Fishery Management Report No. 17-36

Annual Management Report of the 2016 Yakutat Area Commercial Salmon Fisheries

by

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and

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Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
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

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat or long
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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ABSTRACT

The 2016 Yakutat set gillnet fishery harvest of 260,000 salmon was 25% below the recent 10-year average. The total harvest included 300 Chinook, 93,000 sockeye, 144,000 coho, 22,000 pink, and 600 chum salmon. The salmon harvest had an exvessel value of $2.4 million, which was an increase of $1.0 million from the 2015 exvessel value. The Yakutat set gillnet fishery was composed of 111 active permit holders, slightly below the recent 10-year average. The 2016 sockeye salmon harvest of 93,000 fish was 28% below the 10-year average. Sockeye salmon harvests in almost all Yakutat District fisheries were below the 5-year average in 2016. Biological escapement goals for sockeye salmon were met in all sockeye salmon producing systems, with the exception of the Lost River. The total coho salmon harvest of 144,000 was slightly above the recent 10-year average. The Situk-Ahrnklin River produced 90% of the total Yakutat Area coho salmon harvest, with the Tsiu River as the second-largest producer. The Chinook salmon harvest was well below the 10-year average. The top Chinook salmon producers were the Alsek River and Yakutat Bay. There were no directed Chinook salmon fisheries in the Situk-Ahrnklin Inlet. The 2016 preseason projection was for a total run of approximately 684 large Chinook salmon returning to the Situk River. Given recent fishery and harvest trends, a run of that size is not expected to achieve the escapement goal without fishery restrictions. For the sixth year in a row, the subsistence, sport, and commercial fisheries were closed for the taking of Chinook salmon. The Situk River pink salmon harvest was well below average. The Situk River chum salmon harvest was less than half the average. Most of the pink salmon harvest came from Situk-Ahrnklin Inlet and Yakutat Bay fisheries.

Key words: Management, Annual Management Report (AMR), set gillnet, 2016 season, 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 (Figure 1) 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. 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.

Although the bulk of the Yakutat salmon harvest is usually reported from four or five major fisheries (the Alsek, Situk-Ahrnklin, and Tsiu rivers, and Yakutat Bay), upwards of 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 escapement goals for most of the major and several of the minor fisheries (Table 1).

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 either difficult to see escapement, or escapement does not become visible until after the fishery has occurred. Fisheries performance data, expressed as catch per unit effort (CPUE), are compared with historical data to estimate run strength for management purposes. Two ocean fisheries, Manby Shore 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 in accordance with Situk-Ahrnklin escapement goals.

YAKUTAT AREA SUMMARY

OVERVIEW

The 2016 Yakutat Area set gillnet fishery produced a cumulative harvest of 260,000, salmon. This was 25% below the recent 10-year average (Tables 2 and 3). Of the 174 Yakutat set gillnet permits, 112 were active this season, which was slightly below the recent 10-year average. The average Yakutat permit holder earned $22,000 for the 2016 season; this almost doubled the income earned in 2015 and was 27% higher than the 10-year average (Table 4). Sockeye salmon harvests in the Yakutat District fisheries were below average in 2016. The coho salmon harvest was slightly above the recent 10-year average. The Situk-Ahrnklin Inlet accounted for 90% of the area's total coho salmon harvest. Almost all of the remote systems, although open to fishing, received little or no effort for coho salmon in 2016. Reduced fishing effort for coho salmon in the Yakutat District is mainly due to the lack of aircraft in the fall. A buying station was maintained on the Tsiu River for the twelfth time since 2001; however, fishing effort has declined in recent years. Approximately 11,000 Tsiu River coho salmon were harvested in 2016, which is roughly 6,000 fish less than the 2015 harvest and 69% below the recent average. The return of pink salmon to the Situk River was below the 10-year average and well below the 2015 return. There is little economic incentive to harvest pink salmon and they are harvested incidentally to sockeye and coho salmon. The harvest of 15,000 pink salmon in the Situk-Ahrnklin Inlet was well below average. The chum salmon harvest in the Yakutat Area is usually minimal but was also below the recent 10-year average of 1,200 fish. The 2016 Chinook salmon harvest of 343 fish was the lowest on record since 1962.

SOCKEYE SALMON

The sockeye salmon harvest of 93,000 fish was below the recent 10-year average of 130,000 fish. The 2016 harvest of 33,000 Situk-Ahrnklin sockeye salmon was below the recent five-year average of 58,000 fish. The Situk-Ahrnklin Inlet was the primary producer for the area and accounted for nearly one-third of the Yakutat Area total sockeye salmon harvest. The Situk River weir count of 55,723 sockeye salmon fell within the BEG range of 30,000–70,000 fish. This is the eighth year in a row that sockeye salmon counts through the Situk River weir met escapement objectives.

The East Alsek and Doame rivers are counted as one watershed and share a common BEG range of 13,000–26,000 sockeye salmon. Commercial fishing remained closed until escapement counts indicated there was a harvestable surplus of sockeye salmon. The peak sockeye salmon escapement count to the East Alsek was 15,000 fish, recorded on June 26, which indicated an early and strong return. Escapement goals were met and commercial fishing opened to sockeye salmon harvest on June 29. The East and Doame rivers are two separate systems with genetically distinct sockeye salmon populations. Historically, Doame River sockeye salmon ran from June through early August, and East River sockeye salmon ran from late July through the end of September. The department believes that both sockeye salmon populations may be in a state of transition due to changes in hydrology and habitat within the drainage. It appears that Doame River stocks are increasing in abundance and getting later in run timing. It also appears that East River stocks are changing from predominantly age-0.3 to age-1.3 fish. The department will continue to monitor these changes and may reevaluate the spawning escapement goals in the future. During the 2016 season, it was unusually dry during July and sections of the upper

Doame River went subsurface. Subsurface sections 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 event may impact freshwater survival and productivity as well as future returns.

The Alsek River sockeye salmon run was below average in 2016. The Alsek River set gillnet fishery harvested 7,000 sockeye, about 10,000 fish less than in 2015 and the lowest harvest on record in the last five years (Tables 6 and 7). Yakutat Bay, with a harvest of 21,000 sockeye salmon, was the second highest producer and accounted for 22% of the area's total sockeye salmon harvest. The Akwe River harvest of 500 sockeye salmon was well below the recent five-year average of 10,000 fish. Low harvest was likely due to decreased effort and closure of the fishery mid-season. The Akwe River was closed to commercial fishing after July 11 due to low escapement counts and was not reopened until coho season. Less than three permits fished the Dangerous River in 2016 and harvest information is confidential. The Manby Shore fishery harvest of 12,000 sockeye salmon was three times the 2015 harvest and was well above the recent 5-year average of 5,000 fish. Spoon River received similar fishing effort in 2016 as 2015, with a harvest of approximately 2,000 sockeye salmon. Sudden Stream, with a harvest of approximately 10,000 sockeye salmon, was the fourth highest producer and accounted for 11% of the area's total sockeye salmon harvest.

COHO SALMON

The 2016 coho salmon harvest of 144,000 fish was above the recent 10-year average of 129,000 fish. Coho salmon returns from 1990–2002 were the largest in the history of the Yakutat Area. Since 2002, coho salmon production for the Yakutat Area has fallen back to historical averages. The Situk-Ahrnklin Inlet harvest of 130,000 coho salmon was above the recent five-year average. The only other major coho salmon producer in Yakutat in 2016 was the Tsiu River in the Yakataga District. The presence of a buying station on the river prompted effort on the Tsiu River for the 12th year in a row. The Tsiu River harvest of approximately 11,000 coho salmon was well below the recent 5-year average of 36,000 fish. The low harvest was due to decreased fishing effort in 2016. Yakutat Bay harvest of 300 coho salmon was also well below the recent average of 3,000 fish. Manby Shore-Inside waters harvest of 900 coho salmon was the highest harvest seen in the last 6 years and was well above the recent 5-year average. Minimal effort was recorded on Spoon River in 2016 and harvest is negligible. Due to lack of aircraft services during the fall, many of the remote fisheries in the Yakutat District received no effort (Italio and East Alsek rivers) or minimal fishing effort (Alsek and Akwe rivers) for coho salmon harvest in 2016. The Kaliakh River, Sudden and Esker streams, and Yahtse and Yana rivers were not fished in 2016.

CHINOOK SALMON

With the exception of the troll fisheries, there are no directed fisheries for Chinook salmon in the Yakutat Area. All Chinook salmon are harvested incidentally in the sockeye salmon set gillnet fisheries. The principle producers of Chinook salmon are the Situk-Ahrnklin Inlet, the Alsek River, and Yakutat Bay. The 2016 preseason total run estimate for large Chinook salmon for the Situk River was 684 fish (range 84–1,287). Although this projection was within the escapement goal range of 450 to 1,050 fish, it did not allow for a viable fishery that would achieve the escapement goal. As mandated by 5 AAC 30.365, *Situk-Ahrnklin Inlet and Lost River King Salmon Fisheries Management Plan,* conservation measures were taken for the 6th year in a row

and the subsistence, sport, and commercial fisheries were closed to Chinook salmon in 2016. The BEG of 450–1,050 large Chinook salmon was not achieved in 2010–2012, and fishermen were not allowed to retain or sell Chinook salmon throughout those seasons. The Chinook salmon BEG was attained in 2013 and subsistence, sport, and commercial fisheries were opened to the retention of Chinook salmon by mid-July. The 2014 Situk River weir count of 475 large Chinook salmon was within the BEG range but was achieved near the end of the run; all fisheries for Chinook salmon remained closed through the end of the sockeye salmon season. In 2015, 176 large Chinook salmon were counted through the Situk River weir and all fisheries were again closed through the end of the sockeye salmon season. The 2016 preseason projection for Alsek River Chinook salmon was for above average returns; however, final escapement fell below the spawning escapement goal.

Although all fisheries were closed to the harvest of Chinook salmon, 330 large Chinook salmon were counted through the Situk River weir and the BEG was not achieved in 2016. The Alsek River harvest of 130 Chinook salmon was well below average and the lowest harvest on record since the directed Chinook salmon fishery closed in 1962. Test fisheries have been conducted in prior years to assess abundance and run strength inseason but due to depressed stocks, test fishing has not been conducted since 2012. The Yakutat Bay harvest of 130 Chinook salmon was 63% below the recent 5-year average. Manby Shore and Spoon River fisheries harvests of 23 and 28 Chinook salmon, respectively, were also below the recent 5-year averages. The Akwe River Chinook salmon harvests were minimal and below average. The Alsek River and Yakutat Bay accounted for 76% of all Chinook salmon harvested in the Yakutat Area. The total Yakutat Area harvest of 343 Chinook salmon was 72% below the recent 10-year average. Set gillnet Chinook salmon prices were $2.06/lb this season, which was the same as 2015 and slightly above the recent average.

PINK SALMON

The 2016 areawide pink salmon harvest of 22,000 fish was one-third of the 2015 harvest and one-fourth of the 10-year average of 87,000 fish. The pink salmon returns to Yakutat in 2010 and 2011 were two of the largest on record. In August 2011, an estimated three million pink salmon were observed in Yakutat Bay. The 5-year period since 2011 has been a reversal of fortune, with all 5 years recording below-average harvest levels of pink salmon. The 2016 pink salmon fishery in several areas in the Gulf of Alaska, including the Yakutat Area, faced a commercial fishery failure due to poor pink salmon returns. Poor pink salmon returns were thought to be caused by a variety of factors outside the control of the fishery managers, including unfavorable ocean conditions and freshwater environmental factors. A federal disaster declaration was issued for some of Alaska's pink salmon fisheries in 2016, including Yakutat. Yakutat Bay and the Situk-Ahrnklin Inlet were the top two producers for the area in 2016. The two fisheries together accounted for almost all of the pink salmon harvested in the Yakutat Area. The Situk-Ahrnklin Inlet harvest of 15,000 pink salmon was well below the recent 5-year average of 58,000 fish. The Yakutat Bay harvest of just over 6,000 pink salmon was below the recent 5-year average of 19,000 and the 2015 harvest of nearly 15,000 pink salmon. Pink salmon harvested in Yakutat Bay are predominantly of Situk River and Humpback Creek origin. An estimated 42,000 pink salmon were counted through the Situk River weir by the time the weir was removed on August 11. The Situk River has a sustainable escapement goal (SEG) of 33,000 pink salmon counted through the weir by August 5 and the goal was achieved in 2016 by August 7.

CHUM SALMON

Chum salmon are a non-target species in the Yakutat Area due to the combination of low abundance and low price; harvest is incidental. Historically, the East River was a major producer as well as the only producer of chum salmon in the Yakutat Area. East 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 2016, the East River fishery had a harvest of 400 chum salmon which was below the recent 5-year average of 500 chum salmon, but was the biggest chum producer in the Yakutat Area. The Situk-Ahrnklin Inlet and Yakutat Bay fisheries had similar harvests of about 60 fish each, which were below average. The areawide chum salmon harvest of 600 fish was half the recent 10-year average of 1,200 fish.

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. Alsek River salmon management is conducted in cooperation with Fisheries and Oceans Canada (DFO) under the auspices of the Pacific Salmon Commission (PSC). In February 2005, the PSC reached bilateral agreement to allow directed Chinook salmon fisheries in the Taku and Stikine rivers to begin in early May. Agreement was not reached to open the Alsek River Chinook salmon fishery until run projections improved. 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. ADF&G was granted permission to conduct test fisheries for Chinook salmon for inseason index of run timing and abundance of Chinook salmon stocks. These test fisheries were conducted in 2005–2008, 2011, and 2012. Due to poor Chinook salmon returns in recent years, test fishing has ceased since 2012.

The 2016 preseason expectations were for above average runs for both Chinook and sockeye salmon. A total of 18 permit holders on the Alsek River harvested approximately 100 Chinook, 7,000 sockeye, and 700 coho salmon in 2016. Chum salmon harvest was negligible and no pink salmon were harvested (Tables 6 and 7). The sockeye salmon harvest was less than half of the 2015 harvest and well below the recent five-year average of 20,000 fish (Table 7). In 2016, the Alsek River opened to commercial fishing on June 5 for 24 hours. Traditionally, inseason management of Alsek River sockeye salmon consists of monitoring the commercial fishery near the mouth of the Alsek River. Current management regimes and decisions are made by monitoring fishery performance data and comparing it to historical CPUE for a given opening to adjust time and area. Parent-year escapement information and harvest trends are also considered when determining the weekly fishing periods. CPUE was well below average throughout most of the sockeye salmon season and only two extensions were given. An additional 24 hours was given in statistical weeks (SW) 31 and 33 due to the inefficiency of nets during high water events with heavy debris. The number of days the fishery was open was above average, but the number of days actively fished fell below average. The number of permits fishing during weekly openings was near the recent ten-year average throughout the season. Sockeye salmon harvests were below average in many weeks of the fishery and a total of 18 permits harvested 7,000 fish

in 2016. The peak sockeye salmon harvest occurred during SW 28 when 12 permits harvested 1,200 fish. There is no directed Chinook salmon fishery on the Alsek River but they are harvested incidentally during the sockeye salmon fishery. A total harvest of 132 Chinook salmon was well below average and the lowest harvest on record since 1962. Coho salmon are targeted by mid-August and fishing effort usually declines. By SW 36, management strategies focused on coho salmon and fishing time increased to 3 days or more per week. Fishing time varied from 3 to 4 days per week until SW 38, when fishing periods increased to 5 days for the rest of the season. The coho salmon harvest in 2016 was negligible. During the past several years there has been reduced fishing effort during coho salmon season due to a lack of aircraft charters to transport fish to town. The commercial fishery closed for the season on October 28.

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 DFO in cooperation with the Champagne-Aishihik First Nation since 1976. Escapement goals are in place for Chinook and sockeye salmon stocks spawning on the Klukshu River. In February 2013, the bilateral Transboundary Technical Committee (TTC) and bilateral Transboundary River (TBR) Panel agreed to the revised biological escapement goals for Alsek River Chinook and sockeye salmon. These goals were for 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; PSC, JTTC 2015). Current escapement monitoring programs including the Klukshu and Village Creek weirs, GSI based run reconstructions, and aerial surveys allow annual comparisons of escapement indices. The most reliable long-term comparative escapement index for Alsek River drainage salmon stocks is the Klukshu River weir count.

In 2016, 7,584 sockeye salmon were counted at the Klukshu River weir. After factoring in Canadian harvest above and below the weir, the total escapement was 7,391 fish, which fell below the recommended escapement goal range of 7,500–11,000 fish. The overall Alsek drainage sockeye run was expected to be 83,000 sockeye salmon, above the 10-year average of 68,000 fish. The Klukshu weir escapement of 651 Chinook salmon was also below the BEG of 800–1,200 fish (Table 8). There is no formal BEG for coho salmon. The Klukshu River coho salmon weir count of 2,141 fish indicated an above-average return. This does not serve as a reliable run strength indicator as the weir is normally removed well before the end of the coho salmon run.

Aerial escapement surveys of sockeye salmon are typically conducted on the Tanis River and Cabin and Basin Creeks. Due to budget constraints and lack of airplane pilots in Yakutat, these systems have not been surveyed for several years and were not surveyed in 2016. DFO installed a video enumeration system on the Klukshu River in 2016 (following on the installation of a similar system on Village Creek in 2014), which monitored salmon passage 24 hours per day.

EAST RIVER

The East 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 River was the peak sockeye salmon producer in Yakutat but this is no longer the case. Salmon production in the East River now fluctuates from year to year. Historically, the East River commercial set gillnet fishery has opened after a minimum escapement count of 13,000 (lower bound of the BEG range) sockeye salmon have been observed. In 2016, aerial surveys indicated strong sockeye salmon returns and the department opened the river to commercial fishing on June 29 (SW 27) for 24 hours. Fishing periods were two days after the first opening and remained two days for the next four weeks. A total of 12 permits harvested 9,000 sockeye salmon which was slightly below average (Tables 9 and 10). By SW 32, fishing time increased to three days with the onset of coho salmon season. Fishing periods remained at three days throughout the coho salmon season. There was minimal effort during the coho salmon season and catch was negligible. The East River harvest of 400 chum salmon was below the recent 5-year average. Although the East River is considered the only consistent producer of chum salmon in the Yakutat Area, chum salmon are not targeted due to transportation costs. Pink salmon are also a non-targeted species and the harvest was negligible. The East River was not fished during the last six weeks of the season. The peak escapement count of 15,000 sockeye salmon was recorded on June 26, within the BEG range of 13,000–26,000 fish. The East River was surveyed for coho salmon once in 2016, insufficient for an accurate peak escapement estimate.

AKWE RIVER

By regulation, the Akwe River commercial set gillnet fishery opened on the fourth Sunday in June (SW 27). Weekly fishing times are initially announced at 1.5 days and then adjusted inseason according to fishery performance. On average no more than five permits fish the Akwe River during the sockeye salmon season. In 2016, three permits harvested 500 sockeye salmon, well below the recent 5-year average of 10,000 fish (Table 11). The Akwe River was only fished two weeks in the 2016 season because the fishery was closed after low escapements were documented. A peak aerial survey count of 800 sockeye salmon was observed on August 1. A float survey conducted by the U.S. Forest Service August 27–28 estimated 1,370 sockeye salmon. The former BEG of 600–1,500 sockeye salmon was eliminated in 2006 (Geiger et al. 2005) and there is no formal BEG for any species in the Akwe River. Commercial fishing was reopened during the coho season; however, there was very little fishing effort and harvest is confidential. The coho harvest was below average mainly due to lack of fish transporters during fall fishing. Historically, aerial surveys of the Akwe River have been of little value in determining escapement due to the turbidity of the river. The dramatic retreat of Chamberlain Glacier, which feeds Akwe Lake, has improved water clarity and visibility in the river, and aerial surveys have become more effective in recent years. No aerial surveys were conducted for coho salmon in 2016 due to lack of pilots. The river was open three days a week throughout the coho salmon season.

ITALIO RIVERS

Three rivers make up the Italio River system: the Old, Middle, and New Italio rivers. The Old Italio 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 Italio River and created two distinct rivers where only one had existed before. The main river is now called

the New Italio and the original river channel is the Middle Italio. All three systems support coho salmon populations and the New Italio River also has a small run of sockeye salmon. With the decline in sockeye salmon production, the New Italio has not been open to commercial fishing since 1987. The New and Middle Italio rivers are still monitored by aerial surveys. Weekly surveys are conducted and peak counts of no more than 1,500 sockeye salmon are usually recorded. In 2011, a peak aerial survey of 6,000 sockeye salmon was recorded on August 17. That was the highest sockeye salmon count in over 20 years and is the highest count on record, indicating the New Italio River sockeye salmon run may be rebuilding. In 2012, the U.S. Forest Service installed a fish weir above Italio Falls which is located just below Italio Lake. The weir was equipped with mini-DVR fish counting systems utilizing motion-detection video. The project results confirmed over 4,000 sockeye salmon escaped into the lake in 2012. The U.S. Forest Service continued the project in 2013 and 2014 with peak weir counts of 5,862 and 3,801 respectively. These projects, along with the department's aerial surveys, are helpful tools for monitoring the recovery of Italio River sockeye salmon stocks. There are no formal BEGs in place for the Italio River salmon stocks. No late fall surveys were conducted in 2016 due to lack of pilots. The Old and Middle Italio rivers were not opened to commercial fishing for coho salmon in 2016.

DANGEROUS RIVER

The Dangerous River was opened to commercial fishing on the second Sunday in June (SW 25). During the sockeye salmon season, weekly fishing periods are 2.5 days by regulation and then adjusted in accordance with fishery performance. Fewer than three permits fished the Dangerous River in 2016 and harvest information is confidential (Table 12). Escapement surveys of the Dangerous River are ineffective due to the glacially occluded water. During the 2016 coho salmon season, fishing time remained at three days throughout, but the river was not commercially fished for coho salmon.

SITUK-AHRNKLIN INLET

The Situk-Ahrnklin Inlet commercial set gillnet fishery recorded below-average harvests for all species during the 2016 season with the exception of coho salmon (Tables 13 and 14). The Situk-Ahrnklin Inlet generated 58% of the Yakutat Area set gillnet income (Tables 15 and 16). The total fishery value of approximately $1.4 million was higher than the 10-year average of $1.1 million. The harvest of 33,000 sockeye salmon was 43% below the recent average. Situk-Ahrnklin sockeye salmon accounted for nearly a third of the area's total sockeye salmon harvest. The coho salmon harvest of 130,000 fish was above the 5-year average of 94,000 fish and accounted for the majority of the Yakutat Area's total coho salmon harvest. The pink salmon harvest of approximately 15,000 fish was well below the recent 5-year average of 58,000 fish and accounted for 71% of the total Yakutat Area pink salmon harvest.

The Situk River weir was installed in the lower river for the 29th consecutive year and used for inseason management of the sockeye and Chinook salmon commercial fisheries (Table 17). Heavy rains and subsequent flooding are typical of the fall coho season. The weir is not maintained during the pink and coho salmon runs.

Prior to the start of the season, Sport Fish Division announced a projection for a total return of 684 large (ocean-age-3 and older) Chinook salmon to the Situk River in 2016, with a range of 84–1,287 fish. The forecast was generated using a sibling relationship model based on ocean age.

The Situk River drainage is managed for a BEG of 730 large Chinook salmon with a range of 450–1,050 fish. Under the terms of 5 AAC 30.365, *Situk-Ahrnklin Inlet and Lost River King Salmon Fisheries Management Plan*, if the projected escapement is 451–730 large Chinook salmon, 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. Although the 2016 preseason projection was for a total run of 684 large Chinook salmon, a run of that size is not expected to achieve the escapement goal. Sockeye and Chinook salmon run timing in the Situk-Ahrnklin Inlet is nearly identical. In order to provide for a commercial fishery for sockeye salmon and still attain escapement objectives for Chinook salmon, conservation measures for Chinook salmon were implemented for the sixth year in a row.

In 2011, Yakutat Area ADF&G staff attended meetings with the Yakutat Tlingit Tribe and the City and Borough of Yakutat to outline a plan that would allow commercial fishing for sockeye salmon while at the same time calling for stringent conservation measures for Chinook salmon. The plan appeared to be successful and was implemented again in both 2012 and 2013 with success. In 2013, the BEG for large Chinook salmon was reached for the first time since 2009 and the restrictions were lifted inseason. In 2014, conservative subsistence, commercial, and sport fisheries management measures were once again implemented in order to protect Chinook salmon stocks in the Situk Inlet while providing fishing opportunities for sockeye salmon and the lower-bound of the BEG was achieved. Although similar and strict conservation measures were in place in 2015, the BEG was not achieved. In 2016, further restrictions were implemented in the sockeye salmon fishery to protect the depressed Chinook salmon stocks. Further restrictions included closing Johnson Slough to commercial fishing and enlarging the closed area near the mouth of the Situk River. Unfortunately, the BEG was again not met. The subsistence and sport fisheries for Chinook salmon closed effective May 12, and the retention and sale of Chinook salmon in the Situk-Ahrnklin Inlet was prohibited when the sockeye salmon fishery opened on June 19. Conservation restrictions remained in effect through the end of the Chinook salmon run in 2016. The management provisions outlined below have been in place for the past six seasons, with further restrictions implemented in 2016.

1. By regulation, there are three regulatory markers located where the Situk River enters the Inlet that delineate fresh river water at mean low tide, upstream of which are closed waters. The open waters immediately adjacent to these markers are known to be a high Chinook salmon abundance area and migration corridor. Approximately 75% of Chinook salmon taken in the commercial fishery came from the nets in this area. The three markers were moved farther out and a fourth marker was added to increase the closure area and protect Chinook salmon from exposure to harvest (Figure 2). Johnson Slough was also closed to commercial fishing for the first time. When conservation measures were no longer needed, the markers were returned to their normal regulatory locations.
2. Prior to 2012, 5 AAC 30.365 contained a “non-sale” 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 “non-sale” to “non-retention.” In other words, all Chinook salmon in the nets would be returned to the water immediately. To address a concern about the potential waste of salmon from net mortalities, dead Chinook

salmon would be turned in to a buyer at the time of sockeye salmon sale for distribution to elderly, legally blind, or 70% disabled members of the community.

3. Finally, it was recognized that ADF&G did not have regulatory authority to require permit holders to closely attend gear while fishing; therefore, the close attendance of gear would have to be voluntary. The department would closely monitor the fishery to see if this experimental plan was effective. If it became clear that too many Chinook salmon were being killed, the only alternative would be to close the commercial sockeye salmon fishery for the season. For this plan to work there must be a cooperative effort among all the parties: the department, the community, and the permit holders.

The Situk-Ahrnklin Inlet fishery opened by regulation on the third Sunday in June and the fishing period remained 2.5 days throughout most of the sockeye season. For the initial opening, 45 permit-holders harvested over 6,000 sockeye salmon, a much bigger harvest than the initial opening in 2015. The peak harvest occurred during SW 28 with 40 permits harvesting almost 7,000 sockeye salmon. The total Situk-Ahrnklin Inlet harvest of approximately 33,000 sockeye salmon was 43% below the 5-year average. Approximately 56,000 sockeye salmon were counted through the Situk River weir in 2016, achieving the mid-point of the BEG range of 30,000–70,000 fish (Table 17). A total of 330 large Chinook salmon passed through the weir and the BEG of 450–1,050 fish was not attained for the second consecutive year. During the "non-retention" period, a total of 20 dead Chinook salmon were retained from nets and given to the Yakutat Senior Center.

The first Sunday in August, fishing times are adjusted to three days a week for coho salmon management. The commercial fishing periods throughout the coho salmon season varied between three to five days. Approximately 130,000 coho salmon were harvested by 77 permit holders. The 2016 coho salmon harvest was above the 2015 harvest and was also the highest harvest in the last five years. 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 is dismantled before the coho salmon run is over so weir counts are not indicative of entire escapements. Float surveys are conducted after the weir is removed to estimate a peak escapement count and to ensure desired escapement goals are achieved. A peak escapement count of 6,000 coho salmon was recorded on September 20 and the BEG of 3,300–9,800 fish was attained.

The pink salmon harvest of 15,000 fish was below the recent 5-year average of approximately 58,000 fish. The peak of the pink salmon return occurs between the end of the sockeye season and the onset of the coho salmon season. Effort levels diminish during this time because fewer permit holders are willing to fish for pink salmon due to the comparatively low price. In 2016, the pink salmon price was $0.23 per pound, higher than last year's price of $0.18. Harvests of Situk River pink salmon increased in the past two decades from an average of 12,000 prior to 1990, to 34,000 in the 1990s, and to 80,000 in the 2000s. From 2001 to 2011, the Situk River harvest accounted for an average of 82% of the Yakutat Area pink salmon harvest. Pink salmon estimates of greater than 500,000 fish obtained during boat surveys of the Situk River in 2005, 2007, and 2010 also suggest pink salmon returns have been at their highest levels since statehood. However, the 2012 pink salmon return to the Situk River was the lowest harvest in the previous seven years. Although Southeast Alaska set a record for pink salmon harvest in 2013, this was not the case for the Yakutat Area. The 2016 pink salmon harvest was well below

average and now stands as the lowest harvest since 2002. The chum salmon harvest of 59 fish was well below the recent five-year average.

Escapement estimates of Situk River pink salmon have been assessed by weir or boat survey counts since 1991. However, the weir is usually removed in early August, well before the peak of the pink salmon run. In addition, peak annual survey counts are not conducted every year due to poor river conditions and/or lack of personnel. Given uncertainties regarding total escapements, the escapement goal was reevaluated and based on a more stable index of escapement (Piston and Heinl 2011). In 2012, a new goal was established based on an index of early season escapement at the weir. The current goal is a lower-bound SEG of 33,000 pink salmon counted through the weir by August 5. In 2016, the goal was not achieved by August 5 but 42,200 pink salmon were counted through the weir prior to its removal on August 11. The goal is currently under review and may be eliminated because the index counts represent some unknown portion of escapement. No late fall surveys were conducted this year.

LOST RIVER

There has not been a directed fishery on sockeye salmon 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 Lost River, and the Lost River has discharged into the Inlet ever since. Beginning in the 1999 season, regulatory markers have been placed in the Situk-Ahrnklin 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. This closure forced the displacement of some traditional fishing sites and many of these fishermen have elected to relocate their operations to either the Situk-Ahrnklin Inlet or Yakutat Bay.

The Lost River was not opened to commercial set gillnetting in 2016. The peak sockeye salmon escapement count of 450 fish did not meet the lower-bound SEG of 1,000 fish for the Lost River. This was the fifth consecutive year the SEG was not attained. The peak coho salmon escapement count of 750 fish did not meet 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 the years and the department recognized that a more systematic approach was needed. Since 2014, all surveys for coho and sockeye salmon were from Summit Lake to the Lost River Bridge (Zeiser 2015). Sufficient surveys were conducted during the fall of 2016, although inclement weather and flood events did occur. It is assumed that Lost River salmon stocks are harvested in the Situk-Ahrnklin fishery but to what extent is unknown. The lower end of the Situk-Ahrnklin estuary is highly mutable and the Lost River drainage is undergoing rapid geological changes that are impacting habitat and productivity. Further conservation measures may be necessary to protect Lost River sockeye salmon stocks.

YAKUTAT BAY

The Yakutat Bay fishery opened on the second Sunday in June and fishing time remained 2.5 days for the first 8 weeks of the sockeye salmon season. Fishing time was extended and varied between 3 and 4 days from SW 33 through SW 42. Yakutat Bay yielded harvests of approximately 100 Chinook, 21,000 sockeye, 300 coho, 6,000 pink, and 60 chum salmon in 2016

(Table 18). The sockeye salmon harvest was slightly below the recent 5-year average (Table 19). The Yakutat Bay fishery was the second largest sockeye salmon producer in the area. A total of 42 permits fished in Yakutat Bay with a peak effort of 28 permits fishing during the first week of the season. Chinook salmon are harvested incidentally in the sockeye salmon fishery and the harvest was well below the historical average.

Yakutat Bay has never produced large coho salmon harvests, perhaps due to the concentration of effort elsewhere during coho salmon season. The 2016 coho salmon harvest of just over 300 fish was well below the recent 5-year average of 3,000 fish and was the lowest recorded in the last 6 years. Effort levels for coho salmon always remain low in Yakutat Bay, and only 5 permits fished Yakutat Bay during the first week of the coho salmon season.

The Yakutat Bay pink salmon harvest of 6,000 fish was less than half the recent average of 19,000 fish. Pink salmon have not been targeted in Yakutat Bay in recent years due to the decline of the Humpback Creek fishery. Yakutat Bay had the highest historical return of three million pink salmon in 2011. Pink salmon were targeted in 2011 but permit holders claimed that a 75-fathom set gillnet was extremely inefficient gear for pink salmon. 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).

MANBY FISHERIES

The Manby Shore ocean fishery is located along the western shore of Yakutat Bay. This fishery harvests 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 and Manby stream harvests were recorded with those from Yakutat Bay. It is likely that the ocean fishery for sockeye salmon developed in 1977 because fairly consistent sockeye salmon harvests begin to appear in the record at that time. Weekly fishing periods are usually adjusted according to Situk River escapement needs. The Manby Shore ocean fishery opened on the third Sunday of June and 10 permits harvested almost 12,000 sockeye. The 2016 sockeye harvest was three times the 5-year average and the highest harvest on record during that time (Table 20). Fishing effort declined by SW 30 and there was no effort the last 5 weeks of the fishing season. The harvest of 17 Chinook salmon was well below the recent average and was the lowest harvest since 2009.

The Manby Shore stream or “inside” fisheries include the waters of Manby Stream, Sudden Stream, 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. Sudden and Manby Streams target both sockeye and coho, whereas the Esker Creek and Spoon River fisheries target only coho salmon. In 2016, Esker and Manby streams were not fished. Less than three permits fished both Spoon River and Sudden Stream; harvest information is confidential. Escapement counts are limited due to the glacial nature of most Manby area streams and no surveys of these inside waters were conducted in 2016. Escapement goals have not been established for the inside waters along the Manby Shore.

YANA RIVER TO ICY BAY

Neither the Yana nor the Yahtse rivers were fished in 2016. These fisheries are remote and have not been fished for several years. No aerial surveys of these systems were conducted.

YAKATAGA DISTRICT FISHERIES

OVERVIEW

The Yakataga District opened on August 7, 2016. The Tsiu River received the lowest fishing effort since 1977 due to dynamic changes of the river creating unfavorable and inefficient fishing. The Kaliakh River, Tashalich River, Eight Mile Creek, and the Seal River were open but not fished in 2016.

TSIU RIVER

The Tsiu River is home to a productive coho salmon run during a 6- to 8-week period from August to early October. The Tsiu River is remote from processors and whole fish have been transported 100 miles from the site by air taxi back to Yakutat. In 2016, Yakutat Seafoods maintained a buying station on the Tsiu River and flew fish to Yakutat with a single-engine turbine de Havilland Otter and a Cessna 206. This marked the 12th time since 2001 that a processor maintained a presence on the Tsiu River. A total of three permits fished on the Tsiu River in 2016 which was below the recent average of 12 permits and well below the historical average. The harvest of 11,000 coho salmon was 69% below the recent 5-year average of 36,000 fish (Table 21).

In 2015, 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 about two miles. One major and two minor overflow channels from the Tsivat River had cut across the sand flats inland of the Tsiu River, and the major overflow channel has become 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. Those regulatory markers have been relocated because salmon are now migrating up the Tsivat River instead of up the Tsiu River, the traditional migratory route, where the upper markers are located by regulation.

In 2014, the markers were moved downstream to just above the Tsiu/Tsivat River confluence. A second set of markers were placed approximately 1,000 yards upstream of the confluence in the Tsivat River overflow channel. The river underwent little change in 2015 and the regulatory markers were put essentially in the same locations as the 2014 marker placements. In 2016, the regulatory marker located in the mainstem of the Tsiu River was placed in the same location as 2015. The Tsivat River marker was moved 500 yards further upstream from the 2015 marker location. An aerial survey on August 27 revealed an estimated 6,000 coho salmon in the river which was above the 2,500 fish needed to consider opening the fishery. The Tsiu River opened to commercial fishing on August 28, average timing for opening the fishery. The river was fished for two 24-hour periods for the first week with catches promising a strong coho salmon run. Because of minimal fishing effort, a one-day extension was warranted during SW 37. By mid-August, Yakutat Seafoods decided to shut down their buying operation early because it wasn't economically feasible with the low harvests. Little effort continued on the grounds but due to bad

weather and the lack of a buyer and transportation, all fishing effort ceased by SW 39. The Tsiu was extended until further notice on September 12 but the river was not fished the last four weeks of the coho season. Survey efforts were conducted between poor conditions and revealed a peak escapement count of 31,000 coho salmon. This escapement estimate exceeded the BEG range of 10,000–29,000 fish.

The regulatory markers as defined in regulation for the Tsiu River no longer reflect the situation on the ground. The Tsiu-Tsivat River system is highly mutable and for the past three years regulatory markers have been relocated by emergency order to accommodate the changing conditions.

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TABLES AND FIGURES

Table 1.–Yakutat Chinook, sockeye, coho, and pink salmon escapement goals.

Species	System	Range	Type	Year Established
Chinook	Klukshu River (Alsek River)	800–1,200	BEG	2013
	Alsek River (total)	3,500–5,300	BEG	2013
	Situk River	450–1,050	BEG	2003
Sockeye	East Alsek-Doame River	13,000–26,000	BEG	2003
	Klukshu River	7,500–11,000	BEG	2013
	Lost River	1,000	SEG	2009
	Situk River	30,000–70,000	BEG	2003
Coho	Tawah Creek (Lost River)	1,400-4,200	SEG	2015
	Situk River	3,300–9,800	BEG	1994
	Tsiu/Tsivat rivers	10,000–29,000	BEG	1994
Pink	Situk River[a]	33,000	SEG	2012

[a] The escapement goal is for 33,000 pink salmon through weir by August 5.

Table 2.–Total salmon harvest by species in the Yakutat Area set gillnet fishery by fishing period, 2016.

Week	Start Date	Chinook	Sockeye	Coho	Pink	Chum	Total
24	5-Jun	28	136	0	0	0	164
25	12-Jun	37	6,463	0	0	5	6,505
26	19-Jun	71	12,072	0	1	14	12,158
27	26-Jun	48	15,067	77	22	6	15,220
28	3-Jul	45	14,276	6	27	9	14,363
29	10-Jul	99	17,573	38	208	17	17,935
30	17-Jul	12	7,730	5	585	6	8,338
31	24-Jul	1	6,797	105	754	20	7,677
32	31-Jul	1	7,227	455	4,857	75	12,615
33	7-Aug	1	3,997	2,211	8,348	242	14,799
34	14-Aug	0	567	2,590	3,011	45	6,213
35	21-Aug	0	867	9,622	3,802	104	14,395
36	28-Aug	0	149	23,229	143	6	23,527
37	4-Sep	0	10	53,888	20	0	53,918
38	11-Sep	0	121	23,605	0	1	23,727
39	18-Sep	0	0	14,939	0	2	14,941
40	25-Sep	0	0	7,836	0	0	7,836
41	2-Oct	0	0	5,423	0	0	5,423
42	9-Oct	0	0	3	0	2	0
Totals		343	93,052	144,032	21,778	554	259,759

Table 3.–Ten-year comparison of Yakutat area set gillnet effort and salmon harvest, 2006–2016.

Year	Active Permits	Chinook	Sockeye	Coho	Pink	Chum	Total
2006	105	1,330	138,734	86,085	88,864	1,225	316,238
2007	120	1,879	236,869	76,550	87,997	2,782	406,077
2008	129	1,309	35,282	153,712	65,227	546	256,076
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	114	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**
2006–2015 Avg.	118	1,236	129,874	128,572	86,898	1,243	347,823
2016[a]	-5%	-72%	-28%	12%	-75%	-56%	-25%

[a] Percent deviation from 10-year average.

Table 4.–Average earnings from setnet fishing, Yakutat area, 2006–2016.

Year	Yakutat Setnet Income	Active Setnet Permits	Avg. Earning Per Permit	Previous 10-Year-Average. Income
2006	$1,695,830	105	$16,150	$12,579
2007	$2,479,100	120	$20,659	$12,501
2008	$1,693,845	129	$13,131	$12,472
2009	$1,640,016	123	$13,333	$12,847
2010	$2,185,611	128	$17,075	$12,660
2011	$2,382,763	122	$19,531	$13,185
2012	$1,496,399	114	$13,242	$14,155
2013	$3,025,915	107	$28,280	$14,630
2014	$2,141,760	117	$18,306	$16,366
2015	$1,428,678	112	$12,756	$16,763
2016	**$2,437,716**	**111**	**$21,961**	**$17,246**
2006–2015 Average	$2,016,992	118	$17,246	$13,816
2016[a]	20%	-6%	27%	25%

[a] Percent deviation from 10-year average.

Table 5.–Harvest of salmon in the Yakutat Area set gillnet fishery by fishing area, 2016.

Area	Chinook	Sockeye	Coho	Pink	Chum	Total
Alsek	132	6,709	655	0	4	7,495
East	3	8,771	56	0	427	9,257
Akwe	7	501	706	4	3	1,221
Italio	Closed					
Middle Italio	Not Fished					
Old Italio	Not Fished					
Dangerous	[a]	[a]	[a]	[a]	[a]	[a]
Situk	20	32,787	130,216	15,492	59	178,574
Lost	Closed					
Yakutat Bay	130	20,818	324	6,220	59	27,551
Manby Shore	23	11,701	881	33	0	12,638
Manby Stream	Not Fished					
Spoon	28	1,639	5	4	2	1,678
Sudden	0	10,101	16	3	0	0
Esker	Not Fished					0
Yahtse	Not Fished					0
Yana	Not Fished					0
Jetty Creek	Not Fished					0
Big River	Not Fished					0
Kaliakh	Not Fished					0
Tsiu	0	15	11,173	22	0	11,210
Seal River	Not Fished					0
Tashalich	Not Fished					0
Kiklukh	Not Fished					0
Totals	343	93,052	144,032	21,778	554	259,416

[a] Fewer than 3 permits; all catch figures are confidential.

Table 6.–Harvest of salmon in the Alsek River set gillnet fishery by fishing period, 2016.

Week	Starting Date	Permits	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
24	5-Jun	11	28	136	0	0	0	164	1.0
25	12-Jun	16	22	799	0	0	0	821	1.0
26	19-Jun	15	21	1,067	0	0	0	1,088	1.0
27	26-Jun	12	3	809	0	0	0	812	1.0
28	3-Jul	12	5	1,196	0	0	0	1,201	1.0
29	10-Jul	11	53	1,161	0	0	0	1,214	1.0
30	17-Jul	8	0	365	0	0	1	366	1.0
31	24-Jul	9	0	684	0	0	0	684	2.0
32	31-Jul	7	0	284	0	0	0	284	1.0
33	7-Aug	3	0	105	1	0	0	108	2.0
34	14-Aug	[a]	[a]	[a]	[a]	[a]	[a]	[a]	1.0
35	21-Aug	3	0	92	24	0	1	117	3.0
36	28-Aug	Not Fished							3.0
37	4-Sep	4	0	1	309	0	0	310	4.0
38	11-Sep	[a]	[a]	[a]	[a]	[a]	[a]	[a]	5.0
39–41	2-Oct	Not Fished							18.5
42	9-Oct	[a]	[a]	[a]	[a]	[a]	[a]	[a]	7.0
43–44	16-Oct	Not Fished							13.0
Totals		18	132	6,709	655	0	4	7,500	65.5

[a] Fewer than 3 permits, all catch figures are confidential.

Table 7.–Harvest of salmon in the Alsek River set gillnet fishery, 2016 and 5-year catch comparison.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2011	18	546	24,169	1,614	0	11	26,358	19
2012	16	510	18,217	536	0	1	19,264	20
2013	15	469	7,517	17	0	5	8,008	40
2014	15	1,074	33,668	3	0	12	34,757	47
2015	19	243	16,104	11	0	0	16,358	69
2016	**18**	**132**	**6,709**	**655**	**0**	**4**	**7,500**	**66.5**
2011–2015 Average	17	568	19,935	436	0	6	20,949	39
2016[a]	6%	-77%	-66%	50%	0%	-33%	-64%	71%

[a] Percent deviation from 5-year average.

Table 8.–Klukshu River Weir escapement, 2000–2016.

Year	Chinook[a]	Sockeye[b]	Coho[c]
2000	1,365	5,551	4,832
2001	1,825	10,290	748
2002	2,240	25,711	9,921
2003	1,671	32,120	3,689
2004	2,525	15,348	750
2005	1,070	3,373	683
2006	568	13,455	420
2007	677	8,956	300
2008	466	2,731	4,275
2009	1,518	5,731	424
2010	2,357	18,936	2365
2011	1,670	21,389	2,119
2012	6 65	17,267	572
2013	1,261	3,902	7,322
2014	842	12,377	341
2015	1,432	11,211	352
2016	**651**	**7,391**	**2,141**
2006–2015 Average	1,146	11,596	1,849

[a] Chinook salmon escapement goal range is 800–1,200 fish.

[b] Sockeye salmon escapement goal range is 7,500–11,000 fish.

[c] Coho salmon numbers are an index; weir is removed before run is over.

Table 9.–Harvest of salmon in the East River set gillnet fishery by fishing period, 2016.

Week	Date	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
27	2-Jul	8	0	515	0	0	0	515	1
28	9-Jul	5	0	562	0	0	1	563	2
29	16-Jul	10	2	1,876	0	0	4	1,882	2
30	23-Jul	5	0	472	0	0	1	473	1
31	30-Jul	8	1	1,507	0	0	13	1521	2
32	6-Aug	9	0	2,205	0	0	58	2263	3
33	13-Aug	8	0	1,395	15	0	232	1642	3
34	20-Aug	5	0	127	21	0	41	189	4
35	27-Aug	3	0	101	20	0	77	198	3
36-42	15-Oct	[a]	[a]	[a]	[a]	[a]	[a]	[a]	3
Totals		12	3	8,771	56	0	427	9,257	24

[a] Fewer than 3 permits; all catch figures are confidential

Table 10.–Harvest of salmon in the East River set gillnet fishery, 2016 and 5-year catch comparison.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2011	17	0	14,867	99	0	330	15,390	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**
2011–2015 Average	14	3	10,215	55	4	530	10,826	23
2016[a]	-14%	0%	-14%	2%	0%	19%	-14%	4%

[a] Percent deviation from 5-year average.

Table 11.–Harvest of salmon in the Akwe River set gillnet fishery, 2016, and 5-year catch comparison.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
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**
2011–2015 Average	5	67	9,517	1,160	838	130	11,712	39.3
2016[a]	-40%	-90%	-95%	-39%	-100%	-98%	-90%	-35.00%

[a] Percent deviation from 5-year average.

Table 12.–Harvest of salmon in the Dangerous River set gillnet fishery, 2016, and 5-year catch comparison

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
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	[a]	[a]	[a]	[a]	[a]	[a]	48
2016	**1**	**[a]**	**[a]**	**[a]**	**[a]**	**[a]**	**[a]**	**51**
2011–2015 Average	5	3	5,196	10	29	2	5,238	41
2016[a]	-75%	–	–	–	–	–	–	20%

[a] Fewer than three permits; all catch figures are confidential.

Table 13.–Harvest of salmon in the Situk-Ahrnklin Inlet set gillnet fishery by fishing period, 2016.

Week	Ending Date	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
26	25-Jun	45	1	6,395	0	0	0	6,396	2.5
27	2-Jul	41	7	5,075	1	3	0	5,086	2.5
28	9-Jul	40	3	6,918	3	10	1	6,935	2.5
29	16-Jul	38	8	4,312	3	88	0	4,411	2.5
30	23-Jul	35	0	2,768	1	505	3	3,277	2.5
31	30-Jul	34	0	1,580	88	415	2	2,085	2.5
32	6-Aug	32	0	2,676	449	4,367	14	7,506	2.5
33	13-Aug	37	1	1,848	2,172	5,963	7	9,991	4
34	20-Aug	38	0	337	2,473	901	2	3,713	4
35	27-Aug	55	0	650	9,529	3,117	22	13,318	3
36	3-Sep	62	0	109	20,681	123	6	20,919	3
37	10-Sep	68	0	0	44,895	0	0	44,895	5
38	17-Sep	74	0	119	21,812	0	1	21,932	4
39	24-Sep	65	0	0	14,850	0	1	14,851	4
40	1-Oct	58	0	0	7,836	0	0	7,836	4
41	8-Oct	41	0	0	5,423	0	0	5,423	3
Total		77	20	32,787	130,216	15,492	59	178,574	51.5

Table 14.–Harvest of salmon in the Situk-Ahrnklin Inlet set gillnet fishery, 2016, and 5-year catch comparison.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2011	85	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	73.0
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**
2011–2015 Average	78	94	57,952	93,539	58,071	266	209,922	60.0
2016[a]	-1%	-79%	-43%	39%	-73%	-78%	-15%	-14%

[a] Percent deviation from 5-year average.

Table 15.–Exvessel value in US dollars of Situk-Ahrnklin set gillnet fishery relative to the total Yakutat area exvessel set gillnet fishery, 2006–2016.

Year	Yakutat Setnet Income	Situk Setnet Income	Percent Value of Situk
2006	$1,695,830	$889,519	52%
2007	$2,479,100	$911,724	37%
2008	$1,693,845	$1,092,913	64%
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%**
2006–2015 Average	$2,017,132	$1,089,526	57%
2016[a]	21%	29%	2%

[a] Percent deviation from 10-year average.

Table 16.–Value of salmon harvest in the Situk-Ahrnklin set gillnet fishery in dollars, 2006–2016.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
2006	$20	$432,874	$411,629	$44,637	$386	$889,519
2007	$0	$523,214	$336,002	$51,167	$1,211	$911,594
2008	$0	$87,572	$949,730	$55,204	$407	$1,092,913
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**
2006–2015 Average	$1,604	$447,594	$623,250	$68,615	$973	$1,142,034
2016[a]	-100%	-44%	83%	-77%	-74%	23%

[a] Percent deviation from 10-year average.

Table 17.–Situk River weir escapement counts, 2006–2016.

Year	Dates of Operation	Chinook[a]	Sockeye[b]	Coho[c]	Pink[d]	Chum
2006	5/11–8/13	749	90,383	320	115,079	283
2007	5/11–8/15	677	61,799	39	224,024	18
2008	5/11–7/23	414	22,540	0	1,275	6
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**
2006–2015 Avg.		504	77,504	319	92,739	50

[a] Chinook salmon weir counts are for large, three ocean or older fish. BEG range is 450–1,050 large fish.

[b] BEG range is 30,000 to 70,000 fish.

[c] The Situk weir is removed before the end of the coho salmon run and counts are not indicative of total escapement.

[d] SEG escapement index is 33,000 fish through weir by August 5.

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

Table 18.–Harvest of salmon in the Yakutat Bay set gillnet fishery by fishing period, 2016.

Week	Date	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
25	18-Jun	28	15	5,664	0	0	5	5,684	2.5
26	25-Jun	27	49	4,610	0	1	14	4,674	2.5
27	2-Jul	27	28	5,312	75	19	6	5,440	2.5
28	9-Jul	20	20	2,028	3	15	6	2,072	2.5
29	16-Jul	22	15	2,121	27	105	9	2,277	2.5
30	23-Jul	9	2	242	2	68	1	315	2.5
31	30-Jul	7	0	290	1	336	5	632	2.5
32	6-Aug	5	1	344	3	487	3	838	2.5
33	13-Aug	5	0	138	8	2,381	3	2,530	4.0
34	20-Aug	3	0	32	44	2,110	2	2,188	4.0
35	27-Aug	4	0	24	49	685	4	762	3.0
36	3-Sep	[a]	[a]	[a]	[a]	[a]	[a]	[a]	3.0
37	10-Sep	[a]	[a]	[a]	[a]	[a]	[a]	[a]	3.0
38	17-Sep	[a]	[a]	[a]	[a]	[a]	[a]	[a]	3.0
39	24-Sep	[a]	[a]	[a]	[a]	[a]	[a]	[a]	3.0
40–42	15-Oct	Not Fished							6.0
Totals		42	130	20,818	324	6,220	59	27,551	49.0

[a] Fewer than three permits; all catch figures are confidential.

Table 19.–Harvest of salmon in the Yakutat Bay set gillnet fishery, 2016, and 5-year catch comparison.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
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**
2011–2015 Avg.	41	354	24,308	3,253	18,723	211	46,849	53.5
2016[a]	2%	-63%	-14%	-90%	-67%	-43%	-41%	-8%

[a] Percentage deviation from 5-year average.

Table 20.–Harvest of salmon in the Manby Shore Ocean set gillnet fishery, 2016, and 5-year catch comparison.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
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	21
2014	5	14	1,712	4	7	5	1,742	55.5
2015	6	65	4,591	29	17	6	4,708	48
2016	**10**	**17**	**11,701**	**881**	**33**	**0**	**12,632**	**32**
2011–2015 Avg.	8	57	4,838	127	13	8	5,042	45.1
2016[a]	25%	-70%	142%	594%	154%	0%	151%	-29.00%

[a] Percent deviation from 5-year average.

Table 21.–Harvest of salmon in the Tsiu River fishery, 2016, and 5-year catch comparison.

Year	Boats	Chinook	Sockeye	Coho	Pink	Chum	Total	Days
2011	21	0	16	34,745	171	2	34,934	34
2012	13	0	0	45,821	0	6	45,827	12
2013	13	0	0	44,887	0	0	44,887	23
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**
2011–2015 Avg.	12	0	8	36,007	34	2	36,051	24
2016[a]	-75%	0%	88%	-69%	-35%	0%	-69%	33%

[a] Percent deviation from 5-year average.

Note: For 5-year comparison, days are for coho salmon season only.

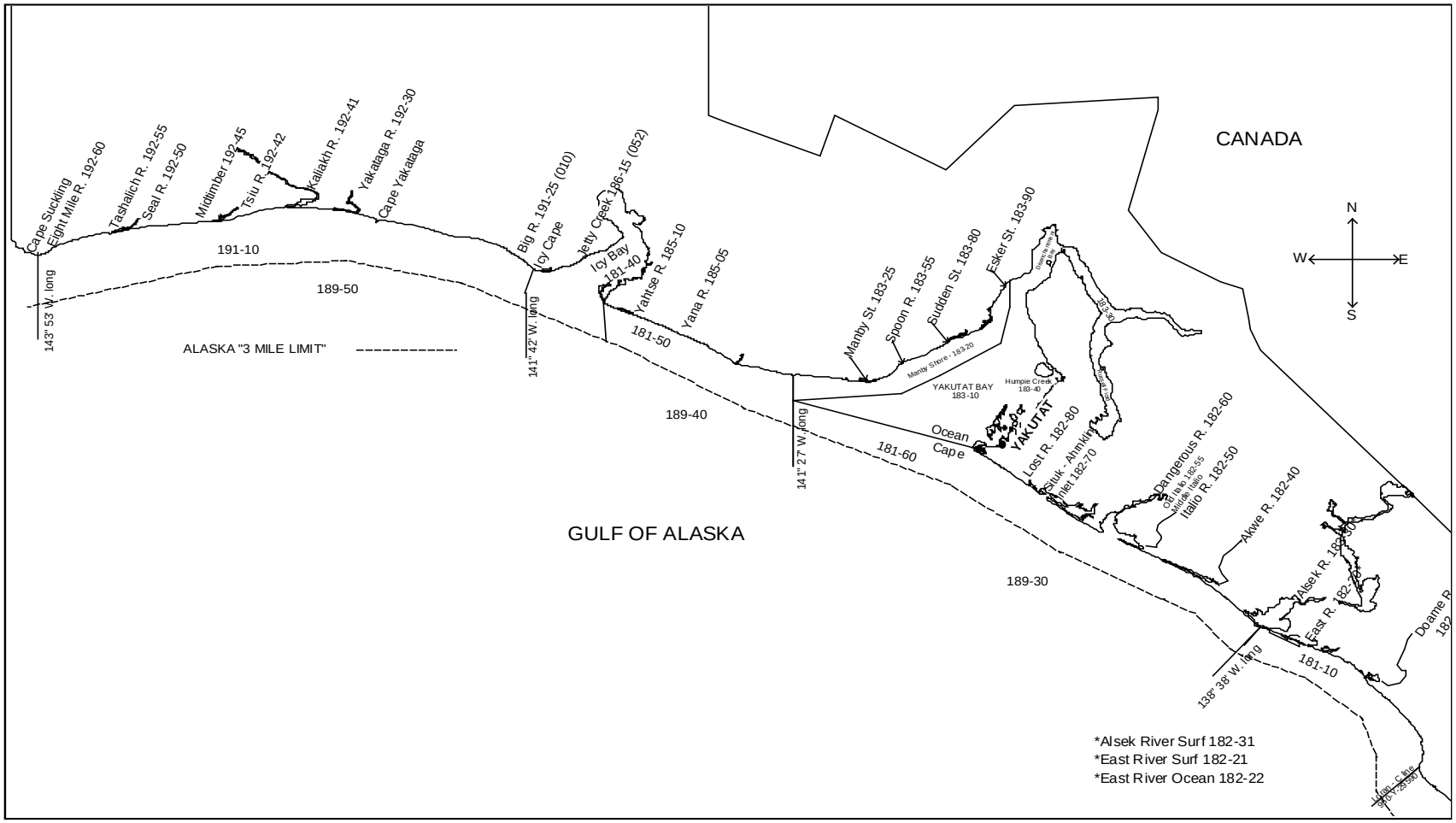

Figure 1.–Yakutat Area map, showing statistical reporting areas.

Figure 2.–Situk-Ahrnklin Inlet commercial set gillnet fishery closure area in 2016.