Fishery Management Report No. 16-13

2015 Bristol Bay Area Annual Management Report

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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

FISHERY MANAGEMENT REPORT NO. 16-13

2015 BRISTOL BAY AREA ANNUAL MANAGEMENT REPORT

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The Fishery Management Reports series was established in 1989 by the Division of Sport Fish for the publication of an overview of management activities and goals in a specific geographic area, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Fishery Management Reports are intended for fishery and other technical professionals, as well as lay persons. Fishery Management Reports are available through the Alaska State Library and on the Internet: http://www.adfg.alaska.gov/sf/publications/. This publication has undergone regional peer review.

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ABSTRACT

The *2015 Bristol Bay Area Annual Management Report* is the 54th 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 2015 inshore sockeye salmon run of 59.1 million fish was 14% above the preseason forecast of 52.0 million fish. Sockeye salmon dominated the inshore commercial harvest, totaling 36.7 million fish of the 37.9 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 22.4 million fish. There was a total harvest of 57,000 Chinook; 1.1 million chum; 2,000 pink; and 38,000 coho salmon. The 2015 Togiak District herring preseason biomass forecast was 163,480 short tons. The purse seine harvest was 20,240 tons and the gillnet harvest was 1,156 tons. The combined harvest was 21,396 tons with an average weight of 406 grams and an average roe percentage of 11.3%. The Dutch Harbor food and bait fishery harvest was 1,972, bringing the total harvest for 2015 to 23,368 tons. All 2015 harvest data are considered final and are based on fish tickets.

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

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.

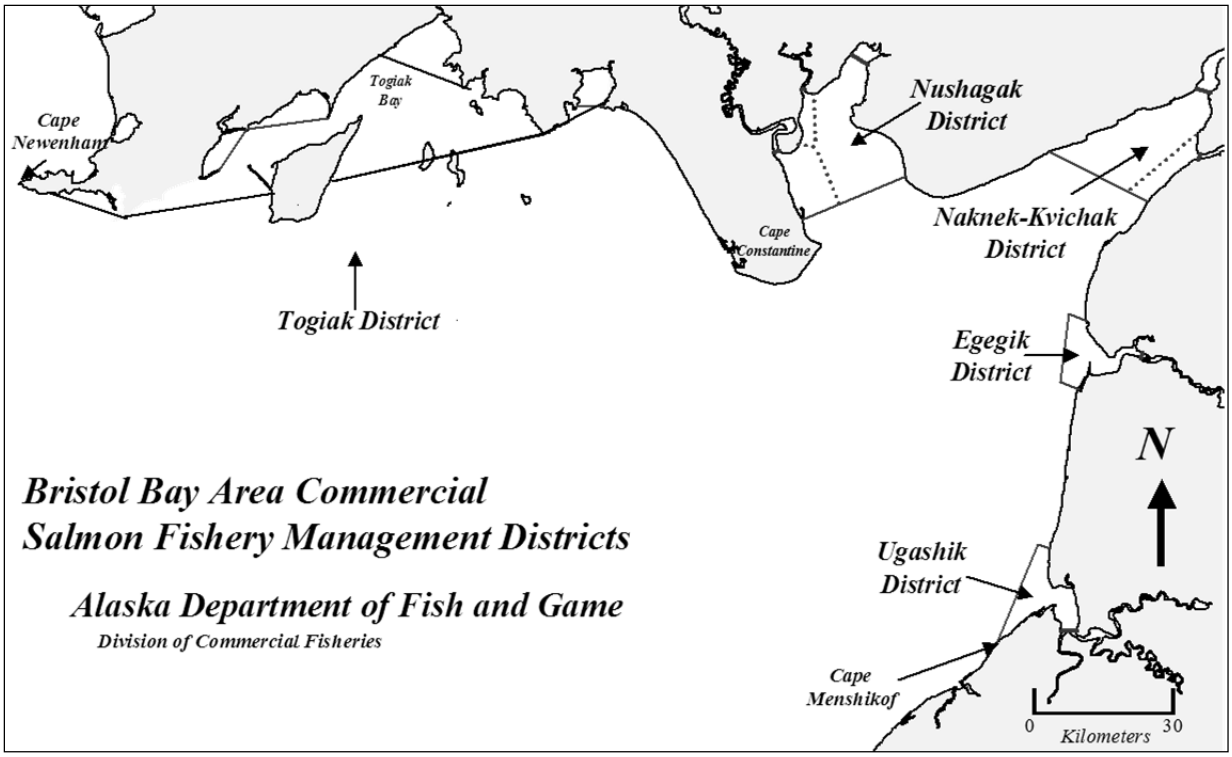

Figure 1.–Bristol Bay area commercial fisheries salmon management districts.

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 (1995–2014) averaged approximately 23.2 million sockeye, 55,000 Chinook, 936,000 chum, 415,000 (even-years only) pink, and 84,000 coho salmon (Appendices A3–A7). Since 1995, the value of the commercial salmon harvest in Bristol Bay has averaged approximately $112.0 million, with sockeye salmon being the most valuable, averaging $110.1 million annually (Appendix A24). Subsistence catches are composed primarily of sockeye salmon and average approximately 101,000 fish (Appendix A27). Sport fisheries harvest all species of salmon, with most effort 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 allowing 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 1,864 in Bristol Bay (Area T) of which 1,744 registered to fish in 2015. There are a total of 975 set gillnet permits in Bristol Bay, and 885 made at least 1 delivery in 2015 (Appendix A2).

2015 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 False Pass commercial 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.

Similar to recent years, with community support and funding from Bristol Bay Regional Seafood Development Association (BBRSDA), tower projects in Naknek, Kvichak, Egegik, Igushik, Ugashik, and Wood river systems started operations 5 days early in 2015 compared to traditional start dates for these enumeration projects. In 2015, BBRSDA funding also allowed some tower projects to run past their normal operational window in response to late run timing.

PRESEASON FORECASTS

Total inshore (excluding harvest in other areas) sockeye salmon production for Bristol Bay in 2015 was forecast to be 52.0 million (Table 1). The Bristol Bay sockeye salmon inshore harvest was predicted to reach 38.5 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 2015 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 to 2011 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, 2012 through 2014 and 2010 through 2014.

SOUTH UNIMAK/SHUMAGIN ISLANDS FISHERY

From 1975 to 2000 these 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 over 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 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 32 hour closures (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 2015 catch information for these fisheries can be found in Appendix A25.

PORT MOLLER TEST FISHERY

From 1967 to 1985, the Alaska Department of Fish and Game (ADF&G) operated a test fishery program based near the community of Port Moller. A large vessel fished gillnets at specific coordinates on transect lines 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. Although forecasting performance of the project was often inaccurate, the project was very 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 through voluntary funding from industry and support from ADF&G and the Fisheries Research Institute (FRI), the Port Moller test fishery project operated from 1987 through 2003. Beginning in 2004, the Bristol Bay Science and Research Institute (BBSRI) has operated the project and performed the bulk of daily inseason analysis. The project is currently operated jointly by ADF&G, BBSRI, and LGL Alaska Research Associates staff.

GENETICS

Over the last 15 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) provide managers with a preliminary estimate of stock compositions of fish returning to Bristol Bay through the Port Moller test fishery; and 2) 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 should be available before those fish reach the fishing districts of Bristol Bay.

ECONOMICS AND MARKET PRODUCTION

In 2015, exvessel value of the inshore commercial salmon harvest was estimated at $99.1 million (Table 3), 37% below the $135.6 million 10-year (2005–2014) average (Appendix A24). The 2015 average sockeye salmon price was $0.50/pound (Table 3).

During the 2015 season, a total of 37 processors/buyers reported that they processed fish from Bristol Bay (Table 4). Of those processors, 6 companies canned, 30 froze, 18 exported fresh, 1 cured salmon, and 11 extracted roe. Product was exported by air by 28 companies and exported by sea by 21 companies.

RUN AND HARVEST PERFORMANCE BY SPECIES

Sockeye Salmon

The 2015 inshore sockeye salmon run of 59.1 million fish was 14% above the preseason forecast of 52.0 million (Table 1). All districts had run sizes that were above forecast with the exception of Egegik District. Sockeye salmon dominated the inshore commercial harvest, totaling 36.7 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 2015 was: the latest run timing on record that was approximately 7 days late in every district, a market price that fell from $1.20/pound in 2014 to $0.50/pound in 2015, and a reduced average fish size across age classes.

Chinook Salmon

Chinook salmon harvests in 2015 were above the 20-year (1995–2014) averages in all districts except Ugashik and Togiak (Appendix A4). The 2015 baywide commercial harvest of 56,513 Chinook salmon was 3% above the 20-year (1995–2014) average of 55,000 fish (Appendix A4). The largest producer of Chinook salmon in the Bay, the Nushagak District, achieved a harvest of 49,945, above the 20-year (1995–2014) average of 44,000 fish (Appendix A4). The Nushagak River Chinook salmon escapement was 98,019, within the sustainable escapement goal range of 55,000–120,000 (Table 6).

Chum Salmon

In 2015, the commercial harvest of 1.1 million chum salmon was 17% above the 20-year (1995–2014) average of 937,000 fish. Chum salmon catches were above 20-year (1995–2014) averages in all districts except Togiak (Appendix A5).

Pink Salmon

Bristol Bay has a dominant even-year pink salmon cycle. In 2015, an off-cycle year, the baywide pink salmon harvest was 2,140 fish. In even-years, the largest run is in the Nushagak District, where the 20 year (1995–2014) harvests averaged 359,000 pink salmon (Appendix A6).

Coho Salmon

Commercial harvest of coho salmon was 37,210 fish, well below the 20-year (1995–2014) average of 84,000, largely because of a lack of market interest in Nushagak District; typically the largest coho salmon run in Bristol Bay. The largest commercial harvest was in the Togiak District, where 26,080 fish doubled the 20-year (1995–2014) average of 13,000 coho salmon (Appendix A7). Nushagak River coho salmon escapement was not monitored in 2015.

SEASON SUMMARY BY DISTRICT

Naknek-Kvichak District

The 2015 total run forecast for the Naknek-Kvichak District was 28.8 million sockeye salmon composed of a projected 9.4 million for escapement and 18.3 million for harvest. The forecast by river system was 14.8 million for the Kvichak River, 1.2 million for the Alagnak River, and 11.7 million for the Naknek River (Table 1). The new escapement goal for Naknek River is a range of 800,000 to 2.0 million. The escapement goal for the Kvichak River is unique; because it has a range of 2.0 to 10.0 million with a maximum exploitation rate of 50% on run sizes between 4.0

million and 20.0 million. Therefore, the lower bound of the Kvichak River escapement goal is adjusted based on the preseason forecast and one time at the midpoint of the run based on inseason catch and escapement data. The total inshore run to the district for 2015 was 31.6 million sockeye salmon with a commercial harvest of 16.5 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 current 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.

Fishing with drift gillnets was restricted to the Naknek Section when the fishery first opened, and the set gillnet fleet was allowed to fish the whole district. Fishing periods during the first 2 weeks of June were from 9:00 AM Monday until 9:00 AM Friday, beginning 9:00 AM Monday, June 1 and ending 9:00 AM Friday, June 12. During the third week of June the set gillnet fleet fished from 9:00 AM Monday, June 15 until 9:00 AM Friday, June 19. From June 15 through June 19 the drift gillnet fleet fished in the Naknek Section only during periods that were announced preseason and were based around each high tide. There were 8 periods during this week ranging from 7 hours to 8.5 hours (Table 7). The intent of putting the drift gillnet fleet on predetermined fishing periods during the third week of June was to reduce boundary line fishing, improve enforcement coverage during open periods, and allow some fish to get by the drift gillnet fleet.

The Naknek-Kvichak District opened at 9:00 AM Monday, June 1; however, the first deliveries did not occur until June 11 (Table 8). During the week of June 15, a total of 12,890 sockeye salmon were harvested. Following the closure on June 19, subsequent fishing periods were based on inseason indicators of abundance for the Naknek and Kvichak rivers.

Escapement counting towers for Naknek and Kvichak rivers were operational during the 2015 season. The Naknek River tower began counting on June 14 and the Kvichak River tower began on June 15, which is 5 days earlier than normal for each project (Table 9). The Naknek River escapement was 1.9 million sockeye salmon and the Kvichak River escapement was 7.3 million sockeye salmon, which was within the escapement goal ranges for each river (Appendix A1).

With an 11.7 million sockeye salmon forecast for the Naknek River there was concern about escapements exceeding the upper bound of the new escapement goal range (2 million). The preseason management strategy was to allow liberal fishing time in the Naknek Section as soon as a volume of fish was detected moving into the district. Through June 24, daily escapements on the Naknek River were slowly increasing and following the expected escapement goal curve (Table 9). The fleet was put on short notice with the earliest possible fishing period on the morning of June 25. However, test fishing in the district on June 24 was slow and the Port Moller test fishery genetic stock composition results from June 10 to June17 estimated only 0.8% Naknek River sockeye salmon in the sample. The fleet was notified on the morning of June 25 that the district would remain closed until further notice. Test fishing continued each day with low indices until the evening of June 26 when indices were high; however they fell off the following morning. Daily escapements on the Naknek River were low on June 25 and June 26 then increased to 68,292 on June 27, pushing the cumulative escapement toward the upper bound of the expected escapement goal curve. The next fishing period occurred on June 28 with both sections open to set gillnets and the drift fleet restricted to the Naknek Section. This period resulted in a catch of 80,863 sockeye salmon, which was far below expectations. Similar fishing

periods occurred with 1 period per day through July 3. Catches ranged from 136,000 to 506,000, which were all below expectations (Table 8).

By July 3, the observed catch and escapement in the district was 7 million fish behind the forecasted total run curve. It was apparent that the run was at least several days late, but it also appeared to be well below forecast. There were abnormally high water temperatures in Northern Gulf of Alaska in the winter and spring of 2015. Additionally the water temperature in Kvichak Bay was recorded as high as 16°C by test fishing boats. There were 2 possible explanations related to water temperature that could explain the observed run to date. First, high water temperatures in the winter and spring could have created poor conditions and resulted in low survival of returning sockeye salmon. Second, the high nearshore temperatures in Bristol Bay could result in slower migration speeds and very late run timing. The second explanation was partially supported by high indices at the Port Moller test fishery, but low catches and escapements in the district.

On July 4, the Naknek River escapement was tracking within the lower portion of the escapement goal curve and the Kvichak River escapement was tracking below the 2 million minimum escapement goal curve. The allocation was 11% Naknek set, 16% Kvichak set, and 73% drift. Regulation specifies 8% Naknek set, 8% Kvichak set, and 84% drift. With escapement to the Kvichak River lacking and Kvichak setnet allocation twice as high as regulation, the Kvichak section was closed to both gear groups and the Naknek Section was opened to both gear groups for 1 tide on July 4. Fishing was closed in the entire district on July 5. On July 6, the Kvichak River escapement goal was adjusted from the preseason escapement goal of 7.7 million, based on a forecasted run of 15.4 million, to the inseason goal of 2.4 million, based on catch and escapement to date and assuming run timing of 2 days late. Fishing resumed on the evening of July 6, with the set gillnet fleet fishing only the flood tide in both sections, and the drift fleet restricted to the Naknek Section, but fishing the flood and ebb tides. This period was designed to conserve Kvichak River sockeye salmon by closing set gillnet fishing on the ebb tide and also to help balance the allocation because the drift fleet was well behind. The results from reduced fishing was 160,116 escapement on July 6 in the Naknek River, bringing the cumulative to 743,328, which is just below the lower bound of the escapement goal range and an escapement of 493,008 on July 7 in the Kvichak River bringing the cumulative escapement to 1.55 million (Table 9). Through July 6, the allocation was 11% Naknek set, 14% Kvichak set, and 75% drift.

On the morning of July 7, the district test boat was fishing near Halfmoon Bay in the Kvichak Section with consistently good sets of 300–600 fish per 10 minute drift. The test boat made a set on the high slack near the shore and caught approximately 1,900 fish. By the afternoon of July 7, the lower bound of the Naknek River escapement goal had been exceeded and the Kvichak River escapement was at 1.3 million with another 600,000 estimated inriver, based on the inriver test fishery (Table 10). With the minimum escapement goal met for Naknek River and the minimum escapement nearly met for the Kvichak River, it was announced that both sections would open to set gillnet fishing for a 20.5 hour period starting at 5:00 PM on July 7. It was also announced that the drift fleet would fish during a 7.5 hour period in the Naknek Section starting at 5:00 PM on July 7, followed by an 8.5 hour period in the entire Naknek-Kvichak District starting at 5:00 AM on July 8. At noon on July 8 it was announced that set gillnet fishing in both sections would be extended for 24.5 hours and the drift fleet would fish the next tide in the Naknek Section only and fish in the entire district on the following tide. On the morning of July 8 the Kvichak inriver estimate was 700,000 based on the inriver test fishery (Table 10). An aerial survey was flown

mid-day and resulted in an inriver estimate of 800,000. Hourly escapement at the tower was over 20,000. With increased escapement estimates for the Kvichak River, it was announced at 3:00 PM on July 8 that the previously announced period for drift gillnet gear in the Naknek Section would be expanded to the entire district. The harvest from July 8 was just over 1 million fish. This nearly doubled the previous highest daily harvest of 506,000 from July 3 (Table 8).

Set gillnet fishing was open continuously beginning with the period that started on July 7 using daily period extensions until July 11 when set gillnet fishing was opened until further notice (Table 7). From July 9 to July 13 the drift gillnet fleet fished each high tide, however periods alternated between the Naknek Section only and the entire district. From July 14 to July 17 the drift gillnet fleet fished each high tide in the entire district. On July 17, both drift and set gillnet gear was opened to continuous fishing until July 27 when the fall schedule went into effect. Daily harvest exceeded 900,000 fish from July 8 to July 17 (Table 8).

The total inshore run to the district for 2015 was 31.6 million sockeye salmon with a commercial harvest of 16.5 million (Table 1). The escapements were 1,920,954 on the Naknek River and 7,349,712 on the Kvichak River (Table 9). An aerial survey estimate of 2,263,000 on the Alagnak River was expanded consistent with Clark (2005) and resulted in a total drainage escapement estimate of 5,770,650 (Appendix A11).

The total harvest of 16.5 million sockeye salmon was 219% above the 20-year (1995–2014) average of 7.6 million and it was the largest catch since 1995 (Appendix A3). The sockeye salmon harvest allocation was 8% Naknek set, 8% Kvichak set, and 84% drift (Appendix A9). The midpoint of the sockeye salmon run into the district was July 12, which was 7 days later than average. This was the second latest run timing on record. In 1956, the run was 8 days later than average.

The Chinook salmon total harvest was 2,813 fish, which was above the 20-year (1995–2014) average of 1,889 fish and was the highest reported catch since 1997 (Appendix A4). The chum salmon harvest totaled 350,152 fish, which was above the 20-year (1995–2014) average of 172,157 (Appendix A5). There was a commercial harvest of 112 pink salmon and 1,230 coho salmon (Appendices A6 and A7).

Egegik District

The 2015 Egegik District harvest of 8.7 million sockeye salmon was 18% below the projected harvest of 10.6 million sockeye (Table 1) and was the fifth largest in the last 20 years (Appendix A13). The sockeye salmon escapement of 2.2 million fish was above the newly adopted the sustainable escapement goal (SEG) range of 800,000–2.0 million. (Appendix A1). With an inshore total of approximately 10.8 million fish to the Egegik District, the 2015 run ranks fifth over the last 20 years and was 14% below the forecast of 12.5 million fish (Table 1; Appendix A13). In 2015, the midpoint of the sockeye salmon run was July 9, or 6 days later than the 20-year average of July 3 and one of the latest on record.

The preseason projection for a Kvichak River run that would provide for the minimum escapement of 2.0 million sockeye salmon allowed commercial fishing to begin in the full Egegik District. The district opened to commercial salmon fishing for a set schedule of 3 days per week on Monday 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 12 (Table 7). For the week of June 14, fishing with set gillnets was allowed an additional Monday to Wednesday iteration of

the schedule that ended Wednesday June 17, and the drift fleet was allowed a 6 hour drift period on Monday, June 15. After those dates both fleets went to an active management scenario and additional fishing time was based on inseason indicators. First deliveries were recorded June 2 (Table 11). Catch was small and remained so through the end of the early season schedule. Through June 17, the total catch was just over 66,000 fish.

In response to early run timing in 2013, with strong community support and funding through the Bristol Bay Regional Seafood Development Association (BBRSDA), the Egegik counting tower was deployed and operational 6 days earlier than normal on June 12, 2015. Estimated escapement for the first 6 days of operation (through June 17) totaled 40,000 fish, ahead of historical run-timing curves but suggested low levels of abundance (Table 12).

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 12). Initial catches from the test fishery did not indicate large numbers of fish were moving into the Egegik River.

The district reopened to both gear groups for 8 hours on June 18 and again June 19 (Table 7). Combined harvest was over 91,000 fish. Cumulative catch through June 19 was 158,000 and cumulative escapement was 90,000 (Tables 11 and 12). With escapement occurring and tracking ahead of expected curves additional fishing time was justified and 8 hour periods were permitted June 20, 21, and 22 for the set gillnet group. The drift gillnet group was permitted to fish 8 hours on June 21. Through June 22 cumulative catch was 260,000 fish and cumulative escapement was 152,000 sockeye salmon and roughly 3 days ahead of anticipated curves.

With escapement progressing ahead of expectations fishing was permitted for both gear groups on June 23. Catch was 72,000 the highest of the season to date and indicative of increasing volume within the district. Additional fishing time was permitted on June 24 for both gear groups resulting in a harvest of 42,000, tower counts on June 24 were 40,000 and still tracking ahead of the expected curve for the date (Table 12). With escapement several days ahead of expectations a 6 hour drift and two 8-hour set gillnet periods were scheduled for June 25. At the end of the day's fishing cumulative harvest was 449,000 fish and cumulative escapement was 239,000 sockeye salmon.

On June 26 two 6-hour drift and one 8-hour set gillnet period produced a harvest of 136,000, the first day of the season over 100,000 fish were harvested and because escapement was tracking ahead of anticipated levels fishing was permitted for 2 tides a day for both gear groups except for single tides for the drift group on June 27 and 30 to allow fish to distribute within the district. During this period harvest averaged 167,000 fish per day. Through June 30 the cumulative harvest was 1.5 million with cumulative escapement at 470,000 sockeye salmon, an average of 41,000 per day and almost 60% of the lower end of the escapement goal range.

On July 1 harvest surpassed 300,000 fish for the first time. In order to ensure escapement from this segment of the run fishing was allowed on a 1 tide per day basis from July 1 to July 5 except for 2 tides for the drift fleet on July 4. Escapement averaged 102,000 sockeye for these 5 days and the lower end of the escapement goal range (800,000) was surpassed on July 4 when the daily escapement of 109,000 brought the cumulative escapement to 834,000 sockeye salmon.

The pace of escapement continued and on July 6 and July 7 fishing time was extended to 2 tides per day for both gear groups (Table 12). Up to this point in the in the run, the inseason indicators

did not support that the forecast would be achieved. The cumulative harvest and escapement suggested the run would fall short of the 12.5 million forecast by a substantial amount. Through July 7 the cumulative escapement was 1.1 million and cumulative harvest was 3.4 million. Using July 3–4 as the average midpoint of the run, an average run timing model suggested a total run in the range of 7–8 million fish.

Because escapement was still progressing ahead of expectations, fishing was permitted for 2 tides per day with both gear groups to control fish movement upriver. On July 10 the drifters were permitted to fish 2 short 4 hour periods on the ebb, to guard against a large escapement event but also to allow fish to redistribute within the district. The strategy appeared effective as escapement dropped to 7,000 on July 9. However, on July 9 commercial harvest in the district topped 630,000 fish, the highest of the year and very late in the season for a catch of such magnitude. With 2 tides per day fishing for both gear groups, from July 10 to July 20 catches remained very strong averaging 349,000 per day. Escapement averaged 74,000 per day for the same time period, with the highest daily value of the year (162,000) occurring on July 19. On July 22 harvest dropped below 100,000 fish with a catch of 81,000. By regulation, the fall schedule of 9:00 AM Monday to 9:00 AM Friday begins on July 17. By regulation, the district is closed on weekends but because there was a harvestable surplus, the fishery was allowed to remain open on the weekends of July 18–19 and July 25–26 with the effect that fishing was allowed continuously from July 17 to July 31.

The late surge of fish was unusual in magnitude and timing. The long term average cumulative harvest for July 10–20 is 952,000, but in 2015 it was 3.8 million fish. The escapement project usually finishes around July 18, but is dependent on run timing for termination. In 2015, the project was extended until July 25, thanks to funding from the BBRSDA, and at 6 weeks, the total time is the longest single season operational period for the project since 1995. Long term average cumulative escapement for the Egegik River between July 10 and July 20 is 302,000 sockeye salmon. In 2015 it was 816,000, with an additional 183,000 occurring between July 21 and July 25. The count on the last full day of operation was 37,000 sockeye, approximately 2% of the cumulative through that date and still very strong for the time of year. Through July 25, cumulative escapement was 2.2 million sockeye salmon, above the upper end of the escapement goal range (Table 12).

Additional factors that impacted the fishery: first, with the announcement of the base price ($0.50/lb) around July 18 many fishermen were disappointed by the offering and stopped fishing, even though there were still significant surpluses of fish in all districts. Second, as the run developed late and was performing below expectations, some processors began to send crews and tenders home around July 8. When the late surge arrived, those companies did not have enough staff to keep up with harvest and as a result some fishermen were placed on limits, which in some cases persisted until the company ceased operation for the season. Third, many fishermen simply ran out of the time that they had allotted to fish for the season. All 3 of these conditions contributed to large escapements at the end of the run.

The 2015 Egegik run was below forecast and exhibited very late run timing; the midpoint was July 9 compared to the 20-year average of July 3. By July 17, cumulative catch was 8.7 million salmon and cumulative escapement was 2,160,792 sockeye salmon (Tables 11 and 12).

The 2015 Egegik sockeye salmon run was composed of mostly 2 and 3-ocean fish, which came from the 2010 and 2011 escapements of 927,000 and 960,000 fish respectively (Table 13 and

Appendix A10). Based on scale data approximately 65% of the run was aged 2.2 fish from the 2010 brood year. These fish were among the smallest mature fish on record averaging between 4.5 and 5 lb for most of the season.

Commercial fishermen harvested approximately 79% of the Egegik 2015 inshore sockeye salmon run, compared to the average of 83% for the last 20 year period (Appendix A13). Peak tower counts occurred July 2, 5, and 19 with 129,594, 144,756, and 161,970 sockeye salmon counted, respectively (Table 12). During the period from June 16 to July 17 in 2015, a total of 319.75 hours were fished by the drift gillnet group (10 hours more than 2014) and 454.25 hours were fished by the set gillnet gear group (55.5 hours more than in 2014), equating to 42% and 60%, respectively, of the 753 available hours (Table 11). By the end of the allocation period on July 17, harvest allocations were 82% drift and 18% set gillnet (Appendix A9). Regulation specifies 86% drift and 14% set.

The large amount of fishing time for the set gillnet fleet and the resulting harvest percentage is because the set gillnet fleet had a higher harvesting efficiency than the drift fleet. In 2014, fish size was small and, in 2015, much of the set gillnet fleet adjusted to add mesh size smaller than 4.75 inch mesh to their stock of nets to increase their harvesting options. The drifters were not as quick to react and add smaller mesh sizes to their net caches to the same extent the set gillnet fleet did, thus were not as effective at controlling escapement of the small fish seen in 2015 as the set gillnet fleet. Because managing the escapement is first priority, and the set gillnet fleet was more effective at harvesting the small fish available, they were allowed to continue fishing in spite of discrepancies in the allocation.

Commercial harvest of other salmon species in the Egegik District was 70,289 fish, or about 0.08% of the total (Table 11). The reported Chinook salmon harvest was 597 fish, 13% below the 20-year average of 732 fish (Appendix A4). The district chum salmon harvest of 68,972 fish was 5% above the 20-year average of 66,000 fish (Appendix A5). No pink salmon were reported in the harvest (Appendix A6). The coho salmon harvest of 730 fish is 96% below the 20-year average of 17,000 fish (Appendix A7).

In summary, the 2015 harvest of 8.7 million sockeye salmon in the Egegik District ranked fifth out of the last 20 years, was 30% above than the 20-year average of approximately 6.9 million fish, and was 14% below the preseason forecast (Table 1; Appendix A13). The fishery harvested 79% of the run into the district compared to the 20-year average of 83% (Appendix A13). The midpoint of the run was July 9, which was 6 days later than the 20-year average and the latest run on record. Peak effort occurred on July 4, when 475 drift gillnet vessels made deliveries in the district including 87 dual permits (Table 14). There were 14 processors registered to purchase fish in the Egegik District this season (Table 4).

Ugashik District

The 2015 inshore sockeye salmon run to the Ugashik District of 7.0 million fish ranks second in the last 20 years (1995–2014) and was 98% above forecast (Table 1; Appendix A14). The midpoint of the run was July 10, coinciding with the 20-year average of July 10. The commercial sockeye salmon catch of approximately 5.5 million fish was 55% above the 20-year average and ranked first for the same period (Table 15; Appendix A3). Sockeye salmon escapement to the Ugashik River totaled 1,564,638; and was above 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) on Monday June 1 by EO (Table 7). Initial landings occurred on June 9 (Table 15). Because the preseason forecast for the Kvichak River allowed all fishing districts to start the season in their full areas, the schedule of 4 days per week was continued until June 12 when fishery management switched to a tide-by-tide basis (Table 7). Fishermen were advised that additional fishing time would depend on inseason indicators of abundance.

Catch through June 12 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 stayed closed the weekend of June 13–14.

The district was opened to set gillnet only fishing on June 17, June 20, and June 23 to gain some insight about levels of abundance within the district. Combined harvest was 14,000 fish with low effort on June 17 and July 20, but with most of the set gillnet fleet participating on July 23. This level of harvest combined with effort demonstrated low, but increasing abundance within the district.

Initial information from the Ugashik District inriver test fishery became available on June 23 (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.

On June 25, a 6 hour drift and 9 hour set gillnet opener resulted in a combined harvest of 31,000 fish which is near the 20-year average of 37,000 for the date (Table 15). Meanwhile inriver test fishery indices showed low passage (Table 16). Considering this information the district remained closed on June 26 but both gear groups fished on June 27; the drift fleet for 7 hours and the set gillnet fleet for 9 hours. Combined harvest was 77,000, demonstrating an increase in abundance within the district.

The escapement tower project, operating about 24 miles upstream of Ugashik Village, started counting on June 26 and ended the day with an estimated passage of 7,182 fish (Table 16). On June 27 and June 28 tower counts were 18,000 and 33,000 contributing to a cumulative escapement of 59,000 sockeye salmon which is several days ahead of anticipated escapement curves for the date and justification for additional commercial fishing time

Inriver test fishery indices increased beginning on June 26, and continued trending upward June 27 and June 28, indicating increased passage into the Ugashik River and resulting in 7 hour drift and 9 hour set gillnet periods on June 27 and June 28 (Table 16). On June 29, the drift fleet was allowed an additional hour, resulting in 8 hour drift and 9 hour set gillnet periods (Table 15). Cumulative harvest over the 3 days was 244,000 fish. On June 30, both fleets were allowed to fish 9 hours with a harvest of 110,000 fish, but the inriver test fishery indices dropped so the district was closed on July 1 for escapement and to allow fish to redistribute within the district.

On July 2, the inriver test fishery numbers rebounded somewhat and the drift gillnet fleet was allowed a 6 hour period to balance the allocation. Harvest was 121,000 fish, the largest of the season to date and an indication that abundance was increasing. Through July 2 the cumulative catch was 519,000 and cumulative escapement was 182,000, with several days of moderate passage still inriver and yet to reach the counting tower project (Tables 15 and 16). Also on July 2, inriver test fish indices increased, which prompted a 6 hour drift and 9 hour set gillnet period for July 3. Harvest from this period was 180,000 fish. Through July 3 cumulative escapement

was 245,000 sockeye salmon and was tracking 1 to 2 days ahead of pace to reach the upper end of the escapement goal range.

With escapement pacing ahead of anticipated curves, fishing was permitted for both gear groups for 1 tide per day from July 4 through July 8; harvest and drift effort levels increased, averaging 285,000 fish per day harvests with an average of 147 deliveries. Through July 8 cumulative harvest was 2.1 million fish. During the same time, escapement continued to pace ahead of expectations averaging 43,000 fish per day with cumulative escapement of 457,000 sockeye salmon, slightly below the lower end of the escapement goal range. Beginning July 6, inriver test fishery indices increased and stayed strong for 5 consecutive days (Table 16).

Considering escapement was tracking ahead of anticipated values and inriver test fishery indices detected increased passage into the Ugashik River, fishing opportunity was liberalized to 2 tides per day on July 9 and July 10 for both gear groups, with daily harvests of 402,000 and 447,000 fish respectively (Table 15). Escapement on July 9 was 60,000 sockeye bringing the cumulative escapement to 516,000 sockeye salmon and surpassing the lower end of the escapement goal range of 500,000.

On July 10 and July 11 escapement was 70,000 and 83,000 sockeye salmon bringing the cumulative to 668,000 and prompting the set gillnet fleet to be opened to continuous fishing (Table 16). Between July 11 and July 14 the drift fleet was allowed to fish 1 long tide per day before being allowed to fish 2 tides per day on July 15. Through July 15, cumulative catch was 4.3 million and cumulative escapement was 813,000. Escapement continued to increase and beginning July 16 both fleets opened to continuous fishing. By regulation the fall schedule of 9:00 AM Monday to 9:00 AM Friday begins on July 17. By regulation the district is closed on the weekends but because there was a harvestable surplus, the fishery was allowed to remain open on the weekends of July 18–19 and July 25–26. On August 1 the fall schedule changes in the Ugashik District from a Monday–Friday schedule to 9:00 AM Thursday to 9:00 AM Monday, the net effect being that fishing was allowed continuously from July 17 to August 3.

Through August 3, cumulative harvest was 5.5 million fish. Cumulative escapement was 1.5 million sockeye when the tower project ended for the season on July 29, which is above the upper end of the escapement goal range.

Similar to Egegik, a strong late season component was also present in Ugashik. The best illustration of the size and lateness lies in comparing escapement and catches in the latter part of the season to long term averages. Between July 15 and July 25 the long term average cumulative escapement for the counting tower project is 380,000 and cumulative district harvest is 368,000. In 2015 escapement was 659,000 and harvest was 1.4 million (Tables 15 and 16).

By the end of the allocation period (July 17), set gillnet fishermen caught approximately 9% of the sockeye salmon harvest and drift gillnet fishermen caught 91%; 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 315 hours, or 168 hours more fishing time than in 2014, and drift gillnet permit holders were permitted to fish a total of 240 hours, or 136 hours more than in 2014 (Table 15).

The reported harvest of 158 Chinook salmon represents 7% of the 20-year average of 917 (Appendix A4). Chinook and chum escapement is 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 2015, no escapement surveys were flown in the Ugashik drainages because of budget constraints. The chum salmon harvest of 69,976 fish is 7% above the 20-year average of 65,000 (Appendix A5). Reported pink salmon harvest was 2 and incidental to directed sockeye salmon fishing (Appendix A6). There was little directed commercial effort for Ugashik coho salmon in 2015; reported harvest was 2,534 fish and is roughly 66% of the 20-year average of 3,800 (Appendix A7).

In summary, the 2015 Ugashik District fishery harvested approximately 77% of the sockeye salmon run to the district, compared to the 20-year average exploitation rate of 69% (Appendix A14). Days of peak catch occurred on July 8, July 9, and July 10 when 382,000; 392,000; and 443,000 fish were harvested, respectively (Table 15). The midpoint of the run was July 10, coinciding with the 20-year average of July 10. Days of peak escapement were July 19, July 20, and July 21 when 86,000; 93,000; and 104,000 sockeye salmon, respectively, passed the counting tower (Table 16). Peak effort occurred on July 11 when 318 drift gillnet vessels, including 69 with dual permits, registered to fish in the district (Table 14). There were 11 processors registered to purchase fish in the Ugashik District this season (Table 4).

Nushagak District

The 2015 Nushagak District total inshore sockeye salmon run was 9.0 million fish, 11% above the preseason forecast of 8.1 million fish (Table 1). Commercial sockeye salmon harvest in Nushagak District reached 5.6 million fish, 8% below the preseason projected harvest of 6.1 million fish and 3% below the 1995–2014 average harvest of 5.8 million sockeye salmon (Table 1 and Appendix A15). Escapement in the district's 3 major river systems was: 1,948,274 for Wood River, 651,172 for Igushik River, and 796,648 sockeye salmon for Nushagak River (Tables 6 and 17). Wood and Igushik rivers sockeye salmon escapement exceeded the upper ends of their escapement goal ranges and Nushagak River sockeye salmon escapement fell within the escapement goal range (Appendix A1). Chinook salmon escapement into Nushagak River was 98,019, which was 3% above the 95,000 inriver goal, and harvest was 48,968 Chinook salmon in Nushagak District (Tables 5 and 6).

In 2015, there was no 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 2015 season (Appendix A19).

The sonar escapement enumeration project at Portage Creek was fully operational on June 5 (Table 6). ADF&G began the season with the idea of being very conservative in regards to directed Chinook salmon openings. This was partly based on the 2014 experience of strong early showing and then a very poor second half of the season. In addition, because of the strong baywide sockeye salmon forecast the department expected to begin directed sockeye salmon openings earlier than normal. Nushagak Chinook salmon escapement was above average early in the season with a couple strong days on June 13 and June 14. An extended period of calm weather persisted through the third week of June and from June 15 to June 20 Chinook salmon escapement was below average. Chinook salmon escapement increased on June 20 and unapportioned sonar counts on June 21 indicated that escapement of all species in the Nushagak River was increasing. Based on this, the department focused on sockeye salmon management and implemented a 5.5 inch or smaller meshes restriction for the conservation of Chinook salmon. The final escapement for Chinook salmon on the Nushagak River was 98,019 fish

(Table 6). This is within the escapement goal range of 50,000–120,000 and just above the inriver goal of 95,000 fish.

There were no directed Chinook salmon openings in the Nushagak District in 2015. Earlier than average sockeye salmon openings and a somewhat better Chinook salmon run produced an incidental harvest of 48,968 Chinook salmon (Tables 5, 18, and 19) in the Nushagak District in 2015. This harvest is 11% above the 1995–2014 average harvest of 43,988 fish for the Nushagak District (Appendices A4 and A19).

Sockeye salmon enumeration on the Wood River began June 13, which was 5 days earlier than usual due to support from BBRSDA. Fish passage was slow but steady through June 20 when the single day escapement of 20,760 increased the cumulative escapement to 40,818 (Table 17). The large baywide forecast for 2015 and strong forecasts for both the Nushagak and Wood river's sockeye salmon runs changed ADF&G's management strategy for 2015. In 2015, ADF&G wanted to begin fishing early in case an overabundance of fish reduced harvesting capacity and escapement was less controllable. The early start would, in theory expand the season for processors by giving them additional days, to harvest and process fish, early in the season that were not typically fished. It would also keep escapement lower so if harvest was subsequently reduced by capacity issues there would be less chance of exceeding the upper ends of escapement goal ranges.

With escapement of sockeye salmon increasing on both the Nushagak and Wood rivers and Nushagak Chinook salmon escapement above expectations ADF&G announced the first Nushagak Section set gillnet opening for the evening of June 21 (Table 18). A second opening for the morning of June 22 was also announced; the morning 8 hour opening would give ADF&G options, such as being able to have a drift gillnet opening on short notice if there was a significant push of fish into the Wood River overnight. Escapement overnight remained slow but ADF&G stuck with the preseason strategy and had a 3.5 hour drift gillnet opening beginning on the morning of June 22. Set gillnets were again fishing the morning of June 23 to keep all options open. Slow overnight escapement and reports of slow fishing from the grounds delayed the next drift gillnet opening until the evening of June 23 (Table 18). Continued slow sockeye salmon escapement and large Chinook salmon incidental harvest prompted ADF&G to delay the next Nushagak Section openings until June 25. From June 25 on ADF&G provided fishing opportunity on almost every tide for both gear types. Harvest and escapement were slower than expected for the size of the forecast and normal run timing. Escapement was steadily approaching the lower ends of the escapement goals for the Wood and Nushagak rivers.

ADF&G started extending set gillnet fishing for 24 hour increments on June 29, and extended until further notice on July 3 (Table 18). A strong storm was expected to impact the Bristol Bay area on July 3 so ADF&G extended drift gillnet fishing from July 2 until July 6. The timing for the extension was excellent as the peak daily harvest of the season occurred on July 3 with approximately 325,000 sockeye salmon harvested (Table 19). July 3 was also the day that Nushagak and Wood river sockeye salmon escapements exceeded the lower end of the goal ranges. The strong storm disrupted fishing through July 5 and escapement also spiked during this time (Table 17). By July 6, with no strong push of fish into the district, things appeared to be winding down significantly below forecast. The Nushagak District was well poised with lower ends of escapement goals achieved in all rivers ADF&G wanted to maximize harvest from this point on.

With the season well past the historical peak much of the effort in the Nushagak District had left for other districts. Escapements were still below the midrange in all systems when fishing was opened until further notice on July 9 (Table 18). ADF&G expected the season to slowly wind down uneventfully. Then the fish hit, and coupled with a storm on July 12 and July 13 escapement spiked. Several processors went on limit or temporarily suspended buying late on July 10 or early July 11. The severe storm also reduced effort significantly. Peak escapement of 121,968 fish for the Wood River occurred on July 13 (Table 17). With reduced boat numbers, processor limitations, and bad weather, the harvest never exceeded the peak of July 3 (Table 19) but harvest did increase. At the same time the harvest percentages for each gear type were no longer controllable because below average drift effort and processor constraints were beyond the control of ADF&G (Appendix A9).

Fishing in the Nushagak District remained open continuously for the rest of the season. Effort gradually dwindled until processors ceased buying operations. Enumeration of sockeye salmon at Wood River was extended until July 23, 5 days past the normal stop date to account for late run timing.

Commercial fishing with set gillnets in the Igushik Section of the Nushagak District began on June 16 (Tables 18 and 19) with 8 hour openings daily. On June 21, when set gillnet fishing began in the Nushagak Section, the Igushik Section openings were standardized with the Nushagak Section openings. Similar to the Wood River, escapement enumeration on the Igushik River began 5 days early on June 18 (Table 17). Escapement was above expectations from the beginning and continued that way through the entire season. Escapement continued to be strong throughout the duration of the enumeration project. Despite the late run timing there was not funding to continue counting until the 1 percent criteria was met. Counting operations ceased on July 22 when the daily count was 46,416; this was 2 days after the peak escapement of 87,834 (Table 17). Set gillnet fishing was steady throughout the season with stronger catches on July 2 and July 3 and then again from July 12 through July 20. The peak harvest for set gillnet fishing at Igushik Beach was July 18; the largest harvest for that date ever. Cumulative set gillnet harvest was just under 600,000 sockeye salmon, the largest harvest on record by almost 100,000 fish. The final escapement into the Igushik system was 651,172 sockeye salmon (Table 17; Appendix A1), above the 400,000 upper end of the escapement goal range.

Pink salmon do not occur in significant numbers in even years in Bristol Bay. Because of late run timing for sockeye salmon fishing remained open past the normal July 23 date when ADF&G would switch to coho salmon management. There was no market interest in pursuing coho salmon in 2015 and effort and market participation in fishing tapered off concurrent with sockeye salmon abundance. One or two direct market operations persisted into September but there was not a significant effort directed to coho salmon in 2015. There was also no escapement enumeration in 2015 because budget cuts forced the Nushagak River counting project to cease operations on July 18. The final pink salmon harvest was 807 (Tables 5 and 19; Appendix A6). The final chum salmon harvest was 502,904 (Tables 5 and 19; Appendix A5). The final coho salmon harvest was 6,969 (Tables 5 and 19; Appendix A7).

Togiak District

The 2015 inshore sockeye salmon run of nearly 591,000 fish was the 17th largest run to the Togiak District in the last 20 years and met the preseason forecast of 590,000 (Table 1; Appendix A17). The harvest for the Togiak District was approximately 372,000 sockeye salmon,

the 17th largest since 1995 (Tables 20 and 21; Appendix A3). Escapement into Togiak Lake was 218,700 sockeye salmon, 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 EO, 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 2015 Togiak River inshore run forecast was 590,000 sockeye salmon, of which 75% were projected to be 3-ocean fish and 25% were projected to be 2-ocean fish (Table 1). Achieving the escapement goal range of 120,000–270,000 sockeye salmon for Togiak Lake would leave approximately 390,000 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 2015, the weekly fishing schedule in Togiak River Section was reduced by 24 hours in the third and fourth weeks of June for Chinook salmon conservation (Table 18). Kulukak and western sections (Cape Peirce, Osviak, and Matogak) remained open for regularly scheduled periods throughout the 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 targeting of Togiak River Chinook salmon, a regulation was passed in December 2012. This regulation moved the drift gillnet boundary away from the Togiak River mouth from June 1 through July 15. In 2015, this seasonal boundary was extended through the end of July by EO in response to extremely small early season commercial Chinook salmon harvest. Total Chinook salmon commercial harvest for Togiak River Section was 2,306 fish, with an additional 357 caught in the remainder of Togiak District (Tables 21, 22, 23, 24 and 25). Chinook salmon escapement to the Togiak River was approximately 3,000 fish from aerial survey assessments and the total Chinook salmon run to the Togiak River was 7,323 fish, well below the 20-year average (1995–2014) of 18,000 (Appendix A20).

Commercial fishing for sockeye salmon opened by regulation on Monday, June 1, but the first deliveries of the season did not occur until June 15 (Table 21). Fishing continued through the week and into the next 2 weeks at expected, low early season participation levels, leaving cumulative harvests at 802 Chinook salmon and 13,834 sockeye salmon at the close of fishing on June 30 (Table 21). Beginning Wednesday, July 1 management turned from Chinook salmon to active sockeye salmon management and the peak season weekly fishing schedule began.

The escapement enumeration project on Togiak River began on July 3 with a count of 258 sockeye salmon (Table 17). Escapement continued to be well below average early, reaching 1,254 after 6 days of counting, compared to an expected cumulative of 17,000. Over this same

period, the cumulative catch of 13,000 sockeye salmon in the Togiak River Section through June 30 compared poorly with expectations of 35,000 for this date (Table 22).

The first 2 weeks of the July is when the peak fishing schedule occurs, usually allowing extended fishing in Togiak River Section. Concerns for the sockeye salmon return to the Togiak River increased even prior to July, because the week started out with well below average harvests of 2,000 and 2,500 on June 29 and June 30, respectively, as opposed to expected harvests of 5,000 to 7,000 sockeye salmon. The first week of July continued to be very disappointing, prompting managers to take the unprecedented step of reducing the peak season fishing schedule. Through July 16, the cumulative Togiak River Section harvest was 77,000 and the cumulative Togiak River escapement was 21,474, versus expectations for a minimum of 42,000 sockeye salmon to meet the low end of the escapement goal range of 120,000. Although a smaller harvest was also a result of reduced fishing time, the low escapement was now a big concern, suggesting the run was dramatically late and perhaps dramatically below forecast.

Schedule reductions of 48 hours were implemented in the second and third weeks of July in hopes of increasing escapement. Escapement began to catch up on July 20, when a 7,278 daily passage began a succession of above average passage through the rest of July. This period saw escapement of 150,042, leaving cumulative escapement at 183,552 through July. The windfall of sockeye salmon escapement permitted maximum allowable extensions of 48 hours in Togiak River Section beginning July 31 and continuing through August 23.

Escapement finished strong for the remainder of the season before the Togiak River enumeration project ceased operations on August 3 with a final escapement of 218,700, within the escapement goal range of 120,000–270,000 sockeye salmon (Appendix A1). The Togiak District sockeye salmon run was estimated to be approximately 7 days late. A larger than typical late season effort took advantage of the late run, with catches well above average in the second week of August, leaving the season total at 354,000 fish harvested (Table 21). Although escapement information to parts of the Togiak River drainage is incomplete, the total 2015 sockeye salmon run ranked 17 among the most recent 20 years (Appendix A17).

By regulation, Togiak District opens to all Area T salmon permit holders on July 27. Because of the very late nature of run timing, the BOF acted on a petition and delayed this opening date to August 5, affording permit holders in Togiak additional time to fish without an influx of participation. This BOF action appeared to help dissuade permit holders from traveling to Togiak from other districts for late season fishing.

Perhaps due in part to a disappointing sockeye season, above average participation led to the second largest harvest of coho salmon since 1998. After the last processor stopped buying on September 2, harvest was 26,000 coho salmon, well above the 20-year average (1995–2014) of 13,000 (Appendix A7). The 2015 commercial Chinook salmon harvest of 2,663 fish represented only 38% of the 20-year (1994–2013) average, and the chum salmon harvest of 103,773 fish was 69% of the 20-year average (Appendices A4 and A5).

2015 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 2). Togiak village lies at the center of the district, 108 kilometers west of Dillingham.

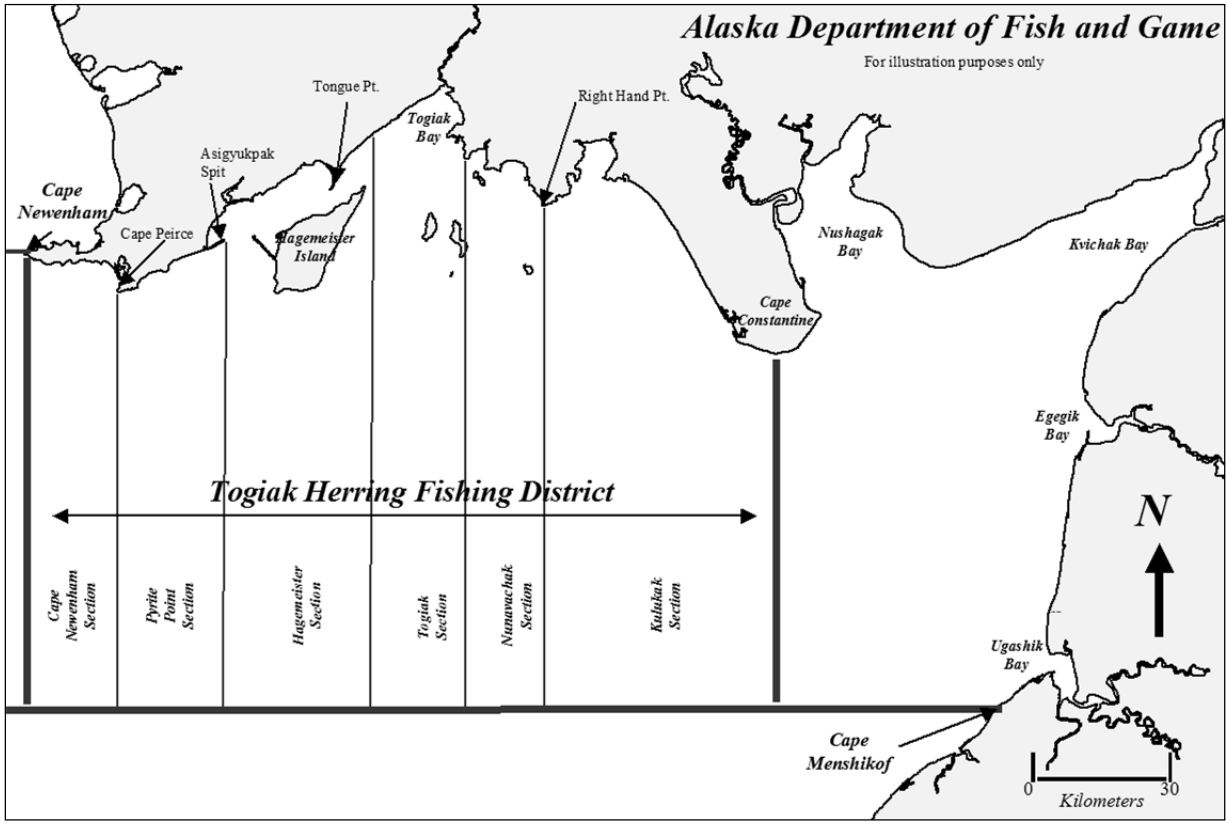

Figure 2.–Togiak Herring District, Bristol Bay.

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 and herring spawn on rockweed kelp *(Fucus* spp.) is 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 1995 to 2014, sac roe harvests averaged 21,672 short tons[1], worth an average of $4.94 million annually (Appendices B2 and

[1] The Alaska Board of Fisheries requires that inseason catch and aerial survey biomass estimates be calculated and reported in short tons. The English short ton = 2,000 lb or 907.2 kg.

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 2015, sac roe harvests brought $1.08 million to permit holders, well below the 10-year average of $2.86 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 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 2015 spawning biomass was dominated by age-8, -9, and -10 herring (Table 26 and Appendix B3). This biomass is 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 (Appendix B1). Since 1994, gillnet effort has increased from 146 vessels, to a peak of 461 in 1996, followed

by a general decline to an all-time low of 6 in 2015 (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 and again in 2015 of 16 vessels (Appendix B1). The 2015 participation of 16 purse seine vessels was down from 17 in 2014. In 2015, gillnet participation decreased from 24 to 6 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 have purchased herring in Togiak (Appendix B1). Since 1998, industry participation has steadily declined to a low in 2012 and again in 2015 of 4 companies (Appendix B1). In 2015, processor participation involved 4 companies (Table 27). 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, to 1,880 short tons per day in 2015 (Appendix B1).

2015 SEASON SUMMARY

Biomass Estimation

Togiak District aerial surveys began April 16, 2015 after fish were reported in the district by a local pilot on April 15. ADF&G staff observed some fish on April 16 but could not confirm they were herring. A second survey on April 21 did not result in any fish being observed. Another pilot report on April 24 again indicated fish present in the Togiak District. ADF&G staff observed 11,154 short tons of herring on the grounds during a survey on April 26 (Table 28). On April 27, 63,382 short tons of herring was documented, exceeding the threshold biomass of 35,000 and prompting the opening of the fishery at 8:00 PM Peak biomass was documented on May 4 when 115,487 short tons of herring and 2.7 miles of spawn were documented. Over 63 miles of spawn and more than 500,000 combined short tons of biomass were documented. The last survey was flown on May 18 when 100,876 short tons of herring were still on the grounds and spawn still occurring (Table 28).

AGE COMPOSITION

Herring were sampled for age and sex composition during 2015. Preliminary analysis indicates that approximately 25% of the biomass was age-6 or younger, and 70% of the biomass was between age-7 and age-10 and 5% of the biomass was age-11 or older.

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 2015 preseason biomass forecast was 163,480 short tons. The projected harvest guideline for each fishery was as follows: 1,500 short tons herring equivalent or 350,000 lb of product for the spawn-on-kelp fishery, 2,184 short tons for the Dutch Harbor food and bait fishery, and the remaining 29,012 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 (20,309 short tons in 2015) and 30% of the harvest is taken by gillnet (8,704 short tons in 2015).

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. For the 2015 season, 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 2015 season to assess processing capacity and to inquire about additional concerns or issues. The poll indicated that 5 companies intended to participate in the 2015 Togiak herring fishery. Two companies indicated they planned to buy both gillnet and purse seine fish and 3 companies planned to buy only purse seine fish. The processing capacity for 2015 was estimated to be 1,880 short tons per day.

Purse Seine

The Togiak purse seine fishery opened at 8:00 p.m. on April 27 (Table 29). ADF&G initially opened the purse seine fishery for 74 hours. Commercial quality fish were available on April 29 when 1,895 short tons of herring were harvested by the purse seine fleet. Herring continued to be of marketable quality for the remainder of the purse seine fishery and ADF&G extended the fishery on April 30, May 2, May 4 and May 6 for 48 hours. The fishery was extended for 24 hours on May 8 and May 9 and the final 14 hour extension was made on May 10. Excellent weather prevailed throughout the season and the purse seine fleet steadily harvested the quota at a pace of about 1,500 short tons per day with a couple slow days of 555 short tons on day 10 and the last day (day 13). The peak harvest of 2,682 short tons occurred on the second day. The final harvest of 20,240 short tons of herring coupled with an estimated deadloss of 500 short tons brings the total harvest to 20,740 short tons (Table 30). The total harvest exceeded the quota by 65 short tons after the estimated deadloss was included. Purse seine participation was documented at 16 vessels, down from 17 in 2014.

Gillnet

The Togiak gillnet fishery opened at 8:00 PM April 27 until further notice with no prior test fishing. In 2015, two companies participated in the Togiak sac roe gillnet fishery, a decrease from 5 in 2014. Fishermen participation was significantly lower than 2014, when 24 vessels participated; only 6 gillnet vessels were involved in the 2015 fishery. Six gillnet vessels represents the lowest participation in the fishery since its inception in 1967. With only 2 companies participating in the gillnet fishery, the daily harvest is confidential. Because of the low participation by the gillnet fleet, ADF&G determined that the requirements of the allocation plan were being met as long as the gillnet fleet that was on the grounds was not restricted by industry. Daily gillnet harvest was low throughout the fishery and there were no indications that the gillnet fleet was constrained by industry. Therefore, ADF&G did not take action to restrain the purse seine fleet. The season officially closed at 12:00 noon on May 11, however, the gillnet fleet stopped fishing on May 9. In general, the daily gillnet harvest was lower than expected and the total harvest was 1,156 short tons, representing 13% of the 8,704 short ton quota.

Spawn on Kelp

No companies registered to buy herring spawn-on-kelp in 2015, therefore there were no openings and no commercial harvest.

EXPLOITATION

The 2015 Togiak herring fisheries were managed for a maximum exploitation rate of 20% of the preseason biomass estimate. The purse seine harvest was 20,240 short tons with a reported average weight of 404 grams and an average roe percentage of 11.3%. The gillnet harvest was 1,156 short tons with a reported average weight of 438 grams and an average roe percentage of 11.1%, making the combined harvest 21,396 short tons with an average weight of 406 grams and an average roe percentage of 11.3%. The Dutch Harbor food and bait fishery harvested 1,972 short tons, resulting in a total harvest for 2015 would be estimated at 23,368 short tons. Based on the preseason biomass estimate of 163,480 short tons, the 2015 exploitation rate would be approximately 14.3%.

EXVESSEL VALUE

The projected exvessel value of the 2015 Togiak herring fishery is approximately $1.08 million. This is based on a grounds price estimate of $50 per ton for seine caught fish and $50 per ton for gillnet caught fish and does not include any postseason adjustments.

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TABLES

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, 2015.

District and river system [a]		Inshore run			Escapement		Inshore catch		
		Forecast [b]	Actual	Percent deviation [c]	Range	Actual	Projected harvest [b]	Actual	Percent deviation [c]
Naknek-Kvichak District									
Kvichak River		14,807	15,466	4	2,000-10,000	7,342	7,119	8,124	14
Alagnak River		1,198	11,629	871	320 minimum	5,771	576	5,858	917
Naknek River		11,728	4,471	-62	800-2,000	1,921	10,328	2,550	-75
	Total	27,733	31,565	14	3,120-12,320	15,034	18,023	16,531	-7
Egegik District		12,038	10,911	-9	800-2,000	2,161	10,638	8,750	-18
Ugashik District		3,562	7,039	98	500-1,400	1,565	2,612	5,474	110
Nushagak District									
Wood River		5,340	5,070	-5	700-1,800	1,941	4,090	3,129	-23
Igushik River		980	1,657	69	150-400	651	705	1,006	43
Nushagak-Mulchatna		1,738	2,255	30	370-900	797	1,103	1,458	32
	Total	8,058	8,982	11	1,220-3,100	3,389	5,898	5,593	-5
Togiak District		584	591	1	120-270	219	389	372	-4
Total Bristol Bay		51,975	59,088	14	5,760-19,090	22,368	37,557	36,720	-1

[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.

Table 2.–Forecast of sockeye salmon returns by age class, river system, and district, in thousands of fish, Bristol Bay, 2015.

District and river system	2-Ocean			3-Ocean			Total
	1.2 (2011)	2.2 (2010)	Total	1.3 (2010)	2.3 (2009)	Total	
Naknek-Kvichak District							
Kvichak River	3,154	9,712	12,866	1,677	832	2,509	15,375
Alagnak River	475	39	514	611	119	730	1,244
Naknek River	2,970	1,262	4,232	7,315	632	7,947	12,179
Total	6,599	11,013	17,612	9,603	1,583	11,186	28,798
Egegik District	2,630	5,118	7,748	1,618	3,135	4,753	12,501
Ugashik District	2,053	517	2,570	973	156	1,129	3,699
Nushagak District							
Wood River	1,926	170	2,096	3,363	86	3,449	5,545
Igushik River	156	23	179	817	22	839	1,018
Nushagak River [a]	119	5	124	1,563	5	1,568	1,805
Total	2,201	198	2,399	5,743	113	5,856	8,368
Togiak District [b]	124	25	149	430	27	457	606
Total Bristol Bay [c]							
Number	13,607	16,871	30,478	18,367	5,014	23,381	53,972
Percent	38%	19%	56%	34%	10%	43%	100%

[a] Nushagak River forecast total includes age-0.3 (16,756) and age-1.4 (101,994) 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.

Table 3.–Mean round weight, price per pound, and total exvessel value of the commercial salmon catch, Bristol Bay, 2015.

Species	Total catch (lb)	Mean weight (lb)	Mean price ($/lb)	Exvessel value ($)
Sockeye	193,734,489	5.2	0.50	96,867,245
Chinook	578,063	15.1	0.50	289,032
Chum	6,178,847	6.1	0.30	1,853,654
Pink	7,756	3.7	0.20	1,551
Coho	257,366	6.7	0.25	64,342
Total	200,756,521			99,075,823

Table 4.–Commercial salmon processors and buyers operating in Bristol Bay, 2015.

	Name of operator/buyer	Base of operations	District [a, b]		Export
1	Alaska General Seafoods	Kenmore, WA	K,E,	C,EF,F,RE	AIR,SEA
2	Alaska Salmon Wild	Ruidoso, NM	K	F	AIR
3	Alaska Wild Kenai Salmon	Wasilla, AK	N	F	AIR
4	Big Creek Fisheries	Everett, WA	E,U	F	AIR,SEA
5	Bristol Siren Salmon	College Place, WA	K	F	AIR
6	Cape Greig	Seattle, WA	E,U	EF	AIR
7	Coffee Point Seafoods	Seattle, WA	E	EF,F,RE	AIR,SEA
8	Ekuk Fisheries	Seattle, WA	N	F	SEA
9	Friedman Family Fisheries	Baltimore, MD	N	F	SEA
10	Great Ruby Fish Company	Anchorage, AK	K	EF,F,RE	AIR
11	Icicle Seafoods	Seattle, WA	E,K,N,U	C,EF,F,RE	AIR,SEA
12	Leader Creek Fisheries	Seattle, WA	E,K,N,U	F,RE	SEA
13	My Girl (Randy Alvarez)	Igiugig, AK	K	F	AIR
14	Nakeem Homepack	King Salmon, AK	K	EF,F,RE	AIR,SEA
15	Naknek Family Fisheries	Naknek, AK	K	F	AIR,SEA
16	North Pacific Seafoods (Togiak Fisheries)	Seattle, WA	T	F	SEA
17	North Pacific Seafoods (Red Salmon)	Seattle, WA	E,K,N,U	C,F,RE	SEA
18	North Pacific Seafoods (Pederson Point)	Seattle, WA	E,K,N,U	F,RE	SEA
19	Ocean Beauty Seafoods	Seattle, WA	E,K,N,U	C,EF,F,RE	AIR,SEA
20	Peter Crimp	Anchorage, AK	N	EF	AIR
21	Peter Pan Seafoods	Seattle, WA	E,K,N,T,U	C,EF,F,RE,S	AIR,SEA
22	Shannon Ford	Federal Way, WA	K	F	AIR
23	Silver Bay Seafoods	Sitka, AK	E,K,N,T,U	F,EF,RE	AIR,SEA
24	Sunrise Salmon	Fergus Falls, MN	K	F	AIR
25	Togiak Seafoods (Copper River Seafoods)	Anchorage, AK	K,N,T	EF	AIR
26	Trident Seafoods	Seattle, WA	E,K,N,T,U	C,EF,F	AIR,SEA
27	Tulchina Fisheries	Naknek, AK	K	F	AIR
28	Victor Popa	Fallbrook, CA	E	EF	SEA
29	Wild Alaska Salmon and Seafood	King Salmon, AK	K	EF, F	AIR,SEA
30	Wild Premium Salmon	Vista, CA	E	EF,F	AIR
31	Favco	Anchorage, AK	N	EF	AIR
32	Mike LaRussa	Dillingham, AK	N	F	SEA
33	Wild Legacy Seafoods	Homer, AK	K	F	SEA
34	Alfonso Palma	Wasilla, AK	N	EF	AIR
35	SEA LLC	Cooper Landing, AK	U	F	AIR
36	Grossi Brothers Seafood	Clayton, CA	K	F	AIR,SEA
37	William N Brown	Naknek, AK	K	EF	AIR

Canning=6; Freezing= 30; Fresh=18; Curing=1; Roe Extraction= 11; Air Export=28; Sea Export=21

[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, 2015.

District and river system		Sockeye	Chinook	Chum	Pink	Coho	Total
Naknek-Kvichak District							
Kvichak River		8,123,676					8,123,676
Alagnak River		5,857,848					5,857,848
Naknek River		2,549,669					2,549,669
	Total	16,531,193	2,813	350,169	112	1,230	16,885,517
Egegik District		8,749,567	602	69,057	0	730	8,819,956
Ugashik District		5,473,800	158	69,967	2	2,533	5,546,460
Nushagak District							
Wood River		3,128,881					3,128,881
Igushik River		1,005,838					1,005,838
Nushagak River		1,458,098					1,458,098
	Total	5,592,816	48,968	502,904	807	6,969	6,152,464
Togiak District							
Togiak Section		313,200					313,200
Kulukak Section		45,331					45,331
Matogak Section		13,141					13,141
Osviak Section		231					231
	Total	371,903	2,663	103,773	1,219	26,080	505,638
Total Bristol Bay		36,719,279	55,204	1,095,870	2,140	37,542	37,910,035

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, 2015.

	Chinook		Chum		Sockeye		Total	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
6/5	346	346	259	259	28	28	632	632
6/6	475	821	366	624	68	96	909	1,541
6/7	787	1,608	832	1,456	5	101	1,623	3,164
6/8	724	2,331	979	2,435	115	216	1,818	4,982
6/9	769	3,100	974	3,409	195	411	1,938	6,920
6/10	2,079	5,179	2,960	6,369	643	1,054	5,682	12,602
6/11	751	5,930	1,834	8,203	512	1,566	3,096	15,698
6/12	1,419	7,349	2,728	10,931	959	2,525	5,106	20,804
6/13	3,444	10,793	6,089	17,020	3,288	5,813	12,822	33,626
6/14	2,070	12,863	6,250	23,270	3,128	8,941	11,448	45,074
6/15	805	13,668	1,570	24,840	3,541	12,482	5,916	50,989
6/16	463	14,131	788	25,628	2,979	15,461	4,230	55,219
6/17	833	14,964	370	25,997	3,556	19,017	4,758	59,978
6/18	365	15,329	1,235	27,232	3,902	22,919	5,502	65,480
6/19	401	15,729	1,330	28,562	8,218	31,137	9,948	75,428
6/20	4,274	20,004	12,621	41,184	22,248	53,385	39,144	114,572
6/21	8,895	28,899	4,909	46,092	47,907	101,292	61,710	176,282
6/22	1,861	30,759	3,116	49,208	21,729	123,021	26,706	202,988
6/23	4,579	35,338	6,781	55,990	23,112	146,133	34,472	237,460
6/24	3,727	39,065	7,669	63,659	25,645	171,778	37,041	274,502
6/25	6,058	45,122	12,854	76,513	32,225	204,003	51,136	325,638
6/26	2,908	48,030	6,262	82,775	13,164	217,167	22,334	347,972
6/27	9,427	57,457	12,776	95,551	18,975	236,142	41,178	389,149
6/28	6,781	64,238	11,632	107,182	37,621	273,763	56,034	445,183
6/29	2,777	67,016	10,972	118,154	26,475	300,238	40,224	485,407
6/30	3,006	70,021	7,651	125,805	22,523	322,761	33,180	518,587
7/1	1,258	71,279	7,402	133,207	21,598	344,359	30,258	548,846

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Table 6.–Page 2 of 2.

	Chinook		Chum		Sockeye		Total	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
7/2	1,654	72,933	6,319	139,527	13,571	357,930	21,544	570,389
7/3	1,822	74,756	7,789	147,315	16,387	374,317	25,998	596,387
7/4	2,193	76,948	8,640	155,955	16,741	391,058	27,574	623,961
7/5	2,444	79,393	11,597	167,553	13,308	404,366	27,350	651,311
7/6	2,033	81,426	3,743	171,295	25,064	429,430	30,840	682,151
7/7	2,918	84,343	5,892	177,188	30,592	460,022	39,402	721,553
7/8	3,340	87,684	9,822	187,010	44,738	504,760	57,900	779,453
7/9	1,247	88,931	5,655	192,664	23,194	527,954	30,096	809,549
7/10	1,227	90,158	10,598	203,263	22,380	550,334	34,206	843,754
7/11	1,477	91,635	21,433	224,696	11,970	562,304	34,881	878,635
7/12	816	92,451	13,175	237,871	26,707	589,011	40,698	919,333
7/13	1,441	93,892	8,533	246,404	35,357	624,368	45,330	964,663
7/14	1,190	95,082	11,955	258,359	45,670	670,038	58,815	1,023,479
7/15	419	95,501	6,232	264,591	30,206	700,244	36,857	1,060,335
7/16	524	96,025	7,345	271,935	21,148	721,392	29,016	1,089,351
7/17	495	96,520	4,658	276,593	28,760	750,152	33,913	1,123,264
7/18	1,499	98,019	12,337	288,929	46,532	796,684	60,368	1,183,632

Table 7.–Commercial fishing emergency orders by period, district, and statistical area, Bristol Bay east side, 2015.

Number	Start date	Start time		End date	End time	Effective time	
Naknek/Kvichak District							
Driftnet							
AKN.55	8 Jul	5:00 AM		8 Jul	1:30 PM	8.5 hours	
AKN.58	9 Jul	6:00 AM		9 Jul	2:00 PM	8.0 hours	
AKN.59	8 Jul	6:30 PM		9 Jul	1:30 AM	7.0 hours	
AKN.63	10 Jul	7:00 AM		10 Jul	2:30 PM	7.5 hours	
AKN.67	11 Jul	8:00 AM		11 Jul	3:00 PM	7.0 hours	
AKN.70	12 Jul	9:00 AM		12 Jul	4:00 PM	7.0 hours	
AKN.71	13 Jul	10:00 AM		13 Jul	5:00 PM	7.0 hours	
AKN.74	13 Jul	11:30 PM		14 Jul	7:30 AM	8.0 hours	
AKN.74	14 Jul	11:00 AM		14 Jul	6:00 PM	7.0 hours	
AKN.77	15 Jul	12:30 AM		15 Jul	8:30 AM	8.0 hours	a
AKN.77	15 Jul	12:30 PM		15 Jul	6:30 PM	6.0 hours	
AKN.80	16 Jul	1:30 AM		16 Jul	9:00 AM	7.5 hours	
AKN.80	16 Jul	1:30 PM		16 Jul	7:30 PM	6.0 hours	
AKN.83	17 Jul	1:30 AM		27 Jul	9:00 AM	247.5 hours	
Setnet							
AKN.01	1 Jun	9:00 AM	to	19 Jun	9:00 AM		b,c
AKN.26	28 Jun	8:30 AM		28 Jun	4:30 PM	8.0 hours	
AKN.29	29 Jun	9:00 AM		29 Jun	5:00 PM	8.0 hours	
AKN.32	30 Jun	10:00 AM		30 Jun	5:30 PM	7.5 hours	
AKN.34	1 Jul	12:00 AM		1 Jul	10:30 AM	10.5 hours	
AKN.38	2 Jul	12:00 PM		2 Jul	7:00 PM	7.0 hours	
AKN.41	3 Jul	1:00 PM		3 Jul	8:00 PM	7.0 hours	
AKN.49	6 Jul	4:00 PM		6 Jul	8:00 PM	4.0 hours	
AKN.55	7 Jul	5:00 PM		8 Jul	1:30 PM	20.5 hours	
AKN.58	8 Jul	1:30 PM		9 Jul	2:00 PM	24.5 hours	d
AKN.60	9 Jul	2:00 PM		10 Jul	2:30 PM	24.5 hours	d
AKN.64	10 Jul	2:30 PM		11 Jul	3:00 PM	24.5 hours	d
AKN.70	11 Jul	3:00 PM		27 Jul	9:00 AM	378.0 hours	d
Naknek Section							
Driftnet							
AKN.01	1 Jun	9:00 AM	to	12 Jun	9:00 AM		b,c
AKN.01	15 Jun	11:00 AM		15 Jun	6:00 PM	7.0 hours	
AKN.01	16 Jun	12:30 AM		16 Jun	9:00 AM	8.5 hours	
AKN.01	16 Jun	12:00 PM		16 Jun	7:00 PM	7.0 hours	
AKN.01	17 Jun	1:00 AM		17 Jun	9:30 AM	8.5 hours	

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Table 7.–Page 2 of 5.

Number	Start date	Start time	End date	End time	Effective time
AKN.01	17 Jun	1:00 PM	17 Jun	8:00 PM	7.0 hours
AKN.01	18 Jun	2:00 AM	18 Jun	10:30 AM	8.5 hours
AKN.01	18 Jun	2:00 PM	18 Jun	9:00 PM	7.0 hours
AKN.01	19 Jun	3:00 AM	19 Jun	11:30 AM	8.5 hours
AKN.26	28 Jun	8:30 AM	28 Jun	4:30 PM	8.0 hours
AKN.29	29 Jun	9:00 AM	29 Jun	5:00 PM	8.0 hours
AKN.32	30 Jun	10:30 AM	30 Jun	6:00 PM	7.5 hours
AKN.34	1 Jul	12:00 AM	1 Jul	9:00 AM	9.0 hours
AKN.38	2 Jul	12:30 PM	2 Jul	6:00 PM	5.5 hours
AKN.41	3 Jul	1:00 PM	3 Jul	6:00 PM	5.0 hours
AKN.44	4 Jul	2:00 PM	4 Jul	7:30 PM	5.5 hours
AKN.52	6 Jul	4:00 PM	6 Jul	11:00 PM	7.0 hours
AKN.55	7 Jul	5:00 PM	8 Jul	12:30 AM	7.5 hours
AKN.63	9 Jul	7:30 PM	10 Jul	3:00 AM	7.5 hours
AKN.64	10 Jul	8:30 PM	11 Jul	4:30 AM	8.0 hours
AKN.64	11 Jul	8:00 AM	11 Jul	3:00 PM	7.0 hours
AKN.70	11 Jul	9:30 PM	12 Jul	5:30 AM	8.0 hours
AKN.71	12 Jul	10:30 PM	13 Jul	6:30 AM	8.0 hours
Setnet					
AKN.44	4 Jul	2:00 PM	4 Jul	9:00 PM	7.0 hours
Egegik District					
Driftnet					
AKN.02	1 Jun	9:00 AM	12 Jun	9:00 AM	[e]
AKN.08	18 Jun	1:00 PM	18 Jun	9:00 PM	8.0 hours
AKN.09	19 Jun	1:45 PM	19 Jun	9:45 PM	8.0 hours
AKN.11	20 Jun	2:30 PM	20 Jun	10:30 PM	8.0 hours
AKN.13	21 Jun	3:30 PM	21 Jun	11:30 PM	8.0 hours
AKN.15	23 Jun	6:00 PM	23 Jun	11:00 PM	5.0 hours
AKN.19	24 Jun	5:45 PM	24 Jun	9:45 PM	4.0 hours
AKN.21	25 Jun	6:00 PM	25 Jun	11:59 AM	6.0 hours
AKN.22	26 Jun	6:00 PM	27 Jun	1:00 AM	7.0 hours
AKN.24	27 Jun	7:00 PM	28 Jun	1:00 AM	6.0 hours
AKN.24	28 Jun	8:00 AM	28 Jun	2:00 PM	6.0 hours
AKN.27	28 Jun	9:00 PM	29 Jun	2:00 AM	5.0 hours
AKN.27	29 Jun	8:00 AM	29 Jun	3:00 PM	7.0 hours
AKN.30	29 Jun	9:30 PM	30 Jun	1:30 AM	4.0 hours
AKN.30	30 Jun	9:30 AM	30 Jun	4:00 PM	6.5 hours

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Number	Start date	Start time	End date	End time	Effective time	
AKN.33	1 Jul	11:00 AM	1 Jul	5:30 PM	6.5 hours	
AKN.35	30 Jun	4:00 PM	30 Jun	7:00 PM	3.0 hours	d
AKN.36	2 Jul	11:00 AM	2 Jul	5:30 AM	6.5 hours	
AKN.39	3 Jul	12:00 PM	3 Jul	6:30 PM	6.5 hours	
AKN.42	4 Jul	4:00 AM	4 Jul	8:00 AM	4.0 hours	
AKN.42	4 Jul	1:30 PM	4 Jul	8:30 PM	7.0 hours	
AKN.45	5 Jul	5:00 AM	5 Jul	8:00 AM	3.0 hours	
AKN.45	5 Jul	2:00 PM	5 Jul	7:00 PM	5.0 hours	
AKN.47	6 Jul	6:00 AM	6 Jul	10:00 AM	4.0 hours	
AKN.47	6 Jul	3:30 PM	6 Jul	10:30 PM	7.0 hours	
AKN.50	7 Jul	4:00 AM	7 Jul	1:00 PM	9.0 hours	
AKN.50	7 Jul	4:15 PM	8 Jul	12:15 AM	8.0 hours	
AKN.53	8 Jul	4:00 AM	8 Jul	12:00 PM	8.0 hours	
AKN.53	8 Jul	5:00 PM	9 Jul	1:00 AM	8.0 hours	
AKN.56	9 Jul	4:45 AM	9 Jul	12:45 PM	8.0 hours	
AKN.56	9 Jul	5:30 PM	10 Jul	1:30 AM	8.0 hours	
AKN.61	10 Jul	5:00 AM	10 Jul	1:00 PM	8.0 hours	
AKN.61	10 Jul	6:30 PM	11 Jul	2:30 AM	8.0 hours	
AKN.65	11 Jul	9:00 AM	11 Jul	1:00 PM	4.0 hours	
AKN.65	11 Jul	8:00 PM	11 Jul	11:59 PM	4.0 hours	
AKN.68	12 Jul	6:00 AM	12 Jul	2:00 PM	8.0 hours	
AKN.68	12 Jul	8:15 PM	13 Jul	4:15 AM	8.0 hours	
AKN.72	13 Jul	7:00 AM	13 Jul	3:00 PM	8.0 hours	
AKN.72	13 Jul	9:00 PM	14 Jul	5:00 AM	8.0 hours	
AKN.75	14 Jul	8:00 AM	14 Jul	4:00 PM	8.0 hours	
AKN.75	14 Jul	10:00 PM	15 Jul	6:00 AM	8.0 hours	
AKN.78	15 Jul	9:00 AM	15 Jul	5:00 PM	8.0 hours	
AKN.78	15 Jul	11:00 PM	16 Jul	7:00 AM	8.0 hours	a
AKN.81	16 Jul	7:00 AM	31 Jul	9:00 AM	368.0 hours	d
Setnet						
AKN.02	1 Jun	9:00 AM	17 Jun	9:00 AM		e
AKN.06	17 Jun	12:00 PM	17 Jun	8:00 PM	8.0 hours	
AKN.08	18 Jun	1:00 PM	18 Jun	9:00 AM	8.0 hours	
AKN.09	19 Jun	1:45 PM	19 Jun	9:45 PM	8.0 hours	
AKN.11	20 Jun	2:30 PM	20 Jun	10:30 PM	8.0 hours	
AKN.13	21 Jun	3:30 PM	21 Jun	11:30 PM	8.0 hours	
AKN.14	22 Jun	4:30 PM	23 Jun	12:30 AM	8.0 hours	
AKN.15	23 Jun	4:30 AM	23 Jun	12:30 PM	8.0 hours	

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Number	Start date	Start time	End date	End time	Effective time	
AKN.17	24 Jun	5:00 AM	24 Jun	1:00 PM	8.0 hours	
AKN.19	24 Jun	5:45 PM	25 Jun	1:45 AM	8.0 hours	
AKN.19	25 Jun	5:30 AM	25 Jun	1:30 PM	8.0 hours	
AKN.21	26 Jun	6:00 AM	26 Jun	2:00 PM	8.0 hours	
AKN.22	27 Jun	7:00 AM	27 Jun	3:00 PM	8.0 hours	
AKN.24	28 Jun	7:00 AM	28 Jun	3:00 PM	8.0 hours	
AKN.27	28 Jun	8:30 PM	29 Jun	4:30 PM	8.0 hours	
AKN.27	29 Jun	8:00 AM	29 Jun	4:00 PM	8.0 hours	
AKN.30	29 Jun	9:30 PM	30 Jun	5:30 AM	8.0 hours	
AKN.30	30 Jun	9:30 AM	30 Jun	5:30 PM	8.0 hours	
AKN.33	1 Jul	10:30 AM	1 Jul	6:30 PM	8.0 hours	
AKN.36	2 Jul	11:00 AM	2 Jul	7:00 PM	8.0 hours	
AKN.39	3 Jul	12:00 PM	3 Jul	8:00 PM	8.0 hours	
AKN.42	4 Jul	1:15 PM	4 Jul	9:15 PM	8.0 hours	
AKN.45	5 Jul	1:45 AM	5 Jul	9:45 AM	8.0 hours	
AKN.45	5 Jul	2:00 PM	5 Jul	10:00 PM	8.0 hours	
AKN.47	6 Jul	2:00 AM	6 Jul	10:00 AM	8.0 hours	
AKN.47	6 Jul	3:15 PM	6 Jul	11:15 PM	8.0 hours	
AKN.50	7 Jul	3:45 AM	7 Jul	11:45 AM	8.0 hours	
AKN.50	7 Jul	4:15 PM	8 Jul	12:15 AM	8.0 hours	
AKN.53	8 Jul	4:00 AM	8 Jul	12:00 PM	8.0 hours	
AKN.53	8 Jul	5:00 PM	9 Jul	1:00 AM	8.0 hours	
AKN.56	9 Jul	4:45 AM	9 Jul	12:45 PM	8.0 hours	
AKN.56	9 Jul	5:30 PM	10 Jul	1:30 AM	8.0 hours	
AKN.61	10 Jul	5:00 AM	10 Jul	1:00 PM	8.0 hours	
AKN.61	10 Jul	6:30 PM	11 Jul	2:30 AM	8.0 hours	
AKN.65	11 Jul	5:15 AM	11 Jul	1:15 PM	8.0 hours	
AKN.65	11 Jul	7:30 PM	12 Jul	3:30 AM	8.0 hours	
AKN.68	12 Jul	6:00 AM	12 Jul	2:00 PM	8.0 hours	
AKN.68	12 Jul	8:15 PM	13 Jul	4:15 AM	8.0 hours	
AKN.72	13 Jul	4:15 AM	31 Jul	9:00 AM	437.0 hours	d
Ugashik District						
Driftnet						
AKN.03	1 Jun	9:00 AM	12 Jun	9:00 AM		b
AKN.20	25 Jun	5:30 AM	25 Jun	11:30 AM	6.0 hours	
AKN.23	27 Jun	6:00 AM	27 Jun	1:00 PM	7.0 hours	
AKN.25	28 Jun	7:00 AM	28 Jun	2:00 PM	7.0 hours	
AKN.28	29 Jun	8:00 AM	29 Jun	4:00 PM	8.0 hours	
AKN.31	30 Jun	8:00 AM	30 Jun	5:00 PM	9.0 hours	

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Table 7.–Page 5 of 5.

Number	Start date	Start time	End date	End time	Effective time	
AKN.37	2 Jul	10:00 AM	2 Jul	4:00 PM	6.0 hours	
AKN.40	3 Jul	11:00 AM	3 Jul	5:00 PM	6.0 hours	
AKN.43	4 Jul	11:30 AM	4 Jul	8:30 PM	9.0 hours	
AKN.46	5 Jul	12:30 PM	5 Jul	9:30 PM	9.0 hours	
AKN.48	6 Jul	12:30 PM	6 Jul	10:30 PM	10.0 hours	
AKN.51	7 Jul	6:00 AM	7 Jul	1:00 PM	7.0 hours	
AKN.54	8 Jul	5:00 AM	8 Jul	12:00 PM	7.0 hours	
AKN.54	8 Jul	3:30 PM	8 Jul	10:30 AM	7.0 hours	
AKN.57	9 Jul	3:00 AM	9 Jul	1:00 PM	9.0 hours	
AKN.62	9 Jul	1:00 PM	9 Jul	6:00 PM	5.0 hours	[d]
AKN.62	10 Jul	5:00 AM	10 Jul	5:00 PM	12.0 hours	
AKN.66	10 Jul	5:00 PM	11 Jul	5:00 AM	12.0 hours	
AKN.66	11 Jul	1:00 PM	11 Jul	9:00 PM	8.0 hours	
AKN.69	12 Jul	5:00 AM	12 Jul	6:00 PM	13.0 hours	
AKN.73	13 Jul	6:00 AM	13 Jul	7:00 PM	13.0 hours	
AKN.76	14 Jul	7:00 AM	14 Jul	7:00 PM	12.0 hours	
AKN.79	15 Jul	8:00 AM	15 Jul	8:00 PM	12.0 hours	
AKN.82	15 Jul	8:00 PM	30 Jul	9:00 AM	349.0 hours	
Setnet						
AKN.07	17 Jun	11:00 AM	17 Jun	7:00 PM	8.0 hours	
AKN.12	20 Jun	12:30 PM	20 Jun	8:30 PM	8.0 hours	
AKN.16	23 Jun	3:00 PM	23 Jun	11:59 PM	9.0 hours	
AKN.20	25 Jun	4:30 AM	25 Jun	1:30 PM	9.0 hours	
AKN.23	27 Jun	5:00 AM	27 Jun	2:00 PM	9.0 hours	
AKN.25	28 Jun	6:00 AM	28 Jun	3:00 PM	9.0 hours	
AKN.28	29 Jun	7:00 AM	29 Jun	4:00pm	9.0 hours	
AKN.31	30 Jun	8:00 AM	30 Jun	5:00 PM	9.0 hours	
AKN.40	3 Jul	11:00 AM	3 Jul	8:00 PM	9.0 hours	
AKN.43	4 Jul	11:30 AM	4 Jul	8:30 PM	9.0 hours	
AKN.46	5 Jul	12:30 PM	5 Jul	9:30 PM	9.0 hours	
AKN.48	6 Jul	12:30 PM	6 Jul	10:30 PM	10.0 hours	
AKN.51	7 Jul	2:00 PM	7 Jul	10:00 PM	8.0 hours	
AKN.54	8 Jul	2:30 PM	8 Jul	10:30 PM	8.0 hours	
AKN.57	9 Jul	3:00 AM	9 Jul	1:00 PM	9.0 hours	
AKN.62	9 Jul	3:30 PM	10 Jul	3:30 PM	24.0 hours	
AKN.66	10 Jul	3:30 PM	11 Jul	3:30 PM	24.0 hours	[d]
AKN.69	11 Jul	3:30 PM	12 Jul	3:30 PM	24.0 hours	[d]
AKN.73	12 Jul	3:30 PM	30 Jul	9:00 AM	401.5 hours	[d]

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

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

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

[d] Extends current fishing period.

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

Table 8.–Commercial salmon catch by date and species, in numbers of fish, Naknek-Kvichak District, Bristol Bay, 2015.

Date		Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
		Drift	Set	Drift	Set						
6/11	[a,b]	24	24								
6/15	[a]	7	15	25	19	410	1	11	0	0	422
6/16	[a]	15.5	24	25	44	1,038	8	19	0	0	1,065
6/17	[a]	15.5	24	45	57	2,184	1	23	0	0	2,208
6/18	[a]	15.5	24	80	105	6,193	84	97	0	0	6,374
6/19	[a]	8.5	9	46	23	2,493	28	34	0	0	2,555
6/20	[c]	0	0	10	0	2,708	5	14	0	0	2,727
6/22	[c]	0	0	6	0	2,415	1	45	0	0	2,461
6/23	[c]	0	0	17	0	12,334	41	35	0	0	12,410
6/24	[c]	0	0	19	0	14,485	35	65	0	0	14,585
6/25	[c]	0	0	23	0	23,520	43	67	0	0	23,630
6/26	[c]	0	0	3	0	2,685	0	0	0	0	2,685
6/27	[c]	0	0	20	0	20,435	8	54	0	0	20,497
6/28		8	8	410	218	80,863	135	739	0	0	81,737
6/29		8	8	471	190	136,498	94	982	0	0	137,574
6/30	[a]	7.5	7.5	566	330	257,800	55	1,734	0	0	259,589
7/1	[a]	9	10.5	464	336	262,053	195	1,071	0	0	263,319
7/2	[a]	5.5	7	530	402	493,149	69	3,725	0	0	496,943
7/3	[a]	5	7	533	360	506,171	166	3,543	0	0	509,880
7/4	[a,d]	5.5	7	520	243	216,702	13	2,315	0	0	219,030
7/5	[c]	0	0	3	0	5,227	0	5	0	0	5,232
7/6	[a]	7	4	546	222	210,229	42	2,214	0	0	212,485
7/7	[a]	7.5	7.5	504	301	170,645	84	1,738	0	0	172,467
7/8		14.5	24	1,020	558	1,004,568	196	9,818	0	0	1,014,582
7/9	[e]	14	24	1,031	505	902,221	113	6,227	0	0	908,561
7/10	[e]	14	24	1,110	595	1,325,385	151	8,247	0	0	1,333,783
7/11	[e]	14	24	1,058	642	1,083,951	150	7,494	0	0	1,091,595
7/12	[e]	14	24	1,202	624	1,303,287	121	15,243	0	0	1,318,651
7/13	[e]	14	24	1,183	558	1,222,909	136	15,484	0	0	1,238,529
7/14		14.5	24	1,116	623	1,122,950	106	11,829	0	0	1,134,885
7/15		14	24	1,365	596	1,388,137	144	14,456	0	0	1,402,737
7/16		13.5	24	1,094	423	953,196	85	14,108	0	0	967,389
7/17		22.5	24	968	312	1,166,414	59	26,521	0	0	1,192,994
7/18		24	24	826	238	655,731	62	22,811	0	0	678,604

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Table 8.–Page 2 of 2.

Date		Hours fished Drift	Hours fished Set	Deliveries Drift	Deliveries Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/19		24	24	681	219	499,463	57	25,792	0	0	525,312
7/20		24	24	598	189	317,975	51	21,649	0	1	339,676
7/21		24	24	397	167	324,150	48	15,705	0	0	339,903
7/22		24	24	295	57	134,166	20	8,560	0	0	142,746
7/23		24	24	167	63	193,093	43	11,782	0	0	204,918
7/24		24	24	166	63	143,147	20	15,313	3	0	158,483
7/25		24	24	132	36	115,578	29	11,135	0	1	126,743
7/26		24	24	133	51	92,727	13	12,657	6	22	105,425
7/27		24	24	90	60	54,129	21	14,032	1	8	68,191
7/28		24	24	95	38	47,318	29	8,005	8	38	55,398
7/29	[b]	24	24	44							
7/30	[b]	24	24	49							
7/31	[b]	24	24	22							
8/3	[b]	15	15	20							
8/4	[b]	24	24	16							
8/5	[b]	24	24	9							
8/6	[b]	24	24	4							
8/7	[b]	9	9	1							
8/12	[b]	24	24	0							
8/13	[b]	24	24	1							
8/14	[b]	9	9	0							
8/17	[b]	15	15	0							
8/18	[b]	24	24	0							
8/19	[b]	24	24	0							
8/20	[b]	24	24	0							
8/31	[b]	15	15	1							
Total		889.0	1,017.5	19,762	9,619	16,531,193	2,813	350,169	112	1,230	16,885,517

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] Fewer than 4 permits; records are confidential.

[c] Test fish catch.

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

[e] Fishery was restricted to the Naknek Section only for drift gillnet gear during 1 of 2 periods.

Table 9.–Daily sockeye salmon escapement tower counts by river system, Bristol Bay east side, 2015.

	Kvichak River		Naknek River		Egegik River		Ugashik River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/11					1,254	1,254		
6/12					1,392	2,646		
6/13					3,216	5,862		
6/14			468	468	7,272	13,134		
6/15	0	0	696	1,164	5,580	18,714		
6/16	90	90	366	1,530	6,504	25,218		
6/17	186	276	138	1,668	14,838	40,056		
6/18	60	336	960	2,628	30,252	70,308		
6/19	120	456	4,818	7,446	19,854	90,162		
6/20	168	624	2,712	10,158	24,834	114,996		
6/21	126	750	2,160	12,318	22,830	137,826		
6/22	408	1,158	26,310	38,628	14,544	152,370		
6/23	264	1,422	101,538	140,166	29,994	182,364		
6/24	150	1,572	132,360	272,526	39,438	221,802		
6/25	2,160	3,732	31,542	304,068	17,160	238,962		
6/26	23,988	27,720	48,798	352,866	35,322	274,284	7,182	7,182
6/27	11,196	38,916	68,844	421,710	59,610	333,894	18,276	25,458
6/28	8,172	47,088	146,340	568,050	65,910	399,804	33,456	58,914
6/29	61,098	108,186	220,260	788,310	42,594	442,398	27,966	86,880
6/30	29,412	137,598	140,940	929,250	28,368	470,766	19,290	106,170
7/01	7,320	144,918	73,764	1,003,014	38,190	508,956	33,420	139,590
7/02	35,268	180,186	16,092	1,019,106	129,594	638,550	42,522	182,112
7/03	190,842	371,028	25,560	1,044,666	86,934	725,484	62,532	244,644
7/04	369,012	740,040	33,798	1,078,464	108,786	834,270	46,158	290,802
7/05	164,538	904,578	51,420	1,129,884	144,756	979,026	50,400	341,202
7/06	150,396	1,054,974	75,366	1,205,250	80,244	1,059,270	53,034	394,236
7/07	493,008	1,547,982	23,406	1,228,656	77,886	1,137,156	23,454	417,690
7/08	755,736	2,303,718	29,718	1,258,374	17,352	1,154,508	39,312	457,002
7/09	535,890	2,839,608	30,756	1,289,130	7,026	1,161,534	59,892	516,894
7/10	177,840	3,017,448	43,440	1,332,570	19,776	1,181,310	69,036	585,930
7/11	140,694	3,158,142	24,996	1,357,566	59,220	1,240,530	82,770	668,700
7/12	321,498	3,479,640	31,752	1,389,318	96,822	1,337,352	34,326	703,026
7/13	571,242	4,050,882	36,312	1,425,630	51,756	1,389,108	29,460	732,486
7/14	443,994	4,494,876	22,734	1,448,364	33,432	1,422,540	35,850	768,336
7/15	374,616	4,869,492	12,354	1,460,718	86,232	1,508,772	45,288	813,624
7/16	386,886	5,256,378	7,356	1,468,074	74,952	1,583,724	32,964	846,588
7/17	276,498	5,532,876	6,354	1,474,428	78,516	1,662,240	37,440	884,028
7/18	295,080	5,827,956			70,098	1,732,338	72,300	956,328
7/19	680,190	6,508,146			161,970	1,894,308	85,908	1,042,236
7/20	420,198	6,928,344			83,358	1,977,666	92,784	1,135,020
7/21	170,520	7,098,864			52,536	2,030,202	103,662	1,238,682
7/22	76,362	7,175,226			25,500	2,055,702	50,820	1,289,502
7/23	49,746	7,224,972			29,994	2,085,696	39,246	1,328,748
7/24	53,214	7,278,186			37,896	2,123,592	53,076	1,381,824
7/25	63,426	7,341,612			37,200	2,160,792	45,636	1,427,460
7/26							43,758	1,471,218
7/27							29,226	1,500,444
7/28							30,288	1,530,732
7/29							33,906	1,564,638

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

Table 10.–Comparison of daily sockeye salmon escapement estimates by tower count, aerial survey estimate and river test fishing enumeration methods, Kvichak River, Bristol Bay, 2015.

	Tower count		River test fishing				
			Fish per	Index points		Cumulative	Estimated
Date	Daily	Cum.	index pt.[a]	Daily	Cum.	escapement	river fish[b]
6/15	0	0					
6/16	90	90					
6/17	186	276					
6/18	60	336					
6/19	120	456	111	16	16	1,724	
6/20	168	624	111	9	25	2,744	
6/21	126	750	111	0	25	2,744	
6/22	408	1,158	111	0	25	2,744	
6/23	264	1,422	111	11	36	4,018	
6/24	150	1,572	111	52	88	9,805	
6/25	2,160	3,732	111	36	124	13,816	
6/26	23,988	27,720	111	47	172	19,070	
6/27	11,196	38,916	111	62	233	25,903	
6/28	8,172	47,088	111	382	616	68,349	
6/29	61,098	108,186	111	42	658	72,994	100,000
6/30	29,412	137,598	111	17	675	74,876	100,000
7/01	7,320	144,918	220	537	1,211	266,465	30,000
7/02	35,268	180,186	208	1,192	2,404	499,959	150,000
7/03	190,842	371,028	230	983	3,387	778,976	350,000
7/04	372,612	743,640	264	1,435	4,822	1,272,983	500,000
7/05	164,538	908,178	228	3,137	7,959	1,814,708	500,000
7/06	150,396	1,058,574	150	2,583	10,542	1,581,288	600,000
7/07	493,008	1,551,582	180	1,790	12,332	2,219,678	600,000
7/08	755,736	2,307,318	219	200	12,531	2,744,348	700,000
7/09	535,890	2,843,208	235	244	12,775	3,002,233	400,000
7/10	177,840	3,021,048	250	213	12,988	3,247,089	150,000
7/11	140,694	3,161,742	252	1,406	14,394	3,627,381	250,000
7/12	321,498	3,483,240	268	2,247	16,641	4,459,897	500,000
7/13	571,242	4,054,482	262	2,346	18,987	4,974,713	1,000,000
7/14	443,994	4,498,476	253	2,156	21,143	5,349,241	1,000,000
7/15	374,616	4,873,092	249	941	22,084	5,498,937	800,000
7/16	386,886	5,259,978	249	1,444	23,528	5,858,408	600,000
7/17	276,498	5,536,476					600,000
7/18	295,080	5,831,556					
7/19	680,190	6,511,746					
7/20	420,198	6,931,944					
7/21	175,020	7,106,964					
7/22	76,362	7,183,326					
7/23	49,746	7,233,072					
7/24	53,214	7,286,286					
7/25	63,426	7,349,712					

[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 June 27 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 11.–Commercial salmon catch by date and species, in numbers of fish, Egegik District, Bristol Bay, 2015.

	Hours fished		Deliveries						
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Coho	Total
6/1	15	15							0
6/2 [a]	24	24							
6/3	9	9							0
6/4 [a]	15	15							
6/5	9	9							0
6/8	15	15		9	83				83
6/9	24	24	4	15	418	1	5		424
6/10	9	9	3	3	100				100
6/11	15	15	7	21	1,765		11		1,776
6/12	9	9	11	5	1,174	1	15		1,190
6/15	6	15	193	102	22,847	12	210		23,069
6/16		24		179	21,635	6	113		21,754
6/17		17		167	17,659	20	91		17,770
6/18	8	8	369	132	43,723	49	524		44,296
6/19	8	8	448	107	45,210	33	458		45,701
6/20		8		145	18,755	7	97		18,859
6/21	8	8	484	146	46,529	50	434		47,013
6/22		8		155	36,824	23	157		37,004
6/23	5	8	477	159	73,353	17	847		74,217
6/24	4	8	386	272	45,375	29	388		45,792
6/25	6	16	317	134	72,699	23	569		73,291
6/26	12	8	337	176	134,858	33	898		135,789
6/27	6	8	406	192	192,648	38	1,075		193,761
6/28	10	11.5	648	340	196,787	41	1,478		198,306
6/29	11.5	15	698	289	260,907	32	1,524		262,463
6/30	8	13.5	419	174	262,463	21	1,286		263,770
7/1	9.5	8	368	191	319,124	20	1,542		320,686
7/2	6.5	8	382	199	337,678	13	2,095		339,786
7/3	6.5	8	387	202	384,910	17	2,105		387,032
7/4	11	8	622	187	350,073	15	2,033		352,121
7/5	8	16	539	249	224,247	7	1,216		225,470
7/6	11	16	548	298	304,120	12	2,041		306,173

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Table 11.–Page 2 of 2.

Date	Hours fished		Deliveries		Sockeye	Chinook	Chum	Coho	Total
	Drift	Set	Drift	Set					
7/7	16.75	16.75	589	265	278,478	6	2,770		281,254
7/8	15	15	555	264	330,162	7	2,108		332,277
7/9	16.5	16.5	608	272	626,797	9	3,957		630,763
7/10	8	15	542	308	521,407	9	4,271		525,687
7/11	11.5	14	555	346	381,669	14	2,947		384,630
7/12	11	24	446	273	309,583	6	2,072		311,661
7/13	15	24	438	251	349,338	6	1,727		351,071
7/14	15	24	386	163	338,445	6	2,361		340,812
7/15	24	24	336	268	363,446	1	4,706		368,153
7/16	24	24	233	199	272,287	1	2,995		275,283
7/17	24	24	236	218	328,908		4,368		333,276
7/18	24	24	229	170	295,010	3	2,940		297,953
7/19	24	24	193	220	501,011	3	2,190		503,204
7/20	24	24	157	95	139,435	4	1,087		140,526
7/21	24	24	153	122	153,058	6	2,100		155,164
7/22	24	24	85	90	80,163	1	1,006		81,170
7/23	24	24	41	40	26,575		702		27,277
7/24	24	24	19	11	16,032		1,240		17,272
7/25	24	24	12	6	10,545		874		11,419
7/26	24	24	6	1	4,684		797	4	5,485
7/27 [a]	24	24							
7/28 [a]	24	24							
7/29 [a]	24	24							
7/30 [a]	24	24							
7/31 [a]	9	9							
8/3 [a]	15	15							
8/4 [a]	24	24							
8/5 [a]	24	24							
8/6 [a]	24	24							
8/7	9	9							0
8/10 [a]	15	15							
Totals	887	1,030	13,873	7,843	8,749,567	602	69,057	730	8,819,956

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

Table 12.–Comparison of daily sockeye salmon escapement estimates by tower count and river test fishing enumeration methods, Egegik River, Bristol Bay, 2015.

	Tower count		River test fishing				
				Index points		Estimated cumulative	
Date	Daily	Cum.	Fish per index pt.[a]	Daily	Cum.	escapement	Estimated river fish[b]
6/12	2,646	2,646					
6/13	3,216	5,862					
6/14	7,272	13,134					
6/15	5,580	18,714					
6/16	6,504	25,218	90	37	37	3,334	
6/17	14,838	40,056	90	246	283	25,510	
6/18	30,252	70,308	90	436	719	64,752	
6/19	19,854	90,162	90	190	909	81,830	
6/20	24,834	114,996	90	140	1,049	94,392	
6/21	22,830	137,826	110	428	1,477	162,456	
6/22	14,544	152,370	115	95	1,572	180,803	25,000
6/23	29,994	182,364	105	336	1,908	200,379	25,000
6/24	39,438	221,802	116	148	2,056	238,498	15,000
6/25	17,160	238,962	116	106	2,162	250,834	10,000
6/26	35,322	274,284	133	223	2,385	317,264	15,000
6/27	59,610	333,894	154	303	2,689	414,062	50,000
6/28	65,910	399,804	158	220	2,909	459,588	70,000
6/29	42,594	442,398	152	314	3,223	489,850	70,000
6/30	28,368	470,766	162	167	3,390	549,128	40,000
7/1	38,190	508,956	158	419	3,808	601,717	70,000
7/2	129,594	638,550	168	762	4,570	767,757	100,000
7/3	86,934	725,484	165	279	4,849	800,149	120,000
7/4	108,786	834,270	158	772	5,622	888,248	70,000
7/5	144,756	979,026	175	660	6,282	1,099,328	100,000
7/6	80,244	1,059,270	155	1,194	7,476	1,158,762	100,000
7/7	77,886	1,137,156	155	238	7,714	1,195,621	100,000
7/8	17,352	1,154,508	152	83	7,797	1,185,100	50,000
7/9	7,026	1,161,534	150	91	7,888	1,183,198	20,000
7/10	19,776	1,181,310	150	203	8,091	1,213,712	20,000
7/11	59,220	1,240,530	161	326	8,418	1,355,248	25,000
7/12	96,822	1,337,352					120,000
7/13	51,756	1,389,108					
7/14	33,432	1,422,540					
7/15	86,232	1,508,772					
7/16	74,952	1,583,724					
7/17	78,516	1,662,240					
7/18	70,098	1,732,338					
7/19	161,970	1,894,308					
7/20	83,358	1,977,666					
7/21	52,536	2,030,202					
7/22	25,500	2,055,702					
7/23	29,994	2,085,696					
7/24	37,896	2,123,592					
7/25	37,200	2,160,792					

[a] The FPI used to estimate the daily ERFs prior to using lag time relationships was calculated using the 2009–2013 mean of median FPIs. This method was used Until June 21 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 13.–Inshore run of sockeye salmon by age class, river system, and district, in thousands of fish, Bristol Bay, 2015.

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	2,080	9,874	11,954	2,673	764	3,437	1	15,392
	Percent	13.5	63.9	77	17.3	4.9	22	0.0	100
Alagnak River									
	Number	3,918	2,546	6,464	4,897	227	5,124	1	11,589
	Percent	33.7	21.9	56	42.1	2.0	44	0.0	99.7
Naknek River									
	Number	1,805	1,080	2,885	1,430	104	1,534	0	4,419
	Percent	40.4	24.2	65	32.0	2.3	34	0.0	99
Total	Number	7,803	13,500	21,303	9,000	1,095	10,095	2	31,400
	Percent	0.2	0.4	0.7	0.3	0.0	0.3	0.0	1.0
Egegik District									
	Number	546	8,162	8,708	846	676	1,522	14	10,244
	Percent	5.0	74.8	80	7.8	6.2	14	0.1	94
Ugashik District									
	Number	3,303	1,037	4,340	1,925	619	2,544	0	6,884
	Percent	46.9	14.7	62	27.4	8.8	36	0.0	98
Nushagak District									
Wood River									
	Number	2,604	211	2,815	2,106	69	2,175	0	4,990
	Percent	51.4	4.2	56	41.5	1.4	43	0.0	99
Igushik River									
	Number	503	0	503	1,152	2	1,154	0	1,657
	Percent	30.3	0.0	30	69.5	0.1	70	0.0	100
Nushagak River									
	Number	190	2	192	2,020	0	2,020	26	2,238
	Percent	8.4	0.1	9	89.6	0.0	90	1.1	99
Total	Number	3,297	213	3,510	5,278	71	5,349	26	8,885
	Percent	30.0	1.4	31.5	66.9	0.5	67.4	0.4	99.2
Togiak District [c]									
	Number	182	10	192	384	10	394	1	591
	Percent	30.9	1.8	32.7	65.0	1.6	66.6	0.1	99.4
Total Bristol Bay [d]									
	Number	15,131	22,922	38,053	17,433	2,471	19,904	43	58,004
	Percent	0.3	0.4	0.7	0.3	0.0	0.3	0.0	1.0

[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, 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 14.–Daily district registration of drift gillnet permit holders by district, Bristol Bay, 2015.

Date	Naknek-Kvichak		Egegik		Ugashik		Nushagak		Togiak[a]	Total
	Total	Dual	Total	Dual	Total	Dual	Total	Dual	Total	
6/25	273	28	391	71	79	18	464	82	40	1,247
6/26	269	26	440	82	94	22	474	84	41	1,318
6/27	554	76	457	84	100	23	449	77	42	1,602
6/28	567	79	463	85	108	27	448	77	43	1,629
6/29	614	91	466	86	111	29	441	75	45	1,677
6/30	629	98	459	85	118	29	435	73	46	1,687
7/01	625	98	464	86	121	31	429	72	46	1,685
7/02	630	99	467	87	138	33	416	68	47	1,698
7/03	638	99	470	88	140	34	399	65	47	1,694
7/04	650	103	454	86	141	34	385	61	48	1,678
7/05	646	102	443	83	146	34	366	56	48	1,649
7/06	647	103	418	80	157	37	329	51	50	1,601
7/07	649	104	375	68	189	43	324	50	51	1,588
7/08	657	106	358	63	256	54	239	35	52	1,562
7/09	670	109	350	62	301	66	217	30	52	1,590
7/10	760	122	342	60	316	71	217	30	52	1,687
7/11	785	128	321	55	277	60	217	30	52	1,652
7/12	804	133	300	51	243	53	217	30	52	1,616
7/13	870	149	296	51	236	50	210	28	52	1,664
7/14	973	170	271	46	232	49	210	29	52	1,738
7/15	991	175	260	42	226	48	209	29	52	1,738
7/16	994	177	259	41	223	47	209	29	52	1,737
Average	677	108	387	70	180	41	332	53	48	1,624

Note: Total permit sum includes dual boat registrations.

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

Table 15.–Commercial salmon catch by date and species, in numbers of fish, Ugashik District, Bristol Bay, 2015.

	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/1	15	15								0
6/2	24	24								0
6/3	24	24								0
6/4	24	24								0
6/5	9	9								0
6/8 [a]	15	15								
6/9 [a]	24	24								
6/10	24	24								0
6/11	24	24								0
6/12	9	9								0
6/17		8		3						198
6/20		8		18	1,638					1,638
6/23		9		46	10,054	10				10,064
6/25	6	9	55	56	29,790	8	687			30,485
6/27	7	9	72	66	76,883	7	571			77,461
6/28	7	9	76	72	72,365	11	527			72,903
6/29	8	9	82	69	93,259	18	356			93,633
6/30	9	9	87	75	109,493	8	645			110,146
7/2	6		105		120,947	17	977			121,941
7/3	6	9	109	82	178,908	4	1,181			180,093
7/4	9	9	110	85	249,309	5	1,301			250,615
7/5	9	9	93	54	209,589	4	2,057			211,650
7/6	10	10	130	87	334,342	9	3,084			337,435
7/7	7	8	161	74	305,112	9	3,418			308,539
7/8	7	8	325	64	382,737	2	4,928			387,667
7/9	15	18.5	227	97	396,501	6	5,185			401,692
7/10	19	21.5	457	82	442,924	13	4,132			447,069
7/11	13	24	222	94	181,176	3	1,889	2		183,070
7/12	13	24	193	95	167,557	5	1,235			168,797
7/13	13	24	213	85	303,817		2,598			306,415
7/14	12	24	215	78	371,792	5	2,378			374,175
7/15	16	24	193	15	259,068	2	3,187			262,257
7/16	24	24	158	18	216,411		2,862			219,273
7/17	24	24	207	6	233,777	1	4,350		1	238,129
7/18	24	24	185	20	205,034	5	4,933			209,972
7/19	24	24	132	28	139,834	2	2,656			142,492
7/20	24	24	143	23	125,202		2,297			127,499
7/21	24	24	92	12	101,622	1	1,122			102,745
7/22	24	24	63	7	36,611		1,387			37,998
7/23	24	24	25	3	22,181	1	855			23,037
7/24	24	24	31	2	27,364	1	2,522			29,887
7/25	24	24	13		10,652		1,485			12,137

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Table 15.–Page 2 of 2.

	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/26	24	24	11	3	10,704		1,485			12,189
7/27	24	24	12	1	10,451		1,450			11,901
7/28	24	24	16	2	13,188		484			13,672
7/29	24	24	12	3	6,522	1	750			7,273
7/30	24	24	18	2	7,638		421			8,059
7/31	24	24	4		2,247		105			2,352
8/1	24	24	4	8	2,516		292			2,808
8/2	24	24	2	3	873		101			974
8/3	9	9								0
8/6	15	15								0
8/7	24	24								0
8/8	24	24								0
8/9	24	24								0
8/10	9	9								0
8/13	15	15								0
8/14	24	24								0
8/15	24	24								0
8/16	24	24								0
8/17	9	9								0
8/20	15	15								0
8/21	24	24								0
8/22	24	24								0
8/23	24	24								0
8/24	9	9								0
8/27	15	15								0
8/28	24	24								0
8/29	24	24								0
8/30	24	24								0
8/31	9	9								0
9/3	15	15								0
9/4	24	24								0
9/5	24	24								0
9/6	24	24								0
9/7	9	9								0
9/10 [a]	15	15								
Total	1,305	1,396	4,258	1,539	5,473,800	158	69,967	2	2,533	5,546,394

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, 2015.

	Tower count		River test fishing				
				Index points		Estimated cumulative	
Date	Daily	Cum.	Fish per index pt.[a]	Daily	Cum.	escapement	Estimated river fish[b]
6/23			69	67	67	4,639	
6/24			69	109	176	12,144	
6/25			69	74	250	17,218	
6/26	7,182	7,182	69	207	457	31,522	
6/27	18,276	25,458	69	326	783	54,004	40,000
6/28	33,456	58,914	129	292	1,075	138,627	50,000
6/29	27,966	86,880	96	232	1,307	125,461	70,000
6/30	19,290	106,170	99	121	1,428	141,333	35,000
7/1	33,420	139,590	130	200	1,627	211,529	35,000
7/2	42,522	182,112	139	417	2,044	284,137	70,000
7/3	62,532	244,644	120	438	2,482	297,886	100,000
7/4	46,158	290,802	135	235	2,717	366,821	60,000
7/5	50,400	341,202	137	279	2,996	410,437	80,000
7/6	53,034	394,236	136	398	3,393	461,503	70,000
7/7	23,454	417,690	123	863	4,257	523,598	70,000
7/8	39,312	457,002	135	623	4,880	658,776	100,000
7/9	59,892	516,894	131	550	5,429	711,248	200,000
7/10	69,036	585,930	129	584	6,013	775,718	200,000
7/11	82,770	668,700	137	327	6,340	868,643	200,000
7/12	34,326	703,026	121	260	6,600	798,652	200,000
7/13	29,460	732,486	122	234	6,835	833,842	100,000
7/14	35,850	768,336	128	415	7,250	928,032	100,000
7/15	45,288	813,624	125	475	7,726	965,707	150,000
7/16	32,964	846,588	121	501	8,227	995,459	150,000
7/17	37,440	884,028	119	505	8,732	1,039,098	150,000
7/18	72,300	956,328					150,000
7/19	85,908	1,042,236					
7/20	92,784	1,135,020					
7/21	103,662	1,238,682					
7/22	50,820	1,289,502					
7/23	39,246	1,328,748					
7/24	53,076	1,381,824					
7/25	45,636	1,427,460					
7/26	43,758	1,471,218					
7/27	29,226	1,500,444					
7/28	30,288	1,530,732					
7/29	33,906	1,564,638					

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 2009–2013 mean of median FPIs. This method was used until June 30 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, 2015.

	Wood River		Igushik River		Togiak River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/13	540	540				
6/14	1,428	1,968				
6/15	1,026	2,994				
6/16	1,092	4,086				
6/17	2,178	6,264				
6/18	5,532	11,796	282	282		
6/19	8,262	20,058	186	468		
6/20	20,760	40,818	516	984		
6/21	23,976	64,794	2,088	3,072		
6/22	22,998	87,792	3,162	6,234		
6/23	20,112	107,904	3,630	9,864		
6/24	35,082	142,986	3,684	13,548		
6/25	33,546	176,532	3,708	17,256		
6/26	27,402	203,934	7,344	24,600		
6/27	53,820	257,754	5,646	30,246		
6/28	67,512	325,266	6,232	36,478		
6/29	62,514	387,780	11,214	47,692		
6/30	55,770	443,550	12,498	60,190		
7/1	68,652	512,202	15,312	75,502		
7/2	71,928	584,130	17,394	92,896		
7/3	92,928	677,058	14,442	107,338	258	258
7/4	70,038	747,096	13,896	121,234	18	276
7/5	73,872	820,968	10,956	132,190	48	324
7/6	83,454	904,422	13,848	146,038	210	534
7/7	75,930	980,352	17,436	163,474	234	768
7/8	57,462	1,037,814	17,118	180,592	486	1,254
7/9	45,006	1,082,820	15,480	196,072	1,734	2,988
7/10	35,796	1,118,616	12,114	208,186	1,164	4,152
7/11	41,190	1,159,806	10,140	218,326	1,608	5,760
7/12	78,180	1,237,986	7,182	225,508	1,308	7,068
7/13	121,968	1,359,954	7,242	232,750	2,316	9,384
7/14	103,524	1,463,478	16,110	248,860	3,156	12,540
7/15	63,030	1,526,508	20,778	269,638	3,252	15,792
7/16	59,718	1,586,226	30,558	300,196	5,682	21,474
7/17	71,688	1,657,914	33,798	333,994	3,990	25,464
7/18	72,678	1,730,592	40,566	374,560	2,772	28,236
7/19	71,472	1,802,064	83,574	458,134	5,274	33,510
7/20	53,598	1,855,662	87,834	545,968	7,278	40,788
7/21	28,782	1,884,444	58,788	604,756	6,372	47,160
7/22	21,954	1,906,398	46,416	651,172	8,748	55,908

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	Wood River		Igushik River		Togiak River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.
7/23	15,330	1,921,728			9,726	65,634
7/24	19,746	1,941,474			12,072	77,706
7/25					9,678	87,384
7/26					13,242	100,626
7/27					10,314	110,940
7/28					15,324	126,264
7/29					18,234	144,498
7/30					21,768	166,266
7/31					17,286	183,552
8/1					9,882	193,434
8/2					6,006	199,440
8/3					5,808	205,248
8/4					2,094	207,342
8/5					4,062	211,404
8/6					7,296	218,700

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

Table 18.–Commercial fishing emergency orders, by district and statistical area, Bristol Bay west side, 2015.

Number[a]	Start Date	Start Time		End Date	End Time	Effective time	
Nushagak District							
Nushagak Section							
Driftnet							
DLG.10	22 Jun	10:00 am	to	22 Jun	1:30 pm	3.5 hours	[b]
DLG.12	23 Jun	8:00 pm	to	24 Jun	1:00 am	5.0 hours	
DLG.13	25 Jun	10:00 am	to	25 Jun	4:00 pm	6.0 hours	
DLG.15	25 Jun	10:30 pm	to	26 Jun	2:30 am	4.0 hours	
DLG.16	26 Jun	10:00 am	to	26 Jun	2:30 pm	4.5 hours	
DLG.17	27 Jun	10:00 am	to	27 Jun	2:00 pm	4.0 hours	
DLG.18	28 Jun	12:30 am	to	28 Jun	3:30 am	3.0 hours	
DLG.18	28 Jun	10:30 am	to	28 Jun	3:30 pm	5.0 hours	
DLG.19	29 Jun	12:30 am	to	29 Jun	6:00 am	5.5 hours	
DLG.19	29 Jun	11:30 am	to	29 Jun	5:30 pm	6.0 hours	
DLG.20	29 Jun	5:30 pm	to	29 Jun	8:00 pm	2.5 hours	[c]
DLG.20	30 Jun	12:30 am	to	30 Jun	8:30 am	8.0 hours	
DLG.20	30 Jun	1:00 pm	to	30 Jun	9:00 pm	8.0 hours	
DLG.21	1 Jul	1:00 am	to	1 Jul	9:00 am	8.0 hours	
DLG.21	1 Jul	2:00 pm	to	1 Jul	10:00 pm	10.0 hours	
DLG.22	2 Jul	2:00 am	to	2 Jul	10:00 am	8.0 hours	
DLG.22	2 Jul	3:00 pm	to	2 Jul	11:00 pm	8.0 hours	
DLG.23	3 Jul	3:00 am	to	3 Jul	11:00 am	8.0 hours	
DLG.23	3 Jul	3:00 pm	to	3 Jul	11:00 pm	8.0 hours	
DLG.24	3 Jul	3:00 pm	to	6 Jul	6:00 pm	75.0 hours	
DLG.25	6 Jul	6:00 pm	to	7 Jul	12:00 am	6.0 hours	
DLG.25	7 Jul	5:00 am	to	7 Jul	1:00 pm	8.0 hours	
DLG.25	7 Jul	5:00 pm	to	8 Jul	1:00 am	8.0 hours	
DLG.26	8 Jul	6:00 am	to	8 Jul	3:00 pm	6.0 hours	
DLG.26	8 Jul	6:00 pm	to	9 Jul	2:00 am	8.0 hours	
DLG.29	9 Jul	7:00 am	to	9 Jul	4:00 pm	9.0 hours	
DLG.29	9 Jul	7:00 pm	to				[d]

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Number[a]	Start Date	Start Time		End Date	End Time	Effective time	
Nushagak District							
Nushagak Section							
Setnet							
DLG.08	21 Jun	5:00 pm	to	21 Jun	11:00 pm	6.0 hours	[b]
DLG.08	22 Jun	5:30 am	to	22 Jun	1:30 pm	8.0 hours	
DLG.11	23 Jun	6:00 am	to	23 Jun	2:00 pm	8.0 hours	
DLG.12	23 Jun	7:00 pm	to	24 Jun	1:00 am	6 hours	
DLG.13	25 Jun	8:00 am	to	25 Jun	4:00 pm	8.0 hours	
DLG.15	25 Jun	8:30 pm	to	26 Jun	2:30 am	6.0 hours	
DLG.15	26 Jun	8:30 am	to	26 Jun	2:30 pm	6.0 hours	
DLG.17	27 Jun	9:00 am	to	27 Jun	4:00 pm	7.0 hours	
DLG.18	27 Jun	10:30 pm	to	28 Jun	3:30 am	5.0 hours	
DLG.18	28 Jun	9:30 am	to	28 Jun	3:30 pm	6.0 hours	
DLG.19	28 Jun	11:00 pm	to	29 Jun	6:00 am	7.0 hours	
DLG.19	29 Jun	10:30 am	to	29 Jun	5:30 pm	7.0 hours	
DLG.20	29 Jun	5:30 pm	to	30 Jun	6:30 pm	25.0 hours	[c]
DLG.21	30 Jun	6:30 pm	to	1 Jul	7:30 pm	25.0 hours	[c]
DLG.22	1 Jul	7:30 pm	to	2 Jul	08:30 pm	25.0 hours	[c]
DLG.23	2 Jul	08:30 pm	to	3 Jul	09:30 pm	25.0 hours	[c]
DLG.24	3 Jul	09:30 pm	to				[d]
Nushagak District							
Igushik Section							
Driftnet							
DLG.10	22 Jun	10:00 am	to	22 Jun	1:30 pm	3.5 hours	[b]
DLG.12	23 Jun	8:00 pm	to	24 Jun	1:00 am	5.0 hours	
DLG.13	25 Jun	10:00 am	to	25 Jun	4:00 pm	6.0 hours	
DLG.15	25 Jun	10:30 pm	to	26 Jun	2:30 am	4.0 hours	
DLG.16	26 Jun	10:00 am	to	26 Jun	2:30 pm	4.5 hours	
DLG.17	27 Jun	10:00 am	to	27 Jun	2:00 pm	4.0 hours	
DLG.18	28 Jun	12:30 am	to	28 Jun	3:30 am	3.0 hours	
DLG.18	28 Jun	10:30 am	to	28 Jun	3:30 pm	5.0 hours	
DLG.19	29 Jun	12:30 am	to	29 Jun	6:00 am	5.5 hours	
DLG.19	29 Jun	11:30 am	to	29 Jun	5:30 pm	6.0 hours	
DLG.20	29 Jun	5:30 pm	to	29 Jun	8:00 pm	2.5 hours	[c]
DLG.20	30 Jun	12:30 am	to	30 Jun	8:30 am	8.0 hours	
DLG.20	30 Jun	1:00 pm	to	30 Jun	9:00 pm	8.0 hours	
DLG.21	1 Jul	1:00 am	to	1 Jul	9:00 am	8.0 hours	

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Number[a]	Start Date	Start Time		End Date	End Time	Effective time	
DLG.21	1 Jul	2:00 pm	to	1 Jul	10:00 pm	10.0 hours	
DLG.22	2 Jul	2:00 am	to	2 Jul	10:00 am	8.0 hours	
DLG.22	2 Jul	3:00 pm	to	2 Jul	11:00 pm	8.0 hours	
DLG.23	3 Jul	3:00 am	to	3 Jul	11:00 am	8.0 hours	
DLG.23	3 Jul	3:00 pm	to	3 Jul	11:00 pm	8.0 hours	
DLG.24	3 Jul	3:00 pm	to	6 Jul	6:00 pm	75.0 hours	
DLG.25	6 Jul	6:00 pm	to	7 Jul	12:00 am	6.0 hours	
DLG.25	7 Jul	5:00 am	to	7 Jul	1:00 pm	8.0 hours	
DLG.25	7 Jul	5:00 pm	to	8 Jul	1:00 am	8.0 hours	
DLG.26	8 Jul	6:00 am	to	8 Jul	3:00 pm	6.0 hours	
DLG.26	8 Jul	6:00 pm	to	9 Jul	2:00 am	8.0 hours	
DLG.29	9 Jul	7:00 am	to	9 Jul	4:00 pm	9.0 hours	
DLG.29	9 Jul	7:00 pm	to				[d]
Nushagak District							
Igushik Section							
Setnet							
DLG.03	16 Jun	12:30 pm	to	16 Jun	8:30 pm	8.0 hours	[b]
DLG.03	17 Jun	1:30 pm	to	17 Jun	9:30 pm	8.0 hours	
DLG.03	18 Jun	2:30 pm	to	18 Jun	10:30 pm	8.0 hours	
DLG.05	19 Jun	3:30 pm	to	19 Jun	11:30 pm	8.0 hours	
DLG.05	20 Jun	4:00 pm	to	21 Jun	12:00 am	8.0 hours	
DLG.05	21 Jun	5:00 am	to	21 Jun	1:00 pm	8.0 hours	
DLG.08	21 Jun	5:00 pm	to	21 Jun	11:00 pm	6.0 hours	
DLG.08	22 Jun	5:30 am	to	22 Jun	1:30 pm	8.0 hours	
DLG.11	23 Jun	6:00 am	to	23 Jun	2:00 pm	8.0 hours	
DLG.12	23 Jun	7:00 pm	to	24 Jun	1:00 am	6 hours	
DLG.12	24 Jun	7:00 am	to	24 Jun	3:00 pm	8.0 hours	
DLG.13	25 Jun	8:00 am	to	25 Jun	4:00 pm	8.0 hours	
DLG.15	25 Jun	8:30 pm	to	26 Jun	2:30 am	6.0 hours	
DLG.15	26 Jun	8:30 am	to	26 Jun	2:30 pm	6.0 hours	
DLG.17	27 Jun	9:00 am	to	27 Jun	4:00 pm	7.0 hours	
DLG.18	27 Jun	10:30 pm	to	28 Jun	3:30 am	5.0 hours	
DLG.18	28 Jun	9:30 am	to	28 Jun	3:30 pm	6.0 hours	
DLG.19	28 Jun	11:00 pm	to	29 Jun	6:00 am	7.0 hours	
DLG.19	29 Jun	10:30 am	to	29 Jun	5:30 pm	7.0 hours	
DLG.20	29 Jun	5:30 pm	to	30 Jun	6:30 pm	25.0 hours	[c]
DLG.21	30 Jun	6:30 pm	to	1 Jul	7:30 pm	25.0 hours	[c]

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Number[a]	Start Date	Start Time		End Date	End Time	Effective time	
DLG.22	1 Jul	7:30 pm	to	2 Jul	08:30 pm	25.0 hours	[c]
DLG.23	2 Jul	08:30 pm	to	3 Jul	09:30 pm	25.0 hours	[c]
DLG.24	3 Jul	09:30 pm	to				[d]
Togiak District							
Drift and Setnet							
DLG.04	18 Jun	9:00 am	to	19 Jun	9:00 am	24.0 hours	[f]
DLG.06	25 Jun	9:00 am	to	26 Jun	9:00 am	24.0 hours	[f]
DLG.27	10 Jul	9:00 am	to	11 Jul	9:00 pm	36.0 hours	[f]
DLG.31	14 Jul	9:00 am	to	16 Jul	9:00 am	60.0 hours	[f]
DLG.31	17 Jul	9:00 am	to	17 Jul	9:00 pm	12.0 hours	[g]
DLG.32	21 Jul	9:00 am	to	23 Jul	9:00 am	48.0 hours	[g]
DLG.33	31 Jul	9:00 am	to	2 Aug	9:00 am	48.0 hours	[g]
DLG.34	7 Aug	9:00 am	to	9 Aug	9:00 am	48.0 hours	[g]
DLG.35	14 Aug	9:00 am	to	16 Aug	9:00 am	48.0 hours	[g]
DLG.36	21 Aug	9:00 am	to	23 Aug	9:00 am	48.0 hours	[g]

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

[b] Gillnet mesh size 5.5 inches or less.

[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.

Table 19.–Commercial salmon catch by date and species, in numbers of fish, Nushagak District, Bristol Bay, 2015.

	Hours fished (drift/set)			Deliveries							
Date	Nushagak	Igushik		Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/16	0/0	0/8		0	15	815					815
6/17	0/0	0/8		0	20	1,408					1,408
6/18	0/0	0/8		0	45	3,901	1	1			3,903
6/19	0/0	0/8		0	52	7,131					7,131
6/20	0/0	0/8	[a]								
6/21	0/6	0/14	[a]								
6/22	3.5/8	3.5/8	[a]								
6/23	4/13	4/13	[a]								
6/24	1/1	1/9	[a]								
6/25	7.5/11.5	7.5/11.5	[a]								
6/26	7/8.5	7/8.5	[a]								
6/27	4/8.5	4/8.5		346	247	89,656	1,379	12,801			103,836
6/28	8/10.5	8/10.5		476	446	164,060	1,474	25,694	5		191,233
6/29	14/19.5	14./19.5		611	411	183,815	1,954	27,508	1		213,278
6/30	16/24	16/24		663	383	238,353	1,834	27,855	1		268,043
7/1	18/24	18/24		664	446	330,687	1,971	30,779	7		363,444
7/2	16/24	16/24		657	526	346,471	1,602	29,377	5		377,455
7/3	17/24	17/24		784	497	263,027	1,257	24,888	4		289,176
7/4	24/24	24/24		351	293	320,097	1,379	28,170	4	1	349,651
7/5	24/24	24/24		249	292	259,275	733	19,033	1		279,042
7/6	24/24	24/24		271	369	222,510	525	18,221	4	1	241,261
7/7	15/24	15/24		413	404	138,090	410	12,918	5	4	151,427
7/8	13/24	13/24		440	353	102,989	373	12,350	14	2	115,728
7/9	16/24	16/24		335	349	75,112	309	9,982	13	1	85,417
7/10	24/24	24/24		362	309	214,806	393	15,157	19	4	230,379
7/11	24/24	24/24		157	443	377,053	361	15,403	15	2	392,834
7/12	24/24	24/24		219	477	328,279	274	11,277	135	4	339,969
7/13	24/24	24/24		289	439	221,404	198	10,347	5	3	231,957
7/14	24/24	24/24		173	422	158,905	258	9,531	17	3	168,714
7/15	24/24	24/24		213	418	303,812	188	13,589	26	9	317,624
7/16	24/24	24/24		147	266	169,939	86	7,057	4	80	177,166
7/17	24/24	24/24		62	264	91,263	19	3,542		95	94,919
7/18	24/24	24/24		113	269	112,281	34	4,297	9	118	116,739
7/19	24/24	24/24		128	291	110,991	68	4,922	30	264	116,275
7/20	24/24	24/24		73	257	88,810	46	3,910	29	290	93,085
7/21	24/24	24/24		66	227	62,800	38	3,029	24	1,426	67,317
7/22	24/24	24/24		27	136	29,266	16	811	24	459	30,576
7/23	24/24	24/24		10	99	31,731	36	918	167	1,308	34,160

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Table 19.–Page 2 of 2.

	Hours fished (drift/set)		Deliveries							
Date	Nushagak	Igushik	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/24	24/24	24/24	12	135	41,541	20	724	35	366	42,686
7/25	24/24	24/24	3	102	25,600	14	481	8	390	26,493
7/26	24/24	24/24	3	90	11,173	13	214	6	817	12,223
7/27	24/24	24/24	1	72	14,243	8	139	50	298	14,738
7/28	24/24	24/24	1	28	7,606	4	59	55	141	7,865
7/29	24/24	24/24	1	8	2,560	1	1	46	5	2,613
7/30	24/24	24/24			1,608		1	35	12	1,656
7/31	24/24	24/24								0
8/1	24/24	24/24								0
8/2	24/24	24/24								0
8/3	24/24	24/24								0
8/4	24/24	24/24								0
8/5	24/24	24/24								0
8/6	24/24	24/24								0
8/7	24/24	24/24 [a]								
8/8	24/24	24/24 [a]								
8/9	24/24	24/24 [a]								
8/10	24/24	24/24 [a]								
8/11	24/24	24/24 [a]								
8/12	24/24	24/24 [a]								
8/13	24/24	24/24 [a]								
8/14	24/24	24/24 [a]								
8/15	24/24	24/24 [a]								
8/16	24/24	24/24 [a]								
8/17	24/24	24/24 [a]								
8/18	24/24	24/24 [a]								
8/19	24/24	24/24 [a]								
8/20	24/24	24/24 [a]								
8/21	24/24	24/24 [a]								
8/22	24/24	24/24 [a]								
8/23	24/24	24/24 [a]								
8/24	24/24	24/24 [a]								
9/7										106
Total	1,082/ 1,145.5	1,204 /1,418	9,954	11,527	5,592,816	48,968	502,904	807	6,969	6,152,333

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

Table 20.–Inshore commercial catch and escapement of sockeye salmon, in numbers of fish, Bristol Bay, 2015.

District and river system		Catch	Escapement	Total Run
Naknek-Kvichak District				
Kvichak River		8,123,676	7,341,612	15,465,288
Alagnak River		5,857,848	5,770,650	11,628,498
Naknek River		2,549,669	1,474,428	4,024,097
	Total	16,531,193	14,586,690	31,117,883
Egegik District		8,749,567	2,160,792	10,910,359
Ugashik District [a]		5,473,800	1,564,638	7,038,438
Nushagak District				
Wood River		3,128,881	1,941,474	5,070,355
Igushik River		1,005,838	651,172	1,657,010
Nushagak River		1,458,098	796,684	2,254,782
	Total	5,592,816	3,389,330	8,982,146
Togiak District				
Togiak Lake		313,200	218,700	531,900
Togiak River/Tributaries		45,331	[b]	45,331
Kulukak System		13,141	[b]	13,141
Other Systems [c]		231	[b]	231
	Total	371,903	218,700	590,603
Total Bristol Bay		36,719,279	21,920,150	58,639,429

[a] Includes Ugashik River tower and aerial survey estimates from King Salmon and Dog Salmon rivers.

[b] No monitoring of escapement occurs.

[c] Includes Negukthlik, Ungalikthluk, Osviak, Matogak, Quigmy, and Slug rivers.

Table 21.–Commercial salmon catch by date and species, in numbers of fish, Togiak District, Bristol Bay, 2015.

Date	Sockeye	Chinook	Chum	Pink	Coho	Total
6/15	76	7	5			88
6/16	191	16	23			230
6/17	233	13	59			305
6/18	40	10	63			113
6/20	21	3	38			62
6/22	1,093	93	234	3		1,423
6/23	1,364	119	294	1		1,778
6/24	1,262	85	327			1,674
6/25	407	72	638			1,117
6/26						[a]
6/27						[a]
6/29	3,123	152	1,355	1		4,631
6/30	5,874	216	2,671	3		8,764
7/1	5,562	113	2,452	8		8,135
7/2	3,717	158	2,121	10		6,006
7/3	6,047	174	2,184	4		8,409
7/4	4,384	95	1,635	11		6,125
7/6	4,591	89	3,996	17	1	8,694
7/7	8,949	180	5,589	15		14,733
7/8	9,939	128	4,662	16		14,745
7/9	9,310	190	7,427	29		16,956
7/10	5,013	53	2,875	3	1	7,945
7/11	487	1	249	9		746
7/13	11,665	64	6,215	66		18,010
7/14	12,544	80	7,039	50		19,713
7/15	5,519	10	2,058	38		7,625
7/16	9,121	52	3,716	8		12,897
7/17	11,409	59	4,598	28		16,094
7/18						[a]
7/20	19,293	40	4,865	34	1	24,233
7/21	14,994	28	4,203	21		19,246
7/22	4,015	13	1,506	3	2	5,539
7/23	15,782	33	4,079	22		19,916
7/24	11,381	24	2,610	13	1	14,029
7/25						[a]
7/27	15,457	16	1,793	53	1	17,320
7/28	24,254	33	2,993	38	5	27,323
7/29	21,497	39	2,886	19	3	24,444
7/30	19,798	30	4,113	51	1	23,993
7/31	15,413	23	2,188	29	12	17,665

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Date	Sockeye	Chinook	Chum	Pink	Coho	Total
8/1	11,896	19	1,319	284	4	13,522
8/2	5,522	5	565	4	2	6,098
8/3	7,943	10	803	7	11	8,774
8/4	9,736	15	1,108	28	22	10,909
8/5	6,395	14	721	44	38	7,212
8/6	7,145	6	850	35	18	8,054
8/7	4,933	8	818	41	42	5,842
8/8	4,858	9	652	30	76	5,625
8/9	960		129		10	1,099
8/10	2,006	3	216	12	96	2,333
8/11	4,909	4	507	20	183	5,623
8/12	3,969	4	386	13	216	4,588
8/13	3,996	7	361	23	484	4,871
8/14	3,146	10	333	10	937	4,436
8/15	2,422	3	243	14	1,005	3,687
8/16	510	2	42		219	773
8/17	804	2	103	10	1,550	2,469
8/18	1,235	2	108	8	1,827	3,180
8/19	1,211	1	82	10	1,674	2,978
8/20	843	3	68	1	1,505	2,420
8/21	729	1	49	8	1,255	2,042
8/22	672	1	29		1,330	2,032
8/23	173	1	4		126	304
8/24	163		6	1	1,032	1,202
8/25	418	2	37	2	2,303	2,762
8/26	296	3	23	4	1,955	2,281
8/27	196		16	5	875	1,092
8/28	239		12	1	1,446	1,698
8/31	175		1	1	2,797	2,974
9/1	116	1	8		2,869	2,994
9/2	2		2		145	149
Total	371,903	2,663	103,773	1,219	26,080	1,516,914

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

Table 22.–Commercial salmon catch by date and species, in numbers of fish, Togiak River Section, Bristol Bay, 2015.

	Deliveries							
Date	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/15		5	34	7				41
6/16		8	42	16	6			64
6/17	2	9	30	10	14			54
6/18								[a]
6/22	6	36	582	76	135	3		796
6/23	7	32	407	101	182	1		691
6/24	2	39	429	67	172			668
6/25	1	23	305	45	118			468
6/29	23	44	1,954	124	962	1		3,041
6/30	28	56	2,971	181	1,797	3		4,952
7/1	25	67	2,336	95	1,609	1		4,041
7/2	35	77	3,717	158	2,121	10		6,006
7/3	40	89	6,020	174	2,157	4		8,355
7/4	18	44	4,191	68	1,155	3		5,417
7/6	31	93	3,693	87	3,397	17		7,194
7/7	56	106	7,279	162	4,356	14		11,811
7/8	37	94	6,694	117	2,592	13		9,416
7/9	67	115	9,114	183	7,216	29		16,542
7/10	30	71	4,610	48	2,441	3	1	7,103
7/13	34	88	10,323	57	5,048	57		15,485
7/14	48	40	7,786	55	4,360	31		12,232
7/16	43	94	9,121	52	3,716	8		12,897
7/17	58	85	11,559	59	4,598	28		16,244
7/20	42	102	16,454	37	4,208	29	1	20,729
7/21	49	56	11,272	24	3,421	10	1	14,728
7/23	56	93	11,568	25	3,668	21		15,282
7/24	23	66	9,204	17	1,926	11		11,158
7/27	46	57	12,871	15	1,752	5	1	14,644
7/28	63	111	19,081	29	2,814	34	4	21,962
7/29	64	110	15,892	33	2,689	10	3	18,627
7/30	43	117	18,645	26	3,969	49		22,689
7/31	50	106	15,430	21	2,126	25	8	17,610
8/1	50	97	13,483	18	1,310	20	4	14,835
8/2	23	35	7,340	5	565	4	2	7,916
8/3	43	32	6,933	10	763	5	9	7,720
8/4	67	95	8,378	10	1,044	22	19	9,473
8/5	38	76	6,056	14	700	44	21	6,835

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	Deliveries							
Date	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
8/6	16	91	5,445	6	815	35	18	6,319
8/7	19	69	5,944	8	790	41	34	6,817
8/8	18	62	4,529	9	652	30	76	5,296
8/9	3	3	3,074		129		10	3,213
8/10	16	20	1,854	3	216	12	96	2,181
8/11	28	55	3,088	4	507	20	183	3,802
8/12	14	40	3,901	4	386	13	216	4,520
8/13	15	49	4,022	7	361	23	484	4,897
8/14	13	48	3,578	10	333	10	937	4,868
8/15	15	38	2,692	3	243	14	1,005	3,957
8/16	1	8	1,637	2	42		219	1,900
8/17	11	26	670	2	103	10	1,550	2,335
8/18	12	45	1,196	2	108	8	1,827	3,141
8/19	4	46	1,058	1	82	10	1,674	2,825
8/20	5	51	984	3	68	1	1,505	2,561
8/21	5	16	816	1	49	8	1,255	2,129
8/22	4	35	935	1	29		1,330	2,295
8/23	1	5	323	1	4		126	454
8/24	4	22	168		6	1	1,032	1,207
8/25	1	34	418	2	37	2	2,303	2,762
8/26	0	33	212	3	23	4	1,955	2,197
8/27	1	26	202		16	5	875	1,098
8/28	3	13	260		12	1	1,301	1,574
8/31	6	21	207		1	1	2,797	3,006
9/1	7	17	114	1	8		2,869	2,992
9/2	2	4	47		2		145	194
Total	1,472	1492	313,200	2,306	84,151	764	25,896	426,317

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

Table 23.–Commercial salmon catch by date and species, in numbers of fish, Kulukak Section, Bristol Bay, 2015.

	Deliveries							
Date	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/15								[a]
6/16	1	3	149		17			166
6/17	1	4	203	3	45			251
6/22	2	13	511	17	99			627
6/23	4	15	957	18	112			1,087
6/24	3	13	833	18	155			1,006
6/29	10	16	1,169	28	393			1,590
6/30	15	17	2,903	35	874			3,812
7/1	14	15	3,226	18	843	7		4,094
7/3								[a]
7/6	3	4	898	2	599		1	1,500
7/7	5	5	1,670	18	1,233	1		2,922
7/8	7	9	3,245	11	2,070	3		5,329
7/9								[a]
7/13	11	12	1,342	7	1,167	9		2,525
7/14	18	17	4,493	20	2,302	14		6,829
7/15	20	16	5,200	6	1,877	38		7,121
7/20	6	13	2,839	3	657	5		3,504
7/21	8	15	3,722	4	792	11		4,529
7/22	7	11	1,579	3	470	1		2,053
7/27	2	11	1,117	1	37	48		1,203
7/28	3	11	3,534	2	151	4	1	3,692
7/29	1	11	3,809	3	102	3		3,917
8/3	0	5	672		40	2	2	716
8/4	0	6	967	5	64	6	3	1,045
8/5	0	5	193		18		2	213
Total	140	246	45,331	224	14,180	152	9	59,896

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

Table 24.–Commercial salmon catch by date and species, in numbers of fish, Matogak Section, Bristol Bay, 2015.

Date[a]	Sockeye	Chinook	Chum	Pink	Coho	Total
6/18						[b]
6/20						[b]
6/25						[b]
6/26						[b]
6/27						[b]
7/4						[b]
7/10	403	5	434			842
7/11	487	1	249	9		746
7/14	398	6	435	5		844
7/15						[b]
7/22	2,344	10	1,026	2		3,382
7/23	1,809	8	411	1		2,229
7/24	3,012	7	684	2		3,705
7/25						[b]
7/27	180		4			184
7/28	312	2	28			342
7/29	991	3	95	6		1,095
7/30	1,136	4	144	2		1,286
7/31						[b]
8/1						[b]
8/5						[b]
8/6						[b]
8/7						[b]
Total	11,072	46	3,510	27	0	14,655

[a] Matogak Section is open 5 days per week by regulation.

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

Table 25.–Commercial salmon catch by date and species, in numbers of fish, Osviak Section, Bristol Bay, 2015.

Date[a]	Sockeye	Chinook	Chum	Pink	Coho	Total
6/25						[b]
7/9						[b]
8/28						[b]
Total						[b]

[a] Osviak Section is open 5 days per week by regulation.

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

Table 26.–Herring spawning biomass, harvest and escapement by age, Togiak District, 2015.

Total harvest [a]			Escapement [b]			Spawning biomass		
Age	Biomass	%	Age	Biomass	%	Age	Biomass	%
3	4	0.00	3	53	0.0	3	55	0.0
4	138	0.01	4	2,024	0.0	4	2,127	0.0
5	757	0.04	5	8,538	0.0	5	9,043	0.0
6	2,675	0.13	6	27,787	0.1	6	29,343	0.1
7	2,375	0.11	7	24,990	0.1	7	26,072	0.1
8	4,978	0.23	8	54,528	0.2	8	56,596	0.2
9	4,718	0.22	9	45,999	0.2	9	47,869	0.2
10	3,915	0.18	10	38,787	0.2	10	40,208	0.2
11	1,220	0.06	11	10,984	0.1	11	11,397	0.0
12	443	0.02	12	4,404	0.0	12	4,594	0.0
13	103	0.00	13	552	0.0	13	602	0.0
14	43	0.00	14	520	0.0	14	536	0.0
15	11	0.00	15	362	0.0	15	362	0.0
Total	21,396	100.00%	Total	219,526	1	Total	228,807	1

[a] Dutch Harbor harvest not included.

[b] Spawning biomass less post-peak harvest.

Table 27.–Commercial herring sac roe and spawn-on-kelp buyers in Togiak District, 2015.

			Product purchased		
			Sac roe		
	Operator/Buyer[a]	Base of operation	Gillnet	Purse seine	Spawn-on-kelp
1	Icicle Seafoods	P/Vs R.M. Thorstensen, Gordon Jensen, S/P	X	X	
2	Leader Creek Fisheries	S/P Naknek	X	X	
3	North Pacific Seafoods	S/Ps Pedersen Pt., Togiak	X	X	
4	Silver Bay Seafoods	S/P Naknek	X	X	
5	Trident Seafoods	P/Vs Independence, ALF	X	X	
6	Y.A.K. Inc.	S/P Naknek		X	

[a] Operators that registered in the Togiak District.

Table 28.–Daily observed estimates of spawn (in miles) and herring (in short tons) by index area, in the Togiak District, 2015.

				Estimated biomass by index area [a]											
Date	Start time	Survey rating [b]	Spawn	NUS	KUK	MET	NVK	UGL	TOG	TNG	MTG	OSK	HAG	WAL	Daily total
4/16	1130	2.7													
4/21	1100	4.0													
4/26	1100	3.1			10,249	614	175	100	16						11,154
4/27	1600	2.1		16,792	8,126	4,318	973	4,104	4,869	1,365			18,279	4,556	63,382
4/29	1000	2.0	24.8	181	9,757	5,935	995	6,810	17,358	3,821	1,365	302			46,524
5/1	1100	3.0	30.4	70	2,339	63	3,325	1,287	57,091	5,970	912	1,567	483		73,107
5/4	1300	1.9	2.7	6,627	15,773	235	486	498	81,116	3,372	1,437	2,490	3,785		115,819[c]
5/6	1100	3.3	2.4	1,028	138	1,921		2,738	88,770	7,834	2,687	1,002	1,303		107,421
5/18	1430	2.1	3.0	2,212	3,684	811	5,865	848	20,237	66,495	642	82			100,876
Total linear miles of spawn			63.3								Peak biomass estimate				115,819

Note: Blank cells represent days or sections where no biomass was observed.

[a] Index areas: NUS – Nushagak Peninsula; KUK – Kulukak; MET – Metervik; NVK – Nunavachak; UGL – Ungalikthluk; TOG – Togiak; TNG – Tongue Pt.; MTG – Matogak; OSK – Osviak; HAG – Hagemeister; WAL – Walrus Islands.

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

[c] Includes deadloss (332 short tons from Nunavachak; 182 short tons from Hagemeister).

Table 29.–Emergency order commercial fishing periods for herring sac roe and spawn-on-kelp in the Togiak District, 2015.

EO #	Area [a]		Date and time				
Herring sac roe gillnet							
DLG-02	Egg Island Section to Cape Constantine		4/27	8:00 pm	to	End of season	
DLG-04	Egg Island Section to 159° 30.00'; Right Hand Point to 58° 50.50'	area change	4/30	6:00 pm			
DLG-07	Egg Island Section to 159° 30.00'; Right Hand Point to 58° 50.50'	closure	5/11	12:00 pm			
Herring sac roe purse seine							
DLG-01	Anchor Pt. to 58° 50.50', Togiak Reef to Cape Newenham		4/27	8:00 pm	to	4/30	10:00 pm
DLG-03	Anchor Pt. to 58° 50.50', Togiak Reef to Cape Newenham	extension	4/30	10:00 pm	to	5/2	10:00 pm
DLG-05	Anchor Pt. to 58° 50.50', Togiak Reef to Cape Newenham	extension	5/2	10:00 pm	to	5/4	10:00 pm
DLG-06	Anchor Pt. to 58° 50.50', Togiak Reef to Cape Newenham	extension	5/4	10:00 pm	to	5/6	10:00 pm
DLG-07	Anchor Pt. to 58° 50.50', Togiak Reef to Cape Newenham	extension	5/6	10:00 pm	to	5/8	10:00 pm
DLG-08	Anchor Pt. to 58° 50.50', Togiak Reef to Cape Newenham	extension	5/8	10:00 pm	to	5/9	10:00 pm
DLG-09	Anchor Pt. to 58° 50.50', Togiak Reef to Cape Newenham	extension	5/9	10:00 pm	to	5/10	10:00 pm
DLG-10	Anchor Pt. to 58° 50.50', Togiak Reef to Cape Newenham	extension	5/10	10:00 pm	to	5/11	12:00 pm
Herring spawn on kelp [b]							

[a] Area descriptions are approximate. Precise boundaries are described in Emergency Orders (EO).

[b] Fishery did not occur.

Table 30.–Commercial herring harvest (in short tons) by fishing section, gear type, and date, Togiak District, Bristol Bay, 2015.

			Kulukak		Nunavachak		Togiak		Hagemeister		Pyrite Point		Total	
Date	Duration	Period	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %
Purse Seine														
4/29	74:00	1			1,989.8	9.9							1,989.8	9.9
4/30	24:00	2			2,238.7	10.4			418.3	10.7			2,657.0	10.5
5/1	24:00	3			1,082.7	10.8			791.7	10.7			1,874.4	10.8
5/2	24:00	4			284.3	10.7			768.6	11.4			1,053.0	11.2
5/3	24:00	5							1,807.2	11.7	457.5	10.5	2,264.7	11.4
5/4	24:00	6							1,279.2	11.4			1,279.2	11.4
5/5	24:00	7							1,570.5	12.0	73.7	10.6	1,644.2	11.9
5/6	24:00	8							1,714.7	12.2	113.3	11.3	1,828.0	12.1
5/7	24:00	9							1,030.7	11.8	474.1	11.6	1,504.8	11.8
5/8	24:00	10					55.2	11.9	462.8	11.2			518.0	11.3
5/9	24:00	11			71.4	11.5	939.3	11.6	977.9	11.6			1,988.6	11.6
5/10	24:00	12			96.8	11.5	10.9	12.6	895.0	11.4	114.8	12.2	1,117.5	11.5
5/11	12:00	13			2.1	10.6			317.4	11.5	201.0	10.5	520.5	11.1
Subtotal	350:00				5,765.8	11.1	1,005.4	11.8	12,034.1	11.1	1,434.3	11.4	20,239.6	11.3
Gillnet														
4/29	24:00	1	107.4	10.6									107.4	10.6
4/30	24:00	2	238.3	11.0									238.3	11.0
5/1	24:00	3	176.5	11.2									176.5	11.2
5/2	24:00	4	214.8	10.2									214.8	10.2
5/3	24:00	5	135.7	10.8									135.7	10.8
5/4	24:00	6	121.1	11.3									121.1	11.3
5/5 [a]	24:00	7												
5/6	24:00	8	34.5	12.5									34.5	12.5
5/7 [a]	24:00	9												
5/8	24:00	10	95.4	12.1									95.4	12.1
5/9	24:00	11	24.9	12.2									24.9	12.2
Subtotal	264:00		1,155.7	11.1	0.3	12.5							1,155.7	11.1

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		Kulukak		Nunavachak		Togiak		Hagemeister		Pyrite Point		Total	
Date	Period	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %
Combined													
4/29	1	107.4	10.6	1,989.8	9.9							2,097.3	9.9
4/30	2	238.3	11.0	2,238.7	10.4			418.3	10.7			2,895.2	10.5
5/1	3	176.5	11.2	1,082.7	10.8			791.7	10.7			2,050.9	10.8
5/2	4	214.8	10.2	284.3	10.7			768.6	11.4			1,267.8	11.0
5/3	5	135.7	10.8					1,807.2	11.7	457.5	10.5	2,400.4	11.4
5/4	6	121.1	11.3					1,279.2	11.4			1,400.2	11.4
5/5	7							1,570.5	12.0	73.7	10.6	1,644.5	11.9
5/6	8	34.5	12.5					1,714.7	12.2	113.3	11.3	1,862.5	12.1
5/7	9							1,030.7	11.8	474.1	11.6	1,512.1	11.8
5/8	10	95.4	12.1			55.2	11.9	462.8	11.2			613.4	11.4
5/9	11	24.9	12.2	71.4	11.5	939.3	11.6	977.9	11.6			2,013.5	11.6
5/10	12			96.8	11.5	10.9	12.6	895.0	11.4	114.8	12.2	1,117.5	11.5
5/11	13			2.1	10.6			317.4	11.5	201.0	10.5	520.5	11.1
Total		1,155.7	11.1	5,766.1	11.1	1,005.4	11.8	12,034.1	11.1	1,434.3	11.4	21,395.7	11.3

Note: Blank cells represent no data because of area closures or no fishing. Roe % is weighted using this formula: (tons*roe % + tons*roe % + ….) / total tons.

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

APPENDIX A: SALMON

Appendix A1.–Escapement goal ranges and actual counts of sockeye salmon by river system, in thousands of fish, Bristol Bay, 1995–2015.

	Kvichak River			Naknek River [a]		
	Range			Range		
Year	Lower	Upper	Actual	Lower	Upper	Actual
1995	6,000	10,000	10,039	800	1,400	1,111
1996	4,000	6,000	1,451	800	1,400	1,078
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
20-Year Avg.	2,840	9,600	3,135	800	1,610	1,576
1995-04 Avg.	3,600	9,200	3,230	800	1,640	1,428
2005-14 Avg.	2,080	10,000	3,041	800	1,580	1,724
2015	2,000	10,000	7,342	800	2,000	1,921

	Egegik River			Ugashik River		
	Range			Range		
Year	Lower	Upper	Actual	Lower	Upper	Actual
1995	800	1,400	1,282	500	1,200	1,304
1996	800	1,400	1,076	500	1,200	668
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
20-Year Avg.	800	1,400	1,216	500	1,200	966
1995-04 Avg.	800	1,400	1,178	500	1,200	901
2005-14 Avg.	800	1,400	1,254	500	1,200	1,032
2015	800	2,000	2,161	500	1,400	1,565

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	Wood River			Igushik River		
	Range			Range		
Year	Lower	Upper	Actual	Lower	Upper	Actual
1995	700	1,200	1,475	150	250	473
1996	700	1,200	1,650	150	250	401
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
20-Year Avg.	700	1,410	1,632	150	285	371
1995-04 Avg.	700	1,320	1,495	150	270	291
2005-14 Avg.	700	1,500	1,769	150	300	452
2015	700	1,800	1,941	150	400	651

	Nushagak River			Togiak River		
	Range			Range		
Year	Lower [b]	Upper	Actual [c]	Lower	Upper	Actual
1995	340	760	311	140	250	186
1996	340	760	557	140	250	157
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
20-Year Avg.	327	768	550	112	233	202
1995-04 Avg.	309	760	501	108	210	192
2005-14 Avg.	346	768	591	114	249	209
2015	370	900	797	120	270	219

[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, 1995–2015.

	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]
1995	967	921	1,888	1,882	96%	75	762	257	1,019	967	94%	8	2,990
1996	966	925	1,891	1,884	96%	70	760	257	1,017	941	92%	6	2,984
1997	959	940	1,899	1,875	95%	67	757	262	1,019	921	90%	7	2,992
1998	954	945	1,899	1,858	95%	55	756	259	1,015	901	88%	6	2,975
1999	937	961	1,898	1,847	95%	52	748	266	1,014	925	91%	6	2,970
2000	945	945	1,890	1,823	95%	38	735	277	1,012	921	90%	6	2,946
2001	958	925	1,883	1,566	82%	24	729	281	1,010	834	82%	2	2,919
2002	945	933	1,878	1,183	62%	16	717	289	1,006	680	67%	2	2,902
2003	923	944	1,867	1,389	74%	7	713	288	1,001	714	71%	1	2,876
2004	912	948	1,860	1,426	77%	3	703	286	989	797	81%	1	2,853
2005	895	967	1,862	1,526	82%	3	688	300	988	829	84%	1	2,854
2006	893	966	1,859	1,567	84%	1	683	302	985	844	86%	0	2,845
2007	881	981	1,862	1,621	87%	1	672	311	983	836	85%	0	2,846
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	1005	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
20-Year Avg.	916	958	1,874	1,670	88%	21	702	294	996	859	86%	2	2,892
1995-04 Avg.	947	939	1,885	1,673	87%	41	738	272	1,010	860	85%	5	2,941
2005-14 Avg.	887	974	1,862	1,645	88%	1	670	313	982	852	87%	0	2,845
2015	834	1,030	1,864	1,744	94%	0	639	336	975	885	91%	0	2,839

[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, 1995–2015.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1995	20,279,581	14,426,007	4,509,418	4,445,900	605,328	44,266,234
1996	8,215,028	10,809,115	4,411,055	5,693,563	462,897	29,591,658
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
20-Year Avg.	7,554,686	6,909,305	2,456,296	5,755,981	541,679	23,217,948
1995-04 Avg.	6,062,244	7,068,260	2,179,014	4,852,374	476,871	20,638,763
2005-14 Avg.	9,047,128	6,750,351	2,733,578	6,659,588	606,488	25,797,133
2015	16,531,193	8,749,567	5,473,800	5,592,816	371,903	36,719,279

Appendix A4.–Chinook salmon commercial catch by district, in numbers of fish, Bristol Bay, 1995–2015.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1995	5,130	782	1,551	79,943	11,982	99,388
1996	4,273	1,012	596	72,123	8,603	86,607
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
20-Year Avg.	1,895	694	918	43,988	7,053	54,547
1995-04 Avg.	2,188	956	914	54,960	7,695	66,712
2005-14 Avg.	1,602	433	922	33,015	6,411	42,383
2015	2,926	753	226	49,945	2,663	56,513

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

Appendix A5.–Chum salmon commercial catch by district, in numbers of fish, Bristol Bay, 1995–2015.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1995	236,472	68,325	62,801	390,158	221,126	978,882
1996	97,582	85,153	106,169	331,494	206,233	826,631
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
20-year Avg.	172,157	65,589	65,547	481,135	151,168	936,854
1995-04 Avg.	85,327	52,496	47,978	340,391	128,071	656,778
2005-14 Avg.	258,986	78,682	83,116	621,878	174,264	1,216,930
2015	350,169	69,057	69,967	502,820	103,773	1,095,786

Appendix A6.–Pink salmon commercial catch by district, in numbers of fish, Bristol Bay, 1995–2015.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1995	55	1	1	120	294	471
1996	4,590	22	21	2,681	30,308	37,622
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[a]
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
20-Year Avg.	10,840	924	70	358,586	44,864	415,284
1995-04 Avg.	8,665	146	92	14,826	11,203	34,932
2005-14 Avg.	13,015	1,702	49	702,346	78,526	795,637
2015	112	0	2	807	1,219	2,140

Note: Averages include even-numbered years only.

Appendix A7.–Coho salmon commercial catch by district, in numbers of fish, Bristol Bay, 1995–2015.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1995	1,105	21,833	13,454	4,181	8,871	49,444
1996	3,601	38,156	13,163	11,401	58,978	125,299
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
20-Year Avg.	1,599	17,177	3,847	49,000	12,732	84,355
1995-04 Avg.	1,045	21,255	5,752	20,968	15,247	64,267
2005-14 Avg.	2,153	13,099	1,943	77,031	10,218	104,444
2015	1,253	730	2,533	6,614	26,080	37,210

Appendix A8.–Total salmon commercial catch by district, in numbers of fish, Bristol Bay, 1995–2015.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1995	20,524,652	14,518,212	4,587,225	4,920,302	847,601	45,397,992
1996	8,325,520	10,933,544	4,531,033	6,111,339	767,032	30,668,468
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
20-Year Avg.	7,737,325	6,994,067	2,526,778	6,520,981	736,209	24,576,836
1995-04 Avg.	6,156,387	7,143,401	2,233,896	5,276,772	634,424	21,613,208
2005-14 Avg.	9,318,263	6,844,734	2,819,660	7,765,191	837,994	27,540,463
2015	16,885,517	8,819,956	5,546,460	6,152,464	505,638	37,910,035

Appendix A9.–Commercial sockeye salmon catch, in percent, by gear type and district, Bristol Bay, 1995–2015.

	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
1995	89	11				90	10	95	5	68		32				52	48	87	13
1996	83	17				90	10	95	5	81		19				52	55	88	12
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	86	14	80	20	77		18	5			66	34	80	20
2002				64	[c] 36	85	15	88	12	77		22	1	67	33	62	38	79	21
2003	91	9	0	65	[c] 35	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
1995-04 Avg.	83	13	5	73	27	86	14	88	12	76		22	4	72	28	54	47	83	17
2005-14 Avg.	83	10	7	81	17	84	16	89	12	78		17	5	58	42	60	40	80	20
2015	84	8	8			81	19	91	9	69		22	9			50	50	81	19
Allocation [d]	84	8	8	84	16	86	14	90	10	74		20	6	74	26	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, 1995–2015.

Year	Naknek-Kvichak[a]	Egegik[b]	Ugashik[c]	Nushagak[d]	Togiak[e]	Total
1995	11,365,573	1,282,508	1,321,108	2,284,060	240,266	16,493,515
1996	2,835,426	1,075,596	692,167	2,607,401 [f]	212,524	7,423,114
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
20-Year Avg.	6,005,264	1,216,183	986,457	2,555,981	226,718	10,986,800
1995-04 Avg.	5,661,945	1,178,018	927,249	2,291,969	241,472	10,300,653
2005-14 Avg.	6,348,582	1,254,349	1,045,665	2,819,994	211,964	11,680,554
2015	15,033,216	2,160,792	1,564,638	3,389,330	218,700 [i]	22,366,676

[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 commercial catch and escapement of sockeye salmon in the Naknek-Kvichak District by river system, in numbers of fish, Bristol Bay, 1995–2015.

		Escapement					
Year	Catch	Kvichak [a]	Alagnak		Naknek [a]	Total	Total run
1995	20,280,970	10,038,720	215,713	[b]	1,111,140	11,365,573	31,645,154
1996	8,215,474	1,450,578	306,750	[b]	1,078,098	2,835,426	11,047,409
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
20-Year Avg.	7,556,162	3,135,310	1,372,076		1,576,098	6,083,484	13,637,513
1995-04 Avg.	6,063,352	3,229,997	1,160,108		1,428,275	5,818,379	11,880,314
2005-14 Avg.	9,048,972	3,040,623	1,584,045		1,723,921	6,348,589	15,394,711
2015	16,531,193	7,349,712	5,770,650	[b]	1,920,954	15,041,316	31,572,509

[a] Tower count.

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

Appendix A12.–Inshore sockeye salmon total run by river system Naknek-Kvichak District, in thousands of fish, Bristol Bay, 1995–2015.

	Kvichak		Alagnak			Naknek		
Year	Number	%	Number	%		Number	%	Total run[a]
1995	27,531	87	633	2	[b]	3,481	11	31,645
1996	3,425	31	663	6	[b]	6,849	62	11,047
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
20-Year Avg.	6,626	42	2,239	16		4,781	42	13,636
1995-04 Avg.	6,339	43	1,351	11		4,176	46	11,880
2005-14 Avg.	6,913	41	3,126	21		5,386	39	15,392
2015	15,466	49	11,629	37	[b]	4,471	14	31,566

[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 A13.–Inshore commercial catch and escapement of sockeye salmon in the Egegik District by river system, in numbers of fish, Bristol Bay, 1995–2015.

		Escapement			
Year	Catch	Egegik [a]	Shosky Cr. [b]	King Salmon River [b]	Total run
1995	14,383,850	1,281,678		830	15,666,358
1996	10,809,115	1,075,596			11,884,711
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
20-Year Avg.	6,872,601	1,216,116	2	384	8,088,909
1995-04Avg.	7,003,561	1,177,916	10	327	8,181,641
2005-14 Avg.	6,741,640	1,254,316	0	441	7,996,176
2015	8,325,956	2,160,792	[c]	[c]	10,486,748

Note: Blank cells represent no survey conducted.

[a] Tower count.

[b] Aerial survey index count.

[c] No survey conducted.

Appendix A14.–Inshore commercial catch and escapement of sockeye salmon in the Ugashik District by river system, in numbers of fish, Bristol Bay, 1995–2015.

		Escapement			
Year	Catch	Ugashik River[a]	King Salmon River[b]	Dog Salmon River[b]	Total run
1995	4,475,879	1,304,058	7,650	9,400	5,796,987
1996	4,411,084	667,518	7,230	17,419	5,103,251
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]		3,066,326
2014	1,507,440	640,158	[c]		2,147,598
20-Year Avg.	2,445,218	962,392	14,958	16,772	3,431,680
1995-04 Avg.	2,162,324	901,272	17,407	8,565	3,089,568
2005-14 Avg.	2,728,112	1,023,512	2,714	27,032	3,773,792
2015	5,473,800	1,564,638	[c]		7,038,438

[a] Tower count plus aerial survey index count.

[b] Aerial survey index count.

[c] Not surveyed.

Appendix A15.–Inshore commercial catch and escapement of sockeye salmon in the Nushagak District by river system, in numbers of fish, Bristol Bay, 1995–2015.

		Escapement							
Year	Catch	Wood[a]	Igushik[a]	Nuyakuk[a]	Nush/Mul [b]	Nushagak [c]	Snake [d]	Total	Total run
1995	4,445,900	1,482,162	473,382	69,702	241,434	311,136 [e]	17,380	2,284,060	6,729,960
1996	5,693,594	1,649,598	400,746	250,692	306,365	557,057 [e]	[f]	2,607,401	8,300,995
1997	2,506,857	1,512,396	127,704	272,982	139,609	412,591 [e]	8,394	2,061,085	4,567,942
1998	2,991,841	1,755,768	215,904	146,250	361,282	507,532 [e]	11,120	2,490,324	5,482,165
1999	6,176,051	1,512,426	445,536	81,006	263,966	344,972 [e]	[f]	2,302,934	8,478,985
2000	6,367,502	1,300,026	413,316	129,468	316,818	446,286 [e]	[f]	2,159,628	8,527,130
2001	4,735,718	1,458,732	409,596	184,044	713,068	897,112 [e]	[f]	2,765,440	7,501,158
2002	2,839,918	1,283,682	123,156	68,928	280,227	349,155 [e]	[f]	1,755,993	4,595,911
2003	6,667,538	1,459,782	194,088	116,646	525,447	642,093 [e]	[f]	2,295,963	8,963,501
2004	6,104,492	1,543,342	109,650	77,406	466,466	543,872 [e]	[f]	2,196,864	8,301,356
2005	7,096,296	1,496,550	365,709	251,016	855,687	1,106,703 [e]	[f]	2,968,962	10,065,258
2006	10,876,552	4,008,102	305,268	170,760	377,650	548,410 [e]	[f]	4,861,780	15,738,332
2007	8,404,532	1,528,086	415,452	[g]	[g]	518,041	[f]	2,461,579	10,866,111
2008	6,903,367	1,724,676	1,054,704	[g]	[g]	492,546	[f]	3,271,926	10,175,293
2009	7,731,518	1,319,232	514,188	[g]	[g]	484,149	[f]	2,317,569	10,049,087
2010	8,424,702	1,804,344	518,040	[g]	[g]	468,696	27,135	2,818,215	11,242,917
2011	4,887,305	1,098,006	421,380	[g]	[g]	428,191	21,167	1,968,744	6,856,049
2012	2,663,014	764,211	193,326	[g]	[g]	432,438	2,000	1,391,975	4,054,989
2013	3,163,805	1,183,348	387,744	[g]	[g]	894,172	1,288	2,466,552	5,630,357
2014	6,447,650	2,764,614	340,590	[g]	[g]	618,477	[f]	3,723,681	10,171,331
20-year Avg.	5,756,408	1,632,454	371,474	151,575	404,002	550,181	12,641	2,558,534	8,314,941
1995-04 Avg.	4,852,941	1,495,791	291,308	139,712	361,468	501,181	12,298	2,291,969	7,144,910
2005-14 Avg.	6,659,874	1,769,117	451,640	210,888	616,669	599,182	12,898	2,825,098	9,484,972
2015	5,592,816	1,948,274	649,825	[g]	[g]	796,648	[f]	3,394,747	8,987,563

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] 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).

[f] No survey conducted.

[g] 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.

Appendix A16.–Inshore sockeye salmon total run by river system, in thousands of fish and percent of total district run, Nushagak District, Bristol Bay, 1995–2015.

	Wood		Igushik		Nushagak								Snake [c]		
	Total run		Total run		Nushagak escapement [a]					Catch	Total run				
Year	Number	%	Number	%	Nuyakuk		Nush-Mul		Sonar [b]	Total	Number	%	Number	%	Total run [d]
1995	4,022	60	1,902	28	70	23	241	77	311	475	786	12	20	0.3	6,730
1996	5,007	60	1,481	18	251	45	306	55	557	1,256	1,813	22			8,301
1997	3,365	74	291	6	273	66	140	34	413	491	904	20	8	0.2	4,568
1998	3,901	71	571	10	146	29	362	71	508	490	998	18	11	0.2	5,481
1999	5,930	70	1,563	18	81	23	264	77	345	640	985	12			8,478
2000	5,278	62	1,748	21	129	29	317	71	446	1,054	1,500	18			8,526
2001	3,987	53	1,315	18	184	21	713	79	897	1,301	2,198	29			7,500
2002	3,715	81	207	5	69	20	280	80	349	325	674	15			4,596
2003	5,647	63	1,018	11	117	18	525	82	642	1,655	2,297	26			8,962
2004	5,375	65	564	7	77	14	467	86	544	1,801	2,345	28			8,284
2005	4,771	47	1,878	19	251	23	856	77	1,107	2,346	3,453	34			10,102
2006	11,064	70	1,435	9	171	31	377	69	548	2,690	3,238	21			15,737
2007	6,523	60	1,762	16					518	2,062	2,580	24			10,865
2008	5,236	56	2,394	26					493	1,152	1,645	18			9,275
2009	7,195	72	926	9					484	1,443	1,927	19			10,048
2010	7,698	66	1,365	12					469	2,153	2,622	22	27	0.2	11,712
2011	4,328	63	1,036	15					428	1,042	1,470	21	21	0.3	6,855
2012	2,449	60	703	17					432	469	901	22	2		4,055
2013	3,174	46	745	11					891	2,090	2,981	43			6,900
2014	7,521	74	992	10					618	1,040	1,658	16		0	10,171
20-Year Avg.	5,309	64	1,195	14	152	28	404	72	550	1,299	1,849	22	15	0	8,357
1995-04 Avg.	4,623	66	1,066	14	140	29	362	71	501	949	1,450	20	13	0	7,143
2005-14 Avg.	5,996	61	1,324	14	211	27	617	73	599	1,649	2,248	24	17	0	9,572
2015	5,070	56	1,657	18					2,255	1,458	3,713	41			8,982

Note: Blank cells represent no data.

[a] 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.

[b] 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).

[c] Aerial survey count.

[d] Because of rounding, district total runs may not equal the sum of the rows. District total run is the sum of Wood, Igushik, Nushagak, and Snake River system total run numbers.

Appendix A17.–Inshore commercial catch and escapement of sockeye salmon in the Togiak District by river system, in numbers of fish, Bristol Bay, 1995–2015.

	Catch				Escapement						
					Togiak						
Year	Togiak	Kulukak	Os/Mat [a]	Total	Lake [b]	River [c]	Tributaries [d]	Kulukak [e]	Other [f]	Total	Total run
1995	527,142	76,056	2,130	605,328	185,718	6,520	18,988	14,620	14,420	240,266	845,594
1996	384,886	76,313	1,705	462,904	156,954	18,320	11,900	18,980	6,370	212,524	675,428
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
20-Year Avg.	482,142	57,788	1,708	541,638	201,484	10,522	10,917	13,659	15,552	226,904	768,541
1995-04 Avg.	421,028	54,546	1,221	476,794	191,664	11,071	12,016	13,659	16,736	241,472	718,266
2005-14 Avg.	543,257	61,030	2,195	606,482	211,304	5,580	1,020		3,713	212,336	818,816
2015 [i]	313,201	45,331	13,372	371,904	218,700					218,700	590,604

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 A18.–Inshore total run of sockeye salmon by district, in numbers of fish, Bristol Bay, 1995–2015.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak [a]	Togiak	Total
1995	31,645,154	15,708,515	5,830,526	6,729,960	845,594	60,759,749
1996	11,050,454	11,884,711	5,103,222	8,300,964	675,421	37,014,772
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
20-Year Avg.	13,568,580	8,128,341	3,442,783	8,312,846	769,707	34,222,257
1995-04 Avg.	11,724,189	8,246,278	3,106,263	7,144,343	718,343	30,939,416
2005-14 Avg.	15,412,971	8,010,405	3,779,303	9,481,349	821,071	37,505,099
2015	31,564,409	10,910,359	7,038,438	8,982,146	590,603	59,085,955

[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 A19.–Chinook salmon harvest, escapement and total runs in the Nushagak District, in numbers of fish, Bristol Bay, 1995–2015.

	Harvests by Fishery				Inriver	Spawning	Total
Year	Commercial	Sport	Subsistence	Total	abundance[a]	escapement[b]	run
1995	79,943	4,951	13,701	98,595	178,146	169,541	268,136
1996	72,123	5,391	15,941	93,455	108,456	98,556	192,011
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
20-Year Avg.	43,988	5,915	12,761	62,664	135,818	122,810	185,473
1995-04 Avg.	54,960	5,192	13,408	73,560	173,063	155,865	229,425
2005-14 Avg.	33,015	6,639	12,114	51,767	98,572	89,755	141,522
2015	48,968	5,525 [d]	11,922 [d]	66,416	98,019	89,767	156,183

[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] Data not available at the time of publication; 5-year average used.

Appendix A20.–Chinook salmon harvest, escapement and total runs in the Togiak River drainage, in numbers of fish, Bristol Bay, 1995–2015.

	Harvests by fishery				Spawning		Total	
Year	Commercial	Sport [a]	Subsistence	Total	escapement [b]		run	
1995	10,768	581	448	11,797	12,600		24,397	
1996	8,114	790	471	9,375	8,299		17,674	
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	
20-Year Avg.	6,853	924	1,014	8,790	7,674		18,121	
1995-04 Avg.	7,815	759	935	9,509	10,039		20,826	
2005-14 Avg.	5,890	1,088	1,093	8,071	4,296		13,253	
2015	2,448	1,077 [g]	875 [g]	4,401	2,922		7,323	

[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] Data not available at the time of publication. 5-year average used.

Appendix A21.–Inshore commercial catch and escapement of chum salmon in the Nushagak and Togiak Districts, in numbers of fish, 1995–2015.

	Nushagak District			Togiak District		
Year	Catch	Escapement [a]	Total run	Catch	Escapement [b]	Total run
1995	390,158	269,886	660,044	221,126	163,040	384,166
1996	331,494	285,648	617,142	206,233	117,240	323,473
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]
20-Year Avg.	468,873	382,762	834,832	151,110	127,004	121,085
1995-04 Avg.	340,391	348,555	688,946	128,071	123,623	218,866
2005-14 Avg.	597,355	416,970	980,717	174,148	138,275	233,041
2015	502,904	288,929	791,833	103,773	[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, 1995–2015.

Year	Sockeye	Chinook	Chum	Pink	Coho
1995	5.5	19.8	6.3	3.6	6.7
1996	6.3	18.0	7.3	3.5	6.8
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
20-Year Avg.	5.9	16.0	6.8	3.5	6.8
1995-04 Avg.	6.0	16.9	6.9	3.5	7.0
2005-14 Avg.	5.9	15.0	6.6	3.5	6.6
2015	5.2	15.1	6.1	3.7	6.7

Appendix A23.–Average price paid (in dollars/pound) for salmon, by species, Bristol Bay, 1995–2015.

Year	Sockeye	Chinook	Chum	Pink	Coho
1995	0.77	0.66	0.20	0.14	0.43
1996	0.81	0.51	0.11	0.05	0.31
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
20-Year Avg.	0.84	0.73	0.17	0.13	0.49
1995-04 Avg.	0.72	0.46	0.11	0.08	0.41
2005-14 Avg.	0.96	1.00	0.24	0.17	0.58
2015 [a]	0.50	0.50	0.30	0.20	0.25

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, 1995–2015.

Year	Sockeye	Chinook	Chum	Pink [a]	Coho	Total [b]
1995	187,863	1,295	1,262		142	190,562
1996	150,968	754	606	7	336	152,671
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
20 Year Avg.	110,081	544	941	331	289	112,020
1995-04 Avg.	87,173	579	479	10	196	88,431
2005-14 Avg.	132,988	510	1,402	652	383	135,609
2015	96,867	289	1,854		64	99,076

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, 1995–2015.

	South Unimak			Shumigan Island			Total		
	Sockeye			Sockeye			Sockeye		
Year	Actual	Quota [a]	Chum	Actual	Quota [a]	Chum	Actual	Quota [a]	Chum
1995	1,451	2,987	342	653	659	195	2,104	3,646	537
1996	572	2,564	129	446	566	228	1,018	3,130	357
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
20-yr Avg.	739	1,932	184	451	426	188	1,161	2,358	372
1995-04 Avg.	767	1,932	186	379	426	157	1,146	2,358	343
2005-14 Avg.	711		182	522		219	1,177		400
2015	618		42	497		136	1,115		178

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, 2014.

Area and river system	Number of permits issued[a]	Estimated salmon harvest					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Naknek-Kvichak District	473	562	65,810	573	272	386	67,603
Naknek River Subdistrict	270	530	24,439	559	243	368	26,139
Kvichak River/Iliamna Lake Subdistrict:	200	30	41,016	14	28	18	41,106
Chekok	1	0	5	0	0	0	5
Igiugig	2	1	267	0	0	0	268
Iliamna Community	1	0	0	0	0	0	0
Iliamna Lake-General	38	0	7,981	0	0	0	7,981
Kijik	4	0	847	0	0	0	847
Kokhanok	13	5	6,357	0	3	0	6,366
Kvichak River	18	0	1,480	0	0	0	1,480
Lake Clark	57	0	5,388	0	0	0	5,388
Levelock	10	18	1,170	14	24	18	1,243
Newhalen River	27	0	7,785	0	0	0	7,785
Pedro Bay	13	0	3,262	0	0	0	3,262
Pile Bay	1	0	258	0	0	0	258
Six Mile Lake	25	5	6,216	1	1	0	6,223
Naknek or Kvichak (Site Unknown)	5	3	355	0	1	0	359
Egegik District	36	150	972	237	4	2	1,366
Ugashik District	20	50	566	224	1	0	842
Nushagak District	581	16,049	27,073	7,463	5,731	2,110	58,425
Igushik/Snake River	20	107	2,061	59	1	18	2,246
Nushagak Bay Commercial	42	603	3,784	1,978	338	111	6,814
Nushagak Bay Noncommercial	215	3,345	8,091	1,914	1,652	822	15,823
Nushagak River	140	8,072	3,970	1,979	2,714	484	17,219
Site Unknown	11	1,102	185	297	127	268	1,980
Wood River	188	2,819	8,983	1,237	900	406	14,344
Togiak District	59	607	4,586	486	669	190	6,539
Total	1,158	17,417	99,008	8,984	6,677	2,689	134,775

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 1 site.

Appendix A27.–Subsistence salmon harvest by district and species, Bristol Bay, 1995–2015.

Year	Permits issued	Sockeye	Chinook	Chum	Pink	Coho	Total
Naknek Kvichak District							
1995	533	75,644	1,431	1,159	383	1,791	80,407
1996	540	81,305	1,574	816	794	1,482	85,971
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
20-Year Avg.	495	69,555	1,060	497	524	956	72,592
1995-04 Avg.	521	71,503	1,466	683	651	1,118	75,421
2005-14 Avg.	469	67,607	653	311	397	795	69,763
2015 [a]	467	66,027	564	250	368	558	67,767
Egegik District							
1995	60	2,818	86	192	100	690	3,886
1996	44	2,321	99	89	85	579	3,173
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
20-Year Avg.	42	1,887	88	73	22	484	2,554
1995-04 Avg.	47	2,289	88	96	37	647	3,158
2005-14 Avg.	37	1,485	88	50	7	321	1,951
2015 [a]	38	1,536	83	24	5	257	1,905

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Year	Permits issued	Sockeye	Chinook	Chum	Pink	Coho	Total
Ugashik District							
1995	20	1,513	56	18	6	290	1,883
1996	26	1,247	50	21	7	298	1,623
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
20-Year Avg.	21	1,179	48	21	14	281	1,542
1995-04 Avg.	25	1,449	63	25	13	356	1,906
2005-14 Avg.	18	908	33	18	15	205	1,179
2015 [a]	17	705	27	9	0	166	908
Nushagak District							
1995	484	22,793	13,701	2,786	188	3,905	43,373
1996	481	22,935	15,941	4,704	1,573	5,217	50,370
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
20-Year Avg.	528	24,720	12,761	3,818	968	4,939	47,206
1995-04 Avg.	527	24,256	13,408	3,494	875	4,808	46,841
2005-14 Avg.	530	25,184	12,114	4,141	1,062	5,070	47,570
2015 [a]	547	25,655	11,922	3,977	1,105	5,310	47,970

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Year	Permits issued	Sockeye	Chinook	Chum	Pink	Coho	Total
Togiak District							
1995	22	1,318	448	425	0	703	2,894
1996	19	662	471	285	59	199	1,676
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
20-Year Avg.	55	2,815	1,013	485	96	371	4,912
1995-04 Avg.	51	2,247	934	439	94	375	4,352
2005-14 Avg.	59	3,383	1,092	532	98	367	5,472
2015 [a]	62	4,053	872	608	92	409	6,034
Total Bristol Bay Area							
1995	1,119	104,086	15,722	4,580	677	7,378	132,443
1996	1,110	108,470	18,136	5,915	2,518	7,775	142,813
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
20-Year Avg.	1,137	100,699	14,979	4,894	1,623	7,034	129,228
1995-04 Avg.	1,167	102,008	15,974	4,738	1,670	7,304	131,692
2005-14 Avg.	1,107	99,390	13,983	5,050	1,577	6,764	126,764
2015 [a]	1,128	97,976	13,469	4,868	1,571	6,715	124,599

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, 1995–2015.

Year	Levelock	Igiugig	Pedro Bay	Kokhanok	Iliamna-Newhalen[a]	Nondalton	Port Alsworth	Other[b]	Total
1995	3,756	497	5,359	14,412	20,134	4,188	2,892	3,441	54,679
1996	1,120	2,309	5,219	14,011	14,787	11,856	3,263	2,307	54,872
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
20-Year Avg.	1,049	1,526	4,316	12,404	12,951	9,312	2,978	2,402	46,937
1995-04 Avg.	1,441	1,515	3,815	10,640	14,443	10,607	2,565	2,474	47,496
2005-14 Avg.	658	1,538	4,816	14,168	11,459	8,017	3,392	2,330	46,378
2015 [c]	955	1,660	4,301	12,046	11,240	7,987	3,874	2,309	44,371

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 2015 data were not available at the time of publishing.

Appendix A29.–Subsistence salmon harvest by community, Nushagak District, Bristol Bay, 1995–2015.

Year	Dillingham[a]	Manokotak	Aleknagik	Ekwok	New Stuyahok	Koliganek	Other[b]	Total
1995	24,998	2,453	1,468	2,046	6,911	2,983	2,406	43,265
1996	27,161	3,883	1,733	2,866	8,892	3,319	2,113	49,967
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
20-Year Avg.	25,625	2,786	2,050	2,157	7,041	3,903	3,625	47,186
1995-04 Avg.	25,562	3,420	1,684	2,515	6,679	3,386	3,557	46,802
2005-14 Avg.	25,688	2,151	2,415	1,799	7,403	4,421	3,694	47,570
2015 [c]	25,986	1,668	2,594	1,917	7,473	4,145	4,187	47,970

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, 1995–2015.

			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]
1995	22	4,350	5/7–5/15	250	33.5	6,995	12.0	254	12.2	19,737	10.1	26,732
1996	19	4,850	5/3–5/8	461	18.0	6,863	11.1	268	2.4	18,008	9.0	24,871
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
20-year Avg.	10	2,560		112	200	5,809	11	73	141	16,033	9	21,842
1995-04 Avg.	13	2,862		190	71	5,849	11	123	33	15,930	9	21,779
2005-14 Avg.	6	2,259		33	329	5,769	11	24	250	16,136	9	21,905
2015	4	1,880	4/27–5/11	6	328.0	1,156	11.1	16	328.0	20,240	11.3	21,396

[a] Number of 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, 1995–2015.

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]		
1995	149,093	996	1,748	6,995	19,737		26,732	29,476	19.8%
1996	135,585	1,899	2,239	6,863	18,008		24,871	29,009	21.4%
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%
20-year Avg.	133,257	963	1,756	5,809	15,863	388	21,672	23,669	17.8%
1995-04 Avg.	129,588	963	1,937	5,849	15,751	224	21,600	24,019	18.6%
2005-14 Avg.	136,927		1,575	5,769	15,976	650	21,745	23,319	17.0%
2015	163,480		1,972	1,156	20,240	500	21,240	23,212	17.3%

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, 1995–2015.

	Age composition (%)						Spawning biomass [a]
Year	≤ 4	5	6	7	8	≥ 9	(short tons)
1995	1	4	7	24	30	35	[c]
1996	[b]	3	5	7	21	64	[c]
1997	7	5	12	11	10	55	144,887
1998	[b]	4	5	10	11	70	[c]
1999	[b]	1	13	9	12	65	157,028
2000	[b]	1	2	17	16	63	[c]
2001	5	21	5	4	27	39	115,155
2002	1	25	28	4	5	36	[c]
2003	[b]	3	37	25	4	31	[c]
2004	[b]	[b]	3.8	43.7	24.6	27.5	[c]
2005	[b]	[b]	0.8	11	41.4	46.4	156,727
2006	1.8	5.4	2.8	5.4	25.9	58.7	176,288
2007	0.7	7.3	15.5	5.5	9.4	61.7	134,221
2008	6.2	9	14.6	15.5	8.1	46.5	136,495
2009	9.4	14.7	14.5	14.9	12.2	34	142,133
2010	1.4	16.1	18.1	13.2	13.2	38.3	135,214
2011	[b]	4	25.3	21.7	15.7	33.3	[c]
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

[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 tons), aerial survey estimates of herring biomass (in tons), and spawn deposition (in miles), Togiak District, 1995–2015.

Year	Preseason forecast [a]	Biomass estimate		Spawn estimate
1995	149,093	149,093	[b]	59
1996	135,585	135,585	[b]	73
1997	125,000	144,887		59
1998	121,000	121,000	[b]	33
1999	90,000	157,028		56
2000	130,904	130,904	[b]	46
2001	119,818	115,155	[b]	57
2002	120,196	120,196	[b]	32
2003	126,213	126,213	[b]	95
2004	143,124	143,124	[b]	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	140,860	[b]	36
2012	123,745	167,738		31
2013	169,094	169,020		47
2014	157,448	203,267		92
20-year Avg.	130,787	146,856		44
1995-04 Avg.	126,093	134,319		55
2005-14 Avg.	135,481	159,394		34
2015	163,480	228,807		63

[a] Forecasts based on Age Structured Analysis.

[b] Peak biomass estimate could not be determined; therefore, preseason forecast was used for exploitation rate determination.

Appendix B5.–Exvessel value of the commercial herring and spawn-on-kelp harvest, in thousands of dollars, Togiak District, 1995–2015.

	Herring			
Year	Sac roe	Food/bait	Spawn-on-kelp	Total
1995	22,235	0	362	22,597
1996	17,658	1	511	18,170
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	2,611	0	[a]	2,611
2013	4,417	0	[a]	4,417
2014	1,278	0	[a]	1,278
20-year Avg.	4,936	119	252	4,939
1995-04 Avg.	7,010	237	252	7,015
2005-14 Avg.	2,862	0	0	2,862
2015	1,008	0	[a]	1,008

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 (tons) and spawn-on-kelp (pounds), Togiak District, 1995–2015.

	Gillnet sac roe			Purse seine sac roe			Spawn-on-kelp		
Year	Guideline[a]	Actual	% Difference[b]	Guideline[a]	Actual[c]	% Difference[b]	Guideline[a]	Actual	% Difference[b]
1995	6,582	6,995	6	19,747	19,737	0	350,000	281,600	-20
1996	5,956	6,863	15	17,868	18,008	1	350,000	455,800	30
1997	5,464	5,164	-5	16,391	18,593	13	350,000	[d]	
1998	5,280	5,952	13	15,840	16,824	6	350,000	[d]	
1999	6,914	4,858	-30	20,741	14,368	-31	350,000	419,563	20
2000	5,738	5,464	-5	17,215	14,957	-13	350,000	[d]	
2001	6,268	6,491	4	14,624	15,879	9	350,000	[d]	
2002	6,288	5,216	-17	14,673	11,833	-19	350,000	[e]	
2003	6,624	6,505	-2	15,457	15,158	-2	350,000	[e]	
2004	7,568	4,980	-34	17,658	13,888	-21	350,000	[d]	
2005	5,667	5,841	3	13,224	15,071	14	350,000	[d]	
2006	7,059	7,132	1	16,471	16,821	2	350,000	[d]	
2007	7,090	4,012	-43	16,544	13,120	-21	350,000	[d]	
2008	6,864	4,832	-30	16,017	15,602	-3	350,000	[d]	
2009	6,378	4,167	-35	14,882	12,404	-17	350,000	[d]	
2010	7,772	7,540	-3	18,134	18,816	4	350,000	[d]	
2011	7,442	5,907	-21	17,364	16,970	-2	350,000	[d]	
2012	6,487	4,027	-38	15,135	12,994	-14	350,000	[d]	
2013	9,017	8,244	-9	21,040	19,366	-9	350,000	[d]	
2014	8,367	6,468	-23	19,523	19,544	0	350,000	[d]	
20-year Avg.	6,741	5,833	-13	16,927	15,998	-5	350,000	247,728	-29
1995-04 Avg.	6,268	5,849	-6	17,021	15,925	-6	350,000	247,728	-29
2005-14 Avg.	7,214	5,817	-20	16,833	16,071	-5	350,000		
2015	8,704	1,220	-86	20,309	20,374	0	350,000	[d]	

[a] Harvest guideline derived from inseason biomass estimate when available, or preseason forecast if weather prevents an estimate.

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

[c] Includes deadloss and test fishery harvest.

[d] No fishery conducted.

APPENDIX C: 2015 BRISTOL BAY SALMON OUTLOOK

Appendix C1.–2015 Bristol Bay salmon outlook.

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BRISTOL BAY 2015

OUTLOOK FOR COMMERCIAL
SALMON FISHING

INTRODUCTION

This document is provided as a guide to fishermen, processors, and the public regarding the 2015 Bristol Bay salmon season. Included is a short narrative with general management framework for each of the five major districts and the 2015 salmon forecast.

During the season, Bristol Bay salmon fishery announcements are broadcast on marine VHF Channel 07A. Fishery announcements are also 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.–5:00 p.m. Monday thru Friday from June 2–June 19, and again after July 17. From June 20–July 13 weekday office hours will be the same as above, but weekend office hours will be from 8:00 a.m. until 12:00 noon.

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Regarding blue and green district registration cards, set gillnet permit holders are only required to fill out and return green cards if they fish in the Nushagak District. Drift gillnet permit holders that fish in the Nushagak and Togiak districts must fill out and return blue district registration cards prior to commercial fishing. Drift gillnet permit holders that fish in the Ugashik, Egegik, and Naknek-Kvichak districts will not need to fill out and return a blue card prior to June 25. Blue and green permit district registration cards will be available at the Anchorage, King Salmon, and Dillingham offices beginning May 1. In addition, PDF files of blue and green district registration cards are posted on the 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. Drift gillnet district registration can also be accomplished through the online registration application. During the 2015 season, catch, escapement, and announcements will be available at the same site at:

(http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareabristolbay.salmon)

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."

2015 Regulatory Changes

At the March 2015 Alaska Board of Fisheries (board) meeting in Anchorage the board adopted a proposal to change the Naknek-Kvichak District boundary line near Graveyard Point to correspond with the historical location. The adopted boundary line is defined as a "point near Graveyard Point at 58° 52.07' N. lat., 157° 00.89' W. long. to a point on the northwest shore of Kvichak Bay at 58° 53.37' N. lat., 157° 04.26' W. long."

As part of the three year regulatory cycle the department is tasked with reviewing, evaluating and recommending adjustments to escapement goals for all species within Bristol Bay commercial districts. At the 2012 board meeting in Naknek, escapement goal adjustments were recommended for most of the large river systems in Bristol Bay commercial fishing districts. At the recommendation of the board, implementation of the department goals was postponed and a subcommittee was formed to 1) provide an independent analysis of department recommendations and 2) examine alternative goals. The deadline for the conclusion of the analysis was given as spring 2015. The subcommittee was composed of members of Bristol Bay Science and Research Institute, sitting and ex-board members, processor representatives and members of the community. Draft reports are available at this website www.bbedc.com. Based on recommendations of the subcommittee the board opted not to adopt OEGs therefore the department's SEGs will be implemented as follows:

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	Old Goal	New Goal
Ugashik River	500,000–1,200,000	500,000–1,400,000
Egegik River	800,000–1,400,000	800,000–2,000,000
Naknek River	800,000–1,400,000	800,000–2,000,000
Wood River	700,000–1,500,000	700,000–1,800,000
Nushagak River	370,000–840,000	370,000–900,000
Igushik River	150,000–300,000	150,000–400,000

Note: there were no recommended changes to the Kvichak, Alagnak, or Togiak River goals.

In addition, new regulatory language was adopted that describes how the department is to manage based on run size as follows:

5 AAC 06.355 (d) (1) Achieve adequate escapement from all segments of the run by spacing openings throughout the run **and, to the extent practicable, manage for escapements 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.**

In general, this means that in years with small runs managers will be expected to "land" the escapement in the lower half of the escapement goal range. In years of large run managers will be expected to land the escapement in the upper half of the escapement goal range.

For example, the 2015 Egegik run has a large preseason forecast of 12.5 million fish and the department will manage for the upper half of the escapement goal range. If inseason assessment suggests the run is as large as forecast the expected management target will be an escapement goal range of 1.4 to 2.0 million fish. However, management of the fishery relies heavily on inseason assessment of run strength and adjusts accordingly.

Alaska Wildlife Troopers – Summer 2015 Outlook – Bristol Bay

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 boardings 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. 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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SALMON OUTLOOK

BAYWIDE

The 2015 Bristol Bay sockeye salmon forecast is approximately 54.0 million fish. Based on the forecast and newly adopted escapement goal ranges, 37.6 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 east side 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

An inshore run of approximately 28.8 million sockeye salmon is expected for the Naknek-Kvichak District in 2015. Based on the forecast, the projected harvest in the Naknek-Kvichak District is approximately 18.0 million sockeye salmon: 7.1 million from the Kvichak River, 580,000 from the Alagnak River and 10.3 million from the Naknek River. The 2015 Kvichak River escapement goal will be 7.7 million. If the run is greater or less than the forecast, the inseason point goal will be adjusted to reflect the actual inseason total run. The Naknek River escapement goal range is 800,000 to 2.0 million. Sockeye salmon returning to the Naknek-Kvichak District are predicted to be 33% age-1.3, 23% age-1.2, 38% age-2.2, and 5% age-2.3 fish.

Beginning June 1, only the Naknek Section will be open to drift gillnet gear, and the entire Naknek-Kvichak District will be open to set gillnet gear. Fishing time during the first 2 weeks of June will be 4 days a week from 9:00 a.m. Monday to 9:00 a.m. Friday, beginning 9:00 a.m. Monday, June 1 and ending 9:00 a.m. Friday, June 12.

During the week of June 15, set gillnet fishing will be open in the Naknek-Kvichak District from 9:00 a.m. Monday until 9:00 a.m. Friday. Drift gillnet fishing in the Naknek Section will be opened with the following schedule:

11:00 a.m. until 6:00 p.m. Monday June 15, a 7.0-hour period;

12:30 a.m. until 9:00 a.m. Tuesday June 16, an 8.5 hour period;

12:00 p.m. until 7:00 p.m. Tuesday June 16, a 7.0-hour period;

1:00 a.m. until 9:30 a.m. Wednesday June 17, an 8.5 hour period;

1:00 p.m. until 8:00 p.m. Wednesday June 17, a 7.0-hour period;

2:00 a.m. until 10:30 a.m. Thursday June 18, an 8.5 hour period;

2:00 p.m. until 9:00 p.m. Thursday June 18, a 7.0-hour period;

3:00 a.m. until 11:30 a.m. Friday June 19, an 8.5-hour period.

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With limited information and low abundance over the past 5 years, special attention will be given to Chinook salmon run strength and effort levels. A mesh size restriction of 5.5 inches or less will be in effect beginning 9:00 a.m. Monday, June 1 until 9:00 a.m. Friday, July 24, to help in the conservation of Chinook salmon.

During closures, there may be extensive use of district test fishing boats. Additional volunteer test boats might be needed because of this increase in test fishing. Permit holders interested in district test fishing in the Naknek-Kvichak District should contact Travis Elison in King Salmon at (907) 246-3341.

EGEGIK DISTRICT

A forecast of approximately 12.5 million sockeye salmon is expected for the Egegik River in 2015. The escapement goal range is 800,000 to 2.0 million sockeye. Based on the forecast, the expected surplus potentially available for harvest is 10.6 million fish. Approximately 41% of the run is expected to be age-2.2 fish, followed by age-2.3 (25%), age-1.3 (13%) and age 1.2 (21%).

In 2015, 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, therefor 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 12. The primary reason for returning to the 3 day per week schedule is to provide for Chinook salmon escapement. By emergency order (E.O.), 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 be in effect beginning 9:00 a.m. Monday June 1 and run through 9:00 a.m. Friday June 12 for drift and set gillnet gear. For the week beginning June 15: commercial fishing with set gillnet gear will be permitted from 9:00 a.m. Monday June 15 until 9:00 a.m. Wednesday June 17. Commercial fishing with drift gillnet gear will be permitted for 5 hours from 10:00 a.m. until 3:00 p.m. Monday June 15. After June 15, additional fishing time for the drift gillnet group will be based on inseason indicators of abundance, and after June 17, fishing for both gear groups will be scheduled according to sockeye salmon run strength. As in previous years, some openings could occur on short notice.

In addition, subsistence fishing will be permitted in the waters of the Egegik commercial district from 12:01 a.m. June 1 until 11:59 p.m. Wednesday 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 2015 coho run was the 2011 escapement, however, because of weather conditions surveys were not flown so no assessment of coho escapement for that year is available. In 2015, management of the fall coho fishery will be based on fishery performance and run strength indicators.

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UGASHIK DISTRICT

The 2015 Ugashik River sockeye salmon forecast is 3.7 million fish. The escapement goal range is 500,000 to 1.4 million sockeye. Based on the forecast, 2.6 million fish are potentially available for harvest. Approximately 55% of the run is expected to be age-1.2 fish, 26% age-1.3, 14% age-2.2, and 4% age-2.3 fish.

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 2015. With limited information and low abundance over the past 5 years, special attention will be given to Chinook salmon run strength and effort levels. A mesh size restriction of 5.5 inches or less will be in effect beginning 12:01 a.m. Monday June 1 until 11:59 p.m. Wednesday July 22, to help in the conservation of Chinook salmon.

Beginning 9:00 a.m. Monday 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 9:00 a.m. Friday June 12. 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 12 will be allowed under E.O. authority and 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 2015.

In addition, subsistence fishing will be permitted in the waters of the Ugashik commercial district from 12:01 a.m. June 1 until 11:59 p.m. Wednesday 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 Ugashik River. Assessment of the escapement is done with aerial surveys. The parent year for the 2015 coho run was the 2011 escapement, however, because of weather conditions surveys were not flown so no assessment of the coho escapement for that year is available. In 2015, management of the fall coho fishery will be based on fishery performance and run strength indicators.

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.

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NUSHAGAK DISTRICT

The variable escapement goal adopted for the Nushagak River is contained in the *Wood River Special Harvest Area (WRSHA) Management Plan* **(5 AAC 06.358**) This plan directs the department to achieve sockeye salmon escapements within the escapement goal range of 370,000 to 900,000 when the preseason forecast is greater than 1 million fish. If the preseason forecast is below 1 million fish, then an Optimum Escapement Goal (OEG) minimum of 260,000 sockeye salmon is in effect when the ratio of Wood River to Nushagak River sockeye salmon is projected to exceed 3:1. During the first week of July, the department assesses Nushagak River sockeye salmon run strength through July 1 and adjusts the escapement goal based on that assessment. If the sockeye salmon runs to the Wood and Nushagak rivers for 2015 (5.6 million and 1.8 million respectively), are realized, the likelihood of fishing in the WRSHA is decreased.

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. In 2014, escapement was sufficient to warrant several short directed Chinook salmon openings. The department will closely monitor Chinook salmon escapement and have openings if escapement warrants beginning as early as June 12.

The 2015 forecast for sockeye salmon in the Nushagak District is 8.4 million fish, 2.2 million for escapement and 5.9 million potentially available for harvest in the Nushagak commercial salmon fishery. The total run forecast by river system is Wood River 5.6 million (escapement goal range 700,000 to 1.8 million), Igushik River 1.0 million (escapement goal range 150,000 to 400,000), and Nushagak River 1.8 million (escapement goal range of 370,000 to 900,000). Approximately 26% of the forecasted run is expected to be age-1.2 sockeye salmon, < 3% age-2.2, 69% age-1.3, and < 2% age-2.3 fish.

Management strategies for 2015 include: 1) directed Chinook salmon openings when 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. Subsequently, if Nushagak River sockeye salmon escapement falls below the expected 370,000 fish curve, then the department may utilize 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 and provide opportunity sooner rather than later 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.

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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.

Igushik River sockeye salmon will be managed independently of the Nushagak-Wood River sockeye salmon stocks. 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.

In 2015, there is no forecast of the coho salmon run to the Nushagak River. 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 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.

TOGIAK DISTRICT

The 2015 total run of Togiak River sockeye salmon is forecast to be 610,000 fish, a decrease from the 2014 forecast of 720,000. 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 400,000 sockeye salmon will potentially be available for commercial harvest. Approximately 10% of the run is expected to be 2-ocean fish and 90% 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 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. Other regulation changes increase the weekly fishing schedule in the Togiak River Section between July 1 and July 16, 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.

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Coho, pink, and chum salmon returns are not formally forecast in the Togiak District due to a lack of sufficient age class information and accurate escapement data. 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.

Table 1.-Forecast of total run, escapement, and harvest of sockeye salmon (millions) returning to Bristol Bay River systems in 2015.

	Total Run Forecast by Age Class						
DISTRICT							**Total**
River	1.2	2.2	1.3	2.3	**Total**	**Escapement**	**Harvest** [a]
NAKNEK-KVICHAK:							
Kvichak	3.15	9.71	1.68	0.83	15.38	7.69	7.12
Alagnak	0.48	0.04	0.61	0.12	1.24	.62	0.58
Naknek	2.97	1.26	7.32	0.63	12.18	1.40	10.33
Total	**6.60**	**11.01**	**9.60**	**1.58**	**28.80**	**9.71**	**18.03**
EGEGIK	**2.63**	**5.12**	**1.62**	**3.14**	**12.50**	**1.40**	**10.64**
UGASHIK	**2.05**	**0.52**	**0.97**	**0.16**	**3.70**	**0.95**	**2.61**
NUSHAGAK							
Wood	1.93	0.17	3.36	0.09	5.35	1.25	4.09
Igushik	0.16	0.02	0.82	0.02	1.02	0.28	0.70
Nushagak	0.12	0.01	1.56	0.01	1.81	0.62	1.12
Total	**2.20**	**0.20**	**5.74**	**0.11**	**8.37**	**2.15**	**5.91**
TOGIAK	**0.12**	**0.03**	**0.43**	**0.03**	**0.61**	**0.18**	**0.41**
BRISTOL BAY	**13.61**	**16.87**	**18.37**	**5.01**	**53.98**	**14.39**	**37.60**

[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 2.01 million in 2015.

APPENDIX D: 2015 TOGIAK HERRING OUTLOOK

Appendix D1.–2015 Togiak herring fishery information.

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

Sam Cotten, Commissioner
Jeff Regnart, Director

Contact:
Tim Sands, Area Management Biologist
Matt Jones, Assistant Area Biologist
Phone: (907) 842-5227
Fax: (907) 842-5937

Dillingham Area Office
546 Kenny Wren Road
Dillingham, AK, 99576

Date Issued: February 27, 2015
Time: 9:00 a.m.

2015 TOGIAK HERRING OUTLOOK

The 2015 Togiak District herring biomass is forecast to be 163,480 tons, approximately 110% of the 10-year average. This forecast is based on an age-structured analysis (ASA) model that has been used since 1993. Ages 4-6 herring are expected to comprise 17% of the projected biomass, ages -7 and -8 comprising 27%, ages 9-11 are expected to make up 50% and the remaining 6% 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 383 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 Bering Sea is almost totally ice free. Given that 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 a forecast of 163,480 tons, up to 32,696 tons of herring will be available for harvest in 2015. Harvest allocation, in accordance with the management plan will be:

Fishery	Harvest Allocation
Spawn-on-Kelp	1,500 tons
Dutch Harbor Food and Bait	2,184 tons
Togiak Sac Roe	29,012 tons
Purse Seine (70%)	20,309 tons
Gillnet (30%)	8,704 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 2015, 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 2,200 tons per day based. This represents a 15% decrease from the 2014 daily capacity of 2,600 tons per day. The preseason poll also indicates that 5 processors will participate in the Togiak sac roe herring fishery with a fleet size of 10 gillnet and 16 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 2015 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 2015 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 the entire harvest guideline of 8,704 tons, while maintaining the specified 70/30 purse seine/gillnet harvest ratio. Product quality will be a priority throughout the gillnet fishery. In 2015, 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 2014, the plan is to open the gillnet area to fishing when threshold biomass is documented. Processors and fishermen may organize test fishing to monitor fishery 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.

ADF&G OPERATIONS 2015

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 regular aerial surveys of Togiak District beginning in late April or early May, depending on weather conditions. The department will not relocate to a field office in Togiak for 2015. 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

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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.