Fishery Management Report No. 14-23

2013 Bristol Bay Area Annual Management Report

by

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May 2014

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

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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. 14-23

2013 BRISTOL BAY AREA ANNUAL MANAGEMENT REPORT

By

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This document should be cited as:
Jones, M., T. Sands, C. Brazil, G. Buck, F. West, P. Salomone, S. Morstad, and T. Krieg. 2014. 2013 Bristol Bay area annual management report. Alaska Department of Fish and Game, Fishery Management Report No. 14-23, Anchorage.

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ABSTRACT

The *2013 Bristol Bay Area Management Report* is the 52nd 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, and outlines basic management objectives and procedures. We have included all information deemed necessary to fully explain the rationale behind management decisions formulated in 2013. The narrative is constructed beginning with a broad historical perspective followed by annual detail of individual districts. To aid in the use of this document as a reference source, all narrative and data tabulations in this volume are combined in 2 sections: salmon followed by herring. For long-term context, historical data are compiled into appendices following the same format, with salmon followed by herring. The extensive set of tables has been updated to record previously unlisted data for easy reference. Fisheries data in this report supersedes information in previous reports. All 2013 harvest data are considered preliminary pending processing of fish tickets. Readers should note that harvest, escapement data, and averages are routinely presented throughout the narrative in rounded form for simplicity. Corrections or comments should be directed to the Dillingham office, attention: Editor Matt Jones, Westside Assistant Area Management Biologist, 546 Kenny Wren Road, Dillingham, AK 99576.

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

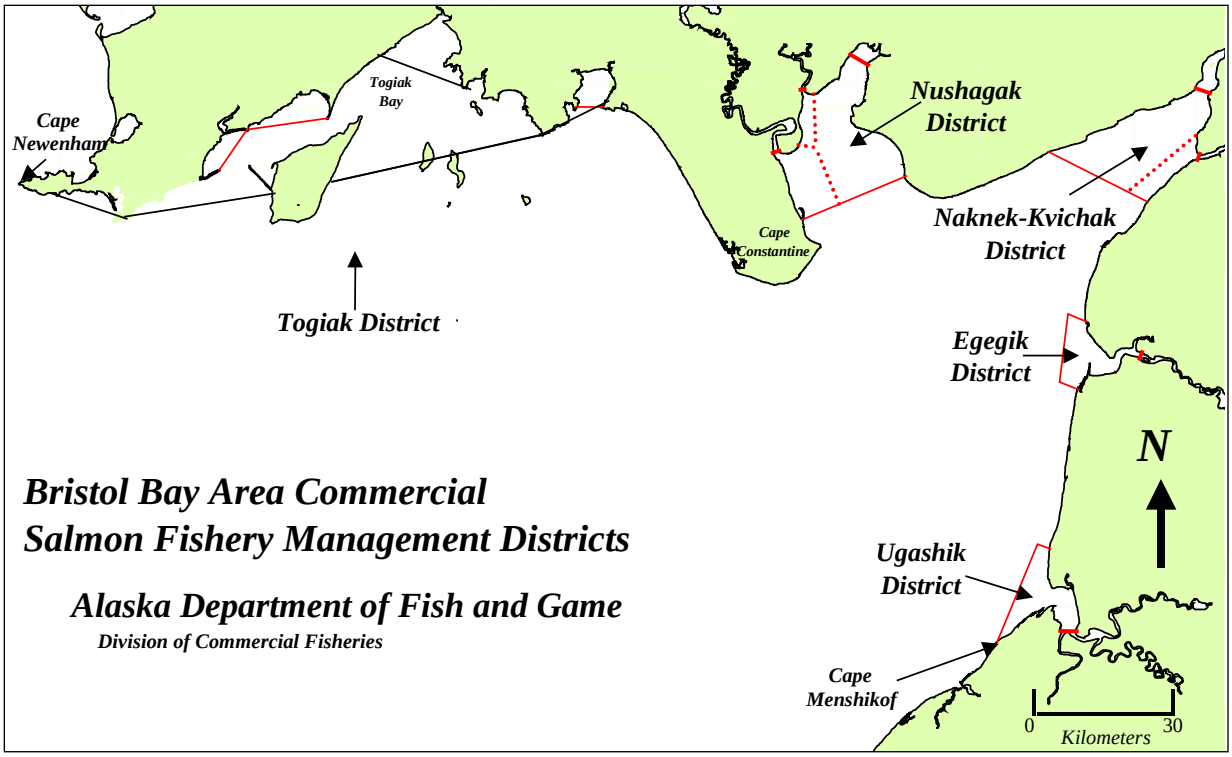

Figure 1.–Bristol Bay area commercial fisheries salmon management districts.

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 (1993–2012) averaged 24.8 million sockeye, 65,000 Chinook, 942,000 chum, 294,000 (even-years only) pink, and 79,000 coho salmon (Appendices A3–A7). Since 1993, the value of the commercial salmon harvest in Bristol Bay has averaged $111.8 million, with sockeye salmon being the most valuable, averaging $109.9 million annually (Appendix A24). Subsistence catches are composed primarily of sockeye salmon and average 135,000 fish (Appendix A26). 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. In 2009, this regulation was modified so that it does not apply when the Naknek Special Harvest Area is in use. Drift gillnet permits are the most numerous at 1,862 in Bristol Bay (Area T), and of those, 1,709 registered to fish in 2013. There are a total of 978 set gillnet permits in Bristol Bay and of those, 854 fished in 2013 (Appendix A2).

2013 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, and the early performance of the commercial fishery. These pieces of information may not give a correct assessment of run size, but collectively, they form patterns 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.

PRESEASON FORECASTS

Total inshore (excluding harvest in other areas) sockeye salmon production for Bristol Bay in 2013 was forecast to be 25.1 million (Table 1). The Bristol Bay sockeye salmon inshore harvest was predicted to reach 16.6 million fish. Runs were expected to meet spawning escapement goals for all river systems in Bristol Bay.

The forecast for the sockeye salmon run to Bristol Bay in 2013 was the sum of individual predictions for 9 river systems (Kvichak, Alagnak, Naknek, Egegik, Ugashik, Wood, Igushik, Nushagak-Mulchatna, 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 2009 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 the years 2010 through 2012.

SOUTH UNIMAK/SHUMAGIN ISLANDS FISHERY

These fisheries were managed under a guideline harvest (quota) specified in 5 AAC 09.365, the *South Unimak/Shumagin Islands June Fishery Management Plan* initially adopted in 1974 by the BOF. The original intent was to prevent overharvest of sockeye salmon runs bound for river systems in Bristol Bay. In 2001, the BOF reviewed the management plan and concluded that because the fishery was based on interception of stocks bound for Bristol Bay and Arctic-Yukon-Kuskokwim regions, it should be restricted. These restrictions were as follows: from June 10 to June 24, commercial fishing periods may occur only from 6:00 a.m. to 10:00 p.m. and may not be open for more than (A) 3 days in any 7-day period, (B) 16 hours per day; (C) 48 hours in any 7-day period; (D) 2 consecutive 16-hour fishing periods in any 7-day period. The BOF removed previous regulations based on a chum salmon cap and a percentage of the Bristol Bay preseason sockeye salmon forecast.

Preliminary catch information for 2013 indicates that the June South Unimak fishery landed 1.0 million sockeye salmon and 189,000 chum salmon, and the June Shumagin Islands fishery landed 508,000 sockeye salmon and 208,000 chum salmon (Appendix A25). The June South

Unimak sockeye and chum salmon harvests represent 120% and 93% of the 20-year (1993–2012) average, respectively. In the June Shumagin Islands fishery, sockeye and chum salmon harvests represent 108% and 111% of the 20-year (1993–2012) average, respectively.

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 FRI contribution to the project was replaced by Bristol Bay Science and Research Institute (BBSRI), which operated the project and performed the bulk of daily inseason analysis. The project is currently operated jointly by ADF&G and BBSRI staff.

GENETICS

Over the last 12 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 an advanced 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 assist management decisions for individual stocks. ADF&G genetics staff has the ability to 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, etc.). The travel time for fish from Port Moller to Bristol Bay is approximately 7 days depending on several factors (e.g. water temperature, wind, etc.). Therefore, results from genetic sampling should be available before those fish reach the fishing districts of Bristol Bay.

ECONOMICS AND MARKET PRODUCTION

In 2013, exvessel value of the inshore commercial salmon harvest was estimated at $134.4 million (Table 3). The 10-year (2003–2012) average exvessel value of Bristol Bay commercial salmon fisheries was $112.0 million (Appendix A24). The 2013 average sockeye salmon price was $1.50/pound, the highest price paid since 1988 (Table 3).

During the 2013 season a total of 34 processors/buyers reported that they processed fish from Bristol Bay in 2013 (Table 4). Of those processors, 7 companies canned, 30 froze, 16 exported fresh, 2 cured salmon, and 11 extracted roe in Bristol Bay. Product was exported by air by 24 companies and exported by sea by 22 companies.

RUN AND HARVEST PERFORMANCE BY SPECIES

Sockeye Salmon

The 2013 inshore sockeye salmon run of 24.2 million fish was below the preseason forecast of 25.1 million (Table 1). Run performance by river system varied in relation to forecasts, with aggregate runs below forecast in Naknek-Kvichak, Nushagak, and Ugashik districts and above forecast in Egegik and Togiak districts. Sockeye salmon dominated the inshore commercial harvest, totaling 15.4 million fish (Table 5). Sockeye salmon escapement goals were met or exceeded in all systems where spawning requirements have been defined.

Chinook Salmon

Chinook salmon harvests in 2013 were well below recent 20-year (1993–2012) averages in all districts. The 2013 baywide commercial harvest of 18,372 Chinook salmon was well below the 20-year (1993–2012) average of 65,000 fish. The largest producer of Chinook salmon in the Bay, the Nushagak District, achieved a harvest of 15,175, compared to the 20-year (1993–2012) average of 52,000 fish (Appendix A4).

Chum Salmon

In 2013, the commercial harvest of 890,906 chum salmon was 18% less than the 20-year (1993–2012) average of 942,000 fish. Chum salmon catches were below 20-year (1993–2012) averages in all districts except Naknek-Kvichak and Togiak (Appendix A5).

Pink Salmon

Bristol Bay has a dominant even-year pink salmon cycle. In 2013, an off-cycle year, the baywide pink salmon harvest was 514 fish. In even years, Nushagak District drives pink salmon production and harvest, where the 20-year (1993–2012) average harvest is 243,000 fish (Appendix A6).

Coho Salmon

Commercial harvest of coho salmon in Nushagak District was 126,717 fish, the fourth largest on record and over four times the 20-year (1993–2012) average of 31,000. The 2013 coho salmon baywide commercial harvest of 138,226 fish was the largest since 1994 and 43% above the recent 20-year (1993–2012) average of 79,000 fish (Appendix A7).

SEASON SUMMARY BY DISTRICT

Naknek/Kvichak District

The 2013 total run forecast for the Naknek/Kvichak District was 10.2 million sockeye salmon composed of a projected 4.6 million for escapement and 5.6 million for harvest (Table 1). The forecast by river system was 5.1 million for the Kvichak River, 2.1 million for the Alagnak River, and 3.5 million for the Naknek River (Table 2). Escapement goals by river system were as follows: 1) a range of 2.0 to 10.0 million for the Kvichak River, 2) minimum 320,000 for the Alagnak River, and 3) a range of 800,000 to 1.4 million for Naknek River. The total inshore run to the district for 2013 was 8.9 million sockeye salmon (Table 1) with a commercial harvest of 4.8 million sockeye salmon.

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 due to 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 19.

For the commercial fishery to begin in the full Naknek/Kvichak District, the preseason sockeye salmon forecast for the Kvichak River must be 30% greater than the 2.0 million lower end of the sustainable escapement goal (SEG). Should the forecast be below that level, fishing will begin in special harvest areas of Naknek, Egegik and Ugashik rivers (5 AAC 06.360 (h)). Based on the 2013 sockeye salmon forecast for the Kvichak River, these restrictions were not implemented on June 1. However, fishing with drift gillnets was restricted to the Naknek Section when the fishery first opened while the set gillnet fleet was allowed to fish the whole district. Fishing periods during the first 3 weeks of June were from 9:00 a.m. Monday to 9:00 a.m. Friday, beginning 9:00 a.m. Monday, June 3, and ending 9:00 a.m. Friday, June 21 (Table 6).

The Naknek-Kvichak District opened at 9:00 a.m. Monday, June 3; however, the first deliveries did not occur until June 12 (Table 7). During the week of June 10, fewer than 100 sockeye salmon were harvested. During the 96-hour period that began at 9:00 a.m. Monday, June 17, a total of 131,992 sockeye salmon were harvested. Following the closure at 9:00 a.m. June 21, subsequent fishing periods were based on escapement into Naknek River.

Escapement counting towers for Naknek and Kvichak rivers were operational during the 2013 season. The Naknek River tower began counting on June 20 and the Kvichak Tower began on June 21 (Table 8). The minimum escapement objectives were exceeded in both systems (Appendix A1). At the end of the weekly fishing schedule on June 21, sockeye salmon passage rates were substantially higher than anticipated for Naknek River based on historical run timing curves. Expected escapement through June 22 for Naknek River was 6,000 sockeye salmon, and actual escapement past the towers was 65,856 fish (Table 8). For Kvichak River, only 954 sockeye salmon had passed the tower through June 22 (Table 9). With escapement above projected levels for the Naknek River and slightly under projected levels for the Kvichak River, commercial fishing was warranted; however, caution was still needed that early in the season. The Naknek-Kvichak District opened to commercial fishing on June 23 for 7.5 hours to set gillnet gear and 6.5 hours to the drift gillnet gear, with drift gillnets restricted to the Naknek Section only (Table 6).

Escapement increased significantly to both river systems; the Naknek River cumulative through midnight June 27 was 237,648, and the projected escapement based on historic run timing was 90,764, approximately 5 days ahead (Table 8). The Kvichak River, through midnight June 27, counted 191,292, while the projected escapement for the same time period was 39,757 sockeye. With escapement increasing daily while fishing 1 tide per day, the Naknek-Kvichak District opened for both tides on June 29 (Table 6). The catch allocation between the 2 gear groups through June 28 was 84% drift, 9% Naknek set, and 7% Kvichak set. With the drift allocation slightly ahead of the set gillnet allocation, commercial fishing went on a continuous fishing schedule until further notice (Table 6).

Escapements continued above projected rates until July 2, when daily rates started to lag from projections. These slower entry rates prompted managers to reduce fishing to 1 tide a day on July 2 (Table 8). On July 4, with escapement significantly slower, commercial fishing would remained closed following a 5:00 p.m. closure until escapements in both river systems improved

(Table 6). On July 7, ADF&G projected the Kvichak River total return would be less than the preseason forecast and reduced the 2013 forecasted return to the Kvichak to 4.0 million, thereby lowering the 2013 escapement goal to 2.0 million. Sockeye escapement improved, and by July 10 commercial fishing for both gear groups resumed (Tables 6 and 8). The drift gillnet fleet was allowed to fish the whole district for the first time on July 10 and continued to fish the whole district during all but 1 tide for the remainder of the season (Table 6).

The total harvest in Naknek/Kvichak District was 4.8 million sockeye salmon; the 20-year (1993–2012) average is 7.9 million (Appendix A3). The Chinook salmon total harvest was 391, which was less than the 20-year (1993–2012) average of 2,000 fish (Appendix A4). The chum salmon harvest totaled 267,348 fish, compared to the 20-year (1993–2012) average of 167,000 (Appendix A5). There was a reported commercial harvest of 361 coho salmon; 3,000 is the 20-year (1993–2012) average (Appendix A7).

Egegik District

The 2013 Egegik District harvest of 4.8 million sockeye salmon was 1% above the projected harvest of 4.7 million fish (Table 1).

The harvest of 4.8 million fish was the 16th largest in the last 20 years (Appendix A13). The sockeye escapement of 1.1 million fish was within the SEG range of 800,000 to 1.4 million (Appendix A1). With an inshore total of approximately 5.9 million fish to the Egegik District, the 2013 run ranks 17th over the last 20 years and was 1% above the forecast of 5.8 million fish (Table 1; Appendix A13). In 2013, the midpoint of the sockeye salmon run was June 28, or 6 days earlier than the 20-year average of July 3. Temperatures in the Bering Sea started warming in late May to early June, which led to speculation of earlier run timing than in 2012.

The 2013 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 June 3. Fishing was permitted 9:00 a.m. Monday to 9:00 a.m. Wednesday and 9:00 a.m. Thursday to 9:00 a.m. Friday until June 14 (Table 6). After that date, additional fishing time would be based on inseason indicators of abundance.

First deliveries were recorded June 6 (Table 10). Anecdotal reports from fishers suggested a volume of fish had passed through the district on the night of June 5 to 6, but with no commercial opening and a lack of assessment projects operational this early in the season, it was difficult to estimate the abundance of that event. However, given the early state of the run, it was probably not large enough to alter subsequent management actions. Run assessment information on Friday, June 7, indicated low abundance within the district, which remained closed over the weekend of June 8 to 9.

The district reopened at 9:00 a.m. June 10 as scheduled (Table 6). Catches for the week of June 10 totaled 108,000 fish, which is strong for the second week in June. The district closed as scheduled at 9:00 a.m. June 14 and remained closed June 15 and 16 (Table 10).

Daily inriver test fishing, which provides estimates of sockeye salmon passage into the lower Egegik River, began on June 16 at established sites just upstream of Wolverine Creek (Table 11). The Egegik River counting towers, which provide daily estimates of sockeye salmon passage into Becharof Lake, became operational at midnight on June 18 and finished the day with a passage estimate of 44,892 sockeye salmon (Table 11), very strong numbers for a first

day's count and indicative that some fish had probably passed into escapement prior to the tower becoming operational.

With indications of escapement from the inriver test fishery (Table 11), fishing was permitted for both gear groups on June 17, resulting in a catch of 237,906 fish and suggesting levels of abundance within the district were higher than usual for the early portion of the season (Table 10). No fishing was allowed on June 18 to provide for escapement. Escapement on June 19 was 92,394, and data from the inriver test fishery indicated travel time from the inriver test fishery project to the tower was approximately 1 day (Table 11).

With the escapement several days ahead of the expected curve, fishing was permitted at a pace of 1 tide per day for both gear groups from June 19 until June 25 (Table 10). Through June 25, cumulative catch was 1.9 million and cumulative escapement was 402,552, about halfway to the lower end of the escapement goal range of 800,000 fish (Tables 10 and 11).

On June 25, inriver test fishery indices dropped off and a 3-hour drift gillnet only period was announced, partly to balance allocation between gear groups and partly to provide additional escapement. Catch from that period was 213,472, and on June 26 escapement at the tower was 2,814 fish (Tables 10 and 11).

Because the inriver test fishery indicated lower passage rates into the Egegik River, no fishing occurred on June 27 to allow for additional escapement. After this closure, inriver test fishery indices increased on June 28 (Table 11).

ADF&G had intended to keep the district closed on June 28 but began receiving reports of fish in the district in the early morning. An aerial survey flight, originally intended to observe the Egegik Lagoon, was diverted to investigate reports from the fleet and a volume of fish was confirmed to be within Egegik Bay, prompting a short-notice opener for the afternoon tide of June 28. Catch from this period was 372,813 (Table 10). At the same time, the inriver test fishery continued to show increased escapement into the Egegik River (Table 11).

Fishing was permitted again on the afternoon tide of June 29 while inriver test fishing indices continued to increase (Table 11). Through June 29, cumulative catch was 2.8 million and cumulative escapement was 603,522 (Tables 10 and 11). With escapement numbers rising and strong indications of abundance within the district, 4 consecutive tides were fished by both gear groups on June 29 and 30 (Table 10). June 30 produced the highest daily catch of the season in the district with a harvest of 564,736 sockeye salmon (Table 10). On July 1, the drift gear group fished 2 tides and the set gillnet group fished a single tide to adjust allocation (Table 10). The rate of escapement slowed and, as escapement indices began to drop off, both gear groups were allowed to fish 1 tide per day. Through July 3, cumulative catch was 4.1 million fish and cumulative escapement was 754,236 (Tables 10 and 11).

Inriver indices continued to fall so no fishing occurred on July 4 (Table 11). A set gillnet only period was permitted on July 5 to determine whether fish were moving into the river as well as to balance allocation. Catch from this period was 11,953 fish, confirming the low inriver data (Tables 10 and 11). Counts at the escapement project were 17,046 fish on July 6, which put the cumulative escapement above the lower end of the escapement goal range (Table 11).

On the evening of July 7, ADF&G received reports from the district of a volume of fish moving into Egegik Bay. An aerial survey flight on the evening of July 7 did not observe any signs of fish, but the conditions were very poor. Inriver indices went up on the morning of July 8, so both

gear groups were allowed to fish the daytime tide (Tables 10 and 11). Escapement counts for July 8 were 41,448 fish, which elevated the total escapement to 855,348 (Table 11).

Commercial fishing was permitted on a pace of 1 tide per day until July 12, when commercial fishing with set gillnets was opened 24 hours per day (Table 6). Drift gillnet fishermen were allowed to fish on a basis of 1 tide a day until July 14, when both gear groups were permitted 24-hour-per-day opportunity until the fall schedule went into effect on July 17 (Table 6). Through July 19 cumulative catch was 4.8 million (Table 10).

The 2013 Egegik run was slightly above forecast and exhibited early run timing, the bulk occurring between June 22 and July 1 (Tables 1 and 10). By the end of the EO period on July 17, catch was 4.8 million and cumulative escapement was 1.1 million sockeye salmon (Tables 10 and 11).

The 2013 Egegik sockeye salmon run were mostly 2- and 3-ocean fish, which came from the 2008 and 2009 escapements of 1.3 and 1.1 million fish, respectively (Table 12 and Appendix A10). Commercial fishermen harvested approximately 81% of the Egegik 2013 inshore sockeye salmon run, compared to the average of 84% for the last 20-year period (Appendix A13). Peak tower counts occurred June 19, July 9, and July 10 with 92,394, 118,650, and 97,584 sockeye salmon counted, respectively (Table 11). During the period from June 16 to July 17 in 2013, a total of 202.5 hours were fished by the drift gillnet group (13.5 hours more than 2012) and 303.5 hours were fished by the set gillnet gear group (76 hours more than in 2012), equating to 27% and 40%, respectively, of the 753 available hours (Table 10). By the end of the EO period on July 17, harvest allocations were 85% drift and 15% set gillnet (Appendix A9).

Commercial harvest of other salmon species in the Egegik District was 44,007 fish, or about 0.9% of the total (Table 10). The reported Chinook salmon harvest was 119 fish, 85% below the 20-year average of 800 fish (Appendix A4). The district chum salmon harvest of 43,080 fish was 37% below the recent 20-year average of 69,000 fish (Appendix A5). No pink salmon were reported in the harvest. Historical pink salmon harvest information is presented in Appendix A6. The coho salmon harvest of 808 fish is 3% of the recent 20-year average of 23,000 fish (Appendix A7).

In summary, the 2013 harvest of 4.8 million sockeye salmon in the Egegik District ranked sixteenth out of the last 20 years, was 40% lower than the most recent 20-year average of approximately 8.0 million fish, and was 1% above the preseason forecast (Table 1; Appendix A13). The fishery harvested 81% of the run into the district compared to the 20-year average of 84% (Appendix A13). The midpoint of the run was June 28, 6 days earlier than the 20-year average. Peak effort occurred on July 1 and July 2, when 399 drift gillnet vessels, including 78 dual permits, registered to fish in the district (Table 13). There were 14 processors registered to purchase fish in the Egegik District this season (Table 4).

Ugashik District

The 2013 inshore sockeye salmon run to the Ugashik District of 3.1 million fish ranks twelfth in the last 20 years (1993–2012) and was 13% below forecast (Table 1; Appendix A14). The midpoint of the run was June 28, 13 days earlier than the most recent 20-year average of July 10 and the earliest on record. The commercial sockeye salmon catch of approximately 2.2 million fish was 19% below the 20-year average and ranked fifteenth for the same period (Table 14).

Sockeye salmon escapement to the Ugashik River was 898,110 within the SEG range of 500,000 to 1.2 million fish (Table 15).

The district was opened to a fishing schedule of 4 days per week (9:00 a.m. Monday to 9:00 a.m. Friday) on June 4 by EO (Table 6). Initial landings occurred on June 10 (Table 14). 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 14, when fishery management switched to a tide-by-tide basis (Table 6).

The preseason forecast for the Ugashik District projected a harvest of 2.6 million sockeye salmon (Table 1). Accordingly, commercial fishermen were advised that fishing time after June 14 would depend on inriver test fishery results, tower escapement levels, and fishery performance.

Catch through June 14 was 1,321 fish, well below the historical average for the first 2 weeks of June (Table 14). 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 15 to 16.

Because of the regulation adopted in 2009 that allowed free transfer between eastside districts until June 25, it was desirable to keep the openings in individual districts aligned to discourage full mobility of the drift fleet between districts with offset openings. Because Egegik was opened on June 17, a 4-hour drift and 8-hour set gillnet period was allowed in Ugashik on June 17; catch from this period was about 21,000 fish, which indicated moderate volume in the district (Table 14).

The district remained closed on June 18, but in response to a request for subsistence opportunity, a 24-hour subsistence period was permitted on June 19, which was subsequently extended for 24 more hours on June 20 (Table 6).

Meanwhile, information from Egegik District was indicating strong early components in that system with initial escapement counts being very high compared to historic data. On June 21, the first genetics analysis from the Port Moller test fishery became available and showed that the genetic signal for Ugashik was similar to the one detected for Egegik, which—considering the strong early-season indications of run strength in that district—was used as a surrogate to allow a 6-hour drift and 10-hour set gillnet period for Ugashik. Catch from this period was 153,000 fish, well above expectations for this date (Table 14).

Catch and genetic information suggested that abundance in the Ugashik District was higher than usual for the early part of the season, so both gear groups fished a single tide on June 22 (Table 14). Catch from this period was 182,000 fish, again large for comparable dates in prior years (Table 14).

Initial information from the Ugashik River inriver test fishery became available on June 23 (Table 15). Inriver test fishing, which occurs about 3 miles upstream of Ugashik Village, provided a daily estimate of sockeye passage into the lower part of the Ugashik River. First information suggested that fish were passing into the river in moderate volume. An aerial survey of the Ugashik Lagoon on July 23 did not observe any fish in the lagoon or the river immediately downstream. However, the inriver test fishery indices still indicated fish were moving into the Ugashik River system in high enough volume to justify commercial fishing (Table 15).

Management of the Ugashik fishery is predicated on inriver test fishery indices. When inriver indices are strong, normal practice is to continue to allow commercial opportunity until the

indices decline and then adjust fishing time. Inriver test fishery indices began to decline on June 26. Port Moller genetics data from June 22 and 24 showed the Ugashik signal diminishing, and prudence suggested a less aggressive approach to commercial opportunity within the district. In addition, based on information from the inriver test fishery, the initial rate of escapement into the Ugashik River was under control. Further, an aerial survey of the Ugashik Lagoon flown on June 25 revealed only a few hundred fish observed between the lagoon and outlet of Lower Ugashik Lake.

Catch from June 21 to 26 was 1.4 million fish (Table 14); cumulative catch through June 26 was 1.5 million, and the highest on record through this date of the season.

The aggressive management approach and high catch rates in the district during this time period have generated some criticism within the fleet over interception of non-local stocks; however, additional factors out of ADF&Gs control contributed to the magnitude of the catch, the principle one being the mobility of the drift gillnet fleet. Since the date requirement to initially register for a district has been moved to June 25 by board action, a significant effect has been the loss of fishery managers' ability to track levels of effort in various east-side districts. On June 21 and 22, about160 vessels fished in the district, based on deliveries. On June 23, that number jumped to 209 and then ultimately to 269 on June 25. The harvesting power of a fleet that size is substantial, and had the department been aware that many vessels were present in the district, commercial opportunities would have been of shorter duration.

The escapement tower project, operating about 24 miles upstream of Ugashik Village, started counting at midnight on June 27 and ended the day with an estimated passage of 10,734 fish (Table 15). An aerial survey of Ugashik Lagoon revealing low numbers of fish on June 25, just prior to counting tower operation, suggests that only a small volume of fish may have been missed by the enumeration project.

Inriver test fishery indices declined on June 26, showing effects of the commercial fishery on escapement, and resulted in a 10-hour set gillnet only opportunity on June 27 to gauge the level of abundance in the interior and upper part of the commercial district (Table 14). Harvest from this period was just under 9,500 fish, which demonstrated some fish moving into upper reaches of the district and confirming data from the test fishery (Table 14). No fishing was allowed on June 28 to provide for escapement.

An alternating day strategy was used between June 28 and July 1. Fishing was permitted on June 29; the district remained closed on June 30, with fishing allowed again on July 1. The idea was to alternate closures for escapement with fishing opportunity; however, inriver test fishery indices remained low despite the closures (Table 15).

Test fishery indices increased on July 3, but the increase was not large enough to justify fishing with the entire fleet, so a set gillnet only period was permitted on July 6 (Tables 14 and 15). Catch was a relatively modest 13,000 fish, which did not indicate a large volume of fish moving upriver (Table 14). Through July 6, cumulative harvest was 1.9 million and cumulative escapement was 215,514 (Tables 14 and 15). Based on test fishery data, fish abundance was insufficient to allow additional commercial opportunity. The district remained closed on July 7.

On the afternoon of July 8, ADF&G received numerous reports of fish in the district, but inriver indices did not move upward until July 9 (Table 15). Test fish indices increased over 2 tides on

July 9, and both gear groups were allowed to fish on the morning tide of July 10 (Tables 14 and 15).

High inriver test fishery indices persisted from July 9 until July 12 and were of large enough size that ADF&G was confident the escapement goal would be achieved (Table 15). Fishing was allowed on a basis of 1 tide per day until July 14 and then increased to 24 hours a day until July 17, when the fall schedule took effect (Table 6).

By the end of the emergency order period (July 17), set gillnet fishermen caught approximately 10% of the sockeye salmon harvest and drift gillnet fishermen caught 90%; 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 232 hours, or 79 hours more fishing time than in 2012, while drift gillnet permit holders were permitted to fish a total of 155.5 hours, or 45.5 hours more than in 2012 (Table 14).

The harvest of 43 Chinook salmon represents 3% of the recent 20-year average of 1,249 (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 2013, no escapement surveys were flown in the Ugashik drainages. The chum salmon harvest of 30,811 fish represents 45% of the 20-year average of 69,000 (Appendix A5).

No coho or pink salmon were reported in the harvest, but there was no directed commercial effort for Ugashik coho salmon in 2013 (Appendix A7).

In summary, the 2013 Ugashik District fishery harvested approximately 71% of the sockeye salmon run to the district, compared to the 20-year average exploitation rate of 70% (Appendix A14). Days of peak catch occurred on June 23, 24, and 25, when 304,000, 304,000 and 340,000 fish were harvested, respectively (Table 14). The midpoint of the run was June 28, 13 days early compared to the 20-year average of July 10 and the earliest run timing since the state took over management of the fishery. Days of peak escapement were July 11, 12, and 13, when 81,726, 135,738, and 107,604 sockeye salmon, respectively, passed the counting tower (Table 15). Peak effort occurred on June 25 when 362 drift gillnet vessels, including 48 with dual permits, registered to fish in the district (Table 13). There were 10 processors registered to purchase fish in the Ugashik District this season (Table 4).

Nushagak District

The 2013 Nushagak District total inshore sockeye salmon run was 5.6 million fish, 12% above the preseason forecast of 5.1 million fish (Table 1). Commercial sockeye salmon harvest in Nushagak District reached 3.2 million fish, 4% below the preseason projected harvest of 3.3 million fish and 44% below the 1993–2012 average harvest of 5.7 million sockeye salmon (Table 1 and Appendix A15). Escapement in the district's 3 major river systems was: 1,183,348 for Wood River, 387,744 for Igushik River, and 894,172 sockeye salmon for Nushagak River (Tables 16 and 17). Nushagak and Igushik sockeye salmon escapements exceeded the upper ends of their escapement goal ranges, and Wood River sockeye salmon escapement fell within the escapement goal range (Appendix A1). Chinook salmon escapement into Nushagak River was 113,709, 20% above the 95,000 inriver goal, and harvest was 15,175 Chinook salmon in Nushagak District (Tables 5 and 17).

In 2013, 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 poor Chinook salmon runs in 2010 and 2011 and the lack of a reliable forecast for the 2013 season (Appendix A19).

The sonar escapement enumeration project at Portage Creek was fully operational on June 7 (Table 17). Early indications were that the 2013 Chinook salmon run to the Nushagak District was similar to years with a strong return, with relatively early and consistent run entry. By June 13 escapement was ahead of expectations, allowing for a 5-hour directed Chinook salmon commercial opening on June 14. Participation in the opening was low, with 8 boats harvesting approximately 500 Chinook salmon. Escapement slowed from June 16 to 19 and then spiked on June 20 and 21. Escapement continued to be steady and strong through the third week of July. By June 21, ADF&G had switched to sockeye salmon management and there was no longer consideration of directed Chinook salmon openings.

The total reported commercial Chinook salmon harvest in 2013 was 15,175 fish (Table 5). The harvest of 15,175 Chinook salmon is well below the 1993–2012 average harvest of 52,007 fish for the Nushagak District (Appendix A4).

Sockeye salmon enumeration on the Wood River began June 18. Fish passage was slow on June 18 and 19, with 348 and 90 sockeye salmon enumerated, respectively (Table 16). The daily count increased to 7,254 sockeye salmon on June 20. A strong count from midnight to 6:00 a.m. on June 21 prompted managers to put the fleet on short notice for a commercial drift gillnet opening as early as 11:00 a.m. June 22. Escapement continued to be strong throughout the day of June 21, and aerial surveys indicated strong movements of fish into both the Nushagak and Wood rivers (Table 16). Based on the increased escapement into the Wood River and the results of the aerial survey, managers projected that the cumulative Wood River sockeye salmon escapement would exceed 100,000 fish on June 22, and commercial fishing was warranted to harvest fish surplus to escapement needs.

Commercial fishing for set gillnets was announced to begin late on June 21, and the drift gillnet fleet would start at 11:00 a.m. on June 22 (Table 18). Unfortunately, the beginning of commercial fishing also corresponded with a severe storm and winds exceeding 50 knots. The storm hampered commercial fishing into the early hours of June 24. Through June 24, the cumulative Wood River escapement was 599,640 sockeye salmon (Table 16). Managers continued to announce liberal fishing openings. The set gillnet fishery, opened on June 21, was extended for the rest of the season (Table 18). The drift gillnet fishery was extended from the first 8-hour opening on June 22 for an additional 24 hours (Table 18). Then openings were based around the tide with 7- to 10-hour openings called for each tide for the rest of the season (Table 18).

Despite an aggressive fishing schedule, sockeye salmon escapement into the Nushagak and Wood rivers increased beyond desired levels (Tables 16, 17, and 18). Although there was differential fishing time allowed between the drift and set gillnet gear types, the main focus of managers was to control escapement and not allocation. The final harvest percentages in the Nushagak District were 78% drift gillnet, 5% Igushik set gillnet, and 17% Nushagak section set gillnet; the goals are 74%, 6%, and 20% respectively (Appendix A9).

Commercial fishing in the Nushagak District continued until 9:00 a.m. July 23, at which time managers switched from sockeye salmon management to coho salmon management (Table 18).

The total sockeye salmon harvest of 3.2 million fish was 4% below the preseason forecast of 3.3 million fish (Tables 1, 19, and 20).

The Nushagak District opened again for a weekly fishing schedule of 9:00 a.m. Thursday to 9:00 a.m. Tuesday beginning at 9:00 a.m. July 25 (Table 18). There was no commercial market available for the first week of this schedule, but a buyer started buying for the second week. This buyer continued buying into the second week of August. Harvest and escapement were average, and ADF&G extended commercial fishing until further notice on August 10 (Table 18). The Portage Creek sonar project on the Nushagak River was operational until August 16; Nushagak River total coho salmon escapement was 207,222 (Table 17). Nushagak District coho salmon harvest is confidential because of limited processor participation.

Commercial fishing with set gillnet gear began in the Igushik Section of the Nushagak District on June 15 when a market became available (Tables 18). The Igushik River tower project began enumerating sockeye salmon on June 24 (Table 16). The Igushik River sockeye salmon forecast was relatively low, so managers restricted fishing time to 8 hours per day until June 21, when openings were increased to 12 hours (Tables 18). On June 23, commercial fishing was extended for 24 hours (Table 18). Escapement was strong beginning with the first day of counts, and fishing was extended until further notice (Tables 16 and 18).

The Igushik Section season was cut short when a tender sank in the mouth of the Igushik River on the morning of June 30. ADF&G closed fishing immediately until the situation could be evaluated. The fishery reopened in the afternoon of July 1 but was closed again on July 5 after reports of contaminated fish were received. The set gillnet fishery remain closed for the remainder of the season and an area of 6 statute miles from the mouth of the Igushik River was closed to drift gillnet fishing as well (Table 18).

Igushik River escapement was significantly increased by the closure to fishing that resulted from the vessel sinking. The final escapement of 387,744 exceeded the upper end of the escapement goal range of 150,000 to 300,000 fish (Appendix A1).

Togiak District

The 2013 inshore sockeye salmon run of 621,670 fish was the 15th largest run to Togiak District in the last 20 years and was 10% above the preseason forecast (Table 1 and Appendix A17). The harvest for the Togiak District was 493,552 sockeye salmon, the twelfth largest since 1993 (Appendix A3). Escapement into Togiak Lake was 128,118 fish, within the escapement goal range of 120,000 to 270,000 sockeye salmon (Table 16 and Appendix A1).

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; and 5 days per week in Osviak, Matogak, and Cape Peirce sections. This schedule is adjusted by emergency order, as necessary, to achieve desired escapement objectives. In addition, transferring into Togiak District is prohibited by regulation if the permit has fished in any of the other 4 Bristol Bay districts prior to July 27. Conversely, permit holders that have fished in Togiak District are prohibited from fishing in any other Bristol Bay District until July 27.

The 2013 inshore run to Togiak River was forecast at 567,000 sockeye salmon, of which 75% were projected to be 3-ocean fish and 25% were projected to be 2-ocean fish (Table 1). An escapement goal range of 120,000 to 270,000 sockeye salmon for Togiak Lake would leave

approximately 392,000 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. On average, a contribution of 50,000 sockeye salmon to district harvest was projected from drainages other than Togiak River.

Management strategy for Chinook salmon the last 11 years has been to reduce the weekly fishing schedule in sections of Togiak District during the last 2 weeks of June. In 2013, the weekly fishing schedule in Togiak River Section was reduced by 48 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. Based on recent year harvests, the Chinook salmon run was again anticipated to be below average. In an effort to protect Togiak River Chinook salmon, a new regulation that passed in December 2012 changed the drift gillnet permit holder boundaries beginning in the 2013 season for the Togiak River Section from June 1 through July 15. The regulation moved the drift gillnet permit holder boundary further south and away from the Togiak River mouth.

Commercial fishing for sockeye salmon opened by regulation on June 1, but the first deliveries of the season did not occur until June 10 (Table 21). Fishing continued through the week and into the next 2 weeks at expected, low participation levels for this early in the season, leaving cumulative harvests at 462 Chinook and 30,990 sockeye salmon at the close of fishing on June 28 (Table 21). Beginning July 1, management turned from Chinook salmon to active sockeye salmon management and the peak season weekly fishing schedule began, allowing fishing in Togiak River Section until 9:00 p.m. Saturday through July 15.

Total Chinook salmon harvest for Togiak River Section was 2,408 fish, with an additional 236 caught in the remainder of Togiak District (Tables 22, 23, 24, and 25). Poor weather and pilot availability inhibited aerial surveys to assess Chinook salmon escapement, preventing calculation of the total Chinook run to the Togiak River (Appendix A20).

The escapement enumeration project on Togiak River began on July 3 with a count of 4,614 sockeye salmon (Table 16). Escapement continued to be strong early, reaching a 3-day cumulative of 14,844 sockeye salmon through July 5, compared to an expected count of 5,000 through this date. Similar to last season, participation in July increased to higher levels (over 80 drift gillnet permits registered) than have been seen over the last 20 years (Table 13). Over the peak fishing schedule that runs through July 16, catch was average the first week and then, coincident with a further increase in participation, the second week started with above-average daily catches of 25,000 to 35,000 sockeye salmon before tapering off to expected daily harvests of 20,000 later in the week (Table 21). Escapement during the peak season period, after beginning very strong, came in at expected daily levels until July 14 saw a several-day drop-off, leaving cumulative escapement at 50,790 through July 16. Concerns over low escapement prompted ADF&G to shorten the weekly fishing schedule by 24 hours the week of July 15. Despite continued high levels of participation, harvest dropped off to below-average daily harvests in the Togiak River Section (Table 22).

When fishing reopened for the week on July 22, harvest was above average before dropping off to average daily harvests of 10,000 to 15,000 sockeye salmon for the remainder of the week. By

July 22, escapement had fallen behind and managers became concerned that strong participation coupled with a low forecast might lead to not reaching the 120,000 lower end of the escapement goal. Concerns were alleviated to some degree when escapement was approximately 10,000 sockeye salmon daily from July 23 through July 25, bringing the cumulative to 109,260. As expected for the typical tail end of the sockeye run, July 26 saw escapement drop off rapidly. The last day of sockeye enumeration at Togiak Lake was August 5 and the final escapement was 128,058, within the escapement goal range of 120,000 to 270,000 sockeye.

By regulation, Togiak District opens to all Area T salmon permit holders on July 27. As with most seasons, some shift in effort from other districts to Togiak took place, but these may have been offset by decreasing local effort. More so than most Togiak sockeye salmon seasons, harvest seemed to drop off very quickly, suggesting that the smaller forecast was realized and that, similar to most of Bristol Bay, the run was 2 days earlier than average.

Some effort targeting coho salmon occurred in August, but participation was small and, after the last day of commercial fishing in Togiak District on August 29, the final coho salmon harvest was 10,340 (Table 21). Although escapement information to all parts of the Togiak River drainage is incomplete, the total sockeye salmon run ranked 15th among the most recent 20 years (Appendix A17). The 2013 commercial Chinook salmon harvest represented only 34% of the 20-year (1993–2012) average, the chum salmon harvest was 35% above, and coho salmon harvest was 33% below the 20-year (1993–2012) average (Appendices A4, A5, and A7).

2013 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).

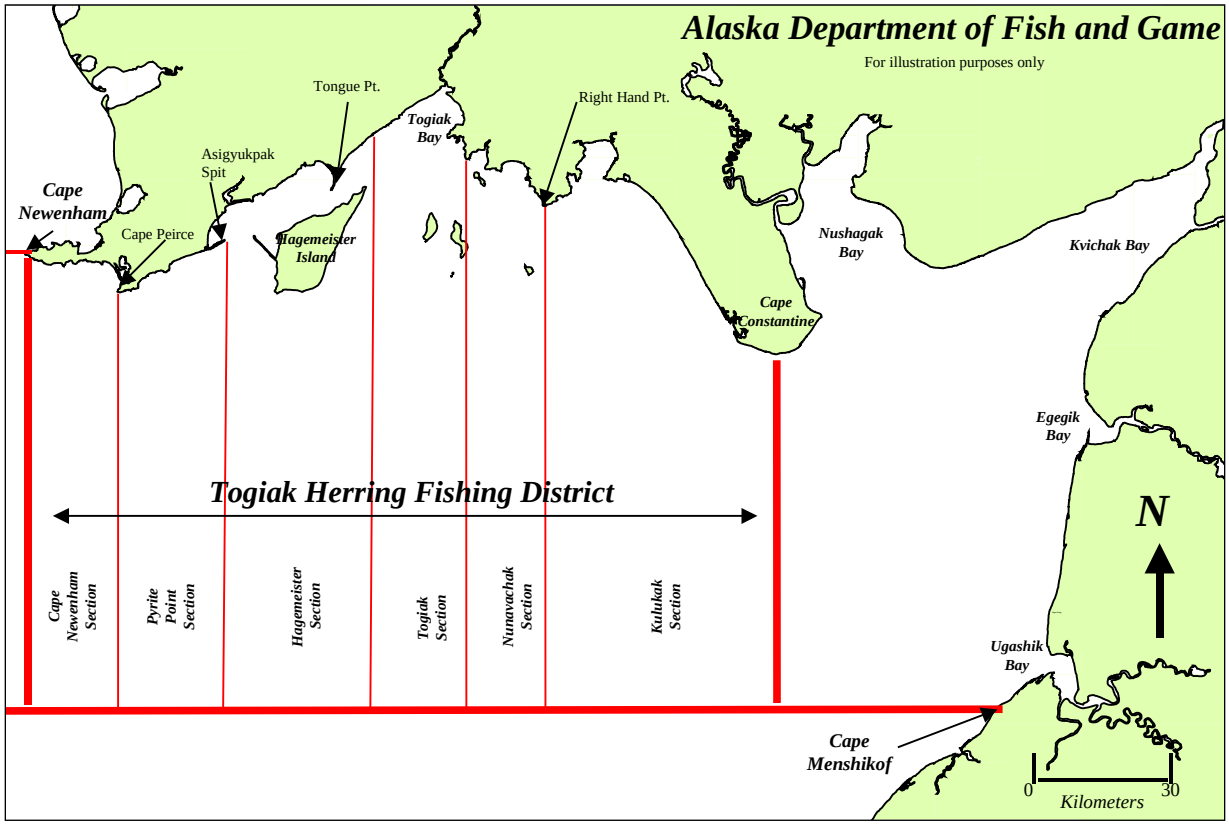

Figure 2.–Togiak Herring District, Bristol Bay.

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 1993 to 2012, sac roe harvests averaged 21,427 tons, worth an average of $5.38 million annually (Appendices B2 and B5).

Spawn-on-kelp harvests have not occurred in the last decade. 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 2013, sac roe harvests brought $4.1 million to permit holders, well above the most recent 10-year average of $2.9 million (Appendix B5). This value represents the grounds price and does not necessarily include postseason adjustments. No spawn-on-kelp fishery has occurred since 2003 (Appendix B2). Similar to the last 7 years, both the purse seine and gillnet fisheries began near the second week of May (Appendix B1).

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. Initial surveys are conducted after there is a reasonable expectation that herring might be present in the Togiak area due to such information as warming sea surface temperatures and reports of activity from the fishing grounds. Subsequent surveys are done several times a week after threshold biomass has been documented. Surveys are done as weather, pilot availability, and funding allow.

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 hand-held tube with a measured grid and a known focal length from a known altitude. Standard conversion factors of 1.52 tons (water depths of 16 ft or less), 2.58 tons (water depths between 16 and 26 ft), and 2.83 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 8 years, ADF&G has been converting aerial survey data collection methods to 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 first of these events documented by ADF&G was underway when ADF&G began monitoring the biomass in 1978. The most recent recruitment event occurred in 2004–2005 and was signaled by large numbers of age-4 herring appearing in the 2008–2009 harvest (Appendix B3). These fish continued to dominate the harvest biomass in 2013 as age-8 and -9 herring (Appendix B3). The herring 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, such as 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. In the last 10 years, processors have developed 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 1993, gillnet effort has increased from 75 vessels, to a peak of 461 in 1996, followed by a general decline to an all-time low of 18 in 2012 (Appendix B1). Purse seine participation fluctuated between 100 and 300 vessels from 1993 to 1998, before a general decline to an all-time low in 2012 of 16 vessels (Appendix B1). In 2013, gillnet participation increased to 37 vessels, the largest participation since 2006, while purse seine effort was 26, an increase from 16 in 2012 (Appendix B1).

Reduction in fleet size has led to the development of cooperative seine fisheries that focus on fish with high-quality roe rather than on quantity. This has also led to changes in the way the fishery is managed. Because fishing is less aggressive and processing capacity is limited, managers are able to allow extended openings leading to increased selectivity and smaller sets.

Industry participation in the fishery peaked between 1979 and 1982, when 33 processors participated in the herring fishery. From 1993 through 1997, 12 to 22 companies have purchased herring in Togiak (Appendix B1). Since 1998, industry participation has steadily declined to a low in 2012 of 4 companies (Appendix B1). In 2013, processor participation involved 6 companies (Table 26). Processing capacity on the grounds has also declined from a high of 4,850 tons per day in 1996, to a low in 2007 of 1,420 tons per day, to 2,675 tons per day in 2013 (Appendix B1).

2013 SEASON SUMMARY

Biomass Estimation

Aerial surveys of the Togiak District began April 28, 2013, and herring were first reported in the district on May 8. Staff first observed herring on May 10 when 43,170 tons of herring were documented (Table 27). On May 12, department staff documented 79,548 tons of herring and 9.7 miles of spawn. Peak biomass was documented on May 13 when ADF&G staff documented 85,888 tons of herring and 7.7 miles of spawn. On May 24, department staff documented 15.6 miles of spawn. Biomass had decreased by this point and only 34,923 tons of herring was documented. A total of 46.9 miles of spawn were documented in 2013 (Table 27).

Age Composition

A total of 6,160 herring from the commercial harvest were sampled from May 11 to 25. This effort produced 5,347 readable scales. Information on age, size, and sex was gathered from each fish, and samples were taken from the commercial purse seine and commercial gillnet fisheries. Sampling coverage was temporally and geographically well represented.

Age classes comprising more than 10% of the total run were age-6, -7, -8, and -9 fish, which comprised 17%, 36%, 18%, and 10%, respectively, of the run by biomass and 19%, 38%, 16%, and 8% of the run by numbers of fish (Table 28). Age classes comprising more than 10% of the harvest were age-6, -7, -8, and -9 fish, which comprised 15%, 32%, 19%, and 12%, respectively, of the harvest by biomass and 18%, 34%, 17%, and 10% by numbers of fish (Table 28). The

gillnet harvest was markedly older than the purse seine harvest. The average length and weight of herring harvested in the commercial fishery was 303 mm and 330 g respectively.

COMMERCIAL FISHERY

The Togiak District herring fisheries are managed in accordance with the **BRISTOL BAY HERRING MANAGEMENT PLAN** (**5 AAC 27.865**). The plan specifies a maximum allowable exploitation rate of 20% and allocates the harvestable surplus among all the fisheries harvesting the Togiak herring stock. The 2013 preseason forecasted biomass was 169,094 tons, the largest over the past 20-year (1993–2012) period (Appendix B4). The projected harvest guideline for each fishery was as follows: 1,500 tons herring equivalent or 350,000 lbs. of product for the spawn-on-kelp fishery, 2,262 tons for the Dutch Harbor food and bait fishery, and the remaining 30,056 tons to the sac roe fishery. The management plan specifies that ADF&G will manage the sac roe fishery so that 70% of the harvest is taken by purse seines (21,040 tons in 2013) and 30% of the harvest is taken by gillnets (9,017 tons in 2013) (Appendix B2).

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 composed of processor-organized cooperatives. For the 2013 season, management staff again allowed long-duration seine openings over a large area of the district and allowed processors to manage their fleets based on processing capacity. Input from the fleet and industry has indicated that this slows the “race for fish” and allows for improved quality and value.

Department staff polled processing companies prior to the season to assess processing capacity for the 2013 season and to inquire about additional concerns or issues. The poll indicated that 6 companies would be participating in the 2013 Togiak herring fishery, all 6 of which would buy gillnet and purse seine herring (Table 26). The processing capacity for 2013 was estimated to be 2,675 tons per day, up from 1,970 in 2012 (Appendix B1).

Purse Seine

The Togiak purse seine fishery opened at 12:00 p.m. on May 11when ADF&G announced an 82-hour opening (Table 30). Commercial quality fish were available late on May 11, and 606 tons of herring were harvested during the first day of fishing (Table 29). Herring continued to be of marketable quality for the remainder of the purse seine fishery, and the department extended the fishery in 48-hour increments for the duration of the fishery (Table 30). Although harvest was reduced due to poor weather on May 16 and 17, the fishery progressed at a steady pace. Improved weather conditions on May 18 allowed the purse seine fleet to harvest 4,110 tons of herring, the largest single-day harvest in 2013 (Table 29). The fleet harvested an additional 2,780 tons the following day, May 19. After the large harvests of May 18 and 19, only 1,970 tons remained on the quota. The fishery was allowed to close as scheduled so the department could evaluate the harvest for that day and determine if additional fishing time was warranted. The fleet was able to harvest 1,180 tons on Monday, May 20, leaving only 790 tons remaining on the quota. The department determined that after subtracting documented dead loss it would not be possible to conduct an orderly fishery for such a small amount of herring without the risk of significantly exceeding the quota. Therefore, the purse seine fishery remained closed for the rest of the season. The final harvest was 19,366 tons of herring, 9% short of the quota and the third largest over the last 20-year (1993–2012) period (Appendix B6).

Gillnet

The Togiak gillnet fishery was opened at 12:00 p.m. on May 11 until further notice with no prior test fishing (Table 30). In 2013, there were 6 companies participating in the Togiak sac roe gillnet fishery, an increase from 3 in 2012 (Table 26). Subsequently, participation by fishermen also increased to 37 vessels, up from 18 in 2012 (Appendix B2). Although the season opened on May 11, the first day that all 6 companies purchased fish was May 13 (Table 29). The combined harvest from May 11 and 12 was 345 tons of herring. Adhering to the allocation plan called for by regulation, the gillnet fleet was able to harvest 30% of the daily total harvest beginning on May 13, the first full day of good fishing. Harvest continued at a similar exploitation rate until May 18. Gillnet harvest began to slow on May 17 and was only 107 tons on May 18. Harvest increased again on May 19 to 439 tons of herring (Table 29). The harvest was similar on May 20 and 21, but deteriorating weather developing by the afternoon of May 21 essentially prevented fishing until May 23. Fishing improved to the largest single-day harvest on May 23 and stayed good until May 25 when weather again deteriorated. Weather improved on May 26; however, herring abundance had diminished and fishing was much slower than previously. The fleet continued to fish until Monday, May 27, but poor fishing and some processors ceasing operations provided the impetus for all the participants to end the season. The season officially closed at 12:00 noon on May 28, although the last delivery was made the morning of May 27. The total gillnet harvest was 8,244 tons of herring, 91% of the quota and the largest harvest of the last 20-year (1993–2012) period (Appendix B6).

Spawn on Kelp

No companies registered to buy herring spawn-on-kelp in 2013; therefore, there were no openings and no commercial harvest.

EXPLOITATION

The 2013 Togiak herring fisheries were managed for a maximum exploitation rate of 20% of the preseason biomass estimate. The purse seine harvest was 19,366 tons, with an average weight of 360 grams and an average roe percentage of 9.0% (Table 29). The gillnet harvest was 8,244 tons, with an average weight of 413 grams and an average roe percentage of 10.9%, making the combined harvest 27,610 tons with an average weight of 386 grams and an average roe percentage of 9.6% (Table 29). The Dutch Harbor food and bait fishery harvested 1,764 tons of herring in 2013 (Appendix B2). Based on the preseason biomass estimate of 169,094 tons, the 2013 exploitation rate would be approximately 17.4% (Appendix B2).

EXVESSEL VALUE

The projected exvessel value of the 2013 Togiak sac roe herring fishery is approximately $4.14 million (Appendix B5). This is based on a grounds price estimate of $150 per ton for seine caught fish and $150 per ton for gillnet caught fish and does not include any postseason adjustments.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge the Commercial and Subsistence Fisheries staff of the Dillingham, King Salmon, and Anchorage offices of the Alaska Department of Fish and Game for their contributions to this report.

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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, 2013.

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		4,901	4,440	-9	2,000-10,000	2,089	2,361	2,351	0
Alagnak River		2,006	2,301	15	320 minimum	1,096	968	1,205	24
Naknek River		3,336	2,172	-35	800-1,400	938	2,236	1,234	-45
	Total	10,233	8,913	-13	3,120-11,720	4,123	5,555	4,790	-14
EGEGIK DISTRICT		5,835	5,915	1	800-1,400	1,114	4,735	4,802	1
UGASHIK DISTRICT		3,396	3,071	-10	500-1,200	898	2,596	2,173	-16
NUSHAGAK DISTRICT									
Wood River		3,301	2,977	-10	700-1,500	1,183	2,301	1,794	-22
Igushik River		499	708	42	150-300	387	249	321	29
Nushagak-Mulchatna		1,262	1,962	55	340-760	895	762	1,067	40
	Total	5,062	5,647	12	1,190-2,560	2,465	3,312	3,182	-4
TOGIAK DISTRICT		567	622	10	120-270	128	392	494	26
TOTAL BRISTOL BAY		25,093	24,169	-4	5,730-17,150	8,728	16,589	15,441	-7

[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. Catch, escapement, and total run for these smaller systems are not included in this table so that forecast efficacy may be gauged. Totals may not equal column sums due to rounding.

[b] Does not include South Peninsula projected harvest.

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

Table 2.–Inshore forecast of sockeye salmon returns by age class, river system, and district, in thousands of fish, Bristol Bay, 2013.

District and River System	2-Ocean 1.2 (2009)	2-Ocean 2.2 (2008)	2-Ocean Total	3-Ocean 1.3 (2008)	3-Ocean 2.3 (2007)	3-Ocean Total	Total
Naknek-Kvichak District							
Kvichak River	1,305	1,645	2,950	1,392	739	2,131	5,081
Alagnak River	500	185	685	1,290	101	1,391	2,076
Naknek River	768	521	1,289	1,613	554	2,167	3,456
Total	2,573	2,351	4,924	4,295	1,394	5,689	10,613
Egegik District	162	3,221	3,383	1,184	1,488	2,672	6,055
Ugashik District	1,588	592	2,180	996	350	1,346	3,526
Nushagak District							
Wood River	1,491	151	1,642	1,699	80	1,779	3,421
Igushik River	146	20	166	337	16	353	519
Nushagak River [a]	28	4	32	1,203	17	1,220	1,252
Total	1,665	175	1,840	3,239	113	3,352	5,192
Togiak District [b]	162	41	203	409	28	437	640
Total Bristol Bay [c]							
Number	6,098	6,380	12,530	10,123	3,373	13,496	26,026
Percent	23	25	48	39	13	52	100

Note: Forecast includes projected harvest of Bristol Bay sockeye salmon in South Peninsula commercial salmon fisheries.

[a] Nushagak River forecast includes age-0.3 (15,000) and age-1.4 (44,000) fish.

[b] Forecasts for Kulukak, Kanik, Osviak, and Matogak River systems were not included. 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, 2013.

Species	Total Catch (lbs.)	Mean Weight (lbs.)	Mean Price ($/lb.)	Exvessel Value ($)
Sockeye	88,011,198	6.00	1.50	132,016,797
Chinook	255,371	18.60	0.77	196,636
Chum	5,362,553	6.40	0.30	1,608,766
Pink	1,593	3.10	0.30	478
Coho	746,420	6.00	0.80	597,136
Total	94,377,135			134,419,813

Note: Weighted averages used.

Table 4.–Commercial salmon processors and buyers operating in Bristol Bay, 2013.

	Name of Operator/Buyer [a]	Base of Operations	District [b]	Method [c]	Export
1	Alaska General Seafoods	Kenmore, WA	E,K,	C,EF,F,RE	AIR,SEA
2	Alaska Salmon Wild	Ruidoso, NM	K	F	AIR
3	Anthony Wood	King Salmon, AK	K	EF, F	AIR,SEA
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 Salmon	Dillingham, AK	N	EF	AIR
8	Coffee Point Seafoods of Washington	Seattle, WA	E	EF,F,RE	AIR,SEA
9	David Wright	Louisville, KY	K	F	SEA
10	Denise Reynolds	Naknek, AK	K	F	AIR
11	Ekuk Fisheries	Seattle, WA	N	F	SEA
12	Greg Fransen	Lynden, WA	K	F	SEA
13	Friedman Family Fisheries	Baltimore, MD	N	F	SEA
14	Great Ruby Fish Company	Anchorage, AK	K	EF,F,RE	AIR
15	Icicle Seafoods	Seattle, WA	E,K,N,U	C,EF,F,RE	AIR,SEA
16	Klawock Oceanside	Poulsbo, WA	N,T	F	SEA
17	Leader Creek Fisheries	Seattle, WA	E,K,N,U	F,RE	SEA
18	My Girl (Randy Alvarez)	Igiugig, AK	K	F	AIR
19	Nakeem Homepack	King Salmon, AK	K	EF,F,RE	AIR,SEA
20	Naknek Family Fisheries	Naknek, AK	K	EF,F,RE,S	AIR,SEA
21	North Pacific Seafoods (Togiak Fisheries)	Seattle, WA	T	F	SEA
22	North Pacific Seafoods (Red Salmon Cannery)	Seattle, WA	E,K,N,U	C,F,RE	SEA
23	North Pacific Seafoods (Pederson Point)	Seattle, WA	E,K,N,U	F,RE	SEA
24	Ocean Beauty Seafoods	Seattle, WA	E,K,N,U	C,EF,F,RE	AIR,SEA
25	Dominic Papetti	Bellingham, WA	K	F	AIR
26	P&P Fish (Matthew Crimp)	Anchorage, AK	N	EF	AIR
27	Peter Pan Seafoods	Seattle, WA	E,K,N,T,U	C,EF,F,RE,S	AIR,SEA
28	Shannon Ford	Federal Way, WA	K	F	AIR
29	Togiak Seafoods (Copper River Seafoods)	Anchorage, AK	K,N,T	EF	AIR
30	Tony Neal (Bristol Trading)	Homer, AK	E	F	AIR,SEA
31	Trident Seafoods	Seattle, WA	E,K,N,T,U	C,EF,F	AIR,SEA
32	Wild Alaska Salmon and Seafood	King Salmon, AK	K	EF, F	AIR,SEA
33	Wild Premium Salmon	Vista, CA	E	EF,F	AIR
34	Yardarm Knot Fisheries	Seattle, WA	E,K,N,U	C,F	SEA

Canning = 7; Freezing = 30; Fresh = 16; Curing = 2; Roe Extraction = 11; Air Export = 24; Sea Export = 22

[a] Indicates operators with a processing facility in a district or operators from other areas buying fish and/or providing support service for permit holders in districts away from the facility.

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

[c] 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, 2013.

District and River System		Sockeye	Chinook	Chum	Pink	Coho	Total
NAKNEK-KVICHAK DISTRICT							
Kvichak River		2,351,107					2,351,107
Alagnak River		1,204,806					1,204,806
Naknek River		1,234,319					1,234,319
	Total	4,790,233	391	267,348	0	361	5,058,333
EGEGIK DISTRICT		4,801,686	119	43,080	0	808	4,845,693
UGASHIK DISTRICT		2,172,783	43	30,811	0	0	2,203,637
NUSHAGAK DISTRICT							
Wood River		1,794,255					1,794,255
Igushik River		321,162					321,162
Nushagak River		1,066,890					1,066,890
	Total	3,182,307	15,175	513,272	320	126,717	3,837,791
TOGIAK DISTRICT							
Togiak Section		451,362	2,408	93,122	170	10,116	557,178
Kulukak Section		33,745	202	19,596	20	8	53,571
Matogak Section [a]		7,370	32	4,927	4	91	12,424
Osviak Section [a]		1,075	2	616	0	125	1,818
	Total	493,552	2,644	118,261	194	10,340	624,991
TOTAL BRISTOL BAY		15,440,561	18,372	972,772	514	138,226	16,570,445

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

Table 6.–Commercial fishing emergency orders, by district and statistical area, Bristol Bay eastside, 2013.

Number	Start Date	Start Time		End Date	End Time	Effective time	
Naknek/Kvichak District							
Drift Net							
AKN.55	10 Jul	2:30 p.m.	to	10 Jul	9:30 p.m.	7.0 hours	
AKN.56	11 Jul	3:00 p.m.	to	11 Jul	10:00 p.m.	7.0 hours	
AKN.59	12 Jul	3:30 a.m.		12 Jul	12:00 p.m.	8.5 hours	
AKN.59	12 Jul	4:00 p.m.	to	12 Jul	11:00 p.m.	7.0 hours	
AKN.59	13 Jul	4:00 a.m.	to	13 Jul	12:30 p.m.	8.5 hours	
AKN.59	13 Jul	5:00 p.m.	to	13 Jul	11:30 p.m.	6.5 hours	
AKN.62	14 Jul	4:30 a.m.	to	14 Jul	1:00 p.m.	8.5 hours	
AKN.62	14 Jul	5:30 p.m.	to	15 Jul	1:00 a.m.	7.5 hours	
AKN.62	15 Jul	5:00 a.m.	to	15 Jul	1:00 p.m.	8.0 hours	
AKN.62	15 Jul	6:30 p.m.	to	16 Jul	2:00 a.m.	7.5 hours	
AKN.62	16 Jul	6:00 a.m.	to	16 Jul	1:30 p.m.	7.5 hours	
AKN.62	16 Jul	7:30 p.m.		17 Jul	9:00 a.m.	13.5 hours	
Set Net							
AKN.01	3 Jun	9:00 a.m.	to	21 Jul	9:00 a.m.		[a]
AKN.17	23 Jun	11:00 a.m.	to	23 Jun	6:30 p.m.	7.5 hours	
AKN.20	24 Jun	12:30 p.m.	to	24 Jun	7:30 p.m.	7.0 hours	
AKN.23	25 Jun	1:30 p.m.	to	25 Jun	8:30 p.m.	7.0 hours	
AKN.27	26 Jun	2:30 p.m.	to	26 Jun	10:00 p.m.	7.5 hours	
AKN.30	27 Jun	4:00 p.m.	to	27 Jun	10:30 p.m.	6.5 hours	
AKN.32	28 Jun	5:00 p.m.	to	29 Jun	12:30 a.m.	7.5 hours	
AKN.33	29 Jun	6:00 p.m.	to	30 Jun	1:30 a.m.	7.5 hours	
AKN.37	30 Jun	1:30 a.m.	to	1 Jul	3:00 a.m.	25.5 hours	
AKN.40	1 Jul	3:00 a.m.	to	2 Jul	4:00 a.m.	25.0 hours	
AKN.43	2 Jul	4:00 a.m.	to	2 Jul	3:30 p.m.	11.5 hours	
AKN.45	3 Jul	8:30 a.m.	to	3 Jul	4:00 p.m.	7.5 hours	
AKN.46	4 Jul	9:00 a.m.	to	4 Jul	5:00 p.m.	8.0 hours	
AKN.52	10 Jul	2:00 p.m.	to	10 Jul	9:30 p.m.	7.5 hours	
AKN.56	10 Jul	9:30 p.m.					fall schedule
Naknek Section							
Drift Net							
AKN.01	3 Jun	9:00 a.m.	to	21 Jul	9:00 a.m.		[a]
AKN.17	23 Jun	12:00 p.m.	to	23 Jun	6:30 p.m.	6.5 hours	
AKN.20	24 Jun	1:30 p.m.	to	24 Jun	7:30 p.m.	6.0 hours	
AKN.23	25 Jun	2:30 p.m.	to	25 Jun	8:30 p.m.	6.0 hours	
AKN.27	26 Jun	3:30 p.m.	to	26 Jun	10:00 p.m.	6.5 hours	
AKN.30	27 Jun	5:00 p.m.	to	27 Jun	10:30 p.m.	5.5 hours	
AKN.32	28 Jun	6:00 p.m.	to	29 Jun	12:30 a.m.	6.5 hours	
AKN.33	29 Jun	6:30 p.m.	to	30 Jun	1:30 a.m.	7.0 hours	
AKN.37	30 Jun	7:00 a.m.	to	30 Jun	2:00 p.m.	7.0 hours	
AKN.37	30 Jun	7:30 p.m.	to	1 Jul	3:00 a.m.	7.5 hours	
AKN.40	1 Jul	7:00 a.m.	to	1 Jul	2:30 p.m.	7.5 hours	

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Number	Start Date	Start Time		End Date	End Time	Effective time	
AKN.40	1 Jul	8:30 p.m.	to	2 Jul	4:00 a.m.	7.5 hours	
AKN.43	2 Jul	8:00 a.m.	to	2 Jul	3:30 p.m.	7.5 hours	
AKN.45	3 Jul	8:30 a.m.	to	3 Jul	4:00 p.m.	7.5 hours	
AKN.46	4 Jul	10:00 a.m.	to	4 Jul	5:00 p.m.	7.0 hours	
AKN.52	10 Jul	2:30 p.m.	to	10 Jul	9:30 p.m.	7.0 hours	
AKN.56	11 Jul	2:30 a.m.	to	11 Jul	12:00 p.m.	9.5 hours	
AKN.46	7 Jul	5:00 p.m.	to	7 Jul	11:30 p.m.	6.5 hours	
AKN.49	8 Jul	5:00 a.m.	to	8 Jul	11:20 p.m.	7.0 hours	
Egegik District							
Drift Net							
AKN.02	3 Jun	9:00 a.m.	to	14 Jun	9:00 a.m.		b
AKN.06	17 Jun	6:30 p.m.	to	18 Jun	10:30 p.m.	4.0 hours	
AKN.10	19 Jun	7:00 p.m.	to	19 Jun	11:59 p.m.	5.0 hours	
AKN.10	20 Jun	7:30 a.m.	to	20 Jun	12:30 p.m.	5.0 hours	
AKN.12	21 Jun	9:00 a.m.	to	21 Jun	1:00 p.m.	4.0 hours	
AKN.15	22 Jun	10:30 a.m.	to	22 Jun	3:30 p.m.	5.0 hours	
AKN.18	23 Jun	10:30 a.m.	to	23 Jun	3:30 p.m.	5.0 hours	
AKN.21	24 Jun	12:30 p.m.	to	24 Jun	5:30 p.m.	5.0 hours	
AKN.24	25 Jun	12:45 p.m.	to	25 Jun	5:45 p.m.	5.0 hours	
AKN.28	26 Jun	4:00 p.m.	to	26 Jun	7:00 p.m.	3.0 hours	
AKN.34	28 Jun	6:00 p.m.	to	28 Jun	10:00 p.m.	4.0 hours	
AKN.35	29 Jun	5:30 p.m.	to	29 Jun	11:59 p.m.	6.5 hours	
AKN.35	30 Jun	5:30 a.m.	to	30 Jun	12:30 p.m.	7.0 hours	
AKN.38	30 Jun	4:00 p.m.	to	30 Jun	11:00 p.m.	7.0 hours	
AKN.38	1 Jul	5:45 a.m.	to	1 Jul	1:45 p.m.	7.0 hours	
AKN.41	1 Jul	8:00 p.m.	to	1 Jul	10:00 p.m.	2.0 hours	
AKN.41	2 Jul	8:00 a.m.	to	2 Jul	12:00 p.m.	4.0 hours	
AKN.44	3 Jul	8:30 a.m.	to	3 Jul	12:30 p.m.	4.0 hours	
AKN.50	8 Jul	11:30 a.m.	to	8 Jul	4:30 p.m.	5.0 hours	c
AKN.51	9 Jul	12:30 p.m.	to	9 Jul	6:30 p.m.	6.0 hours	
AKN.53	10 Jul	1:00 p.m.	to	10 Jul	7:00 p.m.	6.0 hours	
AKN.57	11 Jul	2:00 p.m.	to	11 Jul	8:00 p.m.	6.0 hours	
AKN.60	12 Jul	3:00 p.m.	to	12 Jul	9:00 p.m.	6.0 hours	
AKN.63	13 Jul	4:00 p.m.	to	13 Jul	10:00 p.m.	6.0 hours	d
AKN.65	14 Jul	12:00 p.m.	to	19 Jul	9:00 a.m.	117.0 hours	e
Set Net							
AKN.02	3 Jun	9:00 a.m.	to	14 Jun	9:00 a.m.		b
AKN.06	17 Jun	6:30 p.m.	to	18 Jun	2:30 a.m.	8.0 hours	
AKN.08	19 Jun	6:30 a.m.	to	20 Jun	2:30 a.m.	8.0 hours	
AKN.10	20 Jun	7:30 a.m.	to	20 Jun	3:30 p.m.	8.0 hours	
AKN.12	21 Jun	8:30 a.m.	to	21 Jun	4:30 p.m.	8.0 hours	
AKN.15	22 Jun	9:30 a.m.	to	22 Jun	5:30 p.m.	8.0 hours	
AKN.18	23 Jun	10:15 a.m.	to	23 Jun	6:15 p.m.	8.0 hours	
AKN.21	24 Jun	11:45 p.m.	to	24 Jun	7:45 p.m.	8.0 hours	

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Number	Start Date	Start Time		End Date	End Time	Effective time	
AKN.24	25 Jun	12:45 p.m.	to	25 Jun	8:45 p.m.	8.0 hours	
AKN.34	28 Jun	4:15 p.m.	to	29 Jun	12:15 a.m.	8.0 hours	
AKN.35	29 Jun	5:15 p.m.	to	30 Jun	1:15 a.m.	8.0 hours	
AKN.35	30 Jun	5:00 a.m.	to	30 Jun	1:00 p.m.	8.0 hours	
AKN.38	1 Jul	5:45 a.m.	to	1 Jul	1:45 p.m.	7.0 hours	
AKN.41	2 Jul	6:30 a.m.	to	2 Jul	2:30 p.m.	8.0 hours	
AKN.44	3 Jul	7:30 a.m.	to	3 Jul	3:30 p.m.	8.0 hours	
AKN.47	5 Jul	9:00 a.m.	to	5 Jul	5:00 p.m.	8.0 hours	
AKN.50	8 Jul	11:30 a.m.	to	8 Jul	7:30 p.m.	8.0 hours	
AKN.51	9 Jul	12:15 p.m.	to	9 Jul	8:15 p.m.	8.0 hours	
AKN.53	10 Jul	1:00 p.m.	to	10 Jul	9:00 p.m.	8.0 hours	
AKN.57	11 Jul	2:00 p.m.	to	11 Jul	10:00 p.m.	8.0 hours	
AKN.60	12 Jul	2:45 p.m.	to	13 Jul	2:45 p.m.	24.0 hours	
AKN.63	13 Jul	2:45 p.m.	to	19 Jul	9:00 a.m.	138.0 hours	e
Ugashik District							
Drift Net							
AKN.03	3 Jun	9:00 a.m.	to	14 Jun	9:00 a.m.		a,f
AKN.07	17 Jun	5:30 p.m.	to	17 Jun	9:30 p.m.	4.0 hours	
AKN.13	21 Jun	8:00 a.m.	to	21 Jun	2:00 p.m.	6.0 hours	
AKN.16	22 Jun	9:00 a.m.	to	22 Jun	9:00 p.m.	8.0 hours	
AKN.19	23 Jun	10:00 a.m.	to	23 Jun	6:00 p.m.	8.0 hours	
AKN.22	24 Jun	10:00 a.m.	to	24 Jun	6:00 p.m.	8.0 hours	
AKN.25	25 Jun	12:00 p.m.	to	25 Jun	8:00 p.m.	8.0 hours	
AKN.26	27 Jun	1:00 p.m.	to	27 Jun	5:00 p.m.	4.0 hours	
AKN.36	29 Jun	3:30 p.m.	to	29 Jun	9:30 p.m.	6.0 hours	
AKN.39	1 Jul	5:00 a.m.	to	1 Jul	12:00 p.m.	7.0 hours	
AKN.54	10 Jul	12:30 p.m.	to	10 Jul	5:30 p.m.	5.0 hours	
AKN.58	11 Jul	1:30 p.m.	to	11 Jul	8:30 p.m.	7.0 hours	
AKN.61	12 Jul	1:30 p.m.	to	12 Jul	10:00 p.m.	8.5 hours	
AKN.64	13 Jul	1:00 p.m.	to	13 Jul	11:00 p.m.	10.0 hours	
AKN.66	14 Jul	12:00 p.m.	to	14 Jul	9:00 a.m.	117.0 hours	e
Set Net							
AKN.03	3 Jun	9:00 a.m.	to	14 Jun	9:00 a.m.		a,f
AKN.07	17 Jun	4:30 p.m.	to	17 Jun	12:30 a.m.	8.0 hours	
AKN.07	17 Jun	7:30 p.m.	to	17 Jun	12:30 a.m.	8.0 hours	
AKN.13	21 Jun	7:00 a.m.	to	21 Jun	5:00 p.m.	10.0 hours	
AKN.16	22 Jun	8:00 a.m.	to	22 Jun	8:00 p.m.	12.0 hours	
AKN.19	23 Jun	9:00 a.m.	to	23 Jun	9:00 p.m.	12.0 hours	
AKN.22	24 Jun	10:00 a.m.	to	24 Jun	10:00 p.m.	12.0 hours	
AKN.25	25 Jun	11:00 a.m.	to	25 Jun	11:00 p.m.	12.0 hours	
AKN.26	26 Jun	12:00 p.m.	to	27 Jun	12:00 a.m.	12.0 hours	
AKN.29	27 Jun	1:00 p.m.	to	27 Jun	11:00 p.m.	10.0 hours	
AKN.36	29 Jun	2:30 p.m.	to	29 Jun	11:59 p.m.	9.5 hours	
AKN.39	1 Jul	3:30 a.m.	to	1 Jul	1:30 p.m.	10.0 hours	

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Number	Start Date	Start Time		End Date	End Time	Effective time	
AKN.42	2 Jul	5:00 a.m.	to	2 Jul	2:00 p.m.	9.0 hours	
AKN.49	6 Jul	8:30 a.m.	to	6 Jul	8:30 p.m.	12.0 hours	
AKN.54	10 Jul	11:30 a.m.	to	10 Jul	8:30 p.m.	9.0 hours	
AKN.58	11 Jul	12:30 p.m.	to	11 Jul	9:30 p.m.	8.0 hours	
AKN.61	12 Jul	12:30 p.m.	to	12 Jul	9:30 p.m.	8.0 hours	
AKN.64	13 Jul	1:30 p.m.	to	19 Jul	9:00 a.m.	139.5 hours	[e]

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

[b] Weekly schedule: 9:00 a.m. Monday to 9:00 a.m. Wednesday, and 9:00 a.m. Thursday to 9:00 a.m. Friday.

[c] Drift gillnet boundary adjustment in Egegik.

[d] Midpoint of escapement reached, transfer waiting period waived in Egegik.

[e] Extends current fishing period.

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

Table 7.–Commercial salmon catch by date and species, in numbers of fish, Naknek-Kvichak District, Bristol Bay, 2013.

		Hours fished		Deliveries							
Date		Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/12	[a,b]	24	24								
6/13	[a]	24	24	7		170	0	0	0	0	170
6/14	[a]	9	9	6		389	0	0	0	0	389
6/17	[a]	15	15	252	46	47,104	9	698	0	0	47,811
6/18	[a]	24	24	405	73	101,524	18	891	0	0	102,433
6/19	[a]	24	24	523	99	130,500	26	900	0	0	131,426
6/20	[a]	24	24	462	155	212,907	28	1404	0	0	214,339
6/21	[a]	9	9	172	66	78,446	4	500	0	0	78,950
6/23	[a]	6.5	7.5	397	236	192,702	3	3,686	0	0	196,391
6/24	[a]	6.5	7.5	401	192	135,571	3	645	0	0	136,219
6/25	[a]	6	7	381	216	220,843	6	2,186	0	0	223,035
6/26	[a]	6.5	7.5	398	302	385,527	4	1,141	0	0	386,672
6/27	[a]	5.5	6.5	428	325	451,557	10	2,224	0	0	453,791
6/28	[a]	6.5	7.5	413	307	362,647	3	897	0	0	363,547
6/29	[a]	7	7.5	444	249	319,443	3	1,337	0	0	320,783
6/30	[a]	7.0/7.5	24	748	329	378,833	7	1,521	0	0	380,361
7/1	[a]	7.5/7.5	24	699	407	360,437	11	1,945	0	0	362,393
7/2	[a]	7.5	15.5	598	269	249,834	2	2,400	0	0	252,236
7/3	[a]	7.5	7.5	560	213	251,799	1	1,869	0	0	253,669
7/4	[a]	7	8	472	213	178,100	13	1,775	0	0	179,888
7/10	[a]	7	10	456	261	413,514	33	76,084	0	0	489,631
7/11	[a]	7.5/7	24	521	276	71,875	25	48,113	0	0	120,013
7/12	[a]	8.5/7	24	621	269	84,842	11	30,699	0	0	115,552
7/13	[a]	8.5/7	24	567	233	55,156	15	12,657	0	0	67,828
7/14		8.5/7.5	24	373	167	30,847	23	9,086	0	0	39,956
7/15		8/7.5	24	238	144	20,144	19	9,318	0	0	29,481
7/16		7/4.5	24	171	106	12,701	15	8,618	0	2	21,336
7/17		24	24	108	125	10,682	19	13,712	0	0	24,413
7/18		24	24	85	61	8,500	16	9,166	0	0	17,682
7/19		9	24	31	7	4,846	3	5,130	0	0	9,979
7/22		15	24	5	18	2,930	1	2,930	0	2	5,863
7/23		24	24	5	19	1,216	14	1,216	0	20	2,466
7/24		24	24	17	17	6,888	20	6,888	0	28	13,824

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	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/25	24	24	19	16	4,774	23	4,774	0	129	9,700
7/26 [b]	9	24								
7/29 [b]	15	24								
7/30 [b]	24	24								
7/31 [b]	24	24								
8/1 [b]	24	24								
8/5 [b]	15	9								
8/6 [b]	24	15								
8/7 [b]	24	24								
8/8 [b]	24	24								
8/12 [b]	15	24								
8/13 [b]	24	24								
8/14 [b]	24	24								
8/15 [b]	24	24								
8/16 [b]	9	24								
8/19 [b]	15	24								
8/20 [b]	24	9								
Total			10,997	5,445	4,790,233	391	267,348	0	361	5,058,333

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.

Table 8.–Daily sockeye salmon escapement tower counts by river system, eastside Bristol Bay, 2013.

	Kvichak River		Naknek River		Egegik River		Ugashik River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/18					44,892	44,892		
6/19					92,394	137,286		
6/20			9,090	9,090	45,366	182,652		
6/21	894	894	14,886	23,976	47,484	230,136		
6/22	60	954	41,880	65,856	40,314	270,450		
6/23	11,628	12,582	54,744	120,600	72,648	343,098		
6/24	55,410	67,992	26,028	146,628	14,952	358,050		
6/25	54,684	122,676	10,446	157,074	44,502	402,552		
6/26	24,042	146,718	20,766	177,840	2,814	405,366		
6/27	44,574	191,292	59,808	237,648	19,326	424,692	10,734	10,734
6/28	71,028	262,320	93,060	330,708	89,592	514,284	37,152	47,886
6/29	132,828	395,148	76,788	407,496	89,238	603,522	24,924	72,810
6/30	142,530	537,678	59,202	466,698	86,610	690,132	25,800	98,610
7/01	169,140	706,818	21,042	487,740	8,346	698,478	25,200	123,810
7/02	304,596	1,011,414	17,658	505,398	19,776	718,254	9,342	133,152
7/03	318,012	1,329,426	24,660	530,058	35,982	754,236	8,382	141,534
7/04	154,824	1,484,250	17,472	547,530	17,010	771,246	19,590	161,124
7/05	86,376	1,570,626	13,812	561,342	19,404	790,650	29,418	190,542
7/06	22,992	1,593,618	12,906	574,248	17,046	807,696	24,876	215,418
7/07	22,500	1,616,118	103,038	677,286	6,204	813,900	23,742	239,160
7/08	14,682	1,630,800	92,448	769,734	41,448	855,348	22,104	261,264
7/09	78,444	1,709,244	109,812	879,546	118,650	973,998	21,630	282,894
7/10	232,362	1,941,606			97,584	1,071,582	41,784	324,678
7/11	117,126	2,058,732			26,622	1,098,204	81,726	406,404
7/12	23,538	2,082,270			11,082	1,109,286	135,738	542,142
7/13	3,306	2,085,576			3,042	1,112,328	107,604	649,746
7/14	2,100	2,087,676			1,302	1,113,630	74,286	724,032
7/15	900	2,088,576					39,102	763,134
7/16							27,822	790,956
7/17							16,290	807,246
7/18							8,496	815,742
7/19							13,320	829,062
7/20							10,782	839,844
7/21							8,640	848,484
7/22							10,692	859,176
7/23							14,208	873,384
7/24							10,530	883,914
7/25							8,358	892,272
7/26							5,838	898,110

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

Table 9.–Comparison of daily sockeye salmon escapement estimates by tower count and river test fishing enumeration methods, Kvichak River, Bristol Bay, 2013.

	Tower Count		River Test Fishing				
				Index Points			
Date	Daily	Cum.	Fish per Index Pt.[a]	Daily	Cum.	Cumulative Escapement	Estimated River Fish[b]
6/20			93	16	16	1,476	
6/21	894	894	93	299	314	29,239	
6/22	60	954	93	967	1,281	119,129	100,000
6/23	11,628	12,582	93	1,573	2,853	265,373	200,000
6/24	55,410	67,992	65	520	3,373	219,265	150,000
6/25	54,684	122,676	48	205	3,578	171,742	40,000
6/26	24,042	146,718	43	1,047	4,625	198,859	50,000
6/27	44,574	191,292	53	1,106	5,730	303,700	100,000
6/28	71,028	262,320	64	1,444	7,174	459,150	200,000
6/29	132,828	395,148	85	1,412	8,587	729,854	300,000
6/30	142,530	537,678	75	2,812	11,399	854,926	300,000
7/01	169,140	706,818	82	2,831	14,230	1,166,885	400,000
7/02	304,596	1,011,414	85	2,074	16,304	1,385,855	200,000
7/03	318,012	1,329,426	88	1,291	17,595	1,548,393	200,000
7/04	154,824	1,484,250	87	888	18,484	1,608,081	100,000
7/05	86,376	1,570,626	87	732	19,215	1,671,739	100,000
7/06	22,992	1,593,618	84	503	19,719	1,656,367	50,000
7/07	22,500	1,616,118	84	382	20,101	1,688,449	70,000
7/08	14,682	1,630,800	82	2,317	22,418	1,838,244	200,000
7/09	78,444	1,709,244	81	1,397	23,815	1,929,016	200,000
7/10	232,362	1,941,606	87	306	24,121	2,098,530	150,000
7/11	117,126	2,058,732	88	24	24,145	2,124,753	50,000
7/12	23,538	2,082,270	86	0	24,145	2,076,463	5,000
7/13	3,306	2,085,576					
7/14	2,100	2,087,676					
7/15	900	2,088,576					

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

[a] The FPI (fish per index point) used to estimate the daily ERFs (estimated river fish) prior to using lag time relationships was calculated using an average of the 1990–2011 starting FPIs after lag time relationships "locked in" and the midpoint of the escapement count each year. A trend line was then fit to the daily averages and an FPI was calculated for the first day. This method was used until June 29 when FPIs were based on lag-time relationships.

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

Table 10.–Commercial salmon catch by date and species, in numbers of fish, Egegik District, Bristol Bay, 2013.

	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/5	9	9								0
6/6 [a]	15	15								
6/7 [a]	9	9								
6/10	15	15	34	32	7,979	1				7,980
6/11	24	24	57	49	27,346		322			27,668
6/12	9	9	8	12	1,645		55			1,700
6/13	15	15	111	60	55,988	5	439			56,432
6/14	9	9	68	12	14,351	1	117			14,469
6/17	4	8	355	177	237,906	32	1,624			239,562
6/19	5	8	489	193	343,705	9	1,769			345,483
6/20	5	8	515	162	192,296	9	1,169			193,474
6/21	4	8	504	150	193,380	10	1,422			194,812
6/22	5	8	289	115	135,540	1	561			136,102
6/23	5	8	346	214	274,023	10	1,205			275,238
6/24	5	8	330	200	193,115	5	857			193,977
6/25	5	8	307	148	213,472	5	2,698			216,175
6/26	3		304		212,614		1,051			213,665
6/28	4	7.75	305	269	372,813	4	1,227			374,044
6/29	6.5	14.5	306	160	330,249	1	1,027			331,277
6/30	14	9.25	541	136	564,736	3	2,143			566,882
7/1	10	8	535	150	430,621	4	2,477			433,102
7/2	4	8	319	148	232,559		1,286			233,845
7/3	4	8	315	148	124,661	2	2,161			126,824
7/5		8		144	11,953	3	143			12,099
7/8	5	8	271	164	94,914	2	2,610			97,526
7/9	6	8	273	169	211,671	1	2,853			214,525
7/10	6	8	275	120	54,372		1,869			56,241
7/11	6	8	248	134	87,240	1	2,693			89,934
7/12	6	24	232	137	72,313	2	3,139			75,454
7/13	6	24	226	176	40,632	4	1,664			42,300
7/14	12	24	166	116	20,198	2	1,264			21,464
7/15	24	24	155	58	21,516	1	1,500			23,017
7/16	24	24	110	53	13,018		983			14,001
7/17	24	24	56	28	5,712	1	455			6,168

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Table 10.–Page 2 of 2.

	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/18	24	24	28	28	4,775		291			5,066
7/19 [a]	9	9								
7/22	15	15		4	787				45	832
7/23 [a]	24	24								
7/24	24	24		4	730				45	775
7/25	24	24		4	482				44	526
7/26	9	9			0					0
7/29	15	15		4	459				49	508
7/30	24	24		4	537				75	612
7/31	24	24		4	160				24	184
8/1	24	24		4	443				87	530
8/2 [a]	9	9								
8/5	15	15		4	129				125	254
8/6	24	24		4	87				204	291
8/7	24	24								0
8/8	24	24								0
8/9	9	9								0
8/12	15	15								0
8/13	24	24								0
8/14	24	24								0
8/15	24	24								0
8/16	9	9								0
8/19	15	15								0
8/20	24	24								0
8/21	24	24								0
8/22	24	24								0
8/23	9	9								0
8/26	15	15								0
8/27	24	24								0
8/28	24	24								0
8/29	24	24								0
8/30	9	9								0
Total	917	1,018	8,078	3,906	4,801,686	119	43,080	0	808	4,845,693

Note: Blank cells indicate no data.

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

Table 11.–Comparison of daily sockeye salmon escapement estimates by tower count and river test fishing enumeration methods, Egegik River, Bristol Bay, 2013.

	Tower Count		River Test Fishing				
				Index Points			
Date	Daily	Cum.	Fish per Index Pt.[a]	Daily	Cum.	Estimated Cumulative Escapement	Estimated River Fish[b]
6/14							
6/15							
6/16			68	369	369	25,078	
6/17			68	796	1,165	79,218	
6/18	44,892	44,892	68	993	2,157	146,709	
6/19	92,394	137,286	68	1,781	3,939	267,827	120,000
6/20	45,366	182,652	46	763	4,702	216,294	35,000
6/21	47,484	230,136	49	848	5,550	271,950	40,000
6/22	40,314	270,450	49	967	6,517	319,311	40,000
6/23	72,648	343,098	53	1,187	7,703	408,276	60,000
6/24	14,952	358,050	46	725	8,428	387,684	25,000
6/25	44,502	402,552	48	341	8,769	420,910	15,000
6/26	2,814	405,366	46	651	9,420	433,318	30,000
6/27	19,326	424,692	46	913	10,333	475,302	50,000
6/28	89,592	514,284	50	1,213	11,545	577,259	50,000
6/29	89,238	603,522	58	868	12,413	719,976	100,000
6/30	86,610	690,132	56	391	12,804	717,042	20,000
7/1	8,346	698,478	55	376	13,180	724,927	30,000
7/2	19,776	718,254	54	543	13,723	741,045	25,000
7/3	35,982	754,236	56	217	13,940	780,633	20,000
7/4	17,010	771,246	55	394	14,334	788,386	20,000
7/5	19,404	790,650	55	309	14,643	805,365	20,000
7/6	17,046	807,696	56	180	14,823	830,069	15,000
7/7	6,204	813,900	55	285	15,108	830,938	10,000
7/8	41,448	855,348	58	2,225	17,333	1,005,331	150,000
7/9	118,650	973,998	56	774	18,107	1,013,981	50,000
7/10	97,584	1,071,582	59	555	18,662	1,101,041	30,000
7/11	26,622	1,098,204					
7/12	11,082	1,109,286					
7/13	3,042	1,112,328					
7/14	1,302	1,113,630					

Note: Blank cells indicate no data.

[a] The FPI used to estimate the daily ERFs prior to using lag time relationships was calculated using a 4-year average of median FPIs with stronger 2-ocean component and similar inshore total run as that projected for 2013.

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

Table 12.–Inshore run of sockeye salmon by age class, river system, and district, in thousands of fish, Bristol Bay, 2013.

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	999	2,587	3,585	602	247	850	1	4,440
	Percent	22.5	58.3	80.8	13.6	5.6	19.1	0.0	99.9
Alagnak River									
	Number	516	504	1,021	1,131	147	1,278	5	2,301
	Percent	22.4	21.9	44.4	49.2	6.4	55.6	0.2	100.1
Naknek River									
	Number	386	424	811	1,000	325	1,325	20	2,172
	Percent	17.8	19.5	37.3	46.0	15.0	61.0	0.9	99.3
Total	Number	1,922	4,020	5,941	2,262	672	2,934	18	8,913
	Percent	21.6	45.1	66.7	25.4	7.5	32.9	0.2	99.8
EGEGIK DISTRICT									
	Number	627	3,451	4,078	396	1,327	1,723	0	5,915
	Percent	10.6	58.3	69.0	6.7	22.4	29.1	0.0	98.1
UGASHIK DISTRICT									
	Number	1,071	750	1,821	981	246	1,227	8	3,071
	Percent	34.9	24.4	59.3	32.0	8.0	40.0	0.3	99.5
NUSHAGAK DISTRICT									
Wood River									
	Number	1,480	205	1,685	1,216	58	1,274	17	2,978
	Percent	49.7	6.9	56.6	40.8	1.9	42.8	0.6	99.4
Igushik River									
	Number	74	23	98	590	19	609	3	708
	Percent	10.5	3.3	13.8	83.3	2.7	86.0	0.4	100.2
Nushagak River									
	Number	309	0	309	1,433	14	1,447	164	1,962
	Percent	15.7	0.0	15.7	73.0	0.7	73.8	8.4	97.9
Total	Number	1,863	228	2,091	3,239	91	3,330	184	5,648
	Percent	36.0	4.6	40.6	54.4	1.7	56.2	2.6	99.4
TOGIAK DISTRICT [c]									
	Number	94	29	122	489	8	497	2	622
	Percent	15.1	4.6	19.7	78.6	1.3	80.0	0.2	99.9
TOTAL BRISTOL BAY [d]									
	Number	5,471	9,392	14,864	6,751	5,025	9,037	121	24,169
	Percent	22.6	38.9	61.5	27.9	20.8	37.4	0.5	99.4

[a] Does not include the South Peninsula catch of Bristol Bay sockeye salmon or immature high seas bycatch.
[b] Totals include minor age classes not listed in this table; minor rivers and creeks are not included.
[c] Does not include rivers other than Togiak River.
[d] Totals may not equal column sums due to rounding.

Table 13.–Daily district registration of drift gillnet permit holders by district, Bristol Bay, 2013.

	Naknek-Kvichak		Egegik		Ugashik		Nushagak		Togiak[a]	
Date	total	dual	total	dual	total	dual	total	dual	total	Total
6/25	471	31	369	36	362	48	354	53	35	1,591
6/26	487	74	379	64	328	94	359	57	39	1,592
6/27	489	79	372	67	277	83	363	58	49	1,550
6/28	505	79	378	64	231	67	369	58	53	1,536
6/29	559	83	385	70	234	49	371	62	53	1,602
6/30	601	100	399	73	235	49	372	60	53	1,660
7/01	608	113	399	78	227	49	359	61	54	1,647
7/02	610	115	399	78	215	47	339	58	57	1,620
7/03	622	115	395	78	217	43	326	52	58	1,618
7/04	634	117	390	80	216	44	319	49	58	1,617
7/05	661	119	379	77	219	44	316	48	58	1,633
7/06	669	127	380	75	206	45	313	48	63	1,631
7/07	641	130	361	76	208	43	319	48	70	1,599
7/08	635	122	358	70	206	43	324	50	73	1,596
7/09	645	119	366	68	186	44	338	49	75	1,610
7/10	668	120	346	70	176	41	263	50	79	1,532
7/11	703	128	332	71	177	40	241	37	79	1,532
7/12	786	137	331	69	181	41	245	33	80	1,623
7/13	793	148	334	69	201	42	248	36	81	1,657
7/14	792	146	332	73	212	47	245	37	81	1,662
7/15	794	145	337	70	205	48	251	35	81	1,668
7/16	810	144	337	71	207	46	252	36	81	1,687
Average	645	113	366	70	224	50	313	49	64	1,612

Note: Total permit sum includes dual boat registrations.

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

Table 14.–Commercial salmon catch by date and species, in numbers of fish, Ugashik District, Bristol Bay, 2013.

		Hours fished		Deliveries							
Date		Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/10		15	15	4		43		1			44
6/11	[a]	24	24								
6/12		24	24	14		851		26			877
6/13		24	24								0
6/14	[a]	9	9								
6/17		4	8	21	3	19,783		989			20,772
6/21		6	10	154	9	151,848		761			152,609
6/22		8	12	160	26	181,071	2	877			181,950
6/23		8	12	209	40	304,028	4	1,411			305,443
6/24		8	12	263	36	304,182	11	1,015			305,208
6/25		8	12	269	32	340,278	9	1,420			341,707
6/26		4	12	233	22	170,385		1,009			171,394
6/27			10		40	9,483		559			10,042
6/29		6	9.5	181	45	204,833		1,313			206,146
7/1		7	10	187	33	185,788	1	1,630			187,419
7/2			9		44	10,749	1	935			11,685
7/6			12		59	12,743	2	1,109			13,854
7/10		5	9	121	92	89,746	2	2,965			92,713
7/11		7	9	113	59	52,535	5	4,897			57,437
7/12		8.5	9	110	45	39,516	1	2,547			42,064
7/13		10	10.5	113	40	31,633	1	2,408			34,042
7/14		12	24	108	47	21,107	2	1,696			22,805
7/15		24	24	100	28	16,459		1,263			17,722
7/16		24	24	70	21	12,649		980			13,629
7/17		24	24	46	14	6,471	1	550			7,022
7/18		24	24	24	5	5,086		426			5,512
7/19		9	9	4		1,120		19			1,139
Total		302.5	391	2,508	740	2,172,783	43	30,811	0	0	2,203,637

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 15.–Comparison of daily sockeye salmon escapement estimates by tower count and river test fishing enumeration methods, Ugashik River, Bristol Bay, 2013.

	Tower Count		River Test Fishing				
				Index Points			
Date	Daily	Cum.	Fish per Index Pt.[a]	Daily	Cum.	Estimated Cumulative Escapement	Estimated River Fish[b]
6/23			64	659	659	42,161	40,000
6/24			64	781	1,440	92,168	80,000
6/25			64	891	2,331	149,215	90,000
6/26			64	354	2,686	171,887	100,000
6/27	10,734	10,734	64	220	2,906	185,954	80,000
6/28	37,152	47,886	64	263	3,169	202,814	125,000
6/29	24,924	72,810	64	345	3,514	224,875	100,000
6/30	25,800	98,610	64	246	3,760	240,650	60,000
7/1	25,200	123,810	32	265	4,025	128,812	40,000
7/2	9,342	133,152	42	350	4,376	183,779	50,000
7/3	8,382	141,534	40	593	4,969	198,747	60,000
7/4	19,590	161,124	43	715	5,683	244,383	70,000
7/5	29,418	190,542	44	740	6,424	282,647	80,000
7/6	24,876	215,418	43	467	6,891	296,313	80,000
7/7	23,742	239,160	42	269	7,160	300,709	60,000
7/8	22,104	261,264	43	346	7,506	322,761	60,000
7/9	21,630	282,894	44	1,312	8,818	388,003	100,000
7/10	41,784	324,678	53	2,198	11,016	583,843	250,000
7/11	81,726	406,404	54	2,222	13,238	714,862	350,000
7/12	135,738	542,142	55	1,111	14,350	789,233	250,000
7/13	107,604	649,746	54	270	14,619	789,438	150,000
7/14	74,286	724,032	52	122	14,741	766,556	40,000
7/15	39,102	763,134	53	55	14,797	784,236	25,000
7/16	27,822	790,956					
7/17	16,290	807,246					
7/18	8,496	815,742					
7/19	13,320	829,062					
7/20	10,782	839,844					
7/21	8,640	848,484					
7/22	10,692	859,176					
7/23	14,208	873,384					
7/24	10,530	883,914					
7/25	8,358	892,272					
7/26	5,838	898,110					

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 an average of the 1990–2011 starting FPIs after lag time relationships "locked in" and the midpoint of the escapement count each year. A trend line was then fit to the daily averages and an FPI was calculated for each day. This method was used until July 1 when FPIs were based on lag-time relationships.

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

Table 16.–Daily sockeye salmon escapement tower counts by river system, westside Bristol Bay, 2013.

	Wood River		Igushik River		Togiak River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/18	348	348				
6/19	90	438				
6/20	7,254	7,692				
6/21	79,590	87,282				
6/22	204,720	292,002				
6/23	198,708	490,710				
6/24	108,930	599,640	51,882	51,882		
6/25	57,240	656,880	34,464	86,346		
6/26	35,262	692,142	34,974	121,320		
6/27	28,470	720,612	25,986	147,306		
6/28	44,484	765,096	9,318	156,624		
6/29	47,724	812,820	7,146	163,770		
6/30	29,364	842,184	3,432	167,202		
7/1	40,980	883,164	5,196	172,398		
7/2	34,998	918,162	9,078	181,476		
7/3	44,934	963,096	20,898	202,374	4,614	4,614
7/4	36,810	999,906	22,764	225,138	6,090	10,704
7/5	39,708	1,039,614	29,070	254,208	4,140	14,844
7/6	23,148	1,062,762	14,142	268,350	1,470	16,314
7/7	23,748	1,086,510	12,192	280,542	1,332	17,646
7/8	22,086	1,108,596	18,066	298,608	1,674	19,320
7/9	22,164	1,130,760	17,364	315,972	2,082	21,402
7/10	14,982	1,145,742	13,740	329,712	4,398	25,800
7/11	11,862	1,157,604	12,414	342,126	5,052	30,852
7/12	8,904	1,166,508	14,778	356,904	5,544	36,396
7/13	5,628	1,172,136	5,604	362,508	4,776	41,172
7/14	5,820	1,177,956	6,438	368,946	3,648	44,820
7/15	3,720	1,181,676	5,202	374,148	2,934	47,754
7/16	1,672	1,183,348	5,136	379,284	3,036	50,790
7/17			3,426	382,710	3,270	54,060
7/18			2,382	385,092	5,508	59,568
7/19			1,044	386,136	8,418	67,986
7/20			900	387,036	4,164	72,150
7/21			708	387,744	2,508	74,658
7/22					4,236	78,894
7/23					9,714	88,608
7/24					10,218	98,826
7/25					10,434	109,260
7/26					3,546	112,806
7/27					2,778	115,584
7/28					2,178	117,762
7/29					1,788	119,550
7/30					1,362	120,912
7/31					1,812	122,724
8/1					1,542	124,266
8/2					1,392	125,658
8/3					744	126,402
8/4					768	127,170
8/5					888	128,058

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

Table 17.–Final daily and cumulative escapement estimates by species, Nushagak River sonar project, Bristol Bay, 2013.

	Sockeye		Chinook[a]		Chum		Coho		Other		Total	
Date	Daily [b]	Cum.	Daily [b]	Cum.	Daily [b]	Cum.	Daily [b]	Cum.	Daily	Cum.	Daily	Cum.
6/7	0	0	170	170	336	336	0	0	0	0	506	506
6/8	0	0	144	314	292	629	0	0	0	0	437	942
6/9	0	0	200	514	454	1,082	0	0	0	0	654	1,596
6/10	231	231	1,827	2,342	1,932	3,014	0	0	0	0	3,990	5,586
6/11	419	649	1,907	4,249	3,398	6,412	0	0	0	0	5,724	11,310
6/12	290	940	790	5,039	1,547	7,960	0	0	0	0	2,628	13,938
6/13	1,044	1,984	482	5,521	1,078	9,037	0	0	0	0	2,604	16,542
6/14	828	2,812	730	6,251	776	9,813	0	0	0	0	2,334	18,876
6/15	1,338	4,149	1,238	7,490	802	10,615	0	0	0	0	3,378	22,254
6/16	2,210	6,360	657	8,147	535	11,150	0	0	0	0	3,402	25,656
6/17	2,062	8,422	581	8,728	93	11,243	0	0	0	0	2,736	28,392
6/18	658	9,080	136	8,864	298	11,541	0	0	0	0	1,092	29,484
6/19	2,988	12,068	208	9,071	926	12,468	0	0	0	0	4,122	33,606
6/20	60,436	72,504	3,568	12,639	17,626	30,094	0	0	0	0	81,630	115,236
6/21	165,033	237,536	11,026	23,665	87,743	117,837	0	0	0	0	263,802	379,038
6/22	131,075	368,612	6,752	30,417	50,381	168,218	0	0	0	0	188,208	567,246
6/23	93,813	462,425	3,608	34,025	30,997	199,215	0	0	0	0	128,418	695,664
6/24	85,052	547,476	5,245	39,270	26,145	225,360	0	0	0	0	116,442	812,106
6/25	53,845	601,322	4,793	44,063	24,858	250,218	0	0	0	0	83,496	895,602
6/26	25,208	626,530	6,289	50,352	36,459	286,677	0	0	0	0	67,956	963,558
6/27	13,875	640,405	5,988	56,340	25,701	312,378	0	0	0	0	45,564	1,009,122
6/28	18,543	658,948	7,487	63,827	14,128	326,506	0	0	0	0	40,158	1,049,280
6/29	37,553	696,501	3,041	66,868	10,274	336,780	0	0	0	0	50,868	1,100,148
6/30	11,008	707,509	2,572	69,440	9,580	346,360	0	0	0	0	23,160	1,123,308
7/1	17,728	725,237	2,338	71,778	8,457	354,818	0	0	0	0	28,524	1,151,832
7/2	19,599	744,836	2,209	73,986	8,925	363,742	0	0	0	0	30,732	1,182,564
7/3	16,799	761,635	3,791	77,777	8,757	372,499	0	0	0	0	29,346	1,211,910
7/4	24,005	785,639	2,841	80,618	9,436	381,935	0	0	0	0	36,282	1,248,192
7/5	33,822	819,461	2,129	82,747	18,439	400,374	0	0	0	0	54,390	1,302,582
7/6	15,970	835,432	1,917	84,664	14,951	415,325	0	0	0	0	32,838	1,335,420
7/7	8,405	843,836	1,392	86,056	16,963	432,288	0	0	0	0	26,760	1,362,180
7/8	5,034	848,871	1,559	87,616	28,380	460,668	0	0	0	0	34,974	1,397,154
7/9	9,789	858,659	2,830	90,445	27,684	488,352	0	0	882	882	41,184	1,438,338
7/10	10,641	869,300	1,072	91,518	21,017	509,369	0	0	0	882	32,730	1,471,068
7/11	6,707	876,007	878	92,396	11,794	521,164	0	0	0	882	19,380	1,490,448
7/12	3,123	879,130	590	92,986	11,395	532,559	0	0	0	882	15,108	1,505,556

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Table 17.–Page 2 of 2.

	Sockeye		Chinook[a]		Chum		Coho		Other		Total	
Date	Daily [b]	Cum.	Daily [b]	Cum.	Daily [b]	Cum.	Daily [b]	Cum.	Daily	Cum.	Daily	Cum.
7/13	3,086	882,216	1,867	94,853	11,252	543,812	0	0	0	882	16,206	1,521,762
7/14	1,104	883,320	1,041	95,895	10,661	554,473	129	129	0	882	12,936	1,534,698
7/15	1,935	885,255	1,545	97,440	4,696	559,168	169	298	1,597	2,479	9,942	1,544,640
7/16	1,661	886,917	2,039	99,479	4,191	563,359	156	454	1,750	4,230	9,798	1,554,438
7/17	1,406	888,322	2,148	101,627	4,221	567,581	147	602	2,499	6,729	10,422	1,564,860
7/18	917	889,239	818	102,445	7,871	575,452	589	1,191	695	7,424	10,890	1,575,750
7/19	827	890,065	2,352	104,798	16,072	591,523	1,734	2,925	1,653	9,077	22,638	1,598,388
7/20	1,934	892,000	1,715	106,513	10,777	602,300	1,736	4,661	519	9,596	16,680	1,615,068
7/21	313	892,313	2,454	108,967	2,240	604,540	3,334	7,995	1,402	10,998	9,744	1,624,812
7/22	0	892,313	1,046	110,013	1,466	606,006	3,690	11,685	794	11,792	6,996	1,631,808
7/23	0	892,313	818	110,831	1,044	607,050	1,762	13,447	552	12,344	4,176	1,635,984
7/24	0	892,313	383	111,214	1,051	608,101	1,276	14,723	446	12,790	3,156	1,639,140
7/25	388	892,700	446	111,659	2,326	610,428	2,169	16,892	89	12,879	5,418	1,644,558
7/26	287	892,987	285	111,944	1,687	612,115	1,544	18,436	109	12,988	3,912	1,648,470
7/27	250	893,237	449	112,393	1,978	614,094	2,272	20,708	181	13,169	5,130	1,653,600
7/28	133	893,370	192	112,585	2,121	616,214	1,229	21,937	369	13,538	4,044	1,657,644
7/29	100	893,469	179	112,764	1,664	617,878	3,075	25,012	185	13,723	5,202	1,662,846
7/30	42	893,511	132	112,896	619	618,497	2,771	27,783	0	13,723	3,564	1,666,410
7/31	58	893,569	142	113,038	1,445	619,942	1,440	29,223	0	13,723	3,084	1,669,494
8/1	0	893,569	0	113,038	1,403	621,345	1,634	30,857	53	13,776	3,090	1,672,584
8/2	0	893,569	0	113,038	2,899	624,244	14,765	45,622	372	14,148	18,036	1,690,620
8/3	0	893,569	0	113,038	1,442	625,686	12,662	58,285	721	14,869	14,826	1,705,446
8/4	0	893,569	0	113,038	1,066	626,752	8,758	67,042	533	15,402	10,356	1,715,802
8/5	0	893,569	0	113,038	0	626,752	5,634	72,676	0	15,402	5,634	1,721,436
8/6	0	893,569	0	113,038	0	626,752	7,344	80,020	0	15,402	7,344	1,728,780
8/7	0	893,569	0	113,038	0	626,752	21,588	101,608	0	15,402	21,588	1,750,368
8/8	0	893,569	425	113,463	425	627,177	27,674	129,282	0	15,402	28,524	1,778,892
8/9	0	893,569	0	113,463	827	628,004	17,251	146,533	0	15,402	18,078	1,796,970
8/10	104	893,673	0	113,463	129	628,134	13,458	159,991	0	15,402	13,692	1,810,662
8/11	499	894,172	115	113,578	0	628,134	9,004	168,995	0	15,402	9,618	1,820,280
8/12	0	894,172	131	113,709	0	628,134	7,951	176,946	0	15,402	8,082	1,828,362
8/13	0	894,172	0	113,709	0	628,134	7,458	184,404	0	15,402	7,458	1,835,820
8/14	0	894,172	0	113,709	0	628,134	8,880	193,284	0	15,402	8,880	1,844,700
8/15	0	894,172	0	113,709	0	628,134	7,164	200,448	0	15,402	7,164	1,851,864
8/16	0	894,172	0	113,709	0	628,134	6,774	207,222	0	15,402	6,774	1,858,638

Note: No pink salmon were apportioned by the Portage Creek sonar project in 2013.

[a] Adjusted counts used for inseason management. Unadjusted counts (DIDSON sonar) reported in Buck and Brazil (2013).

[b] Values rounded to nearest fish.

Table 18.–Commercial fishing emergency orders, by district and statistical area, Bristol Bay westside, 2013.

Number	Start Date	Start Time		End Date	End Time	Effective time	
Nushagak District							
Nushagak & Igushik Sections							
Drift Net							
DLG.03	14 Jun	5:30 p.m.	to	14 Jun	10:30 p.m.	5.0 hours	a
DLG.14	22 Jun	11:00 a.m.	to	22 Jun	7:00 p.m.	8.0 hours	b
DLG.15	22 Jun	7:00 p.m.	to	23 Jun	7:00 p.m.	24.0 hours	c
DLG.16	24 Jun	2:00 a.m.	to	24 Jun	10:00 a.m.	8.0 hours	
DLG.16	24 Jun	3:00 p.m.	to	24 Jun	10:00 p.m.	7.0 hours	
DLG.17	25 Jun	3:00 a.m.	to	25 Jun	12:00 p.m.	9.0 hours	
DLG.17	25 Jun	3:00 p.m.	to	25 Jun	10:00 p.m.	7.0 hours	
DLG.18	26 Jun	2:00 a.m.	to	26 Jun	12:00 p.m.	10.0 hours	
DLG.18	26 Jun	4:00 p.m.	to	27 Jun	12:00 a.m.	8.0 hours	
DLG.19	27 Jun	4:00 a.m.	to	27 Jun	2:00 p.m.	10.0 hours	
DLG.19	27 Jun	6:00 p.m.	to	28 Jun	2:00 a.m.	8.0 hours	
DLG.20	28 Jun	6:00 a.m.	to	28 Jun	4:00 p.m.	10.0 hours	
DLG 20	28 Jun	8:00 p.m.	to	29 Jun	4:00 a.m.	8.0 hours	
DLG.21	29 Jun	8:00 a.m.	to	29 Jun	6:00 p.m.	10.0 hours	
DLG.21	29 Jun	10:00 p.m.	to	30 Jun	6:00 a.m.	8.0 hours	
DLG.22	30 Jun	10:00 a.m.	to	30 Jun	8:00 p.m.	10.0 hours	
DLG.22	1 Jul	12:00 a.m.	to	1 Jul	8:00 a.m.	8.0 hours	
DLG.24	1 Jul	8:00 a.m.	to	1 Jul	5:00 p.m.	9.0 hours	c,d
DLG.25	1 Jul	9:00 p.m.	to	2 Jul	7:00 a.m.	10.0 hours	
DLG.25	2 Jul	11:00 a.m.	to	2 Jul	7:00 p.m.	8.0 hours	
DLG.26	1 Jul	12:30 p.m.	to				e
DLG.27	2 Jul	10:00 p.m.	to	3 Jul	8:00 a.m.	10.0 hours	
DLG.27	3 Jul	11:00 a.m.	to	3 Jul	7:00 p.m.	8.0 hours	
DLG.28	3 Jul	11:00 p.m.	to	4 Jul	9:00 a.m.	10.0 hours	
DLG.28	4 Jul	1:00 p.m.	to	4 Jul	9:00 p.m.	8.0 hours	
DLG.29	5 Jul	1:00 a.m.	to	5 Jul	11:00 a.m.	10.0 hours	
DLG.29	5 Jul	3:00 p.m.	to	5 Jul	11:00 p.m.	8.0 hours	
DLG.30	5 Jul	3:00 p.m.	to				f
DLG.31	5 Jul	1:00 p.m.	to				d
DLG.33	9 Jul	12:00 p.m.	to				g
DLG.35			to	23 Jul	9:00 a.m.	333.0 hours	
DLG.35	25 Jul	9:00 a.m.	to	30 Jul	9:00 a.m.	120.0 hours	h
DLG.38	12 Aug	12:00 p.m.	to				f
Nushagak District							
Nushagak Section							
Set Net							
DLG.03	14 Jun	5:30 p.m.	to	14 Jun	10:30 p.m.	5.0 hours	a
DLG.14	21 Jun	11:30 p.m.	to	22 Jun	11:30 p.m.	24.0 hours	b
DLG.15	22 Jun	11:30 p.m.	to	24 Jun	12:00 a.m.	24.5. hours	c
DLG.16	24 Jun	12:00 a.m.	to	25 Jun	2:00 a.m.	26.0 hours	c
DLG.17	25 Jun	2:00 a.m.	to				c,f
DLG.33	9 Jul	12:00 p.m.	to				g
DLG.35			to	23 Jul	9:00 a.m.	333.0 hours	
DLG.35	25 Jul	9:00 a.m.	to	30 Jul	9:00 a.m.	120.0 hours	h
DLG.38	12 Aug	12:00 p.m.	to				f

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Table 18.–Page 2 of 2.

Number[a]	Start Date	Start Time		End Date	End Time	Effective time	
Nushagak District							
Igushik Section							
Set Net							
DLG.03	14 Jun	5:30 p.m.	to	14 Jun	10:30 p.m.	5.0 hours	a
DLG.05	15 Jun	6:30 p.m.	to	16 Jun	2:30 a.m.	8.0 hours	
DLG.05	16 Jun	7:00 p.m.	to	17 Jun	3:00 a.m.	8.0 hours	
DLG.05	17 Jun	8:30 p.m.	to	18 Jun	4:00 a.m.	8.0 hours	
DLG.07	18 Jun	9:00 p.m.	to	19 Jun	5:00 a.m.	8.0 hours	
DLG.07	19 Jun	10:00 p.m.	to	20 Jun	6:00 a.m.	8.0 hours	
DLG.07	20 Jun	11:00 p.m.	to	21 Jun	7:00 a.m.	8.0 hours	
DLG.11	21 Jun	10:30 a.m.	to	21 Jun	10:30 p.m.	12.0 hours	
DLG.11	22 Jun	11:00 a.m.	to	22 Jun	11:00 p.m.	12.0 hours	
DLG.11	23 Jun	12:00 p.m.	to	24 Jun	12:00 a.m.	12.0 hours	
DLG.16	24 Jun	12:00 a.m.	to	25 Jun	2:00 a.m.	26.0 hours	c
DLG.17	25 Jun	2:00 a.m.	to				c,f
DLG.23			to	30 Jun	9:00 a.m.	127.0 hours	i
DLG.26	1 Jul	12:30 p.m.	to				f
DLG.31			to	5 Jul	1:00 p.m.	96.5 hours	i
DLG.33	9 Jul	12:00 p.m.	to				g
DLG.35	25 Jul	9:00 a.m.	to	30 Jul	9:00 a.m.		h
DLG.38	12 Aug	12:00 p.m.	to				f
Togiak District							
Drift and Set Net							
DLG.02	19 Jun	9:00 a.m.	to	21 Jun	9:00 a.m.	48.0 hours	j
DLG.09	26 Jun	9:00a.m.	to	28 Jun	9:00 a.m.	48.0 hours	j
DLG.34	18 Jul	9:00 a.m.	to	19 Jul	9:00 a.m.	24.0 hours	j
DLG.36	26 Jul	9:00 a.m.	to	28 Jul	9:00 a.m.	48.0 hours	k
DLG.37	2 Aug	9:00 a.m.	to	4 Aug	9:00 a.m.	48.0 hours	k
DLG.37	3 Aug	9:00 a.m.	to	4 Aug	9:00 a.m.	24.0 hours	l

[a] Gillnet mesh size 7.5 inches or larger.
[b] Gillnet mesh size is restricted to 5.5 inches or less.
[c] Extends current fishing period.
[d] Fishery closed within 6 statute miles of 58˚ 43.82' N lat, 158˚ 52.77 W long, until further notice.
[e] Fishery reopened within 6 statute miles of 58˚ 43.82' N lat, 158˚ 52.77 W long, until further notice.
[f] Commercial fishing open until further notice.
[g] Transfer waiting period waived.
[h] Weekly schedule: 9:00 a.m. Thursday to 9:00 a.m. Tuesday.
[i] Fishery closed until further notice.
[j] Reduces the weekly fishing schedule in Togiak River Section.
[k] Extends the weekly fishing schedule in Togiak River Section.
[l] Extends the weekly fishing schedule in Cape Peirce, Osviak, and Matogak Sections of the Togaik District.

Table 19.–Commercial salmon catch by date and species, in numbers of fish, Nushagak District, Bristol Bay, 2013.

	Hours fished (drift/set)			Deliveries							
Date	Nushagak	Igushik		Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/14	5/5	5/5	[a]	8	9	533	518	126	0	0	1,177
6/15	0/0	0/5.5	[a]		18	1,122	2	23	0	0	1,147
6/16	0/0	0/7.5	[a]		30	1,438	5	27	0	0	1,470
6/17	0/0	0/6.5	[a]		17	728	1	12	0	0	741
6/18	0/0	0/7	[a]		16	1,296	14	21	0	0	1,331
6/19	0/0	0/7	[a]		35	3,251	43	52	0	0	3,346
6/20	0/0	0/7	[a]		16	1,589	13	19	0	0	1,621
6/21	0/0.5	0/19			74	14,201	94	230	0	0	14,525
6/22	13/24	13/12		147	182	109,737	598	13,234	0	0	123,569
6/23	19/24	19/12		262	285	247,952	776	34,501	0	0	283,229
6/24	15/24	15/12		322	320	109,834	5,609	14,674	0	0	130,117
6/25	16/24	16/22		418	278	205,936	575	39,651	2	0	246,164
6/26	18/24	18/24		445	288	325,972	776	66,892	1	0	393,641
6/27	16/24	16/24		423	415	351,934	780	43,018	1	0	395,733
6/28	16/24	16/24		461	457	256,743	765	26,475	3	0	283,986
6/29	16/24	16/24		382	297	207,947	549	34,447	2	0	242,945
6/30	16/24	16/9		364	251	245,251	751	27,368	0	0	273,370
7/1	20/24	20/11.5		275	291	108,317	336	16,562	0	0	125,215
7/2	17/24	17/24		438	298	142,982	640	22,531	0	0	166,153
7/3	17/24	17/24		425	346	178,313	341	32,209	3	0	210,866
7/4	17/24	17/24		475	343	148,366	216	23,121	0	0	171,703
7/5	19/24	19/13		300	291	95,823	185	15,313	3	0	111,324
7/6	24/24	24/0		306	199	106,939	286	24,601	2	1	131,829
7/7	24/24	24/0		283	223	69,698	234	12,725	13	0	82,670
7/8	24/24	24/0		224	192	64,268	181	13,980	5	2	78,436
7/9	24/24	24/0		258	157	44,620	139	11,322	3	1	56,085
7/10	24/24	24/0		306	179	48,459	157	11,797	14	10	60,437
7/11	24/24	24/0		172	167	23,958	144	6,259	3	8	30,372
7/12	24/24	24/0		99	157	19,735	100	4,620	12	69	24,536
7/13	24/24	24/0		91	104	14,846	69	4,625	5	115	19,660
7/14	24/24	24/0		61	125	10,552	94	3,411	10	330	14,397
7/15	24/24	24/0		67	115	8,489	79	2,426	8	362	11,364
7/16	24/24	24/0		24	107	3,891	28	1,593	122	495	6,129
7/17	24/24	24/0		20	84	2,947	30	1,801	2	861	5,641
7/18	24/24	24/0		15	64	1,522	15	1,594	5	1,168	4,304
7/19	24/24	24/0		21	12	832	11	1,146	3	1,169	3,161
7/20	24/24	24/0		5	12	356	1	217	1	5,112	5,687
7/21	24/24	24/0		3	11	295	2	114	2	194	607
7/22	24/24	24/0		2	18	1,063	9	135	16	394	1,617
7/23	9/9	9/0		0	0	0	0	0	0	0	0

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	Hours fished (drift/set)		Deliveries							
Date	Nushagak	Igushik	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/25	15/15	15/15	0	0	0	0	0	0	0	0
7/26	24/24	24/24	0	0	0	0	0	0	0	0
7/27	24/24	24/24	0	0	0	0	0	0	0	0
7/28	24/24	24/24	0	0	0	0	0	0	0	0
7/29	24/24	24/24	0	0	0	0	0	0	0	0
7/30	9/9	9/9	0	0	0	0	0	0	0	0
8/1	15/15	15/15 [a]	12	13	18	1	27	0	6,373	6,419
8/2	24/24	24/24 [a]	39	9	74	2	183	77	17,134	17,470
8/3	24/24	24/24 [a]	20	4	18	3	58	0	6,853	6,932
8/4	24/24	24/24 [a]	24	21	175	0	50	0	5,734	5,959
8/5	24/24	24/24 [a]	26	10	63	1	47	0	13,462	13,573
8/6	9/9	9/9 [a]	11	1	0	0	11	0	13,706	13,717
8/8	15/15	15/15 [a]								0
8/9	24/24	24/24 [a]	13	10	10	0	4	1	2,800	2,815
8/10	24/24	24/24 [a]	49	17	74	0	18	0	19,170	19,262
8/11	24/24	24/24 [a]								0
8/12	24/24	24/24[b] [a]	8		0	0	0	0	865	865
8/13	24/24	24/24 [a]	22	17	22	1	1	0	10,414	10,438
8/14	24/24	24/24 [a]	12	4	7	0	0	0	8,555	8,562
8/15	24/24	24/24 [a]	10	6	102	0	1	1	6,427	6,531
8/16	24/24	24/24 [a]	17	4	6	1	0	0	5,601	5,608
8/17	24/24	24/24 [a]	12	8	1	0	0	0	2,759	2,760
8/18	24/24	24/24 [a]	5	7	2	0	0	0	1,164	1,166
Total	500.5/578.5	510.5/1,020	7,382	6,614	3,182,307	15,175	513,272	320	126,717	3,837,719

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

[b] Fishing extended until further notice.

Table 20.–Inshore commercial catch and escapement of sockeye salmon, in numbers of fish, Bristol Bay, 2013.

District and River System		Catch	Escapement	Total Run
NAKNEK-KVICHAK DISTRICT				
Kvichak River		2,351,107	2,088,576	4,439,683
Alagnak River		1,204,806	1,095,950	2,300,756
Naknek River		1,234,319	938,160	2,172,479
	Total	4,790,233	4,122,686	8,912,919
EGEGIK DISTRICT		4,801,686	1,113,630	5,915,316
UGASHIK DISTRICT		2,172,783	898,110 [a]	3,070,893
NUSHAGAK DISTRICT				
Wood River		1,794,255	1,183,348	2,977,603
Igushik River		321,162	387,036	708,198
Nushagak River		1,066,890	895,407	1,962,297
	Total	3,182,307	2,465,791	5,648,098
TOGIAK DISTRICT				
Togiak Lake			128,118	128,118
Togiak River/Tributaries		451,362	[b]	451,362
Kulukak System		[c]	[b]	33,745
Other Systems [d]		[c]	[b]	0
	Total	493,552	128,118	621,670
TOTAL BRISTOL BAY		15,440,561	8,728,335	24,168,896

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

[b] No monitoring of escapement occurs.

[c] Fewer than 4 permits holders involved in fishery; records are confidential.

[d] 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, 2013.

Date	Sockeye	Chinook	Chum	Pink	Coho	Total
6/10 [a]						
6/11 [a]						
6/12 [a]						
6/13 [a]						
6/14 [a]						
6/17 [a]						
6/18	1,183	53	375	0	0	1,611
6/19	1,578	48	497	0	0	2,123
6/20	202	0	42	0	0	244
6/23 [a]						
6/24	8,652	122	2,115	0	0	10,889
6/25	15,638	199	3,092	0	0	18,929
6/26	3,227	98	2,042	1	0	5,368
6/27	394	8	1,284	0	0	1,686
6/28	967	10	1,858	0	0	2,835
6/29	60	2	65	0	0	127
7/1	8,779	81	5,361	0	0	14,221
7/2	11,226	134	5,868	0	0	17,228
7/3	12,097	92	6,441	0	0	18,630
7/4	15,145	96	6,137	3	0	21,381
7/5	22,331	201	10,058	2	0	32,592
7/6	17,889	131	8,417	1	0	26,438
7/8	25,559	118	7,578	4	0	33,259
7/9	35,991	348	15,673	9	0	52,021
7/10	34,864	190	18,552	2	0	53,608
7/11	23,511	139	12,243	9	0	35,902
7/12	21,692	81	6,355	2	0	28,130
7/13	18,243	59	6,053	2	0	24,357
7/15	18,774	63	14,019	5	0	32,861
7/16	15,722	55	13,865	8	0	29,650
7/17	14,640	51	8,084	11	1	22,787
7/18	10,322	28	5,681	6	1	16,038
7/19	1,076	1	624	0	0	1,701
7/20	599	5	274	0	0	878
7/22	26,659	21	10,500	14	3	37,197
7/23	18,285	36	9,448	24	2	27,795
7/24	13,983	23	4,341	9	11	18,367
7/25	14,069	19	3,658	21	22	17,789
7/26	12,991	13	2,498	5	4	15,511
7/27	10,736	18	2,090	11	22	12,877

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Date	Sockeye	Chinook	Chum	Pink	Coho	Total
7/28	3,046	2	515	1	11	3,575
7/29	9,399	13	2,728	6	21	12,167
7/30	8,651	13	2,901	6	33	11,604
7/31	5,599	5	1,790	4	50	7,448
8/1	4,598	10	1,312	4	71	5,995
8/2	3,872	7	1,030	5	45	4,959
8/3	3,365	3	821	3	74	4,266
8/4	1,239	1	166	0	19	1,425
8/5	1,729	1	353	1	51	2,135
8/6	3,650	3	741	6	323	4,723
8/7	1,356	2	285	1	101	1,745
8/8	866	2	152	0	122	1,142
8/9	551	1	172	2	50	776
8/12	309	2	78	1	261	651
8/13	393	0	109	0	314	816
8/14	305	0	96	1	588	990
8/15	161	4	94	2	740	1,001
8/16	115	1	32	0	362	510
8/19	54	0	12	0	924	990
8/20	115	1	25	0	1,301	1,442
8/21	72	3	42	0	1,525	1,642
8/22 [a]						
8/24	0	1	1	0	112	114
8/26	28	0	13	2	823	866
8/27	25	0	15	0	814	854
8/28	34	1	12	0	886	933
8/29 [a]						
Total	493,552	2,644	208,786	194	10,340	715,516

[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, 2013.

		Deliveries							
Date		Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/10	[a]								
6/11	[a]								
6/12	[a]								
6/13	[a]								
6/14	[a]								
6/17	[a]								
6/18		0	21	593	35	114	0	0	742
6/19		1	16	923	44	174	0	0	1,141
6/23	[a]								
6/24		12	48	7,254	98	1,559	0	0	8,911
6/25		21	77	13,852	181	2,100	0	0	16,133
6/26		5	34	1,732	84	977	1	0	2,794
7/1		36	40	8,705	81	5,192	0	0	13,978
7/2		48	76	11,226	134	5,868	0	0	17,228
7/3		48	103	12,097	92	6,441	0	0	18,630
7/4		59	98	15,145	96	6,137	3	0	21,381
7/5		71	121	22,331	201	10,058	2	0	32,592
7/6		59	95	17,889	131	8,417	1	0	26,438
7/8		58	79	24,079	110	6,134	3	0	30,326
7/9		152	113	32,282	325	14,836	8	0	47,451
7/10		95	127	24,805	156	16,685	2	0	41,648
7/11		127	139	23,511	139	12,243	9	0	35,902
7/12		111	124	21,692	81	6,355	2	0	28,130
7/13		94	126	18,243	59	6,053	2	0	24,357
7/15		74	96	16,435	49	12,959	2	0	29,445
7/16		44	102	13,897	44	11,536	5	0	25,482
7/17		70	111	13,440	37	7,759	7	0	21,243
7/18		48	56	9,124	27	4,805	6	0	13,962
7/22		85	115	25,938	20	10,339	11	3	36,311
7/23		115	98	15,970	29	8,996	21	2	25,018
7/24		76	98	12,244	22	4,104	8	11	16,389
7/25		86	102	13,071	18	3,538	21	10	16,658
7/26		83	105	12,507	13	2,469	4	4	14,997
7/27		49	111	10,736	18	2,090	11	22	12,877
7/28		13	35	3,046	2	515	1	11	3,575
7/29		57	66	8,391	10	2,645	6	16	11,068

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Date	Deliveries Drift	Deliveries Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/30	53	83	7,791	10	2,806	5	31	10,643
7/31	32	66	4,493	3	1,642	4	24	6,166
8/1	16	64	3,882	9	1,161	3	47	5,102
8/2	14	57	3,135	5	929	4	15	4,088
8/3	17	48	3,255	3	809	2	63	4,132
8/4	6	7	1,239	1	166	0	19	1,425
8/5	7	37	1,729	1	353	1	51	2,135
8/6	26	50	3,650	3	741	6	323	4,723
8/7	13	30	1,356	2	285	1	101	1,745
8/8	5	26	866	2	152	0	122	1,142
8/9	4	11	551	1	172	2	50	776
8/12	9	21	309	2	78	1	261	651
8/13	5	28	393	0	109	0	314	816
8/14	3	25	305	0	96	1	588	990
8/15	7	28	161	4	94	2	740	1,001
8/16	2	6	115	1	32	0	362	510
8/19	9	21	54	0	12	0	924	990
8/20	6	31	115	1	25	0	1,301	1,442
8/21	13	35	72	3	42	0	1,525	1,642
8/22 [a]								
8/26	11	11	28	0	13	2	823	866
8/27	12	19	25	0	15	0	814	854
8/28	9	17	34	1	12	0	886	933
8/29 [a]								
Total	2,084	3,273	451,362	2,408	190,884	170	10,116	654,940

[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, 2013.

	Deliveries							
Date [a]	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/17 [b]								
6/18 [b]								
6/19 [b]								
6/20 [b]								
6/24	6	18	1,398	24	556	0	0	1,978
6/25	12	22	1,786	18	992	0	0	2,796
6/26	10	17	1,495	14	1,065	0	0	2,574
7/1 [b]								
7/8	5	17	1,480	8	1,444	1	0	2,933
7/9	5	30	3,709	23	837	1	0	4,570
7/10	10	37	10,059	34	1,867	0	0	11,960
7/15 [b]								
7/16	13	10	1,825	11	2,329	3	0	4,168
7/17 [b]								
7/22 [b]								
7/23	4	24	2,315	7	452	3	0	2,777
7/24	3	10	1,739	1	237	1	0	1,978
7/29	3	14	1,008	3	83	0	5	1,099
7/30	2	13	860	3	95	1	2	961
Total	96	244	33,745	202	12,359	20	8	46,334

[a] Kulukak Section is open 60 hours per week by regulation.

[b] 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, 2013.

Date[a]	Sockeye	Chinook	Chum	Pink	Coho	Total
6/27 [b]						
6/28 [b]						
6/29 [b]						
7/18 [b]						
7/19 [b]						
7/20 [b]						
7/25 [b]						
7/26 [b]						
7/31 [b]						
8/1 [b]						
8/2 [b]						
8/3 [b]						
Total						

[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, 2013.

Date[a]	Sockeye	Chinook	Chum	Pink	Coho	Total
7/18 [b]						
7/19 [b]						
7/20 [b]						
7/31 [b]						
8/24 [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.–Commercial herring sac roe and spawn-on-kelp buyers in Togiak District, 2013.

			Product Purchased		
			Sac Roe		
	Operator/Buyer [a]	Base of Operation	Gillnet	Purse Seine	Spawn-on-Kelp
1	Icicle Seafoods	P/Vs Bering Star, Arctic Star, R.M. Thorstensen	X	X	
2	Trident Seafoods	P/V Alaska Packer, P/V Pribilof	X	X	
3	Ocean Beauty	S/P Naknek	X	X	
4	Y.A.K. Inc.	S/P Naknek	X	X	
5	Leader Creek Fisheries	S/P Naknek	X	X	
6	North Pacific Seafoods	S/P Pedersen Pt., S/P - Togiak	X	X	

[a] Operators that registered in Togiak District.

Table 27.–Daily observed estimates of spawn (in miles) and herring (in tons) by index area, in the Togiak District, 2013.

				Estimated Biomass by Index Area [a]													
Date	Start Time	Survey Rating [b]	Spawn(miles)	NUS	KUK	MET	NVK	UGL	TOG	TNG	MTG	OSK	PYR	CPN	HAG	WAL	Daily Total
4/28	1230	2.0	0.0														0
5/3	1000	2.3	0.0														0
5/5	1100	3.0	0.0														0
5/7	1300	1.5	0.0														0
5/10	1100	1.5	0.0	3,001	1,574	375			460	56					37,208	496	43,170
5/12	0000	2.0	9.7	212	7,006	14,275	3,204	12,264	34,407	935	4,464	2,258			523		79,548
5/13	1400	2.1	7.7	53	12,564	11,361	14,296	16,407	9,167	2,058	16,656	3,025			301		85,888
5/14	1300	1.8	5.9	804	12,969	5,584	1,339	4,132	7,801	3,321	1,935	4,075	2,083	127			44,170
5/15	0900	2.9	7.1	99	4,423	1,802	3,578	6,221	18,880		2,975	65			980		39,023
5/19	1000	3.5	0.9	73	2,902	341	1,751	1,158	52,546		3,469	788			2,257		65,285
5/24	1000	3.5	15.6	9,583	26	30	5,073	818	14,670	1,630	543	202			2,348		34,923
5/29	1300	3.0	0.0	8,719	23,993	397			28,651	9,620	4,155				12		75,547
Total linear miles of spawn			46.9										Peak biomass estimate				85,888

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; PYR – Pyrite Point; CPN – Cape Newenham; HAG – Hagemeister; WAL – Walrus Islands.

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

Table 28.–Herring total commercial harvest, escapement, and total run (in tons) by year class, Togiak District, 2013.

Total Harvest [a]			Escapement		Total Run	
Age	Biomass	%	Biomass	%	Biomass	%
4	45	0.2	203	0.1	248	0.1
5	503	1.8	2,883	2.0	3,386	2.0
6	2,208	8.0	14,079	10.0	16,288	9.6
7	6,390	23.1	35,307	25.0	41,696	24.7
8	8,051	29.2	40,578	28.7	48,629	28.8
9	4,397	15.9	21,579	15.3	25,976	15.4
10	2,833	10.3	11,974	8.5	14,808	8.8
11	1,477	5.4	6,996	4.9	8,473	5.0
12	831	3.0	4,030	2.8	4,861	2.9
13	574	2.1	2,036	1.4	2,609	1.5
14	222	0.8	1,137	0.8	1,360	0.8
15	78	0.3	608	0.4	687	0.4
Total	27,610	100	141,410	100	169,020	100

[a] Does not include Dutch Harbor food and bait fishery harvest.

Table 29.–Commercial herring harvest (in tons) by fishing section, gear type, and date in the Togiak District, Bristol Bay, 2013.

			Kulukak		Nunavachak		Togiak		Hagemeister		Pyrite Point		Cape Newenham		Total	
Date	Duration	Period	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe % [a]
Purse Seine																
5/11	54:00	1			605.8	8.2	202.8	9.4							605.8	11.3
5/12	48:00	2			3,141.7	9.1	215.3	7.0	292.3	9.9					3,434.0	9.6
5/13	24:00	3			1,839.6	9.0									1,839.6	9.0
5/14	24:00	4			1,128.8	9.7			730.7	9.0					1,859.5	9.4
5/15	24:00	5			598.4	10.0	220.4	8.2	959.8	8.8					1,558.2	10.4
5/16	12:00	6							1,102.6	8.9					1,102.6	8.9
5/17	24:00	7							893.3	8.8	35.0	10.2			893.3	9.2
5/18	24:00	8			164.4	10.6			3,595.2	9.1					3,595.2	9.6
5/19	24:00	9							2,429.3	9.0					2,429.3	9.0
5/20	24:00	10							1,211.0	8.8					1,211.0	8.8
Subtotal [a]	328:00				7,478.7	9.2	638.5	8.2	11,214.2	9.0	35.0	10.2			19,366.4	9.0
Gillnet																
5/11	102:00	1	345.4	11.3											345.4	11.3
5/13	24:00	2	942.4	11.2											942.4	11.2
5/14	24:00	3	784.6	11.1											784.6	11.1
5/15	24:00	4	760.4	10.7											760.4	10.7
5/16	24:00	5	523.7	10.4											523.7	10.4
5/17	24:00	6	321.5	10.7											321.5	10.7
5/18	24:00	7	29.9	11.2											29.9	11.2
5/19	24:00	8	29.9	9.0	408.6	10.6									438.5	10.5
5/20	24:00	9			526.3	10.2									526.3	10.2
5/21	24:00	10	858.3	11.0	53.8	11.4									912.1	11.0
5/23	24:00	11	1,136.5	11.1											1,136.5	11.1
5/24	24:00	12	693.3	9.5	185.9	12.8									879.2	10.2
5/25	24:00	13	178.3	10.6	69.1	13.2									247.4	11.3
5/26	24:00	14	242.2	12.2											242.2	12.2
5/27	120:00	15	153.4	13.2											153.4	13.2
Subtotal [a]	534:00		6,999.8	10.9	1,243.7	10.9									8,243.5	10.9

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Table 29.–Page 2 of 2.

			Kulukak		Nunavachak		Togiak		Hagemeister		Pyrite Point		Cape Newenham		Total	
Date	Duration	Period	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe %	Tons	Roe % [a]
Combined																
5/11			345.4	11.3	605.8	8.2	202.8	9.4							1,154.0	9.3
5/12					3,141.7	9.1	215.3	7.0	292.3	9.9					3,649.3	9.0
5/13			942.4	11.2	1,839.6	9.0									2,782.0	9.7
5/14			784.6	11.1	1,128.8	9.7			730.7	9.0					2,644.1	9.9
5/15			760.4	10.7	598.4	10.0	220.4	8.2	959.8	8.8					2,539.0	9.6
5/16			523.7	10.4					1,102.6	8.9					1,626.3	9.4
5/17			321.5	10.7					893.3	8.8	35.0	10.2			1,249.8	9.3
5/18			29.9	11.2	164.4	10.6			3,595.2	9.1					3,789.5	9.2
5/19			29.9	9.0	408.6	10.6			2,429.3	9.0					2,867.8	9.2
5/20					526.3	10.2			1,211.0	8.8					1,737.3	9.2
5/21			858.3	11.0	53.8	11.4									912.1	11.0
5/23			1,136.5	11.1											1,136.5	11.1
5/24			693.3	9.5	185.9	12.8									879.2	10.2
5/25			178.3	10.6	69.1	13.2									247.4	11.3
5/26			242.2	12.2											242.2	12.2
5/27			153.4	13.2											153.4	13.2
Total [a]			6,999.8	10.9	8,722.4	9.4	638.5	8.2	11,214.2	9.0	35.0	10.2			27,609.9	9.6

Note: Blank cells represent no data due to area closures or no fishing.

[a] Weighted roe % used with this formula: (tons*roe % + tons*roe % + ….) / total tons.

Table 29.–Emergency order commercial fishing periods for herring sac roe and spawn-on-kelp in the Togiak District, 2013.

EO #	Area [a]		Date and Time				
Herring Sac Roe Gillnet							
DLG-02	Egg Island Section		5/11	12:00 p.m.	to	end of season	
DLG-06	Egg Island Section; Right Hand Point to Mud Bay	area change	5/18	8:00 p.m.			
DLG-08	Egg Island Section; Right Hand Point to Anchor Pt.	area change	5/20	10:00 a.m.			
DLG-09	Egg Island Section; Right Hand Point to Anchor Pt.	closure				5/26	12:00 p.m.
DLG-10	Egg Island Section; Right Hand Point to Anchor Pt.	extension	5/26	12:00 p.m.	to	5/27	12:00 p.m.
DLG-11	Egg Island Section; Right Hand Point to Anchor Pt.	extension	5/27	12:00 p.m.	to	5/28	12:00 p.m.
Herring Sac Roe Purse Seine							
DLG-01	Right Hand Pt. to Anchor Pt., Togiak Reef to Cape Newenham		5/11	12:00 p.m.	to	5/14	10:00 p.m.
DLG-03	Right Hand Pt. to Anchor Pt., Togiak Reef to Cape Newenham	extension	5/14	10:00 p.m.	to	5/16	10:00 p.m.
DLG-04	Right Hand Pt. to Anchor Pt., Togiak Reef to Cape Newenham	extension	5/16	10:00 p.m.	to	5/18	8:00 p.m.
DLG-05	Mud Bay to Anchor Pt.; Togiak Reef to Cape Newenham	area change; extension	5/18	8:00 p.m.	to	5/20	8:00 p.m.
DLG-07	Togiak Reef to Cape Newenham	area change	5/20	10:00 a.m.			
Herring Spawn on Kelp [b]							

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

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

APPENDIX A: SALMON

Appendix A1.–Escapement goal ranges and actual counts of sockeye salmon by river system, in thousands of fish, Bristol Bay, 1993–2013.

	Kvichak River			Naknek River [a]		
	Range			Range		
Year	Lower	Upper	Actual	Lower	Upper	Actual
1993	4,000	8,000	4,025	800	1,400	1,536
1994	6,000	10,000	8,338	800	1,400	991
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
20-Year Avg.	3,100	9,500	3,426	800	1,610	1,582
1993-02 Avg.	4,200	9,000	3,748	800	1,520	1,304
2003-12 Avg.	2,000	10,000	3,104	800	1,700	1,860
2013	2,000	10,000	2,089	800	1,400	938

	Egegik River			Ugashik River		
	Range			Range		
Year	Lower	Upper	Actual	Lower	Upper	Actual
1993	800	1,200	1,517	500	900	1,390
1994	800	1,200	1,897	500	900	1,081
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
20-Year Avg.	800	1,380	1,262	500	1,170	1,013
1993-02 Avg.	800	1,360	1,275	500	1,140	995
2003-12 Avg.	800	1,400	1,249	500	1,200	1,031
2013	800	1,400	1,114	500	1,200	898

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	Wood River			Igushik River		
	Range			Range		
Year	Lower	Upper	Actual	Lower	Upper	Actual
1993	700	1,200	1,176	150	250	406
1994	700	1,200	1,472	150	250	446
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
20-Year Avg.	700	1,380	1,567	150	280	378
1993-02 Avg.	700	1,260	1,460	150	260	346
2003-12 Avg.	700	1,500	1,675	150	300	409
2013	700	1,500	1,183	150	300	387

	Nushagak River			Togiak River		
	Range			Range		
Year	Lower [b]	Upper	Actual [c]	Lower	Upper	Actual
1993	340	760	791	140	250	177
1994	340	760	563	140	250	155
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
20-Year Avg.	324	760	542	114	231	204
1993-02 Avg.	309	760	518	116	220	189
2003-12 Avg.	340	760	566	112	242	219
2013	370	840	895	120	270	128

[a] An "optimal escapement goal" of up to 2.0 million sockeye salmon was set by the Alaska Board of Fish (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, 1993–2013.

	Drift Net [a]						Set Net [a]						Total
Year	Resident	Non-Resident	Drift Total	Permits Fished	% Fished	Interim Use	Resident	Non-Resident	Set Total	Permits Fished	% Fished	Interim Use	Drift & Set
1993	982	904	1,886	1,875	99%	81	763	259	1,022	965	94%	8	2,851
1994	970	917	1,887	1,865	99%	77	760	259	1,019	939	92%	7	2,826
1995	967	921	1,888	1,882	100%	75	762	257	1,019	967	95%	8	2,855
1996	966	925	1,891	1,884	100%	70	760	257	1,017	941	93%	6	2,832
1997	959	940	1,899	1,875	99%	67	757	262	1,019	921	90%	7	2,820
1998	954	945	1,899	1,858	98%	55	756	259	1,015	901	89%	6	2,800
1999	937	961	1,898	1,847	97%	52	748	266	1,014	925	91%	6	2,823
2000	945	945	1,890	1,823	96%	38	735	277	1,012	921	91%	6	2,811
2001	958	925	1,883	1,566	83%	24	729	281	1,010	834	83%	2	2,717
2002	945	933	1,878	1,183	63%	16	717	289	1,006	680	68%	2	2,558
2003	923	944	1,867	1,389	74%	7	713	288	1,001	714	71%	1	2,581
2004	912	948	1,860	1,426	77%	3	703	286	989	797	81%	1	2,849
2005	895	967	1,862	1,526	82%	3	688	300	988	829	84%	1	2,850
2006	893	966	1,859	1,567	84%	1	683	302	985	844	86%	0	2,844
2007	881	981	1,862	1,621	87%	1	672	311	983	836	85%	0	2,845
2008	887	976	1,863	1,636	88%	0	678	302	980	850	87%	0	2,843
2009	864	999	1,863	1,642	88%	0	674	307	981	855	87%	0	2,844
2010	866	997	1,863	1,731	93%	0	672	311	983	861	88%	0	2,846
2011	1,005	857	1,862	1,747	94%	0	660	321	981	878	90%	0	2,846
2012	849	1,013	1,862	1,740	93%	0	654	325	979	883	90%	0	2,841
20-Year Avg.	928	948	1,876	1,684	90%	29	714	286	1,000	867	87%	3	2,804
1993-02 Avg.	958	932	1,890	1,766	93%	56	749	267	1,015	899	89%	6	2,789
2003-12 Avg.	898	965	1,862	1,603	86%	2	680	305	985	835	85%	0	2,819
2013	862	1,000	1,862	1,709	92%	0	646	332	978	854	87%	0	2,840

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

Appendix A3.–Sockeye salmon commercial catch by district, in numbers of fish, Bristol Bay, 1993–2013.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1993	8,907,872	21,600,603	4,176,952	5,236,932	539,933	40,462,292
1994	16,327,858	10,750,213	4,352,797	3,393,139	400,039	35,224,046
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
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
20-Year Avg.	7,884,000	7,941,000	2,699,000	5,707,000	543,000	24,783,000
1993-02 Avg.	7,779,000	9,053,000	2,543,000	4,438,000	457,000	24,271,000
2003-12 Avg.	7,989,000	6,830,000	2,854,000	6,975,000	630,000	25,353,000
2013	4,790,233	4,801,686	2,172,783	3,182,307	493,552	15,440,561

Appendix A4.–Chinook salmon commercial catch by district, in numbers of fish, Bristol Bay, 1993–2013.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1993	7,477	1,476	3,075	62,979	10,851	85,858
1994	6,016	1,243	3,685	119,480	10,484	140,908
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
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
20-Year Avg.	2,000	1,000	1,000	52,000	8,000	65,000
1993-02 Avg.	3,000	1,000	1,000	59,000	9,000	74,000
2003-12 Avg.	2,000	1,000	1,000	45,000	7,000	56,000
2013	391	119	43	15,175	2,644	18,372

Appendix A5.–Chum salmon commercial catch by district, in numbers of fish, Bristol Bay, 1993–2013.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1993	43,684	70,628	73,402	505,799	144,869	838,382
1994	219,118	62,961	52,127	328,260	232,559	895,025
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
20-Year Avg.	167,000	69,000	69,000	481,000	155,000	942,000
1993-02 Avg.	105,000	55,000	50,000	304,000	150,000	664,000
2003-12 Avg.	229,000	83,000	88,000	659,000	159,000	1,221,000
2013	267,348	43,080	30,811	340,881	208,786	890,906

Appendix A6.–Pink salmon commercial catch by district, in numbers of fish, Bristol Bay, 1993–2013.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1993	86	2	2	83	240	413
1994	11,537	145	21	8,652	69,552	89,907
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
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
20-Year Avg.	11,000	455	50	243,000	40,000	294,000
1993-02 Avg.	9,000	175	59	11,000	21,000	42,000
2003-12 Avg.	13,000	735	41	474,000	58,000	546,000
2013	0	0	0	320	194	514

Note: Averages include even-numbered years only.

Appendix A7.–Coho salmon commercial catch by district, in numbers of fish, Bristol Bay, 1993–2013.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1993	1,779	41,603	2,387	14,345	12,615	72,729
1994	5,877	48,436	19,250	5,615	96,062	175,240
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
20-Year Avg.	3,000	23,000	7,000	31,000	15,000	79,000
1993-02 Avg.	3,000	30,000	11,000	27,000	25,000	96,000
2003-12 Avg.	2,000	17,000	2,000	35,000	6,000	63,000
2013	361	808	0	126,717	10,340	138,226

Appendix A8.–Total salmon commercial catch by district, in numbers of fish, Bristol Bay, 1993–2013.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1993	8,960,902	21,714,567	4,255,818	5,820,138	708,508	41,459,933
1994	16,570,406	10,862,998	4,427,880	3,855,157	808,696	36,525,137
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	25,550,033
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
20-Year Avg.	8,039,000	8,569,000	2,823,000	6,384,000	749,000	26,541,000
1993-02 Avg.	8,731,000	10,253,000	2,783,000	4,861,000	717,000	27,345,000
2003-12 Avg.	7,346,000	6,885,000	2,862,000	7,908,000	782,000	25,737,000
2013	5,058,333	4,845,693	2,203,637	3,665,400	624,991	16,398,054

Appendix A9.–Commercial sockeye salmon catch, in percent, by gear type and district, Bristol Bay, 1993–2013.

	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
1993	84	16				93	7	90	10	72	28				54	46	86	14
1994	90	10				92	8	94	6	68	32				52	48	88	12
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 [c]	86	14	80	20	77	18	5			66	34	80	20
2002				64 [c]	36 [c]	85	15	88	12	77	22	1	67	33	62	38	79	21
2003	91	9	0	65 [c]	35 [c]	81	19	89	11	83	15	2			63	37	79	21
2004	79	11	10	88	12	86	14	88	12	84	15	1			55	45	79	21
2005				81	19	82	18	87	13	84	14	2			56	44	66	34
2006	86	8	5	81	19	84	16	88	12	87	11	2			53	47	85	15
2007	82	12	6	80	12	84	16	92	8	80	17	3			59	41	81	19
2008	81	12	7			85	15	92	8	79	16	5			60	40	82	18
2009	80	12	9			85	15	87	13	76	20	4			60	40	82	18
2010	81	10	9			84	16	90	10	78	17	6	71	29	61	39	82	18
2011	84	10	7			83	17	87	13	76	16	7			60	40	81	19
2012	85	7	8			83	17	90	10	67	27	6	45	55	67	33	73	27
1993-02 Avg.	84	14	6	69	31	88	12	89	11	73	25	4	72	28	53	48	84	16
2003-12 Avg.	83	10	7	79	19	84	16	89	11	79	17	4	58	42	59	41	79	21
2013	84	9	7			85	15	90	10	78	17	5			65	35	84	16
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 Fish 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, 1993–2013.

Year	Naknek-Kvichak [a]	Egegik [b]	Ugashik [c]	Nushagak [d]	Togiak [e]	Total
1993	5,908,799	1,517,000	1,413,454	2,372,617	242,475	11,454,345
1994	9,571,245	1,894,977	1,095,068	2,503,624	233,632	15,298,546
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
20-Year Avg.	6,298,000	1,298,000	1,110,000	2,539,000	240,000	11,532,000
1993-02 Avg.	5,789,000	1,366,000	1,147,000	2,391,000	254,000	11,043,000
2003-12 Avg.	6,807,000	1,229,000	1,073,000	2,687,000	225,000	12,022,000
2013	4,122,686	1,113,630	898,110	2,465,791	128,118	8,728,335

[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 1993–2013.

[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, 1993–2013.

		Escapement					
Year	Catch	Kvichak [a]	Alagnak		Naknek [a]	Total	Total Run
1993	8,907,876	4,025,166	347,975	[b]	1,535,658	5,908,799	14,816,675
1994	16,327,858	8,337,840	242,595	[b]	990,810	9,571,245	25,899,103
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
20-Year Avg.	7,886,000	3,426,000	1,337,000		1,582,000	6,345,000	14,228,000
1993-02 Avg.	7,780,000	3,748,000	312,000		1,304,000	5,363,000	13,143,000
2003-12 Avg.	7,991,000	3,105,000	2,528,000	[c]	1,860,000	7,326,000	15,314,000
2013	4,790,233	2,088,576	1,095,950	[b]	938,160	4,122,686	8,912,919

[a] Tower count.

[b] Aerial survey estimates.

[c] 2003–2011 average.

Appendix A12.–Inshore sockeye salmon total run by river system Naknek-Kvichak District, in thousands of fish, Bristol Bay, 1993–2013.

	Kvichak		Alagnak			Naknek		
Year	Number	%	Number	%		Number	%	Total Run [a]
1993	9,335	63	889	6	[b]	4,741	32	14,817
1994	22,273	86	518	2	[b]	3,108	12	25,899
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
20-Year Avg.	7,306	45	2,148	15		4,779	40	14,228
1993-02 Avg.	8,562	51	590	6		3,991	43	13,143
2003-12 Avg.	6,051	39	3,850	25	[d]	5,566	37	15,314
2013	4,555	51	2,360	26	[b]	2,233	25	8,913

[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.

[d] 2003–2011 average.

Appendix A13.–Inshore commercial catch and escapement of sockeye salmon in the Egegik District by river system, in numbers of fish, Bristol Bay, 1993–2013.

		Escapement			
Year	Catch	Egegik [a]	Shosky Cr. [b]	King Salmon River [b]	Total Run
1993	21,600,858	1,516,980	20		23,117,858
1994	10,750,213	1,894,932	15	30	12,645,190
1995	14,427,193	1,281,678		830	15,709,701
1996	10,809,201	1,075,596			11,884,797
1997	7,517,603	1,103,964		40	8,621,607
1998	3,529,170	1,110,882		50	4,640,102
1999	7,388,357	1,727,772		625	9,116,754
2000	7,029,444	1,032,138			8,061,582
2001	2,872,725	968,862	10		3,841,597
2002	4,611,002	1,036,092			5,647,094
2003	2,291,631	1,152,030		90	3,443,751
2004	10,209,790	1,290,144			11,499,934
2005	8,016,242	1,621,584	0		9,637,826
2006	7,591,163	1,465,128	0		9,056,291
2007	6,498,302	1,432,500	0	1,500	7,932,302
2008	7,404,589	1,259,568	0	250	8,664,407
2009	11,528,600	1,146,276	0	4	12,674,880
2010	5,074,212	926,904		150	6,001,266
2011	4,813,227	961,200			5,774,427
2012	5,062,390	1,233,900		300	6,296,590
20-Year Avg.	7,951,000	1,262,000	6	352	9,213,000
1993-02 Avg.	9,054,000	1,275,000	15	315	10,329,000
2003-12 Avg.	6,849,000	1,249,000	0	382	8,098,000
2013	4,801,686	1,113,630			5,915,316

Note: Blank cells represent no survey conducted.

[a] Tower count.

[b] Aerial survey index count.

Appendix A14.–Inshore commercial catch and escapement of sockeye salmon in the Ugashik District by river system, in numbers of fish, Bristol Bay, 1993–2013.

		Escapement				
Year	Catch	Ugashik [a] River	King Salmon [b] River		Dog Salmon [b] River	Total Run
1993	4,176,952	1,389,534	22,570		1,350	5,590,406
1994	4,352,797	1,080,858	8,885		5,325	5,447,865
1995	4,509,418	1,304,058	7,650		9,400	5,830,526
1996	4,411,084	667,518	7,230		17,419	5,103,251
1997	1,402,690	618,396	27,645		10,600	2,059,331
1998	730,299	890,508	27,425		6,920	1,655,152
1999	2,256,111	1,651,572	6,350		4,120	3,918,153
2000	1,538,931	620,040	12,900		5,480	2,177,351
2001	480,713	833,628	22,940		9,800	1,347,081
2002	1,573,668	892,104	11,460		2,020	2,479,252
2003	1,749,819	758,532	27,620		4,000	2,539,971
2004	3,139,327	776,364	22,850		15,890	3,954,431
2005	2,216,906	779,172	0	[c]	20,440	3,016,518
2006	2,429,637	978,718	0	[c]	24,440	3,432,795
2007	5,026,733	2,523,686	5,420	[c]	70,020	7,625,859
2008	2,334,023	588,632	0	[c]	7,700	2,930,355
2009	2,555,294	1,346,630	0	[c]	17,920	3,919,844
2010	4,032,000	805,686	0	[c]	25,200	4,862,886
2011	2,643,656	1,003,753	0	[c]	26,100	3,673,509
2012	2,418,653	670,578	8		24,432	3,113,671
20-Year Avg.	2,699,000	1,009,000	11,000		15,000	3,734,000
1993-02 Avg.	2,543,000	995,000	16,000		7,000	3,561,000
2003-12 Avg.	2,855,000	1,023,000	6,000		24,000	3,907,000
2013	2,172,783	898,110	0	[c]	0	3,070,893

[a] Tower count plus aerial survey index count.

[b] Aerial survey index count.

[c] King Salmon River system affected by Mt. Chiginigak.

Appendix A15.–Inshore commercial catch and escapement of sockeye salmon in the Nushagak District by river system, in numbers of fish, Bristol Bay, 1993–2013.

		Escapement										
Year	Catch	Wood	Igushik [a]	Nuyakuk [a]	Nush/Mul	Nushagak [b]	Snake [c]	Total [d]	Total Run
1993	5,236,932	1,176,126	405,564	[e]	[e]	790,927	[f]	[g]	2,372,617	7,609,549
1994	3,393,143	1,471,890	445,920	[e]	[e]	563,334	[f]	22,480	2,503,624	5,896,767
1995	4,445,900	1,482,162	473,382	69,702	241,434	311,136	[f]	17,380	2,284,060	6,729,960
1996	5,693,594	1,649,598	400,746	250,692	306,365	557,057	[f]	[g]	2,607,401	8,300,995
1997	2,506,857	1,512,396	127,704	272,982	139,609	412,591	[f]	8,394	2,061,085	4,567,942
1998	2,991,841	1,755,768	215,904	146,250	361,282	507,532	[f]	11,120	2,490,324	5,482,165
1999	6,176,051	1,512,426	445,536	81,006	263,966	344,972	[f]	[g]	2,302,934	8,478,985
2000	6,367,502	1,300,026	413,316	129,468	316,818	446,286	[f]	[g]	2,159,628	8,527,130
2001	4,735,718	1,458,732	409,596	184,044	713,068	897,112	[f]	[g]	2,765,440	7,501,158
2002	2,839,918	1,283,682	123,156	68,928	280,227	349,155	[f]	[g]	1,755,993	4,595,911
2003	6,667,538	1,459,782	194,088	116,646	525,447	642,093	[f]	[g]	2,295,963	8,963,501
2004	6,104,492	1,543,342	109,650	77,406	466,466	543,872	[f]	[g]	2,196,864	8,301,356
2005	7,096,296	1,496,550	365,709	251,016	855,687	1,106,703	[f]	[g]	2,968,962	10,065,258
2006	10,876,552	4,008,102	305,268	170,760	377,650	548,410		[g]	4,861,780	15,738,332
2007	8,404,532	1,528,086	415,452	[e]	[e]	518,041		[g]	2,461,579	10,866,111
2008	6,903,367	1,724,676	1,054,704	[e]	[e]	492,546		[g]	3,271,926	10,175,293
2009	7,731,518	1,319,232	514,188	[e]	[e]	484,149		[g]	2,317,569	10,049,087
2010	8,424,702	1,804,344	518,040	[e]	[e]	468,696	27,135		2,818,215	11,242,917
2011	4,887,305	1,098,006	421,380	[e]	[e]	428,191	21,167		1,968,744	6,856,049
2012	2,663,014	764,211	193,326			432,438	2,000		1,391,975	4,054,989
20-Year Avg.	5,707,000	1,567,000	378,000	152,000	404,000	542,000	16,000		2,493,000	8,200,000
1993-02 Avg.	4,439,000	1,460,000	346,000	150,000	328,000	518,000	15,000		2,330,000	6,769,000
2003-12 Avg.	6,976,000	1,675,000	409,000	154,000	556,000	567,000	17,000		2,655,000	9,631,000
2013	3,182,307	1,183,348	387,744	[e]	[e]	894,172	1,288		2,466,552	5,648,859

Note: Blank cells represent no data.

[a] Tower count.

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

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

[d] Aerial survey estimate.

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

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

[g] No survey conducted.

Appendix A16.–Inshore sockeye salmon total run by river system, in thousands of fish and percent of total district run, Nushagak District, Bristol Bay, 1993–2013.

	Wood		Igushik		Nushagak								Snake [c]		
	Total Run		Total Run		Nushagak Escapement [a]					Catch	Total Run				
					Nuyakuk		Nush-Mul		Sonar	Total					
Year	Number	%	Number	%	Number	%	Number	%	Estimate [b]	Number	Number	%	Number	%	Total Run [d]
1993	3,725	49	1,580	21					791	1,513	2,304	30			7,609
1994	2,957	50	1,300	22					563	1,034	1,597	27	42	0.7	5,896
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
20-Year Avg.	5,109	63	1,252	15	152	28	404	72	542	1,270	1,812	22	19	0	8,179
1992-01 Avg.	4,189	63	1,196	17	150	32	328	68	518	858	1,376	20	20	0	6,769
2002-11 Avg.	6,029	62	1,308	14	154	22	556	78	567	1,681	2,248	24	17	0	9,590
2013	2,978	53	708	13					894	1,067	1,961	35	1	0	5,648

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] Due to 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, 1993–2013.

	Catch				Escapement						
					Togiak						
Year	Togiak	Kulukak	Os/Mat [a]	Total	Lake [b]	River [c]	Tributaries [d]	Kulukak [e]	Other [f]	Total	Total Run
1993	475,799	58,616	5,518	539,933	177,185	4,600	11,330	31,800	17,560	242,475	782,408
1994	321,121	76,781	2,137	400,039	154,752	6,200	13,220	29,740	29,720	233,632	633,671
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
2001 [g]	798,427	10,052	1,618	810,097	296,676	6,520	150	17,280	17,990	338,616	1,148,713
2002	214,240	19,032	471	233,743	162,402	4,100	12,075	8,500	12,430	199,507	433,250
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
20-Year Avg.	482,000	60,000	1,000	543,000	204,000	10,000	11,000	17,000	17,000	237,000	780,000
1993-02 Avg.	400,000	55,000	2,000	456,000	189,000	10,000	13,000	18,000	17,000	247,000	704,000
2003-12 Avg.	564,000	65,000	444	630,000	219,000	6,000	548	8,000	15,000	226,000	856,000
2013 [i]	451,362	33,745	8,445	493,552	128,118					128,118	621,670

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 Ongivinuck 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, 1993–2013.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak [a]	Togiak	Total
1993	14,816,671	23,117,603	5,590,406	7,609,549	782,408	51,916,637
1994	25,899,103	12,645,190	5,447,865	5,896,763	633,671	50,522,592
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
20-Year Avg.	14,151,000	9,203,000	3,734,000	8,197,000	780,000	36,065,000
1993-02 Avg.	13,143,000	10,328,000	3,561,000	6,769,000	704,000	34,505,000
2003-12 Avg.	15,158,000	8,079,000	3,907,000	9,626,000	855,000	37,625,000
2013	9,148,587	5,950,083	3,070,893	5,648,098	621,670	24,439,331

[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, 1993–2013.

	Harvests by Fishery				Inriver	Spawning	Total
Year	Commercial	Sport	Subsistence	Total	Abundance [a]	Escapement [b]	Run
1993	62,979	5,900	17,709	86,588	203,508	192,402	278,990
1994	119,480	10,627	15,490	145,597	199,643	186,791	332,388
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	30,443	69,556
2011	26,927	4,844	12,461	44,232	59,728	51,068	95,300
2012	11,952	5,931	10,350	28,233	107,786	101,049	129,282
20-Year Avg.	52,000	6,000	13,000	71,000	147,000	133,000	205,000
1993-02 Avg.	59,000	6,000	13,000	78,000	173,000	155,000	233,000
2003-12 Avg.	45,000	7,000	13,000	64,000	121,000	112,000	176,000
2013	15,175	5,547 [d]	11,532 [d]	32,254	113,709	105,603	137,857

[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 District, in numbers of fish, Bristol Bay, 1993–2013.

	Harvests by Fishery				Spawning	Total
Year	Commercial	Sport [a]	Subsistence	Total	Escapement [b]	Run
1993	10,851	225	784	11,860	16,035	27,895
1994	10,486	663	904	12,053	19,353	31,406
1995	11,982	581	448	13,011	16,438	29,449
1996	8,603	790	471	9,864	11,476	21,340
1997	6,074	1,165	667	7,906	11,495	19,401
1998	14,132	763	782	15,677	11,666	27,343
1999	11,932	644	1,244	13,820	12,263	26,083
2000	7,862	470	1,116	9,448	16,897	26,345
2001	9,937	1,006	1,612	12,555	15,185	27,740
2002	2,801	76	703	3,580	14,265	17,845
2003	3,231	706	1,208	5,145	5,668 [c]	[d]
2004	9,310	1,388	1,094	11,792	15,990	27,782
2005	10,759	1,734	1,528	14,021	13,521	27,542
2006	16,225	1,064	1,630	18,919	1,670 [c]	[d]
2007	7,769	1,501	1,234	10,504	0 [c]	[d]
2008	3,087	592	1,337	5,016	2,140 [c]	[d]
2009	4,602	606	827	6,035	[e]	[d]
2010	5,553	591	1,162	7,306	10,096 [f]	17,402
2011	6,731	871	966	8,568	2,140	10,708
2012	4,829	859	951	6,639	1,503	8,142
20-Year Avg.	8,000	815	1,000	10,000	10,000	23,000
1993-02 Avg.	9,000	638	873	11,000	15,000	25,000
2003-12 Avg.	7,000	991	1,000	9,000	6,000	18,000
2013	2,644	704 [g]	1,049 [g]	4,396	[e]	[d]

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

[b] Spawning escapement estimated from comprehensive aerial surveys.

[c] Partial survey.

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

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

[f] USFWS radiotelemetry-derived escapement estimate.

[g] 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, 1993–2013.

	Nushagak District			Togiak District		
Year	Catch	Escapement [a]	Total Run	Catch	Escapement [b]	Total Run
1993	505,799	275,748	781,547	144,869	98,470	243,339
1994	328,260	481,004	809,264	232,559	229,470	462,029
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]	250,264
2007	953,292	161,483	1,114,775	202,486	[e]	202,486
2008	492,341	326,300	818,641	301,967	279,580 [c]	581,547
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	126,000	332,614
20-Year Avg.	481,000	362,000	843,000	155,000	132,000	225,000
1993-02 Avg.	304,000	351,000	655,000	150,000	142,000	270,000
2003-12 Avg.	659,000	373,000	1,032,000	159,000	114,000	180,000
2013	340,881	623,326	628,134	208,786	[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] Poor weather/pilot availability prevented aerial surveys to assess escapement.

Appendix A22.–Average round weight (in pounds) of the commercial salmon catch by species, Bristol Bay, 1993–2013.

Year	Sockeye	Chinook	Chum	Pink	Coho
1993	6.0	17.4	6.5		6.8
1994	5.5	18.0	6.5	3.7	8.2
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
20-Year Avg.	5.9	16.2	6.8	3.5	6.9
1993-02 Avg.	5.9	17.3	6.9	3.4	7.1
2003-12 Avg.	5.9	15.1	6.7	3.5	6.7
2013	6.0	18.6	6.4	3.1	6.0

Note: Blank cells represent no data.

Appendix A23.–Average price paid (in dollars/pound) for salmon, by species, Bristol Bay, 1993–2013.

Year	Sockeye	Chinook	Chum	Pink	Coho
1993	0.67	0.76	0.22	0.25	0.52
1994	0.97	0.64	0.22	0.12	0.71
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	1.07	0.26	0.12	0.26
20-Year Avg.	0.78	0.65	0.16	0.11	0.46
1993-02 Avg.	0.78	0.53	0.13	0.10	0.47
2003-12 Avg.	0.77	0.76	0.18	0.12	0.44
2013	1.50	0.77	0.30	0.30	0.80

Note: Price does not include all postseason adjustments or bonuses.

Appendix A24.–Estimated exvessel value of the commercial salmon catch by species, in thousands of dollars, Bristol Bay, 1993–2013.

Year	Sockeye	Chinook	Chum	Pink [a]	Coho	Total
1993	163,089	1,133	1,194		263	165,679
1994	188,918	1,616	1,201	41	1,019	192,796
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
20-Year Avg.	109,879	650	889	217	240	111,767
1993-02 Avg.	109,785	764	630	14	301	111,487
2003-12 Avg.	109,974	535	1,148	420	180	112,047
2013	134,657	271	1,716	0	590	137,234

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

[a] Includes even-numbered years only.

Appendix A25.–South Unimak and Shumigan Island preseason sockeye allocation and actual sockeye and chum salmon harvest in thousands of fish, Alaska Peninsula, 1993–2013.

	South Unimak			Shumigan Island			Total		
	Sockeye			Sockeye			Sockeye		
Year	Actual	Quota [a]	Chum	Actual	Quota [a]	Chum	Actual	Quota [a]	Chum
1993	2,365	2,375	382	607	524	150	2,972	2,899	532
1994	1,001	2,938	374	460	648	208	1,461	3,586	582
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
20-Year Avg.	834	2,113	202	466	466	186	1,272	2,579	388
1993-02 Avg.	1,017	2,113	236	392	466	141	1,409	2,579	377
2003-12 Avg.	652		167	540		231	1,135		399
2013	1,049		189	508		208	1,557		397

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, 2012.

Area and river system	Number of permits issued [a]	Estimated salmon harvest [b]					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Naknek-Kvichak District	483	785	72,708	485	127	474	74,578
Naknek River Subdistrict	280	607	20,338	396	104	384	21,828
Kvichak River/Iliamna Lake Subdistrict:	207	178	52,370	89	23	90	52,750
Igiugig	2	0	555	0	0	0	555
Iliamna Lake-General	37	0	6,655	0	0	0	6,655
Kokhanok	26	161	15,148	0	0	1	15,310
Kvichak River	21	0	3,774	0	0	0	3,774
Lake Clark	55	0	4,610	0	0	0	4,610
Levelock	3	17	845	89	23	89	1,063
Newhalen River	46	0	13,829	0	0	0	13,829
Pedro Bay	17	0	4,059	0	0	0	4,059
Six Mile Lake	13	0	2,895	0	0	0	2,895
Egegik District	38	37	1,172	190	19	7	1,425
Ugashik District	20	31	997	228	25	0	1,280
Nushagak District	517	10,350	20,587	2,642	3,072	1,309	37,960
Igushik/Snake River	12	143	937	105	20	7	1,212
Nushagak Bay Commercial	42	368	1,238	291	176	196	2,269
Nushagak Bay Noncommercial	204	2,685	7,387	1,011	796	410	12,289
Nushagak River	119	4,896	4,448	808	1,559	426	12,136
Site Unknown	1	0	80	0	0	0	80
Wood River	156	2,259	6,497	427	522	270	9,974
Togiak District	53	933	5,265	293	764	84	7,339
Total	1,107	12,136	100,728	3,837	4,007	1,874	122,582

Note: 2013 numbers were not available at the time of publication.

[a] Harvests are extrapolated for all permits issued, based on those returned and on the area fished as recorded on the permit. Due to rounding, the sum of columns and rows may not equal the estimated total. Of 1,107 permits issued for the management area, 1,039 were returned (92.6%).

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

Appendix A26.–Subsistence salmon harvest by district and species, Bristol Bay, 1993–2013.

Year	Permits Issued	Sockeye	Chinook	Chum	Pink	Coho	Total
NAKNEK KVICHAK DISTRICT							
1993	560	101,555	2,080	2,476	762	2,025	108,898
1994	555	87,662	1,843	503	460	1,807	92,275
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
20-Year Avg.	504	73,000	1,000	612	562	1,000	76,000
1993-02 Avg.	536	77,000	2,000	908	646	1,000	82,000
2003-12 Avg.	473	68,000	776	317	477	835	70,000
2013 [a]	469	67,995	574	229	440	785	70,024
EGEGIK DISTRICT							
1993	69	3,633	128	148	15	905	4,829
1994	59	3,208	166	84	153	857	4,468
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
20-Year Avg.	44	2,000	93	84	30	550	3,000
1993-02 Avg.	49	2,000	92	75	44	651	3,000
2003-12 Avg.	40	2,000	94	92	16	449	2,000
2013 [a]	35	1,376	69	28	5	254	1,732

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Year	Permits Issued	Sockeye	Chinook	Chum	Pink	Coho	Total
UGASHIK DISTRICT							
1993	39	1,766	86	107	24	495	2,478
1994	31	1,587	126	42	38	579	2,372
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
20-Year Avg.	23	1,000	55	28	17	318	2,000
1993-02 Avg.	27	2,000	74	36	19	401	2,000
2003-12 Avg.	19	990	35	20	15	235	1,000
2013 [a]	16	1,029	29	11	10	170	1,250
NUSHAGAK DISTRICT							
1993	500	27,114	17,709	3,257	240	5,038	53,358
1994	523	26,501	15,490	5,055	2,042	5,338	54,426
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
20-Year Avg.	521	25,000	13,000	4,000	967	5,000	47,000
1993-02 Avg.	525	25,000	13,000	3,000	868	5,000	48,000
2003-12 Avg.	517	24,000	13,000	4,000	1,000	5,000	46,000
2013 [a]	530	25,842	12,128	3,757	1,798 [b]	4,738	47,386

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Year	Permits Issued	Sockeye	Chinook	Chum	Pink	Coho	Total
TOGIAK DISTRICT							
1993	38	2,139	784	571	8	743	4,245
1994	25	1,777	904	398	77	910	4,066
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
20-Year Avg.	52	3,000	1,000	482	89	419	5,000
1993-02 Avg.	44	2,000	873	449	47	431	4,000
2003-12 Avg.	61	3,000	1,000	514	132	406	5,000
2013 [a]	63	3,595	1,045	612	72	433	5,756
TOTAL BRISTOL BAY AREA							
1992	1,204	134,330	16,623	10,772	5,314	10,612	177,651
1993	1,206	136,207	20,787	6,559	1,049	9,206	173,808
1994	1,193	120,735	18,529	6,082	2,770	9,491	157,607
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
20-Year Avg.	1,144	105000	15,000	5,000	2,000	7,000	135,000
1993-02 Avg.	1,181	111,000	16,000	5,000	2,000	8,000	142,000
2003-12 Avg.	1,103	99,000	15,000	5,000	2,000	6,000	127,000
2013 [a]	1,112	98,928	13,249	4,651	1,625	6,313	124,766

Note: The sum of columns and rows may not equal the estimated total due to 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.

[b] Includes even years only.

Appendix A27.–Subsistence harvest of sockeye salmon by community, in numbers of fish, Kvichak River drainage, Bristol Bay, 1993–2013.

Year	Levelock	Igiugig	Pedro Bay	Kokhanok	Iliamna-Newhalen[a]	Nondalton	Port Alsworth	Other[b]	Total
1993	4,699	1,397	6,226	18,810	19,067	17,890	3,254	2,780	74,123
1994	1,467	1,201	8,747	15,771	15,553	15,246	3,074	3,284	64,343
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
20-Year Avg.	1,000	2,000	5,000	13,000	14,000	10,000	3,000	2,000	50,000
1993-02 Avg.	2,000	2,000	5,000	12,000	14,000	12,000	3,000	3,000	52,000
2003-12 Avg.	617	2,000	5,000	14,000	13,000	8,000	3,000	2,000	47,000
2013 [c]	682	2,091	5,244	14,182	12,124	7,001	3,631	1,967	46,924

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 because current data were not available at the time of publishing.

Appendix A28.–Subsistence salmon harvest by community, Nushagak District, Bristol Bay, 1993–2013.

Year	Dillingham[a]	Manokotak	Aleknagik	Ekwok	New Stuyahok	Koliganek	Other[b]	Total
1993	25,315	3,048	2,593	2,936	12,169	4,180	2,538	52,779
1994	30,145	3,491	2,289	4,343	8,056	4,513	2,322	55,159
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
20-Year Avg.	25,000	3,000	2,000	2,000	7,000	4,000	3,000	47,000
1993-02 Avg.	26,000	3,000	2,000	3,000	7,000	3,000	3,000	48,000
2003-12 Avg.	25,000	2,000	2,0	2,000	7,000	4,000	3,000	46,000
2013 [c]	25,884	2,561	2,600	1,737	6,239	3,380	3,587	45,989

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, 1993–2013.

			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]
1993	12	2,500	4/27–5/9	75	144.5	3,564	10.1	140	33.8	14,392	9.6	17,956
1994	16	3,300	5/11–5/20	146	76.0	7,462	12.0	240	4.6	22,853	9.4	30,315
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
20-Year Avg.	10	2,563		120	170	6,000	11	90	111	16,000	9	22,000
1993-02 Avg.	15	3,035		200	62	6,000	11	154	18	17,000	9	23,000
2003-12 Avg.	6	2,092		40	278	5,000	11	26	205	15,000	9	21,000
2013	6	2,675	5/11–5/28	37	408.0	8,244	10.9	26	224.0	19,366	9.0	27,610

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

[b] Total vessels fished.

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

Appendix B2.–Exploitation of Togiak herring stock, 1993–2013.

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]		
1993	164,130	1,481	2,790	3,564	14,392		17,956	22,227	13.5%
1994	148,716	1,134	3,349	7,462	22,853		30,315	34,798	23.4%
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	[f]	2,846	5,216	11,793	40	17,009	20,115	16.7%
2003	126,213	[f]	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%
20-Year Avg.	133,000	1,000	2,000	6,000	16,000	309	22,000	24,000	17.9%
1993-12 Avg.	134,000	1,000	2,000	6,000	17,000	218	22,000	25,000	18.1%
2003-12 Avg.	131,000	55	2,000	5,000	15,000	418	20,000	22,000	17.9%
2013	169,020		1,764	8,243	19,366	1593	27,609	29,373	17.4%

Note: Blank cells represent no data.

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

[b] Includes bait harvest.

[c] Includes test fish harvest.

[d] Aerial survey estimated waste.

[e] Does not include waste.

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

Appendix B3.–Age composition, by weight, of total inshore herring run, Togiak District, 1993–2013.

	Age Composition (%)						Total Run
Year	≤ 4	5	6	7	8	≥ 9	(short tons) [a]
1993	[b]	6.0	23.0	1.0	1.0	67.0	193,847
1994	[b]	2.0	12.0	28.0	3.0	55.0	185,412
1995	1.0	4.0	7.0	24.0	30.0	35.0	[c]
1996	[b]	3.0	5.0	7.0	21.0	64.0	[c]
1997	7.0	5.0	12.0	11.0	10.0	55.0	144,887
1998	[b]	4.0	5.0	10.0	11.0	70.0	[c]
1999	[b]	1.0	13.0	9.0	12.0	65.0	157,028
2000	[b]	1.0	2.0	17.0	16.0	63.0	[c]
2001	5.0	21.0	5.0	4.0	27.0	39.0	115,155
2002	1.0	25.0	28.0	4.0	5.0	36.0	[c]
2003	[b]	3.0	37.0	25.0	4.0	31.0	[c]
2004	[b]	[b]	3.8	43.7	24.6	27.5	[c]
2005	[b]	[b]	0.8	11.0	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	9.0	14.6	15.5	8.1	46.5	136,495
2009	9.4	14.7	14.5	14.9	12.2	34.0	142,133
2010	1.4	16.1	18.1	13.2	13.2	38.3	135,214
2011	[b]	4.0	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	2.0	9.6	24.7	28.8	34.8	169,020

Note: Age composition is weighted by aerial survey data and weight at age.

[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.–Aerial survey estimates of herring biomass (in tons) and spawn deposition (in miles), Togiak District, 1993–2013.

Year	Preseason Forecast [a]	Biomass Estimate		Spawn Estimate
1993	148,786	193,847		53
1994	142,497	185,412		72
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	156,727		28
2006	129,976	176,288		18
2007	134,566	134,221		19
2008	134,516	136,495		49
2009	121,800	142,133		15
2010	146,775	135,214		8
2011	140,860	140,860	[b]	36
2012	123,745	167,738		31
20-Year Avg.	129,000	146,000		44
1993-02 Avg.	128,000	145,000		54
2003-12 Avg.	130,000	146,000		33
2013	169,094	169,020		47

[a] 1993–2013 forecasts based on age structured analysis. Previous years based on age composition, abundance, average growth, and mortality rates.

[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, 1993–2013.

	Herring			
Year	Sac Roe	Food/Bait	Spawn-on-Kelp	Total
1993	5,268	3	268	5,539
1994	9,329	0	212	9,541
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
20-Year Avg.	5,381	119	248	5,408
1993-02 Avg.	7,996	159	281	7,966
2003-12 Avg.	2,767	78	50	2,850
2013	4,142	0	[a]	4,142

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

[a] Fishery not conducted.

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

Appendix B6.–Guideline and actual harvests of sac roe herring (tons) and spawn-on-kelp (pounds), Togiak District, 1993–2013.

	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]
1993	6,570	3,564	-46	19,709	14,392	-27	350,000	383,000	9
1994	6,277	7,462	19	18,832	22,853	21	350,000	308,400	-12
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]	-81
2003	6,624	6,505	-2	15,457	15,158	-2	350,000	[e]	-96
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]	
20-Year Avg.	7,000	6,000	-12	17,000	16,000	-5	350,000	276,000	-21
1993-02 Avg.	6,000	6,000	-5	18,000	17,000	-4	350,000	319,000	-9
2003-12 Avg.	7,000	5,000	-20	16,000	15,000	-6	350,000	14,000	-96
2013	9,017	8,244	-9	21,040	19,366	-9	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 fish harvest.

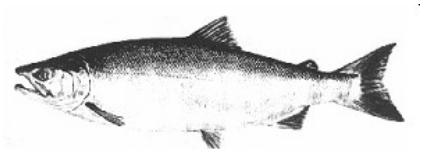
[d] No fishery conducted.

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

APPENDIX C: 2013 BRISTOL BAY SALMON OUTLOOK

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

Cora Campbell, Commissioner
Jeff Regnart, Director



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Date Issued: 04/02/2013

BRISTOL BAY
2013 OUTLOOK FOR COMMERCIAL
SALMON FISHING

INTRODUCTION

This document is provided as a guide to fishermen, processors, and the public. The intent of this document is to provide the reader with general information regarding the 2013 Bristol Bay salmon season. Included is a short narrative regarding general framework for management of each of the five major districts, the 2013 salmon forecast, and a brief summary of regulation changes adopted by the Alaska Board of Fisheries (board) in December 2012 and March 2013.

During the season, Bristol Bay salmon fishing announcements are broadcast on marine VHF Channel 07A and 2509 MHz SSB. Current fishing announcements are aired on local radio stations – KAKN and KDLG. Regular announcement times that may be utilized are 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.** The direct line from the Dillingham boat harbor will be operational in late April and is located on the west end of the harbormaster's house. Fishermen are asked to note new office hours at the Dillingham fish and game office will be 8:00 a.m.–5:00 p.m. Monday thru Friday from June 3–June 21, and again after July 19. From June 22–July 19 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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and green district registration cards prior to commercial fishing. 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. During the 2013 season, catch, escapement, and announcements will be available at the same site (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."

2013 REGULATORY CHANGES

1. After thorough discussion at the December 2012 and March 2013 meetings the board did not renew the regulation allowing set gillnet permit holders to operate two permits. As a result, a set gillnet permit holder may operate only a single S04T gillnet permit. The permit holder may not fish more than 2 separate gillnets and no net may be more than 50 fathoms.
2. Set gillnet permit holders fishing in the Nushagak District are required to register their permit, including stat area, prior to fishing (green card).
3. At the March 2011 board meeting, the drift gillnet dual permitting process was changed. Both permit holders planning on utilizing the dual permit option must register as a dual permit operation with the department prior to fishing, however, it takes only one permit holder to notify the department when they terminate the dual permit partnership.
4. If the department opens the Wood River Special Harvest Area, (WRSHA) it will be opened for only one gear type at a time with a ratio of three (3) drift gillnet openings for every one (1) set gillnet opening. In addition set gillnet fishermen are not restricted to a specific distance from shore though they are still restricted to a distance between nets.
5. Drift gillnet fishermen may have up to 200 fathoms of gear on board when in the WRSHA but any gear over 75 fathoms must be in a bag.
6. In the Nushagak District, the department may institute a mesh restriction of 4.75 inches or smaller for the protection on Nushagak bound sockeye salmon.
7. For the conservation of Chinook salmon, the department shall, to the extent practicable, open and close commercial fishing periods for drift gillnet gear in the Naknek-Kvichak District between the seven-foot flood and the seven-foot ebb tide stages, as measured at the mouth of the Naknek River.

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8. The Togiak River Section boundary near the Togiak River was **changed for drift gillnet fishing only for the period of June 1 through July 15** (set gillnet permit holder operations are not affected by this change). This new line runs approximately from Togiak Fisheries Inc. to the mouth of the Kurtluk River at 59°03.19' N. lat., 160°20.18' W. long. to 59°01.76' N. lat., 160°28.17' W. long.

9. The northwest boundary of the Togiak River Section near the Togiak River referred to in 5AAC 06.350(3)(1) was changed to be those waters of the Togiak River upstream of a line from 59°03.33' N. lat., 160°20.08' W. long. to 59°03.58' N. lat., 160°22.60' W. long.
10. Dual drift permit holder operations are no longer permitted in Togiak District.
11. At the March 2013 meeting, the board made changes as 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.

Alaska Wildlife Troopers – Summer 2013 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.

SALMON OUTLOOKS

BAYWIDE

The forecasted Bristol Bay sockeye salmon run for 2013 is approximately 26.3 million fish. Based on the forecast, 16.6 million fish are potentially available for commercial harvest (Table 1). However, run timing will be the key factor as to when fishing will occur. The department manages fisheries based on inseason information regarding abundance. The inseason management approach uses a suite of tools to provide abundance information in each district as each run develops and is used by the department to determine fishing opportunity.

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

NAKNEK/KVICHAK DISTRICT

An inshore run of approximately 10.6 million sockeye salmon is expected for the Naknek/Kvichak District in 2013. Based on the forecast, the projected harvest in the Naknek/Kvichak District is approximately 5.6 million sockeye salmon; 2.4 million from the Kvichak River, 1.0 million from the Alagnak River and 2.2 million from the Naknek River. The 2013 Kvichak River escapement goal will be 2.5 million. If the run is greater 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 1.4 million. Sockeye salmon returning to the Naknek/Kvichak District are predicted to be 40% age-1.3, 24% age-1.2, 22% age-2.2, and 13% age-2.3 fish.

To begin the season, the Naknek Section only will be open to drift gillnet gear, and for set gillnet gear both the Naknek and Kvichak Sections will be open beginning June 3. Fishing time during the first 3 weeks of June will be 4 days per week from 9:00 a.m. Monday to 9:00 a.m. Friday, beginning 9:00 a.m. Monday, June 3 and ending 9:00 a.m. Friday, June 21. Permit holders participating in the Naknek/Kvichak District salmon fishery should be advised that once sufficient run strength appears in the district they may be put on short notice.

There is the possibility of escapement falling behind schedule in the Kvichak River. In order to reduce the harvest of Kvichak River stocks, the department may restrict fishing to the flood portion of the tide only, from the 7-foot level to high water slack.

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 3 until 9:00 a.m. Friday, July 26, 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 Slim Morstad at (907) 246-3341 in King Salmon.

EGEGIK DISTRICT

A forecasted run of approximately 6.1 million sockeye salmon is expected for the Egegik River in 2013. The escapement goal range is 800,000 to 1.4 million sockeye. Based on the forecast, the expected surplus potentially available for harvest is 4.7 million fish. Approximately 53% of the run is expected to be age-2.2 fish, followed by age-2.3 (25%), age-1.3 (19%) and age 1.2 (less than 1%).

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In 2013, separate gear openings and extensions will be used to adjust harvest in an attempt to achieve allocation percentages. Fishermen are reminded that regulation directs the department to avoid "to the extent practicable", continuous fishing with set gillnet gear in the Egegik District, and that Egegik set gillnet fishermen in 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 14. The primary reason for returning to the 3 day per week schedule is to provide for Chinook salmon escapement. By emergency order, 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 3 and run through 9:00 a.m. Friday, June 14. After June 15, fishing will be scheduled according to sockeye salmon run strength. As in previous years, some openings could occur on short notice. Periods will be adjusted to allocate harvest between drift and set gillnet gear groups.

In addition, subsistence fishing will be permitted in the waters of the Egegik commercial district from midnight June 1 until 11:59 p.m. Friday June 14. 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 Egegik River coho salmon run forecasts. Assessment of escapement is done through aerial surveys, however during the time coho salmon are inriver weather conditions frequently make aerial surveys difficult. In 2009, surveys were not flown due to bad weather so no assessment of the escapement for that year is available. In 2013, management of the fall coho fishery will be based on fishery performance and run strength indicators.

UGASHIK DISTRICT

The forecasted Ugashik River sockeye salmon run in 2013 is 3.5 million fish. The escapement goal range is 500,000 to 1.2 million sockeye. Based on the forecast, 2.6 million fish are potentially available for harvest. Approximately 45% of the run is expected to be age-1.2 fish, 28% age-1.3, 17% age-2.2, and 10% age-2.3fish.

The Ugashik District allocation plan specifies 10% set and 90% drift. As in previous years separate gear openings and commercial period length adjustments will be used to address allocation between gear groups in 2013. 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 Saturday June 1 until 11:59 p.m. Monday, July 22, to help in the conservation of Chinook salmon.

Beginning 9:00 a.m. Monday June 3, 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 14. With an expected run to the Kvichak River that exceeds a 40% exploitation rate above the minimum escapement goal stipulated in regulation, fishing time after June 15 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 2013.

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The department does not produce Ugashik River coho salmon run forecasts. Assessment of escapement is done through aerial surveys. The parent year for the 2013 coho run was the 2009 escapement, however, because of weather conditions surveys were not flown so no assessment of the coho escapement for that year is available. In 2013, 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 as 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.

NUSHAGAK DISTRICT

The variable escapement goal adopted for the Nushagak River is contained in the Wood River Special Harvest Area (WRSHA) Management Plan. This plan directs the department to achieve sockeye salmon escapements within the escapement goal range of 370,000 to 760,000 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 forecast to the Wood and Nushagak Rivers for 2013 (3.42 million and 1.31 million respectively), is accurate, the likelihood of fishing in the WRSHA is decreased.

Nushagak River Chinook salmon are managed according to the Nushagak/Mulchatna Chinook Salmon Management Plan. This plan directs the commercial fishery to be managed for an inriver goal of 95,000 Chinook salmon. Based on the poor performance of Chinook salmon statewide, and the poor run to the Nushagak in 2010, a directed Chinook salmon opening is unlikely. However, if inseason assessment of subsistence catches and escapement past the Nushagak sonar indicates a larger than expected run, a directed Chinook opening could occur.

The 2013 forecast for sockeye salmon in the Nushagak District is 5.25 million fish, 1.75 million for escapement and 3.31 million potentially available for harvest in the Nushagak commercial salmon fishery. The total run by river system is Wood River 3.42 million (escapement goal range 700,000 to 1.5 million), Igushik River 0.52 million (escapement goal range 150,000 to 300,000), and Nushagak River 1.31 million (escapement goal range of 370,000 to 760,000). Approximately 32% of the forecasted run is expected to be age-1.2 sockeye salmon, < 4% age-2.2, 62% age-1.3, and < 3% age-2.3 fish.

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Management strategies for 2013 include: 1) directed Chinook salmon openings only if warranted by escapement. 2) Igushik Section sockeye salmon openings are likely to begin in the third 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 late 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.

Permit holders are reminded that there were significant changes made to the WRSHA management plan. 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 set 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 2013, 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. The department will use enumeration information from the Nushagak River sonar project to determine what amount of fishing time is warranted.

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 2013 inshore run of Togiak River sockeye salmon is forecast at 590,000 fish, down considerably from the 2012 forecast of 780,000. The Togiak District Salmon Management Plan (TDSMP) 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 390,000 sockeye salmon will potentially be available for commercial harvest. Approximately 25% of the run is expected to be 2-ocean fish and 75% is expected to be 3-ocean fish.

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Commercial fisheries in the Togiak District are managed under the Togiak District Salmon Management Plan (TDSMP). The plan restricts permit holders 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. The plan also increases the weekly fishing schedule in the Togiak River Section between July 1 and July 16, and restricts 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. Adequate Chinook salmon escapement in most years can be attributed to mesh size restrictions in late June and early July, as well as to reductions in the weekly fishing schedule during late June. Anticipating another poor Chinook salmon run, reduction to the weekly fishing schedule is again likely for the 2013 season. These reductions will likely limit commercial fishing to between 48 and 72 hours of fishing time during each of the last two weeks of June. Additionally, as in 2012, a mesh size restriction for Chinook salmon conservation may be in place throughout July. Fishermen are also reminded of changes to Togiak regulations adopted at the 2012 board meeting (see regulatory changes section above, numbers 8, 9, and 10). The Kulukak Section weekly fishing schedule, reduced to 60 hours at the 2009 BOF meeting, is unlikely to be changed in 2013.

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.

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Table 1.-Forecast of total run, escapement and harvest of sockeye salmon returning to Bristol Bay River systems in 2013.

Millions of Sockeye Salmon							
	Total Run Forecast by Age Class						
DISTRICT River	1.2	2.2	1.3	2.3	**Total**	**Escapement**	**Total Harvest**
NAKNEK-KVICHAK:							
Kvichak	1.31	1.65	1.39	0.74	5.08	2.54	2.36
Alagnak	0.50	0.19	1.29	0.10	2.08	1.04	0.96
Naknek	0.77	0.52	1.61	0.55	3.46	1.10	2.23
Total	**2.57**	**2.35**	**4.30**	**1.39**	**10.61**	**4.68**	**5.55**
EGEGIK	**0.16**	**3.22**	**1.18**	**1.49**	**6.06**	**1.10**	**4.74**
UGASHIK	**1.59**	**0.59**	**1.00**	**0.35**	**3.53**	**0.80**	**2.60**
NUSHAGAK							
Wood	1.49	0.15	1.70	0.08	3.42	1.00	2.30
Igushik	0.15	0.02	0.34	0.02	0.52	0.25	0.25
Nushagak	0.03	0.00	1.20	0.02	1.31	0.50	0.76
Total	**1.67**	**0.17**	**3.24**	**0.11**	**5.25**	**1.75**	**3.31**
TOGIAK	**0.11**	**0.04**	**0.41**	**0.03**	**0.59**	**0.18**	**0.39**
BRISTOL BAY	**6.10**	**6.38**	**13.10**	**3.37**	**26.03**	**8.50**	**16.59**

APPENDIX D: 2013 TOGIAK HERRING OUTLOOK

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

Cora Campbell, 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: March 26, 2013
Time: 12:00 p.m.

2013 TOGIAK HERRING FISHERY INFORMATION

This notice is intended to provide information to participants in the 2013 Togiak herring fishery. The 2013 herring biomass in Togiak District is forecast to be 169,094 tons, an increase from 2012. The 2013 forecast is based on an age-structured analysis (ASA) model that has been used since 1993. Ages -7 and -8 herring are expected to comprise 47% of the projected herring biomass, with ages -6 and under making up another 26%. Ages 9-11 are expected to make up 23% of the spawning run, while the remaining 4% 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 317 grams.

The Togiak herring fishery occurs on fish at or about the time of spawning. The occurrence and timing of spawning is related to water temperatures experienced by herring on the spawning grounds and also appears related to 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 reported at Unalaska between 24 February and 16 March, as we consider this a useful index of conditions encountered by maturing herring ultimately bound for spawning grounds in and around the Togiak District. The 1995-2012 historical average temperature for that date range is 3.3^{o} C, whereas the average temperature experienced during 2013 has been considerably warmer at 3.7^{o} C. This is similar to 2009 which experienced water temperatures of 3.6 ^{o} C during this time frame and had first harvests on 13 May. Sea ice conditions throughout the Bering Sea (ice extent and area) are currently very similar to 2010 which experienced first harvests occurred on 11 May. We anticipate the 2013 fishery to have similar timing (see current ice map information at NSIDC.ORG).

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The Bristol Bay Herring Management Plan (BBHMP) (**5 AAC 27.865**) sets a maximum 20% exploitation rate for the Togiak District stock. Based on a forecasted run of 169,094 tons, up to 33,819 tons of herring will be available for harvest in 2013. Harvest allocation, in accordance with the BBHMP, will be:

Fishery	Harvest Allocation
Spawn-on-Kelp	1,500 tons
Dutch Harbor Food and Bait	2,262 tons
Togiak Sac Roe	30,056 tons
Purse Seine (70%)	21,040 tons
Gillnet (30%)	9,017 tons

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 to fishermen and processors.

In 2013, sac roe fisheries will again be managed to maximize product quality through long openings allowing permit holders to make smaller sets and harvest the best fish available. Processors will also have more flexibility to control harvest volume so that holding time between harvest and processing is optimal. Available processing capacity is expected to be approximately 2,775 tons per day based on a preseason poll. This represents a significant increase from the 2012 daily capacity of 2,000 tons per day. The preseason poll also indicates there will be six (6) processing companies participating in the Togiak sac roe herring fishery and fleet size is expected to be 40 gillnet and 28 purse seine vessels. For the last few seasons, the department has opened the herring fishery as soon as threshold biomass has been documented and anticipates using this strategy again in 2013 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

In recent years, the seine fleet has operated in conjunction with the processing industry in cooperative groups. Indications are that this will be the case again in 2013 and therefore, fishing time and area will be very liberal. This should allow purse seine vessels to locate high quality herring and each cooperative to fill their company's daily processing capacity. 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 companies that want to make test sets 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 9,017 tons, while maintaining the specified 70/30 purse seine/gillnet ratio. Product quality will be a priority throughout the gillnet fishery.

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In 2013, 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 2012, the plan is to open the gillnet area to fishing when threshold biomass is present. Individual companies and fishermen can organize their own test fishing scheme once the area is open and make decisions on when to begin fishing for production. Until it is determined that marketable quality fish are present, participants should test cautiously with a small portion of gear.

At the December 2009 Alaska Board of Fisheries (BOF) meeting, the Egg Island Section was formally approved and the coordinates are now in regulation. Additionally, the legal compliment of gear was increased to 100 fathoms. There were no changes made to the Togiak herring fishery regulations at the December 2013 BOF meeting.

ADF&G OPERATIONS 2013

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 2013. The department will monitor marine VHF channel 7 from Dillingham and be available at the phone number listed at the top of this document. Fishing announcements and regular fishery updates will be communicated directly to each processor, published on the web and distributed by fax and email.

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