

# **Chilkat River and King Salmon River King Salmon Stock Status and Action Plan, 2018**

by

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And

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March 2018

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H <sub>A</sub>
gram	g			base of natural logarithm	<i>e</i>
hectare	ha	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	catch per unit effort	CPUE
kilogram	kg			coefficient of variation	CV
kilometer	km	at	@	common test statistics	(F, t, $\chi^2$ , etc.)
liter	L	compass directions:		confidence interval	CI
meter	m	east	E	correlation coefficient	
milliliter	mL	north	N	(multiple)	R
millimeter	mm	south	S	correlation coefficient (simple)	r
<b>Weights and measures (English)</b>		west	W	covariance	cov
cubic feet per second	ft <sup>3</sup> /s	copyright	©	degree (angular)	°
foot	ft	corporate suffixes:		degrees of freedom	df
gallon	gal	Company	Co.	expected value	<i>E</i>
inch	in	Corporation	Corp.	greater than	>
mile	mi	Incorporated	Inc.	greater than or equal to	≥
nautical mile	nmi	Limited	Ltd.	harvest per unit effort	HPUE
ounce	oz	District of Columbia	D.C.	less than	<
pound	lb	et alii (and others)	et al.	less than or equal to	≤
quart	qt	et cetera (and so forth)	etc.	logarithm (natural)	ln
yard	yd	exempli gratia (for example)	e.g.	logarithm (base 10)	log
<b>Time and temperature</b>		Federal Information Code	FIC	logarithm (specify base)	log <sub>2</sub> , etc.
day	d	id est (that is)	i.e.	minute (angular)	'
degrees Celsius	°C	latitude or longitude	lat or long	not significant	NS
degrees Fahrenheit	°F	monetary symbols (U.S.)	\$, ¢	null hypothesis	H <sub>0</sub>
degrees kelvin	K	months (tables and figures): first three letters	Jan,...,Dec	percent	%
hour	h	registered trademark	®	probability	P
minute	min	trademark	™	probability of a type I error (rejection of the null hypothesis when true)	$\alpha$
second	s	United States (adjective)	U.S.	probability of a type II error (acceptance of the null hypothesis when false)	$\beta$
<b>Physics and chemistry</b>		United States of America (noun)	USA	second (angular)	"
all atomic symbols		U.S.C.	United States Code	standard deviation	SD
alternating current	AC	U.S. state	use two-letter abbreviations (e.g., AK, WA)	standard error	SE
ampere	A			variance	
calorie	cal			population	Var
direct current	DC			sample	var
hertz	Hz				
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

***REGIONAL INFORMATION REPORT NO. 1J18-05***

**CHILKAT RIVER AND KING SALMON RIVER KING SALMON STOCK  
STATUS AND ACTION PLAN, 2018**

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## ABSTRACT

In response to guidelines established in the Policy for the Management of Sustainable Salmon Fisheries (SSFP), the Alaska Department of Fish and Game (department) recommended that the Chilkat River king salmon (*Oncorhynchus tshawytscha*) stock be designated as a “stock of management concern.” A “management concern” is defined as “a concern arising from a chronic inability, despite use of specific management measures, to maintain escapements for a salmon stock within the bounds of the SEG [sustainable escapement goal], BEG [biological escapement goal], OEG [optimum escapement goal], or other specified management objectives for the fishery.” Escapement of Chilkat River king salmon has fallen below the lower bound of the existing BEG (1,750–3,500) in 5 of the past 6 years (2012–2017). Escapement of King Salmon River king salmon has similarly fallen below the lower bound of the existing BEG (120–240) in 4 of the past 6 years, when preliminary 2017 estimates are included (2012–2017). Since 2012, the department has implemented conservative management measures to reduce harvest of Chilkat River king salmon and increase escapement. Through these measures and from actions taken to reduce Taku River king salmon harvest, by extension, harvest of king salmon from the King Salmon River may similarly have been reduced. These management actions have thus far proven insufficient to consistently achieve the BEGs. This action plan report provides stock assessment and management background information and presents management measures adopted by the Alaska Board of Fisheries at the January 2018 Southeast and Yakutat regulatory meeting to reduce harvest of Chilkat River and King Salmon River king salmon in commercial, sport, and subsistence fisheries.

**Key words:** Action plan, king salmon, *Oncorhynchus tshawytscha*, Chilkat River, Southeast Alaska, stock of concern, fishing, sustainable salmon fisheries policy, Alaska Board of Fisheries.

## INTRODUCTION

The *Policy for the Management of Sustainable Salmon Fisheries* (SSFP; 5 AAC 39.222) directs the Alaska Department of Fish and Game (department) to provide the Alaska Board of Fisheries (board) with reports on the status of salmon stocks and identify any salmon stocks that present a concern related to yield, management, or conservation during regularly-scheduled board meetings. This report provides the department’s assessment of the Chilkat River and King Salmon River king salmon (*Oncorhynchus tshawytscha*) runs as stocks of management concern and outlines management measures adopted by the board to reduce harvest on both runs. Criteria that must be met for future removal of these stocks of concern designations are also presented, as well as historical and ongoing stock assessment information and the existing regulations and emergency order (EO) authority the department follows to manage for the Chilkat River and King Salmon River king salmon escapement goal.

In September 2017, the department recommended to the board that the Chilkat River and King Salmon River king salmon runs be designated as stocks of management concern<sup>1</sup>. This recommendation was based on guidelines established in the SSFP. The SSFP states that a management concern is “a concern arising from a chronic inability, despite use of specific management measures, to maintain escapement for a stock within the bounds” of the established escapement goal whether it be a sustainable escapement goal (SEG), biological escapement goal (BEG), or optimal escapement goal (OEG), or other specified management objective. Chronic inability is further defined in the SSFP as the “continuing or anticipated inability to meet escapement thresholds over a 4 to 5 year period, which is approximately equivalent to the generation time of most salmon species.” Chilkat River king salmon escapements were below the lower bound of the BEG range of 1,750 to 3,500 fish in 5 out of the past 6 consecutive years from 2012 to 2017 (Table 1). King Salmon River king salmon escapements were below the lower bound of the BEG range of 120–240 fish in 4 out of the past 6 years from 2012 to 2017.

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<sup>1</sup> Unpublished memorandum from S. Kelley and T. Brookover, ADF&G, to Alaska Board of Fisheries, 29 September 2017.

The board designated the Chilkat River and King Salmon River king salmon runs as stocks of management concern at their October 2017 work session, following the department's recommendation. In December 2017, the department provided a draft action plan for consideration by the board and public that included various options to reduce harvest of Chilkat and King Salmon river king salmon in the commercial, sport, and subsistence fisheries. The board reviewed those options at the January 2018 Southeast and Yakutat regulatory meeting and adopted the final action plan presented in this report.

## **STOCK ASSESSMENT BACKGROUND**

### **CHILKAT RIVER**

The Chilkat River is a glacial system that empties into Chilkat Inlet and northern Lynn Canal, near Haines (Figure 1). The Chilkat River supports the fifth largest stock of king salmon in SEAK, and these fish rear primarily around SEAK (Pahlke 2008). Among the 11 SEAK king salmon stocks that are monitored for escapement, the Chilkat River is 1 of 4 stocks for which a full stock assessment is performed on an annual basis by the department. This includes coded-wire-tagging juveniles and smolt, which provides estimates of smolt abundance and estimates of harvest by gear, area, and time in mixed stock commercial and sport fisheries. Coded-wire tagging of this stock was conducted from 1988 to 1990 and from 1999 to present. Juvenile king salmon have been coded-wire tagged at relatively high rates (8–10%) since 1999. These data, when paired with spawning abundance estimates, allow estimating marine (smolt-to-adult) survival, total return (escapement plus harvest by age), and calendar year harvest and brood year exploitation rates for the Chilkat River stock. Estimates of escapement are germane to large fish (age-1.3 and older) and are based on mark-recapture estimates conducted annually since 1991. Lynn Canal fisheries that harvest this stock are managed according to the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan* (5 AAC 33.384) to achieve escapements within the escapement goal range.

### **Escapement**

Since 1992, Chilkat River king salmon escapements have averaged 3,488 fish; during the most recent 10-year (2007–2016) and 5-year periods (2012–2016), escapements averaged 2,201 and 1,761 fish, respectively (Table 1). The 10-year and the 5-year averages are 49% and 40% of the 1991–2006 average, respectively. King salmon escapements to the Chilkat River over the last 6 years, including the preliminary estimate for 2017, have been below the lower bound of the BEG in every year except 2015, despite restrictive actions implemented to reduce harvest in the commercial fishery and Chilkat Inlet sport fishery since 2015 and in the subsistence fisheries in 2017.

### **Harvest**

Chilkat River king salmon are harvested directly in a small terminal marine sport fishery in Chilkat Inlet, but are otherwise harvested in mixed stock sport fisheries, commercial drift gillnet (Lynn Canal) and troll (primarily in northern SEAK) fisheries, and in sockeye salmon (*O. nerka*) subsistence fisheries in Chilkat Inlet and the Chilkat River. Coded-wire tagging information suggests harvest rates on Chilkat River king salmon have historically been low, averaging about 21%, but increased to an average 27% from 2010 to 2013. In the past 3 years (2015–2017), with more restrictive management measures in place, harvest rates decreased to a range of 10% to 18% (Table 1). Over the most recent 10-year period (2007–2016), the net fishery accounted for



46% of the total harvest, followed by the troll fishery (28%), and sport fishery (26%). Annual harvest rates across all fisheries have averaged 23% for Chilkat River king salmon since 2008.

The overall average harvest from 2007 to 2016 was composed primarily of contributions to terminal and non-terminal drift gillnet fisheries, which averaged 329 fish. Commercial troll also contributes to harvest and within troll fisheries, most Chilkat River king salmon harvest occurs in the spring troll fishery.

The sport harvest of Chilkat River king salmon occurs primarily from May through July. Sport harvest of Chilkat River king salmon from 2007 to 2016 averaged 187 fish (range: 32–309 fish) as estimated from coded-wire tag recoveries. Most of this harvest (96%) occurred in the Northern Inside area and the remaining 4% occurred in the Northern Outside area; no sport harvest was identified in the Southern Inside or Outside areas.

Terminal subsistence harvest comprises the smallest percentage of the overall harvest of Chilkat River king salmon, which are harvested incidentally in sockeye salmon subsistence fisheries in the Chilkat River and Chilkat Inlet (Ericksen and McPherson 2004). In 2003, the board adopted an Inriver Goal that is 100 fish greater than the BEG to accommodate incidental harvest in the Chilkat River (5 AAC 33.384 (C)). Subsistence harvest in the Chilkat River and Chilkat Inlet, as reported on ADF&G subsistence permits, averaged < 70 fish over the most recent 10-year period (2007–2016). Household harvest survey data collected by the Division of Subsistence were also used to estimate community-wide harvests and uses of all salmon, by year and by gear type by residents of Klukwan (1996) and Haines (2012)<sup>2</sup>. Klukwan residents harvested an estimated 106 king salmon using subsistence methods in 1996; 33% of households reported harvesting subsistence king salmon, and 83% of households used king salmon (any method). Haines residents harvested an estimated 412 king salmon using subsistence methods in 2012; 21% of households reported harvesting subsistence king salmon, and 58% used king salmon (any method). The estimated harvest in 2012, however, while large, likely included harvest of hatchery king salmon that returned to a release site at Lutak Inlet, near Haines. Between 81,000 and 222,000 hatchery king salmon smolt were released at Lutak Inlet by Northern Southeast Aquaculture Association and Douglas Island Pink and Chum, Inc. (DIPAC) from 2008 to 2011.

## **KING SALMON RIVER**

The King Salmon River is a clearwater system located on Admiralty Island, about 30 km south of Juneau. It is the only monitored island stock of king salmon in SEAK. This stock does not support directed fisheries, but it is likely harvested incidentally in SEAK marine waters in sport and commercial fisheries. Harvest estimates of the King Salmon River stock are not available because the stock contribution in marine fisheries has not been determined.

### **Escapement**

The King Salmon River is 1 of 11 king salmon indicator stocks in SEAK, each of which are monitored for escapement of large ( $\geq 660$  mm MEF, primarily age-1.3 and older) fish each year. Escapements of large king salmon are based on weir counts from 1983 to 1992, expanded index counts using helicopter or foot surveys from 1971 to 1982 and 1993 to 2011, and foot surveys from 2012 to 2016. Ten years of concurrent weir and index count data were used to estimate a

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<sup>2</sup> ADF&G Community Subsistence Information System: <http://www.adfg.alaska.gov/sb/CSIS/>.

survey expansion factor of 1.52. Based on weir counts from 1983 to 1992, peak run timing occurs about mid-July, and all fish are in the river by about July 31 (Josephson et al. 1993).

Since 1975, King Salmon River king salmon escapements have averaged 165 fish; during the most recent 10-year (2007–2016) and 5-year periods (2012–2016), escapements averaged 128 and 103 fish, respectively. The 10-year and the 5-year averages are 67% and 54% of the 1975–2006 average, respectively. Escapements over the last 5 years, including the preliminary estimate for 2017, have been below the lower bound of the BEG in every year except 2016 (Table 2), despite restrictive actions implemented in the sport and commercial fisheries since 2012 to conserve Chilkat and Taku river king salmon stocks.

## **Harvest**

Harvest of King Salmon River king salmon has never been quantified because no coded-wire tagging program has been established. Genetic stock identification estimates are not available because sample sizes are insufficient to provide accurate harvest estimates. However, King Salmon River broodstock released from several hatcheries in SEAK in the 1970s and 1980s indicates a portion of this stock rears in inside waters in SEAK; therefore, the King Salmon River stock is likely subjected to harvest rates similar to those experienced by other king salmon stocks with an inside rearing component, such as the Chilkat (~25%) and Unuk (~50%) river stocks. The Chinook Technical Committee (CTC) of the Pacific Salmon Commission (PSC) uses harvest rates observed in the SEAK mixed stock fisheries (i.e., non-terminal rates) for king salmon released at nearby Crystal Lake hatchery as surrogate values for the King Salmon River stock and over the recent decade (2007–2016) these rates have averaged around 40%.

## **ESCAPEMENT GOAL EVALUATION**

The *Policy for Statewide Salmon Escapement Goals* (5 AAC 39.223) along with the SSFP require the department to report on salmon stock status and escapement goals to the board on a regular basis, document and review existing salmon escapement goals, establish goals for stocks for which escapement can be reliably measured, and prepare scientific analyses with supporting data when goals are created, modified, or recommended for elimination.

## **CHILKAT RIVER**

From 1975 to 1992, aerial survey counts were conducted on 2 small clear-water tributaries within the Chilkat River watershed. Radio telemetry studies conducted in 1991 and 1992, however, showed that survey counts were not representative of king salmon escapement in the entire drainage and the surveys were subsequently discontinued. In 1981, the department established an escapement goal of 2,000 large fish, based on the assumed fraction of the escapement represented by survey counts (now discontinued). A BEG range for large king salmon from the Chilkat River was developed in 2003 with information from a stock assessment program (1991–2003) and catch sampling programs of the U.S. drift gillnet fisheries in Lynn Canal and Taku Inlet, the U.S. commercial troll fishery, and the U.S. recreational fishery near Haines and Juneau (Ericksen and McPherson 2004). Stock assessment was based on mark-recapture studies to estimate abundance of large fish, age-1.3 and older, and also age-1.2 king salmon in the Chilkat River drainage. Relative age composition was estimated from 1991 to 2003 from spawning grounds samples during the mark-recapture studies. Point estimates of spawning abundance ( $S_{MSY}$ ) that would on average produce maximum sustained yield (MSY) was recommended at 1,750–3,500 large salmon from estimation of the spawner-recruit

replacement value and the relationship of replacement and  $S_{MSY}$  in other SEAK king salmon stocks. This method was corroborated by a model that relates watershed area to  $S_{MSY}$ . The department, the board, and the CTC agreed on a BEG range of 1,750–3,500 large spawners. At the same time, the board adopted an inriver goal of 1,850–3,600 large king salmon to account for incidental harvest in the Chilkat River subsistence sockeye salmon fishery.

## **KING SALMON RIVER**

In 1981, the department established a peak index escapement goal of 200 large king salmon in the King Salmon River, based on maximum counts of 200 spawners in 1957 and 211 spawners in 1973. In the mid-1980s, the goal was revised to 250 large spawners counted through the weir that was operated at the time.

The current escapement goal was developed in 1997 with information on escapement, age composition, and harvests collected from 1991 to 1997 (McPherson and Clark 2001). Ten years of weir operations (1983–1992) provided the basis for estimating total escapement and age composition in other years. From 1971 to 1997, annual foot or aerial surveys were conducted to count peak numbers of large spawners (age-1.3 and older) in the King Salmon River. Large spawner abundance from 1971 to 1982 and 1993 to 1997 was estimated by using the average fraction counted during 1983–1992 (67.5%) and the observed variation around that mean. The inriver return of large fish for each brood year was estimated from the estimated number of large spawners each year and age composition data. The number of jacks (age-1.2 fish) from 1971 to 1982 and 1993–1995 was estimated by using the average percent of jacks (22%) for the 1979–1986 broods (known from weir counts). Harvests were estimated from exploitation rates from Crystal Lake Hatchery, applied to the estimated inriver returns of wild king salmon estimated for King Salmon River. From these data, total returns were calculated for 21 brood years, 1971–1991. Spawner-recruit parameters were estimated for a Ricker model and precision of parameters was estimated using 2 separate bootstrap methods, one of which used residuals of returns with fixed variation in spawners and another which used the estimated variance for both returns and spawners. This analysis provided the current BEG range of 120–240 large spawners for King Salmon River king salmon.

## **ESCAPEMENT GOAL RECOMMENDATION**

The department reviewed salmon escapement goals every 3 years prior to the Southeast and Yakutat board meeting and recommended no changes to the Chilkat River or King Salmon River king salmon escapement goals since adoption in 2003 and 1997 (Geiger and McPherson 2004; Der Hovanisian and Geiger 2005; Der Hovanisian et al. 2011; Heintz et al. 2014; Heintz et al. 2017), respectively.

## **STOCK OF CONCERN RECOMMENDATION**

Escapements of king salmon have fallen below the lower bound of the current BEG ranges for Chilkat River in 5 of the past 6 years and for King Salmon River in 4 of the past 5 years, including the preliminary 2017 escapement estimates. Recent inseason management actions taken in the sport, commercial, and subsistence fisheries during the 2016 and 2017 fishing seasons to correct this trend have been insufficient to achieve the current BEGs. Therefore, in October 2017 the department recommended that the board designate Chilkat River and King Salmon River king salmon stocks of management concern, based on guidelines established in the SSFP (5 AAC 39.222).

## OUTLOOK

The department produces preseason forecasts of total run by December 1 for Situk, Chilkat, Taku, Stikine, and Unuk river king salmon in SEAK. The preseason forecast of Chilkat River king salmon total run in 2018 is 1,033 large fish, which, even with zero harvest, is below the lower bound of the escapement goal range of 1,750–3,500 large spawners. The department does not produce preseason forecasts for the other 6 indicator stocks in the region, including the King Salmon River stock, due to a lack of sibling model information and harvest contribution estimates. However, the downward trend in king salmon production throughout SEAK is expected to continue through 2018.

## HABITAT ASSESSMENT

### CHILKAT RIVER

The Chilkat River is a mainland glacial system that originates in British Columbia, Canada that traverses rugged mountainous terrain and terminates in Chilkat Inlet in northern Lynn Canal (Figure 1). The main channels and major tributaries comprise approximately 600 km of fluvial habitat in a watershed covering about 1,600 km<sup>2</sup> (Bugliosi 1988). The Chilkat River is the third or fourth largest producer of king salmon (McPherson et al. 2003), the second largest producer of coho salmon (*O. kisutch*), and the largest producer of sockeye salmon in SEAK (Eggers et al. 2010).

Unlike most other large mainland watersheds in SEAK, the Chilkat River watershed has significant road access and proximity to a population center and associated infrastructure. As such, the risk of negative anthropomorphic impacts is higher here than in other remote salmon producing watersheds on the mainland of SEAK. The watershed contains over 300 km of roads, a significant portion of which are in close proximity to the Chilkat River mainstem and the most significant tributaries used by king salmon for spawning, rearing, or migration. The roads cross a number of anadromous tributaries to the mainstem of the Chilkat River, which have the potential to obstruct or hinder fish passage, although king salmon are likely the least impacted salmonid given their preferred habitat and the location of such crossings. The proposed Haines Highway Reconstruction project between mileposts 3.9 and 25.0 involves the largest modification of riparian and wetland habitat immediately adjacent to the mainstem Chilkat River. This project follows the Chilkat River for approximately 35 km and crosses 106 culverts. The highway embankment along the Chilkat River was conceptually designed for erosion and depth of scour protection. Following the Environmental Assessment (EA) released in 2013, a Final Revised Environmental Assessment was prepared in response to public input. Alaska Department of Transportation and Public Facilities, on behalf of the U.S. Department of Transportation Federal Highway Administration, had a Finding of No Significant Impact for this project:

- (1) due to the proposed conservation measures, short-term impacts from construction activities would be temporary and minimal; and
- (2) the avoidance, minimization, and mitigation measures outlined in Section 4 of the document<sup>3</sup> would offset the quality and quantity of essential fish habitat and the overall effects would not be adverse.

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<sup>3</sup> Haines Highway MP 3.5 to MP 25.3 Final Revised EA; DOT&PF/Federal Project Nos. Z686060000/0956028, August 2016.

Approximately 500,000 cubic yards of gravel were mined from the river near the Haines airport runway during the winter of 1990–91 for construction of the Haines airport. Otherwise, no mining activities within the Chilkat River exists. No instream mining of gravel material is reportedly planned for the Haines Highway project.

Iron, gold, copper, platinum, and palladium deposits exist within the Chilkat River watershed. Placer mining is ongoing in the Porcupine Creek mining district. Exploration of a volcanogenic massive sulfide deposit is underway in a tributary of the Klehini River, but mining permit applications have not been submitted.

The Haines State Forest includes the sub-basins of some of the major tributaries to the Chilkat River. About 15% of the state forest is dedicated to timber harvest, which has occurred in the forest since the 1960s. The annual allowable harvest is 5.88 million board feet. Timber operations on state lands follow Standards and Guidelines and Best Management Practices established in the Forest Resources Practices Act (FRPA), which are designed to minimize impacts on fish habitat. While historical timber extraction/harvest occurring in the watershed potentially occurred in less restrictive settings, all planned timber harvest in future years will be guided by the FRPA and therefore should have minimal impacts on anadromous fish.

A 40,000 acre portion of the Alaska Chilkat Bald Eagle Preserve (CBEP; ADNR 2002) surrounds the Chilkat River and its tributaries upstream of Haines Highway milepost 8, and contains the drainage's waterways and riparian lowlands. These lands and waters provide essential king salmon habitat for juvenile rearing, emigrating smolt, immigrating adults, and spawning areas. Two of the purposes of the CBEP, as described in the CBEP Management Plan (September 2002), are directly related to the Chilkat River king salmon stock:

- protect and sustain the natural spawning and rearing areas of the Chilkat River system in perpetuity; and
- maintain water quality and necessary water quantity.

The management guidelines in the CBEP Management Plan require that proposed activities in the preserve that may affect water quality, fish or game habitat disturbance, or stream modification will include department review.

## **KING SALMON RIVER**

The habitat in the King Salmon River watershed is considered pristine and should remain so into the future. The entire King Salmon River drainage is within the Admiralty Island National Monument and the Kootznoowoo Wilderness Area, both of which provide habitat protection. There are no freshwater or riparian habitat related concerns identified for this stock and there have been no documented timber or mining activities in the watershed. This island watershed drains an area of approximately 108 km<sup>2</sup> and contains 95 km of stream habitat of which about 11 km is designated anadromous (Figure 2).

# **FISHERY MANAGEMENT OVERVIEW AND BACKGROUND**

## **COMMERCIAL FISHERIES**

### **Past Commercial Fishery Management Actions**

Commercial salmon fisheries are coordinated regionally by gear type and are opened and closed by EO. Fishery managers adjust time and area, and in some situations include gear stipulations, for the regularly scheduled openings in response to harvestable surpluses and conservation concerns.

Management actions taken in the District 11 drift gillnet fishery (Figure 4) to protect king salmon returning to the Taku River should provide protection to King Salmon River runs given their close proximity (Figure 3). Below is an outline of significant changes to the commercial net and troll (Figures 5 and 6) fisheries from 2012 to 2017 intended to reduce harvest and increase escapement of king salmon to the Chilkat and Taku rivers and, by default, to the King Salmon River:

#### **2012:**

- Reduced area open in northern Chilkat Inlet to the District 15 (Figure 7) commercial drift gillnet fishery during the first 5 weeks of the season by implementing and exceeding conservation measures of the Lynn Canal and Chilkat River King Salmon Fishery Management Plan.
- Reduced time and area open in Taku Inlet in the first week of the District 11 drift gillnet fishery.
- Imposed a 6-inch maximum mesh restriction in the first week of the District 11 drift gillnet fishery.
- Regional purse seine fisheries closed to retention of king salmon through August 5.

#### **2013:**

- Reduced area open in northern Chilkat Inlet to the District 15 commercial drift gillnet fishery during the first 5 weeks of the season by implementing and exceeding conservation measures of the Lynn Canal and Chilkat River King Salmon Fishery Management Plan.
- Reduced time in the first week and area open in Taku Inlet in the first 2 weeks of the District 11 drift gillnet fishery.
- Imposed a 6-inch maximum mesh restriction in the first week of the District 11 drift gillnet fishery.
- Closed regional purse seine fisheries to retention of king salmon through August 8.

#### **2014:**

- Reduced area open in northern Chilkat Inlet to the District 15 commercial drift gillnet fishery during the first 5 weeks of the season by implementing and exceeding conservation measures of the Lynn Canal and Chilkat River King Salmon Fishery Management Plan.

- Imposed 6-inch maximum mesh restriction in first week (statistical week [SW] 25) in Section 15-A and Section 15-C of the District 15 drift gillnet fishery.
- Reduced time in the first week and area open in Taku Inlet in the first 2 weeks of the District 11 drift gillnet fishery.
- Imposed a 6-inch maximum mesh restriction in the first week of the District 11 drift gillnet fishery.

#### **2015:**

- Reduced area open in northern Chilkat Inlet to the District 15 commercial drift gillnet fishery during the first 5 weeks of the season by implementing and exceeding conservation measures of the Lynn Canal and Chilkat River King Salmon Fishery Management Plan.
- Imposed a 6-inch maximum mesh restriction in first and second weeks (SW 26–27) in Sections 15-A and 15-C of the District 15 drift gillnet fishery.
- Closed the western half of Section 15-A in first and second weeks (SW 26–27) of the District 15 drift gillnet fishery.
- Closed regional purse seine fisheries to retention of king salmon through July 30.

#### **2016:**

- Reduced area open in northern Chilkat Inlet to the District 15 commercial drift gillnet fishery during the first 5 weeks of the season by implementing and exceeding conservation measures of the Lynn Canal and Chilkat River King Salmon Fishery Management Plan.
- Imposed a 6-inch maximum mesh restriction in first and second weeks (SW 26–27) in Sections 15-A and 15-C of the District 15 drift gillnet fishery.
- Closed the western half of Section 15-A first through third weeks (SW 26–28) of the District 15 drift gillnet fishery.
- Reduced time and open area in the first week of the District 11 drift gillnet fishery. Area restriction significantly more than previously implemented.
- Imposed a 6-inch maximum mesh restriction in the first week of the District 11 drift gillnet fishery.

#### **2017:**

##### Net Fisheries:

- Reduced area open in northern Chilkat Inlet to the District 15 commercial drift gillnet fishery during the first 5 weeks of the season by implementing and exceeding conservation measures of the Lynn Canal and Chilkat River King Salmon Fishery Management Plan.
- Imposed a 6-inch maximum mesh restriction in first through third week (SW 25–27) in Section 15-A of the District 15 drift gillnet fishery.
- Closed western half of Section 15-A in first through fifth week (SW 25–29) of the District 15 drift gillnet fishery.
- Imposed night closures between 10:00 p.m. and 4:00 a.m. in first through third week (SW 25–27) in Section 15-A of the District 15 drift gillnet fishery.

- Imposed a 6-inch maximum mesh restriction in first and second weeks (SW 25–26) in Section 15-C of the District 15 drift gillnet fishery.
- Limited time and area open to 2 days/week south of the latitude of Pt. Bridget with any extensions limited to the “postage stamp” area in first and second weeks (SW 25–26) in Section 15-C of the District 15 drift gillnet fishery.
- Imposed a 6-inch maximum mesh restriction in first and second week (SW 25 and 26) in Boat Harbor THA (District 15).
- Opened inside area of Boat Harbor THA (west of marker) 7 days/week in first through fourth weeks (SW 25–28); outside of Boat Harbor THA open only within 1 mile of western shoreline for first and second week (SW 25 and 26).
- Reduced time and open area in the first 4 weeks of the District 11 drift gillnet fishery. The first week’s area restriction again significantly more than previously implemented.
- Imposed a 6-inch maximum mesh restriction in the first 2 weeks of the District 11 drift gillnet fishery.
- Closed regional purse seine fisheries to retention of king salmon before July 23 and after August 8.

#### Troll Fishery:

- Closed the waters of Section 15-A in Lynn Canal/Chilkat Inlet north of the latitude of Sherman Rock to commercial trolling from April 15 to December 31; the waters of Sections 15-C and 12-B closed to troll gear effective April 15–30; the waters of 15-C and 12-B were not opened to spring troll fisheries and remained closed during May and June.
- Closed the waters of Section 11-B south of the latitude of Grave Point Light, Section 11-C, and Section 11-D to troll gear effective April 1–30; these waters were not opened to spring troll fisheries and remained closed during May and June.
- Delayed initial opening dates from May 1 to June 15 for Homeshore, South Passage, and Cross Sound spring troll fisheries.
- Reduced initial opening lengths during SWs 18–22 for Point Sophia and Hawk Inlet spring troll fisheries from 7 days/week to 3 days/week.
- Limited Port Althorp spring troll fishery to opening lengths of 2 days/week through SW week 22, while Lisianski Inlet fishery had limited openings of 3 days/week through SW week 22; both fisheries were opened 4–5 days/week in 2016 during May.
- Reduced initial opening length of Chatham Strait spring troll fishery from 7 days/week to 4 days/week during May, and kept opening lengths during June to less than 7 days/week.
- Closed Tebenkof Bay spring troll fishery for the season.
- Closed regionwide spring troll fishery from May 29 to June 14.
- Closed king salmon retention in all troll fisheries for the season on August 10, and did not open second summer troll king salmon retention period.

## **SPORT FISHERIES**

### **Chilkat River**

A May/June marine boat sport fishery in Chilkat Inlet and Chilkoot Inlet near Haines targets king salmon returning to the Chilkat River, along with other stocks. The bag limits and the Chilkat Inlet terminal area closed to king salmon sport fishing are set according to the preseason forecast of Chilkat River king salmon abundance, or inseason data when available, following provisions



in the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan* (5 AAC 33.384). The plan specifies an inriver abundance goal range of 1,850–3,600 large (age-1.3 and older) king salmon and prescribes sport regulations based on the projected inriver run of Chilkat River king salmon. When the preseason forecast of inriver abundance is below the lower bound of the inriver goal range (< 1,850 fish) the plan specifies that sport fishing for king salmon will be closed in Chilkat Inlet as follows: north of a department regulatory marker immediately north of Seduction Point through June 30; and north of a line extending from a department regulatory marker located approximately 1 mile south of Anchorage Point to a department regulatory marker directly north of the Letnikof Cove boat ramp, through July 15; and in the remainder of Chilkat Inlet north of Seduction Point, from July 1 to 15 the bag and possession limit is 1 king salmon. When the preseason forecast is within the inriver goal range (1,850–3,600 fish) the plan specifies that Chilkat Inlet is closed to sport fishing for king salmon north of a line extending from a department marker located approximately 1 mile south of Anchorage Point to a department regulatory marker directly north of the Letnikof Cove boat ramp from April 15 to July 15. When the preseason forecast is above the upper bound of the inriver goal (>3,600 fish), bag and possession limits may be increased in Chilkat Inlet. At all inriver abundance forecast levels, king salmon sport fishing is closed in northern Chilkat Inlet near the mouth of the Chilkat River from April 15 to July 15 to conserve milling king salmon (5 AAC 47.021(c)).

## **King Salmon River**

King Salmon River king salmon are harvested incidentally in Southeast Alaska marine waters. While there is no coded-wire tag information available for the King Salmon River, harvest of Taku and Chilkat river king salmon stocks can serve as an indicator for when and where King Salmon River fish are harvested since the King Salmon River is geographically close to these systems and likely shares partial overlap of patterns in migration timing and rearing. The Juneau area marine boat sport fishery targets king salmon primarily from April to June, with continued effort the remainder of the year. In the Juneau marine boat sport fishery, Taku River fish are typically harvested in the early spring season, and harvest tapers off in June when anglers target hatchery king salmon. Rearing Chilkat River king salmon are harvested in late summer and winter. Regulations for the Juneau area sport fishery are set by EO as directed by the *Southeast Alaska King Salmon Management Plan* (5 AAC 47.055). In addition, special provisions for District 11 (5 AAC 47.021(e)) may be implemented during spring based on the preseason forecast of Taku River king salmon. Lastly, liberalized regulations may be implemented by EO in a designated THA if Douglas Island Pink and Chum (DIPAC) Hatchery broodstock needs are expected to be met.

The special provisions for the waters of District 11 prescribe sport regulations based on the preseason terminal run forecast of Taku River king salmon relative to the escapement goal of 19,000–36,000 large fish (age 1.3 and older). During years with an allowable catch of Taku River king salmon (preseason terminal run forecast >38,900 fish), sport fishing regulations are liberalized: bag, possession, and annual limits are increased, and the use of 2 rods is allowed. During years when there is no allowable catch (preseason terminal run forecast <38,900 fish), the upper Taku Inlet is closed from April 16 to June 14, bag and possession limits may be reduced, and additional time and/or area closures in terminal areas or migration corridors may be implemented. The THA, which includes the DIPAC Hatchery and other remote release sites in Auke Bay, is usually open June 1 to August 31, with a bag and possession limit of 4 fish of any size, which does not count towards the nonresident annual limit. If hatchery broodstock concerns

arise, the THA opening may be delayed or a sport fishing closure may be implemented near the hatchery.

## **PAST SPORT FISHERIES MANAGEMENT ACTIONS**

The commissioner or an authorized designee may, by EO, change bag and possession limits and annual limits, and alter methods and means in sport fisheries (5 AAC 75.003). These changes may not reduce the allocation of harvest amongst other user groups. An EO may not supersede provisions for increasing or decreasing bag and possession limits or change methods and means specified in regulatory management plans established by the board. The commissioner or an authorized designee may decrease sport fish bag and possession limits and annual limits and restrict methods and means of harvest by EO when the total escapement of a species of anadromous fish is projected to be less than the escapement goal for that species listed in management plans adopted by the board or established by the department.

Management actions taken to protect king salmon returning to the Chilkat and Taku rivers likely protect fish returning to the King Salmon River because these stocks are in close proximity (Figure 3) and likely share similar migration patterns and rearing areas. Below is an outline of the management measures implemented in the sport fishery from 2012 to 2017 to reduce harvest and increase escapement of king salmon to the Chilkat and Taku rivers and, by default, to the King Salmon River:

### **2012:**

#### Chilkat:

The preseason forecast exceeded the inriver goal range of 1,850–3,600 large fish. An inseason estimate of inriver run on July 11, however, was between 1,350 and 1,850 large fish. Through EO, extended the northern Chilkat Inlet area closed to king salmon fishing July 16–31. In the remainder of Chilkat Inlet, bag and possession limit reduced to 1 king salmon  $\geq$  28 inches July 16–31 (EO 1-KS-F-22-12).

#### Taku:

The preseason forecast of 48,000 large fish indicated an allowable catch was present; in accordance with District 11 king salmon sport fishery regulations the following king salmon regulations were established April 25 to June 30 in District 11: resident bag and possession limit of 3 fish  $\geq$  28 inches; nonresident bag and possession limit of 2 fish  $\geq$  28 inches, annual limit 5; 2 rods per angler (EO 1-KS-E-03-12).

By late May, inseason information indicated that the BEG would not be achieved and the liberalized sport fishing regulations based on an allowable catch were no longer justified and therefore rescinded June 1 (EO 1-KS-E-13-12).

From June 1 to August 31, a bag and possession limit of 4 king salmon with no size or annual limit was established in a designated sport terminal harvest area to provide increased opportunity for king salmon in excess of hatchery broodstock requirements (EO 1-KS-E-10-12).

### **2013:**

#### Chilkat:

Preseason forecast was an inriver run within the goal range of 1,850–3,600 large fish. An inseason estimate of inriver run on July 10, however, was between 1,000 and 1,850 large fish.

Through EO, extended the northern Chilkat Inlet area closed to king salmon fishing July 16–31 (EO 1-KS-F-18-13).

Taku:

The preseason forecast of 26,000 large fish did not indicate an allowable catch and therefore no liberalized regulations were applied to the Juneau spring sport fishery. The following regional king salmon regulations applied to the Juneau Area including District 11: bag and possession limit of 1 fish  $\geq$  28 inches; nonresident harvest limit of 3 fish  $\geq$  28 inches through June 30, 2 fish  $\geq$  28 inches July 1–15; and 1 fish  $\geq$  28 inches July 16 to December 31; and 2 rods for resident anglers October to March (EO 1-KS-R-2-13).

From June 1 to August 31, a bag and possession limit of 4 king salmon with no size or annual limit was established in a designated sport terminal harvest area to provide increased opportunity for king salmon in excess of hatchery broodstock requirements (EO 1-KS-E-7-13).

**2014:**

Chilkat:

The preseason forecast was an inriver run within the goal range of 1,850–3,600 large fish. An inseason estimate of inriver run on July 9, however, was 1,400 large fish. Through EO, closed northern Chilkat Inlet to king salmon fishing July 16–31 (EO 1-KS-F-17-14).

Taku:

The preseason forecast of 26,700 large fish did not indicate an allowable catch and therefore no liberalized regulations were applied to the Juneau spring sport fishery. The following regional king salmon regulations applied in the Juneau Area including District 11: resident bag and possession limit of 3 fish  $\geq$  28 inches; nonresident bag and possession limit of 1 fish  $\geq$  28 inches except in May and June; the nonresident bag and possession limit was 2 fish  $\geq$  28 inches, nonresident annual limit of 6 fish; and 2 rods October to March for all anglers (EO 1-KS-R-03-14).

From June 1 to August 31, a bag and possession limit of 4 king salmon with no size or annual limit was established in a designated sport terminal harvest area to provide increased opportunity for king salmon in excess of hatchery broodstock requirements (EO 1-KS-E-9-14).

**2015:**

Chilkat:

The preseason forecast was an inriver run of 1,713 large fish. Through EO, closed entire Chilkat Inlet to king salmon fishing April 15 to July 15. In the remainder of District 15, bag & possession limit reduced to 1 king salmon  $\geq$  28 inches from April 15 to December 31 (EO 1-KS-F-5-15).

Taku:

The preseason forecast of 26,100 large fish indicated no allowable catch was present and unless harvest of Taku River king salmon was reduced it was unlikely the BEG would be achieved. To reduce harvest, the bag and possession limit for District 11 was reduced to 1 king salmon  $\geq$  28 inches for all anglers from April 4 to June 30 and king salmon north of a line from Cooper Point to the mouth of Dorothy Creek could not be retained until after July 1 (EO 1-KS-E-4-15).

From June 1 to August 31 a bag and possession limit of 4 king salmon with no size or annual limit was established in a designated sport harvest area to provide increased opportunity for king salmon in excess of hatchery broodstock requirements (EO 1-KS-E-13-15).

## **2016:**

### Chilkat:

The preseason forecast was an inriver run of 1,726 large fish. Through EO, closed entire Chilkat Inlet to king salmon sport fishing April 15 to July 15. In the remainder of Section 15-A, bag and possession limit reduced to 1 king salmon  $\geq$  28 inches April 15 to December 31 (EO 1-KS-F-5-16). In Sections 15-B and 15-C, bag & possession limit reduced to 1 king salmon  $\geq$  28 inches April 15 to June 30 (EO 1-KS-E-4-16).

### Taku:

The preseason forecast of 29,200 large fish indicated unless harvest of Taku River king salmon was reduced it was unlikely the BEG would be achieved. To reduce harvest, the bag and possession limit for District 11 and District 15 south of Sherman Rock was reduced to 1 king salmon  $\geq$  28 inches for all anglers from April 15 to June 30 and king salmon north of a line from Cooper Point to the mouth of Dorothy Creek could not be retained until after July 1 (EO 1-KS-E-4-16).

Inseason information indicated the BEG was not likely to be achieved. Further conservative management action was taken by closing a portion of District 11 from June 4 to June 30 to the retention of king salmon (EO 1-KS-E-18-16).

From June 1 to August 31 a bag and possession limit of 4 king salmon with no size or annual limit was established in a designated sport harvest area to provide increased opportunity for king salmon in excess of hatchery broodstock requirements (EO 1-KS-E-13-16).

## **2017:**

### Chilkat:

The preseason forecast was an inriver run of 600 large fish. Through EO, closed entire Chilkat Inlet to king salmon sport fishing April 15 to July 15. Section 15-A, Lynn Canal north of the latitude of Sherman Rock, king salmon retention prohibited April 15 to December 31 (EO 1-KS-F-5-17). In Sections 15-B and 15-C, closed to king salmon fishing April 15 to June 15 (EO 1-KS-E-0-17).

### Taku:

The preseason forecast of 13,300 large fish did not indicate an allowable catch and the lower bound of the BEG would not be met even if harvest of Taku River king salmon was eliminated. To reduce harvest, sport fishing for king salmon in District 11, Sections 12 B and 15 C was closed from April 15 to June 14 (EO 1-KS-E-6-17).

## **SUBSISTENCE FISHERIES**

The territory of the Chilkat (Klukwan) and Chilkoot (Haines) Tlingit historically included most of the Chilkat River and Chilkat Inlet area. Permanent seasonal camps were established at various spots along the entire length of the river and on the shores of the inlet, and these were used for fishing and processing salmon at various times throughout the season. Gear used

historically included spears, harpoons, gaffs, weirs, basket traps, and, in later years, nets (Turek 2009). Residents of Klukwan have been the main subsistence fishers on the Chilkat River above river mile 7.

## **PAST SUBSISTENCE FISHERIES MANAGEMENT ACTIONS**

The board has established a customary and traditional use finding of 7,174–10,414 salmon as the amount reasonably necessary for subsistence (ANS) in District 15, which includes all waters of the Chilkat River and Chilkat Inlet north of the latitude of Glacier Point (Figure 8), as well as the Chilkoot River, Lutak Inlet, and Chilkoot Inlet north of the latitude of Battery Point, excluding waters of Taiya Inlet north of the latitude of the tip of Taiya Point (5 AAC 01.716). There are no customary and traditional use findings for salmon near the King Salmon River, and no subsistence or personal use fisheries target this stock. Below is an outline of significant changes to subsistence fisheries from 2012 to 2017 that have affected harvest and escapement of king salmon returning to the Chilkat River:

### **2012:**

- Reduced time and area open to subsistence fishing in Chilkat Inlet and in the Chilkat River during the first 5 weeks of the season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan*.

### **2013:**

- Reduced time and area open to subsistence fishing in Chilkat Inlet and in the Chilkat River during the first 5 weeks of the season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan*.

### **2014:**

- Reduced time and area open to subsistence fishing in Chilkat Inlet and in the Chilkat River during the first 5 weeks of the season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan*.

### **2015:**

- Reduced time and area to subsistence fishing in Chilkat Inlet and in the Chilkat River during the first 5 weeks of the season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan*.

### **2016:**

- Reduced time and area open to subsistence fishing in Chilkat Inlet and in the Chilkat River during the first 5 weeks of the season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan*.

### **2017:**

- Reduced time and area open to subsistence fishing in Chilkat Inlet and in the Chilkat River during the first 5 weeks of the season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan*.
- Limited the time allowed to subsistence fish in the Chilkat River to 4 days/week between June 15 and July 31.
- Implemented non-retention of live king salmon in the subsistence fishery.

## **ACTION PLAN MANAGEMENT OPTIONS FOR ADDRESSING STOCK OF CONCERN**

In December 2017, the department developed a draft action plan for consideration by the board and public that included management options to reduce harvest of Chilkat River and King Salmon River king salmon in each of the commercial, sport, and subsistence fisheries (Appendix A). The draft plan presented 3 options for the commercial fisheries: (a) maintain status quo, (b) reduce hours of commercial fishing periods, or (c) reduce the number of commercial fishing periods. The draft plan presented 3 options for the sport fishery: (a) maintain status quo with modification (b) reduce the time and area open to king salmon sport fishing and reduce the bag limits during the remainder of the year, and (c) further reduce time and area open to king salmon sport fishing. Finally, the draft plan presented 3 options for the subsistence fishery: (a) maintain the status quo, (b) reduce time and area, and (c) further reduce time and area. The board reviewed these options at the January 2018 Southeast and Yakutat regulatory meeting and adopted measures outlined below.

**Guiding principles in implementing these action plans:** Notwithstanding auxiliary preseason information, elements of this king salmon action plan and selection of the various inseason management measures will be formulated based upon preseason run forecasts for the Chilkat, Unuk, Taku, Stikine, and Situk rivers and will be evaluated relative to the established escapement goals for these king salmon stocks. Further changes to management measures will be based on inseason run assessment information as it becomes available and be balanced with requirements and provisions of the Pacific Salmon Treaty and allowable harvests.

### **ACTION PLAN GOAL**

The goal of this plan is to rebuild the Chilkat and King Salmon river king salmon runs to consistently achieve escapements within their escapement goal ranges and to consistently provide reasonable fishing opportunity at more historical levels for commercial, sport, and subsistence fisheries.

Management actions and the benefits and detriments described below are intended to reflect only those related to the goal of rebuilding king salmon runs to levels that achieve the current BEGs for Chilkat and King Salmon rivers. The King Salmon River king salmon stock is a unique, small island population that is rarely encountered in genetic sampling of fishery harvest. Fishery samples from this stock are combined with other inside-rearing stocks such as the Chilkat River for reporting purposes. Conservative management actions taken to reduce harvest to protect Chilkat, Taku, and Stikine river stocks are assumed to reduce harvest of King Salmon River king salmon, due to the close proximity of these stocks and common migration corridors and rearing areas. The best available information indicates that low marine survival is probably the primary factor causing the recent low king salmon runs throughout SEAK.

### **ACTION #1: COMMERCIAL FISHERIES**

**Objective:** Reduce the commercial harvest of Chilkat River and King Salmon River king salmon.

**Background:** Chilkat River king salmon start returning to spawn near the beginning of the commercial drift gillnet fishery season and migrate through Lynn Canal during the same time as Chilkoot Lake, Chilkat River mainstem, and Chilkat Lake sockeye salmon and Boat Harbor

hatchery chum salmon (*O. keta*), which are the primary targets of the District 15 drift gillnet fishery. Management decisions that potentially result in the reduction of commercially-caught Chilkat River king salmon in the fishery include limiting area, fishing time, time of day, and gillnet mesh size. Limiting the area open to the drift gillnet fishery in northern Chilkat Inlet maximizes escapement potential for king salmon that have migrated through northern Lynn Canal. Limiting the duration of weekly openings in both upper and lower Lynn Canal allows for maximizing the number of days that fishing gear is not in the water, resulting in a decrease in harvest of all salmon. Night closures minimize the catch of smaller, feeder king salmon that rear in Lynn Canal and exhibit diurnal vertical migration behavior. Restricting maximum allowable mesh size can reduce the catch of larger mature king salmon while still allowing the harvest of sockeye and chum salmon.

Rearing areas and returning adult migration routes and run timing of King Salmon River king salmon are unknown. Potential area restrictions in the District 11 commercial drift gillnet areas designed to minimize the harvest of Taku River king salmon should also reduce the incidental harvest of King Salmon River king salmon. Non-retention in the purse seine fisheries throughout the region will also assist in minimizing commercial fishery impacts on King Salmon River king salmon.

### **Option A—Commercial Troll Fishery**

#### **Specific Action to Implement the Objective:**

- Using EO authority, close the waters of Section 15-A in Lynn Canal/Chilkat Inlet north of the latitude of Sherman Rock to commercial trolling from April 15 to December 31; close the waters of Sections 15-C and 12-B to troll gear April 15–30; Sections 15-C and 12-B closed to spring troll fisheries during May and June.
- Using EO authority, close the waters of Section 11-B south of the latitude of Grave Point Light, Section 11-C, and Section 11-D, to troll gear April 1–30; waters of District 11 closed to spring troll fisheries during May and June.
- Using EO authority, delay initial opening dates from May 1 to June 15 for Homeshore, South Passage, and Cross Sound spring troll fisheries.
- Using EO authority, reduce initial opening lengths during SW 18–22 for Point Sophia and Hawk Inlet spring troll fisheries from 7 days/week to 3 days/week in May.
- Using EO authority, limit Port Althorp spring troll fishery to opening lengths of 2 days/week through SW 22, and limit Lisianski Inlet fishery to opening lengths of 3 days/week through SW 22.
- Using EO authority, reduce initial opening length of Chatham Strait spring troll fishery from 7 days/week to 4 days/week during May, and keep opening lengths during June at less than 7 days/week.
- Using EO authority, close Tebenkof Bay spring troll fishery.
- Using EO authority, may close regionwide spring troll fishery from May 29 to June 14.

**Benefits:** These management actions can be accomplished through EO authority and the user groups are accustomed to the actions. The restrictions are directly related to historical coded-wire tag and genetic stock identification data. The troll fisheries impacted by these restrictions experience minimal disruption. These actions will reduce time and area of the gillnet fishery during the first 5 weeks to reduce king salmon harvest.

**Detriments:** Despite initiating troll management actions during 2017, the Chilkat River king salmon escapement goal was not achieved.

### **Option B–Commercial Net Fisheries**

#### **Specific Action to Implement the Objective:**

- Using EO authority, reduce the open area in northern Chilkat Inlet during the first 5 weeks of the District 15 drift gillnet season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan* by closing the area north of Eldred Rock Lighthouse.
- Using EO authority, close western half of Section 15-A in first through fifth week of the District 15 drift gillnet fishery.
- Using EO authority, impose 6-inch maximum mesh restriction in Section 15-A in the first through third weeks of the District 15 drift gillnet fishery.
- Using EO authority, impose night closures between 10:00 p.m. and 4:00 a.m. in first through fourth week of the season in Section 15-A and Section 15-C of the District 15 drift gillnet fishery.
- Using EO authority, limit time and area open to 2 days/week in the “postage stamp” area only in the first week of the season in Section 15-C in the District 15 drift gillnet fishery.
- Using EO authority limit time and area open to 2 days/week in the area south of the latitude of Vanderbilt Reef in the second week of the season in Section of 15-C in the District 15 drift gillnet fishery.
- Using EO authority, impose 6-inch maximum mesh restriction in first and second weeks of the season in Section 15-C in the District 15 drift gillnet fishery.
- By regulation, the inside area of Boat Harbor THA (west of marker) is open 7 days/week in first through fourth week of the season.
- Using EO authority, open outside of Boat Harbor THA only 2 days/week during first and second weeks of the season.
- Using EO authority, impose 6-inch maximum mesh restriction in first and second week in outside area of Boat Harbor THA.
- Using EO authority, impose non-retention of king salmon over 28 inches in regional purse seine fisheries.
- Using EO authority, reduce area open in Taku Inlet for the first 5 weeks of the District 11 drift gillnet fishery; close Taku Inlet north and west of a line from Point Greely to Cove Point for first week and north of Point Greely, Cooper Point or Jaw Point for second through fifth week of the season.
- Using EO authority, do not open Section 11-C to drift gillnetting.
- Using EO authority, impose night closures between 10:00 p.m. and 4:00 a.m. in Subdistrict 111-31, and Section 11-C if open.
- Using EO authority, impose 6-inch maximum mesh size restriction for the first 3 weeks of the District 11 drift gillnet fishery.

**Benefits:** These management actions can be accomplished through EO authority. The restrictions are directly related to historical coded-wire tag and genetic stock identification data. These management actions reduce time and area of the gillnet fishery during the first 5 weeks to reduce king salmon harvest.



**Detriments:** Mesh size restrictions in Section 15-C may decrease the catch of large female hatchery chum salmon returning to the Boat Harbor THA. A reduction of time and area in Section 15-A will reduce sockeye salmon harvest.

## **ACTION #2: SPORT FISHERY**

**Objective: Reduce the sport harvest of Chilkat River and King Salmon River king salmon.**

**Background:** The Division of Sport Fish used Commissioner’s EO authority to restrict time and area, reduce bag and possession limits and close areas since 2015 to reduce Chilkat River and Taku River (and thus, by default, the King Salmon River) king salmon harvest. Despite closures to the terminal sport fisheries near the Chilkat and Taku rivers in 2016 and 2017, escapements failed to meet the escapement goals in the Chilkat and King Salmon rivers (Tables 1 and 2). In 2017, the most restrictive year in the Haines management area, the estimated sport fishery harvest of Chilkat River king salmon in all SEAK sport fisheries was only 44 fish, as estimated from coded-wire tag recoveries. Coded-wire tag recoveries indicate that a significant portion of Chilkat River king salmon rear primarily in the inside waters of northern SEAK, suggesting that management measures should be focused in those waters. Similarly, King Salmon River stocks also appear to rear in inside waters. Thus, restrictive management measures implemented to conserve Chilkat and Taku river stocks should minimize harvest of both Chilkat and King Salmon river king salmon. Based on coded-wire tag recoveries in the District 11 sport fisheries, about 90% of the Taku River king salmon harvest occurred from April 15 to June 30 during 2000–2017, and about 80% or more of the escapement had passed the Taku River fish wheels by June 15. Conservative management actions around Juneau in the spring of 2017 reduced the District 11 sport harvest of Taku River (and potentially, Chilkat and King Salmon river) king salmon to less than 10% (34 fish) of the 2012–2016 average (548 fish). It is assumed that spring and early summer closures around the King Salmon River estuary (Section 11D) would also provide appreciable protection for King Salmon River stocks in their terminal area.

### **Option A—Status Quo with Modification**

Use department EO authority to implement conservative king salmon regulations in Districts 11, 12, and 15 that are essentially identical to those implemented in 2017, but with a longer closed period in Section 11-D. Regional king salmon regulations established under the *Southeast Alaska King Salmon Management Plan* would apply in the restricted areas during the remainder of the year when king salmon fishing and king salmon retention are allowed. The proposed closure boundaries for Option A in the respective districts and sections for the management options discussed below are depicted in Figure 9.

**Specific Action to Implement the Objective:** Implement closures inseason in the Haines, Skagway, and Juneau areas as follows:

- **District 15:** Section 15-A, April 15–December 31, no retention of king salmon; Sections 15-B and 15-C, April 15–June 14, no retention of king salmon. Chilkat Inlet, north of Seduction Point, April 15–June 30, closed to king salmon fishing (5 AAC 33.384 (e)(2)(B)(i)).
- **District 12:** Section 12-B, April 15–June 14, no retention of king salmon.
- **District 11:** Sections 11-A, 11-B and 11-C, April 15–June 14, no retention of king salmon; Section 11-D closed to king salmon fishing April 15–June 30.

- **THA near Juneau:** If surplus hatchery king salmon return to the DIPAC Hatchery in excess of broodstock needs, the designated sport THA near Juneau will be liberalized with a bag and possession limit of 2 king salmon any size, no annual limit June 15–August 31.

**Benefits:** These management actions can be accomplished through EO authority and allow the department the ability to return to more liberal fisheries if king salmon runs rebuild prior to the next board meeting. This option will reduce harvest of king salmon in the Juneau, Haines, and Skagway areas, while providing limited sport fishing opportunity to harvest surplus hatchery king salmon returning to the DIPAC Hatchery.

**Detriments:** Chilkat River and King Salmon River king salmon rear year-round in inside waters of northern SEAK. Rearing fish will be vulnerable to harvest when area closures expire. More restrictive options reduce sport fishing opportunity and have economic impacts on the charter fleet.

### **ACTION #3: SUBSISTENCE FISHERY**

**Objective: Reduce the subsistence harvest of Chilkat River and King Salmon River king salmon.**

**Background:** Subsistence fishing in District 15 begins by regulation on June 1 in the Chilkat River and on the Saturday before the first commercial drift gillnet opening (third Sunday of June) in Chilkat Inlet. The subsistence fishery targets early run sockeye salmon, and king salmon are harvested incidentally. Management actions to minimize Chilkat River king salmon retention include time and area restrictions in both the Chilkat River and Chilkat Inlet.

#### **Option A–Status Quo**

**Specific Action to Implement the Objective:** Implement same management measures used in 2017.

- Using EO authority, reduce time and area open to subsistence fishing in Chilkat Inlet and in the Chilkat River during the first 5 weeks of the season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan*.
- Using EO authority, open entire Chilkat River to subsistence fishing June 1–14.
- Using EO authority, close Chilkat River to subsistence fishing June 15–July 31, except for the portion of the river between Haines Highway mile 19 and the Wells Bridge; this section open only 4 days/week.
- Using EO authority, close Chilkat Inlet to subsistence fishing until July 22.

**Benefits:** Increase king salmon conservation by decreasing area and duration of subsistence fishing in the Chilkat River and in Chilkat Inlet.

**Detriments:** Potentially incur incidental king salmon harvest when Chilkat River is open to subsistence fishing 7 days/week from June 1 to June 14.

## **CONDITIONS FOR REDUCING MANAGEMENT RESTRICTIONS OR DELISTING A STOCK OF CONCERN**

Criteria for removing the stock of concern designation or reducing management restrictions include:

1. If the lower bound of the biological escapement goal range is met or exceeded in 3 consecutive years or is met in 4 out of 6 consecutive years, the department will recommend removing Chilkat and/or King Salmon River king salmon as a stock of management concern at the first Southeast and Yakutat board meeting after this condition is met.
2. Management measures could be relaxed in specific areas if updated stock composition and harvest data indicates areas where restrictions are no longer needed to ensure the escapement goal is met.
3. In the event that 2 consecutive years of escapements are near the upper bound of the escapement goal range or above the range, management restrictions may be relaxed or set aside using EO authority.

Stock status, action plan performance (including information on harvest rate, distribution, and timing in commercial fisheries), and escapement goal review will be updated in a report to the board at the 2021 Southeast and Yakutat meeting.

## **RESEARCH PLAN**

### **Past and Current Research Projects for the Chilkat River**

The department has conducted extensive research and monitoring projects on the Chilkat River related to king salmon. From 1975 to 1992, aerial survey counts were conducted on 2 small clear-water tributaries. Radio telemetry studies conducted in 1991 and 1992, however, showed that survey counts were not representative of escapement in the entire drainage and the surveys were discontinued. Escapement estimates of large adults since 1991 are based on mark-recapture studies that provide precise estimates, with CV's averaging 14% since inception. King salmon smolt coded-wire tagging began in 1999 with a relatively high mark fraction averaging 8–10%. The Chilkat River king salmon stock is an escapement indicator stock and an exploitation rate indicator stock recognized by the PSC and the CTC. Pacific Salmon Treaty obligations include producing the full suite of stock assessment data, including smolt production, overwinter and marine survival, harvest and exploitation rates, estimates of escapement, and escapement age-sex-length composition.

A multitude of research programs have been conducted to gather detailed information about Chilkat River king salmon stocks:

1. The Chilkat River king salmon stock is part of the coast wide king salmon genetic baseline (Seeb et al. 2007); however, identifying wild Chilkat River king salmon is convoluted because the Chilkat River stock has been used as a brood stock for hatchery releases in the upper Lynn Canal.
2. Mark-recapture studies, 1991 to present (Elliott and Power 2017a).
3. Coded-wire tag studies, 1988–1990, 1999 to present (Elliott and Power 2017b).
4. Age, sex, and length composition of escapements, 1991 to present (Elliott and Power 2017a).

5. Marine Harvest Sampling: The department annually samples marine harvest from the commercial and sport fisheries throughout SEAK where Chilkat River king salmon stocks are encountered. These programs include varying study designs to estimate biological parameters associated with age, sex, length, fishing effort, and catch and harvest. Inspection of adipose fin clips, which identify coded-wire-tagged king salmon, is a key component of these programs, allowing estimation of harvest (Buettner et al. 2017; Jaenicke et al. 2015 and 2017).
6. The department has conducted subsistence research in the communities of Klukwan and Haines and published non-commercial harvest, use and participation data for Klukwan (1996) and Haines (Sill and Koster 2017).

### **Past and Current Research Projects for the King Salmon River**

The department has conducted annual assessments of king salmon escapement on the King Salmon River since 1971, which included foot or helicopter counts from 1971 to 1982, adult weir counts from 1983 to 1992, foot and helicopter counts from 1993 to 2011, and finally standardized foot surveys since 2012.

A multitude of research programs have been conducted to gather detailed information about the King Salmon River king salmon stock:

1. The King Salmon River king salmon stock is part of the genetic baseline (Seeb et al. 2007).
2. Standardized aerial and foot escapement surveys since the 1970s (Richards and Frost 2017).
3. Weir counts from 1983 to 1992 (McPherson and Clark 2001).
4. Age, sex, and length composition, coded wire tag and escapement sampling, 1993 to present (Richards and Frost 2017).
5. Marine Harvest Sampling: The current marine harvest sampling of commercial and sport catch is not designed to apportion or account for King Salmon River king salmon because this stock is not coded-wire-tagged (Buettner et al. 2017; Jaenicke et al. 2015 and 2017).

## **ACKNOWLEDGEMENTS**

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## **TABLES**

Table 1.–Chilkat River large king salmon escapement and harvest rate estimates, 2007–2017.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 <sup>d</sup>	5-year Average <sup>e</sup>	10-year Average <sup>f</sup>
Escapement <sup>a</sup>	1,438	2,882	4,406	1,797	2,674	1,723	1,719	1,529	2,452	1,380	1,173	1,761	2,200
Harvest	713	870	489	1,111	978	884	393	962	547	157	152	589	710
Total Run	2,151	3,752	4,895	2,908	3,652	2,607	2,112	2,491	2,999	1,537	1,325	2,349	2,910
Harvest Rate:													
Troll Winter	0.00	0.00	0.00	0.05	0.03	0.04	0.00	0.00	0.00	0.02	0.04	0.01	0.02
Troll Spring	0.11	0.07	0.05	0.04	0.03	0.06	0.02	0.00	0.02	0.00	0.03	0.01	0.03
Troll Summer R1 <sup>b</sup>	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01
Troll Summer R2 <sup>b</sup>	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Troll All	0.11	0.13	0.05	0.09	0.07	0.10	0.02	0.00	0.04	0.02	0.07	0.03	0.06
Sport Early <sup>c</sup>	0.12	0.00	0.02	0.10	0.06	0.07	0.06	0.12	0.04	0.00	0.03	0.05	0.05
Sport Late <sup>c</sup>	0.01	0.01	0.01	0.00	0.01	0.02	0.00	0.01	0.00	0.07	0.00	0.02	0.01
Sport All	0.13	0.01	0.03	0.10	0.06	0.09	0.06	0.12	0.04	0.07	0.03	0.06	0.06
Net All	0.09	0.09	0.02	0.19	0.14	0.14	0.10	0.26	0.11	0.01	0.01	0.10	0.11
U.S. All	0.33	0.23	0.10	0.38	0.27	0.34	0.19	0.39	0.18	0.10	0.11	0.19	0.23
Canada All	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.33	0.23	0.10	0.38	0.27	0.34	0.19	0.39	0.18	0.10	0.11	0.19	0.23

<sup>a</sup> The BEG range for the Chilkat River is 1,750–3,500 large adult king salmon. Gray cells in this row indicate escapements below the lower bound of the BEG for that particular year.

<sup>b</sup> Troll Summer retention period 1 (R1) occurs in early July; Troll Summer R2 occurs from August through September.

<sup>c</sup> Sport Early occurs April through July of the current year; Sport Late occurs in August of the prior year.

<sup>d</sup> Preliminary estimate.

<sup>e</sup> 2013 to 2017.

<sup>f</sup> 2008 to 2017.



Table 2.—King Salmon River large king salmon escapement estimates, 2007–2017.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 <sup>b</sup>	5-year Average <sup>c</sup>	10-year Average <sup>d</sup>
Escapement <sup>a</sup>	181	120	109	158	192	155	94	68	50	149	85	89	118

<sup>a</sup> The BEG range for the King Salmon River is 120–240 large adult king salmon. Gray cells in this row indicate escapements below the lower bound of the BEG for that particular year.

<sup>b</sup> Preliminary estimate.

<sup>c</sup> 2013 to 2017.

<sup>d</sup> 2008 to 2017.



## **FIGURES**

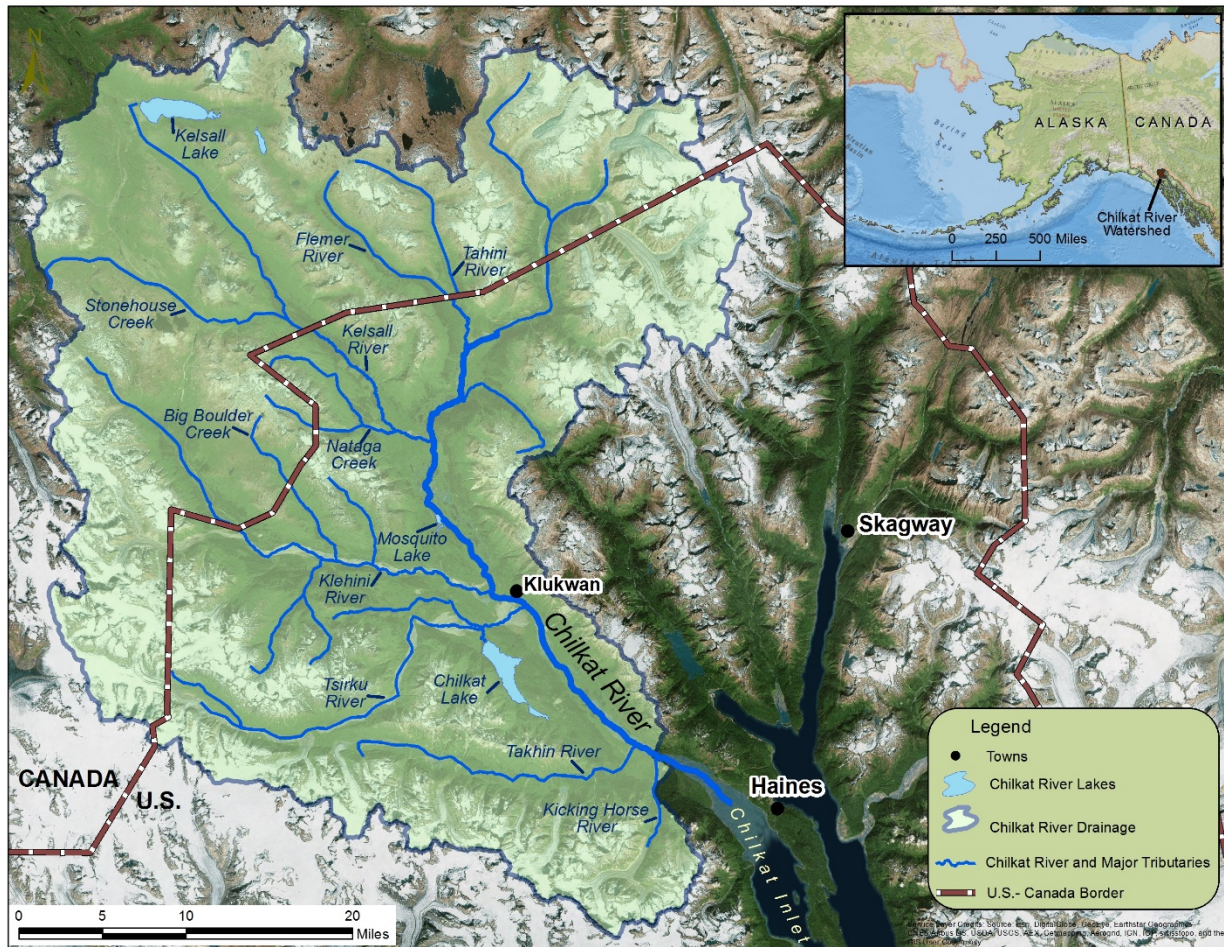


Figure 1.—Map of the Chilkat River drainage and primary king salmon spawning tributaries, including the Kelsall, Tahini, and Klehini rivers.



Figure 2.—Map of the King Salmon River watershed.



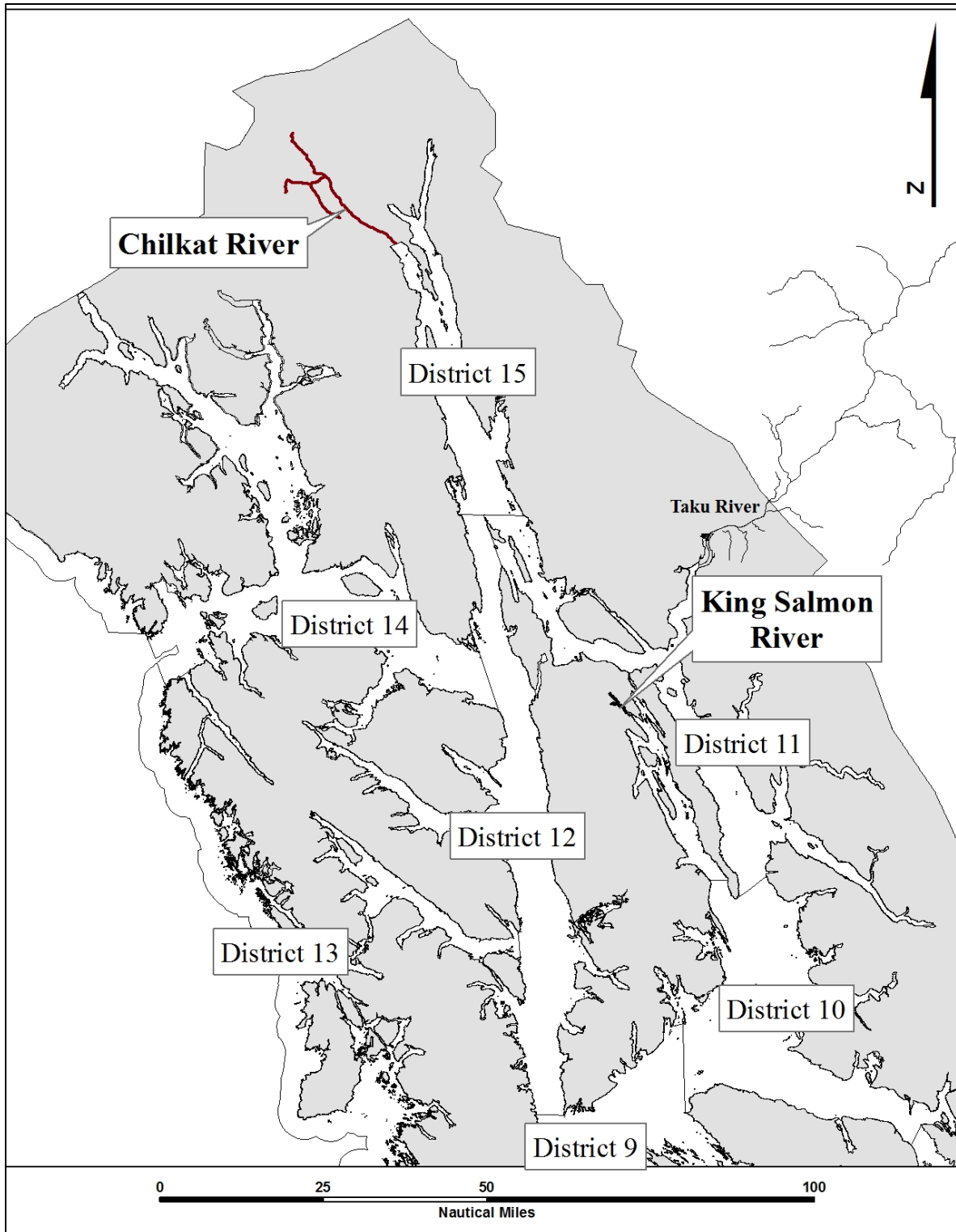


Figure 3.—Map showing the locations of Chilkat River, King Salmon River, and nearby fishing districts.

## District 111 Drift Gillnet Areas

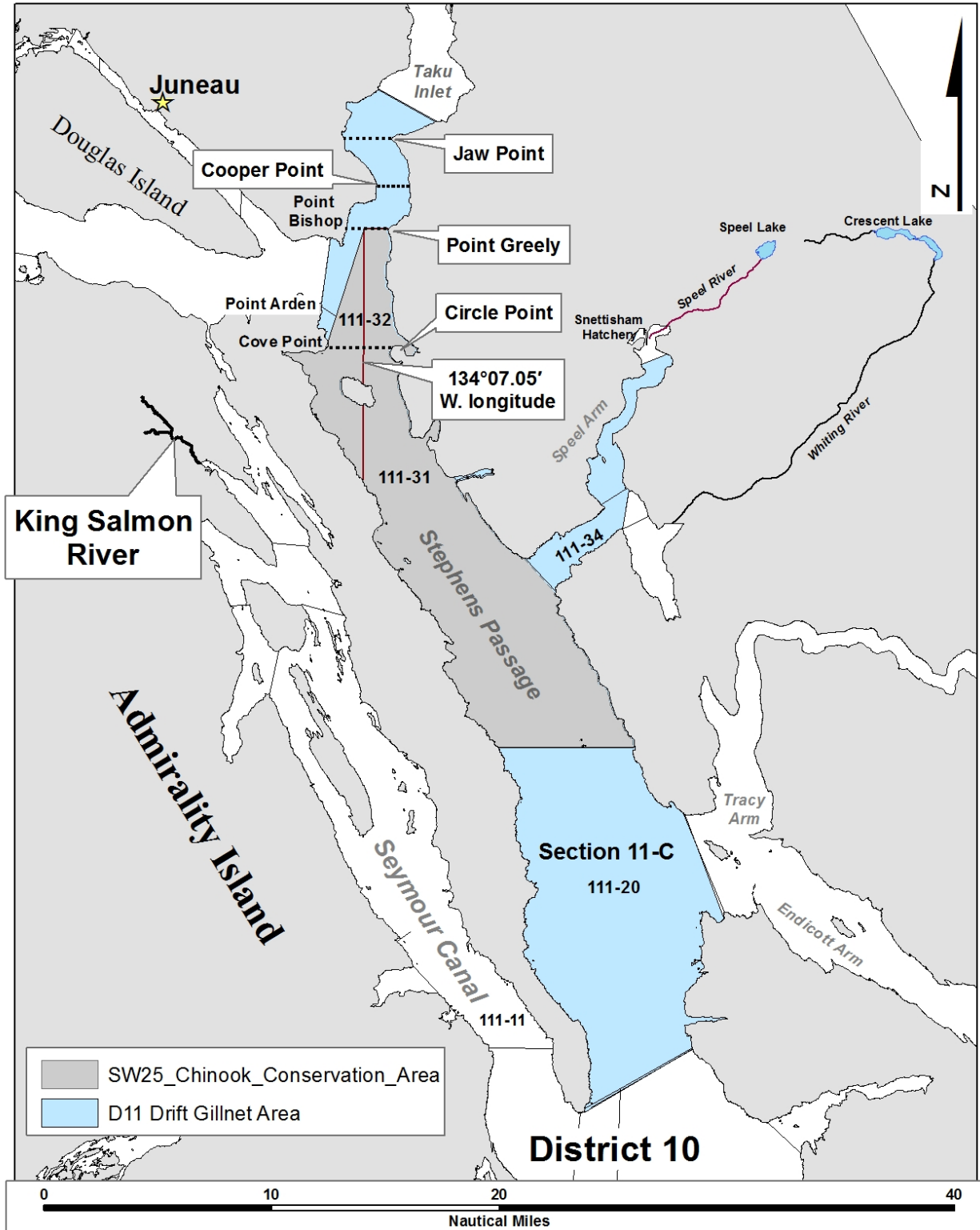


Figure 4.—Map of District 11 commercial drift gillnet fishing areas.

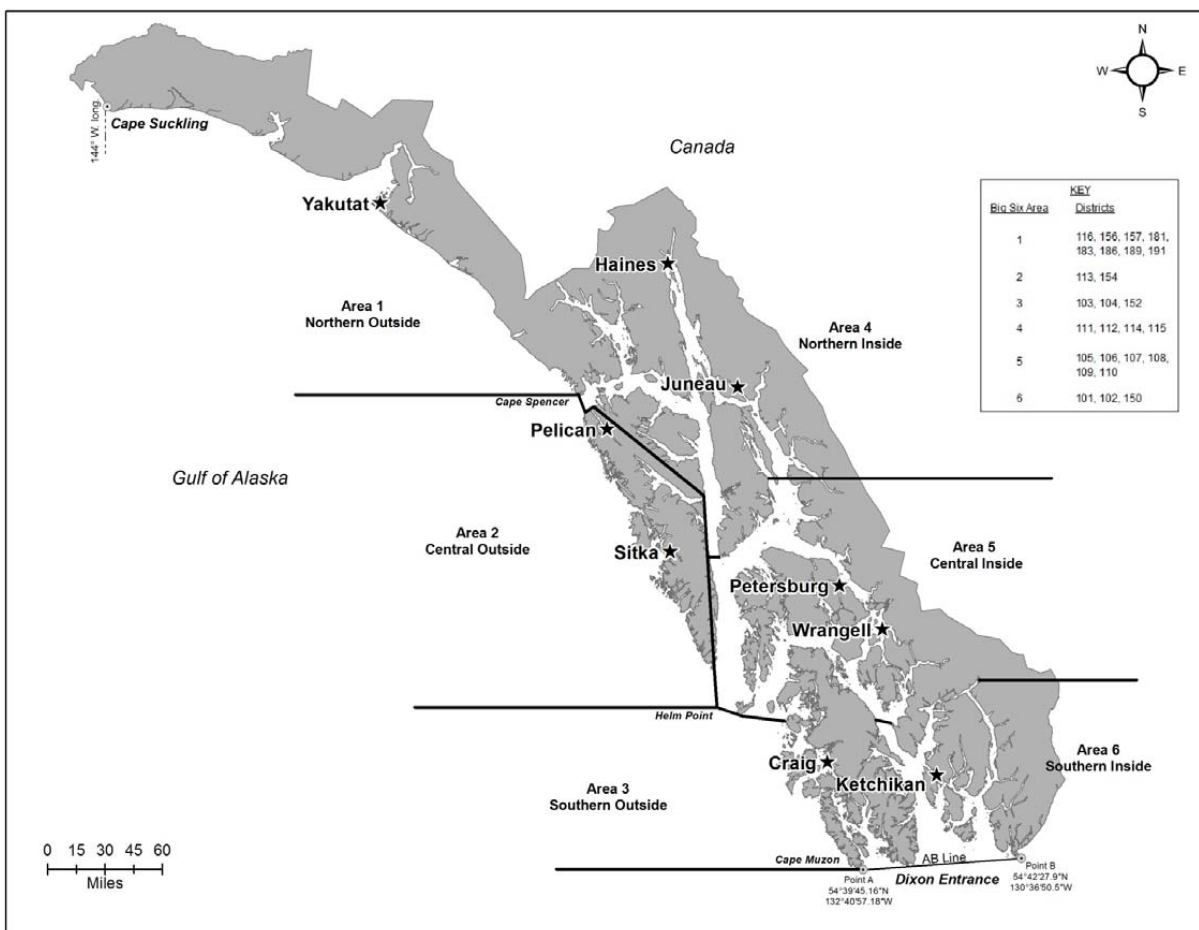


Figure 5.—Map of Southeast Alaska commercial troll fishing and Big Six management areas, Cape Suckling to Dixon Entrance.



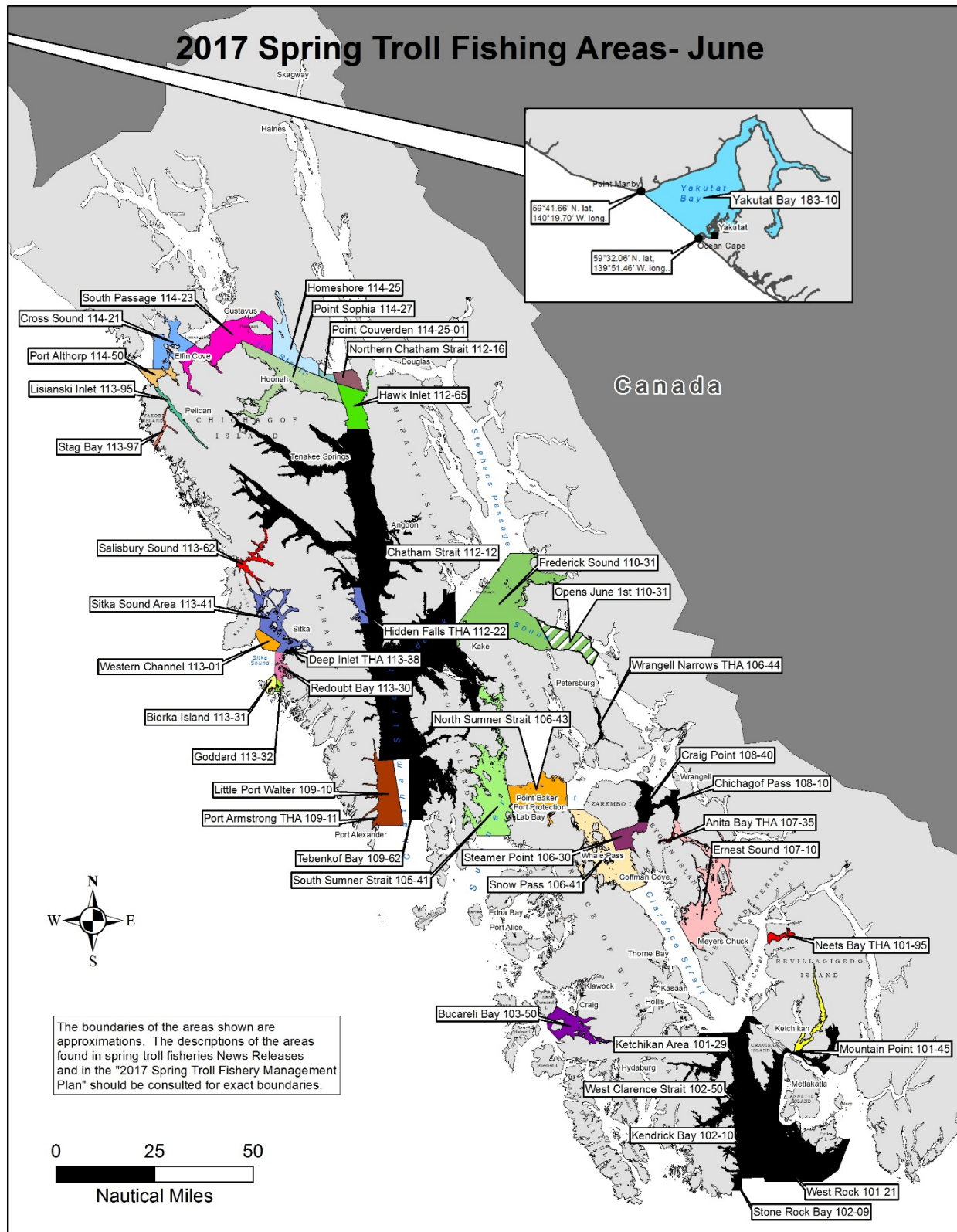


Figure 6.—Map of commercial spring troll fishing areas in Southeast Alaska.

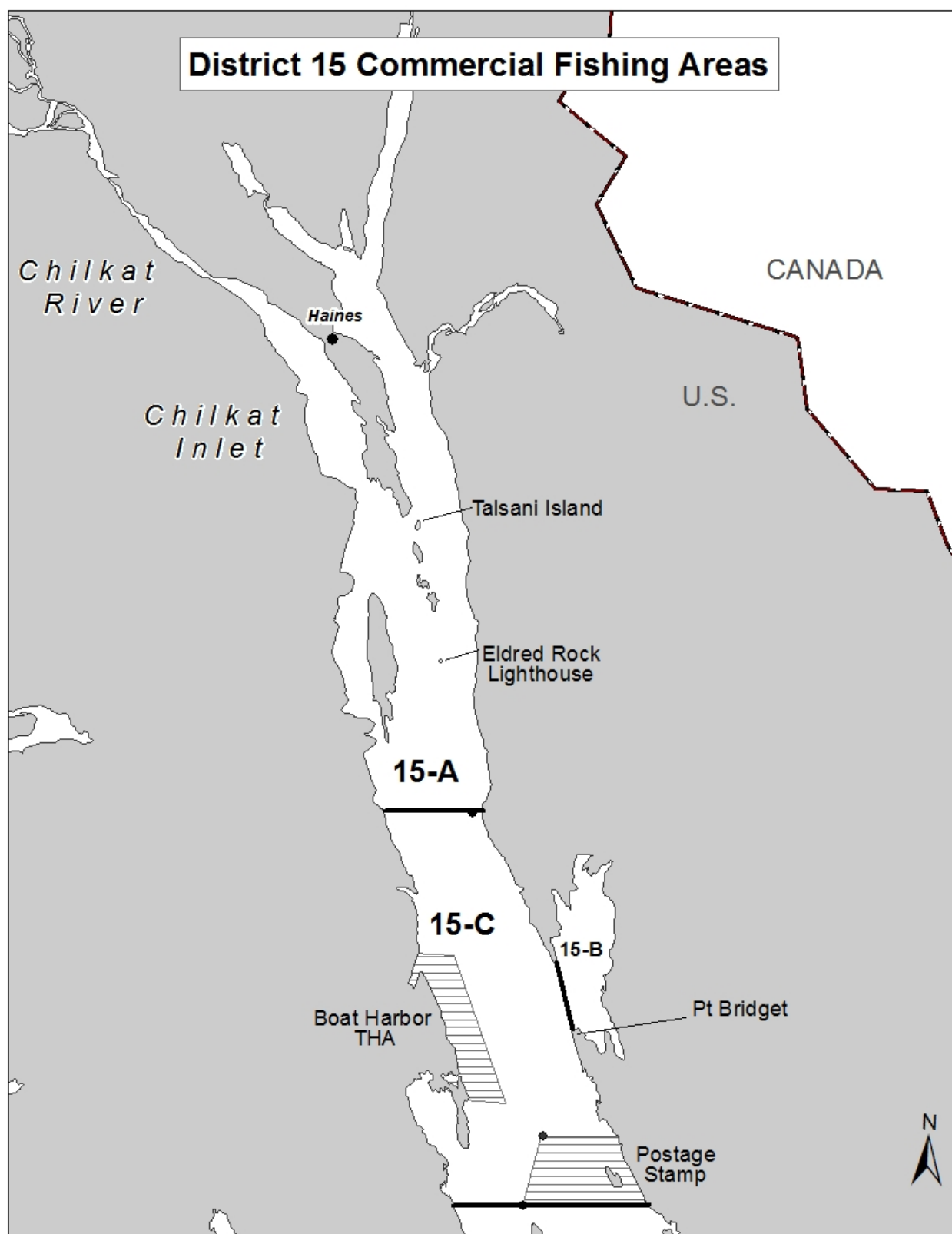


Figure 7.—Map of District 15 commercial drift gillnet fishing areas.

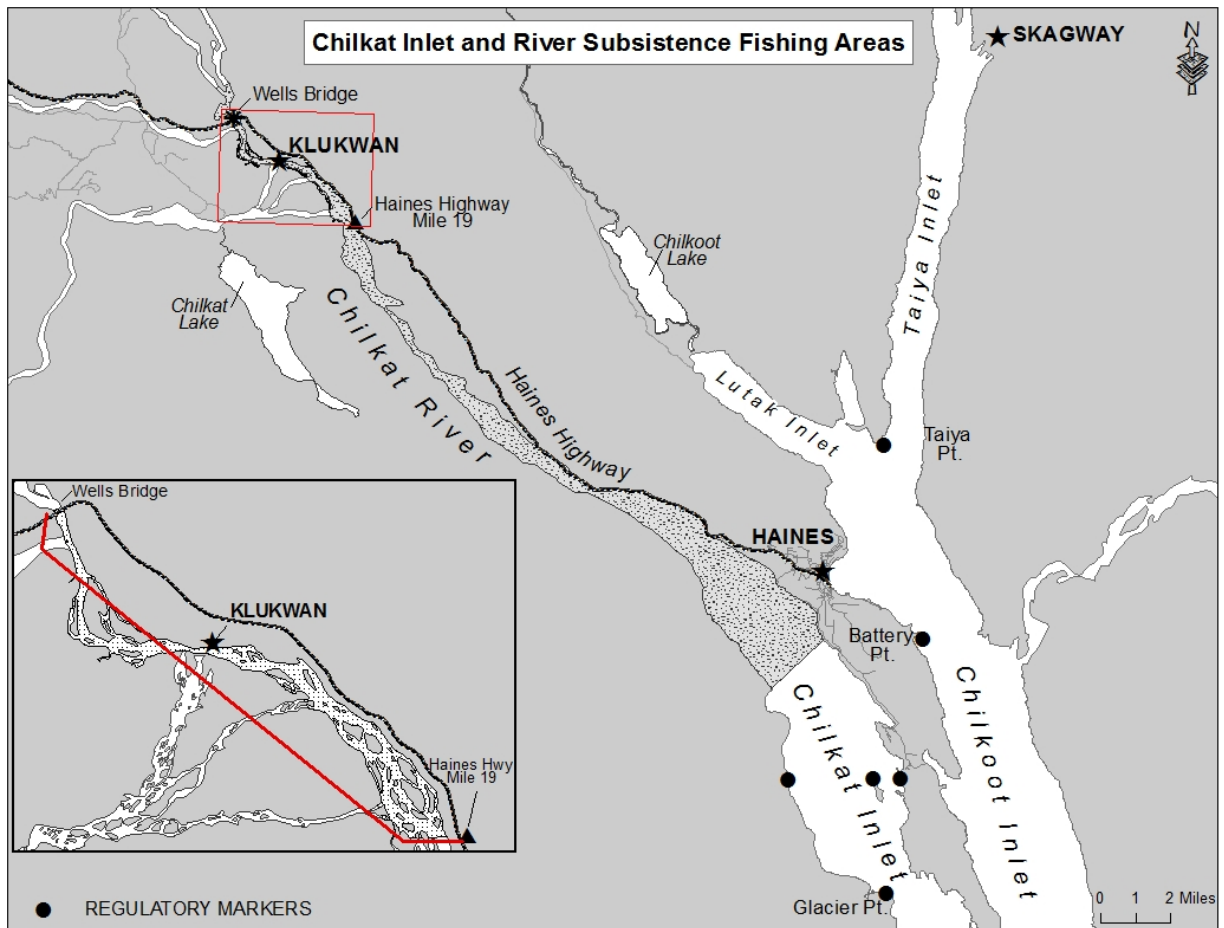


Figure 8.—Map of the Chilkat River and Inlet and current subsistence fishing areas (shaded area).

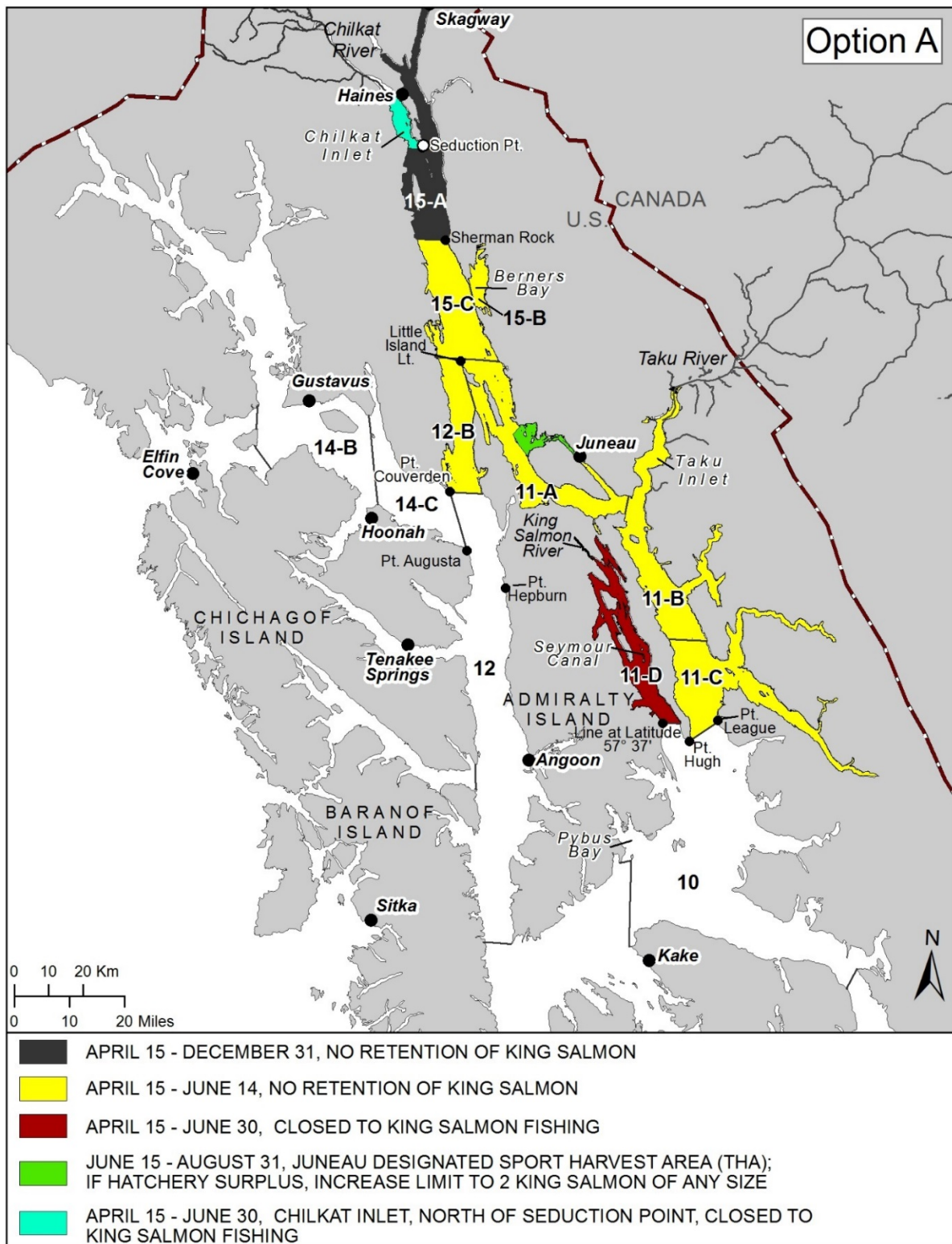


Figure 9.—Map depicting sport fishery management measures to implement Chilkat and King salmon rivers king salmon action plan Option A with modification.

## **APPENDICES**

Appendix A1.—Options to reduce harvest of Chilkat River and King Salmon River king salmon in the commercial fisheries. Presented to the board and public for consideration at the January 2018 Southeast and Yakutat regulatory meeting.

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## **ACTION #1—COMMERCIAL FISHERY**

**Objective: Reduce the commercial harvest of Chilkat River and King Salmon River king salmon.**

**Background:** Chilkat River king salmon start returning to spawn near the beginning of the gillnet fishery season and are migrating through Lynn Canal during the same time as Chilkoot Lake, Chilkat River mainstem, and Chilkat Lake sockeye salmon and Boat Harbor enhanced chum salmon, which are the primary targets of the District 15 gillnet fishery. Management decisions that potentially result in the reduction of commercially-caught Chilkat River king salmon in the fishery include limiting area, duration, time of day, and gillnet mesh size allowed. Limiting the area open to the gillnet fishery in northern Chilkat Inlet maximizes escapement potential for king salmon that have migrated through northern Lynn Canal. Limiting the duration of weekly openings in both upper and lower Lynn Canal allows for the maximum number of days that fishing gear is not in the water, resulting in a decrease in harvest of all salmon. Night closures minimize the catch of smaller, feeder king salmon that are rearing in Lynn Canal and have diurnal vertical migration behavior. Restricting maximum allowable mesh size can reduce the catch of mature king salmon while still allowing the harvest of sockeye and chum salmon.

Rearing areas and returning adult migration routes and timing for the King Salmon River king salmon are unknown. Restrictions in the District 11 drift gillnet fishery to conserve Taku River king salmon will help minimize impacts on the stock. Non-retention in the purse seine fisheries throughout the region will also assist in minimizing commercial fishery impacts on King Salmon River king salmon. Potential area restrictions in the District 11 commercial drift gillnet areas are designed to minimize the harvest of Taku River king salmon, which should also reduce the incidental harvest of King Salmon River king salmon.

### **Option A. Status Quo.**

Specific Action to Implement the Objective: Same management decisions as 2017.

#### **1. Net Fisheries:**

- Reduce the open area in northern Chilkat Inlet during the first 5 weeks of the season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan* by closing area north of the southernmost tip of Talsani Island.
- Impose 6-inch maximum mesh restriction in first through third week in Section 15-A.
- Close western half of Section 15-A in first through fifth week in Section 15-A.
- Impose night closures between 10:00 p.m. and 4:00 a.m. in first through third week in Section 15-A.
- Impose 6-inch maximum mesh restriction in first and second weeks in Section 15-C.
- Limit time and area open to 2 days/week south of the latitude of Pt. Bridget with any extensions limited to the “postage stamp” in first and second weeks in Section 15-C.
- Open only the inside area of Boat Harbor THA (west of marker) 7 days/week in first through fourth week.

- Open outside area of Boat Harbor THA only within 1 mile of western shoreline for first and second week.
- Impose 6-inch maximum mesh restriction in first and second week in outside area of Boat Harbor THA.
- Impose non-retention of king salmon over 28 inches in regional purse seine fisheries.
- Reduce area open in Taku Inlet for the first 4 weeks of the District 11 drift gillnet fishery; close Taku Inlet north and west of a line from Point Greely to Cove Point for first week and north of Jaw Point for second through fourth week.
- Impose 6-inch maximum mesh size restriction for the first 2 weeks of the District 11 drift gillnet fishery.

## 2. *Troll Fisheries:*

- Close the waters of Section 15-A in Lynn Canal/Chilkat Inlet north of the latitude of Sherman Rock to commercial trolling from April 15 to December 31; close the waters of Sections 15-C and 12-B to troll gear April 15 to 30; close the waters of 15-C and 12-B to spring troll fisheries, remaining closed during May and June.
- Close the waters of Section 11-B south of the latitude of Grave Point Light, 11-C, and 11D, to troll gear April 1–30; these waters closed to spring troll fisheries, remaining closed during May and June.
- Delay initial opening dates from May 1 to June 15 for Homeshore, South Passage, and Cross Sound spring troll fisheries.
- Reduce initial opening lengths during SW 18–22 for Point Sophia and Hawk Inlet spring troll fisheries. Both areas having initial opening lengths of 7 days/week but reduced to 3 days/week in May.
- Limit Port Althorp spring troll fishery to opening lengths of 2 days/week through SW 22, while Lisianski Inlet fishery has limited openings of 3 days/week through SW 22; both fisheries increased to 4–5 days/week during May.
- Reduce initial opening length of Chatham Strait spring troll fishery from 7 to 4 days during May and keep opening lengths during June at 7 days/week.
- Close Tebenkof Bay spring troll fishery.
- Close regionwide spring troll fishery from May 29 to June 14.

**Benefits:** These management actions can be accomplished through EO authority and the user groups are accustomed to the actions. The restrictions are directly related to historical coded-wire tag and genetic stock identification data. The fisheries impacted by these restrictions experience minimal disruption. These actions will reduce time and area of the gillnet fishery during the first 5 weeks to reduce king salmon harvest.

**Detriments:** Mesh size restrictions in Section 15-C may decrease the catch of large female chum salmon returning to the Boat Harbor THA. The ability of the fleet to harvest early runs of Chilkat River sockeye salmon will be reduced. Despite initiating troll management actions during 2017, the Chilkat River king salmon escapement goal was not achieved.



## **Option B. Reduce Hours of Commercial Fishing Periods.**

### Specific Action to Implement the Objective:

#### 1. *Net Fisheries:*

- Reduce the open area in northern Chilkat Inlet during the first 5 weeks of the season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan* by closing area north of Eldred Rock Lighthouse.
- Impose 6-inch maximum mesh restriction in first through third week in Section 15-A.
- Close western half of Section 15-A in first through fifth week in Section 15-A.
- Impose night closures between 10:00 p.m. and 4:00 a.m. in first through fourth week in Section 15-A and Section 15-C.
- Impose 6-inch maximum mesh restriction in first and second weeks in Section 15-C.
- Limit time and area open to 2 days/week in the “postage stamp” area only in first and second weeks in Section 15-C.
- Open only the inside area of Boat Harbor THA (west of marker) 7 days/week in first through fourth week.
- Open outside of Boat Harbor THA only 2 days/week within 1 mile of western shoreline for first and second week.
- Impose 6-inch maximum mesh restriction in first and second week in outside area of Boat Harbor THA.
- Impose non-retention of king salmon over 28 inches in regional purse seine fisheries.
- Reduce area open in Taku Inlet for the first 5 weeks of the District 11 drift gillnet fishery; close Taku Inlet north and west of a line from Point Greely to Cove Point for first week and north of Point Greely, Cooper Point or Jaw Point for second through fifth week.
- Impose 6-inch maximum mesh size restriction for the first 3 weeks of the District 11 drift gillnet fishery.
- Do not open Section 11-C to drift gillnetting.
- Impose night closures between 10:00 p.m. and 4:00 a.m. in Subdistrict 111-31, and Section 11-C if open.

#### 2. *Troll Fisheries:* Combination of area changes and closures.

- Winter Troll: notwithstanding any remaining seasonal guideline harvest level, close the winter troll fishery in all waters of SEAK/Yakutat beginning SW 12, with Section 15-A in Lynn Canal/Chilkat Inlet north of the latitude of Sherman Rock remaining closed to commercial trolling through December 31.
- Spring Troll: limit opportunities during May and June spring troll king salmon fisheries to terminal harvest areas, waters in close proximity to hatchery facilities or release sites, and in areas that have been identified as having low proportional harvests of wild stock SEAK/Yakutat king salmon; spring troll chum fisheries, as described in the *District 12 and District 14 Enhanced Chum Salmon Troll Fisheries Management Plan* (5 AAC 29.114) to open June 15 with retention of king salmon prohibited.



- Summer Troll: delay the first retention period for king salmon during the general summer troll fishery by a week to target 70% of the remaining troll king salmon annual allocation, minus the number of treaty king salmon harvested in winter and spring troll, on July 8.

**Benefits:** These management actions can be accomplished through EO authority. The restrictions are directly related to historical coded-wire tag and genetic stock identification data. These management actions reduce time and area of the gillnet fishery during the first 5 weeks to reduce king salmon harvest.

**Detriments:** Mesh size restrictions in Section 15-C may decrease the catch of large female chum salmon returning to the Boat Harbor THA. A decrease of time and area in Section 15-A will reduce sockeye salmon harvest.

### **Option C. Reduce Number of Commercial Fishing Periods.**

#### Specific Action to Implement the Objective:

##### 1. *Net Fisheries:*

- Delay opening of Section 15-A until week 3 (closed for weeks 1 and 2).
- Reduce the open area in northern Chilkat Inlet during the first 5 weeks of the season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan* by closing area north of Eldred Rock Lighthouse.
- Impose 6-inch maximum mesh restriction in first through third week in Section 15-A
- Close western half of Section 15-A in first through fifth week.
- Impose night closures between 10:00 p.m. and 4:00 a.m. in first through fourth week in Section 15-A and Section 15-C.
- Delay opening of Section 15-C until week 2 (closed for week 1).
- Impose 6-inch maximum mesh restriction in first and second weeks in Section 15-C.
- Limit time and area open to 2 days/week in the “postage stamp” area only in first and second weeks in Section 15-C.
- Open only the inside area of Boat Harbor THA (west of marker) 7 days/week in first through fourth week.
- Open outside of Boat Harbor THA only 2 days/week within 1 mile of western shoreline for first and second week.
- Impose 6-inch maximum mesh restriction in first and second week in outside area of Boat Harbor THA.
- Impose non-retention of king salmon over 28 inches in regional purse seine fisheries.
- Forgo the initial third Sunday in June drift gill net opportunity in District 11.
- Reduce area open in Taku Inlet for the next 4 weeks of the District 11 drift gillnet fishery; close Taku Inlet north of the latitude of Point Greely and west of 134° 7.0' W. longitude (includes the waters of Doty's Cove) for first 2 weeks and north of Point Greely, Cooper Point or Jaw Point for third through fifth week.
- Impose 6-inch maximum mesh size restriction for the first 3 weeks of the District 11 drift gillnet fishery.
- Do not open Section 11-C to drift gillnetting.
- Reduce time in Subdistrict 111-31.

- Impose night closures between 10:00 p.m. and 4:00 a.m. in all of District 11.
- Impose non-retention of king salmon over 28 inches in regional purse seine fisheries.

2. *Troll Fisheries:* Wide-scale area closures.

- Winter Troll: notwithstanding any remaining seasonal guideline harvest level, close the winter troll fishery in all waters of SEAK/Yakutat beginning SW 12, with waters of Section 15-A in Lynn Canal/Chilkat Inlet north of the latitude of Sherman Rock remaining closed to commercial trolling through December 31.
- Spring Troll: close all spring troll.
- Summer Troll: delay summer troll season until July 15.

**Benefits:** These management actions can be accomplished through EO authority. The restrictions are directly related to historical coded-wire tag and genetic stock identification data. There would be no Chilkat River king salmon retention in the gillnet fishery.

**Detriments:** Reduced sockeye and chum salmon harvest for the first 5 weeks of the season.

Appendix A2.—Options to reduce harvest of Chilkat River and King Salmon River king salmon in the sport fishery. Presented to the board and public for consideration at the January 2018 Southeast and Yakutat regulatory meeting.

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## **ACTION #2—SPORT FISHERY**

**Objective: Reduce the sport harvest of Chilkat River and King Salmon River king salmon.**

**Background:** The Division of Sport Fish used Commissioner’s EO authority to restrict time and area, reduce bag and possession limits and close areas since 2015 to reduce Chilkat River and Taku River (and thus, by default, the King Salmon River) king salmon harvest. Despite closures to the terminal sport fisheries near the Chilkat and Taku rivers in 2016 and 2017, escapements failed to meet the escapement goals in the Chilkat and King Salmon rivers (Tables 1 and 2). In 2017, the most restrictive year in the Haines management area, the estimated sport fishery harvest of Chilkat River king salmon was 44 fish in all of SEAK, as estimated by coded-wire tag recoveries. Coded-wire tag recoveries indicate that a significant portion of Chilkat River king salmon rear primarily in the inside waters of northern SEAK, suggesting that harvest reduction actions should be focused in those waters. Similarly, King Salmon River stocks appear to rear in inside waters, thus restrictive measures applied to Chilkat and Taku river stocks should minimize harvest of the Chilkat and King Salmon rivers king salmon. Based on coded-wire tag recoveries in District 11 sport fisheries, about 90% of Taku River king salmon were harvested from April 15 to June 30 during 2000–2017, with about 80% or more past the fish wheels on Taku River by June 15. Conservative management actions around Juneau in the spring of 2017 reduced District 11 sport harvest of Taku River (and potentially, Chilkat and King Salmon river sport harvest) king salmon to less than 10% (34 fish) of the 2012–2016 average (548 fish). It is assumed that spring and early summer closures around the King Salmon River estuary (Section 11D) would also provide appreciable protection for King Salmon River stocks in their terminal area.

### **Option A. Status Quo with Modification.**

Use department EO authority to implement conservative king salmon regulations in Districts 11, 12, and 15 that are essentially identical to those implemented in 2017, but with a longer closed period in Section 11-D, and an expanded king salmon fishing closure area to the entire Haines/Skagway area (Section 15-A). Regional king salmon regulations established under the *Southeast Alaska King Salmon Management Plan* would apply in the restricted areas during the remainder of the year when fishing is allowed. The proposed closure boundaries for Option A in the respective districts and sections for the management options discussed below are depicted in Appendix A 3.

Specific Action to Implement the Objective: Implement closures inseason in the Haines, Skagway, and Juneau areas as follows:

- *District 15:* Section 15-A closed to king salmon fishing April 15 to July 15, retention of king salmon prohibited July 16 to December 31. Sections 15-B and 15-C closed to king salmon fishing April 15 to June 14.
- *District 12:* Section 12-B closed to king salmon fishing April 15 to June 14.
- *District 11:* Sections 11-A, 11-B and 11-C closed to king salmon fishing April 15 to June 14; Section 11-D closed to king salmon fishing April 15 to June 30.
- *THA near Juneau:* If surplus hatchery king salmon return to the DIPAC Hatchery in excess of broodstock needs, the designated sport THA near Juneau will be liberalized

with a bag and possession limit of 2 king salmon any size, no annual limit from June 15 to August 31.

**Benefits:** These management actions can be accomplished through EO authority and allows the department the ability to return to more liberal fisheries if king salmon runs rebuild prior to the next board meeting. This option will reduce harvest of king salmon in the Juneau, Haines, and Skagway area, while providing limited sport fishing opportunity to harvest surplus hatchery king salmon returning to the DIPAC Hatchery.

**Detriments:** Chilkat River and King Salmon River king salmon rear year-round in inside waters of northern SEAK. Rearing fish will be vulnerable to harvest when area closures expire. More restrictive options reduce levels of sport fishing opportunity and have economic impacts on the charter fleet.

**Option B. Reduce Time and Area Open to King Salmon Sport Fishing and Reduce Bag Limits During Remainder of Year.**

Reduce king salmon sport fishing time and area in Districts 11, 12, and 15, close the eastern section of District 14, and reduce the bag limit and establish an annual limit for all anglers of 3 king salmon in the restricted areas during the remainder of the year when fishing is allowed. The proposed closure boundaries for Option B in the respective districts and sections for the management options discussed below are depicted in Appendix A 4.

Specific Action to Implement the Objective:

- *District 15:* King salmon bag and possession limit of 1 fish  $\geq$  28 inches in length, annual limit of 3 fish  $\geq$  28 inches in length, January 1 to December 31. Section 15-A closed to king salmon fishing April 15 to December 31; Sections 15-B and 15-C closed to king salmon fishing April 15 to June 30.
- *Section 14-C:* King salmon bag and possession limit of 1 fish  $\geq$  28 inches in length, annual limit of 3 fish  $\geq$  28 inches in length, January 1 to December 31; closed to king salmon fishing from April 15 to June 30.
- *District 12:* In the waters north of the latitude of Point Hepburn, king salmon bag and possession limit of 1 fish  $\geq$  28 inches in length, annual limit of 3 fish  $\geq$  28 inches in length, January 1 to December 31; closed to king salmon fishing April 15 to June 30.
- *District 11:* King salmon bag and possession limit of 1 fish  $\geq$  28 inches in length, annual limit of 3 fish  $\geq$  28 inches in length, January 1 to December 31; Sections 11-A, 11-B and 11-C closed to king salmon fishing April 15 to June 30; Section 11-D closed to king salmon fishing April 15 to July 31.
- *THA near Juneau:* If surplus hatchery king salmon return to the DIPAC Hatchery in excess of broodstock needs, the designated sport THA near Juneau will be liberalized with a bag and possession limit of 2 king salmon any size, no nonresident annual limit, June 15 to August 31.

**Benefits:** These management actions can be accomplished through EO authority and allows the department the ability to return to more liberal fisheries if king salmon runs rebuild prior to the next board meeting. This action would reduce the harvest of Chilkat River and King Salmon River king salmon during May to July when the majority of the harvest occurs in the northern SEAK inside waters, while providing limited sport fishing opportunity to harvest surplus hatchery king salmon returning to the DIPAC Hatchery.

**Detriments:** Chilkat River and King Salmon River king salmon rear year-round in inside waters of northern SEAK. Rearing fish will be vulnerable to harvest when area closures expire. More restrictive options reduce levels of sport fishing opportunity and have economic impacts on the charter fleet.

### **Option C. Further Reduce Time and Area Open to King Salmon Sport Fishing.**

Extend king salmon fishing closure April 15 to July 15 in all of Districts 10 and 11, the northern portion of District 12, Section 15-B and 15-C, Sections 14-B and 14-C and reduce the bag limit and establish an annual limit for all anglers of 3 king salmon in the restricted areas during the remainder of the year when fishing is allowed. The proposed closure boundaries for Option C in the respective districts and sections for the management options discussed below are depicted in Appendix A 5.

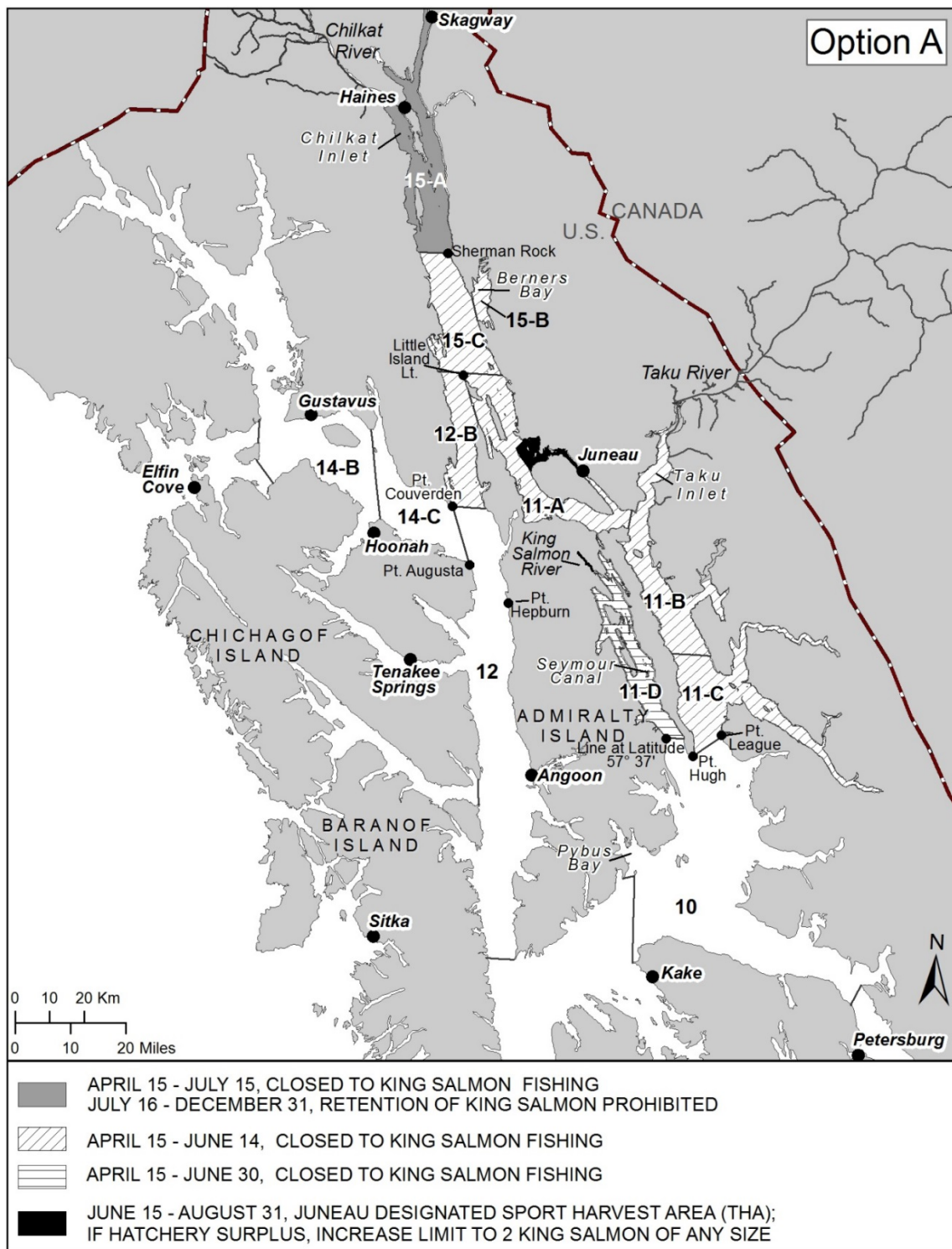
#### Specific Action to Implement the Objective:

- *District 15:* King salmon bag and possession limit of 1 fish  $\geq$  28 inches in length, annual limit of 3 fish, January 1 to December 31. Section 15-A closed to king salmon fishing April 15 to December 31. Sections 15-B and 15-C closed to king salmon fishing April 15 to July 15.
- *District 14-B and 14-C:* King salmon bag and possession limit of 1 fish  $\geq$  28 inches in length, annual limit of 3 fish  $\geq$  28 inches in length, January 1 to December 31; closed to king salmon fishing April 15 to July 15.
- *District 12:* In the waters north of the latitude of Point Hepburn, king salmon bag and possession limit of 1 fish  $\geq$  28 inches in length annual limit of 3 fish, January 1 to December 31; closed to king salmon fishing April 15 to July 15.
- *District 11:* King salmon bag and possession limit of 1 fish  $\geq$  28 inches in length, annual limit of 3 fish  $\geq$  28 inches in length, January 1 to December 31; Sections 11-A, 11-B and 11-C closed to king salmon fishing April 15 to July 15. Section 11-D closed to king salmon fishing April 15 to July 31.
- *THA near Juneau:* If surplus hatchery king salmon return to the DIPAC Hatchery in excess of broodstock needs, the designated THA near Juneau will be liberalized with a bag and possession limit of 2 king salmon any size, no nonresident annual limit, June 30 to August 31.
- *District 10:* King salmon bag and possession limit of 1 fish  $\geq$  28 inches in length, annual limit of 3 fish  $\geq$  28 inches in length, January 1 to December 31; closed to king salmon fishing from April 15 to July 15.

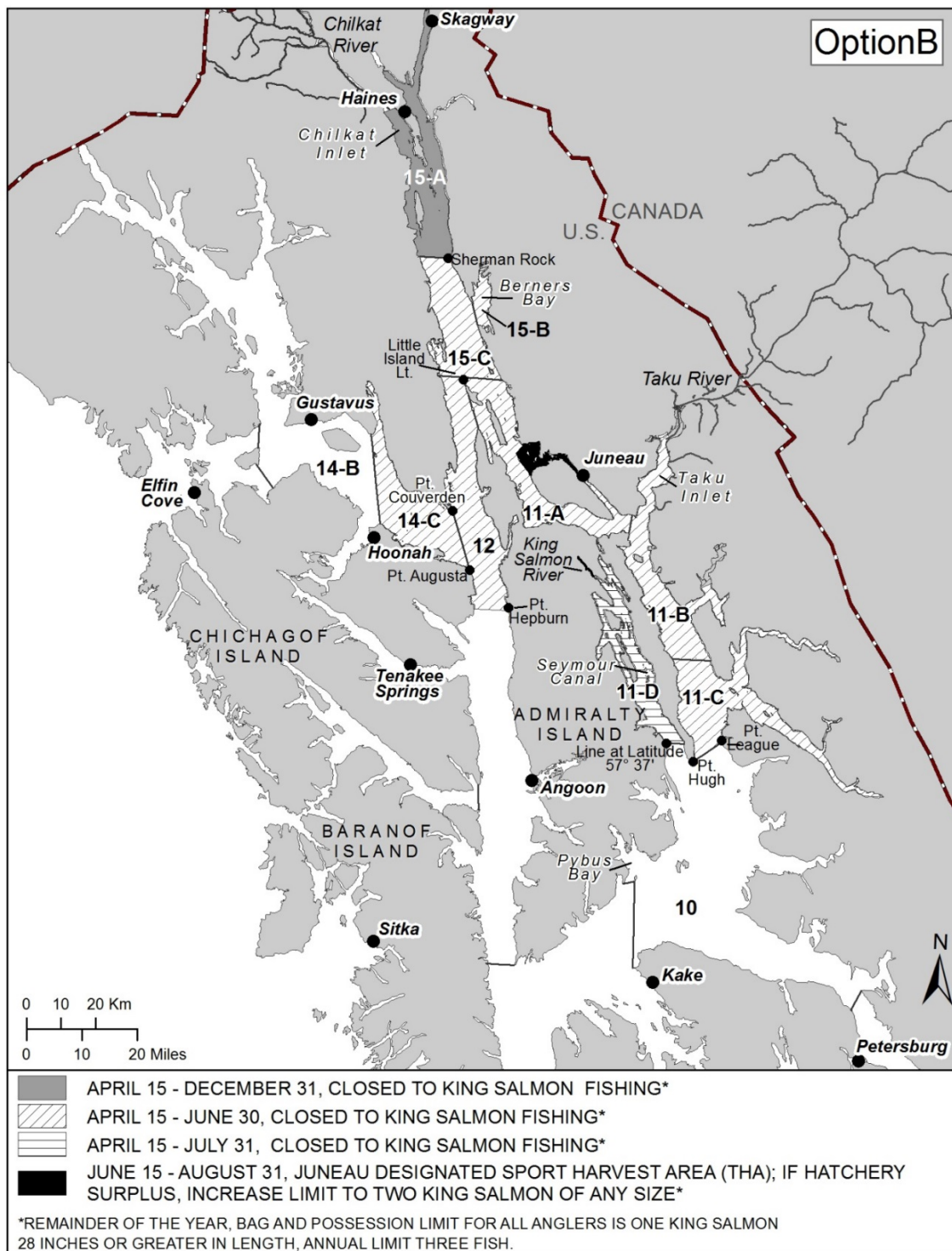
**Benefits:** These management actions can be accomplished through EO authority and allows the department the ability to return to more liberal fisheries if king salmon runs rebuild prior to the next board meeting. This action provides protection of Chilkat River and King Salmon River king salmon stocks until most spawning fish are past the Juneau sport fishing area and provides limited sport fishing opportunity to harvest surplus hatchery king salmon returning to the DIPAC Hatchery.

**Detriments:** Chilkat River and King Salmon River king salmon rear year-round in inside waters of northern SEAK. Rearing fish will be vulnerable to harvest when area closures expire. More restrictive options reduce levels of sport fishing opportunity and have economic impacts on the charter fleet.

Appendix A3.—Map of northern Southeast Alaska showing the sport fishing management areas and proposed areas closed to sport fishing under Option A to protect Chilkat River and King Salmon River king salmon. Presented to the board and public for consideration at the January 2018 Southeast and Yakutat regulatory meeting.

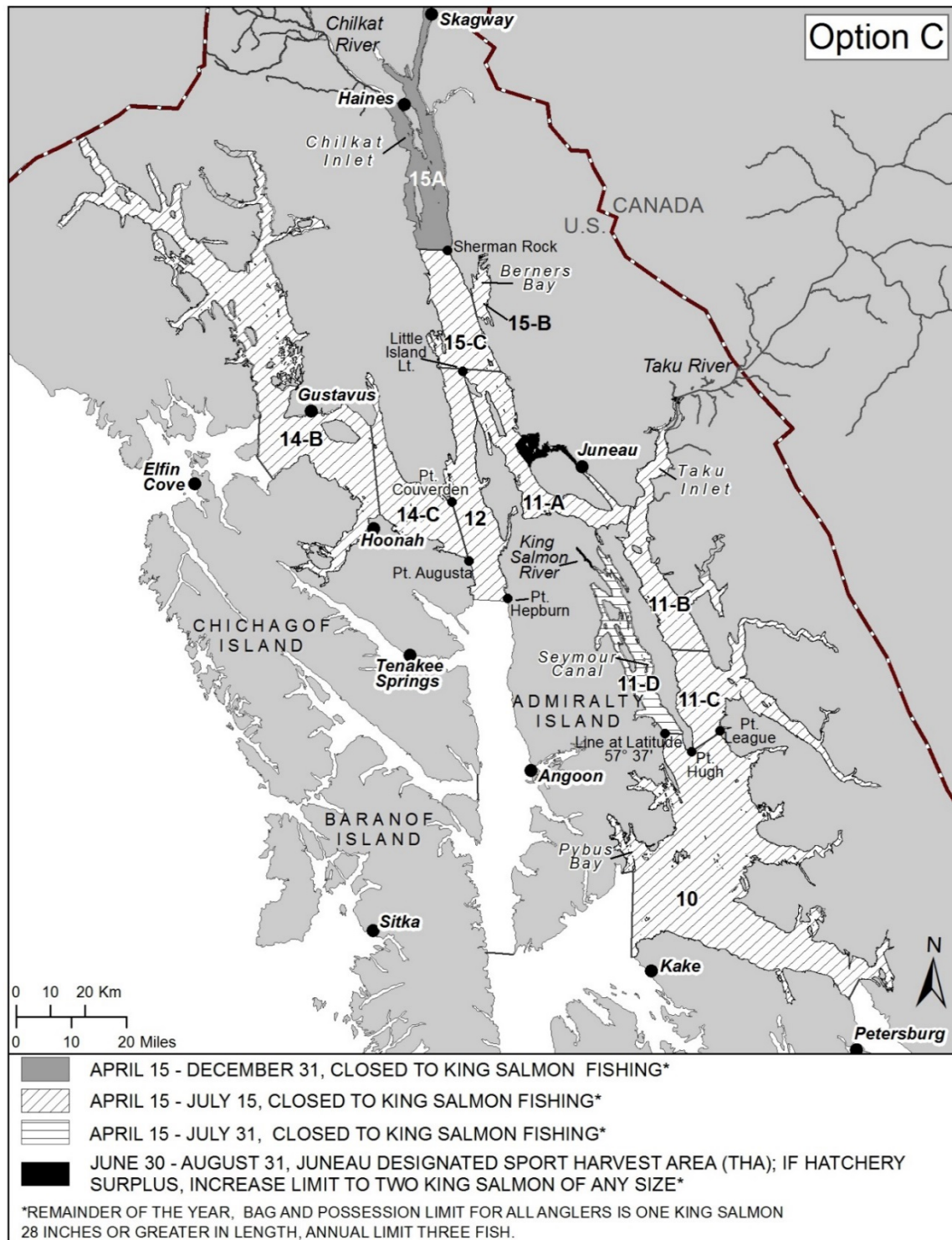


Appendix A4.—Map of northern Southeast Alaska showing the sport fishing management areas and proposed areas closed to sport fishing under Option B to protect Chilkat River and King Salmon River king salmon. Presented to the board and public for consideration at the January 2018 Southeast and Yakutat regulatory meeting.





Appendix A5.—Map of northern Southeast Alaska showing the sport fishing management areas and proposed areas closed to sport fishing under Option C to protect Chilkat River and King Salmon River king salmon. Presented to the board and public for consideration at the January 2018 Southeast and Yakutat regulatory meeting.





Appendix A6.—Options to reduce harvest of Chilkat River and King Salmon River king salmon in the subsistence fishery. Presented to the board and public for consideration at the January 2018 Southeast and Yakutat regulatory meeting.

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### **ACTION #3—SUBSISTENCE FISHERY**

**Objective: Reduce the subsistence harvest of Chilkat River and King salmon River king salmon.**

**Background:** Subsistence gillnet fishing in District 15 begins on June 1 in the Chilkat River and on the Saturday before the first commercial gillnet opening (third Sunday of June) by regulation. Traditionally, this subsistence fishery targets early run sockeye salmon with king salmon as incidental harvest. Management actions to minimize Chilkat River king salmon retention include time and area restrictions for both the Chilkat River and Chilkat Inlet.

#### **Option A. Status Quo**

Specific Action to Implement the Objective: Same management decisions as 2017.

- Reduce area and duration open in Chilkat Inlet and in the Chilkat River to subsistence fishing during the first 5 weeks of the season by implementing and exceeding conservation measures of the *Lynn Canal and Chilkat River King Salmon Fishery Management Plan*.
- Open entire Chilkat River June 1–14.
- Close Chilkat River June 15 to July 31, except for the portion of the river between Haines Highway mile 19 and the Wells Bridge; this section open only 4 days/week.
- Close Chilkat Inlet until July 22.
- Impose non-retention of live king salmon in Chilkat River and Chilkat Inlet.

**Benefits:** Decreases area and duration of fishing on Chilkat River and in Chilkat Inlet.

**Detriments:** Allows Chilkat River subsistence fishing opportunity, 7 days/week from June 1 to June 15.

#### **Option B. Reduced Time and Area**

Specific Action to Implement the Objective:

- Close Chilkat River June 1 to July 31, except for the portion of the river between Haines Highway mile 19 and the Wells Bridge; this section open only 3 days/week.
- Impose 53/8-inch maximum mesh restriction for Chilkat River until July 31.
- Close Chilkat Inlet until July 31.
- Impose non-retention of live king salmon in Chilkat River and Chilkat Inlet.

**Benefits:** Potentially reduces king salmon harvest.

**Detriments:** Reduced subsistence opportunity: Klukwan has traditionally been able to fish any mesh size 7 days/week for the entire season June 1 to September 30.

#### **Option C. Further Reduced Time and Area.**

Specific Action to Implement the Objective:

- Close entire Chilkat River until third Saturday of June.

- Close Chilkat River from third Saturday of June to July 31, except for the portion of the river between Haines Highway mile 19 and the Wells Bridge; this section open only 3 days/week.
- Impose 53/8-inch maximum mesh restriction for Chilkat River until July 31.
- Close Chilkat Inlet until July 31.
- Non-retention of live King salmon in Chilkat River and Chilkat Inlet.

**Benefits:** Potentially reduces king salmon harvest.

**Detriments:** Reduced subsistence opportunity: Klukwan has traditionally been able to fish any mesh size 7 days/week for the entire season June 1 to September 30.

Appendix B1.—Substitute language to provide the department the authority to set annual limits by residency in the Southeast Alaska Area king salmon sport fishery.

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**5 AAC 47.020. General provisions for seasons, bag, possession, annual, and size limits, and methods and means for the salt waters of the Southeast Alaska Area.**

(1) king salmon, may be taken from January 1–December 31:

(A) king salmon must be 28 inches or greater in length; the commissioner shall establish bag, possession, and annual limits, by emergency order, as specified in 5 AAC 47.055; a harvest record is required for a nonresident as specified in 5 AAC 75.006;

(B) in times of king salmon conservation, the department may establish annual limits, pursuant to 5 AAC 75.003, for king salmon for residents and nonresidents.

Substitute language to provide the department the authority prohibit retention of king salmon of king salmon greater than 28 inches in length in the commercial salmon purse seine fishery:

**5 AAC 33.392. Size limits and landing of king salmon.**

(b) A CFEC purse seine salmon permit holder may take but may not sell king salmon [BETWEEN THE SIZES OF GREATER THAN 21 INCHES FROM THE TIP OF THE SNOUT TO TIP OF TAIL (IN ITS NATURAL AND OPEN POSITION) AND] less than the legal length size limit specified in (a) of this section. King salmon taken in the purse seine fishery that are less than the legal size limit will not be counted against the king harvest quota;

(g) Notwithstanding (a), if the department determines that it is necessary for the conservation of king salmon or to meet obligations of the Pacific Salmon Treaty, the commissioner may, by emergency order, close the purse seine salmon fishery and immediately reopen the fishery during which king salmon equal to or greater in length than the limits set forth in (a) of this section that are taken incidentally in the purse seine salmon fishery must be returned to the water unharmed;

(h) A person may not mutilate or otherwise disfigure king salmon in any manner that prevents determining the size limits set out in this section.