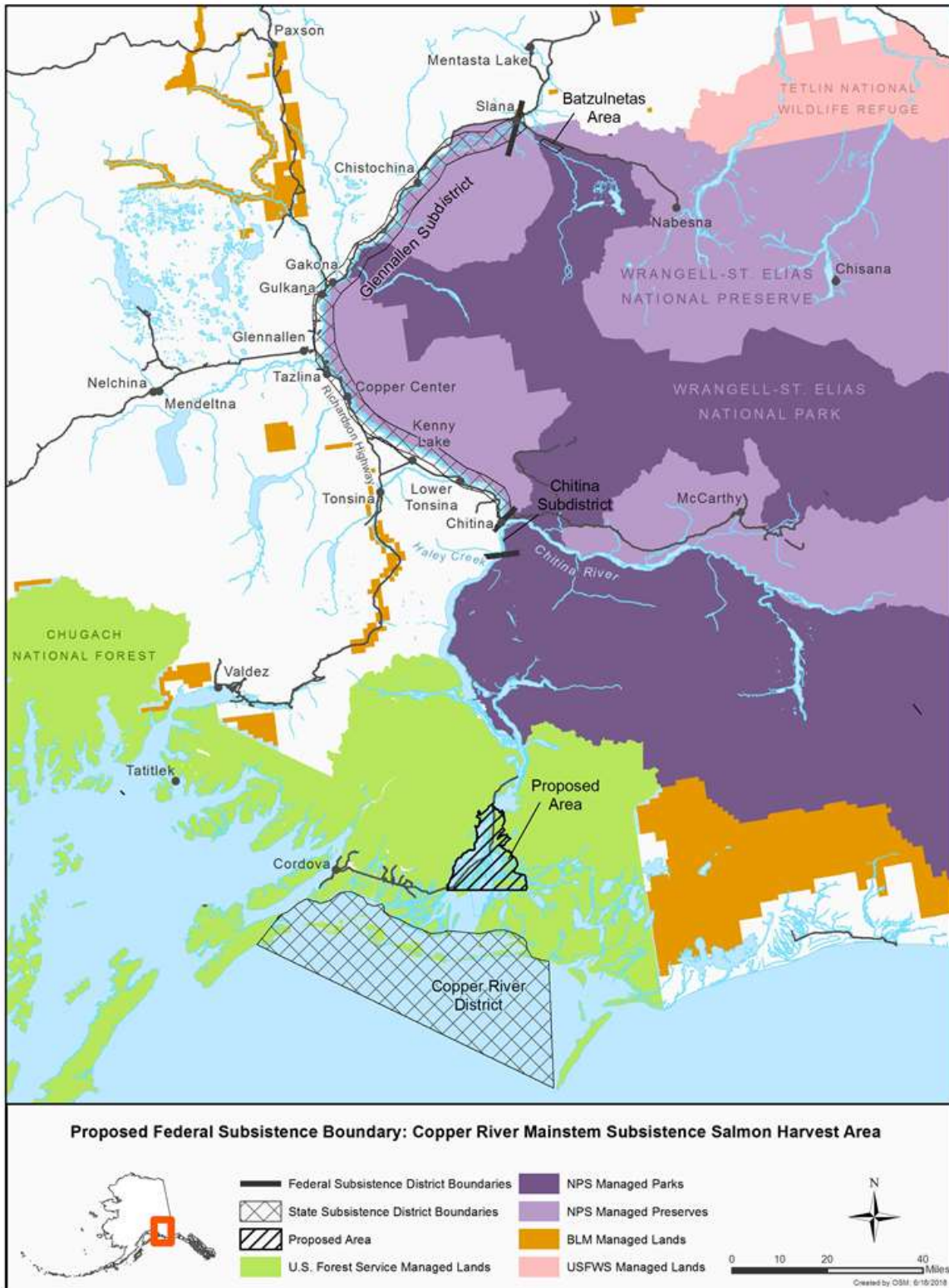


Figure 1. Map indicating the Federal and State District and Subdistrict boundaries for the Copper River basin and the State's Copper River District in marine waters. Not specified on this map is the area covered under Federal Permit FFPW0, which includes eligible waters in the CRD/PWS Area and excludes the waters of the Copper River.

During that same regulatory cycle, Proposal FP06-18 was submitted requesting restricting the harvest methods for salmon to spears, gaffs, and rod and reel in the PWS Area within the Chugach National Forest, except for the Copper River drainage (OSM 2006). In addition, Proposal FP06-19 was submitted, which would change the Federal seasons, harvest, and possession limits for Cutthroat, Rainbow, and Lake trout, Dolly Varden, whitefish, and Arctic Grayling to be identical to the State of Alaska sport fishing regulations in the waters of the Prince William Sound Area, except in the Copper River drainage upstream of Haley Creek. Besides affecting overall potential take across the freshwaters of the Prince William Sound area, two specific fisheries would be eliminated under FP06-19: 1) a winter gillnet fishery for whitefish in the Cordova area and 2) subsistence harvest of trout in the Copper River Delta east of the Copper River. The Board rejected proposals FP06-18 and FP06-19 because they restricted subsistence uses.

In 2007, proposal FP07-14 was submitted requesting that the Copper River waters downstream of the 52-Mile (Million Dollar) bridge be opened to Federal subsistence harvest of salmon using dip nets and rod and reel with bait for the months of May, June, and July (OSM 2007). The Board rejected Proposal FP07-14, despite noting in their decision justification that, at that time, there were no biological concerns and that use of salmon is a customary and traditional use in the Copper River (FSB 2007).

In 2018 proposal FP19-13 was submitted by the United States Forest Service, Cordova Ranger District. FP19-13 requested that conditions for the federal subsistence permit (FFPW01) for the PWS Area be placed in Federal subsistence management regulations. This proposal was approved by the Federal Subsistence board and moved the seasons, harvest limits, and methods and means of harvest for this fishery to the Federal subsistence management regulations for the Prince William Sound Area under section §____.27(e)(11)(xvii).

The 2018 fisheries proposal cycle also included FP19-14. FP19-14 was submitted by the Native Village of Eyak and proposed to extend the current Federal subsistence salmon fishery opportunity afforded to residents of PWS to specific waters of the lower Copper River beginning one-half mile downstream of the road crossing at Copper River Highway Mile 27 and extending upstream to the Million Dollar Bridge, by dip net and rod and reel. The Native Village of Eyak withdrew FP19-14 during the first day of the 2018 Southcentral Regional Advisory Council. Upon announcing the withdrawal, a Native Village of Eyak representative stated that if they had not withdrawn they would have proposed a modification to require harvest reporting with 24 hours of harvesting Chinook.

In the Upper Copper River District, the Federal subsistence season runs from May 15 through September 30. The Upper Copper District is separated into two parts: the Chitina Subdistrict and the Glennallen Subdistrict (**Figure 1**). The allowable gear is rod and reel, dip nets, and fish wheels. The annual harvest limit for a household of one is 30 salmon (including no more than 5 Chinook Salmon by dip net and 5 Chinook Salmon by rod and reel). Upon request, permits for additional salmon will be issued for up to 200 salmon total (the Chinook Salmon limit does not change). The annual harvest limit for a household of two or more persons is 60 salmon (including no more than 5 Chinook Salmon by dip net and 5 Chinook Salmon by rod and reel). Upon request, permits for additional salmon will be issued for up to 500 salmon total; the Chinook Salmon limit does not change (FSMP 2017). State subsistence regulations are very

similar to Federal regulations in the Upper Copper River District. The most significant differences are that rod and reel is not a recognized method to harvest State subsistence fish, and the State manages the Upper Copper River District for two different fisheries, where the Chitina Subdistrict provides for a State personal use fishery and the Glennallen Subdistrict provides for a State subsistence fishery. The State Chitina personal use fishery is managed distinctly separate from the Glennallen subsistence fishery, with State subsistence receiving priority over personal use (ADF&G 2017). Additionally, there is a small Federal and State subsistence fishery specific for the residents of Dot and Mentasta lakes, defined as the Batzulnetas Area (**Table 1**). The Batzulnetas Area subsistence fishery requires a permit from either the National Park Service (Federal) or from the State.

Table 1. Coarse-scale overview of current salmon subsistence and personal use fisheries in waters of the Copper River (ADF&G 2017; FSMP 2017). Refer to pertinent regulations for specific information regarding each fishery. Emergency Orders, Special Actions, and other management actions affect these fisheries by limiting the season or allowable take throughout the year.

Fishery	Allowable Gear	Season	Salmon Limits
<i><u>Federal Subsistence</u></i>			
Upper Copper River District: Glennallen Subdistrict ^a	Fish wheels; Dip nets; Rod and reel	May 15 – Sept 30	1-person ^b : 30 salmon, up to 200 salmon; 2-person or more ^b : 60 salmon, plus 10 for each additional
Upper Copper River District: Chitina Subdistrict ^a	Fish wheels; Dip nets; Rod and reel	May 15 – Sept 30	1-person ^b : 30 salmon, up to 200 salmon; 2-person or more ^b : 60 salmon, plus 10 for each additional
Batzulnetas Area	Copper River: Fish wheels; Dip nets; Rod and reel Tanada Creek: Dip nets; Fyke nets; Spears; Rod and Reel	May 15 – Sept 30	Copper River: 1-person ^b : 30 salmon, up to 200 salmon; 2-person or more ^b : 60 salmon, plus 10 for each additional Tanada Creek: <1,000 Sockeye by Fyke net and no (0) Chinook
<i><u>State Subsistence</u></i>			
Upper Copper River District: Glennallen Subdistrict	Fish wheels; Dip nets	June 1 – Sept 30	1-person ^b : 30 salmon, up to 200 salmon; 2-person or more ^b : 60 salmon, plus 10 for each additional
Batzulnetas Area	Copper River: Fish wheels; Dip nets Tanada Creek: Dip nets; Spears	June 1 – Sept 30	1-person: 30 salmon, up to 200 salmon; 2-person or more: 60 salmon, plus 10 for each additional; no (0) Chinook harvests in this Area
Copper River District (Flats–marine waters)	Gill nets	May 15 – Oct 31 ^c	1-person: 15 salmon; 2-person or more: 30 salmon, plus 10 for each additional; up to 5/total can be Chinook

State Personal Use

Upper Copper River District: Chitina Subdistrict	Dip nets	June 7 – Sept 30	1-person: 25 salmon; plus 10 for each additional; up to 5 of total can be Chinook
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^a Total combined harvest; see regulation for details

^b Per household, a maximum of 5 Chinook by dip net and 5 Chinook by rod-reel can be counted towards the total salmon limit; Chinook caught in fish wheels must be released unharmed

^c See regulations for open period specifications within this season

There is also a State subsistence fishing permit that allows for the harvest of salmon in the marine waters of the Copper River District (**Table 1; Figure 1**). The Copper River District includes the Copper River Flats and other marine waters near Cordova (Fall et al. 2018). The legal gear allowed in the Copper River District is drift gillnets, and the harvest limits are 15 salmon for a household of one, 30 salmon for a household of two, and 10 salmon for each additional person in that household. There is also a limit of five Chinook Salmon per permit. The season for this State subsistence fishery is May 15 – October 31, with fishing periods: a) from May 15 until two days before the commercial opening of that salmon district, seven days a week; b) during the commercial salmon season, only during open commercial fishing periods, seven days a week; and c) from two days following the closure of the commercial fishing season in that district through October 31, seven days a week (**Table 1; ADF&G 2017**). In 2018, the State allowed an additional day of subsistence harvest opportunity for Copper River salmon by allowing fishing on Saturdays, in addition to the subsistence fishing during commercial open periods already allowed.

State of Alaska sport fishing regulations can be complicated for certain locations within the PWS Area. In most of the proposed area, the daily sport fish bag limit for salmon, other than Chinook Salmon, is six per day, 12 in possession, but only three per day, three in possession may be Coho Salmon (ADF&G 2018a). The general Chinook Salmon sport fishing fresh waters harvest limit in the PWS Area for fish 20 inches or longer is two per day, four in possession and for fish less than 20 inches is 10 per day, 10 in possession. However, State sport fishing regulations in all freshwater drainages crossed by the Copper River Highway, from and including Eyak River to the Million Dollar Bridge, including Clear Creek (Mile 42), have a daily harvest limit for salmon of three per day, three in possession, except for Chinook Salmon (which remains at two per day, four in possession for fish 20 inches or longer and 10 per day, 10 in possession for fish less than 20 inches and Coho Salmon (which remains open year-round; restricts bait fishing once the Coho Salmon bag limit is reached August 15-September 15; and specifies that any Coho Salmon removed from the water must be retained toward that day's bag limit). State sport fishing general regulations for PWS fresh waters also only allow the use of unbaited, artificial lures from April 15 through June 14, and prohibits snagging in all fresh waters.

Current Events

For 2020, the ADF&G forecast for Copper River wild Sockeye Salmon anticipated a run return 32.7% below the 10-year average (Haught pers comm. 2020). However, the return of Sockeye Salmon to this system is falling below the anticipated forecast. As of June 10, 2020, only 183,902 cumulative Sockeye Salmon were counted past the Miles Lake Sonar site, which is approximately 39.1% fewer fish than

expected (Haught pers comm. 2020). The low return of Sockeye Salmon to date has resulted in closures of commercial fishing in the Copper River District.

The Copper River Chinook Salmon total run point estimate for 2020 is 60,000 fish, whereas the 10-year (2010–2019) total run average is 47,859 (Haught pers comm. 2020). To date, Area managers have not restricted the Chinook Salmon fisheries for the Copper River.

Biological Background and Harvest History

Salmon fisheries in the Copper River primarily harvest Chinook, Sockeye, and Coho salmon. These salmon stocks are harvested in multiple fisheries, including a commercial gillnet fishery at the mouth of the Copper River; a personal use dip net fishery in the Chitina Subdistrict of the Upper Copper River District; and sport fisheries that occur in various tributaries. State subsistence fishing is restricted to three areas on the Copper River (**Figure 2; Table 1**): 1) the Copper River District, i.e. the Copper River Flats; 2) the Glennallen Subdistrict within the Upper Copper River District; and 3) the Batzulnetas area. Of the three State subsistence areas, the Upper Copper River District has the highest effort and harvest (Botz and Somerville 2017). Federal subsistence fishing is restricted to: 1) the Upper Copper River District (both the Glennallen and Chitina Subdistricts) and 2) the Batzulnetas Area.

The State of Alaska set the upper Copper River sustainable escapement goal (SEG) at 360,000–750,000 wild Sockeye Salmon, and the Copper River Delta SEG at 55,000–130,000 Sockeye Salmon (Haught et al. 2017). Since 1998, the ADF&G has successfully met or exceeded the SEG for Sockeye Salmon in the Copper River (Fall et al. 2018, Somerville 2018, pers. comm.; **Table 2**). The recent 10-year average (2008–2017) Copper River wild Sockeye Salmon total run is 2,078,000 fish (Haught and Vega 2018). The total estimated runs and end destinations (commercial, sport and subsistence harvests and escapement information) for Sockeye Salmon in the Copper River system for 2006–2016 are available in **Appendix 2** (Russell et al. 2017).

In 2003, the Chinook Salmon SEG for the Copper River was lowered to 24,000 or more fish (Bue et al. 2002). A more recent review for this fishery by Haught et al. (2017) recommended an SEG range of 18,500–33,000 Chinook Salmon, which ADF&G removed from Board of Fisheries consideration, as the existing escapement goal falls within the recommended range and new sonar technology being tested may lead to a new large Chinook Salmon sonar escapement goal within the next few years. Since 2002, the lower bound of the Chinook salmon SEG for this system was met or exceeded 11 out of 16 years (Fall et al. 2018; Somerville 2018, pers. comm.; **Table 2**). The recent 10-year average (2008–2017) Copper River Chinook Salmon total run is 45,000 fish (Haught and Vega 2018). The total estimated runs and end destinations (commercial, sport and subsistence harvests and escapement information) for Chinook Salmon in the Copper River system for 2006–2016 are available in **Appendix 2** (Russell et al. 2017).

Table 2. Estimated Sockeye and Chinook salmon returns and spawning escapements for the Copper River, 2007-2017, and the previous 5-year and 10-year averages (Fall et al. 2018; Somerville 2018, pers. comm.)

Year	Sockeye Salmon		Chinook Salmon	
	Est. Total Return ^a	Spawning Escapement ^a	Est. Total Return ^a	Spawning Escapement ^a
2007	2,961,568	612,102	87,770	34,575
2008	1,141,223	480,597	53,880	32,487
2009	1,721,695	469,089	43,007	27,787
2010	1,715,714	502,992	33,181	16,764
2011	3,097,537	607,657	53,889	27,994
2012	3,253,887	930,699	44,312	27,835
2013	3,006,009	860,829	42,880	29,012
2014	3,411,981	864,988	35,322	20,709
2015	3,205,039	925,506	56,174	26,764
2016	2,074,971	513,563	29,243	12,485
2017	1,252,701	492,297	53,825	35,386
Average 2012 - 2016	2,991,509	824,557	41,586	23,361
Average 2007 - 2016	2,559,525	679,523	47,966	25,641

^a Preliminary until all upriver harvests, including sport harvest, has been accounted for.

Coho, Chum, and Pink salmon are not expected to be highly impacted by this proposal, though there may be some incidental take in the proposed Copper River waters. The existing recreational Coho Salmon fishery in the proposed area is minimal. Coho Salmon will strike at artificial lures and bait, but Coho Salmon are abundant in many of the local streams with more favorable water conditions, and little effort would be expected in the proposed area for this species. The State has a SEG of 32,000–67,000 for Copper River Delta Coho Salmon (Haught et al. 2017), and at this time, there are no biological concerns for the CRD fishery (Botz 2018, pers. comm.). Few Chum Salmon use the Copper River and have not historically been targeted by recreational or subsistence fishers, but some have been taken incidentally to other salmon fisheries (Miller and Stratton 2001). The State has not established an escapement goal for Chum Salmon in the Copper River drainage. Few Pink Salmon migrate up the Copper River, and those that do enter the drainage are only found in the very lower reaches of clear water tributaries.

The estimated annual salmon harvest by State subsistence permit holders in the Copper River District (Copper River Flats) of the PWS Area averaged 3,722 total salmon for the previous 10-year period (**Table 3; Appendix 2, 3**). For the three State subsistence fishery districts in PWS, the Copper River District near the community of Cordova accounts for the majority of subsistence salmon harvested, with 91% of the total harvests in 2015 (Fall et al. 2018). However, subsistence harvest data for the Eastern and Southwest Districts is likely to be consistently underestimated (Ashe et al. 2005).

Table 3. State subsistence permit activity; the harvest of salmon in the marine waters of the Copper River District (Copper River Flats; gear type: gillnet), 2007-2017; and the previous 10-year average (Fall et al. 2018; Vega 2018, pers. comm.)

Year	Permits				Reported Salmon Harvest			
	Issued	Returned	Fished	Not Fished ^a	Chinook	Sockeye	Coho	Total
2007	469	440	295	145	1,145	6,148	15	7,308
2008	506	480	248	232	470	3,969	53	4,492
2009	323	293	128	165	212	1,764	22	1,998
2010	325	314	139	175	276	1,980	27	2,283
2011	273	263	113	150	212	1,783	34	2,029
2012	378	357	204	153	237	4,270	0	4,507
2013	531	492	321	171	854	5,639	1	6,494
2014	288	269	101	168	153	1,675	0	1,828
2015	241	231	97	134	167	1,403	10	1,580
2016	195	189	77	112	73	1,075	2	1,150
10-Year Average	371	350	193	159	441	3,266	16	3,722
2017	450	416	265	151	778	2,448	43	3,269

^a As reported on returned permits.

The estimated annual salmon harvest by State subsistence salmon dip net permit holders in the Upper Copper River District (Glennallen Subdistrict) averaged 16,974 total salmon for the previous 10-year period (2007-2016), of which 16,291 were Sockeye Salmon and 630 were Chinook Salmon. The estimated salmon harvest by Glennallen Subdistrict fishwheel permit holders averaged an additional 44,866 total salmon for the previous 10-year period, of which 43,179 were Sockeye Salmon and 1,436 were Chinook Salmon (**Appendix 2, 3**). Additional salmon harvested from the Upper Copper River District over the same time period include the Chitina Subdistrict personal use fishery, with 10-year average harvests (2007-2016) of 144,785 total fish, of which 141,577 were Sockeye Salmon and 1,114 were Chinook Salmon (Somerville 2018, pers. comm.).

The yearly Federal subsistence harvests for the Upper Copper River District (Chitina and Glennallen Subdistricts combined) averaged 9,852 Sockeye Salmon and 276 Chinook Salmon from 2007-2016. In 2017, the harvests from the Glennallen Subdistrict far exceeded the take from the Federal subsistence fishery in the Chitina Subdistrict. Coho Salmon averaged only 45 fish harvested in this District for the same 10-year average (**Table 4**).

Table 4. Estimated harvest of Sockeye, Chinook, and Coho salmon by Federally qualified subsistence users in the Upper Copper River District, as reported for each the Glennallen and Chitina Subdistricts, 2007-2017 (Sarafin 2018, pers. comm.).

Year	Permits					Permits				
	Permits issued	fished (%)	Sock-eye	Chinook	Coho	Permits issued	fished (%)	Sock-eye	Chinook	Coho

	Chitina Subdistrict					Glennallen Subdistrict				
2007	98	89	1,044	29	45	281	84	18,125	677	40
2008	82	85	928	26	87	270	81	14,009	870	183
2009	68	91	898	9	12	274	85	13,925	581	40
2010	92	86	2,397	20	38	269	88	14,601	341	73
2011	85	86	2,137	15	9	277	88	16,066	799	60
2012	90	94	1,419	6	8	275	92	15,718	403	85
2013	99	91	2,199	19	9	273	89	17,789	372	27
2014	113	95	1,628	15	72	315	905	23,889	439	25
2015	111	93	2,404	14	15	325	92	26,753	416	14
2016	128	81	1,925	20	41	320	83	19,181	446	11
10-yr avg	97	-	1,698	17	34	288	-	18,006	534	56
2017	132	80	1,828	15	9	338	84	18,550	473	1

The Federal subsistence fishing permit for the CRD/PWS Area allows for the harvest of fish in fresh waters (not including the Copper River) with harvest limits for salmon as described earlier. Under this permit, over 95% of the harvest by Federally qualified subsistence users occurs in three river systems: Ibeck Creek, Eyak River, and Alaganik Slough (USFWS 2018). On average, 30 households fished under their Federal subsistence permit, harvesting an annual average of 446 salmon from 2006-2016, approximately 80% of which were Coho Salmon (**Table 5**). Rod and reel is overwhelmingly the most common harvest method under this permit (Burcham 2018, pers. comm.), as relatively clear waters from the Alaganik and Eyak systems negatively impacts dip net success. No Chinook Salmon have been reported as harvested under the CRD/PWS Area Federal subsistence permit since its inception in 2005 (USFWS 2018; Burcham 2018, pers. comm.). Additionally, though permit FFPW01 is available to both Tatitlek and Chenega, no (0) households outside of Cordova have requested or been issued this fishery permit in other qualifying villages. However, they do qualify for and are issued wildlife permits for Mountain Goats in Unit 6D and for ceremonial deer harvest in Unit 6D (Burcham 2018, pers. comm.).

Table 5. Federal subsistence permit activity and harvest of salmon (not including waters of the Copper River), 2007-2017, within the Chugach National Forest and the previous 10-year average (Pearson 2018, pers. comm.)

Year	Permits				Reported Salmon Harvest			
	Issued	Returned	Fished	Not Fished ^a	Chinook	Sockeye	Coho	Total
2007	32	32	16	16	0	33	62	95
2008	44	42	24	18	0	32	117	149
2009	38	38	22	16	0	46	185	231
2010	48	44	21	23	0	0	231	231
2011	66	52	29	23	0	35	485	520
2012	63	46	31	15	0	83	428	511
2013	65	60	23	37	0	120	329	449
2014	88	72	41	31	0	76	610	686
2015	94	62	47	15	0	150	865	1015
2016	110	92	51	41	0	219	526	745
2017	98	88	48	40	0	127	503	630
2018	97	92	40	57	0	96	255	351
2019	120	111	48	72	6	116	586	702
Average	74	64	34	31	0	87	399	486

^a As reported on returned permits.

Recreational fishing is very popular in the PWS Area, especially along the road accessible systems. The Copper River is the only major producer of Chinook Salmon in the PWS Area. Although allowed, a sport fishery for salmon or trout in the proposed area has not developed, primarily because of the high turbidity of the Copper River. Additionally, Bridge No. 339 was closed in August 2011 after sustaining substantial damage from a washout event, inhibiting vehicle access on the Copper River Highway beyond Mile 36 and limiting fishing opportunities for a large area of the Copper River Delta. The bait restriction from April 15 through June 14 to protect spawning trout also reduces the chances of harvesting Chinook Salmon migrating through the lower Copper River since the bait restriction overlaps the migration timing of that species. Sockeye Salmon do not readily take bait or lures and are not often pursued in the turbid Copper River with rod and reel. Outside of the Copper River, the sport fishery for Chinook Salmon in PWS is supported almost entirely by hatchery-produced fish that are harvested in marine waters of the Cordova terminal harvest area (Thalhauser 2014).

There are populations of unknown size of Rainbow and Steelhead trout that migrate up the Copper River. Current Federal subsistence management regulations require the immediate release of Rainbow and Steelhead trout unharmed unless taken incidentally in a fish wheel. Rainbow and Steelhead trout taken incidentally by dip net or rod and reel in the Federal subsistence fishery of the Upper Copper River District must also be released unharmed.

Cultural Knowledge & Traditional Practices

The mouth of the Copper River is located within the traditional territory of the Eyak people. At the time of contact with Europeans, multiple Eyak communities were present in the vicinity of the river's delta including both the community of Eyak and that of Alaganik (Sherman 2012; Fall and Zimpelman 2016). This area was also in proximity to the traditional territories of the Ahtna, Chugach, and Tlingit cultures.

The population of Cordova has been steadily rising since 1960, and as of 2010 there were 2,239 residents (ADCCED 2018). Cordova continues to have a significant Alaska Native population with an active village council (ADCCED 2018). Commercial fishing and subsistence activities are considered central to the culture of the community (ADCCED 2018). In 2014, approximately 77% of residents participated in the harvest of wild resources, averaging 116 lbs. per capita (Fall and Zimpelman 2016).

Salmon made up the largest portion of the 2014 harvest (35% of the total harvest representing 43.8 lbs. per capita) and were used by approximately 92% of households. Sockeye Salmon were used and harvested by Cordova households more than any other salmon (73%; 19 lbs. per capita), followed by Coho Salmon (71%; 16 lbs. per capita), and Chinook Salmon (63%; 8 lbs. per capita). Still, the 2014 estimated per capita salmon harvest for the community was the lowest estimated for Cordova since 1985 (Fall and Zimpelman 2016).

The most commonly used gear type for harvesting salmon, other than removal from commercial catch (i.e. homepack), was rod and reel, which composed 38% of the total salmon harvest by weight (Fall and Zimpelman 2016). Subsistence gear was used for 19% of the overall salmon harvest and 27% of the Sockeye Salmon harvest (Fall and Zimpelman 2016). Access to Sockeye Salmon in freshwaters near Cordova is limited, and in 2014, only 10% of the harvest of this species was by rod and reel (Fall and Zimpelman 2016). Residents that do not have boat access to the state subsistence driftnet fishery harvest Coho Salmon in larger numbers (Fall and Zimpelman 2016). The Federal subsistence and State rod and reel fisheries are especially important to Cordova residents because they are accessible by road and include the heavily used Ibeck Creek, Alaganik Slough, and Eyak River (Fall and Zimpelman 2016).

Current Events

Fall and Zimpelman (2016) reported that some residents of Cordova experience regulatory conflicts that effect their ability to harvest salmon. These residents indicated that subsistence fishing opportunities are limited in both time and space. Other Cordova residents indicated that subsistence fisheries cannot be accessed because of a lack of a boat, the need to work when fishery openings occur, or because of increasing fuel and boat maintenance costs. Furthermore, even when time and resources are available, weather and tides must also align if they are to safely access the State subsistence fishery (Fall and Zimpelman 2016). Fall and Zimpelman (2016) report that "the overall sentiment of the community is that current fishing regulations are not working and that more subsistence opportunity, separate from the commercial opportunity, is needed." As noted in the current events section, Board of Fisheries recently took action to alleviate some aspects of this concern with the addition of a Saturday subsistence fishing opportunity in the marine waters of the Copper River Flats.

Currently, the Covid-19 pandemic has added another level of complexity. While Covid-19 daily reported cases began to decline in late April and early May, they have been increasing since then. Alaska is now seeing more reported cases than at anytime since the first case was reported. Nationally, Alaska is one of 14 states currently experiencing their highest number of reported cases (week ending June 13, 2020).

The proponent expressed concerns that entering the harbor to access his boat would put him in contact with fisherman who have recently arrived in Cordova and are in quarantine. Additionally, members of multiple households often join to harvest salmon during State subsistence gillnet openers. This is done to share expenses and to operate 50 fathom (300 foot) nets which are pulled by hand from smaller vessels without hydraulic net reels. Without an alternative, individuals have had to choose between compromising health and safety values and catching their household limits of Copper River salmon.

Effects of the Proposal

If adopted, this proposal would extend access under the existing Federal subsistence permit for the CRD area (FFPW01) to include waters of the Copper River one-half mile downstream of all road crossings beginning at mile 27 of the Copper River Highway and extending upstream to the Million Dollar Bridge for up to 60 days. This proposal specifies dip net and rod and reel as the only legal gear types for this fishery. Although not mentioned specifically in the proposal, the intent of the proponent is to limit harvest to 15 salmon per first individual in a household, and additional 15 salmon for the second household member, and 10 salmon each for additional household members, with a household limit of 5 Chinook. This harvest limit is to be cumulative with the limits in place for the State subsistence gillnet fishery on the Copper River flats and the Federal subsistence fishery on the Copper River Delta (FFPW01) and not additive to those harvest limits. The result would be a fishery that allows participant to harvest Copper River salmon without compromising health and safety values during the Covid-19 pandemic for rural residents of the Prince William Sound area. It is anticipated that residents of Cordova, and possibly Tatitlek and Chenega Bay would be the main participants. A Federal subsistence harvest of salmon in the lower Copper River may increase the number of Federal subsistence households participating in that fishery effort, or it may shift some of the harvest efforts from currently permitted waterbodies to the waters of the Copper River and its tributaries. The permitted total salmon harvest limit per household will not change.

Federally qualified subsistence users in the CRD area currently concentrate their harvest efforts for salmon through the Federal subsistence fishery in Ibeck Creek, Eyak River, and Alaganik Slough or through the State subsistence fishery in the marine waters of the Copper River Flats. Most of the Federal subsistence harvest efforts are focused on the fall Coho Salmon return across the CRD. State subsistence regulations only allow for the harvest of salmon in the marine waters of the Copper River flats, which requires access to a suitable boat and the approved gear type (relatively expensive gill nets). In contrast, most of the State subsistence harvest efforts are focused on the early summer Sockeye Salmon returns to the Copper River flats. This proposal would provide access and methods for rural residents without boats capable of accessing marine waters to participate in the harvest of Copper River Chinook and Sockeye

Salmon. This outcome will also effectively extend temporal access to salmon harvest for those who cannot access Chinook or Sockeye salmon in the State Subsistence fishery.

The proposed regulatory change would be expected to have minimal biological effects on fish stocks. Historically, the Sockeye Salmon runs to the Upper Copper River have consistently provided an underexploited escapement (**Appendix 1**). This proposal would open waters to Federal subsistence fishing that contain runs of Chinook Salmon. It is not anticipated that the harvest from these fisheries would affect the subsistence, personal use, or sport harvests in the Upper Copper River District.

OSM PRELIMINARY CONCLUSION

Support Proposal FSA20-04 **with modification** to specify season dates, methods and means, and harvest limits within the proposed area, as well as to define the proposed area as the Lower Copper River District.

The modified regulation should read:

For the Chugach National Forest Portion of the Prince William Sound Area permits:

- In the Chugach National Forest portion of the Prince William Sound Area you must possess a Federal subsistence fishing permit to take salmon, trout, whitefish, Grayling, Dolly Varden, or char. Permits are available from the Cordova Ranger District.*
- Salmon harvest is not allowed in Eyak Lake and its tributaries and Eyak River upstream from the Copper River Highway bridge.*
- You must record on your subsistence permit the number of subsistence fish taken. You must record all harvested fish prior to leaving the fishing site and return the permit by the due date marked on the permit.*
- You must remove both lobes of the caudal (tail) fin from subsistence-caught salmon before leaving the fishing site.*
- You may take salmon by rod and reel, dip net, spear, and gaff year round, except as specified in the freshwater streams section on page 74. In the lower Copper River, from the Million Dollar Bridge to a boundary extending 0.5 mile downriver of road crossings of the mainstem Copper River, east of 27 Mile on the Copper River Highway, you may take salmon only by dip net and rod and reel. **Fishing is prohibited from within 100 yards up and downstream of the Miles Lake sonar sites. Salmon harvest from the lower Copper River must be reported within 48 hours to the Cordova Ranger District in person or by phone (907) 424-7661.***

Chugach National Forest portion of Prince William Sound Area permits			
Species	Gear	Incidental Catches	Season

<i>Dolly Varden, Arctic Char, Whitefish, and Grayling</i>	<i>Rod and Reel Spear Gillnet</i>	<i>The maximum incidental gillnet harvest of trout is 10.</i>	<i>You may take Dolly Varden, Arctic Char, Whitefish, and Grayling with rod and reel, and spear year-round and with a gillnet from January 1–April 1.</i>
<i>Cutthroat Trout</i>	<i>Rod and Reel Spear Gillnet</i>		<i>You may take Cutthroat Trout with rod and reel, and spear from June 15–April 14th and with a gillnet from January 1–April 1</i>
<i>Rainbow and steelhead trout</i>		<i>You may not retain Rainbow/steelhead trout for subsistence unless taken incidentally in a subsistence gillnet fishery. Rainbow/steelhead trout must be immediately released from a dip net without harm. 2019/2021 Federal Subsistence Fisheries Regulations 2019/2</i>	

<i>Chugach National Forest portion of Prince William Sound Area permits</i>	
<i>Household Size</i>	<i>Annual Harvest Limits and Permit Restrictions</i>
<i>One-person household</i>	<i>15 salmon (other than Pink) may be taken; 5 Cutthroat Trout, with only 2 over 20 inches may be taken; Pink Salmon: see the conditions of the permit.</i>
<i>Household of two or more persons</i>	<i>For a household with two persons, 30 salmon (other than Pink) may be taken, plus an additional 10 salmon for each additional person in a household over two; 5 Cutthroat Trout, with only 2 over 20 inches per each household member with a maximum household limit of 30 Cutthroat Trout; Pink Salmon: see the conditions of the permit. Only 5 Chinook Salmon may be retained per household</i>

Justification

The proposal allows an alternative means to harvest Copper River salmon that does not compromise individual health and safety concerns during the Covid-19 pandemic. Based on numbers of households that participate in the existing Federal subsistence fishery on the Copper River Delta, and harvest that has already occurred during the first month of the State subsistence gillnet fishery, relatively small numbers of sockeye and king salmon would be harvested. Harvest and escapement information indicate that sufficient salmon are present to allow a Federal subsistence fishery in the lower Copper River without creating a biological concern. The proposal does not increase total allowable salmon harvest but improves access for Federally qualified users in the lower Copper River. The historic use of dip nets and the harvests of salmon in the proposed area are well-documented. Dip net and rod and reel both provide capture methods that allow for non-target species, such as Rainbow and Steelhead trout, to be immediately released in good condition. Thus, the gear types both promote conservation and provide for continued subsistence opportunity.

The modification establishing a household limit of 5 Chinook Salmon in the lower Copper River is consistent with the harvest limit for the State subsistence gillnet fishery on the Copper River flats and is cumulative, not additive to that limit.

The modification closing fishing 100 yards up and downstream of the Miles Lake sonar sites will prevent disturbance of fish near the sonar sites that could potentially affect salmon escapement counts crucial to management.

The modification requiring reporting within 48 hours of harvest will help inform in-season managers and help with management of the salmon run.

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Appendix 1. Total estimated sockeye salmon runs to the Copper River by end user or destination and the 10-year average, 2006–2016 (Table copied from Russell et al. 2017).

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	10-year Average	2016
Commercial harvest ^a	1,496,754	1,901,773	320,815	896,621	636,214	2,052,432	1,866,541	1,608,117	2,050,007	1,750,762	1,458,004	1,175,100
Commercial, homepack ^a	1,539	2,023	2,172	6,528	7,064	9,070	7,985	9,448	12,072	10,590	6,849	9,598
Commercial, donated ^a	114	180	80	47	0	0	0	0	0	0	42	0
Educational drift gillnet permit ^a	16	62	29	8	61	23	200	152	186	91	83	203
[State] Subsistence (Cordova, drift gillnet) ^b	4,355	6,148	3,969	1,764	1,980	1,783	4,270	5,639	1,675	1,403	3,299	1,075
Federal subsistence (PWS/Chugach Nat'l Forest, dip net, spear, rod and reel) ^b	150	36	32	46	36	35	64	102	76	152	73	110
Subsistence (Batzulnetas, dip net, fish wheel or spear) ^b	0	1	1	0	106	9	101	867	116	0	120	0
[State] Subsistence (Glenallen Subdistrict, dip net, fish wheel or spear) ^c	57,710	65,714	43,157	46,849	70,719	59,622	76,305	73,728	75,501	81,800	65,111	62,474
Federal subsistence (Glennallen subdistrict, dip net, fish wheel or spear) ^d	16,711	15,225	11,347	11,822	14,134	15,753	16,487	17,060	23,034	26,897	16,847	19,365
Personal use reported (Chitina Subdistrict, dip net) ^c	123,261	125,126	81,359	90,035	138,487	128,052	127,143	180,663	157,215	223,080	137,442	148,982
Federal subsistence (Chitina Subdistrict, dip net) ^d	1,379	929	789	817	2,324	1,933	915	2,252	1,664	2,310	1,531	1,321
Upriver sport harvest ^e	14,297	23,028	11,431	13,415	14,743	7,727	23,404	26,711	18,005	9,489	16,225	18,068
Delta sport harvest ^e	113	1,704	1,225	959	1,342	838	764	386	87	130	755	201
Upriver spawning escapement ^f	579,550	612,065	480,597	468,724	502,995	607,657	953,245	860,829	864,988	930,095	686,075	503,033
Delta spawning escapement ^g	197,792	176,570	135,900	138,584	167,810	153,014	133,700	151,410	128,410	132,390	151,558	103,100
Hatchery broodstock/excess	97,202	28,648	45,022	43,409	157,980	59,589	65,348	72,369	53,737	40,123	66,343	32,341
Total estimated sockeye salmon run size	2,590,943	2,959,232	1,137,925	1,719,628	1,715,995	3,097,537	3,276,472	3,009,733	3,386,773	3,209,312	2,610,355	2,074,971

^a Numbers are from fish ticket data. Homepack numbers for sockeye salmon are voluntarily reported, but are legally required.

^b Data are reported harvest from returned state and federal subsistence permits.

^c Data are expanded harvest from returned state and federal subsistence permits.

^d Data are reported harvest (2002–2004) and expanded harvest (2005–2014) from returned state and federal subsistence permits.

^e Upriver and Copper River Delta sport harvest data are from statewide sport fish harvest surveys.

^f Beginning in 1999, sockeye salmon spawning escapement was based on the total number of fish past the Miles Lake sonar minus the Chinook salmon inriver midpoint abundance estimate, upriver subsistence, personal use, sport, hatchery broodstock, and onsite hatchery surplus. Prior to 1999, upriver spawning escapement was based on the Miles Lake sonar passage (sockeye salmon only) minus upriver subsistence, personal use, sport, hatchery broodstock, and onsite hatchery surplus. The number of sockeye salmon past the Miles Lake sonar was determined by multiplying the total number of fish past the sonar by the percentage of sockeye salmon in the total upriver subsistence and personal use fisheries.

^g Delta spawning escapement estimated by doubling the peak aerial survey index.

Appendix 2. Total estimated Chinook salmon run to the Copper River by end user or destination and the previous 10-year average, 2006–2016
(Table copied from Russell et al. 2017).

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	10- year Avg.	2016
Commercial harvest ^a	30,278	39,095	11,437	9,457	9,645	18,500	11,764	8,826	10,207	22,506	17,172	12,348
Commercial, homepack ^a	779	1,019	537	876	906	1,282	853	564	768	1,145	873	727
Commercial, donated ^a	3	0	4	0	0	0	0	0	0	0	1	0
Educational drift gillnet permit ^a	11	70	47	50	31	6	6	55	36	50	36	86
[State] Subsistence (Cordova, drift gillnet) ^b	779	1,145	470	212	276	212	237	854	153	167	451	73
Subsistence (Batzulnetas, dip net, fish wheel or spear) ^b	0	0	0	0	0	0	0	5	0	0	1	0
[State] Subsistence (Glennallen Subdistrict, dip net, fish wheel or spear) ^c	2,769	3,276	2,381	2,493	2,099	2,319	2,095	2,148	1,365	2,212	2,316	2,075
Federal subsistence (Glennallen Subdistrict, dip net, fish wheel or spear) ^d	430	569	705	494	326	744	415	374	420	402	488	396
Personal use harvests (Chitina Subdistrict, dip net) ^c	2,663	2,694	1,999	214	700	1,067	567	744	719	1,570	1,294	711
Federal subsistence (Chitina Subdistrict, dip net) ^d	13	26	22	8	18	13	5	18	14	15	15	015
Sport harvest ^e	3,425	5,123	3,618	1,355	2,409	1,753	459	570	931	1,343	2,099	948
Upriver spawning escapement ^f	58,454	34,565	32,485	27,781	16,771	27,993	27,911	28,727	20,709	26,764	30,216	11,864
Total est. Chinook salmon run size	99,604	87,582	53,705	42,940	33,181	53,889	44,312	42,885	35,322	56,174	54,959	29,243

^a Numbers are from fish ticket data.

^b Data are reported harvest from returned state and federal subsistence permits.

^c Data are expanded harvest from returned state and federal subsistence permits.

^d Data are reported harvest (2002–2004) and expanded harvest (2005–2011) from returned state and federal subsistence permits.

^e Upriver Chinook salmon sport harvest only; there is no Copper River Delta Chinook salmon sport harvest. The sport harvest numbers are generated from the statewide sport fish harvest survey.

^f Upriver Chinook salmon spawning escapement was estimated using the inriver abundance estimate and subtracting subsistence, personal use, and sport Chinook salmon harvests. Beginning in 1999, inriver abundance estimates were calculated using mark–recapture studies; prior to 1999 inriver abundance estimates were calculated using aerial and foot surveys