

# **Fishery Management Report No. 20-06**

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## **Annual Management Report for the 2019 Yakutat Commercial Set Gillnet Salmon Fisheries**

by

**Richard A. Hoffman**

and

**Hannah L. Christian**

March 2020

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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

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## ABSTRACT

This report provides an overview of the 2019 Yakutat Management Area (YMA) commercial set gillnet fisheries and stock status. The total commercial harvest of all species was 189,049 fish with an estimated preliminary exvessel value of \$1,348,922, a 33% decrease from the 10-year average value of \$2 million. The harvest included 316 Chinook, 54,810 sockeye, 100,480 coho, 33,048 pink, and 395 chum salmon. The Situk-Ahrnklin Inlet commercial fishery produced 73% of the total exvessel value. The total number of individual permits fished during the season was 95 permits, below the 10-year average of 115 permits. The total sockeye salmon harvest was well below the 10-year average of 111,100 fish, with the Situk-Ahrnklin Inlet fishery accounting for the highest harvest. The coho salmon harvest was also below average and the Situk-Ahrnklin Inlet produced 71% of the areawide coho salmon harvest. Pink salmon returns throughout YMA were average in 2019, but the overall harvest was below average. Chum salmon harvest was also below average. With recent years of poor production and low Chinook salmon returns to the Situk River, the subsistence, sport, and commercial fisheries were closed to Chinook salmon retention for the ninth year in a row. The 2019 Situk River weir count of 623 large Chinook salmon was within the biological escapement goal (BEG) range of 450–1,050. Chinook salmon escapement goals were achieved on the Alsek and Klukshu rivers. The Situk River weir count of 72,541 sockeye salmon was above the BEG range of 30,000–70,000 fish. The Alsek and Klukshu rivers also exceeded their escapement goals for sockeye salmon.

Key words: Management, Annual Management Report (AMR), set gillnet, 2019 season, Yakutat Management Area (YMA), Chinook, sockeye, pink, chum, coho, salmon, Yakutat, Yakataga, district, statistical week (SW), Situk River, weir, Situk-Ahrnklin Inlet, Yakutat Bay, Tsiu River, Alsek River, East River, Doame River, Akwe River, Italio River, Biological Escapement Goal (BEG), Sustainable Escapement Goal (SEG), catch per unit effort (CPUE)

## INTRODUCTION

The Yakutat set gillnet fisheries are divided into two fishing districts: the Yakutat District, which extends from Cape Fairweather to Icy Cape, and the Yakataga District, which extends from Icy Cape to Cape Suckling. The Yakutat District set gillnet fisheries primarily target sockeye and coho salmon, although all five species of salmon are harvested. The Yakataga District fisheries only target coho salmon (Figure 1).

Although the bulk of the Yakutat salmon harvest is usually reported from six major fisheries (Situk-Ahrnklin Inlet; Yakutat Bay; Manby Shore; and the Alsek, East Alsek, and Tsiu/Tsivat rivers), up to 25 different areas are open to commercial fishing each year. With few exceptions, set gillnetting is confined to the intertidal area inside the mouths of the various rivers and streams and to the ocean waters immediately adjacent to each. Due to the terminal nature of these fisheries, the department has been able to develop biological escapement goals (BEGs) and sustainable escapement goals (SEGs) for most of the major and several of the minor fisheries (Table 1). Two ocean fisheries, Manby Shore Outside and Yakutat Bay, occur within Yakutat Bay. Historical stock analysis of these fisheries indicates that the majority of sockeye salmon harvested, especially during the first six or seven weeks of the season, are of Situk-Ahrnklin origin. These fisheries are managed to meet Situk-Ahrnklin escapement goals.

Systems mentioned in this report and noted as index streams are used in managing commercial set gillnet fisheries in the Yakutat and Yakataga districts. Escapement counts performed inseason become the driving force in establishing openings, closures, and fishing times for each fishery. The fisheries are managed to ensure that escapement goals are met. In the case of glacial systems, it is often difficult to see fish, and escapement is not apparent until fish have passed through fishery into clear water streams. Fisheries performance data, expressed as catch per unit effort (CPUE), are compared with historical data to estimate run strength for management purposes.

This report summarizes the 2019 commercial salmon fishing season; commercial harvest by fishery, historical commercial harvest, fishing effort, and management actions. General information concerning escapements and economic value is also contained in this report.

## **YAKUTAT AREA SUMMARY**

### **OVERVIEW**

The 2019 YMA set gillnet fishery produced a cumulative harvest of 189,049 salmon (Table 2). The total harvest was 58% of the 10-year average of 324,700 fish. Up to 141 Yakutat set gillnet permits are renewed annually (CFEC 2019), and of those, an average of 115 permits are actively fished each year. In 2019, 95 permits were active. The average earning per permit was estimated at \$14,199 for the 2019 season, 44% higher than 2018 average earning per permit and 20% lower than the 10-year average (Table 4). The overall sockeye salmon harvest in the Yakutat District fisheries was below average. Sockeye salmon returns to the YMA were average to above average in 2019. The sockeye salmon return to the Situk-Ahrnklin Inlet was late, which prompted reduced fishing time for the Situk-Ahrnklin Inlet and Yakutat Bay for statistical weeks (SW) 27–30 until projections indicated the midpoint of escapement goal range was going to be met. The coho salmon harvest was below the 10-year average. The Situk-Ahrnklin Inlet accounted for nearly all of the YMA coho salmon harvest. Almost all the remote systems, although open to fishing, received little or no effort for coho salmon. Reduced fishing effort for coho salmon in the Yakutat and Yakataga districts is mainly due to economic struggles and the lack of air transport in the fall. There was no fishing effort on the Tsiu or Tashalich rivers, but Kaliakh and Seal rivers received effort. The 2019 pink salmon return to the Situk River was on time and average. There are no directed pink and chum salmon fisheries because there is little economic incentive to target them. As such, pink and chum salmon are harvested incidentally to sockeye and coho salmon. The harvest of pink and chum salmon was less than half the 10-year average. Chinook salmon are also harvested incidentally to sockeye and coho salmon. Extensive efforts were taken to reduce the harvest of Chinook salmon and as a result the 2019 harvest was about a third of the 10-year average (Table 3).

### **SOCKEYE SALMON**

Sockeye salmon returns to the YMA were expected to be average to above average, but 2019 returns ranged from below to above average as indicated by harvest and escapement. Directed sockeye salmon fisheries occurred in Alsek, East Alsek, and Dangerous rivers; the Situk-Ahrnklin Inlet; Yakutat Bay; and the Manby Shore–Outside in 2019. The total sockeye salmon harvest of 54,800 fish was well below the 10-year average of 111,100 fish (Table 3).

The Situk-Ahrnklin Inlet had below-average returns in 2019. The Situk-Ahrnklin Inlet sockeye salmon harvest of 16,500 was well below the 10-year average of 49,800 fish (Table 15). The Situk-Ahrnklin Inlet was the primary producer in the YMA, accounting for 30% of the total sockeye salmon harvest (Table 5). The Situk River weir count of 72,541 sockeye salmon was above the BEG range of 30,000–70,000 fish (Table 18).

The sockeye salmon returns to the East Alsek River were above average in 2019. The total harvest of 11,500 sockeye salmon was above the 10-year average harvest of 8,200 fish and was the second highest producer of sockeye salmon in the YMA (Tables 10). The East Alsek River lower bound of the SEG range of 9,000 to 24,000 sockeye salmon was achieved on July 3, and the peak count of 27,300 sockeye salmon was above the upper end of the range (Table 11).



The Alsek River sockeye salmon run was above average in 2019. The set gillnet fishery harvest of 9,800 sockeye salmon was below the 10-year average (Table 7). The Klukshu River weir count of 19,073 fish was above the upper end of the BEG range of 7,500 to 11,000 fish. The total Alsek River sockeye salmon escapement was estimated to be 114,000, above the upper end the BEG of 24,000 to 33,500 fish (Table 8).

The remaining sockeye salmon fisheries in the YMA were below to above average. Yakutat Bay, with a harvest of 8,400 sockeye salmon, was well below the 10-year average and was the fourth highest producer in the YMA. The Manby Shore–Outside fishery harvest of 8,100 sockeye salmon was well above average and the fifth highest producer. Fewer than three permits fished the Dangerous River and harvest information is confidential. The Manby Shore–Inside fishery was not fished, and the Akwe River was closed due to low escapement (Table 5).

## **COHO SALMON**

The 2019 coho salmon harvest of 100,500 fish was below the 10-year average of 134,900 fish (Table 3). Coho salmon returns to the YMA from 1990 to 2002 were the largest returns on record. Since 2002, coho salmon production has fallen to historical averages. The Situk-Ahrnklin Inlet harvest of 71,500 coho salmon was below the 10-year average (Table 15). Yakutat Bay harvest of 100 coho salmon was also below average (Table 20). In 2019, the Kaliakh River received fishing effort for the second time since 2010 and was the second highest producer of coho salmon in the YMA with 22,800 fish harvested (Table 5). The Manby Shore–Outside waters harvest of 5,600 coho salmon was above the 10-year average (Table 21). In the Yakataga District, all the fishing effort came from Cordova set gillnet permit holders and fish were sold in Cordova. Due to lack of aircraft services during the fall, many of the remote fisheries in the Yakutat and Yakataga districts received little to no effort during the coho salmon season. The Seal River received minimal effort and the Tsiu, Spoon, Yahtse, and Yana rivers were opened but not fished in 2019.

## **CHINOOK SALMON**

There are no directed set gillnet fisheries for Chinook salmon in the YMA. All Chinook salmon are harvested incidentally in the sockeye salmon fisheries. Traditionally, the principal harvest areas of Chinook salmon are the Situk-Ahrnklin Inlet, the Alsek River, and Yakutat Bay. The total YMA harvest of 300 Chinook salmon was below the 10-year average of 900 fish. The Alsek River and Yakutat Bay accounted for 70% of all Chinook salmon harvested in the YMA (Table 3).

The Situk-Ahrnklin Inlet Chinook salmon fishery has been closed since 2010 due to conservation concerns. The 2019 preseason total run estimate for large Situk River Chinook salmon was 300 large fish. This projection was below the BEG range of 450–1,050 fish and did not allow for the achievement of the escapement goal if normal fisheries were prosecuted. As directed in 5 AAC 30.365, *Situk-Ahrnklin Inlet and Lost River King Salmon Fisheries Management Plan*, conservation measures were taken for the 10th year in a row and the subsistence, sport, and commercial fisheries were closed to Chinook salmon retention again in 2019. The 2019 weir count of 623 large Chinook salmon was within the BEG range (Table 18).

The 2019 preseason projection for Alsek and Klukshu rivers Chinook salmon stocks was for a below-average return to the Klukshu River and an average return for the Alsek River. Due to Chinook salmon conservation, the fishery was delayed two weeks and a 6" mesh size restriction was in effect. The Alsek River harvest of 80 Chinook salmon was well below average and the lowest harvest on record since 1990 (Table 6). The Klukshu River weir count exceeded the BEG

range of 800–1,200 fish and the Alsek River estimated escapement exceeded the BEG of 3,500–5,300 fish (Table 8).

The majority of YMA Chinook salmon harvest took place in the marine waters near Yakutat. The Yakutat Bay harvest of 140 Chinook salmon was below the 10-year average of 330 fish (Table 20). Manby Shore–Outside fisheries harvest of 90 Chinook salmon was above the 10-year average (Table 21).

## **PINK SALMON**

Pink salmon returns to the YMA are sporadic and show no trend in even or odd years, unlike the rest of the region. The 2019 areawide pink salmon harvest of 33,000 fish was slightly higher than the 2018 harvest but well below the 10-year average of 76,900 fish (Table 3). Yakutat Bay and the Situk-Ahrnklin Inlet were the top two pink salmon producers for the area and together accounted for almost all the pink salmon harvested in the YMA. The Situk-Ahrnklin Inlet harvest of 28,800 pink salmon was below the 10-year average of 61,100 fish (Table 15). The Yakutat Bay harvest of 4,100 pink salmon was below the 10-year average of 16,700 fish (Table 20). Pink salmon harvested in Yakutat Bay are predominantly of Situk River and Humpback Creek origin. An estimated 222,900 pink salmon were counted through the Situk River weir by the time the weir was removed on August 10 (Table 18).

## **CHUM SALMON**

There are no directed chum salmon fisheries in the YMA due to the combination of low abundance and low price. All chum salmon harvest is incidental to sockeye and coho salmon harvests. Historically, the East Alsek River was a major producer as well as the only producer of chum salmon in the YMA. East Alsek River chum salmon productivity has declined for more than a decade and it is speculated that changes in habitat are a driving factor in the decline. In 2019, the Situk River fishery was the highest producer of chum and had a harvest of 170 chum salmon, which was below the 10-year average of 200 chum salmon (Table 15). Yakutat Bay was the third highest producer with 90 chum salmon harvested, below the 10-year average of 220 fish (Table 20). The areawide chum salmon harvest of 400 fish was also below the 10-year average of 900 fish (Table 3).

# **YAKUTAT DISTRICT FISHERIES**

## **ALSEK RIVER**

Alsek River stocks contribute to the U.S. commercial set gillnet fisheries located in Dry Bay, at the mouth of the Alsek River. No commercial fishery exists in the Canadian portions of the Alsek River drainage, although aboriginal and recreational fisheries occur in the Tatshenshini River and some of its headwater tributaries. Harvest-sharing arrangements of Alsek River salmon stocks between Canada and the U.S. have not been specified. Annex IV of the Pacific Salmon Treaty calls for the development and implementation of cooperative abundance-based management plans and programs for Alsek River Chinook and sockeye salmon. Alsek River salmon management is conducted in cooperation with Fisheries and Oceans Canada (FOC) under the auspices of the Pacific Salmon Treaty (PST). Agreement was reached to not open the Alsek River Chinook salmon fishery until run projections improved. ADF&G was granted permission to conduct test fisheries for Chinook salmon for inseason index of run timing and abundance of Chinook salmon stocks. A test fishery for Chinook salmon was conducted in the Alaska portion of the Alsek River in

2005–2008 and 2011–2012 as an inseason index of run timing and abundance. Due to depressed Alsek River Chinook salmon stocks, test fishing ceased in 2013.

A large and variable proportion of the drainagewide escapement of Alsek River Chinook, sockeye, and coho salmon populations are enumerated at a counting weir on the Klukshu River. The Klukshu River is an important tributary in the upper Alsek River drainage in Canada. The weir has been operated by FOC in cooperation with the Champagne-Aishihik First Nation (CAFN) since 1976. Escapement goals are in place for Chinook and sockeye salmon stocks spawning on the Klukshu River and the mainstem of the Alsek River. These goals are for an Alsek River Chinook salmon maximum sustained yield (MSY) target of 4,700 fish (escapement goal range 3,500–5,300 fish), Klukshu River Chinook salmon MSY target of 1,000 fish (escapement goal range of 800–1,200 fish), Alsek River sockeye salmon MSY target of 29,700 fish (escapement goal range of 24,000–33,500 fish), and Klukshu River sockeye salmon MSY target of 9,700 fish (escapement goal range 7,500–11,000 fish; Pacific Salmon Commission Joint Transboundary Technical Committee 2015).

ADF&G manages the Alsek River (Dry Bay) commercial set gillnet fishery to achieve the established Chinook salmon escapement goal ranges, Alsek River sockeye salmon escapement goal range plus 3,000 sockeye salmon and the Klukshu River sockeye salmon escapement goal range. Time and area openings are adjusted by monitoring catch per unit effort (CPUE) data and comparing it to historical CPUE. The duration of weekly fishing periods is based on CPUE and Klukshu River weir data. Parent-year escapement information and harvest trends are also considered when determining the weekly fishing periods. Historically, set gillnets have often been restricted to a maximum mesh size of 6 inches through July 1 to minimize Chinook salmon harvest. Preseason forecasts were for below average Chinook and sockeye salmon runs in 2019. The U.S. commercial set gillnet sockeye salmon fishery was delayed two weeks in 2019 and a 6-inch maximum mesh restriction was in effect through July 27 as a Chinook salmon conservation measure.

The 2019 Alsek River commercial set gillnet fishery opened June 16 in statistical week (SW) 25. The total number of individual permits fished during the season was 12, below the 10-year average of 16 permits (Table 7). During the sockeye salmon fishery, the CPUE was exceeded during several openings and triggered extensions. Even with the extensions, the sockeye salmon harvest was below average. The sockeye salmon harvest of 9,800 fish was below the 10-year average of 13,800 fish. Harvests of Chinook salmon through late June were well below average. The Chinook salmon harvest of 80 fish was the lowest harvest on record since 1990. Coho salmon are targeted by the third week of August when fishing effort typically declines. Since 2010, there has been reduced fishing effort during the coho salmon season due to a lack of aircraft charters to transport fish to Yakutat. By SW 33, management strategies are focused on coho salmon and fishing time increased to three days per week. In 2019, there was no effort after early August and harvest was minimal. The river was not fished the last nine weeks of the season (SW 33-41) and the Dry Bay fishery closed for the season on October 11. The 2019 commercial fishery was opened for a total of 40.5 days but was only actively fished for 13.5 days (Table 6).

Current escapement monitoring programs including the Klukshu and Village Creek video weirs, genetic stock identification (GSI) based run reconstructions, and aerial surveys allow annual comparisons of escapement indices. Historically, the department conducted aerial surveys on Tanis River and Cabin and Basin creeks to monitor sockeye and Chinook salmon abundance. Due to budget constraints and lack of pilots in Yakutat, these systems have not been surveyed since 2001.

The most reliable long-term comparative escapement index for Alsek River drainage salmon stocks is the Klukshu River weir count. Total Alsek River run estimates for Chinook salmon are generated by expanding the total Klukshu River run by a factor of 4.0. Sockeye salmon run estimates are generated using Dry Bay commercial sample GSI analysis to expand the Klukshu River weir counts.

The Klukshu River weir count of 19,073 sockeye salmon was well above the BEG range of 7,500–11,000 fish. The Klukshu River weir count of 1,589 Chinook salmon also exceeded the BEG range of 800–1,200 fish. In the Canadian recreation fisheries, FOC opened Chinook salmon on August 16th with a bag limit of one Chinook salmon a day and sockeye salmon on September 5th with a bag limit of two sockeye salmon a day. The aboriginal (food and basic needs) fishery was unrestricted in 2019 for both Chinook salmon and sockeye salmon. The Klukshu River coho salmon weir count of 2,180 fish was below average, but this count does not serve as a reliable run strength indicator because the weir is removed well before the end of the coho salmon run (Table 8).

## **EAST ALSEK-DOAME RIVER SYSTEM**

The East Alsek River is located approximately 56 miles southeast of Yakutat on the Alsek River flood plain. Prior to the early 1900s, the East Alsek River was once a tributary of the transboundary Alsek River but is now fed by clear running groundwater and has no direct connection to the Alsek River. The Doame River is a clear water system with two lakes located just east of the East Alsek River. The Doame River once entered the Gulf of Alaska directly but an earthquake in 1966 caused the river to change course and it now empties into the East Alsek River, just upstream from fisheries in the East Alsek River lagoon. The East Alsek River has undergone major geophysical changes over the past several decades that have forced salmon stocks to adapt to a new environment. In the 1970s and 1980s, the East Alsek River was the peak sockeye salmon producer in Yakutat, but this is no longer the case.

In 2003, a BEG of 13,000–26,000 sockeye salmon was established for the East Alsek and Doame rivers combined. In September 2017, the escapement goal review committee recommended eliminating the combined East Alsek-Doame River BEG range and replacing it with a sustained escapement goal (SEG) range of 9,000–24,000 sockeye salmon for just the East Alsek River (Table 1). An escapement goal based on the dominant East Alsek River sockeye salmon run would be more consistent with and simplify management of the set gillnet fishery. The department still monitors the Doame River salmon stocks for abundance.

For the third season in a row, it was unusually dry during July and sections of the upper Doame River were without water. Sections of exposed riverbed varied in length from one-half to one mile. Fish were observed below dry sections waiting for water levels to rise with some individuals spawning before they reached the lake. This continued event may affect future returns through reduced freshwater survival.

The East Alsek commercial fishery opened on July 8 (SW28), once the bottom end of the SEG range (9,000 sockeye salmon) was observed. Aerial surveys initially indicated a strong, on-time sockeye salmon run. A peak escapement count of 27,300 sockeye salmon was recorded on August 20, exceeding the upper range of the SEG (24,000) (Table 11). The initial opening was for 24 hours then increased to two days in each of the following two weeks (SW 29-30). In SW 31, fishing time was increased to four days and remained at four days until effort declined and coho management began (Table 9). Effort was minimal during the coho salmon season due to lack of air taxi service to fly the harvest back to Yakutat for processing. The East Alsek River was not

fished during SW 35-37 or 39-42. Fewer than three permits fished the East Alsek River during SW 38 and harvest information is confidential. Aerial surveys of the East Alsek/Doame River drainage were not conducted in 2019 for coho salmon due to the unavailability of pilots. A total of 15 permits harvested 11,500 sockeye salmon, which was above the 10-year average. The East Alsek River harvest of 100 chum salmon was below the 10-year average of 400 fish. Although the East Alsek River is considered the only consistent producer of chum salmon in the YMA, chum salmon are not targeted due to transportation costs. Pink salmon are also a nontargeted species and there was minimal harvest in 2019 (Table 10).

## **AKWE RIVER**

By regulation, the Akwe River commercial fishery typically opens on the fourth Sunday in June. Due to low sockeye salmon escapements in recent years, the fishery has been closed until desired escapements were observed. In 2019, sockeye salmon returns were again poor, and the fishery remained closed throughout the duration of the sockeye salmon season. The fishery opened for coho salmon harvest on August 11 but was not fished (Table 12). As with most remote fisheries in the YMA, fishing effort drops in the fall during the coho salmon season from lack of fish transporters and logistical/economic struggles.

Historically, aerial surveys of the Akwe River have been of little value in determining escapement due to the turbidity of the river. The former BEG of 600–1,500 sockeye salmon was eliminated in 2006 (Geiger et al. 2005), and currently there are no formal escapement goals for any salmon species in the Akwe River. The dramatic retreat of the Chamberlain Glacier, which feeds Akwe Lake, has improved water clarity and visibility in the river, making aerial surveys more effective in recent years. A peak aerial survey count of 850 sockeye salmon was observed on July 23. No aerial surveys were conducted for coho salmon in 2019 due to lack of available pilots and air support.

## **ITALIO RIVERS**

Three rivers make up the Italo River system: Old, Middle, and New Italo rivers. The Old Italo River has always been a separate river flowing into the Gulf of Alaska just east of the mouth of the Dangerous River. Geological changes in the mid-1980s changed the Italo River and created two distinct rivers where only one had existed before. The main river is now called the New Italo and the original river channel is the Middle Italo. All three systems support coho salmon populations, and the New Italo River also has a small run of sockeye salmon. With the decline in sockeye salmon production, the New Italo has not been open to commercial fishing since 1987. There are no formal escapement goals for any Italo River salmon stocks. The former BEG of 2,500–7,000 sockeye salmon was eliminated in 2006 (Heinl and Geiger 2005). The New and Middle Italo rivers are still monitored by aerial surveys when possible. Weekly aerial surveys are conducted and peak counts of no more than 2,000 sockeye salmon are usually recorded, although escapement counts appear to be increasing over the past decade. In 2015, a peak aerial survey of 8,000 sockeye salmon was recorded on August 9. This was the highest sockeye salmon count in over 20 years and is the highest count on record, suggesting the New Italo River sockeye salmon run may be rebuilding. In 2012, the USFS installed a fish weir above Italo Falls, which is located just below Italo Lake. The weir was equipped to video-record fish passage utilizing motion detection. The project results confirmed that over 4,000 sockeye salmon escaped into the lake in 2012. The USFS continued the project in 2013 and 2014 with total weir counts of 5,862 and 3,801, respectively. These projects, along with department aerial surveys, were helpful tools for

monitoring the recovery of New Italo River sockeye salmon stocks. Aerial surveys are currently the only assessment program for the Italo River systems. In 2019, a peak count of 2,620 sockeye salmon was observed and no surveys were conducted for coho salmon because of pilot availability. The Old and Middle Italo rivers were not opened to commercial fishing for coho salmon in 2019 due to lack of interest.

## **DANGEROUS RIVER**

By regulation, the Dangerous River opens to commercial fishing on the second Sunday in June for weekly fishing periods of 2.5 days per week during the sockeye salmon season. Escapement surveys of the Dangerous River are ineffective due to the glacially occluded water. Less than three permits fished the Dangerous River in 2019 and harvest information is confidential (Table 13). During the coho salmon season, fishing time was three days per week, but it was not fished.

## **SITUK-AHRNKLIN INLET**

The Situk River is located on the Yakutat forelands and is accessible by road from the village of Yakutat. The river flows into the Situk-Ahrnklin Inlet, the site of the historically oldest, most productive set gillnet fishery in the YMA, which normally supports the largest concentration of fishing effort (up to 100 permits). In 2019, the Inlet's total commercial harvest of 116,900 fish was below the 10-year average of 207,100 fish. The exvessel value of the Situk-Ahrnklin set gillnet fishery was approximately \$989,400 (Table 16). This harvest generated 73% of the total YMA set gillnet income (Table 17). The total exvessel value for the YMA was \$1.3 million, below the 10-year average of \$2 million (Table 4). The Situk-Ahrnklin Inlet fishing effort was 63 permits, which is below the 10-year average of 79 permits. The harvest of 16,500 sockeye salmon was well below average and accounted for 32% of the YMA total sockeye salmon harvest. The coho salmon harvest of 71,500 fish was below the 10-year average of 95,900 fish and accounted for 71% of the YMA total coho salmon harvest. The pink salmon harvest of 28,800 fish was well below the 10-year average of 61,100 fish and accounted for 87% of the total YMA pink salmon harvest (Table 15).

Sockeye and Chinook salmon escapements have been enumerated annually at an adult counting weir on the Situk River since 1976. The department uses the weir counts as an inseason management tool for managing the Situk-Ahrnklin sockeye salmon commercial fisheries. Heavy rains and subsequent flooding are typical of the fall coho season and the weir is removed before the end of the pink and coho salmon runs. The department manages the Situk-Ahrnklin Inlet commercial fisheries to achieve escapement goals established for Situk River Chinook, sockeye and coho salmon. The Situk River weir count of 72,500 sockeye salmon was above the BEG range of 30,000–70,000 fish. The Situk River weir count of 623 Chinook salmon was within the BEG range of 450–1,050 fish (Table 18).

The commercial, subsistence, and sport fisheries in the Situk River drainage are managed according to the *Situk-Ahrnklin Inlet and Lost River King Salmon Fisheries Management Plan* (5 AAC 30.365). The plan directs the department to manage the fisheries to achieve a BEG of 450–1,050 large (ocean-age-3 and older) Chinook salmon (Table 1). The Situk River Chinook salmon BEG has only been achieved four of the last ten years (Table 18). Due to record low escapements of Situk River Chinook salmon, conservation measures have been implemented since 2010. Commercial fishery actions were focused on area restrictions while trying to maintain a weekly fishing schedule for the directed sockeye salmon fishery beginning the third Sunday in

June. Management options for maximizing harvest of Situk River sockeye salmon are limited due to the overlap in run timing with Chinook salmon. In addition, an area around the Lost River mouth is closed by regulation (5 AAC 30.350 (a)(7)) to conserve Lost River sockeye and coho salmon that are harvested incidentally in the Situk-Ahrnklin Inlet fishery. Area closures have displaced some traditional fishing sites (up to 10 permits) and fishermen have moved to other fishing sites in the Situk-Ahrnklin Inlet or in Yakutat Bay.

The 2019 preseason forecast was for a total return of 300 large (ocean-age-3 and older) Chinook salmon to the Situk River. The forecast was generated using a sibling relationship model in which the 2017 and 2018 estimated total runs of fish from brood years 2014 and 2015 were used to predict the total cumulative run of 5- and 6-year-old fish in 2019. According to the *Situk-Ahrnklin Inlet and Lost River King Salmon Fisheries Management Plan*, if the projected escapement is 451–730 large Chinook salmon or less, the department shall establish a non-retention Chinook salmon season and restrict the weekly fishing periods in the Situk-Ahrnklin Inlet and Lost River set gillnet fisheries. The preseason projection is for total return and does not factor in any harvest of fish below or above the Situk River weir. A total run of 300 large Chinook salmon was not expected to achieve the spawning escapement goal if normal fisheries were prosecuted. The department closed the commercial, subsistence, and sport fisheries to the retention of Chinook salmon for the ninth year in a row. Additional Chinook salmon conservation measures are described below.

1. By regulation, there are three regulatory markers located where the Situk River enters the Inlet that delineate freshwater at mean low tide upstream of which are closed waters. The open area immediately adjacent to these markers is a known migration corridor where high numbers of Chinook salmon are typically encountered. In past years, approximately 75% of Chinook salmon harvested in the commercial fishery were harvested in this area. To further reduce the harvest of Chinook salmon in 2019, this area was closed by extending closure into the inlet. An extended area around Johnson Slough has been closed to commercial fishing since 2016 and was closed again in 2019. Closed waters returned the regulatory closure at the onset of the coho salmon fishery.
2. Prior to 2012, 5 AAC 30.365 contained a nonsale provision under certain scenarios of low Chinook salmon abundance. At the Alaska Board of Fisheries (BOF) meeting in February 2012, the regulation was changed from nonsale to nonretention, meaning that no Chinook salmon may be retained. In order to alleviate concerns about the potential waste, all live Chinook salmon caught must be returned to the water immediately and any dead Chinook salmon were relinquished to the buyer at the time of sockeye salmon sale for distribution to the elderly, legally blind, or 70% disabled members of the community.
3. ADF&G does not have regulatory authority to require permit holders to closely attend gear while fishing. Therefore, the department requested permit holders to closely attend their gear on a voluntary basis. The department closely monitored the fishery to determine whether permit holders were attending their gear and to determine the number of Chinook salmon being caught. If too many Chinook salmon were being caught, the fishery would have closed for the remainder of the sockeye season.
4. Subsistence fishing was prohibited in waters around the mouth of the Situk River in 2019. The USFS placed the same restrictions on the federal subsistence fishery. By regulation, waters are closed 100 yards on either side of the Lost River terminus. In 2019, this area was enlarged to protect depressed Lost River sockeye salmon stocks. The Division of Sport

Fish placed restrictions on the sport fishery by closing a portion of the Situk River downstream of the weir to decrease the angling pressure on Chinook salmon holding in the lower river.

The Situk-Ahrnklin Inlet fishery opened by regulation on the third Sunday in June (SW 25). The Situk River sockeye salmon weir counts were slightly below the long-term average, indicating a potentially weak run, but the department opened the fishery on normal fishing periods of 2.5 days for the first and second openers (SW 25–26). Fishing time was reduced to 1.5 days for SW 27–30 as the sockeye salmon returns to the Situk River remained depressed and showed no signs of improvement. Fishing time was restored to 2.5 days during the final week of sockeye management SW 31 after weir counts increased and escapement was projected to reach the midpoint of the BEG. For the initial opening, 24 permit holders harvested 1,700 sockeye salmon. The peak harvest occurred during SW 30 with 33 permits harvesting almost 3,000 sockeye salmon (Table 14). The total Situk-Ahrnklin Inlet harvest of 16,500 sockeye salmon was below average.

From the first Sunday in August (SW 32), management emphasis switched to coho salmon. The commercial fishing periods throughout the coho salmon season varied between three to four days each week until the close of the fishing season. Approximately 71,500 coho salmon were harvested by 55 permit holders. With economic considerations limiting participation in more remote coho salmon fisheries, effort levels have increased in the Inlet during the fall. The Situk River weir was dismantled before the coho salmon run was complete. As is typically done, float surveys were conducted after the weir was removed to estimate a peak escapement count and to ensure the escapement goal was met. A peak escapement count of 10,381 coho salmon was recorded on September 16 and was above the BEG range of 3,300–9,800 fish.

The pink salmon harvest of 28,800 fish was below the 10-year average of 61,100 fish. Peak run timing for pink salmon typically occurs between the end of the sockeye season and the onset of the coho salmon season. Effort levels diminished during this time because fewer permit holders were willing to fish for pink salmon due to the comparatively low price. In 2019, the pink salmon price was \$0.25 per pound, the same as 2018. The chum salmon harvest of 170 fish was below the 10-year average (Table 15).

Currently, there is no formal escapement goal for pink salmon. The assessment program to monitor Situk River pink salmon includes boat surveys conducted from Nine-Mile Bridge to the Lower Situk River. Prior to 2018, the Situk River had an escapement goal that was based on an index of early season escapement at the weir (Piston and Heintz 2011). In September 2017, the department's escapement goal review committee recommended eliminating the Situk River pink salmon escapement goal given the limited utility of available escapement information and the low harvest rates on this stock (Heintz et al. 2017). Approximately 222,900 pink salmon were counted through the Situk River weir before its removal on August 10. Boat surveys are sporadic and not conducted every year due to limited staff and poor river conditions in the fall. No late fall pink salmon surveys were conducted this year.

## **LOST RIVER**

The Lost River was not opened to commercial set gillnetting in 2019. There has not been a directed sockeye salmon fishery in the Lost River since 1998, and the last directed fishery for coho salmon in the Lost River took place in 2004. In 1999, the westward erosion and movement of the mouth of Situk-Ahrnklin Inlet overlapped the mouth of the Lost River. The Lost River has discharged into the Inlet ever since. It is assumed that Lost River salmon stocks are harvested in the Situk-



Ahrnklin Inlet fishery, but to what extent is unknown. Beginning in the 1999 season, regulatory markers have been placed in the Situk-Ahrnklin Inlet estuary to delineate areas closing the Lost River to commercial fishing. In 2012, the BOF adopted a regulation (5 AAC 30.350(a)(7)) to place regulatory markers 100 yards downstream from the terminus of the Lost River and move them out to 500 yards during the second week of July to close those waters to commercial fishing. This closure forced the displacement of some traditional fishing sites, and many of these fishermen have elected to relocate their operations within the Situk-Ahrnklin Inlet or other areas in the Yakutat District.

Increased conservation measures for Lost River salmon have been needed in recent years. The lower end of the Situk-Ahrnklin Inlet estuary is highly mutable. The Lost River drainage is undergoing rapid geological changes that are affecting habitat and productivity. Escapements have not met desired levels for the past eight years. Beginning with the 2017 season, closed waters increased to 500 yards below and above the terminus of the Lost River for the entirety of the fishing season.

Currently, there is no formal goal for Lost River sockeye salmon. In September 2017, the escapement goal committee recommended the elimination of the Lost River sockeye salmon lower-bound SEG as a result of the poor quality of available information (Heinl et al. 2017). The department continues to monitor Lost River sockeye salmon through boat surveys. A peak count of 840 sockeye salmon was observed in 2019.

The peak escapement count of 1,866 coho salmon was within the SEG range of 1,400–4,200 fish. Historically, escapement surveys have been conducted in Tawah and Ophir creeks, along with various drainage ditches that are tributaries to the Lost River. Inconsistent surveys have been recorded over several years and the department recognized that a more systematic approach was needed. Since 2014, all surveys for coho and sockeye salmon were conducted from Summit Lake to the Lost River Bridge (Zeiser 2015).

## **YAKUTAT BAY**

The 2019 Yakutat Bay fishery opened on the second Sunday in June (SW 24). Fishing time for the first two weeks of the sockeye salmon season was 2.5 days per week. Fishing time was reduced to 1.5 days from SW 27 through to SW 31 when fishing time returned to 2.5 days for remainder of sockeye management. The 2019, Yakutat Bay fishery harvest of 8,400 sockeye salmon was below the recent 10-year average. A total of 32 individual permit holders fished the Yakutat Bay fisheries with a peak effort of 30 permits fishing during the first week of the season (Table 19). Chinook salmon are harvested incidentally in the sockeye salmon fishery. The 2019 harvest of 140 Chinook salmon was below the 10-year average (Table 20).

The coho salmon fishery in Yakutat Bay has never yielded large harvests. Effort is typically low because fishermen concentrate in other, more robust areas during coho salmon season. The 2019 coho salmon harvest of 100 fish was well below the 10-year average (Table 20). Four permit holders fished Yakutat Bay the first week of the coho salmon season and effort continued to drop to fewer than three permits. There was no effort during the last five weeks of the season. Fishing time during the coho salmon season was 3 days per week (Table 19).

The pink salmon fishery typically occurs in August. However, pink salmon have not been targeted in Yakutat Bay in recent years due to the decline of the Humpback Creek fishery. Systematic surveys to estimate spawning escapement into Humpback Creek have not been conducted since

the mid-1990s. There has not been a directed fishery on Humpback Creek pink salmon stocks since 1996 (Woods 2003). In 2005, the escapement goal for Humpback Creek was eliminated due to lack of fishing effort on the stock (Heinl and Geiger 2005). Effort was low in August with 4 or fewer permits fishing. Fishing time in August was 3 days per week (Table 19). The Yakutat Bay pink salmon harvest of 4,100 fish was below the 10-year average of 16,700 fish (Table 20).

## **MANBY SHORE OUTSIDE AND INSIDE FISHERIES**

The Manby Shore Outside fishery is located along the western shore of Yakutat Bay. This fishery harvests sockeye salmon stocks that are destined for the Situk River and the Manby Shore streams. Historical data is difficult to interpret because prior to the mid-1980s, harvests from the ocean fishery were combined with harvests from inside waters. Also, before 1950, all the Manby Shore Ocean and Manby Shore Stream harvests were recorded with those from Yakutat Bay. It is likely that the ocean fishery for sockeye salmon developed in 1977 because consistent sockeye salmon harvests begin to appear in the record at that time. Weekly fishing periods during the sockeye salmon fishery are usually adjusted according to Situk River escapement needs. The overall fishing time in 2019 was average with a total of 48 days open. The Manby Shore Outside waters opened on the third Sunday of June and three permits fished. Fishing effort increased for Manby Shore Outside waters when Yakutat Bay fishing time was reduced. Overall effort in 2019 was above the 10-year average with 11 permits fishing. The sockeye salmon harvest of 8,100 fish was above the 10-year average of 5,700 fish. The coho salmon harvest of 5,600 fish was also above the 10-year average of 300 fish. The increased coho salmon harvest was probably due to two factors: a change in the type of net webbing and favorable weather conditions that allowed for fishermen to continue to fish in outside waters. The harvest of 90 Chinook salmon was above the 10-year average of 60 fish (Table 21).

The Manby Shore Inside or “Inland” fisheries include the waters above the mean high tide line of Manby and Sudden streams, Spoon River, and Esker Creek. The fishing history of these systems is inconsistent because only some, or even none, may be fished in a given year. Sockeye and coho salmon are targeted at Sudden and Manby streams. Only coho salmon is targeted at Esker Creek and Spoon River. In 2019, none of the Manby Inside Waters were fished even though fisheries were open (Table 22). Escapement counts are limited due to the glacial nature of most Manby area streams and no surveys of these inside waters were conducted in 2019. Escapement goals have not been established for the inside waters systems along the Manby Shore.

## **YANA RIVER TO ICY BAY**

Neither the Yana nor the Yahtse rivers were not fished again in 2019. These fisheries are remote and have not been fished, despite being open, for several years due to a lack of air support. No aerial surveys of these systems were conducted in 2019.

## **YAKATAGA DISTRICT FISHERIES**

### **OVERVIEW**

The Yakataga District opened on August 4 (SW 32) for the start of coho management. Coho salmon are the only salmon species targeted in the Yakataga District. Since 2014, the Tsiu River has continued to experience low fishing effort due to dynamic changes of the river creating unfavorable and inefficient fishing conditions. There was no buying station on the Tsiu River for

the third year in a row. The Kaliakh and Seal rivers were fished, and the Tsiu River, Eight Mile Creek, and Tashalich River were open but not fished in 2019.

## **TSIU AND TSIVAT RIVER DRAINAGE**

The Tsiu and Tsivat rivers are very productive coho salmon systems. The coho salmon returns to these rivers occur during a 6- to 8-week period from August to early October. The Tsiu River has been commercially fished since the 1960s and once supported up to 40 individual permit holders; harvests of up to 100,000 coho salmon were common. The Tsivat River is adjacent to the Tsiu and has a few overflow channels that drain into the Tsiu River. The Tsiu River is remotely located from processors, and whole fish are transported by air taxi approximately 125 miles to Yakutat where the product is processed. Historically, fish have been transported from the site in a DC-3 or similar aircraft when production levels required large aircraft. Coho salmon harvests have fallen below historic levels, but harvest on the Tsiu River is a function of effort and effort levels have been well below historic levels over the past decade. Effort has continued to plummet in recent years due to unfavorable fishing conditions, geological changes of the river, and lack of buying station.

The Tsiu River is highly mutable and can change drastically from year to year. In 2012, the Tsiu River presented a new scenario to both industry and ADF&G staff due to geophysical changes in the river itself. During the preceding year, the river mouth broke through a sand spit to the west and shortened the river by approximately two miles. One major and two minor overflow channels from the Tsivat River had cut across the sand flats inland of the Tsiu River. The major overflow channel became the new migration route for coho salmon. This new confluence of the Tsiu and Tsivat rivers is approximately one-half mile downstream of the regulatory markers located near the Yakutat Seafoods buying station, one-half mile below Duck Camp Island. Salmon are no longer migrating up the Tsiu River and are instead entering the Tsivat River well before they reach the current upper marker location. To account for the new migration route, it was decided during 2018 Board of Fish meetings to place a regulatory marker on the Tsivat River north of 60° 05.34' N latitude and west of 143° 03.66' W longitude.

The Tsiu River fishery typically opens after 2,500–3,000 coho salmon have escaped above the regulatory markers. An aerial survey on August 31 revealed approximately 3,000 fish in the river concentrated in the lower half mile of river due to low water conditions. The fishery was first opened for two days during SW 38 after receiving favorable reports from local sport fishing lodges and remained open for two days a week for SWs 39–41. There was no commercial fishing effort during the four weeks the Tsiu River fishery was open (Table 23). The 2019 season marked the third time a fish buying station was not maintained since 2001. Due to lack of air taxi service, a peak aerial escapement survey could not be conducted in 2019.

## **OTHER YAKATAGA STREAMS**

The Kaliakh and Seal rivers received commercial fishing effort in 2019. The Kaliakh River has not received consistent fishing effort in many years. Prior to the 2018 season, the last time it received effort was in 2010. In the spring of 2019, there was again interest by fisherman out of Cordova to fish the Kaliakh River. The Kaliakh River opened for commercial fishing on August 4 (SW 32) with a weekly fishing period of two 36-hour openers per week. The Kaliakh River was fished SWs 34–38, with the maximum effort on SW 37 with 5 permits fished. The Kaliakh River was the second highest producer of coho salmon in YMA with a harvest of 22,800 coho salmon

(Table 5). Aerial surveys cannot be conducted on these systems due to the glacial water feeding both systems, so the fisheries are managed conservatively until more catch information is available to calculate CPUE.

The Seal river was fished for the second time in recent history. The Seal River was opened to commercial fishing on September 1 (SW 36) with a weekly fishing period of 3 days that continued through SWs 36–41 (Table 5). Fewer than three permits fished the Seal River and all harvest information is confidential.

All coho salmon harvested in the Yakataga district were transported to Cordova, and exvessel values were not included in the estimated income for the overall YMA exvessel income.

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## **TABLES AND FIGURES**

Table 1.—Yakutat area Chinook, sockeye, and coho, salmon escapement goals.

Species	System	Escapement Goal	Goal Type	Year Established	Assessment Method
Chinook	Alsek River (total) <sup>a,b</sup>	3,500–5,300	BEG	2013	Expansion
	Situk River	450–1,050	BEG	2003	Weir
Sockeye	East Alsek River	9,000–24,000	SEG	2018	HS, IE
	Klukshu (Alsek) River	7,500–11,000	BEG	2013	Weir
	Alsek River <sup>c</sup>	24,000–33,500	BEG	2013	Run reconstruction
	Situk River	30,000–70,000	BEG	2003	Weir
Coho	Tawah Creek (Lost River)	1,400–4,200	SEG	2015	BS, IE
	Situk River	3,300–9,800	BEG	1994	BS, IE
	Tsiu/Tsivat Rivers	10,000–29,000	SEG	2018	AS, IE

Note: BEG = biological escapement goal, SEG = sustainable escapement goal, HS = helicopter survey, BS = boat survey, IE = index escapement.

<sup>a</sup> The Chinook salmon goal for the Alsek River are for all fish; Situk River is for large fish ( $\geq 660$  mm mid eye to tail fork, or fish age 1.3 and older).

<sup>b</sup> Escapement to the Alsek River is calculated through expansion of the Klukshu River inriver weir count by a factor of 4.0 and subtraction of any inriver harvests above the weir and in Dry Bay in the lower Alsek River.

<sup>c</sup> Alsek River escapement estimates are based on an expansion of genetic stock identification information from the U.S. commercial set gillnet fishery in Dry Bay and Klukshu River weir counts (TTC 2017) and are not available on a timely basis. The management approach for the Alsek river continues to be based on meeting the Klukshu River BEG as measured at the weir (TTC 2017).

Table 2.—Yakutat area set gillnet weekly salmon harvest, 2019.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Total
24	9-Jun	33	2,933	0	1	2	2,969
25	16-Jun	56	5,552	2	3	25	5,638
26	23-Jun	96	8,798	1	15	8	8,918
27	30-Jun	50	5,439	2	50	5	5,546
28	7-Jul	49	6,510	1	438	3	7,001
29	14-Jul	16	8,131	2	2,554	2	10,705
30	21-Jul	8	8,436	19	5,377	12	13,852
31	28-Jul	4	2,005	35	950	6	3,000
32	4-Aug	0	2,976	365	4,368	13	7,722
33	11-Aug	2	3,334	1,508	7,472	167	12,483
34	18-Aug	1	514	6,575	7,673	79	14,842
35	25-Aug	0	157	15,763	4,087	44	20,051
36	1-Sep	1	23	23,042	60	23	23,149
37	8-Sep	0	2	29,038	0	6	29,046
38	15-Sep	0	0	18,210	0	0	18,210
39	22-Sep	0	0	4,343	0	0	4,343
40	29-Sep	0	0	1,004	0	0	1,004
41	6-Oct	0	0	570	0	0	570
Totals		316	54,810	100,480	33,048	395	189,049

Table 3.—Yakutat area set gillnet fishery effort and salmon harvest in numbers of fish, 2009–2019.

Year	Active Permits	Chinook	Sockeye	Coho	Pink	Chum	Total
2009	123	1,533	105,825	133,808	76,956	871	318,993
2010	128	501	122,020	161,584	160,470	1,239	445,814
2011	122	1,123	167,704	126,215	205,261	900	501,203
2012	113	942	124,780	98,677	27,343	2,162	253,904
2013	107	1,401	168,356	158,046	67,344	1,428	396,575
2014	117	1,403	116,435	161,977	20,733	621	301,169
2015	112	934	82,736	129,069	68,785	660	282,184
2016	112	343	93,052	144,032	21,778	554	259,759
2017	113	946	122,479	139,990	91,744	887	356,046
2018	103	295	7,175	95,640	28,114	132	131,356
2019	95	316	54,810	100,480	33,048	395	189,049
2009–2018 Avg.	115	942	111,056	134,904	76,853	945	324,700
2019 <sup>a</sup>	-17%	-66%	-51%	-26%	-57%	-58%	-41%

<sup>a</sup> Percentage deviation from 10-year average.

Table 4.—Yakutat area set gillnet fishery exvessel value, 2009–2019.

Year	Exvessel Value	Active Permits	Avg. Value Per Permit	Previous 10-year Average Value
2009	\$1,881,291	123	\$15,420	\$17,693
2010	\$2,374,762	128	\$18,699	\$15,812
2011	\$2,466,663	122	\$20,386	\$16,020
2012	\$1,606,523	113	\$13,970	\$16,709
2013	\$3,110,040	107	\$29,066	\$16,969
2014	\$2,146,683	117	\$18,348	\$18,446
2015	\$1,340,825	112	\$11,972	\$18,433
2016	\$1,930,222	112	\$17,708	\$18,631
2017	\$2,494,214	113	\$22,073	\$18,428
2018	\$974,220	103	\$9,458	\$17,623
2019	\$1,348,922	95	\$14,199	\$17,710
2009–2018 Avg.	\$2,032,544	115	\$17,710	\$17,476
2019 <sup>a</sup>	-34%	-17%	-20%	1%

Note: Estimated exvessel values from 2009 to 2018 are from CFEC data. Exvessel values from 2019 are from fish ticket data.

<sup>a</sup> Percent deviation from 10-year average.

Table 5.–Yakutat Area set gillnet harvest of salmon in numbers of fish by fishing area, 2019.

Area	Chinook	Sockeye	Coho	Pink	Chum	Total
Alsek	79	9,787	1	0	0	9,867
East Alsek	5	11,489	195	8	118	11,815
Akwe	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Italio	Closed	Closed	Closed	Closed	Closed	Closed
Middle Italio	Closed	Closed	Closed	Closed	Closed	Closed
Old Italio	Closed	Closed	Closed	Closed	Closed	Closed
Dangerous	*	*	*	*	*	*
Situk	0	16,469	71,534	28,762	173	116,938
Lost	Closed	Closed	Closed	Closed	Closed	Closed
Yakutat Bay	141	8,437	104	4,106	88	12,876
Manby Shore	88	8,140	5,645	163	16	14,052
Manby Stream	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Spoon	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Sudden	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Esker	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Yahtse	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Yana	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Jetty Creek	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Big River	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Kaliakh	0	0	22,838	0	0	22,838
Tsiu	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Seal River	*	*	*	*	*	*
Tashalich	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Kiklukh	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished	Not Fished
Totals	316	54,810	100,480	33,048	395	189,049

\* Fewer than 3 permits; all harvest figures are confidential.

Table 6.–Alsek River set gillnet fishery weekly effort and salmon harvest in numbers of fish, 2019.

Week	Starting	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
	Date								
23–24	2-Jun	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
25	16-Jun	11	26	509	0	0	0	535	1
26	23-Jun	11	36	2,108	0	0	0	2,144	1.5
27	30-Jun	9	10	1,613	0	0	0	1,623	2
28	7-Jul	10	5	2,739	0	0	0	2,744	2
29	14-Jul	8	2	2,422	0	0	0	2,424	2
30	21-Jul	6	0	330	0	0	0	471	1
31	28-Jul	*	*	*	*	*	*	*	2
32	4-Aug	*	*	*	*	*	*	*	2
33–42	11-Aug	Not Fished	0	0	0	0	0	0	27
Totals		12	79	9,787	1	0	0	9,867	40.5

\* Fewer than 3 permits; all harvest figures are confidential.



Table 7.–Alsek River set gillnet fishery effort and salmon harvest in numbers of fish, 2009–2019.

Year	Boats	Chinook	Sockeye	Coho
2009	17	602	12,906	3,454
2010	19	273	12,668	1,884
2011	17	546	24,169	1,614
2012	16	510	18,217	536
2013	15	469	7,517	17
2014	15	1,074	33,668	3
2015	19	243	16,104	11
2016	18	132	6,709	655
2017	13	127	4,883	114
2018	10	88	1,363	2
2019	12	79	9,787	1
2009–2018 Avg.	16	333	13,820	829
2019 <sup>a</sup>	-25%	-76%	-29%	-100%

<sup>a</sup> Percentage deviation from 10-year average.

Table 8.–Klukshu River weir counts and Alsek River drainage estimates, 2002–2019.

Year	Klukshu Weir Counts			Alsek River Drainage Estimate	
	Chinook	Sockeye	Coho <sup>a</sup>	Chinook	Sockeye
2002	2,240	25,711	9,921	5,569	93,172
2003	1,671	32,120	3,689	5,904	100,712
2004	2,525	15,348	750	7,083	81,581
2005	1,070	3,373	683	4,390	57,223
2006	568	13,455	420	2,321	47,574
2007	677	8,956	300	2,827	N/A
2008	466	2,731	4,275	1,885	N/A
2009	1,568	5,731	424	6,239	N/A
2010	2,357	18,936	2365	9,526	N/A
2011	1,670	21,389	2,119	6,850	83,899
2012	665	17,267	572	3,027	76,598
2013	1,261	3,902	7,322	4,992	83,771
2014	842	12,377	341	3,357	87,093
2015	1,432	11,211	352	5,697	63,709
2016	651	7,584	2,141	2,834	58,836
2017	448	3,711	1,000	1,926	101,564
2018	1,078	7,031	790	4,312	N/A
2019	1,559	19,053	1,668	6,341	114,000
2009–2018 Avg.	1,197	10,914	1,743	4,876	N/A

<sup>a</sup> Coho salmon numbers are an index; weir is removed before run is over.

Table 9.–East Alsek River set gillnet fishery weekly effort and salmon harvest in numbers of fish, 2019.

Week	Start Date	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
23–27	30-Jun	Closed	Closed	Closed	Closed	Closed	Closed	Closed	Closed
28	7-Jul	3	1	558	0	2	1	562	1
29	14-Jul	3	1	1,036	0	6	0	1,043	2
30	21-Jul	6	2	4,049	0	0	0	4,051	2
31	28-Jul	6	0	1,125	0	0	0	1,125	4
32	4-Aug	8	0	2,348	1	0	1	2,350	4
33	11-Aug	9	1	2,372	78	0	108	2,559	5
34	18-Aug	1	*	*	*	*	*	*	7
35–37	25-Aug	Not fished	0	0	0	0	0	0	9
38	15-Sep	1	*	*	*	*	*	*	3
39–42	22-Sep	Not fished	0	0	0	0	0	0	12
Totals		14	5	11,500	195	8	118	11,826	49

\* Fewer than 3 permits; all harvest figures are confidential.

Table 10.–East Alsek River set gillnet fishery effort and salmon harvest in numbers of fish, 2009–2019.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2009	22	10	7,388	1,042	4	275	8,719	38
2010	5	0	103	680	0	214	997	17
2011	17	0	14,867	99	0	330	15,296	18
2012	17	5	12,124	78	4	1,223	13,434	15
2013	13	7	18,474	72	0	785	19,338	16
2014	10	2	3,069	24	14	212	3,321	34
2015	14	0	2,542	4	1	101	2,648	33
2016	12	3	8,771	56	0	427	9,257	24
2017	12	4	14,236	0	0	367	14,607	45
2018	4	0	216	0	0	25	241	30
2019	15	5	11,500	195	8	118	11,826	49
2009–2018 Avg.	13	3	8,179	206	2	396	8,786	27
2019 <sup>a</sup>	15%	67%	41%	-5%	300%	-70%	35%	82%

<sup>a</sup> Percentage deviation from 10-year average.

Table 11.—East Alsek River escapement counts, 2009–2019.

Year	Dates of Peak Count	Sockeye
2009	3-Aug	12,250
2010	14-Aug	12,500
2011	17-Aug	35,000
2012	22-Jul	16,000
2013 <sup>a</sup>	N/A	N/A
2014	28-Jun	9,800
2015	9-Aug	15,000
2016	1-Aug	19,200
2017	16-Aug	22,500
2018	30-Jul	10,500
2019	20-Aug	27,300
2009–2018 Avg.		19,094

<sup>a</sup> No survey conducted.

Table 12.—Akwe River set gillnet fishery effort and salmon harvest in numbers of fish, 2009–2019.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2009	5	90	7,251	2,270	56	15	9,682	43.5
2010	7	43	6,082	6,351	30	255	12,761	36.5
2011	7	178	21,360	1,639	225	24	23,426	43
2012	5	36	5,888	1,187	564	381	8,056	39
2013	3	76	15,917	759	1,514	123	18,389	40
2014	6	19	1,726	2,201	291	66	4,303	35
2015	4	28	2,694	13	1,594	56	4,385	39.5
2016	3	7	501	706	4	3	1,221	25.5
2017	6	11	8,070	1	1,375	19	9,476	36
2018	Not fished	0	0	0	0	0	0	21
2019	Not fished	0	0	0	0	0	0	36
2009–2018 Avg.		5	49	6,949	1,513	565	9,170	36
2019 <sup>a</sup>		-100%	-100%	-100%	-100%	-100%	-100%	0%

<sup>a</sup> Percent deviation from 10-year average.

Table 13.–Dangerous River set gillnet fishery salmon harvest in numbers of fish, 2009–2019.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2009	13	30	8,691	194	493	26	9,434	54.5
2010	3	2	3,997	4	1	0	4,004	62.5
2011	5	9	4,114	6	0	0	4,129	51
2012	6	0	5,814	30	104	5	5,953	38
2013	3	2	7,046	0	3	1	7,052	21.5
2014	5	1	3,808	2	8	0	3,819	54
2015	2	*	*	*	*	*	*	48
2016	1	*	*	*	*	*	*	51
2017	1	*	*	*	*	*	*	47
2018	5	1	215	0	0	0	216	31.5
2019	2	*	*	*	*	*	*	52.5
2009–2018 Avg.	4	5	3,547	24	61	3	3,640	46
2019 <sup>a</sup>	-50%	-100%	-87%	-100%	-100%	-100%	-87%	14%

\* Fewer than three permits; all harvest figures are confidential.

<sup>a</sup> Percent deviation from 10-year average.

Table 14.–Situk-Ahrnklin set gillnet fishery weekly effort and salmon harvest in numbers of fish, 2019.

Week	Ending Date	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
25	16-Jun	24	0	1,651	0	0	0	1,651	2.5
26	23-Jun	27	0	2,902	0	5	0	2,907	2.5
27	30-Jun	26	0	1,932	0	22	0	1,954	1.5
28	7-Jul	20	0	1,924	0	283	1	2,208	1.5
29	14-Jul	25	0	2,769	0	1,806	1	4,576	1.5
30	21-Jul	33	0	2,954	13	4,928	6	7,901	1.5
31	28-Jul	16	0	398	24	475	0	897	2.5
32	4-Aug	21	0	540	361	4,118	10	5,029	3
33	11-Aug	30	0	834	1,364	6,587	40	8,825	3
34	18-Aug	37	0	396	4,151	6,575	52	11,174	3
35	25-Aug	49	0	144	8,904	3,963	38	13,049	3
36	1-Sep	51	0	23	15,912	0	20	15,955	4
37	8-Sep	54	0	2	19,962	0	5	19,969	4
38	15-Sep	55	0	0	14,926	0	0	14,926	4
39	22-Sep	42	0	0	4,343	0	0	4,343	4
40	29-Sep	17	0	0	1,004	0	0	1,004	4
41	6-Oct	10	0	0	570	0	0	570	3
Total		63	0	16,469	71,534	28,762	173	116,938	48.5

Table 15.–Situk-Ahrnklin set gillnet fishery effort and salmon harvest in numbers of fish, 2009–2019.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2009	84	307	49,016	69,978	66,640	147	186,088	70
2010	85	50	72,185	70,727	143,234	310	286,506	58
2011	86	22	65,661	79,911	142,061	307	287,962	68.5
2012	71	89	53,168	48,328	21,395	254	123,234	44.5
2013	74	314	88,751	106,873	58,742	317	254,997	73
2014	83	27	42,782	121,411	15,788	125	180,133	57.5
2015	78	20	39,397	111,174	52,367	327	203,285	55.75
2016	77	20	32,787	130,216	15,492	59	178,574	51.5
2017	74	18	51,062	135,686	77,635	166	264,567	57.5
2018	79	2	2,788	84,972	17,651	28	105,441	35
2019	63	0	16,469	71,534	28,762	173	116,938	48.5
2009–2018 Avg.	79	87	49,760	95,928	61,101	204	207,079	57
2019 <sup>a</sup>	-20%	-100%	-67%	-25%	-53%	-15%	-44%	-15%

<sup>a</sup> Percentage deviation from 10-year average.

Table 16.–Situk-Ahrnklin set gillnet fishery exvessel value, 2009–2019.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
2009	\$2,022	\$328,357	\$521,304	\$6,306	\$387	\$858,376
2010	\$173	\$645,752	\$544,028	\$180,304	\$1,744	\$1,372,001
2011	\$62	\$540,253	\$579,919	\$184,039	\$1,452	\$1,305,724
2012	\$0	\$373,835	\$372,174	\$25,195	\$1,350	\$772,554
2013	\$13,768	\$902,793	\$954,355	\$60,821	\$1,373	\$1,933,110
2014	\$0	\$384,644	\$864,835	\$20,007	\$550	\$1,270,036
2015	\$0	\$256,648	\$698,528	\$58,468	\$871	\$1,014,515
2016	\$4	\$249,929	\$1,141,887	\$15,832	\$249	\$1,407,901
2017	\$0	\$525,168	\$1,143,843	\$107,080	\$803	\$1,776,894
2018	\$0	\$34,711	\$818,280	\$17,651	\$168	\$870,810
2019	\$0	\$146,145	\$813,050	\$29,617	\$626	\$989,438
2009–2018 Avg.	\$1,603	\$424,209	\$763,915	\$67,570	\$895	\$1,258,192
2019 <sup>a</sup>	-100%	-66%	6%	-56%	-30%	-21%

<sup>a</sup> Percentage deviation from 10-year average.

Table 17.—Situk-Ahrnklin set gillnet fishery exvessel value relative to the total Yakutat Area set gillnet exvessel value, 2009-2019.

Year	Yakutat Area	Situk-Ahrnklin	Percent Value of Situk-Ahrnklin
2009	\$1,641,423	\$858,378	52%
2010	\$2,185,611	\$1,372,001	63%
2011	\$2,382,763	\$1,305,724	55%
2012	\$1,496,399	\$772,553	52%
2013	\$3,025,915	\$1,407,902	64%
2014	\$2,141,760	\$1,270,036	59%
2015	\$1,428,678	\$1,014,515	71%
2016	\$2,437,716	\$1,407,901	58%
2017	\$2,494,214	\$1,776,894	71%
2018	\$974,220	\$870,810	89%
2019	\$1,348,922	\$989,437	73%
2009–2018 Avg.	\$2,020,870	\$1,205,671	63%
2019 <sup>a</sup>	-33%	-18%	16%

<sup>a</sup> Percentage deviation from 10-year average.

Table 18.—Situk River weir counts, 2009-2019.

Year	Dates of Operation	Chinook <sup>a</sup>	Sockeye	Coho <sup>b</sup>	Pink <sup>b</sup>	Chum
2009	5/12-8/5	904	83,959	10	62,287	2
2010	5/11-8/5	170	47,865	2,706	84,594	1
2011	5/9/-8/7	240	89,993	46	169,908	112
2012	6/1-8/7	321	62,467	17	33,620	11
2013	6/11-8/4	912	118,635	31	133,585	3
2014	6/9-8/6	475	102,308	13	28,284	20
2015	6/9-8/7	176	95,093	9	74,729	42
2016	6/8-8/11	330	55,723	200	42,200	5
2017	6/7-8/10	1,188	91,146	370	263,830	443
2018	6/11-8/7	420	26,704	16	53,781	23
2019	6/6-8/10	623	72,541	435	222,895	32
2009–2018 Avg.		514	77,389	342	94,682	66

*Note:* In 1992 and from 1994 to the present, the weir has been operated by Sport Fish Division in May and early June to count emigrant steelhead

<sup>a</sup> Chinook salmon weir counts are for large, three ocean or older, fish.

<sup>b</sup> The Situk weir is not operated through the end of the coho or pink salmon return and is not a useful measure of escapement.

Table 19.—Yakutat Bay set gillnet fishery weekly effort and salmon harvest in numbers of fish, 2019.

Week	Start Date	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
24	9-Jun	30	34	2,933	0	1	2	2,970	2.5
25	16-Jun	22	26	2,533	2	3	22	2,586	2.5
26	23-Jun	16	26	1,119	1	8	5	1,159	2.5
27	30-Jun	6	31	283	0	23	5	342	1.5
28	7-Jul	3	11	147	0	145	1	1,315	1.5
29	14-Jul	5	4	592	1	718	0	1,315	1.5
30	21-Jul	5	5	333	4	422	5	769	1.5
31	28-Jul	6	3	222	4	470	6	705	2.5
32	4-Aug	3	0	34	3	250	2	289	3
33	11-Aug	4	1	127	23	880	19	1,050	3
34	18-Aug	4	0	105	47	1,077	19	1,248	3
35	25-Aug	1	*	*	*	*	*	*	3
36	1-Sep	2	*	*	*	*	*	*	3
37-41	8-Sep	Not Fished	0	0	0	0	0	0	15
Totals		32	142	8,437	104	4,106	88	12,877	46

\* Fewer than three permits; all harvest figures are confidential.

Table 20.—Yakutat Bay set gillnet fishery effort and salmon harvest in numbers of fish, 2009–2019.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2009	56	394	15,423	3,308	26,650	353	46,128	60.5
2010	46	92	15,092	1,052	17,200	377	33,813	54.5
2011	50	257	27,612	6,646	62,774	215	97,504	67
2012	39	247	23,836	2,672	5,275	280	32,310	48
2013	36	492	26,837	5,362	6,145	192	39,028	40
2014	41	266	29,670	719	4,625	201	35,481	59
2015	38	509	13,586	865	14,796	167	29,923	53.5
2016	42	130	20,818	324	6,220	59	27,551	49
2017	42	713	31,387	2,236	12,599	322	47,257	63
2018	36	175	1,208	794	10,361	75	12,613	41.5
2019	32	142	8,437	104	4,106	88	12,877	46
2009–2018 Avg.	43	328	20,547	2,398	16,665	224	40,161	54
2019 <sup>a</sup>	-25%	-57%	-60%	-96%	-75%	-61%	-68%	-15%

<sup>a</sup> Percentage deviation from 10-year average.

Table 21.–Manby Shore-Outside set gillnet fishery effort and salmon harvest in numbers of fish, 2009–2019.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2009	12	100	2,830	60	378	33	3,401	48
2010	13	33	8,938	52	5	71	9,099	48
2011	15	111	9,203	503	29	11	9,857	56.5
2012	7	55	5,084	25	1	12	5,177	44.5
2013	9	41	3,600	72	9	5	3,727	55.5
2014	5	14	1,712	4	7	5	1,742	55.5
2015	6	65	5,491	29	17	6	5,608	48
2016	10	23	11,701	881	33	0	12,648	32
2017	5	76	7,382	1,069	90	13	8,630	49.5
2018	4	29	1,047	575	96	4	1,751	41.5
2019	11	88	8,140	5,645	163	16	14,052	48
2009–2018 Avg.	9	55	5,699	327	67	16	6,164	48
2019 <sup>a</sup>	22%	60%	43%	1626%	143%	0%	128%	0%

<sup>a</sup> Percent deviation from 10-year average.

Table 22.–Manby Shore-Inside set gillnet fishery effort and salmon harvest in numbers of fish, 2009–2019.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2009	2	*	*	*	*	*	*	46.5
2010	1	*	*	*	*	*	*	45.5
2011	1	*	*	*	*	*	*	49
2012	1	*	*	*	*	*	*	42
2013	1	*	*	*	*	*	*	45
2014	Not fished	0	0	0	0	0	0	53
2015	3	64	1,157	5	9	2	1,237	45.5
2016	2	*	*	*	*	*	*	47
2017	3	0	5,420	375	43	0	5,838	42
2018	1	*	*	*	*	*	*	33.5
2019	Not fished	0	0	0	0	0	0	48
2009–2018 Avg.	2	9	2,348	83	99	0	2,540	45
2019 <sup>a</sup>	-100%	-100%	-100%	-100%	-100%	-100%	-100%	7%

\* Fewer than three permits; harvest information is confidential.

<sup>a</sup> Percent deviation from 10-year average.



Table 23.—Tsiu River set gillnet fishery effort and salmon harvest in numbers of fish, 2009–2019.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2009	10	0	74	43,723	121	2	43,920	23.5
2010	19	6	3	77,780	0	3	77,792	21
2011	20	0	16	34,360	171	2	34,549	16
2012	13	0	0	45,821	0	6	45,827	12
2013	13	0	0	44,887	0	0	44,887	27
2014	9	0	0	37,613	0	0	37,613	20
2015	6	0	24	16,968	0	1	16,993	31
2016	3	0	15	11,173	22	0	11,210	32
2017	2	*	*	*	*	*	*	6
2018	4	0	0	2,077	0	0	2,077	35
2019	Not fished	0	0	0	0	0	0	8
2009–2018 Avg.	11	1	13	31,491	32	1	31,538	22
2019 <sup>a</sup>	-100%	-100%	-100%	-100%	-100%	-100%	-100%	-64%

Note: For 10-year comparison, days are for coho salmon season only.

\* Fewer than three permits; harvest information is confidential.

<sup>a</sup> Percent deviation from ten-year average.

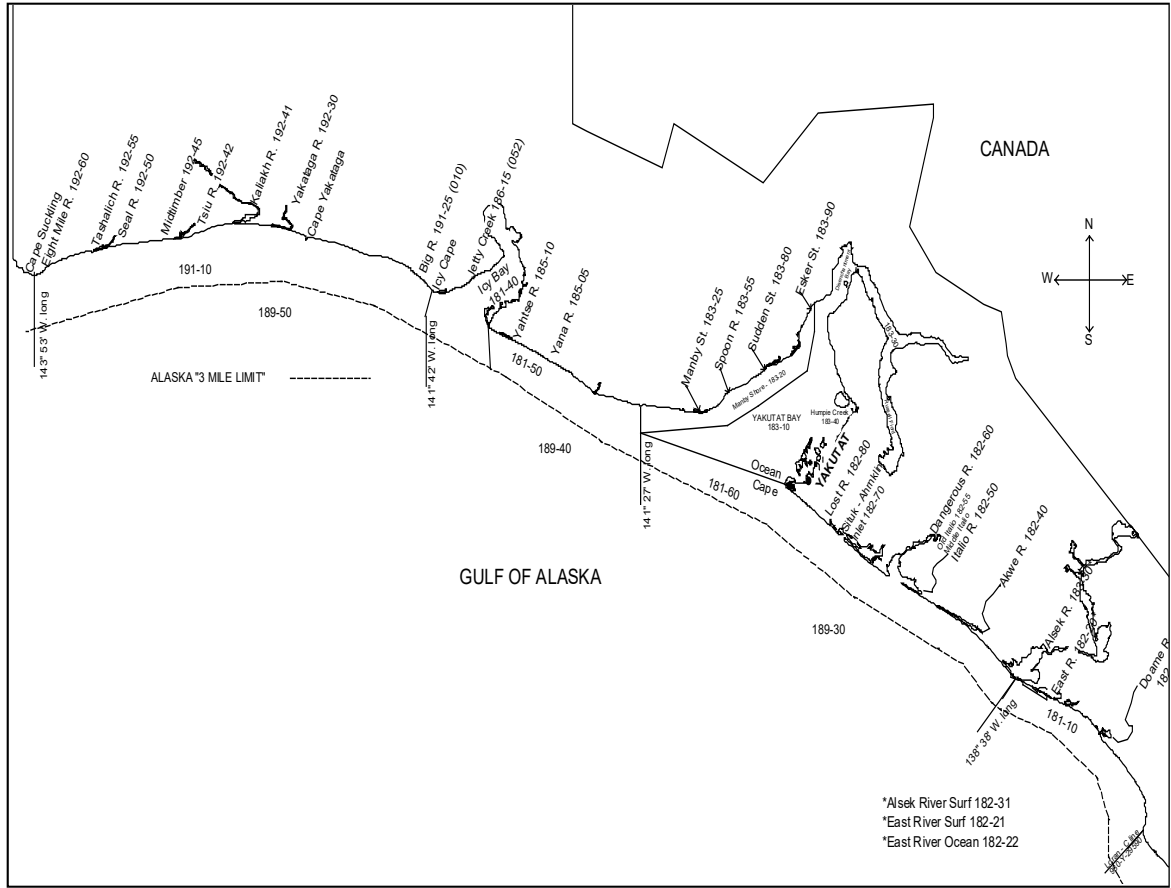


Figure 1.—Yakutat Management Area map, showing statistical reporting areas.