Fishery Management Report No. 18-11

2017 Bristol Bay Area Annual Management Report

by

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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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2017 BRISTOL BAY AREA ANNUAL MANAGEMENT REPORT

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ABSTRACT

The *2017 Bristol Bay Area Annual Management Report* is the 56th consecutive annual volume reporting on management activities of the Alaska Department of Fish and Game, Division of Commercial Fisheries staff in Bristol Bay. The report emphasizes a descriptive account of the information, decisions, and rationale used to manage the annual Bristol Bay commercial salmon (sockeye *Oncorhynchus nerka*, Chinook *O. tshawytscha*, chum *O. keta*, pink *O. gorbuscha*, and coho *O. kisutch*) and Pacific herring (*Clupea pallasii*) fisheries. The 2017 inshore sockeye salmon run of 57.6 million fish was 31% above the preseason forecast of 39.9 million fish. Sockeye salmon dominated the inshore commercial harvest, totaling 38.8 million fish of the 40.6 million total commercial salmon harvest. Sockeye salmon escapement goals were met or exceeded in all systems where spawning requirements have been defined with a baywide escapement of 18.8 million fish. There was a total harvest of 41,000 Chinook, 1,495,000 chum, 35,000 pink, and 241,000 coho salmon. The 2017 Togiak District herring preseason biomass forecast was 130,852 short tons. The combined harvest was 17,129 short tons with an average roe percent of 11%. The Dutch Harbor food and bait fishery harvest was 1,270 short tons, bringing the total harvest for 2017 to 18,399 short tons. All 2017 salmon harvest data are considered final and are based on fish tickets.

Key words: Pacific salmon *Oncorhynchus* spp., sockeye salmon *Oncorhynchus nerka*, Chinook salmon *O. tshawytscha*, chum salmon *O. keta*, coho salmon *O. kisutch*, pink salmon *O. gorbuscha*, Pacific herring *Clupea pallasii*, commercial fisheries, Bristol Bay, Naknek, Kvichak, Egegik, Ugashik, Wood, Nushagak, Igushik, Togiak, Annual Management Report (AMR)

INTRODUCTION

MANAGEMENT AREA DESCRIPTION

The Bristol Bay management area includes all coastal and inland waters east of a line from Cape Newenham to Cape Menshikof (Figure 1). The area includes 9 major river systems: Naknek, Kvichak, Alagnak, Egegik, Ugashik, Wood, Nushagak, Igushik, and Togiak. Collectively, these rivers are home to the largest commercial sockeye salmon *Oncorhynchus nerka* fishery in the world. Sockeye salmon are by far the most abundant salmon species that return to Bristol Bay each year, but Chinook *O. tshawytscha*, chum *O. keta*, coho *O. kisutch*, and, in even years, pink salmon *O. gorbuscha* returns are important to the fishery as well. The Bristol Bay area is divided into 5 management districts (Naknek-Kvichak, Egegik, Ugashik, Nushagak, and Togiak) that correspond to major river systems. The management objective for each river is to achieve salmon escapements within established escapement goal ranges while harvesting fish in excess of those ranges through orderly fisheries. In addition, regulatory management plans have been adopted for individual species in certain districts.

OVERVIEW OF BRISTOL BAY SALMON FISHERIES

The 5 species of Pacific salmon found in Bristol Bay are the focus of major commercial, subsistence, and sport fisheries. Annual commercial catches for the most recent 20-year span (1997–2016) averaged approximately 23.3 million sockeye, 47,000 Chinook, 950,000 chum, 488,000 (even-years only) pink, and 82,000 coho salmon (Appendices A3–A7). Since 1997, the value of the commercial salmon harvest in Bristol Bay has averaged approximately $109.0 million. Sockeye salmon was the most valuable and averaged $106.9 million annually (Appendix A24). Subsistence catches were composed primarily of sockeye salmon and average approximately 100,000 fish (Appendix A27). Sport fisheries harvest all species of salmon, but most effort was directed toward Chinook and coho salmon stocks.

Management of the commercial fishery in Bristol Bay is focused on discrete stocks with harvests directed at terminal areas around the mouths of major river systems. Each stock is managed to achieve a spawning escapement goal based on sustained yield. Escapement goals are achieved by

regulating fishing time and area by emergency order (EO) and/or adjusting weekly fishing schedules. Legal gear for the commercial salmon fishery includes both drift (150 fathoms) and set (50 fathoms) gillnets. However, the Alaska Board of Fisheries (BOF) passed a regulation in 2003 that allows 2 drift permit holders to concurrently fish from the same vessel and jointly operate up to 200 fathoms of drift gillnet gear. Drift gillnet permits are the most numerous with 1,863 in Bristol Bay (Area T) of which, 1,710 were registered to fish in 2017. There are a total of 972 set gillnet permits in Bristol Bay and 881 made at least 1 delivery in 2017 (Appendix A2).

2017 COMMERCIAL SALMON FISHERY

RUN STRENGTH INDICATORS

Fishery managers in Bristol Bay have several early indicators of sockeye salmon run size, including the preseason forecast, the South Alaska Peninsula commercial salmon fishery, an offshore test fishery operating from Port Moller, genetic stock identification, individual district test fishery programs, early performance of the commercial fishery, inriver test fishery programs, and timely escapement information from counting towers and a sonar project. Individually, these pieces of information may not give a correct assessment of run size, but collectively, they allow broad scale examination of inseason data such as relative strengths of year classes, discrepancies from the forecast (relative to expected year class contributions), or differences in run timing that can be important to successful management of the commercial fishery.

Due to State of Alaska budget cuts many of these run assessment projects were not funded by the state general fund in the 2016 and 2017 fishing season. In 2016, the Bristol Bay Fisheries Collaborative (BBFC) was initiated and formed as a grass-roots stakeholder group to temporarily provide financial support for Bristol Bay commercial fisheries management. Members that made financial contributions included fishermen's associations, individual fishermen, 12 different processing companies, 5 different shipping companies, 6 different boroughs and villages, and Bristol Bay Native Corporation. In 2017, BBFC funded or partially funded 10 projects: Port Moller test fishery; Ugashik, Egegik, and Kvichak inriver test fisheries; District catch sampling; Alagnak River counting tower, Nushagak sonar (partial June and July); aerial surveys of Naknek, Kvichak, and Alagnak drainages; and Togiak and Igushik counting towers. These projects were operated by the Alaska Department of Fish and Game (ADF&G) and the Bristol Bay Science and Research Institute (BBSRI), either individually or collaboratively.

PRESEASON FORECASTS

Total inshore (excluding harvest in other areas) sockeye salmon production for Bristol Bay in 2017 was forecast to be 39.9 million (Table 1). The Bristol Bay sockeye salmon inshore harvest was predicted to reach 27.5 million fish. Runs were expected to be large enough to meet spawning escapement goals for all river systems in Bristol Bay.

The forecast for the sockeye salmon run to Bristol Bay in 2017 was the sum of individual predictions for 9 river systems (Kvichak, Alagnak, Naknek, Egegik, Ugashik, Wood, Igushik, Nushagak, and Togiak) and 4 major age classes (age 1.2, 1.3, 2.2, and 2.3, plus age 0.3 and 1.4 for Nushagak) (Table 2). Adult escapement and return data from brood years 1972–2014 were used in the analyses.

Predictions for each age class returning to a river system were calculated from models based on the relationship between adult returns and spawners or siblings from previous years. Tested

models included simple linear regression and recent year averages. All models were evaluated for time series trends. Models chosen were those with statistically significant parameters having the greatest past reliability (accuracy and precision) based on mean absolute deviation, mean absolute percent error, and mean percent error between forecasts and actual returns for 2 time periods, 2014–2016 and 2012–2016.

SOUTH UNIMAK/SHUMAGIN ISLANDS FISHERY

From 1975 to 2000 the South Unimak and Shumagin Islands commercial fisheries were managed under a guideline harvest level (GHL) based on a percentage of the Bristol Bay inshore sockeye salmon harvest. The original intent was to prevent overharvest of sockeye salmon runs bound for river systems in Bristol Bay. From 1986 to 2000, a chum salmon cap was implemented because of concerns about large chum salmon harvest and a weak Yukon River fall chum salmon run. In 2001, the BOF modified the *South Unimak/Shumagin Islands June Fishery Management Plan* (5 AAC 09.365) to eliminate the GHL and chum salmon cap and instead established a June fishing schedule. In 2004, the BOF established a fishing schedule that began at 6:00 AM on June 7 and ended at 10:00 PM on June 29 for all gear types. Fishing periods were 88 hours in duration interspersed by a 32 hour closure (Poetter 2014a). In 2013, the BOF modified the fishing schedule for seine and drift gillnet gear by beginning the season at 6:00 AM on June 10 and ending at 10:00 PM on June 28, which reduced fishing time by 64 hours (Poetter 2014b). Preliminary 2017 catch information for these fisheries can be found in Appendix A25.

PORT MOLLER TEST FISHERY

From 1967 to 1985, ADF&G operated a test fishery program based near the community of Port Moller, approximately 150–200 miles southwest of Bristol Bay fishing districts. A large vessel (70–100′) fished gillnets at specific stations on a transect line perpendicular to the migration path of sockeye salmon returning to Bristol Bay. Collected data were used to estimate strength, timing, age, and size composition of the run about 6–9 days prior to its arrival to inshore fishing districts. Although forecasting performance of the project was inaccurate, the project was popular with salmon processors because it gave an additional indication of run size, which influenced production capacity and price paid to fishermen. The project did not operate in 1986, but with funding from processors, the Fisheries Research Institute (FRI) operated the test fishery from 1987 through 2002. Beginning in 2003, with financial support from ADF&G, industry, and BBSRI; BBSRI has operated the project and performed the bulk of daily inseason analysis (Raborn et al. 2017). In 2017 the project operated with personnel from ADF&G, BBSRI, and LGL Alaska Research Associates.

GENETICS

Over the last 17 years, ADF&G has built and tested a genetic baseline capable of identifying stock compositions of mixed-fishery samples from within Bristol Bay. The genetics program has 2 primary objectives: 1) to provide managers with a preliminary estimate of stock compositions of fish returning to Bristol Bay through the Port Moller test fishery; and 2) to provide researchers with stock composition estimates by year within fishing districts for use in the estimates of total runs and development of brood tables.

Genetic sampling was added to the Port Moller test fishery project starting in 2004. The intent is to use inseason genetic analysis to identify components of the annual run in time to inform management decisions for individual stocks. ADF&G genetics can complete analysis and deliver

results in 3 to 5 days depending on several factors (e.g., timing of airline flights, weather on the fishing grounds). The travel time for fish from Port Moller to Bristol Bay is approximately 7 days depending on several factors (e.g., district, water temperature, wind). Therefore, results from genetic sampling are typically available before the fish they represent reach the fishing districts of Bristol Bay (Figure 2).

ECONOMICS AND MARKET PRODUCTION

In 2017, the exvessel value of inshore commercial salmon harvest was estimated at $216.4 million (Table 3), which was 50% above the $144.6 million 10-year (2007–2016) average (Appendix A24). The 2017 average sockeye salmon price was $1.02/pound.

During the 2017 season, a total of 38 processors/buyers reported that they processed fish from Bristol Bay (Table 4). Of those processors, 4 companies canned, 35 froze, 18 exported fresh, 1 cured salmon, and 8 extracted roe. Two of the major companies ceased canning operations in 2017. Product was exported by air by 30 companies and exported by sea by 21 companies.

RUN AND HARVEST PERFORMANCE BY SPECIES

Sockeye Salmon

The 2017 inshore sockeye salmon run of approximately 57.6 million fish was 44% above the preseason forecast of 39.9 million (Table 1). All districts except Naknek-Kvichak District had run sizes that were above forecast. Sockeye salmon dominated the inshore commercial harvest, totaling 38.8 million fish, which was the largest harvest since 1995 (Table 5 and Appendix A3). Sockeye salmon escapement goals were met or exceeded in all systems where spawning requirements have been defined. Most notable in 2017 was a record 20.0 million sockeye salmon return to the Nushagak District and market price rose 34% from $0.76/pound in 2016 to $1.02/pound in 2017. Average fish weights were 5.5 pounds, which was smaller across all age classes than the long-term average, but larger than 2015 and 2016 (Appendix A22).

Chinook Salmon

The 2017 baywide commercial harvest of 41,399 Chinook salmon was 11% below the 1997–2016 average of 46,546 fish (Appendix A4). The Naknek-Kvichak, Egegik, and Ugashik districts harvests were above the 1997–2016 averages and the Togiak District was below average. Harvest in the Nushagak District, the largest producer of Chinook salmon in Bristol Bay, was 32,194, which was below the 1997–2016 average of 40,071 fish (Appendix A4). The Nushagak River Chinook salmon escapement was 56,961 which was within the sustainable escapement goal (SEG) range of 55,000–120,000, but below the inriver goal of 95,000 (Table 6).

Chum Salmon

In 2017, the commercial harvest of approximately 1.5 million chum salmon was 57% above the 1997–2016 average of 949,842 fish. Chum salmon harvests in all districts were above the 1997–2016 averages (Appendix A5).

Pink Salmon

Bristol Bay has a dominant even-year pink salmon cycle. In 2017, an off-cycle year, the baywide pink salmon harvest was 34,558 fish. In even-years, the largest run is in the Nushagak District, where the 1997–2016 harvests averaged 412,070 pink salmon (Appendix A6).

Coho Salmon

Commercial harvest of coho salmon was 240,885 fish, which was 290% above the 1997–2016 average of 82,014. The largest commercial harvest was in the Nushagak District, where the 167,347 fish harvest was 319% higher than the 1997–2016 average of 52,500 coho salmon (Appendix A7). Nushagak River coho salmon escapement was not monitored in 2017.

SEASON SUMMARY BY DISTRICT

Naknek-Kvichak District

The 2017 inshore run forecast for the Naknek-Kvichak District was 15.5 million sockeye salmon composed of a projected 7.2 million for escapement and 8.3 million for harvest. The forecast by river system was 7.5 million for the Kvichak River, 3.9 million for the Alagnak River, and 4.1 million for the Naknek River (Table 1). The escapement goal for Naknek River is a range of 800,000–2.0 million. The escapement goal for the Kvichak River is a range of 2.0–10.0 million. The Alagnak River has a lower bound escapement goal of 320,000. The total inshore run to the district for 2017 was 15.4 million sockeye salmon which included a commercial harvest of 8.3 million sockeye salmon and a total escapement of 7.1 million sockeye salmon (Table 1).

ADF&G does not forecast Chinook, chum, coho, or pink salmon for systems in Naknek-Kvichak District. Commercial harvest of Chinook salmon has remained relatively small because of mesh size restrictions that have been in effect since the early 1990s. Mesh restrictions are set by EO and prohibit gillnets with a mesh size larger than 5.5 inches until July 25. Additionally, the *Naknek-Kvichak District Commercial Set and Drift Gillnet Sockeye Salmon Fisheries Management and Allocation Plan* (5 AAC 06.364(f)) directs ADF&G to open commercial fishing periods only between the 7-foot flood and 7-foot ebb tide stage for the conservation of Chinook salmon.

Escapement counting towers for Naknek, Kvichak, and Alagnak rivers were operational during the 2017 season. The Naknek River tower crew began counting on June 19, the Kvichak River tower began counting on June 22, and the Alagnak River tower began counting on June 28 (Table 7). This was the first season of operations for the Alagnak River tower since 2011, thanks to funding from BBFC. The Naknek River escapement was 1.9 million, the Kvichak River escapement was 3.2 million, and the Alagnak River escapement was 2.0 million sockeye salmon, which were within the escapement goal ranges for each river (Appendix A1).

Fishing with drift gillnets was restricted to the Naknek Section during the early season schedule, but both sections were open to the set gillnets. Fishing periods were from 9:00 AM Monday until 9:00 AM Friday, beginning 9:00 AM Thursday, June 1 and ending 9:00 AM Friday, June 23 (Table 8). The first deliveries occurred on June 19 (Table 9) and the early season fishing schedule ended with a total harvest of 33,800 sockeye salmon. Following the closure on June 23, subsequent fishing periods were based on inseason indicators of abundance in the Naknek and Kvichak rivers.

District test fishing began on June 24 and indices ranged from 0 to 247 fish per fathom hour, which indicated very few fish. On June 25, indices ranged from 0 to 259 fish per fathom hour. On June 26, indices ranged from 0 to 36 fish per fathom hour. On the morning of June 27, the first 3 drifts in the area of the ship's anchorage yielded indices ranging from 185 to 340, which possibly signaled a buildup of fish. At 9:00 AM an announcement was made for a short notice opener on the afternoon tide with 6.5 hours for set gillnets in the Naknek-Kvichak District and 6-hours for drift gillnets in the Naknek Section. Harvest from this period was about 45,000 sockeye

salmon (Table 9). The Naknek River escapement on June 27 was 11,118 and the 6:00 AM count on June 28 was 20,322 for a cumulative of about 51,000. This appeared to be the beginning of the Naknek River sockeye salmon run. A period was announced for the afternoon tide on June 28 with 7 hours for set gillnets in the Naknek-Kvichak District and 6.5 hours for drift gillnets in the Naknek Section (Table 8). There were 252 vessels registered to fish in the district and harvest was a disappointing 15,374 sockeye salmon (Tables 9 and 10).

District test fishing resumed on the morning of June 29. One sockeye salmon was caught during six 10-minute drifts. On the morning of June 30, test fishing caught zero sockeye salmon during 5 drifts. On July 1, the test boat was not sent out because of the results from the previous 2 days. From June 25 to June 29, winds blew out of the east in excess of 25 mph. This apparently blew fish away from the eastside districts because abundance in the Egegik District had also decreased.

On the morning of July 2, the phone began ringing off the hook at about 8:45 AM with reports of an extreme amount of jumpers that had moved in on the high tide in the mouth of the Naknek River. The 6:00 AM count at the Naknek tower was 1,700 fish for a cumulative of 75,000, which was more than 300,000 fish below and 6 days behind the midpoint of the escapement goal curve. The district test boat began fishing at 8:15 AM inside the Naknek Section, indices ranged from 19 to 367 fish per fathom hours which indicated moderate catches. When the test boat moved down near the Johnson Hill line, indices increased and ranged from 325 to 657 fish per fathom hours, which indicated good catches. A survey was flown in the early afternoon to determine if and how many fish had committed to swimming up to the Naknek River and to determine if another volume of fish was moving into the district. During the survey few fish were observed swimming up the river above the power lines. At the mouth of the river hundreds of jumpers could be observed out of the water at a time and on a continuous basis, which verified reports from the morning. During the survey of the Naknek Section very few fish were observed. If more fish had been observed in the district or swimming upriver, then there would have been a period beginning on the evening tide of July 2. However, escapement was far behind, and therefore at 6:00 PM an announcement was made that the Naknek Section would open to drift gillnet gear for 7 hours beginning at 8:30 AM and set gillnet gear for 7.5 hours beginning at 8:00 AM on July 3. Harvest from that period was 795,756 (Table 9).

The Naknek River tower count through 2:00 PM July 3 was 274,392 with an hourly passage rate of 30,000 fish. There were 331 permits including 47 dual vessels registered to fish in the district (Table 10). In the afternoon, reports that some processors suspended buying and some were going on catch limits in Egegik and Nushagak Districts caused concern about being able to pace the escapement in the Naknek River. The announcement at 3:00 PM July 3 was for a 19-hour set gillnet period in the Naknek-Kvichak District and two 7.5-hour periods for drift gillnets in the Naknek Section. Processor limits and suspensions began affecting harvest in the Naknek-Kvichak District on the afternoon of July 4 and harvest on this day was 509,563 (Table 9). At the Naknek River tower daily escapement was 473,586 on July 3 and 236,838 on July 4 for a cumulative escapement of 800,688, which was within the escapement goal range (Table 7).

On the afternoon of July 4, the Kvichak River tower cumulative escapement was 18,000 and the inriver estimate based on the test fishery was 300,000 (Table 11). With the Naknek River escapement goal met and fish starting to show up in the Kvichak inriver test fishery, set gillnets in the Naknek-Kvichak District were given daily extensions through the evening of July 7. Drift gillnets were given an 18.5-hour period in Naknek Section on July 5 and harvest was 267,928

sockeye salmon. On July 5, the 2:00 PM count at the Kvichak River tower was 167,208, for a cumulative of 213,816 and the inriver estimate based on an aerial survey was 650,000. Once the fish inriver had passed the tower (typically 2 days) the escapement would meet the lower bound escapement goal curve. If Kvichak River escapement continued at that rate, then escapements would quickly surpass the desired escapement levels and there was limited harvesting power in the district due to lack of vessels and processor limitations. On July 6, the Naknek-Kvichak District opened to drift gillnets for 18.5 hours. The purpose of this period was to determine if the Kvichak River fish would continue with the strong push. A district survey was flown during the period and low to moderate catches were observed. Harvest from this period was 546,142 sockeye salmon. With relatively low catches in the Kvichak Section, the drift gillnet fleet was moved back into the Naknek Section for an 18.5-hour period on July 7 and harvest was 552,369 sockeye salmon (Table 9). Drift periods were open for consecutive 2 tides because the holdover tide would have made for impractically short closures between the high tides.

At 2:00 PM on July 7, cumulative escapements were 1,064,292 on the Naknek River; 1,047,852 on the Kvichak River; and 717,814 on the Alagnak River (Table 7). The district was closed to all fishing on the morning tide of July 8 to allow escapement from this portion of the run and to allow processors and fishermen to regroup and prepare for more sustained fishing.

On the morning of July 8, the Kvichak inriver estimate based on the inriver test fishery was 100,000 and an announcement was made for a 7.5-hour period for set gillnets in the Naknek-Kvichak District and a 6.5-hour period for drift gillnets in the Naknek Section. An aerial survey of the Kvichak River increased the inriver estimate to 260,000. Based on this the set gillnet period was extended 24.5 hours and the drift gillnet fleet was given an 18-hour period for the following 2 tides on July 9 (Table 8). Harvest on July 8 and July 9 was 454,596 and 625,443 for a cumulative of 3,845,812 (Table 9).

On July 8, the Kvichak River daily escapement was 59,976 for a cumulative of 1,184,628 (Table 7), which was still above the lower bound escapement goal curve. Kvichak River escapement increased to 80,664 at 2:00 PM on July 9 and the inriver estimate was 250,000. Set gillnets were extended through 8:00 PM July 10 and drift gillnets were given a 9-hour and a 6-hour period in the Naknek Section (Table 9).

On the afternoon of July 10, the Kvichak River cumulative escapement was 1,347,312 and the inriver estimate based on an aerial survey was 600,000. Set gillnets were extended 16 hours and drift gillnets were given a 9.5-hour period in the Naknek Section with periods scheduled to end at noon on July 11. On the morning of July 11 the Kvichak River cumulative escapement was 1,419,354 and the inriver estimate was 900,000 based on the test fishery (Table 11). With the escapement goal nearly assured for the Kvichak River, the set gillnet period was extended 24.5 hours and a drift gillnet period was announced for 6.5 hours in the Naknek-Kvichak District beginning at 3:00 PM July 11, followed by a 9.5-hour period in the Naknek Section (Table 8). Harvest on July 10 and July 11 was 470,945 and 406,850 for a cumulative of 4,723,607 sockeye salmon (Table 9).

The Kvichak River daily escapement was 227,838 on July 11 and the 6:00 AM count on July 12 was 65,808 for a cumulative of 1,665,300 and the inriver estimate remained at 900,000 (Table 11). The Naknek-Kvichak District was open to drift gillnets for 9.5 hours followed by a 6.5-hour period in the Naknek Section. The set gillnet period was extended 24.5 hours until 12:30 PM July 13 (Table 8).

At 6:00 AM on July 13 the Kvichak River cumulative escapement was 2,028,678, which was within the escapement goal range. The inriver estimate was 600,000. The Alagnak River cumulative escapement was 1,548,624 (Table 7). From July 13 through 9:00 AM July 17 fishing with set gillnets was extended daily. Drift gillnet fishing periods alternated tides between the Naknek-Kvichak District and the Naknek Section.

Cumulative harvest through July 16 was 7,008,084 sockeye salmon (Table 9). The final allocation was 70% drift gillnet, 17% Naknek set gillnet, and 13% Kvichak set gillnet (Appendix A9). Regulation specifies 84% drift gillnet, 8% Naknek set gillnet, and 8% Kvichak set gillnet. At the end of the allocation period there were 577 permits including 97 dual permit operations registered to fish in the district (Table 10). Processor limits and lack of drift gillnet vessels made achieving the catch allocation impracticable.

The fall schedule of 9:00 AM Monday to 9:00 AM Friday took effect at 9:00 AM, Monday, July 17 and the fishery was closed from 9:00 AM July 21 to 9:00 AM July 24 (Table 8). Typically a fishing period announced by EO will keep the fishery open through the first couple weekends of the fall schedule to keep fishermen and markets around. However, through the morning of July 16, the Kvichak River escapement was only 2.4 million, which was near the bottom of the escapement goal range of 2–10 million. With late run timing and the relatively low escapement, the fall schedule was allowed to take effect to increase Kvichak River escapement. During the first weekend closure, a pulse of fish entered the district and increased the Kvichak River escapement by almost 400,000 fish. The same pulse of fish entered the Naknek and Alagnak rivers; however, counting operations ceased on July 22 at both of those counting tower projects and the majority of this pulse went uncounted.

The total inshore run to the district for 2017 was 15.6 million sockeye salmon with a commercial harvest of 8.3 million. The inshore harvest and total run for the district were nearly identical to the preseason forecast. The Kvichak River came back slightly below forecast and the Naknek and Alagnak rivers were slightly above forecast (Table 1). The escapements were 1,899,972 on the Naknek River; 3,163,404 on the Kvichak River; and 2,041,824 on the Alagnak River (Table 7).

The total harvest of 8.3 million sockeye salmon was 8% above the 1997–2016 average of 7.6 million (Appendix A3). The total inshore run of 15.4 million sockeye salmon was 8% above the 1997–2016 average of 14.2 million (Appendix A13). The midpoint of the sockeye salmon run into the district was July 10, which was 5 days later than the historical average and was the third season in a row with notably late run timing (data on file with Bristol Bay Management Group, Division of Commercial Fisheries, ADF&G, Anchorage).

The Chinook salmon total harvest of 2,477 fish was above the 1997–2016 average of 1,711 fish (Appendix A4). The chum salmon harvest totaled 249,696 fish, which was above the 1997–2016 average of 184,814 fish (Appendix A5). There was a commercial harvest of 174 pink salmon and 4,754 coho salmon (Appendices A6 and A7).

Egegik District

The 2017 Egegik District harvest of 12.0 million sockeye salmon was 23% above the projected harvest of 9.7 million sockeye (Table 1) and was the largest in the last 20 years (Appendix A14). The sockeye salmon escapement of 2.6 million fish was above the SEG range of 800,000–2.0 million (Appendix A1). With an inshore total of approximately 14.6 million fish to the Egegik

District, the 2017 run ranks first over the last 20 years and was 42% above the forecast of 10.3 million fish (Table 1; Appendix A14).

The district opened to commercial salmon fishing for a set schedule of 3 days per week at 12:01 AM Thursday, June 1. Fishing was permitted from 9:00 AM Monday to 9:00 AM Wednesday and 9:00 AM Thursday to 9:00 AM Friday until June 16 (Table 8). After that date the district went to an active management and additional fishing time was based on inseason indicators. The first deliveries, on June 5, were small and harvests remained small through the end of the schedule (Table 12). Through June 16, the total harvest was just over 70,000 fish.

Daily inriver test fishing, which provides estimates of sockeye salmon passage into the lower Egegik River, began on June 17 at established sites just upstream of Wolverine Creek (Table 13). Initial catches from the test fishery did not indicate large numbers of fish moving into the Egegik River. A complicating factor in 2017 was low river levels at the test fishery sites which concentrates fish and tends to inflate test fishery results, making it appear there are more fish in the system. Low water can also affect the ability of the test fishery crew to operate.

The district remained closed on June 17, but because test fishery indices showed fish passing into the Egegik River, the district was opened for 8 hours to both gear groups on the night of June 18 (Table 12). The combined harvest was over 69,000 fish. Inriver test fishery indices remained at a moderate level so the drift fleet was permitted to fish the evening tide of June 19 for 3 hours as a guarding strategy, in case a push of fish developed. Through June 19, cumulative catch was 175,505 sockeye salmon and cumulative escapement was 44,820 after 2 days of tower operations (Tables 12 and 13). It should be noted that after 3 years of support from the BBRSDA to start tower operations a week early, in 2017 the project reverted to the normal start time of around June 17.

Inriver test fishery indices increased on June 20 (Table 13) resulting in a 3.5-hour period for the drift fleet and the set gillnet fleet was permitted to fish an 8-hour opener on the evening of June 20. Both fleets were allowed to fish the next tide on June 21, 6 hours for the drift and 8 hours for the set gillnet fleet. Harvest on June 20 was 90,964 fish with another 133,125 fish harvested on June 21 bringing the cumulative to 404,000 fish (Table 12). Escapement on June 20 was 48,630 and 27,612 on June 21 bringing the cumulative to 121,062 sockeye salmon.

On June 21 inriver indices dropped off, but 8-hour periods were permitted for both gear groups on June 22 and June 23. Combined commercial harvest for the 2 days was 374,337 fish. Meanwhile, escapement dropped to 23,466 sockeye salmon over the same period, which, when combined with test fishery information indicated that the pace of escapement was slowing. Accordingly, on June 24 fishing time for the drift fleet was reduced to a 5-hour period and the set gillnet fleet was permitted to fish 8 hours. On June 25 the drift fleet was permitted to fish 4 hours but the set gillnet fleet did not fish in an effort to increase escapement while not leaving the district completely unguarded in case a strong push materialized. Harvest on June 24 was 254,295 fish with another 201,655 on June 25, bringing the cumulative harvest to 1.2 million fish. Through June 25, the cumulative escapement was 166,356 sockeye salmon.

On June 26 the drift fleet was permitted to fish 4 hours and the set gillnet fleet was allowed an 8-hour period. Harvest was 185,751 fish, but escapement was beginning to fall behind desired levels. The district remained closed on June 27 and June 28 to allow fish to pass into the river. Escapement on June 27 was 6,858 sockeye salmon and on June 28 only 1,584, which indicated a drop in abundance within the river. Inriver test fishery indices were also very low (Table 13).

Fishing time was reduced to a 3-hour drift only opener on June 29 and then an 8-hour set gillnet only opener on June 30. Harvest was 154,382 for the drift opener and 15,120 fish for the set gillnet opener on June 29 (Table 12). Escapement over the same days was 28,086 sockeye, an improvement, but still lagging behind run timing curves.

Between June 25 and June 29, Bristol Bay experienced a series of storms with a strong east/southeast wind component. It was thought that this wind pushed fish from the eastside districts into offshore areas and was of a long enough duration that fish built up and concentrated. Genetic information from the Port Moller test fishery project showed 2 strong signals for the first part of the season; the signal from the Nushagak District rivers and the Egegik District (Figure 2). However, through June 29 only the Nushagak stocks made an appearance inshore. Egegik escapement began to lag on June 24 so that between June 24 and June 30 escapement averaged 11,600 fish per day for a total of 81,000 but an average of between 30,000 and 40,000 fish per day were needed to keep pace with escapement curves. It was because of the strong Egegik genetic signal from the Port Moller test fishery that ADF&G adopted a guarding strategy to allow some commercial opportunity to occur, even in the face of dwindling escapement. In an attempt to increase the rate of escapement, fishing time was adjusted downward for the drift gillnet fleet as the season moved towards July (Table 12).

On the afternoon of June 30, the wind turned westerly and by early evening reports of increased fish volume began to come into the King Salmon office. The reports came from both the Egegik and Ugashik districts. On the morning of July 2, reports indicated that fish were still present in Egegik and an 8-hour opener was announced for both gear groups on the evening tide followed by a set gillnet only opening on the following tide as a guarding measure.

Harvest from July 2 was 995,668 fish and among the top daily totals since 1957. Inriver test fishery indices were extremely high, but because of low water levels, were difficult to translate into a good estimate for fish inriver. Escapement on July 2 was 60,000 sockeye (Tables 12 and 13).

As the morning of July 3 progressed, reports came in from the district indicating that the set gillnet fleet had experienced very heavy catches the previous night and they were still trying to clear their nets. It became apparent that a very large volume of fish was present in the district. The previously scheduled set gillnet only period began at 6:30 AM, but by 7:00 AM elements of the processing group that services the set gillnet fleet in Egegik notified ADF&G that they were suspending buying operations because of large harvests on the previous tide. At 9:00 AM, with an hour's notice, ADF&G announced a 6-hour opening for the drift gillnet fleet beginning at 10:00 AM, another 5 hours on the evening tide, and an additional 8 hours for the morning tide on July 4. The set gillnet group was permitted to fish 8 hours on the evening tide on July 3 and another 8 hours on the morning of July 4. Harvest on July 3 was over 1 million fish. The fish detected by the inriver test fishery began to pass the counting tower in large numbers, with 296,460 sockeye salmon passing the tower on July 3. Through July 3 the cumulative harvest was 3.6 million fish and cumulative escapement was 592,944 sockeye salmon (Tables 12 and 13). Inriver test fishery indices remained very high. Meanwhile the Nushagak District was also experiencing large catches and fish were beginning to appear in the Naknek-Kvichak and Ugashik districts. The processing sector began to impose catch limits and in some cases suspended buying operations.

On July 4 both gear groups were permitted to fish 2 tides with a total of 11.5 hours of drift fishing time and 15.5 hours of set gillnet time. Harvest from the day was another 976,545

(Tables 12 and 13). Fish representing the inriver indices from July 2 began to pass the tower site. Escapement on July 4 was 616,338, a record for single day escapement at the project since 1957. Through July 4 cumulative harvest was 4.7 million and cumulative escapement was 1.2 million sockeye salmon, exceeding the minimum of the escapement goal range.

Starting July 4 processor limits and suspensions began to increase so that by July 5 they were fairly widespread. On July 5, fishing time for both gear groups was allowed on the morning tide and then extended for a series of 24 hour increments that began at 3:00 PM. With limits in place and escapement within the escapement goal range, maximum time was allowed to permit industry and fishermen to decide how to best utilize their resources to harvest fish surplus to escapement needs. Harvest for the day dropped to 603,617 fish and escapement was another 506,004 sockeye salmon, which was the second largest single day of escapement in the data set. The lower harvest and high escapement reflected limitations in processing capacity. The net effect was that the fishery was opened continuously for both gear groups from 7:15 AM July 5 until 3:00 PM July 12.

From July 2 to July 11 harvest was 7.5 million fish. Escapement was 2.1 million sockeye salmon and above the escapement goal range and 1.7 million fish of the escapement occurred over the 4 day span between July 3 and July 6 (Tables 12 and 13). When considered together, this represents 9.6 million fish in a 10 day interval, during which daily harvest averaged 682,000 fish and daily escapement 213,000 sockeye salmon, which was a very compressed time period for this number of fish.

The inriver test fishery project ended operations for the season on July 9 because low water prohibited the crew from fishing. This date was about 4 days earlier than the usual end date of around July 12.

On July 8 escapement began to drop and by July 11 volume was beginning to decline with a corresponding relaxation of catch limits by processors. On July 12, the drift gillnet fleet was allowed to fish 15.25 hours, which represented the last of the 24 hour extensions for that group. The set gillnet fleet was allowed 1 more 24 hour extension because they were slightly behind on their harvest percentage and based on reports that most of the drift harvest was occurring at the southwest corner of the district. Catches from this area of the district often contain a high percentage of non-local stocks and fishing time for the drift gillnet fleet was reduced as a result. Because set gillnet catches were decreasing, reducing drift gillnet time while still permitting set gillnets to fish as a guarding strategy permitted redistribution of fish to the interior portions of the district and provided some insight as to whether the fish in the district were local or traveling stocks.

Escapement on July 12 was 16,662 sockeye and catch was 326,202 fish, which reinforced the idea that non-local stocks were contributing a higher percentage to the district harvest. Because of this, the drift fleet did not fish for 2 consecutive tides to allow fish to redistribute and to allow non-local stocks to pass through the district. The set gillnet fleet was permitted to continue fishing. Escapement on July 13 was 14,808 sockeye salmon and harvest was 500,515 fish (Tables 12 and 13).

On July 14, fish that traveled through the district during the drift closure began to pass the tower and the day ended with a tally of 132,054 sockeye salmon. That escapement represented fish from later portions of the run, which are often underrepresented. Factoring in a 2 day travel time from the district to the counting tower put the volume of fish in the district on July 12 at near

450,000 fish. Considering that only 132,054 fish eventually passed the counting tower, these numbers demonstrate that there was a fairly large component of non-local stocks present in the district. Through July 14 cumulative harvest was 10.0 million and cumulative escapement was 2.5 million (Tables 12 and 13). An ancillary benefit was that the 2 tide break allowed elements of the processing sector to clear out backlogs of unprocessed fish. The last day of reported processor limits was July 13.

From July 14 through July 17 both set and drift gillnet fleets were permitted to fish 2 tides a day and beginning the afternoon of July 16, continuous fishing was permitted until 9:00 AM July 31 when the fall schedule of 9:00 AM Mondays to 9:00 AM Fridays commenced. The net result was that fishing was open continuously until 9:00 AM Friday, August 4.

The 2017 Egegik run was above forecast and exhibited slightly late and compressed run timing; the midpoint was July 6 compared to the 1997–2016 average of July 3. Catch and escapement were near 9.6 million fish (65% of the run) in a 10-day period between July 2 and July 11. By July 17, cumulative catch was 10.8 million salmon. Cumulative escapement was 2,600,982 sockeye salmon when the escapement project ended on July 17 (Tables 12 and 13).

The 2017 Egegik sockeye salmon run was composed of mostly 2-ocean and 3-ocean fish, which came from the 2012 and 2013 escapements of 1.2 million and 1.1 million sockeye salmon, respectively (Table 14; Appendix A10). Based on scale data, approximately 39% of the run was aged 2.2 fish from the 2012 brood year.

During the period from June 16 to July 17 in 2017, a total of 355.75 hours were fished by the drift gillnet group (28.5 hours more than 2016) and 376.5 hours were fished by the set gillnet gear group (79.25 hours more than in 2016), equating to 47% and 50%, respectively, of the 753 available hours (Table 12). By the end of the allocation period on July 17, harvest percentages were 86% drift and 14% set gillnet (Appendix A9). Regulation specifies 86% drift gillnet and 14% set gillnet.

Commercial harvest of other salmon species in the Egegik District was 162,684 fish, or about 0.01% of the total (Table 12). The reported Chinook salmon harvest was 866 fish, which was 24% above the 1997–2016 average of 700 fish (Appendix A4). The district chum salmon harvest of 147,330 fish was more than double the 1997–2016 average of 65,100 fish (Appendix A5). The reported pink salmon harvest was 214 fish (Appendix A6). The coho salmon harvest was 14,274 fish compared to the 1997–2016 average of 14,241 fish (Appendix A7).

In summary, the 2017 harvest of 12.0 million sockeye salmon in the Egegik District ranked first out of the last 20 years, which was 84% above the 1997–2016 average of approximately 6.5 million fish, and was 23% above the preseason forecast (Table 1; Appendix A14). The fishery harvested 82% of the run into the district compared to the 1997–2016 average of 83% (Appendix A14). The midpoint of the run was July 6, which was 3 days later than the 1997–2016 average. Peak harvest occurred on July 2, 3, and 4 with 988,524; 1,086,749; and 970,569 sockeye salmon harvested, respectively (Table 12). Peak escapement occurred on July 4 and July 5 with 616,338 and 506,004 sockeye salmon counted, respectively. Peak effort occurred on June 27, when 512 drift gillnet permits were registered in the district including 119 dual permits operations (Table 10). There were 14 processors registered to purchase fish in the Egegik District in 2017 (Table 4).

Ugashik District

The 2017 inshore sockeye salmon run to the Ugashik District of 6.9 million ranks fourth in the last 20 years and was 31% above forecast (Table 1; Appendix A15). The midpoint of the run was July 12, which was 2 days later than the 1997–2016 average of July 10. The commercial salmon catch of approximately 5.8 million fish was more than double the 1997–2016 average of 2.6 million and ranked second for the same time period (Table 15; Appendix A3). Sockeye salmon escapement to the Ugashik River totaled 1,186,446 and was within the SEG range of 500,000–1.4 million fish (Table 16).

The district was opened to a fishing schedule of 4 days per week (9:00 AM Monday to 9:00 AM Friday) 12:01 AM Thursday, June 1 by EO (Table 8). Initial landings occurred on June 12 (Table 15). Because the preseason forecast for the Kvichak River allowed all fishing districts to start the season in their full areas, and because of BOF action requiring district registration for drift gillnetters, the schedule of 4 days per week continued until 9:00 AM Friday June 16 when fishery management switched to a tide-by-tide basis (Table 8). Fishermen were advised that additional fishing time would depend on inseason indicators of abundance.

At the 2015 BOF meeting, the requirement for drift fishermen to register prior to fishing was reinstated and because the district experienced good harvest rates in 2015 and 2016, ADF&G anticipated a higher level of drift gillnet effort early in the season. As a result ADF&G was more attentive to levels of drift effort because of the potential to intercept non local stocks. Fishermen were advised that ADF&G would consider fleet size and be cautious about allowing drift fishing time depending on the number of drift fishermen. Escapement levels, as indexed by the inriver test fishery, would play a prominent role in determining frequency and duration of fishing periods as the season progressed.

Catch through June 16 was well below the historical average for the first 2 weeks of June (Table 15). With no escapement assessment this early in the season and available indicators suggesting low levels of abundance, the district remained closed June 17–21.

On June 22, a 10-hour set gillnet only period was permitted to provide insight about abundance in the interior portions of the district. The harvest suggested that the volume of fish inside the district was low and 19 deliveries indicates that the set gillnet fleet was not fully in place.

Initial information from the Ugashik District inriver test fishery became available on June 25 (Table 16) and suggested that fish were passing into the river in low volume. Inriver test fishing, which occurs about 3 miles upstream of Ugashik Village, provided a daily estimate of sockeye salmon passage into the lower part of the Ugashik River. River levels were low which concentrated fish and made them more vulnerable to the inriver test fishery project, potentially indicating higher than actual abundance.

In 2015 and 2016, Ugashik had seen high contributions to escapement from early in the season. With this in mind, both fleets were permitted to fish June 25; the drift fleet for 5 hours and the set gillnet fleet for 10 hours. Effort was still building, and harvest from this period was 135,148 fish, but the inriver indices remained low and reports from the district indicated that most of the fish were caught on the west line (Tables 15 and 16). The combination of low inside setnet catches, very low inriver indices, and harvest occurring on the west line of the district suggested a high component of non-local fish. Information from the Port Moller test fishery project showed a small signal for Ugashik stocks (Figure 2). To minimize intercept of non-local stocks the

district remained closed on June 26 to allow fish to build up within the interior portions of the district.

Still cautious of interception, the set gillnet fleet was permitted to fish a 10-hour period on June 27. This resulted in a harvest of 1,285 fish, which was very low and indicated very little movement into the upper reaches of the district. The inriver test fishery indices confirmed that low numbers of fish were entering the lower river (Tables15 and 16).

The escapement tower project, operating about 24 miles upstream of Ugashik Village, started counting on June 27 and ended with a partial day estimated passage of 114 fish (Table 16). That count represented fish that had been inriver for a couple of days; however, the inriver test fishery data showed that entry of fish into the river was low and there were few fish in the river below the escapement project. Between June 27 and July 4 daily escapement counts averaged 368 sockeye salmon for a cumulative of slightly less than 3,000 sockeye. In most years this represents a poor hourly count but in this case, the estimate encompasses 8 days and was far below desired levels. The district remained closed until escapement improved. It is likely that the east/southeasterly winds had the same impact of pushing fish offshore in Ugashik as had happened in the other eastside districts.

On the afternoon of July 1 ADF&G began to receive reports of increasing abundance within the district. Because escapement was lagging it was necessary to see evidence in the inriver indices that the fish were committing to the Ugashik River prior to allowing commercial opportunity. Reports indicated that fish were moving steadily into the district, but definitive information did not come from the test fishery until July 4. With indices showing good passage into the river, a 5-hour drift opener was permitted on the evening tide of July 4. The set gillnet fleet was permitted 12 hours. Harvest from the period was 195,930 fish, but more importantly the inriver indices remained strong and additional commercial fishing time was permitted on July 5. Harvest dropped to 66,052 fish because of catch limits imposed by processors (Tables 15 and 16). Because Ugashik exhibited slightly later run timing compared to the rest of Bristol Bay, by the time fish arrived in the district, processing capacity was already heavily tasked keeping up with harvests from other districts in the bay, primarily from Nushagak and Egegik. When Ugashik harvests increased the processing sector was already struggling to keep pace with volume. Limits were imposed on Ugashik fishermen beginning July 4, which coincided with the first increase in volume in the district.

On July 6 inriver indices remained strong. With passage into the river, both gear groups were permitted 12 hours. Harvest was 413,024 fish. Meanwhile, fish detected by the inriver test fishery on July 4 began passing the counting tower project demonstrating a 2–3 day travel time from the test fishery to the tower, which was fairly short for the Ugashik River. Through July 6 cumulative escapement was 139,608 sockeye salmon and cumulative harvest was 817,477 fish (Tables 15 and 16).

On July 7 escapement continued to be strong and the inriver test fishery detected similar levels of fish entry into the Ugashik River. Both fleets were allowed to fish 12 hours with a resulting harvest of 414,296. Through July 7, cumulative harvest was 1.2 million and cumulative escapement was 284,364 sockeye salmon, which was about half way to the lower end of the escapement goal range (Tables 15 and 16).

Fishing was permitted for both gear groups for approximately 12 hours per day between July 7 and July 14, or 1 long period per day based on tidal cycles. The exception was that the set gillnet

fleet fished a 9-hour period on July 9 to allow some additional escapement from that run segment. Between July 4 and July 17 commercial harvest averaged 340,000 fish per day and escapement averaged 73,000 sockeye salmon per day. Inriver indices continued to show strong passage throughout the same time period. Through July 17, cumulative harvest was 4.9 million fish and cumulative escapement was 1.0 million sockeye salmon (Tables 15 and 16). The lower end of the escapement goal range was surpassed on July 11. The district was opened to continuous fishing on July 16, which continued until the start of the fall schedule on July 31 (Table 8).

Through August 1, cumulative harvest was 5.8 million fish. Cumulative escapement was 1.2 million sockeye salmon when the tower project ended for the season on July 25, which was within the escapement goal range.

By the end of the allocation period (July 17), set gillnet fishermen caught approximately 8% of the sockeye salmon harvest and drift gillnet fishermen caught 92%; the allocation specified in regulation is 10% set gillnet and 90% drift gillnet (Appendix A9). Between June 23 and July 17, set gillnet permit holders were permitted to fish a total of 207.5 hours, which was 100 hours less fishing time than in 2016, and drift gillnet permit holders were permitted to fish a total of 193 hours, which was 30 hours less than in 2016 (Table 15).

The reported harvest of 1,219 Chinook salmon was 36% above the 1997–2016 average of 893 fish (Appendix A4). Chinook and chum salmon escapement was assessed by aerial surveys in the Dog Salmon and King Salmon rivers, major tributaries of the Ugashik River and the biggest producers of these species in the district. In 2017, no escapement surveys were flown in the Ugashik drainages because of budget constraints. The chum salmon harvest of 88,126 fish was 27% above the 1997–2016 average of 64,223 fish (Appendix A5). The reported pink salmon harvest was 143 fish (Appendix A6). There was no directed commercial effort for Ugashik coho salmon in 2017 and the reported harvest was 7 fish. (Appendix A7).

Pacific walrus returned to the same beach used during the 2016 season which is located about 0.5 miles north of the district boundary. There were fewer animals present than in 2016. Similar to 2016, EO authority was used to move the district boundary 1 mile south from the location defined in regulation to provide an additional buffer space for the animals (Table 8). Although it didn't completely eliminate interactions between the drift gillnet fleet and walrus, the buffer zone seemed to work as intended.

In summary, the 2017 Ugashik District fishery harvested approximately 82% of the sockeye salmon run to the district, compared to the 1997–2016 average harvest rate of 69% (Appendix A15). Days of peak catch occurred on July 10, 11, and 12 when 535,027; 503,243; and 439,894 fish were harvested, respectively (Table 15). The midpoint of the run was July 12 compared with the 1997–2016 average of July 10. Days of peak escapement were July 6, 7, and 13 when 121,878, 144,756, and 118,842 sockeye salmon, respectively, passed the counting tower (Table 16). Peak effort occurred on July 16 when 409 drift gillnet permits, including 99 dual permits operations, registered to fish in the district (Table 10). There were 14 processors registered to purchase fish in the Ugashik District in 2017 (Table 4).

Nushagak District

The 2017 Nushagak District total inshore sockeye salmon run was 20 million fish, which was 141% above the preseason forecast of 8.3 million fish (Table 1). Commercial sockeye salmon

harvest in Nushagak District reached 12.3 million fish, which was 99% above the preseason projected harvest of 6.2 million fish and 108% above the 1997–2016 average harvest of 5.9 million sockeye salmon (Table 1; Appendices A3 and A16). Escapement in the district's 3 major river systems was: 4,274,224 for Wood River; 578,700 for Igushik River; and 2,852,306 sockeye salmon for Nushagak River (Tables 6 and 17). Wood, Igushik, and Nushagak river sockeye salmon escapements exceeded the upper ends of their escapement goal ranges (Appendix A1). Wood River sockeye salmon escapement set a new record for total escapement and Nushagak River was the second highest on record. Chinook salmon escapement into Nushagak River was 56,961, which was 33% below the 95,000 inriver goal; harvest was 32,194 Chinook salmon in Nushagak District (Tables 6 and 18).

In 2017, ADF&G did not produce a forecast for Nushagak District Chinook salmon. The preseason plan for Chinook salmon management was to have directed openings if and when escapement warranted such openings. This decision was based on the lower than average Chinook salmon runs in recent years and the lack of a reliable forecast for the 2017 season (Appendix A19).

The sonar escapement enumeration project at Portage Creek was fully operational on June 7 (Table 6). ADF&G began the season with a conservative management strategy in regards to directed Chinook salmon openings. This was partly based on the 2014 experience of a strong early showing and then a very poor second half of the season. In addition, because of the strong baywide sockeye salmon forecast ADF&G expected to begin directed sockeye salmon openings earlier than normal. Earlier than normal sockeye salmon openings would have increased the incidental harvest of Chinook salmon and harvest any available surplus. Nushagak River Chinook salmon escapement was well below expectations early in the season. The cumulative escapement through June 20 was 3,031 (Table 6). This projected out to a total escapement of less than 15,000. At the same time, the Nushagak River sockeye salmon escapement was far ahead of expectations at 209,542 and projecting over 10 million. Wood River sockeye salmon escapement was 94,842 through June 20, also surpassing expectations (Table 17). On June 21, ADF&G staff received subsistence reports that indicated a large push of Chinook salmon. This information along with the strong sockeye salmon escapements prompted managers to announce commercial fishing openings. The set gillnet fleet began at 10:30 PM June 21 and the drift gillnet fleet began at 12:30 AM June 22 (Table 19).

Preseason, the plan had been to open commercial fishing when Wood River sockeye salmon escapement had reached about 30,000. The exceptionally low Nushagak River Chinook salmon escapement was cause to delay the planned fishing until after that point. Wood River sockeye salmon escapement reached the 30,000 level on June 19 (Table 17). Because it surpassed the 100,000 level on June 21, managers felt that waiting any longer would not be in line with the management plans. The exceptionally high Nushagak River sockeye salmon escapement at this time also weighed heavily in the decision to commence commercial fishing. There was a considerable lag between the time a fishing period was announced and when escapement was affected at the various enumeration projects. Wood River sockeye salmon escapement went from just over 100,000 total when the announcement was made at noon on June 21, to over 500,000 total by the time escapement was noticeably slowed from the effects of commercial fishing on the morning of June 24. Similarly, Nushagak River sockeye salmon escapement was over 700,000 by the time fishing had an impact. Nushagak River Chinook salmon escapement did also benefit with 10,633 fish counted at the sonar on June 22 (Table 6). Chinook salmon escapement

was low for most of the season; however, the total escapement ended at 56,961. This was below the 95,000 inriver goal, but much better than the June 20 projection of 15,000.

There were no directed Chinook salmon openings in the Nushagak District in 2017 and earlier than average sockeye salmon openings. A somewhat late albeit small Chinook salmon run produced an incidental harvest of 32,194 Chinook salmon (Tables 6 and 18) in the Nushagak District in 2017. This harvest was 26% below the 1997–2016 average harvest of 40,071 fish for the Nushagak District (Appendices A4 and A19).

Sockeye salmon enumeration on the Wood River began June 18. Fish passage was above average from the start, with over 11,000 sockeye salmon counted on the first day (Table 17). Commercial fishing was delayed from a start of June 19 until June 22, solely to protect the Nushagak Chinook salmon stock. Once fishing did begin it was necessary to fish regularly to control sockeye salmon escapement. Set gillnet fishing was extended for both the Nushagak and Igushik sections on June 22 and never closed after that, and was extended until further notice on June 26. Drift gillnet fishing was extended on June 24 in conjunction with a forecasted storm. The storm materialized and a massive push of fish entered the Nushagak District. In the history of the Nushagak District a single day of sockeye salmon harvest had never exceeded 1 million fish. On June 26 the sockeye salmon harvest was 1,113,911. Fishing was extended several times until June 29 and harvest gradually decreased down to about 45,000 on July 1 (Table 18).

Despite calls for additional closures to protect Nushagak River Chinook salmon, management focused on sockeye salmon because cumulative sockeye salmon escapements were over 1 million fish on both the Nushagak and Wood rivers by June 29 (Tables 6 and 17). Controlling sockeye salmon escapement into these rivers was the priority and there was no reason to believe that the run had peaked. Managers did return to 2 long openings each day with a closed period on part of the flood tide to allow some escapement and fish to distribute throughout the entire district. On July 2, the Wood River Special Harvest Area (WRSHA) was opened to set gillnet fishing (Table 19). This was done to harvest sockeye salmon surplus to escapement needs and was for set gillnets only because they were behind on their harvest percentage. The wind picked up on the evening of July 2 and by the morning of July 3 it was clear that another large movement of sockeye salmon was occurring. Some companies had suspended buying early on the morning of July 3 and reports from the district indicated at least 4 vessels had been sunk or swamped as a result of weather and too many fish on board. For the second time in the history of the Nushagak District and the second time during the season daily sockeye salmon harvest exceeded 1 million. The final harvest number from July 3 was 1,542,398 (Table 18).

Fishing on July 3 was extended until July 6, and then extended again until further notice as companies struggled with the larger than expected harvest baywide. Processors were on limits or suspended buying through July 15. Even with fishing open continuously, including in the WRSHA, escapements continued well above the upper ends of the escapement goal curves. Sockeye salmon escapement on the Wood River peaked on July 6 at 396,816 and was above 100,000 daily from July 4 until July 15. The final cumulative escapement on the Wood River was 4,274,224 surpassing the 2006 record (Appendix A1). Sockeye salmon escapement on the Nushagak River peaked on July 5 at 440,612 and ended the season with a cumulative of 2,852,306.

Commercial fishing with set gillnets in the Igushik Section of the Nushagak District began on June 12 (Tables 18 and 19) with 8-hour openings daily. The Igushik set gillnet harvest was

average for the first week of fishing. When fishing began on the Nushagak side of the district on June 21, the Igushik set gillnet openings mirrored the Nushagak Section gillnet openings. All set gillnet fishing in the Nushagak District was extended until further notice on June 26. The Igushik set gillnet harvest was steady for the entire season. Igushik harvest is not reported separately in this report, but it was above average for 2017. Escapement into the Igushik River was also steady and strong, finishing with a final escapement of 578,700, which exceeded the upper end of the escapement goal range (Table 17; Appendices A1 and A16).

As the sockeye salmon run ended, fishing effort dropped steadily and processing effort also diminished. With decreased fishing effort and reduced processing capacity, the transition from sockeye salmon management to coho salmon management was relatively seamless. Fishing remained open continuously for the rest of the season. The WRSHA was closed on July 28 and the mesh restriction was removed on August 1. Coho salmon harvest was strong even though effort was generally less than 50 set and drift gillnet permit holders total (Table 18). The total Nushagak District coho salmon harvest was 167,347; that was more than 3 times the 1997–2016 average of 50,000 and the second highest since 1997 (Tables 5 and 18; Appendix A7). Bristol Bay has a dominant even-year pink salmon cycle, and therefore 2017 was not a year with a significant pink salmon run. There were no coho salmon escapement enumeration in 2017 because budget cuts forced the Nushagak River counting project to cease operations on July 18. The final chum salmon harvest was 804,878 (Tables 5 and 18; Appendix A5). The final sockeye salmon harvest was 12,322,519 and was the largest on record (Tables 5 and 18; Appendix A3).

Togiak District

The 2017 inshore sockeye salmon run of nearly 712,000 fish was the 12th largest run to Togiak District in the last 20 years and exceeded the preseason forecast of 633,000 (Table 1; Appendix A18). The harvest for the Togiak District was 516,488 sockeye salmon, the twelfth largest since 1997 (Table 20; Appendices A3 and A18). Escapement into Togiak Lake was 195,330 sockeye salmon, which was within the escapement goal range of 120,000–270,000 fish (Table 17; Appendix A1).

The Togiak District is managed differently than other districts in Bristol Bay. This district uses a fixed fishing schedule of 60 hours per week in Kulukak Section, 4 days per week in Togiak River Section, except for a peak fishing schedule of 5.5 days per week from July 1 to July 15, and 5 days per week in Osviak, Matogak, and Cape Peirce sections. This schedule is adjusted by emergency order, as necessary, to achieve escapement objectives. In addition, transferring into Togiak District prior to July 27 is prohibited by regulation if the permit has been registered in any of the other 4 Bristol Bay districts. Conversely, permit holders that have fished in Togiak District are prohibited from fishing in any other Bristol Bay district until July 27.

The 2017 Togiak River inshore run forecast was 633,000 sockeye salmon, of which 77% were projected to be 3-ocean fish and 21% were projected to be 2-ocean fish (Table 2). Achieving the escapement goal range of 120,000–270,000 sockeye salmon for Togiak Lake would leave approximately 440,000 fish available for harvest in Togiak River Section (Table 1). Smaller sockeye salmon runs to other drainages in the district (primarily the Kulukak River) occur, but these are not included in the preseason forecast because age composition and escapement data are not complete. A contribution of 50,000 sockeye salmon to the district harvest was projected from drainages other than Togiak River.

Based on recent year harvests, the Chinook salmon run was again anticipated to be below average. In 2017, the weekly fishing schedule in Togiak River Section was reduced by 48 hours in both the third and fourth weeks of June for Chinook salmon conservation (Table 19). Fishing was extended in the Togiak River section from July 8 until July 10 because of good run strength indicators. The western sections (Cape Peirce, Osviak, and Matogak) of the Togiak District were open for regularly scheduled periods until the week of July 17. The western sections remained closed for the week of July 17 because of large harvests in the Matogak and Osviak Sections in 2017 and an increasing trend for harvest in those areas over the last several years. Those sections opened as scheduled the remainder of the season. The Kulukak Section was open for the weekly schedule for the entire season. Although the *Togiak District Salmon Management Plan* provides for a directed Chinook salmon fishery if run strength is adequate, effort largely focuses on sockeye salmon for the entire season. In an effort to reduce the targeting of Togiak River Chinook salmon, a regulation was passed in December 2012. The regulation moved the drift gillnet boundary away from the Togiak River mouth from June 1 through July 15. Total Chinook salmon harvest for Togiak River Section was 4,643 fish, with an additional 380 caught in the remainder of Togiak District (Table 20; Appendix A20).

Commercial fishing for sockeye salmon opened by regulation on Thursday, June 1, but the first deliveries of the season did not occur until June 13 (Table 20). Fishing continued through the week and during the next 2 weeks at expected, low early season participation levels, resulting in cumulative harvests of 578 Chinook salmon and 23,722 sockeye salmon at the close of fishing on June 30 (Table 20). Beginning Saturday, July 1 management turned from Chinook salmon to active sockeye salmon management and the peak season weekly fishing schedule began. in 2017, that resulted in the fishery closing on Wednesday, June 28 and reopening from 12:00 AM until 9:00 PM Saturday, July 1.

The counting tower project on Togiak River began on July 2 with a count of 1,068 sockeye salmon (Table 17). Escapement continued to be near average early, reaching 10,806 after 6 days of counting compared to an expected cumulative of 10,043. Based on the reports of good fishing and escapement above the minimum expectations, fishing was extended through the first weekend of the peak schedule, July 8 and 9. Escapement fell below expected levels after the extension; therefore, no further extensions were considered.

The below average escapement did cause some concern, but with the previous 2 years in mind, managers factored late run timing into the equation and decided no restrictions to the fishing schedule were needed. This strategy resulted in fishing continuing on the regular weekly schedule for the remainder of the season. Similar to 2015 and 2016, a late surge of fish passed the tower and pushed escapement to the mid-range of the escapement goal for a final total of 195,330 (Table 17). The escapement count on August 6, the last day of enumeration, was 5,232 and it was likely that significant additional escapement occurred after enumeration ceased. The escapement goal range for the Togiak River system is 120,000–270,000 sockeye salmon (Table 1 and Appendix A1).

The season total sockeye salmon harvest was 516,488 fish (Table 20). Although escapement information to parts of the Togiak River drainage is incomplete, the total 2017 sockeye salmon run ranked 12th among the most recent 20 years (Appendix A18).

There was some interest in coho salmon fishing after the sockeye salmon harvest dropped off. Fishing continued until the last processor stopped buying on September 7. Harvest for coho

salmon totaled 54,503, which was nearly 5 times the 1997–2016 average of 11,111 (Appendix A7). The 2017 commercial Chinook salmon harvest of 4,643 fish represented only 73% of the 1997–2016 average, and the chum salmon harvest of 204,518 fish was 142% of the 1997–2016 average (Appendices A4 and A5). The pink salmon harvest was 26,797 fish; this was a record harvest for odd years when pink salmon occur in low numbers (Appendix A6).

2017 BRISTOL BAY HERRING FISHERY

The Bristol Bay area includes all waters south of a line, extending west from Cape Newenham, east of the International Date Line in the Bering Sea and north of a line extending west from Cape Menshikof. The Bristol Bay area is divided into 3 herring fishing districts: the Bay District, including all waters east of the longitude of Cape Constantine, the Togiak District, including all waters between the longitude of Cape Newenham and the longitude of Cape Constantine, and the General District, including all waters west of the longitude of Cape Newenham. Togiak District spans approximately 192 kilometers (Figure 3). Togiak village lies at the center of the district, 108 kilometers west of Dillingham.

Pacific herring (*Clupea pallasii*) have been documented throughout Bristol Bay, but the major concentration returns to the Togiak area each spring to spawn and is the focus of herring sac roe and spawn-on-kelp fisheries. In the Togiak District, herring are commercially harvested for sac roe using gillnets and purse seines but herring spawn on rockweed kelp (*Fucus* spp.) are harvested by hand.

The herring sac roe fishery began in the Togiak District in 1967, followed by the first fishery for spawn on kelp in 1968. Effort and harvest levels remained low for the first 10 years of the fishery. Increased interest, favorable market conditions, and additional incentives provided by the Fishery Conservation and Management Act of 1976 (later becoming the Magnusson-Stevens Act) resulted in a rapid expansion of the Togiak herring fishery in 1977.

The Togiak herring fishery is the largest in Alaska. From 1997 to 2016, sac roe harvests averaged 22,667 short tons, worth an average of $3.08 million annually (Appendices B2 and B5). Given the volatile nature of the herring sac roe market, historic harvests and value are of limited utility when contemplating future harvest or value. In 2017, sac roe harvests brought $1.71 million to permit holders, well below the 2007–2016 average of $2.6 million (Appendix B5). This value represents the grounds price and doesn't necessarily include postseason adjustments. No spawn-on-kelp fishery has occurred since 2003 (Appendix B2).

STOCK ASSESSMENT

Since 1978, ADF&G has conducted aerial surveys throughout the herring spawning migration to estimate abundance, timing, and distribution of Pacific herring in the Togiak District. Surveys are conducted after there is a reasonable expectation that herring might be present in the Togiak area. Surveys occur several times a week after threshold biomass has been documented. Surveys are performed as weather, pilot availability, and funding allow.

Fundamental aerial survey techniques used in Togiak have remained largely unchanged since 1978 and are described in Lebida and Whitmore (1985). Herring school surface area is estimated through a handheld tube with a measured grid and a known focal length from a known altitude. Standard conversion factors of 1.52 short tons (water depths of 16 ft or less), 2.58 short tons (water depths between 16 ft and 26 ft), and 2.83 short tons (water depths greater than 26 ft) per

538 ft^2 of surface area is applied to herring school surface areas to estimate the total biomass observed during each flight. Over the last 10 years, ADF&G has transitioned to aerial survey data collection methods that use Geographic Information Systems (GIS), allowing "real-time" data entry and analysis. The new GIS-based program, among other improvements, allows observers to use the survey aircraft to estimate length and width dimensions of very large herring schools, providing a more objective and reliable estimate.

Herring ages 2 through 20 have been observed in the Togiak District, but herring are generally considered to begin recruiting into the fishery at age-4 and to be fully recruited at age-9. Herring abundance is related to year class survival and is strongly driven by large recruitment events that occur approximately every 8–10 years. The 2017 spawning biomass was older than is typical with 56% of the biomass age-9 and older. Age-8 and -7 herring made up 20% and 13% of the spawning biomass whereas the remaining 11% of the run was age-6 and younger (Appendix B3). This biomass was considered healthy and stable.

SAC ROE HERRING FISHERY OVERVIEW

Fishing and Industry Participation

Unlike most herring fisheries in Alaska, the Togiak sac roe fishery is not a limited entry fishery. Gillnets, purse seines, and hand purse seines are legal gear. Because fishing effort is not limited, effort levels can vary substantially from year to year. Herring market conditions are one of the leading factors influencing effort in a given year, but other factors also influence fleet size. Because the majority of herring permit holders in Togiak participate in other fisheries, like Bristol Bay salmon, the health of the salmon market and markets for other fish indirectly affect effort in the herring fishery. Herring prices paid to permit holders the prior year and run timing also affect effort. For over a decade processors have utilized cooperative fleets for the purse seine fishery. Under limited markets, processors choose the makeup of their fishing fleets to maximize their efficiency, thereby influencing the number of participants.

Fishing effort in the sac roe fishery increased through the late 1980s, decreased early in the 1990s, increased again to a peak in 1996, and has generally declined since that time. Since 1994, gillnet effort increased from 146 vessels, to a peak of 461 in 1996, followed by a general decline to an all-time low of 3 in 2016 (Appendix B1). Purse seine participation fluctuated between 100 and 300 vessels from 1994 to 1998, before a general decline to an all-time low in 2012 of 16 vessels. The 2017 participation of 19 purse seine vessels was up from 17 in 2016. In 2017, gillnet participation increased from 3 to 15 vessels (Appendix B1).

Industry participation in the fishery peaked between 1979 and 1982, when 33 processors participated in the herring fishery. From 1994 through 1997, 16 to 22 companies purchased herring in Togiak. Since 1998, industry participation has steadily declined to a low in 2012 and in 2015 through 2017 of 4 companies (Table 21; Appendix B1). Processing capacity on the grounds has also declined from a high of 4,850 short tons per day in 1996, to a low in 2007 of 1,420 short tons per day. In 2017 the capacity was 1,900 short tons per day (Appendix B1).

2017 SEASON SUMMARY

Biomass Estimation

Togiak District aerial surveys began April 17, 2017 after fish were reported in the district by a local pilot on April 15. ADF&G staff did not observe any fish in the district on April 17. Staff

flew additional flights on April 21 and April 24 without observing fish. Fish were reportedly observed by an industry spotter pilot on April 24 in the evening. ADF&G kept in contact with spotter pilots on the grounds and waited until April 28 to fly the next survey. Staff observed 54,738 short tons of herring on the grounds on April 28 and opened the fishery at 6:00 PM that evening (Tables 22 and 23). Weather prevented staff from doing surveys as frequently as they would have liked and also reduced the effectiveness of the surveys that were done. The peak biomass survey with 65,574 short tons occurred on May 9, after the purse seine fishery was completed. The May 9 survey was also the peak spawn survey with 8.1 miles of spawn documented (Table 22). The final survey was flown on May 15; by then the herring biomass was only 8,196 short tons, most of which was found in the eastern portion of the district, and only a small amount of spawn was observed in the western portion of the district near Hagemeister Spit.

AGE COMPOSITION

Over the course of the fishery ADF&G sampled 5,200 herring from the harvest in order to: 1) determine the age composition of the harvest, 2) estimate the age composition of the biomass, 3) determine the size at age of herring in this year's spawning biomass, and 4) provide data for next year's forecast. The 2017 total spawning biomass was 23.4% age-7 or younger, 38.9% were age-8 or age-9 and 37.5% were age-10 or older (Appendix B3; Terry and Buck[1]). The mean weight of herring in this year's gillnet harvest was 435 grams and the purse seine harvest was 367 grams.

COMMERCIAL FISHERY

Togiak District herring fisheries are managed in accordance with the *Bristol Bay Herring Management Plan* (5 AAC 27.865), which specifies a maximum allowable exploitation rate of 20% and allocates the harvestable surplus among all the fisheries harvesting the Togiak herring stock. The 2017 preseason biomass forecast was 130,852 short tons. The projected harvest guideline for each fishery was as follows: 1,500 short tons of herring equivalent or 350,000 lb of product for the spawn-on-kelp fishery; 1,727 short tons for the Dutch Harbor food and bait fishery; and the remaining 22,943 short tons for the sac roe fishery. The management plan further specifies that ADF&G will manage the sac roe fishery so that 70% of the harvest is taken by purse seine (16,060 short tons in 2017) and 30% of the harvest is taken by gillnet (6,883 short tons in 2017).

The *Bristol Bay Herring Management Plan* and other regulations direct ADF&G to conduct an orderly, manageable fishery and strive for the highest level of product quality with a minimum of waste. In recent years, the seine fleet has been comprised of processor-organized cooperatives. In 2017, management staff allowed long duration seine openings over a large area of the district and let processors limit harvest for their individual fleets based on processing capacity.

ADF&G staff polled processing companies prior to the 2017 season to assess processing capacity and to inquire about additional concerns or issues. The poll indicated that 4 companies intended to participate in the 2017 Togiak herring fishery. Three companies indicated they planned to buy both gillnet and purse seine fish and 1 company planned to buy only purse seine fish. The processing capacity for 2017 was estimated to be 2,150 short tons per day.

[1] Draft report: Terry, M. and Buck, G. B. Abundance, age, sex, and size statistics for Pacific herring in Togiak District of Bristol Bay, 2017. On file with Bristol Bay Research Group, ADF&G, Division of Commercial Fisheries, Anchorage.

Purse Seine

The Togiak purse seine fishery opened at 6:00 PM on April 28 until further notice (Table 23). The harvest was minimal on April 28 because herring were still not of commercially viable quality. By the afternoon of April 29, fishermen were able to find commercial quality fish and harvest began in earnest. The harvest for April 28 and April 29 was 2,280 short tons and another 3,375 short tons were harvested April 30. The 3,375 short tons on April 30 was the peak harvest. Harvest continued at a steady pace with slowdowns due to weather on May 3 and May 5. The May 5 harvest of 445 short tons was the smallest harvest for the season. The season ended on May 6 when 1,830 short tons were harvested. ADF&G reallocated 525 short tons of the unharvested spawn on kelp quota to the purse seine fishery; this represents 70% of the 750 short tons that can be reallocated. However, 500 short tons was subtracted from the quota due to documented deadloss. This made the allowable harvest 16,085 short tons of herring. Weather on May 6 was poor in the morning, but it was expected to improve as the day progressed. Managers asked processors for updates on the harvest every 2 hours beginning at 11:30 AM. The goal was to give industry enough opportunity to harvest the quota, but not go significantly over. Fishing remained slow throughout the day on May 6, with harvest increasing slightly by the 5:30 PM update. Early reports at 7:00 PM indicated fishing was much improved and all companies were taking fish. ADF&G announced at 7:30 PM that the fishery would close at 8:30 PM and that fish needed to be completely pumped from all sets by 11:30 PM ADF&G was concerned that fishermen might make sets and hold them for several hours while additional tenders were made available. This could potentially cause harvest to exceed the quota. After receiving catch reports on the morning of May 7 ADF&G determined that 1,830 short tons of herring had been harvested on May 6. This left 110 short tons of fish available under the quota. ADF&G did not feel they could have an orderly fishery that would harvest such a limited amount and decide to keep the purse seine fishery closed, ending the 2017 Togiak purse seine fishery. The cumulative harvest was 15,787 short tons, equal to 98.3% of the 16,060 ton quota. Purse seine participation was documented at 19 vessels, up from 17 in 2016 (Appendix B1).

Gillnet

The Togiak gillnet fishery opened at 6:00 PM April 28 until further notice (Table 23). The first gillnet harvest was reported on May 1; the daily harvest is confidential because only 2 processors participated early in the fishery. Preseason, ADF&G determined that 3 companies would buy gillnet herring; 1 of the companies, however, would only buy gillnet herring after the purse seine fishery closed. Up to 15 permit holders participated in the gillnet fishery concurrently with the purse seine fishery, 4 additional permit holders began fishing after the purse seine fishery closed. Weather was a significant factor affecting the gillnet fishery. No harvest was reported May 5–7 because strong winds limited fishing. The final gillnet harvest was 1,342 short tons of the 6,883 ton quota. In 2017, 11 vessels participated in the herring gillnet fishery, compared to 3 in 2016 (Appendix B1).

Spawn on Kelp

No companies registered to buy herring spawn-on-kelp in 2017; therefore, there were no openings and no commercial harvest.

EXPLOITATION

The 2017 Togiak herring fisheries were managed for a maximum exploitation rate of 20% of the preseason biomass estimate. The purse seine harvest was 15,787 short tons, the average roe content was 11%, and the average reported weight was 408 grams. The gillnet harvest was 1,342 short tons of 12% roe content and 415 gram average weight herring. The combined harvest equals 17,129 short tons of 409 grams, 11% roe content herring. The Dutch Harbor food and bait fishery harvested 1,270 short tons of herring. The total harvest in 2017 was estimated to be 18,399 short tons. Based on the preseason biomass estimate of 130,852 short tons, the 2017 exploitation rate was approximately 14% (Appendix B2).

EXVESSEL VALUE

The projected exvessel value of the 2017 Togiak herring fishery was approximately $1.71 million (Appendix B5). This is based on an advance price estimate of $100 per ton and does not include any postseason adjustments.

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TABLES AND FIGURES

Table 1.–Comparison of inshore sockeye salmon forecast versus actual run, escapement goals versus actual escapements, and projected versus actual commercial catch, by river system and district, in thousands of fish, Bristol Bay, 2017.

		Inshore Run			Escapement		Inshore Catch		
District and River System [a]		Forecast [b]	Actual	Percent Deviation [c]	Range	Actual	Projected Harvest [b]	Actual	Percent Deviation [c]
Naknek-Kvichak District									
Kvichak River		7,470	6,524	-13	2,000-10,000	3,163	3,470	3,361	-3
Alagnak River		3,894	4,119	6	320 minimum	2,042	1,809	2,077	15
Naknek River		4,114	4,718	15	800-2,000	1,900	3,014	2,818	-7
	Total	15,478	15,361	-1	3,120-12,320	7,105	8,293	8,256	0
Egegik District		10,257	14,581	42	800-2,000	2,601	8,559	11,980	40
Ugashik District		5,260	6,892	31	500-1,400	1,186	4,086	5,706	40
Nushagak District									
Wood River		5,292	11,009	108	700-1,800	4,274	3,767	6,735	79
Igushik River		1,207	1,318	9	150-400	579	994	739	-26
Nushagak-Mulchatna		1,802	7,700	327	370-900	2,852	1,299	4,848	273
	Total	8,301	20,027	141	1,220-3,100	7,705	6,060	12,322	103
Togiak District		633	711	12	120-270	195	476	516	8
Total Bristol Bay [d]		39,929	57,572	44	5,760-19,090	18,792	27,474	38,780	41

[a] The Bristol Bay inshore forecast does not include several minor river systems, including the Snake River drainage in Nushagak District, and the Kulukak, Osviak, Matogak and Slug River systems in Togiak District. Catches, escapements, and total runs for these smaller systems are not included in this table so that forecast efficacy may be gauged. Totals may not equal column sums because of rounding.

[b] Does not include South Peninsula projected harvest.

[c] Percent deviation = (Actual - Forecast) / Forecast.

[d] Total may not equal some of all districts due to rounding.

Table 2.–Forecast of sockeye salmon returns by age class, river system, and district, in thousands of fish, Bristol Bay, 2017.

District and	2-Ocean			3-Ocean			
River System	1.2 (2013)	2.2 (2012)	Total	1.3 (2012)	2.3 (2011)	Total	Total
Naknek-Kvichak District							
Kvichak River	2,420	2,920	5,340	2,000	420	2,420	7,760
Alagnak River	1,430	810	2,240	1,610	200	1,810	4,050
Naknek River	2,080	600	2,680	1,160	440	1,600	4,280
Total	5,920	4,330	10,260	4,770	1,050	5,830	16,090
Egegik District	770	4,380	5,150	3,630	1,870	5,500	10,650
Ugashik District	1,690	450	2,140	2,860	470	3,330	5,470
Nushagak District							
Wood River	2,970	150	3,120	2,330	50	2,380	5,500
Igushik River	340	10	350	890	20	910	1,260
Nushagak River [a]	250	0	250	1,520	20	1,540	1,870
Total	3,550	160	3,720	4,740	90	4,830	8,630
Togiak District [b]	120	20	140	490	20	510	650
Total Bristol Bay [c, d]							
Number	12,050	9,350	21,410	16,500	3,500	20,000	41,470
Percent	29%	23%	52%	40%	8%	48%	100%

[a] Nushagak River forecast total includes age-0.3 (119) and age-1.4 (78,346) fish.

[b] Kulukak, Kanik, Osviak, and Matogak River systems are not forecast. These systems contribute approximately 50,000 sockeye salmon to Togiak District harvest each year.

[c] Sockeye salmon of several minor age classes are expected to contribute an additional 1–2% to the total return.

[d] Total may not equal some of all districts due to rounding.

Table 3.–Mean round weight, price per pound, and total exvessel value of the commercial salmon catch, Bristol Bay, 2017.

Species	Total Catch (lb)	Mean Weight (lb)	Mean Price ($/lb)	Exvessel Value ($)
Sockeye	208,025,866	5.4	1.02	212,186,384
Chinook	476,992	11.5	0.72	343,434
Chum	9,500,452	6.4	0.30	2,850,136
Pink	129,327	3.7	0.16	20,692
Coho	1,531,174	6.4	0.65	995,263
Total	219,663,812			216,395,909

Table 4.–Commercial salmon processors and buyers operating in Bristol Bay, 2017.

	Name of Operator/Buyer	Base of Operations	District[a]	Method[b]	Export
1	Alaska's Best Seafood, LLC.	Dillingham, AK	N	EF, F, RE	AIR, SEA
2	Alaska General Seafoods	Kenmore, WA	K,E,	C,EF,F,RE	AIR,SEA
3	Alaska Salmon Wild	Ruidoso, NM	K	F	AIR
4	Anthony Wood	King Salmon, AK	K	EF, F	AIR, SEA
5	Big Creek Fisheries	Everett, WA	E,U	EF, F	AIR,SEA
6	Bristol Bay Seafoods	Homer, AK	N, U	EF, F	AIR, SEA
7	Cape Greig	Seattle, WA	E,U	F, RE	AIR
8	Coffee Point Seafoods	Seattle, WA	E, U	EF,F,RE	AIR,SEA
9	Copper River Seafoods	Anchorage, AK	E,K,N,T,U	EF	AIR
10	David M. Wright	Naknek, AK	K	F	AIR
11	Diamond O Fish House	Wasilla, AK	K	F	AIR
12	Ekuk Fisheries LLC.	Seattle, WA	N	F	SEA
13	Ekuk Wild Salmon and Halibut Co.	Dillingham, AK	N	EF, F	AIR, SEA
14	Madison's Salmon Co.	Anchorage, AK	K	F	AIR
15	Friedman Family Fisheries	Baltimore, MD	N	F	SEA
16	Icicle Seafoods	Seattle, WA	E,K,N,U	C,EF,F,RE	AIR,SEA
17	Joel Reynolds	College Place, WA	N	F	AIR
18	Leader Creek Fisheries	Seattle, WA	E,K,N,U	F,RE	SEA
19	My Girl	Igiugig, AK	K	F	AIR
20	Nakeem Homepack	King Salmon, AK	K	F	SEA
21	North Pacific Seafoods (Togiak Fisheries)	Seattle, WA	T	F	SEA
22	North Pacific Seafoods (Red Salmon Cannery)	Seattle, WA	E,K,N,U	F, EF	SEA
23	North Pacific Seafoods (Pederson Point)	Seattle, WA	K	F	SEA
24	Ocean Beauty Seafoods	Seattle, WA	E,K,N,U	EF,F	AIR,SEA
25	Peter Pan Seafoods	Seattle, WA	E,K,N,T,U	C,EF,F,RE,S	AIR,SEA
26	Salmon Slayer/Matt Beck	Gunnison, CO	N	EF	AIR
27	Stikine Seafoods	Wrangell, AK	U	EF	AIR
28	Silver Bay Seafoods	Sitka, AK	E,K,N,T,U	F,EF,RE	AIR,SEA
29	Sunrise Salmon	Fergus Falls, MN	K	F	AIR
30	Terpening Fishing LLC	Homer, AK	U	F	AIR
31	Three Tough Mothers	Naknek, AK	K	F	AIR
32	Trident Seafoods	Seattle, WA	E,K,N,U	C,F	AIR,SEA
33	Tulchina Fisheries	Naknek, AK	K	EF, F	AIR
34	Two If By Seafoods	Issaquah, WA	K	F	AIR
35	F/V King Louie Victor Popa	Fallbrook, CA	E	F	SEA
36	Wild Alaska Salmon and Seafood	King Salmon, AK	N	EF, F	AIR,SEA
37	Whiz Bang Fisheries, Inc.	Friday Harbor, WA	K	F	AIR, SEA
38	Wild Premium Salmon	Vista, CA	E	EF,F	AIR

[a] E = Egegik; K = Naknek-Kvichak; N = Nushagak; T = Togiak; U = Ugashik.

[b] Type of processing: C = canned; EF = export fresh; F = frozen; RE = roe extraction; S = cured.

Table 5.–Commercial salmon catch by district and species, in number of fish, Bristol Bay, 2017.

District and River System		Sockeye	Chinook	Chum	Pink	Coho	Total
Naknek-Kvichak District							
Kvichak River		3,360,725					3,360,725
Alagnak River		2,077,424					2,077,424
Naknek River		2,818,155					2,818,155
	Total	8,256,304	2,477	249,696	174	4,754	8,513,405
Egegik District		11,980,502	866	147,330	214	14,274	12,143,186
Ugashik District		5,705,712	1,219	88,126	143	7	5,795,207
Nushagak District							
Wood River		6,735,330					6,735,330
Igushik River		739,484					739,484
Nushagak River		4,847,705					4,847,705
	Total	12,322,519	32,194	804,878	7,230	167,347	13,334,168
Togiak District		516,488	4,643	204,518	26,797	54,503	806,949
Total Bristol Bay	Total	38,781,525	41,399	1,494,548	34,558	240,885	40,592,915

Note: Species other than sockeye salmon are not apportioned to individual rivers.

Table 6.–Final daily and cumulative escapement estimates by species, Nushagak River sonar project, Bristol Bay, 2017.

	Sockeye		Chinook		Chum	
Date	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
6/7	257	257	36	36	308	308
6/8	417	674	78	113	555	863
6/9	473	1,147	85	199	617	1,481
6/10	616	1,763	62	261	642	2,123
6/11	466	2,228	66	326	536	2,659
6/12	1,552	3,780	231	557	1,919	4,579
6/13	3,684	7,464	485	1,042	3,481	8,060
6/14	2,442	9,906	108	1,150	1,578	9,638
6/15	7,014	16,920	356	1,506	5,883	15,521
6/16	21,455	38,375	201	1,708	6,424	21,945
6/17	24,566	62,941	92	1,799	4,167	26,112
6/18	50,374	113,315	537	2,337	8,621	34,732
6/19	50,206	163,521	284	2,621	16,008	50,740
6/20	46,021	209,542	410	3,031	4,605	55,345
6/21	76,400	285,941	1,246	4,276	17,971	73,316
6/22	294,242	580,183	10,633	14,910	45,273	118,590
6/23	204,265	784,448	1,826	16,736	56,025	174,614
6/24	74,151	858,599	564	17,299	8,823	183,438
6/25	20,709	879,308	2,369	19,669	8,524	191,961
6/26	12,269	891,577	1,114	20,782	9,819	201,780
6/27	45,748	937,326	2,783	23,565	13,125	214,905
6/28	58,847	996,173	8,880	32,445	17,287	232,192
6/29	50,957	1,047,130	1,374	33,818	9,493	241,686
6/30	42,998	1,090,128	1,017	34,835	7,148	248,833
7/1	30,149	1,120,276	3,161	37,997	5,138	253,971
7/2	14,796	1,135,072	4,254	42,251	7,620	261,591
7/3	21,559	1,156,631	1,065	43,316	8,558	270,149
7/4	363,047	1,519,678	902	44,218	16,031	286,180
7/5	440,612	1,960,289	2,240	46,458	9,764	295,944
7/6	199,591	2,159,881	4,597	51,055	45,328	341,272
7/7	69,605	2,229,486	2,215	53,270	4,974	346,246
7/8	62,550	2,292,036	760	54,030	3,356	349,602
7/9	74,750	2,366,787	165	54,195	17,994	367,596
7/10	134,244	2,501,031	320	54,515	8,296	375,892
7/11	104,973	2,606,003	310	54,825	2,153	378,046
7/12	72,315	2,678,318	199	55,024	12,104	390,150
7/13	30,838	2,709,156	291	55,314	2,946	393,095
7/14	40,401	2,749,558	189	55,504	1,745	394,841
7/15	29,748	2,779,305	193	55,697	4,043	398,884
7/16	28,611	2,807,916	377	56,074	4,085	402,968
7/17	11,325	2,819,241	370	56,444	7,103	410,071
7/18	7,478	2,826,719	123	56,567	4,843	414,914
7/19	16,922	2,843,641	204	56,772	300	415,214
7/20	8,665	2,852,306	189	56,961	274	415,488

Note: All counts rounded to nearest whole fish.

Table 7.–Daily sockeye salmon escapement tower counts by river system; east side Bristol Bay, 2017.

	Kvichak River		Naknek River		Alagnak River		Egegik River		Ugashik River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/12										
6/13										
6/14										
6/15										
6/16										
6/17										
6/18							18,942	18,942		
6/19			2,472	2,472			25,878	44,820		
6/20			1,590	4,062			48,630	93,450		
6/21			2,346	6,408			27,612	121,062		
6/22	162	162	6,048	12,456			11,934	132,996		
6/23	648	810	1,248	13,704			11,532	144,528		
6/24	306	1,116	1,458	15,162			8,466	152,994		
6/25	150	1,266	3,264	18,426			13,362	166,356		
6/26	198	1,464	738	19,164			22,830	189,186		
6/27	240	1,704	11,118	30,282			6,858	196,044	114	114
6/28	138	1,842	27,066	57,348	1,476	1,476	1,584	197,628	24	138
6/29	702	2,544	5,838	63,186	1,620	3,096	2,850	200,478	282	420
6/30	3,810	6,354	8,364	71,550	468	3,564	25,236	225,714	408	828
7/1	2,088	8,442	1,734	73,284	540	4,104	11,160	236,874	348	1,176
7/2	42	8,484	16,980	90,264	456	4,560	59,610	296,484	420	1,596
7/3	162	8,646	473,586	563,850	294	4,854	296,460	592,944	480	2,076
7/4	37,962	46,608	236,838	800,688	134,880	139,734	616,338	1,209,282	864	2,940
7/5	339,570	386,178	110,082	910,770	293,886	433,620	506,004	1,715,286	14,790	17,730
7/6	445,578	831,756	27,432	938,202	261,036	694,656	312,624	2,027,910	121,878	139,608
7/7	292,896	1,124,652	144,726	1,082,928	37,572	732,228	130,398	2,158,308	144,756	284,364
7/8	59,976	1,184,628	71,604	1,154,532	122,052	854,280	43,362	2,201,670	76,668	361,032
7/9	113,604	1,298,232	129,840	1,284,372	61,800	916,080	43,290	2,244,960	36,060	397,092
7/10	73,422	1,371,654	77,154	1,361,526	95,502	1,011,582	57,168	2,302,128	62,586	459,678
7/11	227,838	1,599,492	92,178	1,453,704	184,170	1,195,752	65,118	2,367,246	85,218	544,896
7/12	374,196	1,973,688	55,488	1,509,192	309,174	1,504,926	16,662	2,383,908	87,276	632,172
7/13	190,740	2,164,428	103,140	1,612,332	120,378	1,625,304	14,808	2,398,716	118,842	751,014
7/14	131,274	2,295,702	74,298	1,686,630	65,310	1,690,614	132,054	2,530,770	105,744	856,758
7/15	140,490	2,436,192	35,154	1,721,784	73,764	1,764,378	22,380	2,553,150	62,868	919,626
7/16	77,508	2,513,700	22,572	1,744,356	70,596	1,834,974	36,552	2,589,702	69,414	989,040
7/17	53,502	2,567,202	22,104	1,766,460	28,884	1,863,858	11,280	2,600,982	44,832	1,033,872
7/18	15,084	2,582,286	44,604	1,811,064	26,340	1,890,198			48,456	1,082,328
7/19	48,048	2,630,334	44,106	1,855,170	76,290	1,966,488			27,372	1,109,700
7/20	52,374	2,682,708	8,070	1,863,240	48,474	2,014,962			16,854	1,126,554
7/21	33,948	2,716,656	9,606	1,872,846	19,596	2,034,558			23,802	1,150,356
7/22	9,306	2,725,962	27,126	1,899,972	7,266	2,041,824			12,714	1,163,070
7/23	4,668	2,730,630							9,546	1,172,616
7/24	80,076	2,810,706							7,524	1,180,140
7/25	151,470	2,962,176							6,306	1,186,446
7/26	113,058	3,075,234								
7/27	49,320	3,124,554								
7/28	19,422	3,143,976								
7/29	12,054	3,156,030								
7/30	7,374	3,163,404								

Table 8.–Commercial fishing emergency orders by period, district, and statistical area, Bristol Bay east side, 2017.

Number	Start	Start Time		End Date	End Time	Effective Time	
Naknek/Kvichak District							
Driftnet							
AKN.27	1 Jul	10:00 AM		1 Jul	4:00 PM	6.0 hours	
AKN.30	2 Jul	10:30 AM		2 Jul	5:00 PM	6.5 hours	
AKN.35	3 Jul	11:00 AM		3 Jul	5:00 PM	6.5 hours	
AKN.54	8 Jul	4:00 PM		8 Jul	11:00 PM	7.0 hours	
AKN.55	10 Jul	5:00 AM		10 Jul	1:30 PM	8.5 hours	
AKN.61	12 Jul	6:30 AM		12 Jul	2:30 PM	8.0 hours	
AKN.64	11 Jul	7:00 PM		12 Jul	2:30 AM	7.5 hours	
AKN.65	12 Jul	7:30 PM		13 Jul	3:30 AM	7.5 hours	
AKN.65	13 Jul	7:30 AM		13 Jul	3:30 PM	7.5 hours	
AKN.68	13 Jul	8:30 PM		14 Jul	4:30 AM	8.0 hours	
AKN.68	14 Jul	8:00 AM		14 Jul	3:30 PM	7.5 hours	
AKN.73	15 Jul	10:00 PM		16 Jul	5:00 AM	19.0 hours	
AKN.73	16 Jul	10:30 PM		1 Aug	9:00 AM	370.5 hours	
							fall schedule
Setnet							
AKN.01	1 Jun	9:00 AM	to	23 Jun	9:00 AM		[a,b]
AKN.26	1 Jul	8:30 AM		1 Jul	4:30 PM	7.5 hours	
AKN.30	2 Jul	9:30 AM		2 Jul	5:00 PM	7.5 hours	
AKN.33	2 Jul	5:00 PM		3 Jul	5:30 PM	24.5 hours	[c]
AKN.35	3 Jul	5:30 PM		4 Jul	7:00 PM	25.5 hours	[c]
AKN.38	4 Jul	7:00 PM		5 Jul	7:30 PM	24.5 hours	[c]
AKN.41	5 Jul	7:30 PM		6 Jul	9:00 PM	25.5 hours	[c]
AKN.55	9 Jul	12:30 PM		10 Jul	1:30 PM	25.0 hours	[c]
AKN.58	10 Jul	1:30 PM		11 Jul	2:00 PM	24.5 hours	[c]
AKN.61	11 Jul	2:00 PM		12 Jul	2:30 PM	24.5 hours	[c]
AKN.65	12 Jul	2:30 PM		13 Jul	3:00 PM	24.5 hours	[c]
AKN.68	13 Jul	3:00 PM			Further notice		[c]
AKN.68	15 Jul	9:00 AM		1 Aug	9:00 AM		
Naknek Section							fall schedule
Driftnet							
AKN.01	1 Jun	9:00 AM	to	23 Jun	9:00 AM		[a,b]
AKN.35	4 Jul	1:00 AM		4 Jul	8:30 AM	7.5 hours	
AKN.38	4 Jul	12:00 PM		4 Jul	7:00 PM	7.0 hours	
AKN.38	5 Jul	1:00 AM		5 Jul	9:30 AM	8.5 hours	
AKN.41	5 Jul	1:30 PM		5 Jul	7:30 PM	6.0 hours	
AKN.41	6 Jul	2:00 AM		6 Jul	10:00 AM	6.0 hours	
AKN.45	6 Jul	2:30 PM		6 Jul	9:00 PM	6.5 hours	
AKN.45	7 Jul	3:00 AM		7 Jul	10:30 AM	7.5 hours	
AKN.48	8 Jul	3:30 AM		8 Jul	12:00 AM	8.0 hours	
AKN.51	8 Jul	4:00 PM		8 Jul	11:00 PM	7.0 hours	
AKN.51	9 Jul	4:30 AM		9 Jul	12:30 PM	8.0 hours	
AKN.55	9 Jul	5:00 AM		9 Jul	11:00 PM	7.0 hours	
AKN.58	10 Jul	6:00 PM		11 Jul	1:00 AM	7.0 hours	
AKN.58	11 Jul	6:00 AM		11 Jul	2:00 PM	8.0 hours	
AKN.61	11 Jul	7:00 PM		12 Jul	2:30 AM	7.5 hours	
Setnet							
AKN.48	8 Jul	3:30 AM		8 Jul	12:00 PM	8.0 hours	
AKN.51	8 Jul	12:00 PM		9 Jul	12:30 PM	24.5 hours	[c]

-continued-

Table 8.–Page 2 of 4.

Number	Start Date	Start Time	End Date	End Time	Effective Time	
Kvichak Section						
Driftnet						
Setnet						
AKN.51	8 Jul	4:00 PM	9 Jul	12:30 PM	20.5 hours	
Egegik District						
Driftnet						
AKN.02	1 Jun	12:01 AM	17 Jun	9:00 AM		d
AKN.07	20 Jun	11:15 AM	20 Jun	7:15 PM	8.0 hours	
AKN.08	21 Jun	12:00 PM	21 Jun	8:00 PM	8.0 hours	
AKN.09	24 Jun	6:00 AM	24 Jun	10:00 AM	4.0 hours	
AKN.11	24 Jun	2:45 PM	24 Jun	7:45 PM	5.0 hours	
AKN.13	25 Jun	3:30 PM	25 Jun	11:30 PM	8.0 hours	
AKN.13	26 Jun	7:00 AM	26 Jun	11:00 AM	4.0 hours	
AKN.15	26 Jun	3:00 PM	26 Jun	10:00 PM	7.0 hours	
AKN.15	27 Jun	7:00 AM	27 Jun	11:00 AM	4.0 hours	
AKN.17	27 Jun	5:15 PM	27 Jun	10:15 PM	5.0 hours	
AKN.19	28 Jun	6:00 PM	28 Jun	10:00 PM	4.0 hours	
AKN.21	30 Jun	7:00 AM	30 Jun	1:00 PM	6.0 hours	
AKN.23	1 Jul	7:30 AM	1 Jul	1:30 PM	6.0 hours	
AKN.23	1 Jul	8:00 PM	1 Jul	11:59 PM	4.0 hours	
AKN.25	30 Jun	7:00 PM	30 Jun	11:00 PM	4.0 hours	
AKN.28	2 Jul	8:30 AM	2 Jul	4:30 PM	8.0 hours	
AKN.31	2 Jul	8:00 PM	2 Jul	11:59 PM	4.0 hours	
AKN.31	3 Jul	10:00 AM	3 Jul	6:00 PM	8.0 hours	
AKN.36	4 Jul	11:00 AM	4 Jul	7:00 PM	8.0 hours	
AKN.39	4 Jul	11:00 PM	5 Jul	4:00 AM	5.0 hours	
AKN.39	5 Jul	12:00 PM	5 Jul	8:00 PM	8.0 hours	
AKN.42	6 Jul	2:00 PM	6 Jul	8:00 PM	6.0 hours	
AKN.44	5 Jul	8:00 PM	5 Jul	10:00 PM	2.0 hours	c
AKN.44	6 Jul	12:45 PM	6 Jul	8:45 PM	8.0 hours	e
AKN.46	7 Jul	5:00 AM	7 Jul	9:00 PM	4.0 hours	
AKN.46	7 Jul	2:00 PM	7 Jul	10:00 PM	8.0 hours	
AKN.49	8 Jul	2:15 PM	8 Jul	10:15 PM	8.0 hours	
AKN.52	9 Jul	3:00 AM	9 Jul	11:00 AM	8.0 hours	
AKN.52	9 Jul	3:45 PM	9 Jul	11:45 AM	8.0 hours	
AKN.56	10 Jul	8:00 AM	10 Jul	12:00 PM	4.0 hours	
AKN.56	10 Jul	4:30 PM	11 Jul	12:30 AM	8.0 hours	
AKN.59	11 Jul	6:00 AM	11 Jul	12:00 PM	6.0 hours	
AKN.59	11 Jul	5:15 PM	12 Jul	1:15 AM	8.0 hours	
AKN.62	12 Jul	5:15 AM	12 Jul	1:15 PM	8.0 hours	
AKN.62	12 Jul	6:00 PM	13 Jul	2:00 AM	8.0 hours	
AKN.66	13 Jul	6:00 AM	13 Jul	2:00 PM	8.0 hours	
AKN.66	13 Jul	6:45 PM	14 Jul	2:45 AM	8.0 hours	f
AKN.69	14 Jul	6:30 AM	14 Jul	2:30 PM	8.0 hours	
AKN.69	14 Jul	7:45 PM	15 Jul	3:45 AM	8.0 hours	
AKN.69	15 Jul	7:15 AM	15 Jul	3:15 PM	8.0 hours	
AKN.74	15 Jul	3:15 PM	25 Jul	9:00 AM	234.45 hours	c
AKN.76	29 Jul	9:00 AM	1 Aug	9:00 AM	66.0 hours	c

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Number	Start Date	Start Time	End Date	End Time	Effective time	
Setnet						fall schedule
AKN.02	1 Jun	12:01 AM	17 Jun	9:00 AM		[d]
AKN.07	20 Jun	11:15 AM	20 Jun	7:15 PM	8.0 hours	
AKN.08	21 Jun	12:00 PM	21 Jun	8:00 PM	8.0 hours	
AKN.09	23 Jun	1:30 PM	23 Jun	9:30 PM	8.0 hours	
AKN.11	24 Jun	2:45 PM	24 Jun	10:45 PM	8.0 hours	
AKN.13	25 Jun	3:30 PM	25 Jun	11:30 PM	8.0 hours	
AKN.17	27 Jun	5:15 PM	28 Jun	1:15 AM	8.0 hours	
AKN.19	29 Jun	6:00 AM	29 Jun	2:00 PM	8.0 hours	
AKN.21	30 Jun	7:00 AM	30 Jun	3:00 PM	8.0 hours	
AKN.23	1 Jul	7:30 AM	1 Jul	3:30 PM	8.0 hours	
AKN.28	2 Jul	8:30 AM	2 Jul	4:30 PM	8.0 hours	
AKN.31	3 Jul	10:00 AM	3 Jul	6:00 PM	8.0 hours	
AKN.36	4 Jul	11:00 AM	4 Jul	7:00 PM	8.0 hours	
AKN.39	5 Jul	12:00 PM	5 Jul	8:00 PM	8.0 hours	
AKN.42	6 Jul	12:45 PM	6 Jul	8:45 PM	8.0 hours	
AKN.46	7 Jul	2:00 PM	7 Jul	10:00 PM	8.0 hours	
AKN.49	8 Jul	2:15 PM	8 Jul	10:15 PM	8.0 hours	
AKN.52	9 Jul	3:00 AM	9 Jul	11:00 AM	8.0 hours	
AKN.52	9 Jul	3:45 PM	9 Jul	11:45 PM	8.0 hours	
AKN.56	10 Jul	4:30 PM	11 Jul	12:30 AM	8.0 hours	
AKN.59	11 Jul	5:15 PM	12 Jul	1:15 AM	8.0 hours	
AKN.59	11 Jul	5:15 PM	12 Jul	1:15 AM	8.0 hours	
AKN.62	12 Jul	5:15 AM	12 Jul	1:15 PM	8.0 hours	
AKN.62	12 Jul	6:00 PM	13 Jul	2:00 AM	8.0 hours	
AKN.66	13 Jul	6:00 AM	13 Jul	2:00 PM	8.0 hours	
AKN.66	13 Jul	6:45 PM	14 Jul	2:45 AM	8.0 hours	[f]
AKN.69	14 Jul	6:30 AM	14 Jul	2:30 PM	8.0 hours	
AKN.69	14 Jul	7:45 PM	15 Jul	3:45 AM	8.0 hours	
AKN.69	15 Jul	7:15 AM	15 Jul	3:15 PM	8.0 hours	
AKN.74	15 Jul	3:15 PM	25 Jul	9:00 AM	234.45 hours	[c]
AKN.76	29 Jul	9:00 AM	1 Aug	9:00 AM	66.0 hours	[c]
Ugashik District						fall schedule
Driftnet						
AKN.03	1 Jun	12:01 AM	22 Jun	11:59 PM		[a]
AKN.06	10 Jun	12:00 PM	30 Sep	11:59 PM	Line Change	
AKN.12	24 Jun	2:00 PM	24 Jun	5:00 PM	3.0 hours	
AKN.18	27 Jun	4:00 PM	27 Jun	8:00 PM	4.0 hours	
AKN.20	28 Jun	5:00 PM	28 Jun	9:00 PM	4.0 hours	
AKN.22	29 Jun	6:00 PM	29 Jun	10:00 PM	4.0 hours	
AKN.24	1 Jul	7:00 AM	1 Jul	11:00 AM	4.0 hours	
AKN.29	2 Jul	8:00 AM	2 Jul	12:00 PM	4.0 hours	
AKN.32	3 Jul	9:00 AM	3 Jul	1:00 PM	4.0 hours	
AKN.34	3 Jul	1:00 PM	3 Jul	5:00 PM	4.0 hours	[c]
AKN.37	4 Jul	12:00 PM	4 Jul	4:00 PM	4.0 hours	
AKN.40	5 Jul	1:00 PM	5 Jul	5:00 PM	4.0 hours	
AKN.42	5 Jul	5:00 PM	5 Jul	8:00 PM	3.0 hours	[c]
AKN.42	6 Jul	12:00 PM	6 Jul	5:00 PM	5.0 hours	
AKN.47	6 Jul	5:00 PM	6 Jul	8:00 PM	3.0 hours	[c]
AKN.47	6 Jul	5:00 PM	6 Jul	8:00 PM	3.0 hours	[c]
AKN.47	7 Jul	12:00 PM	7 Jul	10:00 PM	10.0 hours	
AKN.50	8 Jul	1:00 PM	9 Jul	1:00 AM	12.0 hours	
AKN.53	9 Jul	9:00 AM	9 Jul	9:00 PM	12.0 hours	

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Number	Start Date	Start Time	End Date	End Time	Effective time	
AKN.53	9 Jul	1:30 AM	10 Jul	1:30 AM	12.0 hours	
AKN.57	10 Jul	2:00 PM	10 Jul	10:00 PM	8.0 hours	
AKN.60	11 Jul	4:00 AM	11 Jul	4:00 PM	12.0 hours	
AKN.63	11 Jul	4:00 PM	11 Jul	10:00 PM	6.0 hours	[c]
AKN.63	12 Jul	3:30 PM	12 Jul	4:00 PM	12.5 hours	
AKN.67	12 Jul	4:00 PM	12 Jul	10:00 PM	6.0 hours	[c]
AKN.67	13 Jul	4:00 AM	13 Jul	4:00 PM	12.0 hours	
AKN.70	13 Jul	4:00 PM	13 Jul	10:00 PM	6.0 hours	[c]
AKN.70	14 Jul	5:00 AM	14 Jul	11:00 PM	18.0 hours	
AKN.72	15 Jul	6:00 AM	14 Jul	11:59 PM	18.0 hours	
AKN.72	16 Jul	7:00 AM	25 Jul	9:00 AM	216.0 hours	[c]
AKN.75	15 Jul	12:00 PM	30 Sep	11:59 PM		[f]
AKN.75	29 Jul	9:00 AM	4 Aug	9:00 AM	72.0 hours	[c]
						fall schedule
Setnet						
AKN.03	1 Jun	12:01 AM	22 Jun	11:59 PM		[a]
AKN.06	10 Jun	12:00 PM	30 Sep	11:59 PM	Line Change	
AKN.10	22 Jun	12:00 PM	23 Jun	10:00 PM	10.0 hours	
AKN.12	24 Jun	2:00 PM	24 Jun	11:59 PM	10.0 hours	
AKN.14	25 Jun	2:30 PM	25 Jun	10:30 PM	8.0 hours	
AKN.16	26 Jun	2:00 PM	26 Jun	11:00 PM	9.0 hours	
AKN.18	27 Jun	3:00 PM	27 Jun	11:59 PM	9.0 hours	
AKN.20	28 Jun	4:00 PM	29 Jun	1:00 AM	9.0 hours	
AKN.22	29 Jun	5:00 PM	30 Jun	2:00 AM	9.0 hours	
AKN.24	1 Jul	6:00 AM	1 Jul	3:00 PM	9.0 hours	
AKN.29	2 Jul	7:00 AM	2 Jul	4:00 PM	9.0 hours	
AKN.29	2 Jul	8:00 AM	2 Jul	5:00 PM	9.0 hours	
AKN.32	3 Jul	8:00 AM	3 Jul	5:00 PM	9.0 hours	
AKN.37	4 Jul	10:00 PM	4 Jul	7:00 PM	9.0 hours	
AKN.40	5 Jul	11:00 AM	5 Jul	8:00 PM	9.0 hours	
AKN.42	6 Jul	11:00 PM	6 Jul	8:00 PM	9.0 hours	
AKN.47	7 Jul	12:00 PM	7 Jul	10:00 PM	10.0 hours	
AKN.50	8 Jul	1:00 PM	9 Jul	1:00 AM	12.0 hours	
AKN.53	9 Jul	1:30 AM	10 Jul	1:30 AM	12.0 hours	
AKN.57	10 Jul	2:00 PM	11 Jul	2:00 PM	12.0 hours	
AKN.60	11 Jul	2:00 AM	11 Jul	4:00 PM	14.0 hours	[c]
AKN.63	11 Jul	4:00 PM	11 Jul	10:00 PM	6.0 hours	[c]
AKN.63	12 Jul	3:30 PM	12 Jul	4:00 PM	12.5 hours	
AKN.67	12 Jul	4:00 PM	12 Jul	10:00 PM	6.0 hours	[c]
AKN.67	13 Jul	4:00 AM	13 Jul	4:00 PM	12.0 hours	
AKN.70	13 Jul	4:00 PM	25 Jul	9:00 AM	216.0 hours	[c]
AKN.75	15 Jul	12:00 PM	30 Sep	11:59 PM		[f]
AKN.75	29 Jul	9:00 AM	4 Aug	9:00 AM	72.0 hours	[c]

[a] Weekly schedule: 9:00 AM Monday until 9:00 AM Friday.

[b] Gillnet mesh size is restricted to 5.5 inches or less.

[c] Extends current fishing period.

[d] Weekly schedule: 9:00 AM Monday to 9:00 AM Wednesday, and 9:00 AM Thursday to 9:00 AM Friday.

[e] Supersedes AKN.42

[f] Midpoint of escapement reached, transfer waiting period waived.

Table 9.–Commercial salmon catch by date and species, in numbers of fish, Naknek-Kvichak District, Bristol Bay, 2017.

		Hours Fished		Deliveries							
Date		Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/14	ab	24	24	1							
6/15	ab	24	24	2	3						
6/16	ab	9	9	2	1						
6/17											
6/18											
6/19	a	15	15	71	49	6,263	15	267	0	0	6,545
6/20	a	24	24	40	54	6,578	50	195	0	0	6,823
6/21	a	24	24	70	119	17,004	128	540	0	0	17,672
6/22	a	24	24	58	59	3,923	5	109	0	0	4,037
6/23	ab	9	9		3						
6/24											
6/25											
6/26											
6/27	a	6	6.5	157	177	44,873	33	761	0	0	45,667
6/28	a	6.5	7.5	180	98	15,374	7	364	0	0	15,745
6/29											
6/30											
7/1											
7/2											
7/3	a	9	10	561	558	795,756	63	5,495	0	0	801,314
7/4	a	13	24	459	554	509,563	51	3,362	15	0	512,991
7/5	a	17.5	24	393	349	267,928	110	3,319	0	0	271,357
7/6		18	24	451	524	546,142	202	5,690	4	0	552,038
7/7	a	18.5	18.5	563	467	552,369	84	2,827	0	0	555,280
7/8	a	11.5	12.5	401	409	454,596	111	2,861	0	0	457,568
7/9	a	19	24	624	665	625,443	157	5,668	0	0	631,268
7/10	a	15	24	801	546	470,945	113	4,794	0	0	475,852
7/11	c	16	24	675	466	406,850	195	12,270	2	0	419,317
7/12	c	16	24	829	532	632,410	153	11,291	0	0	643,854
7/13	c	16.5	24	897	527	616,984	185	16,524	1	0	633,694
7/14	c	15.5	24	722	457	564,521	133	16,944	4	0	581,602
7/15	c	14.5	24	678	423	243,800	92	9,062	1	0	252,955
7/16	c	14.5	24	649	320	226,762	86	12,562	0	0	239,410
7/17		24	24	523	204	533,947	94	24,800	2	0	558,843
7/18		24	24	640	336	403,335	99	19,598	5	1	423,038
7/19		24	24	353	198	69,492	68	5,636	0	1	75,197
7/20		24	24	178	89	36,246	76	11,369	0	0	47,691
7/21		9	9	22	7	3,641	1	1,864	0	0	5,506
7/22											

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Table 9.–Page 2 of 2.

Date		Hours Fished Drift	Hours Fished Set	Deliveries Drift	Deliveries Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/23											
7/24		15	15	255	67	99,615	61	33,400	41	27	133,144
7/25		24	24	117	85	43,641	34	12,932	12	5	56,624
7/26		24	24	68	77	26,335	27	5,567	1	8	31,938
7/27		24	24	42	63	12,988	19	2,469	0	8	15,484
7/28	[b]	9	9	10	9						
7/29											
7/30											
7/31	[b]	15	15	14	13						
8/1	[b]	24	24	17	26						
8/2	[b]	24	24	11	19						
8/3	[b]	24	24	2	6						
8/4	[b]	9	9		3						
8/5											
8/6											
8/7	[b]	15	15	8	7						
8/8	[b]	24	24	8	18						
8/9	[b]	24	24	8	9						
8/10	[b]	24	24	11	12						
8/11	[b]	9	9		2						
8/12											
8/13											
8/14	[b]	15	15	6	2						
8/15	[b]	24	24	1	3						
8/16	[b]	24	24	6	3						
8/17	[b]	24	24	2	3						
8/18	[b]	9	9								
8/19											
8/20											
8/21	[b]	15	15		2						
8/22	[b]	24	24	2	7						
8/23	[b]	24	24		7						
8/24	[b]	24	24		8						
8/25	[b]	9	9		1						
Total				11,592	8,646	8,256,304	2,477	249,696	174	4,754	8,513,405

Note: Unless otherwise noted, blank cells represent days with no data.

[a] Fishery was restricted to the Naknek Section only for drift gillnet gear.

[b] Test fish catch.

[c] Set gillnet gear was only open in Naknek Section.

Table 10.–Daily district registration of drift gillnet permit holders by district, Bristol Bay, 2017.

	Naknek-Kvichak		Egegik		Ugashik		Nushagak		Togiak[a]	Total
Date	Total	Dual	Total	Dual	Total	Dual	Total	Dual	Total	
6/1	1	0	8	0	1	0	0	0	0	10
6/2	1	0	8	0	1	0	0	0	0	10
6/3	1	0	10	1	2	0	1	0	0	14
6/4	1	0	10	1	3	0	1	0	1	16
6/5	1	0	10	1	3	0	1	0	1	16
6/6	1	0	11	1	3	0	2	0	1	18
6/7	1	0	11	1	3	0	3	0	1	19
6/8	2	0	13	2	3	0	4	0	1	23
6/9	2	0	16	2	3	0	5	0	1	27
6/10	9	1	35	3	3	0	13	0	2	62
6/11	11	1	45	3	3	0	15	0	2	76
6/12	11	1	51	4	5	1	15	0	2	84
6/13	20	1	81	12	18	2	22	0	3	144
6/14	25	1	87	12	21	3	26	2	4	163
6/15	35	3	101	15	28	6	28	0	5	197
6/16	38	4	117	19	30	6	37	2	8	230
6/17	39	4	129	22	26	4	56	4	10	260
6/18	38	5	153	27	31	5	57	26	10	289
6/19	84	14	276	63	35	6	69	74	12	476
6/20	125	19	303	66	43	8	155	134	17	643
6/21	132	18	346	77	48	11	248	154	20	794
6/22	159	22	380	82	56	13	444	186	22	1,061
6/23	163	21	431	95	68	17	531	206	22	1,215
6/24	161	22	457	101	75	18	593	216	24	1,310
6/25	169	23	480	107	138	35	602	228	25	1,414
6/26	176	24	496	113	173	47	609	228	29	1,483
6/27	183	25	512	119	177	47	630	240	34	1,536
6/28	252	33	482	111	184	48	629	244	37	1,584
6/29	272	37	467	108	191	51	634	238	37	1,601
6/30	304	45	473	110	198	51	636	244	38	1,649
7/01	309	45	470	111	198	51	620	242	40	1,637
7/02	314	46	473	112	198	51	575	210	40	1,600
7/03	331	47	491	119	216	55	550	204	41	1,629
7/04	354	53	504	123	229	57	548	196	41	1,676
7/05	379	59	501	122	232	60	497	194	41	1,650
7/06	389	60	484	117	230	60	471	186	42	1,616
7/07	437	73	467	111	238	63	441	182	42	1,625
7/08	470	82	442	109	249	65	409	178	42	1,612
7/09	508	90	416	103	258	68	367	166	43	1,592
7/10	539	93	416	104	284	71	362	154	43	1,644
7/11	560	98	403	100	333	77	330	154	43	1,669
7/12	558	95	385	100	329	76	282	152	43	1,597
7/13	577	102	306	72	342	80	280	138	43	1,548
7/14	598	103	381	103	381	92	273	134	43	1,676
7/15	599	104	385	103	394	96	276	134	43	1,697
7/16	577	97	391	104	409	99	290	130	43	1,710
Average[b]	316	50	401	95	193	48	403	167	33	1,346

Note: Total permit sum includes dual boat registrations.

[a] Dual boat registration is not permitted by regulation in Togiak District.

[b] Seasonal averages calculated for June 16 to July 16.

Table 11.–Comparison of daily sockeye salmon escapement estimates by tower count, aerial survey estimate and river test fishing enumeration methods, Kvichak River, Bristol Bay, 2017.

	Tower Count		River Test Fishing				
			Fish per	Index Points		Cumulative	Estimated
Date	Daily	Cum.	Index Pt.[a]	Daily	Cum.	Escapement	River Fish[b]
6/22	162	162					
6/23	648	810	140	3	3	382	
6/24	306	1,116	140	3	5	750	
6/25	150	1,266	140	0	5	750	
6/26	198	1,464	140	3	8	1,132	
6/27	240	1,704	140	0	8	1,132	
6/28	138	1,842	140	29	37	5,249	
6/29	702	2,544	140	36	74	10,294	
6/30	3,810	6,354	140	0	74	10,294	
7/01	2,088	8,442	140	0	74	10,294	
7/02	42	8,484	140	6	79	11,083	
7/03	162	8,646	225	1,283	1,362	306,558	300,000
7/04	37,962	46,608	165	1,963	3,326	548,741	500,000
7/05	339,570	386,178	200	2,192	5,518	1,103,530	650,000
7/06	445,578	831,756	173	179	5,697	985,514	150,000
7/07	292,896	1,124,652	200	483	6,179	1,235,883	100,000
7/08	59,976	1,184,628	200	883	7,062	1,412,429	250,000
7/09	113,604	1,298,232	197	831	7,893	1,554,979	250,000
7/10	73,422	1,371,654	181	4,695	12,588	2,278,462	900,000
7/11	227,838	1,599,492	173	1,842	14,431	2,496,502	900,000
7/12	374,196	1,973,688	171	626	15,057	2,574,664	600,000
7/13	190,740	2,164,428	151	269	15,326	2,314,228	150,000
7/14	131,274	2,295,702	150	490	15,816	2,372,331	100,000
7/15	140,490	2,436,192					
7/16	77,508	2,513,700					
7/17	53,502	2,567,202					
7/18	15,084	2,582,286					
7/19	48,048	2,630,334					
7/20	52,374	2,682,708					
7/21	33,948	2,716,656					
7/22	9,306	2,725,962					
7/23	4,668	2,730,630					
7/24	80,076	2,810,706					
7/25	151,470	2,962,176					
7/26	113,058	3,075,234					
7/27	49,320	3,124,554					
7/28	19,422	3,143,976					
7/29	12,054	3,156,030					
7/30	7,374	3,163,404					

[a] The FPI used to estimate the daily ERFs prior to using lag time relationships was calculated using the 5-year average of median FPIs. This method was used through July 2 when FPIs were based on lag time relationships.

[b] Estimated river fish (ERF) was based on the river test fishery cumulative escapement estimate less the cumulative tower count. On occasion, ADF&G staff adjusted the ERF based on catchability and other factors.

Table 12.–Commercial salmon catch by date and species, in numbers of fish, Egegik District, Bristol Bay, 2017.

	Hours Fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/1	15	15								
6/2	9	9								
6/3										
6/4										
6/5 [a]	15	15		1						
6/6 [a]	24	24		1						
6/7 [a]	9	9		1						
6/8 [a]	15	15		13						
6/9 [a]	9	9		4						
6/10										
6/11										
6/12	15	15	14	67	10,843	10	132	0	0	10,985
6/13	24	24	33	68	10,412	3	249	0	0	10,664
6/14	9	9	9	7	1,398	0	12	0	0	1,410
6/15	15	15	61	103	37,757	12	462	0	0	38,231
6/16	9	9	22	10	7,298	3	120	0	0	7,421
6/17										
6/18	5.5	5.5	169	147	68,663	46	709	0	0	69,418
6/19	5.5	2.5	193	5	39,336	6	504	0	0	39,846
6/20	3.5	8	206	163	89,721	47	1,196	0	0	90,964
6/21	6	8	250	134	130,842	15	2,268	0	0	133,125
6/22	8	8	309	161	206,033	26	4,076	0	0	210,135
6/23	8	8	305	129	161,760	26	2,416	0	0	164,202
6/24	5	8	351	143	251,388	21	2,886	0	0	254,295
6/25	4		357		199,018	17	2,620	0	0	201,655
6/26	4	8	379	133	183,060	43	2,648	0	0	185,751
6/27										
6/28										
6/29	3		357		151,779	10	2,593	0	0	154,382
6/30		8		120	14,846	25	249	0	0	15,120
7/1										

-continued-

Table 12.–Page 2 of 3.

Date	Hours Fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Drift	Set	Drift	Set						
7/2	5.75	5.75	406	259	988,524	18	7,126	0	0	995,668
7/3	11	14.25	664	279	1,086,749	45	7,913	0	0	1,094,707
7/4	11.5	15.5	586	191	970,569	35	5,913	28	0	976,545
7/5	21.5	21.5	400	230	599,210	43	4,357	7	0	603,617
7/6	24	24	515	255	636,642	41	4,816	0	0	641,499
7/7	24	24	511	280	660,944	12	4,069	0	0	665,025
7/8	24	24	429	297	606,426	15	4,186	0	0	610,627
7/9	24	24	522	292	730,486	23	9,065	0	0	739,574
7/10	24	24	310	280	376,509	24	3,658	0	0	380,191
7/11	24	24	368	272	423,314	46	5,220	0	0	428,580
7/12	15.25	24	217	314	323,247	9	2,946	0	0	326,202
7/13	9	22.75	291	403	496,133	24	4,358	0	0	500,515
7/14	16	16	511	372	426,384	36	4,406	0	0	430,826
7/15	15.75	15.75	498	304	342,814	25	4,856	0	0	347,695
7/16	20.5	20,5	412	172	232,253	16	4,103	0	0	236,372
7/17	24	24	289	126	228,221	15	5,642	0	0	233,878
7/18	24	24	312	236	357,686	28	7,866	0	0	365,580
7/19	24	24	333	205	202,027	11	4,789	0	0	206,827
7/20	24	24	235	165	104,880	11	3,118	1	0	108,010
7/21	24	24	213	97	67,961	15	1,840	1	0	69,817
7/22	24	24	153	84	119,077	22	3,008	0	0	122,107
7/23	24	24	119	94	126,770	6	4,516	0	0	131,292
7/24	24	24	106	88	109,499	11	5,697	0	0	115,207
7/25	24	24	73	42	55,691	2	4,519	0	0	60,212
7/26	24	24	59	43	44,007	1	2,026	0	0	46,034
7/27	24	24	48	22	28,278	8	983	1	5	29,275
7/28 [a]	24	24	15	7						
7/29 [a]	24	24	15	10						
7/30 [a]	24	24	12	5						
7/31 [a]	24	24	11	6						
8/1 [a]	24	24	18	4						

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Table 12.–Page 2 of 3.

Date		Hours Fished Drift	Hours Fished Set	Deliveries Drift	Deliveries Set	Sockeye	Chinook	Chum	Pink	Coho	Total
8/2	[a]	9	9	10	4						
8/3	[a]	15	15	5	1						
8/4	[a]	9	9	5							
8/5											
8/6											
8/7	[a]	15	15		2						
8/8	[a]	24	24	8	4						
8/9	[a]	9	9		2						
8/10	[a]	15	15		2						
8/11		9	9								
8/12											
8/13											
8/14	[a]	15	15	1	2						
8/15	[a]	24	24		2						
8/16	[a]	9	9		2						
8/17	[a]	15	15		2						
8/18		9	9								
8/19											
8/20											
8/21	[a]	15	15		1						
8/22	[a]	24	24		2						
8/23	[a]	9	9		2						
8/24	[a]	15	15		2						
8/25		9	9								
8/26											
8/27											
8/28	[a]	15	15		2						
8/29	[a]	24	24		2						
Totals		1,163	1,184	11,695	6,878	11,980,502	866	147,330	214	14,274	12,143,186

[a] Fewer than 4 permits; records are confidential.

Table 13.–Comparison of daily sockeye salmon escapement estimates by tower count and river test fishing enumeration methods, Egegik River, Bristol Bay, 2017.

	Tower Count		River Test Fishing				
				Index Points		Estimated Cumulative	Estimated
Date	Daily	Cum.	Fish per Index Pt.[a]	Daily	Cum.	Escapement	River Fish[b]
6/17			50	1,027	1,027	52,000	52,000
6/18	18,942	18,942	50	712	1,739	89,000	37,000
6/19	25,878	44,820	50	515	2,254	115,000	26,000
6/20	48,630	93,450	50	1,169	3,423	173,000	58,000
6/21	27,612	121,062	50	292	3,715	188,000	15,000
6/22	11,934	132,996	50	218	3,933	199,000	11,000
6/23	11,532	144,528	154	130	4,063	219,000	20,000
6/24	8,466	152,994	267	75	4,138	239,000	20,000
6/25	13,362	166,356	90	500	4,638	284,000	45,000
6/26	22,830	189,186	273	110	4,748	314,000	30,000
6/27	6,858	196,044	68	219	4,967	329,000	15,000
6/28	1,584	197,628	71	210	5,177	344,000	15,000
6/29	2,850	200,478	96	467	5,644	389,000	45,000
6/30	25,236	225,714	102	246	5,890	414,000	25,000
7/1	11,160	236,874	101	199	6,089	434,000	20,000
7/2	59,610	296,484	21	7,223	13,312	584,000	150,000
7/3	296,460	592,944	30	5,055	18,367	734,000	150,000
7/4	616,338	1,209,282	177	3,381	21,748	1,334,000	600,000
7/5	506,004	1,715,286	153	2,615	24,363	1,734,000	400,000
7/6	312,624	2,027,910	160	1,247	25,610	1,934,000	200,000
7/7	130,398	2,158,308	554	271	25,881	2,084,000	150,000
7/8	43,362	2,201,670					
7/9	43,290	2,244,960					
7/10	57,168	2,302,128					
7/11	65,118	2,367,246					
7/12	16,662	2,383,908					
7/13	14,808	2,398,716					
7/14	132,054	2,530,770					
7/15	22,380	2,553,150					
7/16	36,552	2,589,702					
7/17	11,280	2,600,982					

[a] The FPI used to estimate the daily ERFs prior to using lag time relationships was calculated using the 2012–2016 mean of median FPIs. This method was used Until June 23 when FPIs were based on lag time relationships.

[b] Estimated river fish (ERF) was based on the river test fishery cumulative escapement estimate less the cumulative tower count. On occasion, ADF&G staff adjusted the ERF based on catchability and other factors.

Table 14.–Inshore run of sockeye salmon by age class, river system, and district, in thousands of fish, Bristol Bay, 2017.

District and River System [a]		1.2	2.2	2-Ocean	1.3	2.3	3-Ocean	1.4	Total [b]
Naknek-Kvichak District									
Kvichak River									
	Number	3,353	352	3,706	2,362	444	2,805	0	6,524
	Percent	51.4	5.4	57	36.2	6.8	43	0.0	99.8
Alagnak River									
	Number	2,513	21	2,533	1,483	45	1,528	0	4,119
	Percent	61.0	0.5	62	36.0	1.1	37	0.0	98.6
Naknek River									
	Number	2,203	495	2,699	1,562	434	1,132	0	4,718
	Percent	46.7	10.5	57	33.1	9.2	42	0.0	99.5
Total	Number	8,069	868	8,938	5,406	923	5,466	0	15,361
	Percent	52.5	17.3	69.8	22.2	7.6	29.8	0.0	99.6
Egegik District									
	Number	3,354	5,730	9,084	1,429	3,747	5,176	0	14,581
	Percent	23.0	39.3	62	9.8	25.7	36	0.0	97.8
Ugashik District									
	Number	4,039	669	4,707	1,585	503	2,088	7	6,892
	Percent	58.6	9.7	68	23.0	7.3	30	0.1	99.5
Nushagak District									
Wood River									
	Number	9,435	55	9,490	1,354	0	1,354	143	11,009
	Percent	85.7	0.5	86	12.3	0.0	12	1.3	99.8
Igushik River									
	Number	971	4	975	335	4	339	3	1,318
	Percent	73.7	0.3	74	25.4	0.3	26	0.2	99.7
Nushagak River									
	Number	3,357	46	3,403	4,150	31	4,181	100	7,700
	Percent	43.6	0.6	44	53.9	0.4	54	1.3	99.8
Total	Number	13,763	105	13,868	5,839	35	5,874	246	20,027
	Percent	67.7	0.5	68.1	30.5	0.2	30.8	0.9	99.8
Togiak District [c]									
	Number	310	10	320	383	4	386	4	711
	Percent	43.6	1.4	45	53.8	0.5	54.3	0.6	99.9
Total Bristol Bay [d]									
	Number	29,535	7,382	36,917	14,642	5,212	18,990	257	57,572
	Percent	51.3	12.8	64.1	25.4	9.1	33.0	0.4	99.1

[a] Does not include the South Peninsula catch of Bristol Bay sockeye salmon or immature high seas bycatch.

[b] Totals do not include minor age classes, and therefore totals are greater than the sum of age classes listed.

[c] Does not include rivers other than Togiak River.

[d] Totals may not equal column sums because of rounding.

Table 15.–Commercial salmon catch by date and species, in numbers of fish, Ugashik District, Bristol Bay, 2017.

	Hours Fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/1	24	24								
6/2	9	9								
6/3										
6/4										
6/5	15	15								
6/6	24	24								
6/7	24	24								
6/8	24	24								
6/9	9	9								
6/10										
6/11										
6/12[a]	15	15	6							
6/13	24	24	9		1,868	1	21	0	0	1,890
6/14	24	24	13		1,444	2	14	0	0	1,460
6/15	24	24	12		2,506	2	45	0	0	2,553
6/16[a]	9	9	5							
6/17										
6/18										
6/19										
6/20										
6/21										
6/22[a]		10		19						
6/23										
6/24										
6/25	5	10	123	28	133,325	40	1,783	0	0	135,148
6/26				2	122	13	0	0	0	135
6/27		10		28	1,243	42	0	0	0	1,285
6/28										
6/29										
6/30										
7/1										
7/2										
7/3										

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Table 15.–Page 2 of 2.

	Hours Fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/4	5	12	175	109	194,196	57	1,677	0	0	195,930
7/5	7	12	137	77	65,699	63	290	0	0	66,052
7/6	12	12	213	79	409,554	93	3,377	0	0	413,024
7/7	12	12	221	100	410,294	54	3,900	48	0	414,296
7/8	12	12	183	88	369,794	47	3,799	0	0	373,640
7/9	12	9	180	70	329,827	33	7,452	0	0	337,312
7/10	12	12	320	16	518,840	38	16,149	0	0	535,027
7/11	12	12	283	95	499,085	92	4,066	0	0	503,243
7/12	13	11	217	53	435,516	78	4,300	0	0	439,894
7/13	13	11	298	73	354,196	81	3,962	0	0	358,239
7/14	11	11	320	74	328,969	57	3,669	0	0	332,695
7/15	19	13.5	323	72	329,374	57	4,846	46	0	334,323
7/16	24	24	266	76	232,982	54	3,752	0	0	236,788
7/17	24	24	334	59	208,517	22	2,966	3	1	211,509
7/18	24	24	380	57	325,601	77	5,180	6	0	330,864
7/19	24	24	203	46	91,633	31	2,109	13	0	93,786
7/20	24	24	186	34	104,676	43	2,426	4	2	107,151
7/21	24	24	156	38	79,043	34	1,733	6	0	80,816
7/22	24	24	149	26	119,607	11	2,194	1,405	0	123,217
7/23	24	24	110	37	55,288	19	1,769	0	0	57,076
7/24	24	24	92	21	37,907	19	2,786	7	1	40,720
7/25	24	24	60	14	30,686	3	2,472	0	2	33,163
7/26	24	24	40		14,825	26	986	10	1	15,848
7/27	24	24	17	6	8,997	1	146	0	0	9,144
7/28	24	24	9	1	2,329	0	111	0	0	2,440
7/29	24	24	6	1	1,989	0	79	0	0	2,068
7/30	24	24	3	1	1,586	0	63	0	0	1,649
Totals	730	754.5	5,049	1,400	5,704,307	1,219	88,126	1,548	7	5,795,207

Note: Unless otherwise noted, blank cells represent days with no data. Due to rounding, totals may not equal column sums.

[a] Fewer than 4 permits; records are confidential.

Table 16.–Comparison of daily sockeye salmon escapement estimates by tower count and river test fishing enumeration methods, Ugashik River, Bristol Bay, 2017.

	Tower Count		River Test Fishing				
				Index Points		Estimated Cumulative	Estimated
Date	Daily	Cum.	Fish per Index Pt.[a]	Daily	Cum.	Escapement	River Fish[b]
6/25			135	74	74	10,000	10,000
6/26			182	55	129	20,000	10,000
6/27	114	114	385	39	168	35,000	15,000
6/28	24	138	323	31	199	45,000	10,000
6/29	282	420	175	57	256	55,000	10,000
6/30	408	828	130	77	333	65,000	10,000
7/1	348	1,176	222	45	378	75,000	10,000
7/2	420	1,596	217	46	424	85,000	10,000
7/3	480	2,076	219	114	538	110,000	25,000
7/4	864	2,940	146	1,711	2,249	360,000	250,000
7/5	14,790	17,730	106	2,841	5,090	660,000	300,000
7/6	121,878	139,608	73	2,741	7,831	860,000	200,000
7/7	144,756	284,364	182	1,097	8,928	1,060,000	200,000
7/8	76,668	361,032	171	1,168	10,096	1,260,000	200,000
7/9	36,060	397,092	140	2,138	12,234	1,560,000	300,000
7/10	62,586	459,678	124	2,425	14,659	1,860,000	300,000
7/11	85,218	544,896	80	2,490	17,149	2,060,000	200,000
7/12	87,276	632,172	106	1,884	19,033	2,260,000	200,000
7/13	118,842	751,014	77	1,949	20,982	2,410,000	150,000
7/14	105,744	856,758	118	1,276	22,258	2,560,000	150,000
7/15	62,868	919,626	134	748	23,006	2,660,000	100,000
7/16	69,414	989,040	133	750	23,756	2,760,000	100,000
7/17	44,832	1,033,872		201	23,957		-
7/18	48,456	1,082,328					
7/19	27,372	1,109,700					
7/20	16,854	1,126,554					
7/21	23,802	1,150,356					
7/22	12,714	1,163,070					
7/23	9,546	1,172,616					
7/24	7,524	1,180,140					
7/25	6,306	1,186,446					

Note: Blank cells represent days when no data were collected.

[a] The FPI used to estimate the daily ERFs prior to using lag time relationships was calculated using the 2012–2016 mean of median FPIs. This method was used until June 22 when FPIs were based on lag time relationships.

[b] Estimated river fish (ERF) was based on the river test fishery cumulative escapement estimate less the cumulative tower count. On occasion, ADF&G staff adjusted the ERF based on catchability and other factors.

Table 17.–Daily sockeye salmon escapement tower counts by river system, Bristol Bay west side, 2017.

	Wood River		Igushik River		Togiak River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/18	11,790	11,790				
6/19	38,460	50,250				
6/20	44,592	94,842				
6/21	62,934	157,776				
6/22	146,310	304,086				
6/23	202,920	507,006				
6/24	142,830	649,836	11,904	11,904		
6/25	103,566	753,402	16,638	28,542		
6/26	33,546	786,948	20,172	48,714		
6/27	136,320	923,268	11,304	60,018		
6/28	54,054	977,322	12,504	72,522		
6/29	47,424	1,024,746	13,386	85,908		
6/30	107,844	1,132,590	13,656	99,564		
7/1	49,908	1,182,498	11,250	110,814		
7/2	39,576	1,222,074	11,586	122,400	1,068	1,068
7/3	30,828	1,252,902	10,194	132,594	672	1,740
7/4	256,638	1,509,540	12,168	144,762	2,250	3,990
7/5	381,366	1,890,906	11,616	156,378	2,082	6,072
7/6	396,816	2,287,722	22,110	178,488	2,160	8,232
7/7	257,412	2,545,134	44,394	222,882	2,574	10,806
7/8	209,868	2,755,002	33,612	256,494	1,848	12,654
7/9	183,624	2,938,626	30,096	286,590	3,180	15,834
7/10	227,628	3,166,254	27,072	313,662	2,832	18,666
7/11	210,858	3,377,112	36,972	350,634	4,524	23,190
7/12	175,518	3,552,630	34,554	385,188	4,704	27,894
7/13	191,622	3,744,252	25,812	411,000	6,726	34,620
7/14	103,662	3,847,914	19,590	430,590	5,700	40,320
7/15	69,420	3,917,334	14,238	444,828	2,448	42,768
7/16	103,014	4,020,348	16,572	461,400	2,424	45,192
7/17	63,462	4,083,810	19,476	480,876	3,192	48,384
7/18	48,198	4,132,008	14,418	495,294	2,850	51,234
7/19	34,242	4,166,250	17,454	512,748	2,796	54,030
7/20	54,248	4,220,498	18,870	531,618	8,508	62,538
7/21	53,726	4,274,224	15,606	547,224	7,986	70,524

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Table 17.–Page 2 of 2.

Date	Wood River		Igushik River		Togiak River	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
7/23			7,428	563,430	5,088	83,082
7/24			6,372	569,802	3,846	86,928
7/25			8,898	578,700	7,764	94,692
7/26					12,042	106,734
7/27					10,416	117,150
7/28					11,424	128,574
7/29					6,510	135,084
7/30					6,666	141,750
7/31					8,580	150,330
8/1					8,232	158,562
8/2					11,262	169,824
8/3					10,302	180,126
8/4					5,880	186,006
8/5					4,092	190,098
8/6					5,232	195,330

Note: Blank cells represent days when escapement projects were not in operation.

Table 18.–Commercial salmon catch by date and species, in numbers of fish, Nushagak District, Bristol Bay, 2017.

	Hours Fished (drift/set)		Deliveries							
Date	Nushagak	Igushik	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/12 [a]	0/0	0/8	0	10						
6/13 [a]	0/0	0/8	0	5						
6/14 [a]	0/0	0/8	0	20						
6/15 [a]	0/0	0/8	0	14						
6/16 [a]	0/0	0/8	0	14						
6/17 [a]	0/0	0/8	0	10						
6/18 [a]	0/0	0/8	0	15						
6/19 [a]	0/0	0/8	0	25						
6/20 [a]	0/0	0/8	0	24						
6/21 [a]	0/1.5	0/8	0	166						
6/22	10/19.5	0/24	604	468	476,655	3,184	113,335	3	0	593,177
6/23	14/24	14/24	700	382	262,580	4,108	65,367	3	0	332,058
6/24	17/24	22/24	741	228	246,708	4,472	57,180	1	0	308,361
6/25	24/24	24/24	613	288	654,356	2,143	65,608	2	0	722,109
6/26	24/24 [b]	24/24 [b]	651	577	1,113,911	2,187	48,700	8	1	1,164,807
6/27	24/24	24/24	547	317	543,766	1,609	40,862	6	0	586,243
6/28	24/24	24/24	696	414	272,656	1,537	35,054	39	1	309,287
6/29	19/24	19/24	568	202	81,718	775	19,249	58	0	101,800
6/30	12/24	12/24	511	242	51,877	842	20,855	121	0	73,695
7/1	15/24	15.5/24	476	252	45,475	1,152	26,997	102	0	73,726
7/2	14/24	14/24	582	302	684,114	1,691	56,587	63	1	742,456
7/3	24/24	19/24	846	669	1,542,398	687	45,605	77	0	1,588,767
7/4	18/14	24/24	537	200	783,407	618	19,209	4	0	803,238
7/5	24/24	24/24	457	562	674,287	826	19,548	152	0	694,813
7/6	24/24 [b]	24/24 [b]	588	465	665,538	883	21,512	95	0	688,028
7/7	24/24	24/24	227	462	446,625	353	14,431	84	0	461,493
7/8	24/24	24/24	376	461	643,415	683	17,426	84	0	661,608
7/9	24/24	24/24	328	502	624,288	489	17,903	42	0	642,722
7/10	24/24	24/24	360	374	356,989	298	13,829	58	0	371,174
7/11	24/24	24/24	281	435	220,223	429	11,544	293	0	232,489
7/12	24/24	24/24	287	453	313,335	377	12,454	437	5	326,608
7/13	24/24	24/24	273	508	316,810	392	13,465	573	1	331,241
7/14	24/24	24/24	248	480	298,347	318	12,626	239	1	311,531
7/15	24/24	24/24	268	330	223,469	203	9,240	400	8	233,320
7/16	24/24	24/24	219	386	182,649	239	6,550	505	14	189,957
7/17	24/24	24/24	109	268	100,766	180	3,428	398	25	104,797
7/18	24/24	24/24	93	319	105,560	195	3,409	301	69	109,534
7/19	24/24	24/24	80	232	55,979	127	1,628	387	51	58,172
7/20	24/24	24/24	55	287	63,630	141	2,132	394	209	66,506
7/21	24/24	24/24	16	215	43,151	79	1,003	293	186	44,712
7/22	24/24	24/24	30	187	46,172	131	2,208	606	458	49,575
7/23	24/24	24/24	31	152	43,768	173	1,438	370	1,320	47,069
7/24	24/24	24/24	4	126	23,423	67	693	284	1,512	25,979
7/25	24/24	24/24	15	86	17,204	65	841	448	2,211	20,769

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Table 18.–Page 2 of 2.

	Hours Fished (drift/set)		Deliveries							
Date	Nushagak	Igushik	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/26	24/24	24/24	5	60	6,690	25	81	98	1,386	8,280
7/27	24/24	24/24	2	58	7,750	35	142	69	819	8,815
7/28	24/24	24/24	10	26	2,278	17	94	27	987	3,403
7/29	24/24	24/24	3	37	4,392	14	164	29	2,166	6,765
7/30 [a]	24/24	24/24	10	28						
7/31 [a]	24/24	24/24	9	25						
8/1 [a]	24/24	24/24	12	28						
8/2 [a]	24/24	24/24	7	28						
8/3 [a]	24/24	24/24	6	27						
8/4 [a]	24/24	24/24	14	16						
8/5 [a]	24/24	24/24	10	20						
8/6 [a]	24/24	24/24	19	26						
8/7 [a]	24/24	24/24	18	23						
8/8	24/24	24/24	32	35	1,443	5	475	0	15,990	17,913
8/9 [a]	24/24	24/24	33	26						
8/10 [a]	24/24	24/24	33	37						
8/11	24/24	24/24	9	33	1,404	5	20	0	11,752	13,181
8/12 [a]	24/24	24/24	10	16						
8/13 [a]	24/24	24/24	18	19						
8/14 [a]	24/24	24/24	17	13						
8/15 [a]	24/24	24/24	14	26						
8/16	24/24	24/24	4	26	274	0	3	0	10,769	11,046
8/17 [a]	24/24	24/24	9	20						
8/18 [a]	24/24	24/24	5	29						
8/19 [a]	24/24	24/24	1	22						
8/20 [a]	24/24	24/24	1	20						
8/21 [a]	24/24	24/24	3	21						
8/22 [a]	24/24	24/24	3	20						
8/23 [a]	24/24	24/24	1	16						
8/24 [a]	24/24	24/24	0	5						
8/28 [a]	24/24	24/24	0	1						
8/29 [a]	24/24	24/24	0	1						
9/4 [a]	24/24	24/24	0	1						
Total	1,082/1,145.5	1,204/1,418	12,735	12,923	12,322,519	32,194	804,878	7,230	167,347	13,334,168

[a] Less than 4 permits involved in fishery; records are confidential.

[b] Fishing extended until further notice.

Table 19.–Commercial fishing emergency orders, by district and statistical area, Bristol Bay west side, 2017.

Number[a]	Start Date	Start Time		End Date	End Time	Effective Time	
Nushagak District							
Nushagak Section							
Driftnet							
DLG.10	22 Jun	12:30 AM	to	22 Jun	5:30 AM	5.0 hours	
DLG.10	22 Jun	12:00 PM	to	22 Jun	5:00 PM	5.0 hours	
DLG.11	23 Jun	12:30 AM	to	23 Jun	6:30 AM	6.0 hours	
DLG.11	23 Jun	1:00 PM	to	23 Jun	9:00 PM	8.0 hours	
DLG.12	24 Jun	2:00 AM	to	24 Jun	9:00 AM	7.0 hours	
DLG.12	24 Jun	2:00 PM	to	24 Jun	9:00 PM	7.0 hours	
DLG.13	24 Jun	9:00 PM	to	26 Jun	12:00 PM	15.0 hours	c
DLG.15	26 Jun	12:00 PM	to	27 Jun	3:00 PM	27.0 hours	c
DLG.16	27 Jun	3:00 PM	to	28 Jun	12:00 PM	21.0 hours	c
DLG.17	28 Jun	12:00 PM	to	29 Jun	1:00 PM	25.0 hours	c
DLG.18	29 Jun	6:00 PM	to	30 Jun	1:00 AM	7.0 hours	
DLG.18	30 Jun	7:00 AM	to	30 Jun	2:00 PM	7.0 hours	
DLG.19	30 Jun	8:00 PM	to	1 Jul	4:00 AM	8.0 hours	
DLG.19	1 Jul	8:30 AM	to	1 Jul	4:00 PM	7.5 hours	
DLG.20	1 Jul	9:00 PM	to	2 Jul	4:00 AM	7.0 hours	
DLG.20	2 Jul	9:00 AM	to	2 Jul	5:00 PM	8.0 hours	
DLG.22	2 Jul	10:00 PM	to	3 Jul	5:00 AM	7.0 hours	
DLG.22	3 Jul	10:00 AM	to	3 Jul	6:00 PM	8.0 hours	
DLG.23	3 Jul	6:00 PM	to	6 Jul	6:00 PM	72.0 hours	c
DLG.24	6 Jul	6:00 PM	to				d
DLG.26	10 Jul	12:00 PM					e
DLG.30	1 Aug	9:00 AM	to				i
Nushagak District							
Nushagak Section							
Setnet							
DLG.10	21 Jun	10:30 PM	to	22 Jun	5:30 AM	7.0 hours	
DLG.10	22 Jun	10:00 AM	to	22 Jun	5:00 PM	7.0 hours	
DLG.11	22 Jun	5:00 PM	to	23 Jun	6:00 PM	25.0 hours	c
DLG.12	23 Jun	6:00 PM	to	24 Jun	7:00 PM	25.0 hours	c
DLG.13	24 Jun	7:00 PM	to	26 Jun	9:00 PM	50.0 hours	c
DLG.15	26 Jun	9:00 PM	to				d
DLG.26	10 Jul	12:00 PM					e
DLG.30	1 Aug	9:00 AM	to				i

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Table 19.–Page 2 of 3.

Number[a]	Start Date	Start Time		End Date	End Time	Effective Time	
Nushagak District							
Igushik Section							
Driftnet							
DLG.11	23 Jun	12:30 AM	to	23 Jun	6:30 AM	6.0 hours	
DLG.11	23 Jun	1:00 PM	to	23 Jun	9:00 PM	8.0 hours	
DLG.12	24 Jun	2:00 AM	to	24 Jun	9:00 AM	7.0 hours	
DLG.12	24 Jun	2:00 PM	to	24 Jun	9:00 PM	7.0 hours	
DLG.13	24 Jun	9:00 PM	to	26 Jun	12:00 PM	15.0 hours	c
DLG.15	26 Jun	12:00 PM	to	27 Jun	3:00 PM	27.0 hours	c
DLG.16	27 Jun	3:00 PM	to	28 Jun	12:00 PM	21.0 hours	c
DLG.17	28 Jun	12:00 PM	to	29 Jun	1:00 PM	25.0 hours	c
DLG.18	29 Jun	6:00 PM	to	30 Jun	1:00 AM	7.0 hours	
DLG.18	30 Jun	7:00 AM	to	30 Jun	2:00 PM	7.0 hours	
DLG.19	30 Jun	8:00 PM	to	1 Jul	4:00 AM	8.0 hours	
DLG.19	1 Jul	8:30 AM	to	1 Jul	4:00 PM	7.5 hours	
DLG.20	1 Jul	9:00 PM	to	2 Jul	4:00 AM	7.0 hours	
DLG.20	2 Jul	9:00 AM	to	2 Jul	5:00 PM	8.0 hours	
DLG.22	2 Jul	10:00 PM	to	3 Jul	5:00 AM	7.0 hours	
DLG.22	3 Jul	10:00 AM	to	3 Jul	6:00 PM	8.0 hours	
DLG.23	3 Jul	6:00 PM	to	6 Jul	6:00 PM	72.0 hours	c
DLG.24	6 Jul	6:00 PM	to				d
DLG.26	10 Jul	12:00 PM					e
DLG.30	1 Aug	9:00 AM	to				i
Nushagak District							
Igushik Section							
Setnet							
DLG.03	12 Jun	3:00 PM	to	12 Jun	11:00 PM	8.0 hours	
DLG.03	13 Jun	4:00 PM	to	14 Jun	12:00 AM	8.0 hours	
DLG.03	14 Jun	4:30 PM	to	15 Jun	12:30 AM	8.0 hours	
DLG.04	15 Jun	4:30 AM	to	15 Jun	12:30 PM	8.0 hours	
DLG.04	16 Jun	5:00 AM	to	16 Jun	1:00 PM	8.0 hours	
DLG.04	17 Jun	6:00 AM	to	17 Jun	2:00 PM	8.0 hours	
DLG.05	18 Jun	6:30 AM	to	18 Jun	2:30 PM	8.0 hours	
DLG.05	19 Jun	7:00 AM	to	19 Jun	3:00 PM	8.0 hours	
DLG.05	20 Jun	8:00 AM	to	20 Jun	4:00 PM	8.0 hours	
DLG.08	21 Jun	9:30 AM	to	21 Jun	5:30 PM	8.0 hours	
DLG.08	22 Jun	10:00 AM	to	22 Jun	6:00 PM	8.0 hours	
DLG.08	23 Jun	11:00 AM	to	23 Jun	7:00 PM	8.0 hours	
DLG.11	22 Jun	5:00 PM	to	23 Jun	6:00 PM	25.0 hours	c
DLG.12	23 Jun	6:00 PM	to	24 Jun	7:00 PM	25.0 hours	c
DLG.13	24 Jun	7:00 PM	to	26 Jun	9:00 PM	50.0 hours	c
DLG.15	26 Jun	9:00 PM	to				d
DLG.26	10 Jul	12:00 PM					e
DLG.30	1 Aug	9:00 AM	to				i

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Table 19.–Page 3 of 3.

Number[a]	Start Date	Start Time		End Date	End Time	Effective Time	
Togiak							
Drift and Setnet							
DLG.06	21 Jun	9:00 AM	to	23 Jun	9:00 AM	48.0 hours	[f]
DLG.14	28 Jun	9:00 AM	to	30 Jun	9:00 AM	48.0 hours	[f]
DLG.25	8 Jul	9:00 PM	to	10 Jul	9:00 AM	36.0 hours	[g]
DLG.27	17 Jul	9:00 AM	to	22 Jul	9:00 AM	120.0 hours	[h]
WRSHA							
Setnet							
DLG.20	2 Jul	7:30 AM	to	3 Jul	8:30 AM	25 hours	
DLG.23	3 Jul	9:00 PM	to	6 Jul	3:00 PM	66 hours	
DLG.24	6 Jul	3:00 PM	to				[d]
DLG.29			to	28 Jul	8:00 AM	521 hours	

[a] Prefix code on emergency orders indicate where announcement originated ("DLG" for Dillingham field office).

[b] Restricts mesh size.

[c] Extends current fishing period.

[d] Commercial fishing open until further notice.

[e] Transfer waiting period waived.

[f] Reduces the weekly fishing schedule in Togiak River Section.

[g] Extends the weekly fishing schedule in Togiak River Section.

[h] Closes the weekly fishing schedule in the Matogak, Osviak and Slug sections.

[i] Removes mesh size restriction.

Table 20.–Commercial salmon catch by date and species, in numbers of fish, Togiak District, Bristol Bay, 2017.

	Deliveries							
Date [a]	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/13	0	3	58	1	42	0	0	101
6/14	1	3	71	1	43	0	0	115
6/15	0	4	74	1	43	0	0	118
6/16	0	3	69	0	20	1	0	90
6/19	4	14	400	17	280	0	0	697
6/20	5	39	1,104	49	641	0	0	1,794
6/21	6	21	1,113	30	688	1	0	1,832
6/22	2	4	454	5	955	0	0	1,414
6/23	1	4	367	11	1,017	3	0	1,398
6/24	2	1	216	3	308	0	0	527
6/26	22	59	5,725	155	2,874	15	0	8,769
6/27	32	94	8,557	212	4,339	28	0	13,136
6/28	19	28	3,151	37	2,015	4	0	5,207
6/29	5	8	1,108	29	3,033	8	0	4,178
6/30	8	5	1,255	27	3,638	32	0	4,952
7/1	49	87	6,238	173	8,111	115	0	14,637
7/3	40	80	10,401	132	5,994	194	0	16,721
7/4	68	156	23,700	281	8,891	390	0	33,262
7/5	67	158	31,729	352	13,026	652	0	45,759
7/6	42	122	18,921	221	10,099	408	0	29,649
7/7	55	134	21,724	230	11,305	662	0	33,921
7/8	35	91	14,714	127	6,733	503	0	22,077
7/9	11	59	10,196	61	2,691	310	0	13,258
7/10	36	118	17,280	234	7,516	617	0	25,647
7/11	54	149	23,120	246	10,379	1,267	0	35,012
7/12	48	147	19,917	308	10,236	1,145	0	31,606
7/13	38	120	14,898	195	9,744	938	0	25,775
7/14	51	135	21,689	251	11,689	1,147	0	34,776
7/15	59	104	24,411	172	10,138	1,437	0	36,158
7/17	36	78	12,555	66	4,255	763	1	17,640
7/18	46	121	17,009	113	5,986	1,180	0	24,288
7/19	89	147	26,602	194	10,681	2,463	0	39,940
7/20	47	141	17,227	132	6,434	1,693	0	25,486
7/21	34	60	10,843	78	2,794	905	0	14,620
7/24	38	115	17,668	65	4,989	1,438	2	24,162
7/25	64	152	25,411	116	6,995	1,836	2	34,360

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Table 20.–Page 2 of 2.

		Deliveries						
Date [a]	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/26	42	135	15,059	51	3,299	924	2	19,335
7/27	42	146	17,623	96	3,585	1,288	2	22,594
7/28	10	40	4,990	27	1,324	460	0	6,801
7/29	1	1	132	1	45	16	0	194
7/31	34	80	8,921	23	1,740	703	10	11,397
8/1	25	77	8,426	23	1,126	530	23	10,128
8/2	23	58	8,435	22	906	468	25	9,856
8/3	11	29	4,134	7	453	182	7	4,783
8/4	0	7	951	0	29	8	0	988
8/7	11	41	2,436	2	449	326	35	3,248
8/8	32	76	8,657	27	1,075	526	151	10,436
8/9	18	72	5,747	8	530	305	207	6,797
8/10	17	60	4,930	5	373	151	208	5,667
8/11	3	19	1,697	0	62	30	58	1,847
8/14	12	33	3,103	0	175	83	853	4,214
8/15	14	50	3,791	3	174	81	1,103	5,152
8/16	4	40	1,910	0	100	52	1,072	3,134
8/17	6	43	2,061	3	108	131	1,135	3,438
8/18	5	9	1,127	3	62	77	709	1,978
8/21	5	8	81	2	22	34	1,664	1,803
8/22	11	35	469	0	81	128	4,352	5,030
8/23	13	42	612	2	72	65	5,619	6,370
8/24	5	35	426	2	32	30	3,097	3,587
8/25	0	9	27	0	7	2	327	363
8/28	14	32	125	0	21	17	6,329	6,492
8/29	14	45	224	1	24	16	9,136	9,401
8/30	10	33	133	1	11	3	3,671	3,819
8/31	3	28	57	1	9	0	3,482	3,549
9/1	1	7	27	7	0	3	672	709
9/4	0	11	24	0	1	0	1,458	1,483
9/5	5	22	80	0	0	2	4,536	4,618
9/6	5	18	76	1	1	1	3,879	3,958
9/7	0	10	22	0	0	0	676	698
Total	1,510	4,115	516,488	4,643	204,518	26,797	54,503	806,949

[a] See Table 19 for inseason adjustments to the regular weekly fishing schedule.

[b] Fewer than 4 permit holders involved in fishery; records are confidential.

Table 21.–Commercial herring sac roe and spawn-on-kelp buyers in Togiak District, 2017.

			Product Purchased		
			Sac Roe		
	Operator/Buyer[a]	Base of Operation	Gillnet	Purse Seine	Spawn-on-Kelp
1	Icicle Seafoods	P/Vs Gordon Jensen	X	X	
2	North Pacific Seafoods	S/P Pedersen Pt., Red Salmon		X	
3	Silver Bay Seafoods	S/P Naknek	X	X	
4	Trident Seafoods	S/ P Naknek	X	X	

[a] Operators that registered in the Togiak District.

Table 22.–Daily observed estimates of spawn (in miles) and herring (in short tons) by index area, in the Togiak District, 2017.

				Estimated Biomass by Index Area [a]													
Date	Start Time	Survey Rating [b]	Miles of Spawn	NUS	KUK	MET	NVK	UGL	TOG	TNG	MTG	OSK	PYR	CPN	HAG	WAL	Daily Total
28 Apr	8:45	3.0	0.0	14	16,121	3,535	712	2,888	10,562	2,811	245	227	0	0	17,623	0	54,738
2 May	10:00	3.4	4.7	80	38	538	1,732	3,342	23,206	2,103	233	0	0	0	127	0	31,399
4 May	14:30 [c]	2.8	0.0	1,048	21,969	1,704	588	497	31,491	574	667	0	0	0	419	0	58,957
9 May	11:30	1.6	8.1	392	2,472	724	955	8,100	46,148	4,079	1,546	0	138	1,020	0	0	65,574
15 May	10:45	2.5	0.6	0	4,267	3,636	0	0	0	0	0	89	0	0	204	0	8,196
Total linear miles of spawn			13.4											Peak biomass estimate			218,864

Note: Blank cells represent no biomass observed.

[a] Index areas: NUS - Nushagak Peninsula; KUK - Kulukak; MET - Metervik; NUK - Nunavachak; UGL - Ungalikthluk/Togiak; TOG - Togiak; TNG - Tongue Pt.; MTG - Matogak; HAG - Hagemeister; OSK - Osviak; PYT - Pyrite Point; CPN - Cape Newenham.

[b] Average survey rating for all sections surveyed: 1= Excellent, 2 = Good, 3 = Fair, 4 = Poor, 5 = Unsatisfactory

[c] Includes 466 short tons of deadloss from Nunavachak.

Table 23.–Emergency order commercial fishing periods for herring sac roe and spawn-on-kelp in the Togiak District, 2017.

EO #	Area [a]		Date and Time			
Herring Sac Roe Gillnet						
DLG-02	Egg Island Section and area eastward to longitude 159^0 30.00'west		4/28	6:00 PM.	to	end of season
DLG-04	159°30.00'W to and including Egg Island Section and west to 58° 50.50'N	area change	4/30	9:30 AM		
DLG-06	159°30.00'W to and including Egg Island Section and west to 160° 19.70'W	area change	5/7	8:00 AM		
DLG-07	Closes herring gillnet fishery	closure	5/16	9:30 a.m.		
Herring Sac Roe Purse Seine						
DLG-01	Anchor Pt. to Right Hand Pt., Togiak Reef to Cape Newenham		4/28	6:00 PM	to	end of season
DLG-03	Mud Bay to Anchor Pt.; Togiak Reef to Cape Newenham	area change	4/30	8:30 AM		
DLG-05	Season Ends, 3 hour limit to retain fish after closure	closure	5/6	8:30 PM		
Herring Spawn on Kelp [b]						

[a] Area descriptions are approximate. Precise boundaries are described in emergency orders.

[b] There was no market for spawn on kelp; therefore, a fishery did not occur.

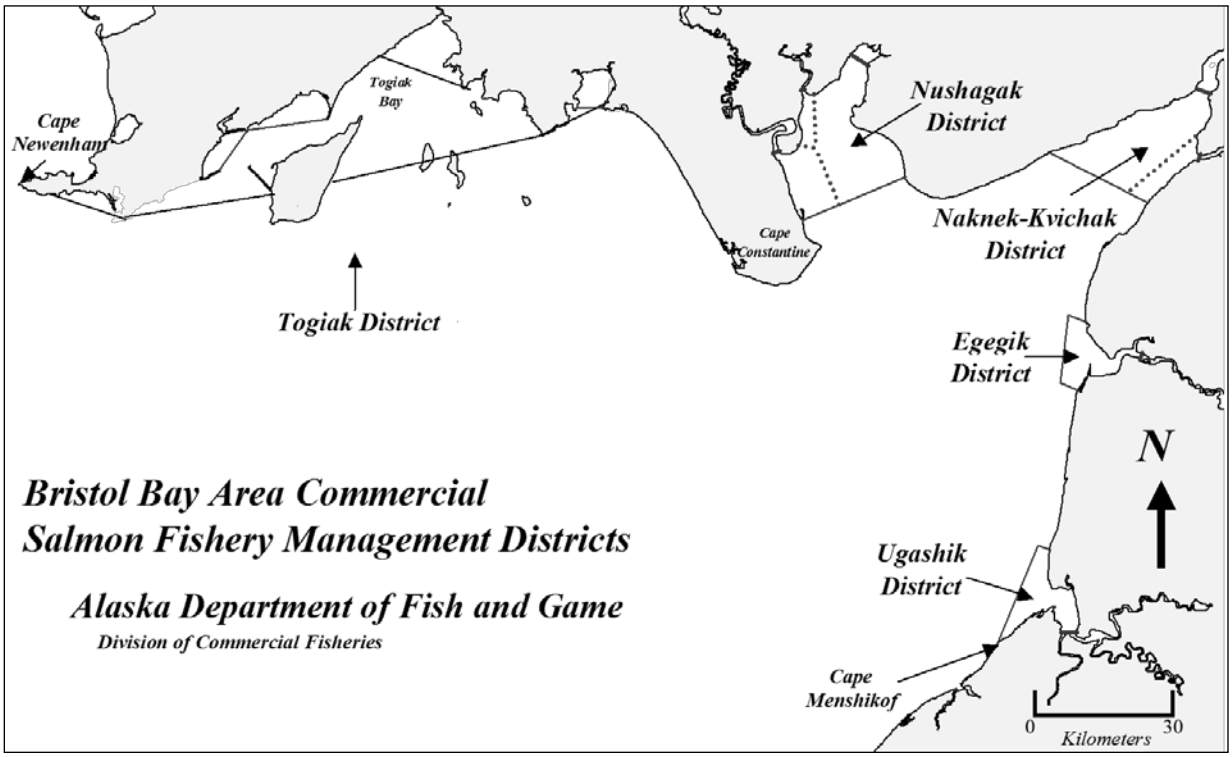

Figure 1.–Bristol Bay area commercial fisheries salmon management districts.

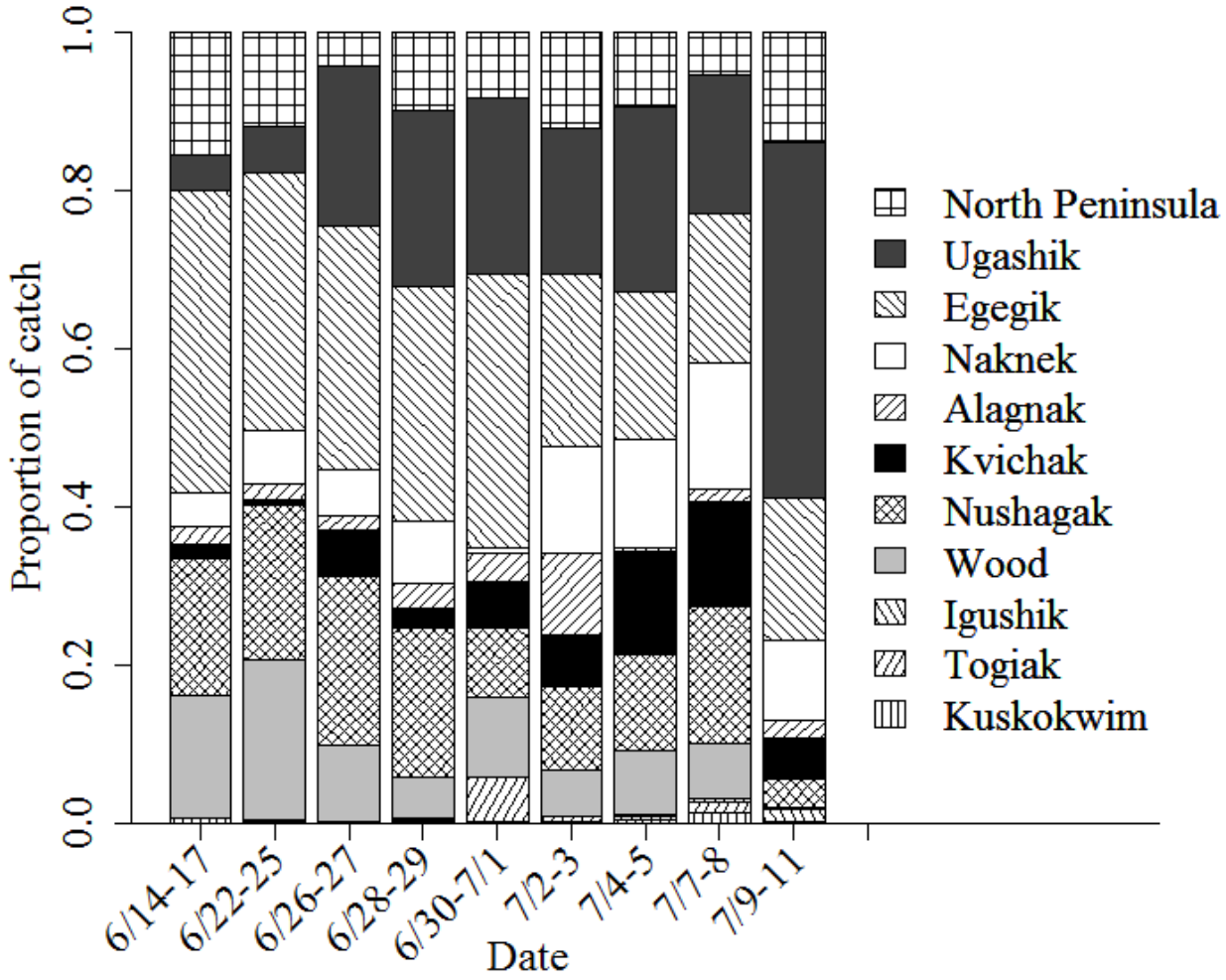

Figure 2.–Stock composition estimates for sockeye salmon sampled from the Port Moller test fishery, 2017.

Note: Mean stock composition estimates for the 11 reporting groups of the Bristol Bay baseline are depicted as stacked bar graphs for each of the 9 temporal periods analyzed in 2017. (Port Moller test fishery data available from ADF&G Gene Conservation Lab, Anchorage).

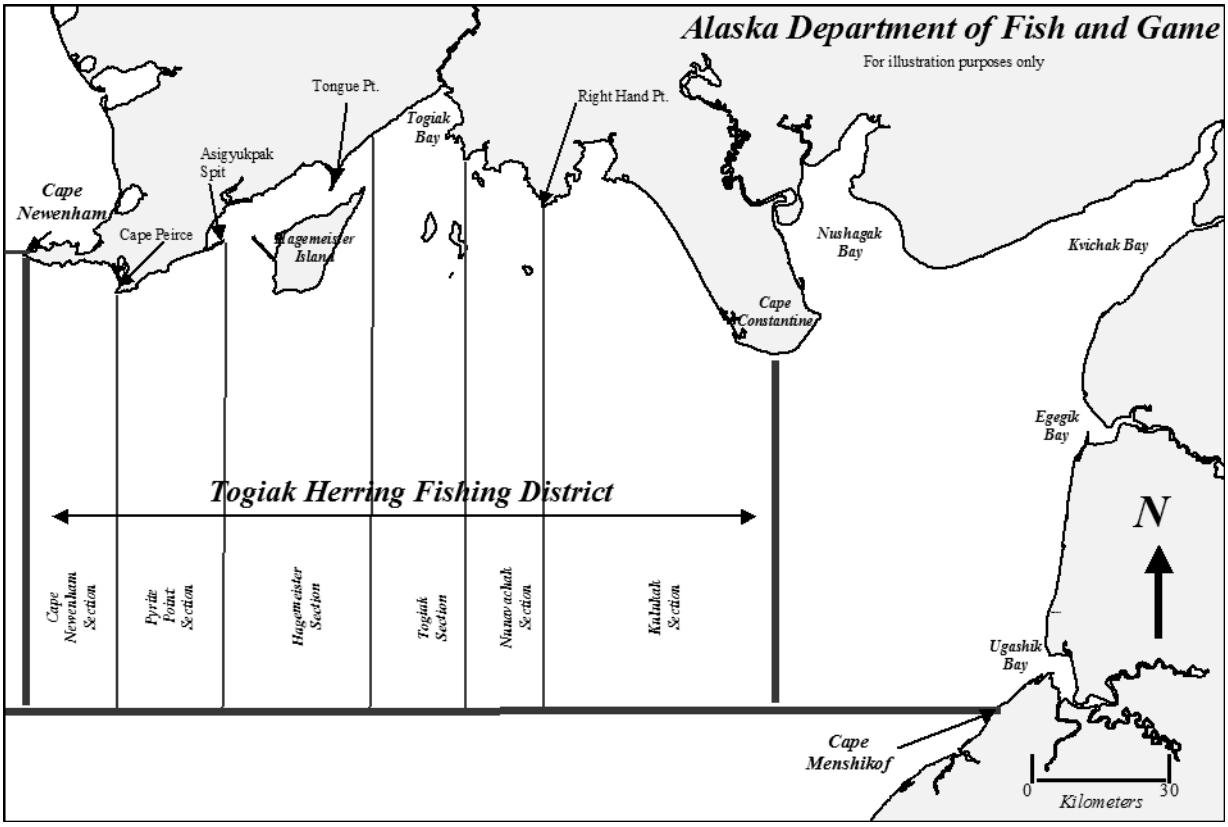

Figure 3.–Togiak Herring District, Bristol Bay.

APPENDIX A: SALMON

Appendix A1.–Escapement goal ranges and actual counts of sockeye salmon by river system, in thousands of fish, Bristol Bay, 1997–2017.

	Kvichak River			Naknek River [a]		
	Range			Range		
Year	Lower	Upper	Actual	Lower	Upper	Actual
1997	4,000	6,000	1,504	800	1,400	1,026
1998	2,000	10,000	2,296	800	1,400	1,202
1999	6,000	10,000	6,197	800	1,400	1,625
2000	6,000	10,000	1,828	800	1,400	1,375
2001	2,000	10,000	1,095	800	2,000	1,830
2002	2,000	10,000	704	800	2,000	1,264
2003	2,000	10,000	1,687	800	2,000	1,831
2004	2,000	10,000	5,500	800	2,000	1,939
2005	2,000	10,000	2,320	800	2,000	2,745
2006	2,000	10,000	3,068	800	2,000	1,953
2007	2,000	10,000	2,810	800	2,000	2,945
2008	2,000	10,000	2,758	800	1,400	2,473
2009	2,000	10,000	2,266	800	1,400	1,170
2010	2,000	10,000	4,207	800	1,400	1,464
2011	2,000	10,000	2,264	800	1,400	1,177
2012	2,000	10,000	4,164	800	1,400	900
2013	2,000	10,000	2,089	800	1,400	938
2014	2,800	10,000	4,459	800	1,400	1,474
2015	2,000	10,000	7,342	800	1,400	1,921
2016	2,800	10,000	4,463	800	2,000	1,692
20-Year Avg.	2,580	9,800	3,070	800	1,640	1,620
1997-06 Avg.	3,000	9,600	2,620	800	1,760	1,679
2007-16 Avg.	2,160	10,000	3,682	800	1,520	1,615
2017	2,000	10,000	3,163	800	2,000	1,900

	Egegik River			Ugashik River		
	Range			Range		
Year	Lower	Upper	Actual	Lower	Upper	Actual
1997	800	1,400	1,104	500	1,200	618
1998	800	1,400	1,111	500	1,200	891
1999	800	1,400	1,728	500	1,200	1,652
2000	800	1,400	1,032	500	1,200	620
2001	800	1,400	969	500	1,200	834
2002	800	1,400	1,036	500	1,200	892
2003	800	1,400	1,152	500	1,200	759
2004	800	1,400	1,290	500	1,200	776
2005	800	1,400	1,622	500	1,200	779
2006	800	1,400	1,465	500	1,200	978
2007	800	1,400	1,433	500	1,200	2,599
2008	800	1,400	1,260	500	1,200	569
2009	800	1,400	1,146	500	1,200	1,346
2010	800	1,400	927	500	1,200	805
2011	800	1,400	961	500	1,200	1,030
2012	800	1,400	1,234	500	1,200	671
2013	800	1,400	1,114	500	1,200	898
2014	800	1,400	1,382	500	1,200	640
2015	800	2,000	2,161	500	1,400	1,565
2016	800	2,000	1,837	500	1,400	1,635
20-Year Avg.	800	1,460	1,288	500	1,220	1,011
1997-06 Avg.	800	1,400	1,251	500	1,200	880
2007-16 Avg.	800	1,520	1,346	500	1,240	1,176
2017	800	2,000	2,601	500	1,400	1,186

-continued-

	Wood River			Igushik River		
	Range			Range		
Year	Lower	Upper	Actual	Lower	Upper	Actual
1997	700	1,200	1,512	150	250	128
1998	700	1,200	1,756	150	250	216
1999	700	1,200	1,512	150	250	446
2000	700	1,200	1,300	150	250	413
2001	700	1,500	1,459	150	300	410
2002	700	1,500	1,284	150	300	123
2003	700	1,500	1,460	150	300	194
2004	700	1,500	1,543	150	300	110
2005	700	1,500	1,497	150	300	366
2006	700	1,500	4,008	150	300	305
2007	700	1,500	1,528	150	300	415
2008	700	1,500	1,725	150	300	1,055
2009	700	1,500	1,319	150	300	514
2010	700	1,500	1,804	150	300	518
2011	700	1,500	1,098	150	300	421
2012	700	1,500	764	150	300	193
2013	700	1,500	1,183	150	300	387
2014	700	1,500	2,765	150	300	341
2015	700	1,800	1,941	150	400	651
2016	700	1,800	1,310	150	400	469
20-Year Avg.	700	1,470	1,639	150	293	380
1997-06 Avg.	700	1,380	1,733	150	275	281
2007-16 Avg.	700	1,560	1,544	150	300	452
2017	700	1,800	4,274	150	400	579
	Nushagak River			Togiak River		
	Range			Range		
Year	Lower [b]	Upper	Actual [c]	Lower	Upper	Actual
1997	340	760	413	100	200	132
1998	340	760	508	100	200	154
1999	235	760	345	100	200	156
2000	235	760	446	100	200	312
2001	340	760	897	100	200	297
2002	235	760	349	100	200	162
2003	340	760	642	100	200	232
2004	340	760	544	100	200	129
2005	340	760	1,107	100	200	149
2006	340	760	541	100	200	312
2007	340	760	518	120	270	270
2008	340	760	493	120	270	206
2009	340	760	484	120	270	314
2010	340	760	469	120	270	188
2011	340	760	428	120	270	191
2012	340	760	432	120	270	203
2013	370	840	895	120	270	128
2014	370	840	618	120	270	152
2015	370	900	797	120	270	219
2016	370	900	1,226	120	270	200

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	Wood River			Igushik River		
	Range			Range		
Year	Lower	Upper	Actual	Lower	Upper	Actual
20-Year Avg.	330	782	605	110	235	203
1997-06 Avg.	309	760	579	100	200	204
2007-16 Avg.	352	804	636	120	270	207
2017	370	900	2,852	120	270	195

[a] An optimal escapement goal of up to 2.0 million sockeye salmon was set by the Alaska Board of Fisheries (BOF) in 2001 when fishing in the Naknek River special harvest area.

[b] An optimal escapement goal of 235,000 sockeye salmon was set by the BOF in 1999.

[c] Nushagak River sonar (at Portage Creek) escapement estimates prior to 2006 were adjusted after the 2012 season to account for a transition in sonar technology that occurred in 2006 (Buck et al. 2012).

Appendix A2.–Salmon entry permit registration by gear and residency, Bristol Bay, 1997–2017.

	Driftnet [a]						Setnet [a]						Total
Year	Resident	Non-Resident	Drift Total	Permits Fished	% Fished	Interim Use	Resident	Non-Resident	Set Total	Permits Fished	% Fished	Interim Use	Drift and Set [b]
1997	959	940	1,899	1,875	95%	67	757	262	1,019	921	90%	7	2,918
1998	954	945	1,899	1,858	95%	55	756	259	1,015	901	88%	6	2,914
1999	937	961	1,898	1,847	95%	52	748	266	1,014	925	91%	6	2,912
2000	945	945	1,890	1,823	95%	38	735	277	1,012	921	90%	6	2,902
2001	958	925	1,883	1,566	82%	24	729	281	1,010	834	82%	2	2,893
2002	945	933	1,878	1,183	62%	16	717	289	1,006	680	67%	2	2,884
2003	923	944	1,867	1,389	74%	7	713	288	1,001	714	71%	1	2,868
2004	912	948	1,860	1,426	77%	3	703	286	989	797	81%	1	2,849
2005	895	967	1,862	1,526	82%	3	688	300	988	829	84%	1	2,850
2006	893	966	1,859	1,567	84%	1	683	302	985	844	86%	0	2,844
2007	881	981	1,862	1,621	87%	1	672	311	983	836	85%	0	2,845
2008	887	976	1,863	1,636	88%	0	678	302	980	850	87%	0	2,843
2009	864	999	1,863	1,642	88%	0	674	307	981	855	87%	0	2,844
2010	866	997	1,863	1,731	93%	0	672	311	983	861	88%	0	2,846
2011	1,005	857	1,862	1,747	94%	0	660	321	981	878	90%	0	2,843
2012	849	1,013	1,862	1,740	93%	0	654	325	979	883	90%	0	2,841
2013	862	1,000	1,862	1,709	92%	0	646	332	978	854	87%	0	2,840
2014	848	1,015	1,863	1,751	94%	0	636	341	977	881	90%	0	2,840
2015	834	1,030	1,864	1,744	94%	0	639	336	975	885	91%	0	2,839
2016	826	1,038	1,864	1,732	93%	0	637	336	973	858	88%	0	2,837
20-Year Avg.	902	963	1,873	1,663	88%	17	696	298	994	855	86%	2	2,866
1997-06 Avg.	932	943	1,883	1,638	85%	34	738	272	1,010	860	85%	5	2,893
2007-16 Avg.	872	983	1,862	1,689	91%	0	661	319	980	863	88%	0	2,843
2017	842	1,021	1,863	1,710	92%	0	635	337	972	881	91%	0	2,835

[a] Allowable gear per license/permit is measured in fathoms, 150 for drift and 50 for setnet.

[b] Includes interim use permits.

Appendix A3.–Sockeye salmon commercial catch by district, in numbers of fish, Bristol Bay, 1997–2017.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total	
1997	589,311	7,517,389	1,402,690	2,506,818	142,569	12,158,777	
1998	2,595,439	3,528,845	730,274	2,990,597	190,427	10,035,582	
1999	9,452,972	7,388,080	2,256,007	6,175,419	385,411	25,657,889	
2000	4,727,061	7,029,397	1,538,790	6,367,208	794,996	20,457,452	
2001	5,280,538	2,872,662	480,509	4,734,800	810,096	14,178,605	
2002	1,418,938	4,610,374	1,573,234	2,839,424	233,743	10,675,713	
2003	3,348,504	2,291,502	1,748,934	6,665,965	706,008	14,760,913	
2004	4,715,070	10,209,227	3,139,229	6,104,048	437,234	26,261,802	[a]
2005	6,728,469	8,015,950	2,216,635	7,096,031	465,094	24,522,179	
2006	7,151,741	7,408,983	2,429,637	10,876,552	626,442	28,493,355	
2007	9,022,511	6,495,908	5,026,615	8,404,111	816,581	29,765,726	
2008	10,381,844	7,403,885	2,334,022	6,903,157	651,315	27,674,223	
2009	8,514,944	11,527,462	2,555,263	7,730,168	559,442	30,887,279	
2010	10,858,209	5,070,816	4,031,832	8,424,030	667,850	29,052,737	
2011	9,016,321	4,810,362	2,643,495	4,886,552	744,626	22,101,356	
2012	10,152,917	5,062,390	2,418,653	2,663,014	622,909	20,919,883	
2013	4,853,030	4,779,133	2,168,216	3,163,805	467,329	15,431,513	
2014	13,791,290	6,928,621	1,511,416	6,448,463	443,287	29,127,035	[b]
2015	16,531,193	8,749,567	5,473,800	5,592,816	371,903	36,719,279	
2016	13,466,245	8,739,699	6,630,231	8,109,797	645,797	37,591,769	
20-Year Avg.	7,629,827	6,522,013	2,615,474	5,934,139	539,153	23,323,653	
1997-06 Avg.	4,600,804	6,087,241	1,751,594	5,635,686	479,202	18,720,227	
2007-16 Avg.	10,658,850	6,956,784	3,479,354	6,232,591	599,104	27,927,080	
2017	8,256,304	11,980,502	5,705,712	12,322,519	516,488	38,781,525	

[a] Total includes General District harvest of 1,656,994 fish.
[b] Includes 3,958 fish that were not assigned to a district.

Appendix A4.–Chinook salmon commercial catch by district, in numbers of fish, Bristol Bay, 1997–2017.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1997	3,132	2,144	1,098	64,390	6,074	76,838
1998	2,722	795	347	117,820	14,132	135,816
1999	1,439	740	1,640	11,178	11,932	26,929
2000	1,077	1,067	893	12,120	7,862	23,019
2001	995	967	1,021	11,746	1,021	15,750
2002	1,002	284	623	40,039	2,801	44,749
2003	611	135	478	43,485	3,231	47,940
2004	1,496	1,632	891	96,759	9,310	114,280[a]
2005	1,458	486	1,818	62,764	10,759	77,285
2006	2,333	915	2,608	84,881	16,225	106,962
2007	1,520	528	1,473	51,831	7,769	63,121
2008	1,344	416	1,191	18,968	3,087	25,006
2009	1,026	308	948	24,693	4,602	31,577
2010	1,060	223	460	26,056	5,553	33,352
2011	1,962	567	372	26,927	6,731	36,559
2012	2,306	282	212	11,952	4,829	19,581
2013	1,360	144	52	10,213	2,718	14,487
2014	1,648	461	83	11,862	1,841	15,895
2015	2,926	753	226	49,945	2,663	56,513
2016	2,797	1,144	1,435	23,783	3,831	32,990
20-Year Avg.	1,711	700	893	40,071	6,349	46,546
1997-06 Avg.	1,627	917	1,142	54,518	8,335	61,699
2007-16 Avg.	1,795	483	645	25,623	4,362	32,908
2017	2,477	866	1,219	32,194	4,643	41,399

[a] Total includes General District harvest of 4,624 fish.

Appendix A5.–Chum salmon commercial catch by district, in numbers of fish, Bristol Bay, 1997–2017.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total	
1997	8,628	59,139	16,903	185,635	47,285	317,590	
1998	82,281	29,405	8,088	208,551	67,345	395,670	
1999	259,922	74,890	68,004	170,806	111,677	685,299	
2000	68,218	38,777	36,349	114,456	140,175	397,975	
2001	16,526	33,579	43,404	526,739	211,701	831,949	
2002	19,189	23,516	35,792	276,787	112,987	468,271	
2003	34,481	37,116	52,908	740,372	68,154	933,031	
2004	29,972	75,061	49,358	458,916	94,025	732,481	
2005	204,777	62,029	39,513	966,069	124,695	1,397,083	
2006	457,855	153,777	168,428	1,240,235	223,364	2,243,659	
2007	383,927	157,991	242,025	953,292	202,486	1,939,721	
2008	237,260	92,901	135,292	492,341	301,967	1,259,761	
2009	255,520	118,212	64,974	745,161	141,375	1,325,242	
2010	337,911	57,324	62,987	424,234	118,767	1,001,223	
2011	218,710	39,246	34,287	296,909	113,234	702,386	
2012	133,959	35,375	31,352	272,163	206,614	679,463	
2013	272,754	36,792	32,624	586,117	209,946	1,138,233	
2014	87,188	33,173	19,677	242,261	100,195	482,531	[a]
2015	350,169	69,057	69,967	502,820	103,773	1,095,786	
2016	237,035	74,641	72,534	397,761	187,508	969,479	
20-year Avg.	184,814	65,100	64,223	490,081	144,364	949,842	
1997-06 Avg.	118,185	58,729	51,875	488,857	120,141	840,301	
2007-16 Avg.	251,443	71,471	76,572	491,306	168,587	1,059,383	
2017	249,696	147,330	88,126	804,878	204,518	1,494,548	

[a] Includes 37 fish that were not assigned to a district.

Appendix A6.–Pink salmon commercial catch by district, in numbers of fish, Bristol Bay, 1997–2017.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1997	35	2	2	46	23	108
1998	11,317	674	247	6,787	6,406	25,431
1999	11	0	3	52	2	68
2000	19,659	32	4	38,309	695	58,699
2001	23	0	0	308	97	428
2002	10	1	1	204	311	527
2003	24	0	0	188	32	244
2004	7,749	0	187	26,150	18,293	52,380
2005	32	0	1	554	2,108	2,695
2006	25,149	700	0	39,011	80,748	145,608
2007	9	9	2	384	533	937
2008	20,682	1,033	16	138,284	125,409	285,424
2009	23	0	1	320	544	888
2010	8,237	1,655	0	1,289,970	39,734	1,339,596
2011	13	0	5	257	352	627
2012	3,535	285	0	877,466	28,055	909,341
2013	467	0	0	208	187	862
2014	7,473	4,835	227	1,166,997	118,682	1,298,214
2015	112	0	2	807	1,219	2,140
2016	12,058	343	1,498	537,525	217,190	768,614
20-Year Avg.	11,587	956	218	412,070	63,552	488,383
1997-06 Avg.	12,777	281	88	22,092	21,291	56,529
2007-16 Avg.	10,397	1,630	348	802,048	105,814	920,238
2017	174	214	143	7,230	26,797	34,558

Note: Averages include even-numbered years only.

Appendix A7.–Coho salmon commercial catch by district, in numbers of fish, Bristol Bay, 1997–2017.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1997	718	35,470	7,156	4,110	2,970	50,424
1998	1,587	29,856	13,007	22,703	58,688	125,841
1999	303	11,464	2,289	2,836	2,653	19,545
2000	952	13,166	1,269	112,852	2,758	130,997
2001	3	12,603	976	3,218	284	17,084
2002	0	7,099	464	93	754	8,410
2003	42	40,577	994	583	1,047	43,243
2004	2,142	2,324	4,744	47,706	15,463	72,379
2005	3,314	20,611	8,162	42,456	8	74,551
2006	5,163	26,788	3,087	44,385	449	79,872
2007	2,180	18,111	1,954	29,578	157	51,980
2008	7,059	29,682	2,220	76,932	1,159	117,052
2009	732	10,594	2,602	35,171	9,209	58,308
2010	901	9,984	407	72,909	24,065	108,266
2011	633	440	84	4,712	7,605	13,474
2012	431	2,493	0	97,382	15,977	116,283
2013	467	812	479	124,182	11,420	137,360
2014	646	11,473	435	242,604	32,134	287,292
2015	1,253	730	2,533	6,614	26,080	37,210
2016	1,110	546	171	79,538	9,346	90,711
20-Year Avg.	1,482	14,241	2,652	52,528	11,111	82,014
1997-06 Avg.	1,422	19,996	4,215	28,094	8,507	62,235
2007-16 Avg.	1,541	8,487	1,089	76,962	13,715	101,794
2017	4,754	14,274	7	167,347	54,503	240,885

Appendix A8.–Total salmon commercial catch by district, in numbers of fish, Bristol Bay, 1997–2017.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1997	602,061	7,614,359	1,427,849	2,761,086	198,926	12,604,281
1998	2,694,447	3,589,915	751,988	3,347,789	337,001	10,721,140
1999	9,715,807	7,475,451	2,328,047	6,360,934	511,689	26,391,928
2000	4,818,024	7,082,486	1,577,446	6,645,252	946,486	21,069,694
2001	5,299,384	2,919,874	526,114	5,277,729	1,032,116	15,055,217
2002	1,439,831	4,641,902	1,610,548	3,157,042	350,596	11,199,919
2003	3,385,814	2,369,459	1,804,199	7,452,178	778,472	15,790,122
2004	4,758,330	10,288,807	3,194,507	6,734,064	574,325	27,233,322
2005	6,940,395	8,099,368	2,266,400	8,168,138	602,660	26,076,961
2006	7,641,821	7,591,163	2,603,760	12,285,064	947,228	31,069,036
2007	9,414,797	6,674,941	5,272,187	9,440,219	1,027,528	31,829,672
2008	10,651,517	7,528,622	2,472,742	7,629,892	1,082,937	29,365,710
2009	8,774,759	11,658,846	2,623,819	8,774,759	714,804	32,546,987
2010	11,208,947	5,144,104	4,095,854	10,222,381	866,201	31,537,487
2011	9,240,963	4,853,480	2,678,405	5,216,149	872,551	22,403,764
2012	10,293,536	5,101,370	2,450,220	3,918,549	878,294	22,641,969
2013	5,127,632	4,816,881	2,201,371	3,884,525	691,600	16,722,009
2014	13,888,262	6,978,563	1,531,838	8,112,236	696,139	31,211,033
2015	16,885,517	8,819,956	5,546,460	6,152,464	505,638	37,910,035
2016	13,719,245	8,816,373	6,705,869	9,148,404	1,063,672	39,453,563
20-Year Avg.	7,825,054	6,709,155	2,574,739	6,582,589	719,111	24,202,438
1997-06 Avg.	4,729,591	6,501,517	2,001,813	5,601,555	609,930	19,681,105
2007-16 Avg.	10,920,518	6,916,793	3,147,666	7,563,624	828,292	28,723,770
2017	8,513,405	12,143,186	5,795,207	13,334,168	806,949	40,592,915

Appendix A9.–Commercial sockeye salmon catch, in percent, by gear type and district, Bristol Bay, 1997–2017.

	Naknek-Kvichak										Nushagak								
		Setnet Sec.		NRSHA [a]			Egegik		Ugashik			Setnet Sec.		WRSHA[b]		Togiak		Total	
Year	Drift	Nak.	Kvi.	Drift		Set	Drift	Set	Drift	Set	Drift	Nush.	Igushik	Drift	Set	Drift	Set	Drift	Set
1997	73	27					87	13	88	12	70	30				37	63	87	13
1998	84	8	8				86	14	85	15	72	24	4	76	24	43	57	86	14
1999	85	8	7				85	15	89	11	70	24	6	78	22	53	47	82	18
2000	84	11	5				84	16	87	13	77	17	6	68	32	57	43	80	20
2001	82	16	2	74	[c]	26 [c]	86	14	80	20	77	18	5			66	34	80	20
2002				64	[c]	36 [c]	85	15	88	12	77	22	1	67	33	62	38	79	21
2003	91	9	0	65	[c]	35 [c]	81	19	89	11	83	15	2			63	37	79	21
2004	79	11	10	88		12	86	14	88	12	84	15	1			55	45	79	21
2005				81		19	82	18	87	13	84	14	2			56	44	66	34
2006	86	8	5	81		19	84	16	88	12	87	11	2			53	47	85	15
2007	82	12	6	80		12	84	16	92	8	80	17	3			59	41	81	19
2008	81	12	7				85	15	92	8	79	16	5			60	40	82	18
2009	80	12	9				85	15	87	13	76	20	4			60	40	82	18
2010	81	10	9				84	16	90	10	78	17	6	71	29	61	39	82	18
2011	84	10	7				83	17	87	13	76	16	7			60	40	81	19
2012	85	7	8				83	17	90	10	67	27	6	45	55	67	33	73	27
2013	84	9	7				85	15	90	10	78	17	5			65	35	84	16
2014	83	9	8				89	11	82	18	73	16	7			58	42	82	18
2015	84	8	8				81	19	91	9	69	22	9			50	50	81	19
2016	83	8	9				82	18	91	9	67	22	11			56	44	81	19
1997-06 Avg.	83	12	5	76		25	85	15	87	13	78	19	3	72	28	55	46	80	20
2007-16 Avg.	83	10	8	80		12	84	16	89	11	74	19	6	58	42	60	40	81	19
2017	70	17	13				87	13	92	8	76	18	4			56	44	80	20
Allocation [d]	84	8	8	84		16	86	14	90	10	74	20	6	NA	NA	NA	NA	NA	NA

Note: Blank cells indicate no data.

[a] Naknek River Special Harvest Area (NRSHA), Naknek-Kvichak District; allocation plan enacted in December 2003.

[b] Wood River Special Harvest Area (WRSHA), Nushagak District.

[c] NRSHA prior to allocation plan; fishing periods were alternated between gear types.

[d] The Alaska Board of Fisheries enacted allocation plan in 1998; reviewed in December 2003. Historical data prior to 1998 is based on postseason numbers. Inseason numbers are presented for 1998 to present because they were used to make management decisions regarding allocation.

Appendix A10.–Sockeye salmon escapement by district, in numbers of fish, Bristol Bay, 1997–2017.

Year	Naknek-Kvichak [a]	Egegik [b]	Ugashik [c]	Nushagak [d]	Togiak [e]	Total
1997	2,747,511	1,104,004	656,641	2,061,085	171,373	6,740,614
1998	3,750,246	1,110,932	924,853	2,490,324	214,626	8,490,981
1999	8,303,878	1,727,772	1,662,042	2,302,934 [f]	231,196	14,227,822
2000	3,654,568	1,032,138	638,420	2,159,628 [f]	390,080	7,874,834
2001	3,194,708	968,872	866,368	2,765,440 [f]	338,616 [g]	9,102,876
2002	2,303,463	1,036,092	905,584	1,755,993 [f]	199,507	6,200,639
2003	5,627,974 [h]	1,152,120	790,202	2,295,963 [f]	261,851 [g]	10,128,110
2004	12,836,100 [h]	1,290,144	815,104	2,196,864 [f]	154,681 [g]	17,292,893
2005	9,283,980 [h]	1,621,734	799,612	2,968,962 [f]	155,778 [g]	14,830,066
2006	6,795,420 [h]	1,465,158	1,003,158	4,861,780 [f]	312,126 [i]	14,437,642
2007	8,221,926 [h]	1,432,500	2,599,186	2,461,579 [f]	269,646 [i]	14,984,837
2008	7,411,104 [h]	1,259,568	596,332	3,271,926 [f]	205,680 [i]	12,744,610
2009	4,406,424 [h]	1,146,276	1,364,338	2,317,569 [f]	313,946 [i]	9,548,553
2010	6,859,068 [h]	927,054	830,886	2,791,080 [f]	188,298 [i]	11,596,386
2011	4,325,220 [h]	961,200	1,029,853	1,947,577	190,970 [i]	8,454,820
2012	5,926,503	1,233,900	695,018	1,389,975	203,148 [i]	9,448,544
2013	4,122,686	1,113,630	898,110	2,465,791	128,118 [i]	8,728,335
2014	6,133,492	1,382,466	640,158	3,723,697	151,934 [i]	12,031,747
2015	15,033,216	2,160,792	1,564,638	3,389,330	218,700 [i]	22,366,676
2016	7,930,458	1,837,260	1,635,270	2,459,450	200,046 [i]	14,062,484
20-Year Avg.	6,443,397	1,298,181	1,045,789	2,603,847	225,016	11,664,673
1996-05 Avg.	5,849,785	1,250,897	906,198	2,585,897	242,983	10,932,648
2006-15 Avg.	7,037,010	1,345,465	1,185,379	2,621,797	207,049	12,396,699
2017	7,105,200 [h]	260,982	1,186,446	7,705,277	195,330 [i]	16,453,235

[a] Includes counts from Kvichak tower, Alagnak aerial survey, and Naknek tower.

[b] Includes Egegik River. May include King Salmon River and Shosky Creek.

[c] Includes Ugashik River. Also includes Mother Goose River and Dog Salmon River systems in 1991–2004.

[d] Includes Wood, Igushik, Nuyakuk, Nushagak-Mulchatna, and Snake rivers. Nushagak River sonar escapement estimates prior to 2006 were adjusted after the 2012 season to account for a transition in sonar technology that occurred in 2006 (Buck et al. 2012).

[e] Includes aerial survey of Togiak River, Lake tributaries, Kulukak system, other miscellaneous river systems, and Togiak River tower count except where noted.

[f] Snake River not surveyed.

[g] Only partial and/or late aerial survey of Togiak streams.

[h] Includes Alagnak tower count.

[i] Togiak River tower count.

Appendix A11.–Inshore total run of sockeye salmon by district, in numbers of fish, Bristol Bay, 1997–2017.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak [a]	Togiak	Total
1997	3,336,822	8,621,393	2,059,331	4,567,903	313,942	18,899,391
1998	6,345,685	4,639,777	1,655,127	5,480,921	405,053	18,526,563
1999	17,756,850	9,115,852	3,918,049	8,478,353	616,607	39,885,711
2000	8,381,629	8,061,535	2,177,210	8,526,836	1,185,076	28,332,286
2001	8,475,246	3,841,534	1,346,877	7,500,240	1,148,712	22,312,609
2002	3,722,401	5,646,466	2,478,818	4,595,417	433,250	16,876,352
2003	8,976,478	3,443,622	2,539,136	8,961,928	967,859	24,889,023
2004	17,551,170	11,499,371	3,954,333	8,300,912	591,915	41,897,701
2005	16,012,449	9,637,684	3,016,247	10,064,993	620,872	39,352,245
2006	13,947,161	8,874,141	3,432,795	15,738,332	938,568	42,930,997
2007	17,244,437	7,928,408	7,625,801	10,865,690	1,086,227	44,750,563
2008	17,792,948	8,663,453	2,930,354	10,175,083	856,995	40,418,833
2009	12,921,368	12,673,738	3,919,601	10,047,737	873,388	40,435,832
2010	17,717,277	5,997,870	4,862,718	11,215,110	856,148	40,649,123
2011	13,341,541	5,771,562	3,673,348	6,834,129	935,596	30,556,176
2012	16,079,420	6,296,290	3,113,671	4,052,989	826,057	30,368,427
2013	9,148,587	5,950,083	3,070,893	5,648,098	621,670	24,439,331
2014	19,924,521	8,310,816	2,147,598	10,171,331	595,192	41,149,458
2015	31,565,141	10,631,593	7,038,933	8,983,050	590,604	58,809,321
2016	21,396,703	10,576,959	8,265,501	10,569,247	845,843	51,654,253
20-Year Avg.	14,081,892	7,809,107	3,661,317	8,538,915	765,479	34,856,710
1997-06 Avg.	10,450,589	7,338,138	2,657,792	8,221,584	722,185	29,390,288
2007-16 Avg.	17,713,194	8,280,077	4,664,842	8,856,246	808,772	40,323,132
2017	15,618,605	14,744,168	6,981,653	21,039,398	1,002,279	59,386,103

[a] Reflects a 2012 adjustment of Nushagak River sonar escapement estimates prior to 2006 to account for a transition in sonar technology that occurred in 2006 (Buck et al. 2012).

Appendix A12.–Inshore commercial catch and escapement of sockeye salmon in the Naknek-Kvichak District by river system, in numbers of fish, Bristol Bay, 1997–2017.

		Escapement				
Year	Catch	Kvichak [a]	Alagnak	Naknek [a]	Total	Total Run
1997	589,545	1,503,732	218,115 [b]	1,025,664	2,747,511	3,336,822
1998	2,596,490	2,296,074	252,200 [b]	1,202,172	3,750,446	6,345,885
1999	9,454,109	6,196,914	481,600 [b]	1,625,364	8,303,878	17,756,850
2000	4,728,095	1,827,780	451,300 [b]	1,375,488	3,654,568	8,381,629
2001	5,281,837	1,095,348	267,000 [b]	1,830,360	3,192,708	8,473,246
2002	1,419,630	703,884	335,661 [b]	1,263,918	2,303,463	3,722,401
2003	3,350,656	1,686,804	3,676,146 [a]	1,831,170	7,194,120	10,542,573
2004	4,716,715	5,500,134	5,396,592 [a]	1,939,374	12,836,100	17,551,170
2005	6,730,812	2,320,422	4,219,026 [a]	2,744,622	9,284,070	15,990,456
2006	7,151,741	3,068,226	1,773,966 [a]	1,953,228	6,795,420	13,949,170
2007	9,027,161	2,810,208	2,466,414 [a]	2,945,304	8,221,926	17,244,437
2008	10,385,172	2,757,912	2,180,502 [a]	2,472,690	7,411,104	17,792,948
2009	8,517,450	2,266,140	970,818 [a]	1,169,466	4,406,424	12,925,769
2010	10,861,016	4,207,410	1,187,730 [a]	1,463,928	6,859,068	17,720,084
2011	9,019,372	2,264,352	883,794 [a]	1,177,074	4,325,220	13,344,592
2012	10,152,917	4,164,444	861,747 [b]	900,312	5,926,503	16,079,420
2013	4,853,030	2,088,576	1,095,950 [b]	938,160	4,122,686	8,975,716
2014	13,791,053	4,458,540	200,500 [b]	1,474,428	6,133,468	19,924,521
2015	16,531,193	7,349,712	5,770,650 [b]	1,920,954	15,041,316	31,572,509
2016	13,466,245	4,462,728	1,775,820 [b]	1,691,910	7,930,458	21,396,703
20-Year Avg.	7,631,212	3,151,467	1,723,277	1,647,279	6,522,023	14,151,345
1997-06 Avg.	4,601,963	2,619,932	1,707,161	1,679,136	6,006,228	10,605,020
2007-16 Avg.	10,660,461	3,683,002	1,739,393	1,615,423	7,037,817	17,697,670
2017	8,256,304	3,163,404	2,047,894 [a]	1,899,426	7,110,724	15,367,028

[a] Tower count.

[b] Aerial surveys estimates expanded by a factor of 2.55 (Clark 2005).

Appendix A13.–Inshore sockeye salmon total run by river system Naknek-Kvichak District, in thousands of fish, Bristol Bay, 1997–2017.

	Kvichak		Alagnak			Naknek		
Year	Number	%	Number	%		Number	%	Total Run [a]
1997	1,669	50	234	7	[b]	1,402	42	3,337
1998	3,427	54	381	6	[b]	2,538	40	6,346
1999	12,963	73	1,065	6	[b]	3,729	21	17,757
2000	2,850	34	754	9	[b]	4,778	57	8,382
2001	1,440	17	424	5	[b]	6,609	78	8,473
2002	707	19	335	9	[b]	2,680	72	3,722
2003	2,003	19	2,530	24	[c]	6,010	57	10,543
2004	7,371	42	6,494	37	[c]	3,686	21	17,551
2005	2,878	18	5,277	33	[c]	7,835	49	15,990
2006	5,859	42	2,790	20	[c]	5,301	38	13,949
2007	4,311	25	4,311	25	[c]	8,794	51	17,244
2008	5,694	32	5,872	33	[c]	6,228	35	17,793
2009	5,558	43	2,714	21	[c]	4,653	36	12,926
2010	9,392	53	2,658	15	[c]	5,670	32	17,720
2011	7,073	53	2,002	15	[c]	4,270	32	13,345
2012	10,372	65	2,417	15	[b]	3,216	20	16,079
2013	4,587	51	2,377	26	[b]	2,249	25	8,976
2014	13,408	28	842	4	[b]	5,648	67	19,898
2015	15,466	49	11,629	37	[b]	4,471	14	31,566
2016	11,615	54	4,857	23	[b]	4,925	23	21,397
20-Year Avg.	6,432	41	2,998	19		4,735	41	14,150
1997-06 Avg.	4,117	37	2,028	16		4,457	48	10,605
2007-16 Avg.	8,748	45	3,968	21		5,012	34	17,694
2017	6,524	42	4,119	27	[c]	4,718	31	15,361

[a] Due to rounding of river system total runs, district total run may not equal the sum of the rows.

[b] Total run is based on aerial survey estimate.

[c] Total run is based on tower count.

Appendix A14.–Inshore commercial catch and escapement of sockeye salmon in the Egegik District by river system, in numbers of fish, Bristol Bay, 1997–2017.

		Escapement			
Year	Catch	Egegik [a]	Shosky Cr. [b]	King Salmon River [b]	Total Run
1997	7,461,533	1,103,964		40	8,565,537
1998	3,503,745	1,110,882		50	4,614,677
1999	7,383,750	1,727,772		625	9,112,147
2000	6,996,138	1,032,138			8,028,276
2001	2,836,555	968,862	10		3,805,427
2002	4,525,293	1,036,092			5,561,385
2003	2,253,721	1,152,030		90	3,405,841
2004	9,881,907	1,290,144			11,172,051
2005	8,015,950	1,621,584	0		9,637,534
2006	7,388,027	1,465,128	0		8,853,155
2007	6,474,027	1,432,500	0	1,500	7,908,027
2008	7,379,871	1,259,568	0	250	8,639,689
2009	11,527,282	1,146,276	0	4	12,673,562
2010	5,059,029	926,904		150	5,986,083
2011	4,806,939	961,200			5,768,139
2012	5,057,490	1,233,900		300	6,291,690
2013	4,779,133	1,113,630	[c]	[c]	5,892,763
2014	6,928,655	1,382,466	[c]	[c]	8,311,121
2015	8,325,956	2,160,792	[c]	[c]	10,486,748
2016	8,739,699	1,837,260	[c]	[c]	10,576,959
20-Year Avg.	6,466,235	1,298,155	2	334	7,764,541
1997-06Avg.	6,024,662	1,250,860	3	201	7,275,603
2007-16 Avg.	6,907,808	1,345,450	0	441	8,253,478
2017	11,980,502	2,600,982	[c]	[c]	14,581,484

Note: Blank cells represent no survey conducted.

[a] Tower count.

[b] Aerial survey index count.

[c] No survey conducted.

Appendix A15.–Inshore commercial catch and escapement of sockeye salmon in the Ugashik District by river system, in numbers of fish, Bristol Bay, 1997–2017.

		Escapement			
Year	Catch	Ugashik [a] River	King Salmon [b] River	Dog Salmon [b] River	Total Run
1997	1,392,516	618,396	27,645	10,600	2,049,157
1998	716,814	890,508	27,425	6,920	1,641,667
1999	2,255,131	1,651,572	6,350	4,120	3,917,173
2000	1,517,236	620,040	12,900	5,480	2,155,656
2001	474,759	833,628	22,940	9,800	1,341,127
2002	1,570,418	892,104	11,460	2,020	2,476,002
2003	1,731,657	758,532	27,620	4,000	2,521,809
2004	3,077,745	776,364	22,850	15,890	3,892,849
2005	2,216,906	779,172	[c]	20,440	3,016,518
2006	2,428,334	978,718	[c]	24,440	3,431,492
2007	4,996,077	2,523,686	5,420 [c]	70,020	7,595,203
2008	2,319,790	588,632	[c]	7,700	2,916,122
2009	2,555,268	1,346,630	[c]	17,920	3,919,818
2010	4,031,625	805,686	[c]	25,200	4,862,511
2011	2,641,882	1,003,753	[c]	26,100	3,671,735
2012	2,415,580	670,578	8	24,432	3,110,598
2013	2,168,216	898,110	[c]	[c]	3,066,326
2014	1,507,440	640,158	[c]	[c]	2,147,598
2015	5,473,800	1,564,638	[c]	[c]	7,038,438
2016	6,630,231	1,635,270	[c]	[c]	8,265,501
20-Year Avg.	2,606,071	1,023,809	16,462	17,193	3,651,865
1997-06 Avg.	1,738,152	879,903	19,899	10,371	2,644,345
2007-16 Avg.	3,473,991	1,167,714	2,714	28,562	4,659,385
2017	5,704,307	1,186,446	[c]	[c]	6,890,753

[a] Tower count plus aerial survey index count.

[b] Aerial survey index count.

[c] Not surveyed.

Appendix A16.–Inshore commercial catch and escapement of sockeye salmon in the Nushagak District by river system, in numbers of fish, Bristol Bay, 1997–2017.

		Escapement							
Year	Catch	Wood [a]	Igushik [a]	Nuyakuk [a]	Nush/Mul [b]	Nushagak [c]	Snake [d]	Total	Total Run
1997	2,506,857	1,512,396	127,704	272,982	139,609	412,591 [f]	8,394	2,061,085	4,567,942
1998	2,991,841	1,755,768	215,904	146,250	361,282	507,532 [f]	11,120	2,490,324	5,482,165
1999	6,176,051	1,512,426	445,536	81,006	263,966	344,972 [f]	[g]	2,302,934	8,478,985
2000	6,367,502	1,300,026	413,316	129,468	316,818	446,286 [f]	[g]	2,159,628	8,527,130
2001	4,735,718	1,458,732	409,596	184,044	713,068	897,112 [f]	[g]	2,765,440	7,501,158
2002	2,839,918	1,283,682	123,156	68,928	280,227	349,155 [f]	[g]	1,755,993	4,595,911
2003	6,667,538	1,459,782	194,088	116,646	525,447	642,093 [f]	[g]	2,295,963	8,963,501
2004	6,104,492	1,543,342	109,650	77,406	466,466	543,872 [f]	[g]	2,196,864	8,301,356
2005	7,096,296	1,496,550	365,709	251,016	855,687	1,106,703 [f]	[g]	2,968,962	10,065,258
2006	10,876,552	4,008,102	305,268	170,760	377,650	548,410	[g]	4,861,780	15,738,332
2007	8,404,532	1,528,086	415,452	[e]	[e]	518,041	[g]	2,461,579	10,866,111
2008	6,903,367	1,724,676	1,054,704	[e]	[e]	492,546	[g]	3,271,926	10,175,293
2009	7,731,518	1,319,232	514,188	[e]	[e]	484,149	[g]	2,317,569	10,049,087
2010	8,424,702	1,804,344	518,040	[e]	[e]	468,696	27,135	2,818,215	11,242,917
2011	4,887,305	1,098,006	421,380	[e]	[e]	428,191	21,167	1,968,744	6,856,049
2012	2,663,014	764,211	193,326	[e]	[e]	432,438	2,000	1,391,975	4,054,989
2013	3,163,805	1,183,348	387,744	[e]	[e]	894,172	1,288	2,466,552	5,630,357
2014	6,447,650	2,764,614	340,590	[e]	[e]	618,477	[g]	3,723,681	10,171,331
2015	5,593,702	1,948,274	649,825	[e]	[e]	796,648	[g]	3,394,747	8,988,449
2016	8,886,077	1,309,707	469,230	[e]	[e]	680,513	[g]	2,459,450	11,345,527
20-year Avg.	5,973,422	1,638,765	383,720	149,851	430,022	580,630	11,851	2,606,671	8,580,092
1997-06 Avg.	5,636,277	1,733,081	270,993	149,851	430,022	579,873	9,757	2,585,897	8,222,174
2007-16 Avg.	6,310,567	1,544,450	496,448			581,387	12,898	2,627,444	8,938,011
2017	12,322,519	4,274,224	578,700	[e]	[e]	2,852,306	[g]	7,705,230	20,027,749

Note: Blank cells represent no data.

[a] Tower count.

[b] Escapement estimates derived from the difference between Nushagak River sonar estimate and Nuyakuk tower count.

[c] Total escapements determined for the entire drainage using Nushagak River sonar estimate.

[d] Aerial survey estimate.

[e] The Nuyakuk tower project was in operation from 1995 to 2006. There is no breakdown of Nuyakuk or Nush/Mul. river escapements outside of these years.

[f] Nushagak River sonar escapement estimates before 2006 were adjusted after 2012 to account for a transition in sonar technology occurring in 2006 (Buck et al. 2012).

[g] No survey conducted.

Appendix A17.–Inshore sockeye salmon total run by river system, in thousands of fish and percent of total district run, Nushagak District, Bristol Bay, 1997–2017.

	Wood		Igushik		Nushagak		
Year	Total Run	%	Total Run	%	Total Run	%	District Total Run[a]
1997	3,365	74	291	6	904	20	4,560
1998	3,901	71	571	10	998	18	5,470
1999	5,930	70	1,563	18	985	12	8,478
2000	5,278	62	1,748	21	1,500	18	8,526
2001	3,987	53	1,315	18	2,198	29	7,500
2002	3,715	81	207	5	674	15	4,596
2003	5,647	63	1,018	11	2,297	26	8,962
2004	5,375	65	564	7	2,345	28	8,284
2005	4,771	47	1,878	19	3,453	34	10,102
2006	11,064	70	1,435	9	3,238	21	15,737
2007	6,523	60	1,762	16	2,580	24	10,865
2008	5,236	56	2,394	26	1,645	18	9,275
2009	7,195	72	926	9	1,927	19	10,048
2010	7,698	66	1,365	12	2,622	22	11,685
2011	4,328	63	1,036	15	1,470	22	6,834
2012	2,449	60	703	17	901	22	4,053
2013	3,174	46	745	11	2,981	43	6,900
2014	7,521	74	992	10	1,658	16	10,171
2015	5,070	56	1,657	18	2,255	25	8,982
2016	5,487	52	1,964	19	3,119	30	10,570
20-Year Avg.	5,386	63	1,207	14	1,988	23	8,580
1997-06 Avg.	5,303	66	1,059	12	1,859	22	8,222
2007-16 Avg.	5,468	61	1,354	15	2,116	24	8,938
2017	11,010	55	1,318	7	7,700	38	20,028

[a] Due to rounding, district total runs may not equal the sum of the rows. District total run is the sum of Wood, Igushik, and Nushagak total run numbers.

Appendix A18.–Inshore commercial catch and escapement of sockeye salmon in the Togiak District by river system, in numbers of fish, Bristol Bay, 1997–2017.

	Catch				Escapement						
					Togiak						
Year	Togiak	Kulukak	Os/Mat [a]	Total	Lake [b]	River [c]	Tributaries [d]	Kulukak [e]	Other [f]	Total	Total Run
1997	91,639	47,979	2,951	142,569	131,682	12,300	8,325	7,950	11,116	171,373	313,942
1998	112,994	75,279	1,375	189,648	153,576	9,780	12,120	12,950	26,200	214,626	404,274
1999	346,750	38,662	0	385,412	155,898	10,800	29,438	12,300	22,760	231,196	616,608
2000	727,384	67,612	0	794,996	311,970	25,200	15,075	22,350	15,485	390,080	1,185,076
2002	214,240	19,032	471	233,743	162,402	4,100	12,075	8,500	12,430	199,507	433,250
2001 [g]	798,427	10,052	1,618	810,097	296,676	6,520	150	17,280	17,990	338,616	1,148,713
2003 [h]	650,066	55,081	861	706,008	232,302			8,004	21,545	261,851	967,859
2004 [g,h]	356,747	79,392	1,095	437,234	129,462	6,100	75		19,044	154,681	591,915
2005 [h]	411,042	54,052	0	465,094	149,178	5,580	1,020		3,713	159,491	624,585
2006 [i]	574,629	51,813	0	626,442	312,126					312,126	938,568
2007 [i]	758,736	57,845	0	816,581	269,646					269,646	1,086,227
2008 [i]	626,792	24,523	0	651,315	205,680					205,680	856,995
2009 [i]	516,955	42,504	0	559,459	313,946					313,946	873,388
2010 [i]	535,489	132,392	4	667,885	190,970					190,970	858,855
2011 [i]	625,423	118,664	547	744,634	188,298					188,298	932,932
2012 [i]	586,160	34,731	1,929	622,820	203,148					203,148	825,968
2013 [i]	425,407	34,692	7,230	467,329	128,118					128,118	595,447
2014 [i]	371,933	59,088	12,237	443,258	151,934					151,934	595,192
2015 [i]	313,200	45,331	13,372	371,903	218,700					218,700	590,603
2016 [i]	522,187	101,554	22,056	645,797	200,046					200,046	845,843
20-Year Avg.	478,310	57,514	3,287	539,111	205,288	10,048	9,785	12,762	16,698	225,202	764,312
1997-06 Avg.	428,392	49,895	837	479,124	203,527	10,048	9,785	12,762	16,698	243,355	722,479
2007-16 Avg.	528,228	65,132	5,738	599,098	207,049					207,049	806,145
2017	458,951	44,389	13,148	516,488	195,330					195,330	711,818

Note: Blank cells represent no data.

[a] Catches in the Osviak and Matogak sections were combined.

[b] Tower count.

[c] Aerial survey estimate.

[d] Aerial survey estimate includes Gechiak, Pungokepuk, Kemuk, Nayorurun, and Ongivinuk river systems.

[e] Aerial survey estimate includes Kulukak River, Kulukak Lake, and Tithe Creek ponds.

[f] Aerial survey estimate includes Matogak, Osviak, Slug, Negukthlik, Ungalikthluk, and Quigmy rivers.

[g] Only the Ongivinuk River was surveyed in tributaries.

[h] Partial survey.

[i] No aerial surveys to assess sockeye salmon escapement conducted.

Appendix A19.–Chinook salmon harvest, escapement and total runs in the Nushagak District, in numbers of fish, Bristol Bay, 1997–2017.

	Harvests by Fishery				Inriver		Spawning	Total
Year	Commercial	Sport	Subsistence	Total	Abundance[a]		Escapement[b]	Run
1997	64,390	3,497	15,318	83,205	170,610		82,000	165,205
1998	117,820	5,827	12,258	135,905	244,461		235,003	370,908
1999	11,178	4,237	10,057	25,472	129,686		122,059	147,531
2000	12,120	6,017	9,470	27,607	117,288		108,588	136,195
2001	11,746	5,899	11,760	29,405	191,988		182,632	212,037
2002	40,039	3,693	11,281	55,013	181,307		173,956	228,969
2003	43,485	5,590	18,686	67,761	166,507		155,085	222,846
2004	96,759	6,813	15,610	119,182	242,183		231,224	350,406
2005	62,764	8,565	12,529	83,858	234,123		223,034	306,892
2006	84,881	7,473	9,971	102,325	124,683		116,088	218,413
2007	51,831	9,669	13,330	74,830	60,464		48,644	123,474
2008	18,968	6,700	12,960	38,628	96,641		87,673	126,301
2009	24,693	6,354	12,737	43,784	81,480		72,100	115,884
2010	26,056	3,907	9,150	39,113	36,625	[c]	30,443	69,556
2011	26,927	4,844	12,461	44,232	59,728	[c]	51,068	95,300
2012	11,952	5,931	10,350	28,233	107,786	[c]	101,049	129,282
2013	10,213	6,685	11,602	28,500	113,709		104,746	133,246
2014	11,862	6,260	16,049	34,171	70,482		62,701	96,872
2015	50,675	7,234	12,117	70,026	98,019		89,286	159,312
2016	23,783	8,411	15,735	47,929	125,368		118,077	166,006
20-Year Avg.	40,107	6,180	12,672	58,959	132,657		119,773	178,732
1997-06 Avg.	54,518	5,761	12,694	72,973	180,284		162,967	235,940
2007-16 Avg.	25,696	6,600	12,649	44,945	85,030		76,579	121,523
2017	32,194	6,904 [d]	12,516 [d]	51,614	56,961		47,075	98,689

[a] Inriver abundance estimated by sonar below the village of Portage Creek. Estimates prior to 2006 were adjusted after the 2012 season to account for a transition in sonar technology that occurred in 2006 (Buck et al. 2012).

[b] Spawning escapement estimated from the following: 1997 - from comprehensive aerial surveys; 1993–1996, 1998–2013, from inriver abundance estimated by sonar minus inriver harvests.

[c] Inseason management count. Revised passage estimates for 2010, 2011, and 2012 are 60,185, 108,278, and 174,085, respectively.

[d] 5-year average used.

Appendix A20.–Chinook salmon harvest, escapement and total runs in the Togiak River drainage, in numbers of fish, Bristol Bay, 1997–2017.

	Harvests by Fishery				Spawning		Total	
Year	Commercial	Sport [a]	Subsistence	Total	Escapement [b]		Run	
1997	5,365	1,165	667	7,197	10,300		17,497	
1998	12,867	763	782	14,412	9,856		24,268	
1999	10,830	644	1,244	12,718	9,520		22,238	
2000	7,258	470	1,116	8,844	11,813		20,657	
2001	9,518	1,006	1,612	12,136	13,110		25,246	
2002	2,682	76	703	3,461	9,515		12,976	
2003	3,078	706	1,208	4,992	3,050	[c]		[d]
2004	7,673	1,388	1,094	10,155	12,324		22,479	
2005	10,125	1,734	1,528	13,387	10,200		23,587	
2006	15,078	1,064	1,630	17,772		[e]		[d]
2007	7,142	1,501	1,234	9,877	0	[c]		[d]
2008	2,891	592	1,337	4,820	2,140	[c]		[d]
2009	4,429	606	827	5,862		[e]		[d]
2010	5,160	591	1,162	6,913	10,096	[f]	17,009	
2011	5,780	871	966	7,617	2,140		9,757	
2012	4,357	859	951	6,167	1,503		7,670	
2013	2,458	900	691	4,049		[e]		[d]
2014	1,477	2,166	607	4,250	3,994		8,244	
2015	2,448	983	876	4,307	2,922		7,229	
2016	3,831	787	949	5,567		[e]		[d]
20-Year Avg.	6,222	944	1,059	8,225	7,030		16,835	
1997-06 Avg.	8,447	902	1,158	10,507	9,965		21,119	
2007-16 Avg.	3,997	986	960	5,943	3,256		9,982	
2017	4,643	1,139 [g]	815 [g]	6,597		[e]		[d]

[a] Sport fish harvest estimate only includes the Togiak River section.

[b] Spawning escapement estimated from comprehensive aerial surveys.

[c] Partial survey.

[d] Total run size cannot be determined in the absence of complete escapement data.

[e] No survey conducted due to poor weather/pilot availability.

[f] USFWS radiotelemetry-derived escapement estimate.

[g] 5-year average used.

Appendix A21.–Inshore commercial catch and escapement of chum salmon in the Nushagak and Togiak Districts, in numbers of fish, 1997–2017.

	Nushagak District			Togiak District		
Year	Catch	Escapement [a]	Total Run	Catch	Escapement [b]	Total Run
1997	185,635	78,011	263,646	47,285	106,580	153,865
1998	208,551	379,818	588,369	67,345	102,455	169,800
1999	170,806	307,586	478,392	111,677	116,183	227,860
2000	114,456	179,394	293,850	140,175	80,860 [c]	[d]
2001	526,739	716,850	1,243,589	211,701	252,610	464,311
2002	276,787	533,095	809,882	112,987	154,360	267,347
2003	740,372	374,992	1,115,364	68,154	39,090 [c]	[d]
2004	458,916	360,265	819,181	94,025	103,810	197,835
2005	966,069	519,618	1,485,687	124,695	108,346	233,041
2006	1,240,235	661,003	1,901,238	223,364	26,900 [c]	[d]
2007	953,292	161,483	1,114,775	202,486	[e]	[d]
2008	492,341	326,300	818,641	301,967	279,580 [c]	[d]
2009	745,161	438,481	1,183,642	141,375	[e]	[d]
2010	424,234	273,914	698,148	118,767	[e]	[d]
2011	296,909	248,278	545,187	113,234	[e]	[d]
2012	272,163	364,499	636,662	206,614	[e]	[d]
2013	340,881	623,326	628,134	208,786	[e]	[d]
2014	242,261	552,797	795,058	100,195	[e]	[d]
2015	502,981	288,929	791,910	103,773	[e]	[d]
2016	397,761	419,810	817,571	187,508	[e]	[d]
20-Year Avg.	477,828	390,422	851,446	144,306	124,616	85,703
1997-06 Avg.	488,857	411,063	899,920	120,141	109,119	171,406
2007-16 Avg.	466,798	369,782	802,973	168,471	279,580	0
2017	804,878	415,488	1,220,366	204,518	[e]	[d]

[a] Escapement based on estimates from the Nushagak River sonar project at Portage Creek. Estimates prior to 2006 were adjusted after the 2012 season to account for a transition in sonar technology that occurred in 2006 (Buck et al. 2012).

[b] Escapement estimates based on aerial surveys.

[c] Partial survey count.

[d] Total run cannot be determined; escapement information incomplete or unavailable.

[e] Chum salmon spawning escapement survey did not occur.

Appendix A22.–Average round weight (in pounds) of the commercial salmon catch by species, Bristol Bay, 1997–2017.

Year	Sockeye	Chinook	Chum	Pink	Coho
1997	6.0	16.4	7.3	3.4	6.3
1998	5.7	17.7	6.4	3.3	8.4
1999	5.3	14.3	6.7	3.2	6.4
2000	6.1	15.7	6.9	3.7	7.6
2001	6.7	17.4	8.2	2.8	7.1
2002	6.1	18.2	7.1	3.8	6.8
2003	6.3	16.0	6.5	4.0	6.9
2004	5.8	15.4	6.6	4.1	6.8
2005	6.3	16.6	7.1	3.5	6.3
2006	5.7	17.0	7.7	3.7	6.4
2007	5.8	13.5	6.1	3.5	6.4
2008	5.8	15.5	6.5	3.6	6.5
2009	5.9	15.2	6.3	3.3	6.5
2010	5.5	14.7	6.4	3.2	8.9
2011	6.2	13.0	7.0	3.2	6.8
2012	5.7	13.9	6.7	3.1	5.4
2013	6.0	15.3	6.4	3.9	6.0
2014	5.6	15.4	6.1	3.7	6.4
2015	5.2	15.1	6.1	3.7	6.7
2016	5.4	12.6	6.0	4.0	5.8
20-Year Avg.	5.9	15.4	6.7	3.5	6.7
1997-06 Avg.	6.0	16.5	7.0	3.5	6.9
2007-16 Avg.	5.7	14.4	6.4	3.5	6.5
2017	5.5	11.2	6.4	3.9	6.3

Appendix A23.–Average price paid (in dollars/pound) for salmon, by species, Bristol Bay, 1997–2017.

Year	Sockeye	Chinook	Chum	Pink	Coho
1997	0.90	0.52	0.10	0.07	0.50
1998	1.22	0.62	0.10	0.08	0.48
1999	0.84	0.53	0.10	0.09	0.72
2000	0.67	0.46	0.09	0.08	0.41
2001	0.42	0.31	0.11	0.09	0.33
2002	0.49	0.33	0.09	0.06	0.32
2003	0.51	0.32	0.08	0.07	0.27
2004	0.51	0.37	0.09	0.09	0.31
2005	0.62	0.58	0.11	0.02	0.29
2006	0.66	0.71	0.12	0.03	0.38
2007	0.67	0.64	0.13	0.03	0.41
2008	0.75	0.83	0.17	0.17	0.55
2009	0.80	0.89	0.17	0.07	0.56
2010	1.07	1.18	0.28	0.36	0.66
2011	1.17	1.04	0.37	0.29	0.74
2012	0.97	1.31	0.34	0.39	0.55
2013	1.50	1.48	0.30	0.14	0.79
2014	1.34	1.32	0.41	0.24	0.84
2015	0.64	0.56	0.30	0.06	0.39
2016	0.95	0.84	0.30	0.18	0.58
20-Year Avg.	0.84	0.73	0.18	0.12	0.49
1997-06 Avg.	0.69	0.46	0.10	0.07	0.39
2007-16 Avg.	0.99	1.00	0.26	0.18	0.59
2017 [a]	1.02	0.72	0.30	0.16	0.65

Source: OCEANAK ADF&G Commercial Operators Annual Report (COAR) By Subject Area. ADF&G is not responsible for errors or deficiencies in reproduction, subsequent analysis, or interpretation.

Note: The exvessel value includes any postseason adjustments or bonuses paid after the fish was purchased. Prices represent a weighted average price per pound by species and area. Prices may reflect a mixture of gear types and delivery conditions.

[a] Price does not include postseason adjustments or bonuses.

Appendix A24.–Estimated exvessel value of the commercial salmon catch by species, in thousands of dollars, Bristol Bay, 1997–2017.

Year	Sockeye	Chinook	Chum	Pink [a]	Coho	Total [b]
1997	65,743	652	198		183	66,777
1998	70,529	1,414	234	7	503	72,688
1999	114,504	207	407		97	115,215
2000	83,940	165	232	16	403	84,756
2001	40,395	132	679		40	41,246
2002	31,899	272	290	0	19	32,479
2003	47,993	249	482		77	48,801
2004	77,897	647	398	19	158	79,119
2005	96,650	738	962		154	98,503
2006	90,233	1,330	1,350	19	178	93,110
2007	119,196	542	1,583		120	121,441
2008	109,904	298	1,271	158	288	111,919
2009	127,615	400	1,291		162	129,468
2010	180,818	464	1,711	1,565	469	185,027
2011	135,655	430	1,604		37	137,726
2012	113,777	254	831	339	155	115,356
2013	138,884	327	2,185		653	142,049
2014	217,151	312	1,233	1,180	1,614	221,490
2015	123,328	332	1,993		101	125,754
2016	152,751	293	1,889	452	264	155,649
20 Year Avg.	106,943	473	1,041	376	284	108,929
1997-06 Avg.	71,978	580	523	12	181	73,269
2007-16 Avg.	141,908	365	1,559	739	386	144,588
2017	212,186	343	2,850	21	995	216,396

Note: Value paid to fishermen is derived from price per pound multiplied by commercial catch.

[a] Includes even-numbered years only.

[b] Total may vary from actual sum because of rounding.

Appendix A25.–South Unimak and Shumigan Island preseason sockeye allocation and actual sockeye and chum salmon harvest in thousands of fish, Alaska Peninsula, 1997–2017.

	South Unimak			Shumigan Island			Total		
	Sockeye			Sockeye			Sockeye		
Year	Actual	Quota [a]	Chum	Actual	Quota [a]	Chum	Actual	Quota [a]	Chum
1997	1,179	1,840	196	449	406	126	1,628	2,246	322
1998	975	1,529	195	314	336	50	1,289	1,865	245
1999	1,106	1,024	187	269	226	58	1,375	1,250	245
2000	892	1,650	169	359	363	70	1,251	2,013	239
2001	271		185	130		149	401		334
2002	356		201	235		178	591		379
2003	336		121	117		161	453		282
2004	532		131	816		357	1,348		488
2005	437		144	567		282	1,004		426
2006	491		96	441		204	932		300
2007	738		153	852		144	1,023		297
2008	1,064		285	650		126	1,714		411
2009	594		201	573		496	1,167		697
2010	488		100	331		171	819		271
2011	937		231	422		192	1,359		423
2012	900		212	628		181	1,528		393
2013	1,049		189	508		208	1,557		397
2014	413		208	252		181	665		389
2015	618		42	497		136	1,115		178
2016	877		149	416		122	1,293		271
20-yr Avg.	713	1,511	170	441	333	180	1,126	1,844	349
1996-05 Avg.	658	1,511	163	370	333	164	1,027	1,844	326
2006-15 Avg.	768		177	513		196	1,224		373
2017	1,071		179	883		461	1,954		640

Note: Blank cells represent no data.

[a] Sockeye salmon quota management system used from 1992 to 2000. The system was based on 8.3% of the Bristol Bay projected inshore harvest and traditional harvest patterns.

Appendix A26.–Subsistence salmon harvest by species, in numbers of fish, by district and location fished, Bristol Bay, 2017.

Area And River System	Number Of Permits Issued[a]	Estimated Salmon Harvest					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Naknek-Kvichak District	426	941	53,922	609	254	347	56,073
Naknek River Subdistrict	259	896	22,135	606	252	341	24,230
Kvichak River/Iliamna Lake Subdistrict:	165	14	30,649	3	2	7	30,676
Igiugig	1	0	60	0	0	0	60
Iliamna Community	3	0	460	0	0	0	460
Iliamna Lake-General	49	0	9,583	0	0	0	9,583
Kokhanok	22	4	6,477	3	2	7	6,493
Kvichak River	12	0	728	0	0	0	728
Lake Clark	47	0	4,951	0	0	0	4,951
Levelock	6	10	1,029	0	0	0	1,039
Newhalen River	13	0	4,461	0	0	0	4,461
Pedro Bay	9	0	1,327	0	0	0	1,327
Pile Bay	1	0	255	0	0	0	255
Six Mile Lake	6	0	1,318	0	0	0	1,318
Naknek or Kvichak (Site Unknown)	7	30	1,137	0	0	0	1,167
Egegik District	26	27	366	167	3	0	563
Ugashik District	19	106	1,100	199	20	9	1,432
Nushagak District	613	15,735	24,790	4,219	4,596	4,160	53,500
Igushik/Snake River	28	81	2,676	212	12	45	3,025
Nushagak Bay Commercial	59	1,049	1,745	507	164	133	3,599
Nushagak Bay Noncommercial	224	4,713	7,802	1,375	1,315	1,000	16,205
Nushagak River	133	5,462	4,372	1,035	2,085	2,501	15,456
Site Unknown	33	751	1,063	159	145	78	2,197
Wood River	190	3,679	7,131	930	875	403	13,017
Togiak District	50	949	3,171	283	343	224	4,969
Total	1,128	17,757	83,349	5,476	5,216	4,740	116,537

Source: ADF&G Division of Subsistence.

Note: Harvests are extrapolated for all permits issued, based on those returned and on the area fished as recorded on the permit. Because of rounding, the sum of columns and rows may not equal the estimated total. Of 1,158 permits issued for the management area, 1,031 were returned (89.0%).

[a] Sum of sites may exceed district totals, and sum of districts may exceed area total, because a permit holder may use more than one site.

Appendix A27.–Subsistence salmon harvest by district and species, Bristol Bay, 1997–2017.

Year	Permits Issued	Sockeye	Chinook	Chum	Pink	Coho	Total
Naknek Kvichak District							
1997	533	85,248	2,764	478	422	1,457	90,368
1998	567	83,095	2,433	784	1,063	1,592	88,967
1999	528	85,315	1,567	725	210	856	88,674
2000	562	61,817	894	560	845	937	65,053
2001	506	57,250	869	667	383	740	59,909
2002	471	52,805	837	909	1,137	943	56,632
2003	489	61,443	1,221	259	198	812	63,934
2004	481	71,110	1,075	469	1,080	566	74,300
2005	462	69,211	1,047	546	275	1,224	72,302
2006	468	69,097	881	341	757	720	71,796
2007	480	69,837	672	405	262	1,104	72,280
2008	481	69,823	719	404	801	1,437	73,184
2009	461	67,970	392	167	36	669	69,235
2010	437	62,309	422	233	835	645	64,445
2011	484	67,164	550	215	56	690	68,675
2012	483	72,708	785	127	474	485	74,579
2013	460	62,143	502	403	88	399	63,535
2014	473	65,810	562	272	386	573	67,603
2015	486	69,720	678	263	126	796	71,583
2016	426	53,922	941	254	347	609	56,073
20-Year Avg.	487	67,890	991	424	489	863	70,656
1997-06 Avg.	507	69,639	1,359	574	637	985	73,193
2007-16 Avg.	467	66,141	622	274	341	741	68,119
2017 [a]	466	64,861	694	264	284	572	66,675
Egegik District							
1997	34	2,438	101	21	5	740	3,304
1998	36	1,795	44	33	52	389	2,314
1999	42	2,434	106	35	2	806	3,384
2000	31	842	16	11	0	262	1,131
2001	57	2,493	111	105	16	928	3,653
2002	53	1,892	65	34	12	356	2,359
2003	62	3,240	84	32	10	297	3,663
2004	46	2,618	169	410	91	1,423	4,711
2005	45	2,267	81	231	2	526	3,106
2006	41	1,641	94	34	7	641	2,418
2007	28	980	165	72	26	334	1,577
2008	37	1,502	91	35	4	295	1,928
2009	26	778	31	6	5	133	953
2010	37	1,657	93	59	8	275	2,091
2011	37	1,772	91	23	2	377	2,265
2012	38	1,172	37	19	7	190	1,425
2013	44	2,108	45	17	5	205	2,380
2014	36	972	150	4	2	237	1,366
2015	32	1,253	150	38	13	353	1,806
2016	26	366	27	3	0	167	563
20-Year Avg.	39	1,711	88	61	13	447	2,320
1997-06 Avg.	45	2,166	87	95	20	637	3,004
2007-16 Avg.	34	1,256	88	28	7	257	1,635
2017 [a]	35	1,174	82	16	5	230	1,508

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Year	Permits Issued	Sockeye	Chinook	Chum	Pink	Coho	Total
Ugashik District							
1997	28	2,785	169	39	23	311	3,327
1998	27	1,241	59	75	82	485	1,942
1999	25	1,365	35	5	0	271	1,675
2000	31	1,927	51	34	1	467	2,481
2001	24	1,197	61	8	2	357	1,624
2002	23	1,294	51	14	2	460	1,821
2003	23	1,113	31	30	0	392	1,567
2004	21	804	64	9	4	234	1,116
2005	22	818	27	18	2	249	1,114
2006	25	962	41	6	16	339	1,364
2007	17	1,056	43	88	79	281	1,546
2008	14	1,660	47	17	9	222	1,955
2009	15	1,061	33	4	41	131	1,270
2010	18	896	21	4	0	135	1,056
2011	15	531	15	3	2	136	687
2012	20	997	31	25	0	228	1,281
2013	14	537	19	10	0	106	672
2014	20	566	50	1	0	224	842
2015	20	935	53	8	0	217	1,214
2016	19	1,100	106	20	9	199	1,432
20-Year Avg.	21	1,142	50	21	14	272	1,499
1997-06 Avg.	25	1,351	59	24	13	356	1,803
2007-16 Avg.	17	934	42	18	14	188	1,196
2017 [A]	19	827	52	13	2	195	1,088
Nushagak District							
1997	538	25,080	15,318	2,056	218	3,433	46,106
1998	562	25,217	12,258	2,487	1,076	5,316	46,355
1999	548	29,387	10,057	2,409	124	3,993	45,969
2000	541	24,451	9,470	3,463	1,662	5,983	45,029
2001	554	26,939	11,760	3,011	378	5,993	48,080
2002	520	22,777	11,281	5,096	1,179	4,565	44,897
2003	527	25,491	18,686	5,064	403	5,432	55,076
2004	511	17,491	15,610	3,869	1,944	4,240	43,154
2005	502	23,916	12,529	5,006	793	5,596	47,841
2006	461	20,773	9,971	4,448	1,591	3,590	40,373
2007	496	25,127	13,330	3,006	430	3,050	44,944
2008	571	26,828	12,960	4,552	1,923	5,133	51,395
2009	530	26,922	12,737	4,510	355	6,777	51,300
2010	528	22,326	9,150	3,660	1,672	2,983	39,791
2011	525	28,006	12,461	3,055	230	5,746	49,498
2012	517	20,587	10,350	3,072	1,309	2,642	37,960
2013	584	30,283	11,602	4,368	206	7,717	54,176
2014	581	27,073	16,049	5,731	2,110	7,463	58,425
2015	591	25,240	12,117	2,953	295	5,644	46,248
2016	613	24,790	15,735	4,596	4,160	4,219	53,500
20-Year Avg.	540	24,935	12,672	3,821	1,103	4,976	47,506
1997-06 Avg.	526	24,152	12,694	3,691	937	4,814	46,288
2007-16 Avg.	554	25,718	12,649	3,950	1,269	5,137	48,724
2017 [a]	577	25,595	13,171	4,144	1,616	5,537	50,062

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Year	Permits Issued	Sockeye	Chinook	Chum	Pink	Coho	Total
Togiak District							
1997	31	1,440	667	380	0	260	2,747
1998	42	2,211	782	412	76	310	3,791
1999	76	3,780	1,244	479	84	217	5,804
2000	54	3,013	1,116	569	90	342	5,130
2001	92	2,576	1,612	367	61	388	6,590
2002	36	2,890	703	605	10	241	3,878
2003	92	2,357	1,208	483	451	883	7,428
2004	46	2,221	1,094	383	108	204	3,584
2005	45	2,299	1,528	301	26	295	4,448
2006	61	2,728	1,630	492	355	408	5,613
2007	48	2,548	1,234	420	19	110	4,332
2008	91	3,770	1,337	701	114	541	6,463
2009	40	2,220	827	365	5	272	3,689
2010	64	3,256	1,162	735	113	514	5,779
2011	68	3,462	966	497	42	545	5,512
2012	53	5,265	933	764	84	293	7,339
2013	64	3,695	691	375	33	208	5,002
2014	59	4,586	607	669	190	486	6,539
2015	48	2,387	876	312	23	650	4,249
2016	50	3,171	949	343	224	283	4,969
20-Year Avg.	58	2,994	1,058	483	105	372	5,144
1997-06 Avg.	58	2,552	1,158	447	126	355	4,901
2007-16 Avg.	59	3,436	958	518	85	390	5,387
2017 [A]	55	3,821	811	493	111	384	5,620
Total Bristol Bay Area							
1997	1,166	116,991	19,159	2,974	668	6,201	145,992
1998	1,234	113,560	15,576	3,792	2,349	8,093	143,368
1999	1,219	122,281	13,009	3,653	420	6,143	145,506
2000	1,219	92,050	11,547	4,637	2,599	7,991	118,824
2001	1,226	92,041	14,412	4,158	839	8,406	119,856
2002	1,093	81,088	12,936	6,658	2,341	6,565	109,587
2003	1,182	95,690	21,231	5,868	1,062	7,816	131,667
2004	1,100	93,819	18,012	5,141	3,225	6,667	126,865
2005	1,076	98,511	15,212	6,102	1,098	7,889	128,811
2006	1,050	95,201	12,617	5,321	2,726	5,697	121,564
2007	1,062	107,778	15,484	3,972	796	4,870	132,901
2008	1,178	103,583	15,153	5,710	2,851	7,627	134,924
2009	1,063	98,951	14,020	5,052	442	7,982	126,447
2010	1,082	90,444	10,852	4,692	2,627	4,623	113,238
2011	1,129	100,935	14,083	3,793	332	7,494	126,637
2012	1,107	100,728	12,136	4,007	1,874	3,837	122,582
2013	1,162	98,765	12,858	5,173	333	8,635	125,764
2014	1,158	99,008	17,417	6,677	2,689	8,984	134,775
2015	1,169	99,535	13,874	3,573	458	7,659	125,100
2016	1,128	83,349	17,757	5,216	4,740	5,476	116,537
20-Year Avg.	1,139	99,656	15,023	4,861	1,761	6,973	128,274
1997-06 Avg.	1,157	100,123	15,371	4,830	1,733	7,147	129,204
2007-16 Avg.	1,124	98,308	14,363	4,786	1,714	6,719	125,890
2017 [A]	1,145	96,277	14,808	4,929	2,019	6,918	124,952

Note: The sum of columns and rows may not equal the estimated total because of rounding. Harvests extrapolated over areas based on permits returned.

[a] 5-year average was used because data were not available at the time of publication.

Appendix A28.–Subsistence harvest of sockeye salmon by community, in numbers of fish, Kvichak River drainage, Bristol Bay, 1997–2017.

Year	Levelock	Igiugig	Pedro Bay	Kokhanok	Iliamna-Newhalen[a]	Nondalton	Port Alsworth	Other[b]	Total
1997	1,062	2,067	5,501	8,722	19,513	17,194	2,348	3,101	59,508
1998	2,454	1,659	3,511	10,418	16,165	13,136	2,678	3,635	53,656
1999	1,276	1,608	5,005	10,725	14,129	17,864	4,282	2,834	57,723
2000	1,467	1,981	1,815	7,175	6,679	11,953	3,200	2,720	36,990
2001	908	779	2,118	9,447	8,132	7,566	1,958	1,901	32,808
2002	625	2,138	2,687	9,847	9,417	5,508	1,201	1,578	33,001
2003	737	1,081	2,135	9,771	13,824	8,016	1,370	1,591	38,495
2004	1,000	1,026	4,803	11,869	21,652	8,789	2,455	1,631	53,225
2005	914	1,017	4,162	16,801	12,010	8,824	2,457	2,078	48,263
2006	0	1,252	4,319	19,028	11,487	8,885	2,418	2,461	49,850
2007	102	1,803	5,487	15,105	11,453	7,902	3,211	2,410	47,473
2008	30	1,558	4,884	14,755	13,569	8,916	3,307	2,544	49,563
2009	759	1,457	7,802	15,759	9,871	5,709	3,155	2,260	46,772
2010	940	2,901	5,609	13,973	8,815	3,185	3,250	2,015	40,688
2011	933	1,931	3,898	9,895	15,433	7,947	4,026	1,163	45,226
2012	750	2,608	4,028	16,530	12,933	9,247	4,420	1,855	52,370
2013	984	345	3,971	13,392	7,632	10,550	3,377	2,305	42,556
2014	1,170	513	3,999	6,440	11,388	9,004	4,296	4,206	41,016
2015	398	1,153	2,519	8,098	9,691	8,722	6,588	2,207	39,377
2016	1,265	297	2,036	7,087	9,900	2,320	4,196	3,548	30,649
20-Year Avg.	881	1,459	4,014	11,742	12,185	9,062	3,210	2,402	44,960
1997-06 Avg.	1,044	1,461	3,606	11,380	13,301	10,774	2,437	2,353	46,352
2007-16 Avg.	733	1,457	4,423	12,103	11,069	7,350	3,983	2,451	43,569
2017 [c]	913	983	3,311	10,309	10,309	7,969	4,575	2,824	41,194

Note: Harvests are extrapolated over areas for all permits issued, based on those returned. Harvest estimates based on community of residence and include fish caught only in the Naknek-Kvichak District.

[a] Includes Chekok.

[b] Subsistence harvests by non-Kvichak River watershed residents.

[c] 5-year average was used as current data were not available at the time of publishing.

Appendix A29.–Subsistence salmon harvest by community, Nushagak District, Bristol Bay, 1997–2017.

Year	Dillingham[a]	Manokotak	Aleknagik	Ekwok	New Stuyahok	Koliganek	Other [b]	Total
1997	23,255	3,988	1,989	1,797	6,427	4,179	4,598	46,233
1998	24,072	4,069	1,112	3,555	5,419	3,166	4,958	46,351
1999	26,502	3,413	1,532	1,805	4,556	2,772	5,389	45,969
2000	27,931	3,173	1,111	3,946	3,715	2,792	2,362	45,029
2001	26,435	3,700	2,129	2,218	7,294	2,209	4,096	48,080
2002	25,004	3,254	1,517	2,735	6,043	3,098	3,247	44,897
2003	26,955	4,214	2,044	2,291	10,817	5,721	3,034	55,076
2004	23,308	2,052	2,206	1,891	6,714	3,619	3,364	43,154
2005	21,898	1,576	1,795	1,388	9,673	8,422	3,088	47,841
2006	22,184	1,655	2,048	1,499	6,160	3,886	2,941	40,373
2007	25,237	2,442	1,382	1,267	8,284	3,054	3,278	44,944
2008	27,446	5,429	3,309	1,902	5,690	4,423	3,196	51,395
2009	30,184	2,068	2,646	2,345	6,855	3,700	3,502	51,300
2010	22,903	2,665	1,570	1,380	5,608	2,406	3,259	39,791
2011	26,850	1,433	3,016	1,805	7,980	3,539	4,875	49,498
2012	22,037	1,212	2,457	1,253	5,062	2,834	3,105	37,960
2013	26,302	1,375	2,368	2,448	11,104	7,290	3,290	54,176
2014	31,838	1,658	3,560	2,700	7,613	4,654	6,403	58,425
2015	26,049	2,946	2,186	1,618	2,860	2,085	8,504	46,248
2016	33,220	2,486	2,349	1,418	5,716	2,510	5,800	53,500
20-Year Avg.	25,980	2,740	2,116	2,063	6,679	3,818	4,114	47,512
1997-06 Avg.	24,754	3,109	1,748	2,313	6,682	3,986	3,708	46,300
2007-16 Avg.	27,207	2,371	2,484	1,814	6,677	3,649	4,521	48,724
2017 [c]	27,889	1,935	2,584	1,887	6,471	3,875	5,421	50,062

Note: Harvests are extrapolated over areas for all permits issued based on those returned. Harvest estimates are based on community of residence and include fish caught only in the Nushagak District.

[a] Includes Portage Creek, Clarks Point, and Ekuk.

[b] Subsistence harvests by non-watershed residents.

[c] A 5-year average was used because current data were not available at the time of publishing.

APPENDIX B: HERRING

Appendix B1.–Sac roe herring industry participation, fishing effort, and harvest, Togiak District, 1997–2017.

			Gillnet					Purse Seine				
Year	Number of Buyers	Daily Processing Capacity [a]	Fishery Dates	Effort [b]	Duration (hours)	Harvest [c]	Roe %	Effort [b]	Duration (hours)	Harvest [c]	Roe %	Total Harvest [c]
1997	18	4,200	5/2-5/6	336	24.0	5,164	11.8	231	6.4	18,649	9.4	23,813
1998	15	2,475	4/29-5/10	152	46.0	5,952	12.5	123	16.5	16,824	9.6	22,776
1999	12	2,400	5/18-5/26	171	28.0	4,858	11.5	96	4.7	14,368	9.2	19,226
2000	12	2,100	5/6-5/14	227	67.0	5,464	10.6	90	15.8	14,957	10.1	20,421
2001	11	2,255	5/6-5/13	96	84.0	6,491	10.6	64	26.0	15,879	9.2	22,370
2002	8	1,920	5/3-5/13	82	102.0	5,216	10.9	37	57.5	11,833	9.3	17,049
2003	7	1,920	4/25-5/7	75	142.0	6,505	10.9	35	110.2	15,158	8.9	21,663
2004	6	2,150	4/29-5/9	54	162.0	4,980	10.4	31	78.0	13,888	9.5	18,868
2005	8	2,330	4/30-5/8	56	149.0	5,841	11.2	33	83.0	15,071	9.6	20,912
2006	7	2,060	5/12-5/21	49	143.9	7,132	10.8	28	113.0	16,821	9.2	23,953
2007	5	1,420	5/10-5/25	25	366.0	4,012	11.2	21	244.0	13,120	10.0	17,132
2008	7	1,950	5/16-5/31	27	312.0	4,832	11.4	28	292.0	15,691	8.4	20,523
2009	6	2,015	5/16-5/31	32	314.0	4,140	10.2	21	266.0	12,967	10.3	17,107
2010	6	2,690	5/11-5/27	35	338.0	7,540	10.1	26	266.0	18,816	9.7	26,356
2011	5	2,413	5/8-5/31	25	318.0	5,907	12.1	22	268.0	16,970	9.6	22,877
2012	4	1,970	5/14-6/1	18	534.0	4,027	12.1	16	328.0	12,994	9.4	17,021
2013	6	2,675	5/11-5/28	37	408.0	8,244	10.9	26	224.0	19,366	9.0	27,610
2014	6	3,065	4/27-5/13	24	412.0	6,016	11.9	17	412.0	19,544	9.7	25,560
2015	4	1,880	4/27-5/11	6	328.0	1,156	11.1	16	328.0	20,240	11.3	21,396
2016	4	2,530	4/17-5/2	3	366.0	80	12.2	17	306.0	14,799	12.3	14,879
20-year Avg.	8	2,321		77	232	5,178	11	49	172	15,898	10	21,076
1997-06 Avg.	10	2,381		130	95	5,760	11	77	51	15,345	9	21,105
2007-16 Avg.	5	2,261		23	370	4,595	11	21	293	16,451	10	21,046
2017	4	1,900	4/28-5/12	15	342.0	1,342	12.0	19	195.0	15,787	11.4	17,129

[a] Number of short tons per day based on companies registered.

[b] Total vessels fished.

[c] Harvest total includes dead loss and test fishery harvest.

Appendix B2.–Exploitation of Togiak herring stock, 1997–2017.

Year	Biomass Estimate[a] (short tons)	S-O-K Herring Equivalent	Dutch Harbor Food/Bait	Sac Roe				Total Harvest	Exploitation Rate
				Gillnet[b]	Purse Seine[c]	Waste[d]	Total[e]		
1997	125,000		1,950	5,164	18,298	350	23,462	25,412	20.3%
1998	121,000		1,994	5,952	16,424	400	22,376	24,370	20.1%
1999	124,946	1,605	2,398	4,858	14,170	198	19,028	23,031	18.4%
2000	130,904		2,014	5,464	14,857	100	20,321	22,335	17.1%
2001	119,818		1,439	6,491	15,660	219	22,151	23,590	19.7%
2002	120,196	260	2,846	5,216	11,793	40	17,009	20,115	16.7%
2003	126,213	55	1,487	6,505	14,778	380	21,283	22,825	18.1%
2004	143,124		1,258	4,980	13,785	103	18,765	20,023	14.0%
2005	108,585		1,154	5,841	14,287	784	20,128	21,282	19.6%
2006	129,976		953	7,132	16,321	500	23,453	24,406	18.8%
2007	134,566		1,214	4,012	12,800	320	16,812	18,026	13.4%
2008	136,495		1,536	4,832	15,691		20,523	22,059	16.2%
2009	121,800		1,941	4,140	12,967		17,107	19,048	15.6%
2010	146,775		1,938	7,540	18,816		26,356	28,294	19.3%
2011	140,860		1,795	5,907	16,970		22,877	24,672	17.5%
2012	123,745		1,807	4,027	12,994		17,021	18,828	15.2%
2013	169,020		1,764	8,243	19,366	1,593	27,609	29,373	17.4%
2014	157,448		1,645	6,016	19,544	54	25,560	27,205	17.3%
2015	163,480		1,972	1,156	20,240	500	21,396	23,368	14.3%
2016	162,244		208	80	14,799		14,879	15,087	9.3%
20-year Avg.	135,310	640	1,666	5,178	15,728	396	20,906	22,667	16.9%
1997-06 Avg.	124,976	640	1,749	5,760	15,037	307	20,798	22,739	18.3%
2007-16 Avg.	145,643		1,582	4,595	16,419	617	21,014	22,596	15.5%
2017	130,852		1,270	1,342	15,787	466	17,129	18,399	14.1%

Note: Blank cells represent no data. SOK = spawn-on-kelp.

[a] Preseason forecast unless peak biomass estimate inseason exceeded preseason forecast.

[b] Includes bait harvest.

[c] Includes test fishery harvest.

[d] Aerial survey estimated waste.

[e] Does not include waste.

Appendix B3.–Age composition, by weight, of total inshore herring run, Togiak District, 1997–2017.

	Age Composition (%)						Spawning Biomass [a]
Year	≤4	5	6	7	8	≥ 9	(short tons)
1995	1	4	7	24	30	35	23,550
1996	[b]	3	5	7	21	64	94,051
1997	7	5	12	11	10	55	144,887
1998	[b]	4	5	10	11	70	9,872
1999	[b]	1	13	9	12	65	157,028
2000	[b]	1	2	17	16	63	93,214
2001	5	21	5	4	27	39	115,155
2002	1	25	28	4	5	36	61,377
2003	[b]	3	37	25	4	31	47,074
2004	[b]	[b]	3.8	43.7	24.6	27.5	53,625
2005	[b]	[b]	0.8	11	41.4	46.4	163,737
2006	1.8	5.4	2.8	5.4	25.9	58.7	179,580
2007	0.7	7.3	15.5	5.5	9.4	61.7	143,827
2008	6.2	9	14.6	15.5	8.1	46.5	136,839
2009	9.4	14.7	14.5	14.9	12.2	34	142,154
2010	1.4	16.1	18.1	13.2	13.2	38.3	146,913
2011	[b]	4	25.3	21.7	15.7	33.3	62,333
2012	0.5	6.6	16.9	35.8	17.6	22.7	167,738
2013	0.1	2	9.6	24.7	28.8	34.8	169,020
2014	0.7	4.3	9.6	23.5	27.6	34.3	203,267
2015	1.0	4.0	12.8	11.4	24.7	46.1	228,807
2016 [c]	-	-	-	-	-	-	136,993
2017	3.4	1.6	5.4	13.0	19.0	56.7	90,269

[a] Includes commercial catch, escapement, and documented waste.

[b] Contribution of age class is less than 0.5%.

[c] Age contribution of the commercial purse seine harvest (by weight) was used to represent the total run. Aerial surveys to determine abundance were hampered by poor weather conditions preventing estimation of total biomass estimate.

Appendix B4.–Preseason forecast (in short tons), aerial survey estimates of herring biomass (in short tons), and spawn deposition (in miles), Togiak District, 1997–2017.

Year	Preseason Forecast [a]	Biomass Estimate[b]	Spawn Estimate
1997	125,000	144,887	59
1998	121,000	9,872	33
1999	90,000	157,028	56
2000	130,904	93,214	46
2001	119,818	115,155	57
2002	120,196	61,377	32
2003	126,213	47,074	95
2004	143,124	53,625	36
2005	96,029	163,737	28
2006	129,976	179,580	18
2007	134,566	143,827	19
2008	134,516	136,839	49
2009	121,800	142,154	15
2010	146,775	146,913	8
2011	140,860	62,333	36
2012	123,745	167,738	31
2013	169,094	169,020	47
2014	157,448	203,267	92
2015	163,480	228,807	63
2016	164,247	136,993	43
2017	136,756	90,269	
20-year Avg.	130,787	115,762	44
1997-06 Avg.	126,093	79,983	55
2007-16 Avg.	135,481	151,541	34
2017	164,244	[c]	13

[a] Forecasts based on Age Structured Analysis.

[b] Dataset reviewed, fall 2017.

[c] Peak biomass estimate was not available during the commercial fishery and the harvest guideline was based on the preseason forecast.

Appendix B5.–Exvessel value of the commercial herring and spawn-on-kelp harvest, in thousands of dollars, Togiak District, 1997–2017.

	Herring			
Year	Sac Roe	Food/Bait	Spawn-on-Kelp	Total
1997	5,340	57	[a]	4,306
1998	5,352	0	[a]	3,986
1999	5,511	1,305	315	6,526
2000	3,718	0	[a]	4,000
2001	3,283	0	[a]	3,090
2002	2,264	228	[b]	1,900
2003	2,664	200	[b]	2,914
2004	2,077	582	[a]	2,659
2005	3,308	0	[a]	3,308
2006	3,168	0	[a]	3,168
2007	2,254	0	[a]	2,254
2008	2,748	0	[a]	2,748
2009	2,803	0	[a]	2,803
2010	3,481	0	[a]	3,481
2011	2,555	0	[a]	2,555
2012	3,698	0	[a]	3,698
2013	4,204	0	[a]	4,204
2014	1,394	0	[a]	1,394
2015	1,031	0	[a]	1,031
2016	1,521	0	[a]	1,520
20-year Avg.	3,119	119	315	3,077
1997-06 Avg.	3,669	237	315	3,586
2007-16 Avg.	2,569	0		2,569
2017	1,710	0	[a]	1,710

Note: Exvessel value (value paid to the fishermen) is derived by multiplying price/ton by the commercial harvest. These estimates do not include any postseason adjustments to fishermen from processors and should therefore be treated as minimum estimates.

[a] Fishery not conducted.

Appendix B6.–Guideline and actual harvests of sac roe herring (short tons) and spawn-on-kelp (pounds), Togiak District, 1997–2017.

	Gillnet Sac Roe			Purse Seine Sac Roe		
Year	Guideline[a]	Actual	% Difference[b]	Guideline[a]	Actual[c]	% Difference[b]
1997	5,464	5,164	-5	16,391	18,593	13
1998	5,280	5,952	13	15,840	16,824	6
1999	6,914	4,858	-30	20,741	14,368	-31
2000	5,738	5,464	-5	17,215	14,957	-13
2001	6,268	6,491	4	14,624	15,879	9
2002	6,288	5,216	-17	14,673	11,833	-19
2003	6,624	6,505	-2	15,457	15,158	-2
2004	7,568	4,980	-34	17,658	13,888	-21
2005	5,667	5,841	3	13,224	15,071	14
2006	7,059	7,132	1	16,471	16,821	2
2007	7,090	4,012	-43	16,544	13,120	-21
2008	6,864	4,832	-30	16,017	15,602	-3
2009	6,378	4,167	-35	14,882	12,404	-17
2010	7,772	7,540	-3	18,134	18,816	4
2011	7,442	5,907	-21	17,364	16,970	-2
2012	6,487	4,027	-38	15,135	12,994	-14
2013	9,017	8,244	-9	21,040	19,366	-9
2014	8,367	6,468	-23	19,523	19,544	0
2015	8,704	1,220	-86	20,309	20,374	0
2016	8,635	80	-99	20,148	14,799	-27
20-year Avg.	6,981	5,205	-23	17,070	15,869	-6
1997-06 Avg.	6,287	5,760	-7	16,229	15,339	-4
2007-16 Avg.	7,676	4,650	-39	17,910	16,399	-9
2017	6,883	1,342	-81	16,060	15,787	-2

[a] Harvest guideline derived from the preseason forecast or inseason biomass estimate when larger.

[b] Actual minus guideline divided by guideline multiplied by 100.

[c] Includes deadloss and test fishery harvest.

APPENDIX C: 2016 BRISTOL BAY SALMON OUTLOOK

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE

Sam Cotten, Commissioner
Scott Kelley, Director

Travis Elison, Naknek-Kvichak Manager
Paul Salomone, Egegik and Ugashik Manager
Tim Sands, Nushagak Manager
Matt Jones, Togiak Manager
Date Issued: April 4, 2016
Time: 3:00 pm

King Salmon Office
P.O. Box 37 King Salmon, AK 99613
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BRISTOL BAY
2016 OUTLOOK FOR COMMERCIAL SALMON FISHING

INTRODUCTION

This document provides general information to fishermen, processors, and the public, concerning the 2016 Bristol Bay salmon season. Included is the general framework for management of each of the five major districts and the 2016 salmon forecast.

During the season, Bristol Bay salmon fishing announcements are broadcast on marine VHF Channel 07A. Current fishing announcements are aired on local radio stations – KAKN and KDLG. As conditions in the fishery change, for the most current information, fishermen should stand by at regular announcement times: 9:00 a.m., 12:00 noon, 3:00 p.m., 6:00 p.m., and 8:00 p.m., unless otherwise stated. Information is also available via telephone; for east-side fisheries (Naknek-Kvichak, Egegik, and Ugashik), dial 246-INFO (4636), for west-side fisheries (Nushagak and Togiak) dial 842-5226. Fishermen are asked to note office hours at the Dillingham fish and game office will be 8:00 a.m. to 5:00 p.m. Monday thru Friday from June 2-June 17, and again beginning Monday July 25. From June 18 to July 22 weekday office hours will be the same as above, but weekend office hours will be from 8:00 a.m. until 12:00 noon. In King Salmon the office hours are as follows: June 1- 15 and after July 16: 8:00 a.m. to 12:00 p.m., and 1:00 p.m. to 4:30 p.m., closed for lunch and weekends. From June 16 to July 15: 8:00 a.m. to 4:30 p.m. 7 days per week.

Regarding district registration cards: **set gillnet** permit holders are only required to fill out and return setnet registration cards if they fish in the Nushagak District. At the December 2015 Board of Fisheries meeting the regulation regarding registration for drift gillnet permit holders was changed.

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Drift gillnet permit holders must fill out and return district registration cards prior to commercial fishing in any district in Bristol Bay. District registration cards will be available at the Anchorage, King Salmon, and Dillingham offices beginning May 1. In addition, PDF files of district registration cards are posted on the ADF&G Bristol Bay homepage and can be printed, completed, mailed to the address on the printout, or submitted to Anchorage, King Salmon, or Dillingham office personnel. District registration can also be accomplished online. During the 2016 season, catch, escapement, and announcements will be available at the same site: http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareabristolbay.salmon.

New for 2016 Port Moller genetics data will be posted at the following web site: http://www.bbedc.com/?page_id=1405 once the project becomes operational.

Fishermen and processors should be aware of the reporting requirements in **5 AAC 06.377 (b)** that state:

"Each commercial fisherman shall report, on an ADF&G fish ticket, at the time of landing, the number of Chinook and coho salmon taken but not sold."

Additionally, new reporting requirements for 2016 found in **5 AAC 39.130 (c)(2) and (17)** require that **when fishing as a dual permit operation, both CFEC permit numbers and signatures of the permit holders will be recorded on fish tickets when fish are delivered.**

2016 Regulatory Changes

The following regulations were adopted or modified at the December 2015 and March 2016 Board of Fisheries meetings in Anchorage:

- Vessel registration- Beginning June 1 all drift gillnet permit holders must register before fishing in any district in Bristol Bay.
- An exemption for minimum distances between units of gear when one set gillnet is operated seaward of another set gillnet that is operated under the authority of the same CFEC permit.
- The board modified the language in the Alagnak River Sockeye Salmon Special Harvest Area (ARSHA) Management Plan that allows for fishing periods to occur concurrently in the ARSHA and the Naknek-Kvichak District after escapement goals for sockeye and Chinook salmon have been met on the Alagnak River. It is unlikely a fishery will occur in the ARSHA in 2016.
- Closed waters of the Kvichak Section (north line) is now defined by those waters northeast of a line from a point near Graveyard Point at **58°52.07' N lat., 157° 00.80' W. long.** to a point on the northwest shore of Kvichak Bay at 58° 53.37' N lat., 157° 04.26' W. long.
- In the Nushagak District the board adopted GPS coordinates for all boundaries in the district. Changes were also made to portions of the Togiak District. Fishermen are strongly encouraged to familiarize themselves with the GPS data points prior to fishing in 2016. District maps are available on the ADF&G website at http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareabristolbay.salmon#maps or at the Dillingham and King Salmon offices.

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- In the Clarks Point area, **set gillnets located in the area from 58° 50.10' N lat., 158° 33.52' W long. to 58° 49.29' N lat., 158° 33.10' W long. will be permitted a maximum of 750 feet from the mean high tide mark, or to the minus three foot low tide mark, whichever location is closer to the mean high tide mark.**
- Nushagak subsistence areas and boundaries have been clarified.
- Nushagak coho salmon management plan has been changed.
- Wood River SHA management plan has changed to include an option to open the Wood River to commercial fishing when the Nushagak District is limited to 4.75 inch mesh to protect Nushagak sockeye salmon.
- In the Togiak District- Both the permit and the vessel are now restricted from fishing in the Togiak District if they are registered for any other district, and permits and vessels are restricted to Togiak District if they register there.
- A regulation was adopted that continuously opens subsistence salmon fishing above the commercial districts in the Ugashik, Egegik, and Naknek rivers.
- Lawful gear, dates, and area descriptions were amended for the subsistence fishery targeting spawning sockeye salmon "redfish" on Naknek Lake.

Alaska Wildlife Troopers – Summer 2016 Outlook – Bristol Bay

During the last few commercial fishing seasons in Bristol Bay, Alaska Wildlife Troopers have investigated numerous complaints of assaults and vessel ramming on the fishing grounds. Several investigations have resulted in criminal charges. Because of this, during the 2016 season the Alaska Wildlife Troopers will monitor and aggressively pursue all complaints of assaultive behavior during the fishery. **Alaska Statute 11.41.220(a)** defines, "**Assault in the third degree**. (a) A person commits the crime of assault in the third degree if that person **recklessly** places another person in **fear** of imminent serious physical injury by means of a dangerous instrument." Assault in the third degree is a **FELONY**. A 32 foot boat, a pike pole, a Victrinox knife or a deck brush could be considered dangerous instruments. In order to avoid the possibility of physical injury, lost fishing time, criminal and/or civil liability, the Alaska Wildlife Troopers implore fishers to think "Safety First".

Enforcement Priorities:

- Continued strong focus on fishing district lines and open period enforcement, particularly in the Naknek-Kvichak and Egegik districts using all available assets to include aircraft, rotorcraft, large and small enforcement vessels, and undercover fishing vessels.
- Routine boarding of drift gillnet and processor vessels to verify licensing and permitting regulations are met. Fishermen and processors are reminded that at the time of delivery of fish, a fish ticket must be generated and must include the signature of a company representative and the full name and signature of the CFEC permit holder (**BOTH permits if dual operation**). The permit holder must be present at the time of delivery in order to sign the fish ticket. Crew members cannot sign fish tickets for permit holders.
- Increased enforcement of state boating safety laws in cooperation with the US Coast Guard.
- Increased Alaska Wildlife Troopers (AWT) presence in the Ugashik and Togiak Districts.

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Bristol Bay Test Fishery

The Bristol Bay Test Fishery was scheduled to operate in 2016 to generate funds that would pay for core management programs that were not otherwise funded by the State budget. The test fishery was expected to generate $250,000 from salmon harvests this season. A competitive bid process was underway when the Bristol Bay Regional Seafood Association (BBRSDA) elected to provide the total amount of funding. The department has suspended plans to conduct the test fishery this season and thanks BBRSDA for their support. District test fishing for run assessment is still likely, particularly in the Naknek-Kvichak District.

SALMON OUTLOOK

BAYWIDE

The forecasted Bristol Bay sockeye salmon run for 2016 is approximately 46.6 million fish. Based on the forecast and using the midpoints of escapement goal ranges, 29.5 million fish are potentially available for commercial harvest (Table 1). The department manages fisheries based on inseason information regarding abundance. The inseason management approach uses a suite of tools to provide information on abundance in each district as each run develops and that information is used by the department to determine fishing opportunity.

The commercial salmon season in Bristol Bay opens June 1 by regulation. Fishing in eastside districts will be allowed using a weekly schedule that will vary by district. The schedules are in place to balance fishing opportunity with escapement in the early part of the season (particularly for Chinook salmon). As each run develops and sockeye salmon run characteristics become defined within individual districts, fishing time will be adjusted accordingly. In the Nushagak District, management of the Chinook salmon fishery will govern fishing time in the early part of the season, followed by directed sockeye salmon management as abundance dictates.

NAKNEK-KVICHAK DISTRICT

A run of approximately 23.2 million sockeye salmon is expected for the Naknek-Kvichak District in 2016. Based on the forecast, the projected harvest in the Naknek-Kvichak District is approximately 11.7 million sockeye salmon: 5.9 million from the Kvichak River, 2.7 million from the Alagnak River and 3.2 million from the Naknek River. Sockeye salmon returning to the Naknek-Kvichak District are predicted to be 33% age-2.2, 30% age-1.2, 28% age-1.3, and 9% age-2.3 fish.

The Naknek River escapement goal range is 800,000 to 2.0 million sockeye salmon. The Kvichak River escapement goal range is 2.0 million to 10.0 million sockeye salmon. Escapements will be managed within the lower or upper portions of the escapement goals proportional to the run size based on the preseason forecast and inseason assessment of run size.

Fishing in the Naknek-Kvichak District will be open 4 days per week from 9:00 a.m. Mondays to 9:00 a.m. Fridays, beginning 9:00 a.m. Wednesday, June 1 and ending 9:00 a.m. Thursday, June 23. Drift gillnet gear will be restricted to fishing in the Naknek Section only, while set gillnet gear will be allowed to fish in the entire Naknek-Kvichak District.

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From June 23 until July 17 fishing periods will be based on sockeye salmon escapements, abundance in the district, and gear group catch allocations. District test fishing for inseason management may be conducted periodically depending on run characteristics. As in previous years, some openings could occur on short notice.

A mesh size restriction of 5.5 inches or less will be in effect beginning 9:00 a.m. Wednesday, June 1 until 9:00 a.m. Friday, July 22, to help in the conservation of Chinook salmon.

EGEGIK DISTRICT

A forecasted run of approximately 7.4 million sockeye salmon is expected for the Egegik River in 2016. The escapement goal range is 800,000 to 2.0 million sockeye. Based on the forecast, the expected surplus potentially available for harvest is 5.7 million fish. Approximately 47 % of the run is expected to be age-2.3 fish, followed by age-2.2 (42 %), age-1.3 (7%), and age 1.2 (4%).

In 2016, separate gear openings and extensions will be used to adjust harvest in an attempt to achieve allocation percentages. Fishermen are reminded that regulation directs the department to avoid "to the extent practicable", continuous fishing with set gillnet gear in the Egegik District, and therefore Egegik set gillnet fishermen should expect breaks in fishing.

Based on the Kvichak River sockeye salmon forecast, fishing will begin in the full Egegik District. The season will start with a 3 day per week schedule that will be in effect through June 17. The primary reason for the 3 day per week schedule is to provide for Chinook salmon escapement. By emergency order (EO), commercial fishing will be allowed in the Egegik District from 9:00 a.m. Monday, until 9:00 a.m. Wednesday and from 9:00 a.m. Thursday until 9:00 a.m. Friday. This schedule will begin at 12:01 a.m. Wednesday June 1 and run through 9:00 a.m. Friday, June 17 for drift and set gillnet gear. After June 17, additional fishing time for both gear groups will be scheduled according to sockeye salmon run strength. As in previous years, some openings could occur on short notice. Periods will be adjusted to allocate harvest between drift and set gillnet gear groups.

In addition, subsistence fishing will be permitted in the waters of the Egegik commercial district from 12:01 a.m. Wednesday June 1 until 11:59 p.m. Friday, June 17. The department will consider additional directed subsistence openings, but will wait until inseason to announce the timing of those openings.

The department does not produce forecasts of the coho salmon run to the Egegik River. The parent year for the 2016 coho run was the 2012 escapement; however, because of weather conditions surveys were not flown, so no assessment of coho escapement for that year is available. In 2016, management of the fall coho fishery will be based on fishery performance and run strength indicators.

UGASHIK DISTRICT

The forecasted Ugashik River sockeye salmon run in 2016 is 5.0 million fish. The escapement goal range is 500,000 to 1.4 million sockeye. Based on the forecast, 3.8 million fish are potentially available for harvest. Approximately 74% of the run is expected to be age-1.2 fish, 10% age-2.2, 11% age-1.3, and 5% age-2.3 fish.

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The Ugashik District allocation plan specifies 10% set gillnet and 90% for the drift gillnet group. As in previous years separate gear openings and adjusting length of commercial periods will be used to address allocation between gear groups in 2016. A mesh size restriction of 5.5 inches or less will be in effect beginning 12:01 a.m. Wednesday June 1 until 11:59 p.m. Friday July 22, to help in the conservation of Chinook salmon.

Beginning 12:01 a.m. Wednesday June 1, commercial fishing in the Ugashik District will be allowed on a 9:00 a.m. Monday to 9:00 a.m. Friday schedule through 11:59 p.m. Wednesday June 22. With an expected run to the Kvichak River that exceeds the minimum escapement goal stipulated in regulation, fishing will begin in the full Ugashik District. Additional fishing time after June 22 will depend on fishery performance and run strength indicators. Permit holders should note that the regulation restricting opportunity to no more than 48 hours between June 16 and June 23 will not be in effect in 2016.

Management of the fall coho fishery will be based on fishery performance and run strength indicators. Assessment of the escapement is done with aerial surveys. The parent year for the 2016 coho run was the 2012 escapement; however, because of weather conditions surveys were not flown so no assessment of the coho escapement for that year is available.

At the March 2013 meeting the board made changes to when Area T permit holders may fish in the inner portion of the Cinder River Section (river and lagoon) and Inner Port Heiden sections. The board adopted proposals that would allow Area T permit holders to fish within the inner portion of the Cinder River Section and Inner Port Heiden Section during all months when open by regulation. For further information contact ADF&G in Port Moller at 907-375-2716. Area T permit holders who fish the Cinder River and Port Heiden sections and deliver their catch in the Ugashik District are reminded to report the section of catch on the appropriate fish tickets and note that transporting fish from the sections mentioned above to deliver in the Ugashik District is not permitted during July.

NUSHAGAK DISTRICT

Nushagak River Chinook salmon are managed according to the *Nushagak-Mulchatna King Salmon Management Plan* (**5 AAC 06.361**). This plan directs the commercial fishery to be managed for an inriver goal of 95,000 Chinook salmon. The department will closely monitor Chinook salmon escapement but does not anticipate any directed Chinook salmon openings in 2016.

The 2016 forecast for sockeye salmon in the Nushagak District is 10.4 million fish; 2.2 million for escapement and 7.8 million potentially available for harvest in the Nushagak District commercial salmon fishery. The total run by river system is Wood River 7.5 million (escapement goal range 700,000 to 1.8 million), Igushik River 1.1 million (escapement goal range 150,000 to 400,000), and Nushagak River 1.7 million (escapement goal range of 370,000 to 900,000). Approximately 50% of the forecasted run is expected to be age-1.2 sockeye salmon, < 2% age-2.2, 46% age-1.3, and < 1% age-2.3 fish.

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Management strategies for 2016 include: 1) directed Chinook salmon openings only if warranted by escapement, 2) Igushik Section sockeye salmon openings are likely to begin in the second week of June and will likely be set gillnet only until escapement or strong harvests dictate otherwise, and 3) begin fishing in the regular district in the third week of June with short openings. Openings will be scheduled based on sockeye salmon escapement levels in the Nushagak and Wood rivers. Mesh size will be limited to 5.5 inches or smaller unless Chinook salmon escapement is above expectations. If the Nushagak River sockeye salmon escapement decreases relative to expected escapements the department may first warn and then impose the 4.75 inch mesh restriction in the Nushagak District. Based on changes made by the Board of Fisheries in December 2015 the department would also open the WRSHA at this time. Subsequently, if Nushagak River sockeye salmon escapement falls below the expected 370,000 fish curve, then the department may limit fishing to only the WRSHA to protect Nushagak River sockeye salmon. Commercial openings in the district may follow as allowed by escapement levels in the Nushagak River. With the large forecast this year the department will try to provide early season opportunity in the Nushagak District. Contingent upon sockeye and Chinook salmon escapement, the department plans to begin fishing once Wood River sockeye salmon escapement exceeds 30,000 fish. This is a notable change from previous years when the department waited to reach 100,000 fish escapement on the Wood River before opening directed sockeye fishing in the commercial district.

Permit holders are reminded that there were significant changes made to the WRSHA management plan at the December 2012 Board of Fisheries meeting. The changes require separate gear type openings, and allocation will be done by a ratio of openings (3:1) for the different gear types. Other changes include restrictions regarding where and how set gillnets may be fished and the amount of gear allowed on board set or drift gillnet vessels. Please be sure you understand all regulations before participating in any fishing activities. Additionally the board changed a boundary line above the Muklung River at the 2015 board meeting.

Igushik River sockeye salmon will be managed independently of the Nushagak-Wood River sockeye salmon stocks. Permit holders should be aware that because of budget cuts the Igushik Tower will not be operated this year. Set gillnet fishing will begin in the Igushik Section when there is a market available. Initial openings will be 8 hours per day and additional time will be added if large harvests or escapement information indicate more time is warranted. Drift gillnet openings in the Igushik Section will be added as needed to control sockeye salmon escapement. Igushik River sockeye salmon returns can be quite variable relative to forecasted run strength. Management will incorporate a readiness to respond with increasing early set gillnet openings, and an attempt to maintain the 6% sockeye harvest allocated to the Igushik Section set gillnet group by only adding drift gillnet openings as needed.

The department will switch to coho salmon management around July 23 when sockeye salmon harvest decreases. Fishery performance and run strength indicators will be used to make management decisions regarding pink and coho salmon fishing opportunity.

District test fishing for inseason management may be conducted periodically depending on run characteristics. Permit holders interested in test fishing in the Nushagak District should contact Tim Sands in Dillingham at (907) 842-5227.

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TOGIAK DISTRICT

The 2016 total run of Togiak River sockeye salmon is forecast at 660,000 fish, an increase from the 2015 forecast of 610,000. The *Togiak District Salmon Management Plan* (TDSMP**, 5 AAC 06.369**) calls for sockeye salmon escapement of 150,000 fish past the counting towers located at the outlet of Togiak Lake. Based on the forecast, approximately 440,000 sockeye salmon will potentially be available for commercial harvest. Approximately 21% of the run is expected to be 2-ocean fish and 79% is expected to be 3-ocean fish.

Unlike other fishing districts in Bristol Bay that require emergency orders to announce fishing periods, Togiak District follows a regular weekly schedule that allows fishing in: Togiak Bay four days per week, fishing in Kulukak Section two and a half days per week, and fishing in Matogak, Osviak, and Cape Peirce Sections five days per week. Following the TDSMP, permit holders are restricted from fishing in the Togiak District until July 27 if they have fished in any other district in Bristol Bay, and conversely, restricts permit holders from fishing in any other district until July 27 if they have fished in the Togiak District. As previously mentioned, 2015 Board of Fisheries action now requires vessel transfers to be restricted in Togiak District similarly to the restriction of permit transfers. Other recent regulation changes prevent drift gillnet fishing effort near the Togiak River mouth through July 15, and restrict mesh size to 5.5 inches or smaller between June 15 and July 15 for the conservation of Chinook salmon.

Chinook salmon run strength in the Togiak River has been considered below average for several years. Anticipating another poor Chinook salmon run, permit holders can expect emergency orders to reduce the weekly fishing schedule in the last two weeks of June and a mesh size restriction through all of July.

Harvest of coho and pink salmon will be dependent on market presence. If a market for coho salmon is present, a conservative harvest strategy will be utilized due to the lack of information about the returning coho salmon run.

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Table 1.–Forecast of total run, escapement, and harvest of sockeye salmon returning to Bristol Bay River systems in 2016.

Millions of Sockeye Salmon							
	Total Run Forecast by Age Class						
DISTRICT River	1.2	2.2	1.3	2.3	**Total**	**Escapement**	**Total Harvest [a]**
NAKNEK-KVICHAK:							
Kvichak	4.30	6.09	1.25	1.06	12.69	6.34	5.87
Alagnak	1.78	0.07	3.73	0.15	5.72	2.86[b]	2.65
Naknek	0.94	1.44	1.41	0.98	4.76	1.40	3.18
Total	**7.02**	**7.59**	**6.38**	**2.18**	**23.17**	**10.61**	**11.71**
EGEGIK	**0.30**	**3.12**	**0.50**	**3.49**	**7.41**	**1.40**	**5.74**
UGASHIK	**3.67**	**0.48**	**0.54**	**0.26**	**4.95**	**0.95**	**3.82**
NUSHAGAK							
Wood	4.91	0.16	2.38	0.08	7.53	1.25	6.00
Igushik	0.13	0.02	0.93	0.01	1.00	0.28	0.77
Nushagak	0.14	0.00	1.48	0.00	1.74	0.64	1.04
Total	**5.17**	**0.19**	**4.78**	**0.10**	**10.36**	**2.16**	**7.82**
TOGIAK	**0.12**	**0.02**	**0.49**	**0.02**	**0.66**	**0.20**	**0.44**
BRISTOL BAY	**16.28**	**11.47**	**12.70**	**6.05**	**46.55**	**15.31**	**29.52**

[a] The projected harvest accounts for the inshore run of Bristol Bay sockeye salmon, excluding harvest in the South Peninsula commercial salmon fisheries. The South Peninsula harvest has averaged 3.7% of the total Bristol Bay sockeye production during the last five years and is forecasted to be 1.72 million in 2016.

[b] The escapement to the Alagnak was estimated based on exploiting the Alagnak stock at the same level as the Kvichak River stock.

APPENDIX D: 2016 TOGIAK HERRING OUTLOOK

ALASKA DEPARTMENT OF FISH AND GAME
DIVISION OF COMMERCIAL FISHERIES
NEWS RELEASE

Sam Cotten, Commissioner

Scott Kelley, Director

Contact:
Tim Sands, Area Management Biologist
Matt Jones, Assistant Area Biologist
Phone: (907) 842-5227
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Dillingham Area Office
546 Kenny Wren Road
Dillingham, AK, 99576
Date Issued: March 16, 2016
Time: 11:00 a.m.

2016 TOGIAK HERRING OUTLOOK

The 2016 Togiak District herring biomass is forecast to be 162,244 tons, very similar to the recent 10 year average spawning biomass. This forecast is based on an age-structured analysis (ASA) model that has been used since 1993. Herring ages 4–8 are expected to comprise 44% of the projected biomass, ages 9–11 are expected to make up 48% while the remaining 8% will be age 12+ fish. Average weight for age–7 and older herring should exceed 300 grams. The forecasted individual average weight of herring in the harvested biomass is 350 grams.

The commercial fishery and spawn timing is largely related to water temperatures experienced by herring on the spawning grounds. Additional factors related to timing include sea surface temperature and sea ice trends across the southeastern Bering Sea in the weeks prior to spawning. We track the average sea surface temperature and Bering Sea ice coverage in February and March, as we consider these variables a useful index of timing for maturing herring ultimately bound for spawning grounds in and around the Togiak District. Currently sea surface temperatures are much higher than we would expect at this time of year and the region of the Bering Sea that we believe has predictive power is ice free. Currently these conditions are so far from normal, we have little confidence in our ability to accurately forecast timing this year.

The Bristol Bay Herring Management Plan (**5 AAC 27.865**) sets a maximum 20% exploitation rate for the Togiak District stock. Based on the forecast of 162,244 tons, 32,449 tons of herring will be available for harvest in 2016. Harvest allocation, in accordance with the management plan will be:

Fishery	Harvest Allocation
Spawn-on-Kelp	1,500 tons
Dutch Harbor Food and Bait	2,166 tons
Togiak Sac Roe	28,782 tons
Purse Seine (70%)	20,148 tons
Gillnet (30%)	8,635 tons

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SAC ROE FISHERY

The management strategy for the Togiak herring fishery is designed to provide for maximum sustained yield while affording the greatest economic benefit. In 2016, sac roe fisheries will again be managed to maximize product quality through long openings which allow permit holders to make smaller sets and harvest the highest quality fish. Long openings also allow processors to have flexible control of harvest volume so that holding time between harvest and processing is optimal. Based on a preseason poll processing capacity is expected to be approximately 2,330 tons per day. This represents a 5% increase from the 2015 daily capacity of 2,200 tons per day. The preseason poll also indicates that 4 processors will participate in the Togiak sac roe herring fishery with a fleet size of 3 gillnet and 21 purse seine vessels. For the last decade, the department has opened the herring fishery as soon as threshold biomass has been documented and anticipates using this strategy again in 2016 to maximize fishing time. The department believes this strategy allows individual companies to maximize their processing capacity and decide what quality is suitable for their individual market.

Purse Seine

For at least the last decade, the seine fishery has operated as individual processor controlled fleets. Indications are that this will be the case again in 2016 and therefore, fishing time and area will be very liberal. This should allow purse seine vessels to locate high quality herring and fill their company's daily needs. This approach should result in fresher, higher quality roe, thereby maximizing product quality and value. The department will not be coordinating any test fishing efforts. As always, the department will work with processors that want to make test sets to monitor roe quality prior to the threshold biomass being documented.

Gillnet

Management of the gillnet fishery will be similar to past years. Ample fishing time and area will be allowed in an effort to take as much gillnet herring as possible. With only 3 permit holders expected to participate in 2016 it is clear that the whole gillnet quota will not be harvested. At the December 2015 Alaska Board of Fisheries meeting the board removed language from the Togiak herring management plan that tied purse seine and gillnet harvest together for the first 50% of the quota. With that language removed each gear type will be able to fish freely until their respective quotas are harvested. In 2016, the department will primarily focus the gillnet fleet in the area east of Right Hand Point. The department will consider opening areas west of Right Hand Point to the gillnet fleet if weather conditions are unfavorable in the eastern section. As in past years, the plan is to open the gillnet area to fishing when threshold biomass is documented. Processors and fishermen may organize test fishing to monitor product quality once the area is open to determine when to begin fishing. Until it is determined that commercial quality fish are present, participants should test cautiously with a small portion of gear to reduce waste.

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ADF&G OPERATIONS 2016

Beginning in late April or early May, current fishery information will be available by calling the telephone recorder in Dillingham at (907) 842-5226. Recordings will be updated regularly throughout the season as information becomes available. The department will conduct aerial surveys of Togiak District beginning in late April or early May, depending on weather conditions. The department will monitor marine VHF channel 7 from Dillingham and be available at the phone number listed at the top of this document. Fishing announcements and regular fishery updates will be communicated directly to each processor, published on the web, and distributed by fax and email.

Visit http://www.adfg.alaska.gov/index.cfm?adfg=cfnews.main to subscribe to herring fax and/or email updates and announcements. Harvest and fishery opening information will also be available at the Commercial Fisheries website at http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareabristolbay.herring_announcements.