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2023 Bristol Bay Area Annual Management Report

by

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

Symbols and Abbreviations

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

Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

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

Mathematics, statistics

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

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2023 BRISTOL BAY AREA ANNUAL MANAGEMENT REPORT

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TABLE OF CONTENTS

Page

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABSTRACT

The *2023 Bristol Bay Area Annual Management Report* is the 62nd consecutive annual report of management activities of the Alaska Department of Fish and Game, Division of Commercial Fisheries staff in Bristol Bay. This report describes the information, decisions, and rationale used to manage the commercial salmon (sockeye *Oncorhynchus nerka*, Chinook *O. tshawytscha*, chum *O. keta*, pink *O. gorbuscha*, and coho *O. kisutch*) and Pacific herring (*Clupea pallasii*) fisheries in Bristol Bay each year. The 2023 inshore sockeye salmon run of 54.5 million fish was 10% above the preseason forecast of 49.7 million fish. Sockeye salmon dominated the inshore commercial harvest, totaling 40.6 million of the 41.0 million salmon commercially harvested. Total Bristol Bay sockeye salmon escapement was 13.9 million fish, and escapement goals were either met or exceeded in all systems with established goals. In total, 7,973 Chinook, 341,504 chum, 3,140 pink, and 17,565 coho salmon were also harvested in the commercial fishery. The Chinook salmon sonar estimate into the Nushagak River was 31,499, below the 55,000-fish lower end of the escapement goal range. The 2023 Togiak District herring preseason biomass forecast was 316,203 short tons. The Togiak District commercial herring fishery did not occur in 2023 because no processing companies participated. All 2023 commercial salmon harvest data are based on fish tickets; these data can change if more information becomes available.

Keywords: Pacific salmon *Oncorhynchus*, sockeye salmon *Oncorhynchus nerka*, Chinook salmon *O. tshawytscha*, chum salmon *O. keta*, coho salmon *O. kisutch*, pink salmon *O. gorbuscha*, Pacific herring *Clupea pallasii*, commercial fisheries, subsistence fisheries, exvessel value, harvest, Port Moller Test Fishery, genetics, Bristol Bay, Naknek, Kvichak, Egegik, Ugashik, Wood, Nushagak, Igushik, Togiak, Annual Management Report (AMR)

INTRODUCTION

MANAGEMENT AREA DESCRIPTION

The Bristol Bay management area (Area T) 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 for salmon (Naknek-Kvichak, Egegik, Ugashik, Nushagak, and Togiak) that correspond to major river systems. The management objective for each river is to achieve salmon escapements within established escapement goal ranges (Table 1; Vega et al. 2022) while providing harvest opportunity for fish in excess of those ranges, consistent with regulatory management plans (5 AAC 06.355–5 AAC 06.369).

COMMERCIAL FISHING PERIODS

Commercial fishing periods in Bristol Bay are announced by emergency orders, except in Togiak where there is an established salmon fishing schedule in regulation. Management biologists use real-time fishery information to make fishery decisions with the intent of meeting the management objectives outlined above. Emergency orders (EOs) are made publicly available using ADF&G's advisory announcement system, available at:

https://www.adfg.alaska.gov/index.cfm?adfg=cfnews.search.

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. Management of Bristol Bay salmon is primarily focused on the

inshore run of these species. The inshore run is those fish harvested within the designated commercial fishing districts of Bristol Bay and those counted at area escapement projects. Annual commercial harvest for the most recent 20 years (2003–2022) averaged 31.9 million sockeye, 37,091 Chinook, 1.1 million chum, 523,056 pink (even years only), and 97,620 coho salmon (Appendices A3–A8). Since 2003, the annual exvessel value of the commercial salmon harvest within Bristol Bay has averaged $191.4 million. Sockeye salmon were the most valuable and averaged $189.9 million annually (Appendix A22). The average subsistence harvest from 2011 to 2020 was 117,035 salmon, which includes an average sockeye salmon harvest of 90,741 (Jones and Neufeld 2022). Sport fisheries harvested all species of salmon, but most effort was directed toward Chinook and coho salmon.

Management of the commercial fishery in Bristol Bay is focused on discrete stocks. Harvests are directed at terminal areas around the mouths of major river systems, and 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 and/or adjusting weekly fishing schedules. Legal gear for the commercial salmon fishery includes both drift (150 fathoms) and set (50 fathoms) gillnets. The Alaska Board of Fisheries (BOF) passed a regulation in 2003 that allows 2 drift permit holders to fish concurrently from the same vessel and jointly operate up to 200 fathoms of drift gillnet gear. Drift gillnet permits are the most numerous in Bristol Bay with a total of 1,864 permits, of which 1,703 were registered to fish in 2023 (Appendix A2). There are 958 set gillnet permits in Bristol Bay, and 848 made at least 1 delivery in 2023 (Appendix A2).

2023 COMMERCIAL SALMON FISHERY

REGULATORY CHANGES

The Alaska Board of Fisheries (board) met in December of 2022 for the 3-year Bristol Bay regulatory cycle. Action taken by the board resulted in the following regulatory changes for subsistence and commercial fishing in the Bristol Bay fishery:

- Subsistence salmon fishing within the Naknek, Alagnak, and Wood River special harvest areas was restricted to set gillnets only.
- Subsistence salmon permits for the Naknek River may now be obtained online and from ADF&G offices including King Salmon, Dillingham, and Anchorage.
- A boundary line coordinate for Kvichak and Naknek Sections was changed to align the section boundary lines with the District boundary line at Johnson Hill.
- A new subsection was added to the Naknek River Sockeye Salmon Special Harvest Area (NRSHA) Management Plan that allows commercial fishing to occur in the NRSHA when escapement in the Naknek River exceeds the mid-point of the escapement goal range and is projected to exceed the upper end of the escapement goal range.
- The late season schedule in Ugashik, after July, is now consistent with the other eastside districts.
- The board adopted the Nushagak River King Salmon Action Plan (ADF&G 2023).
- The Togiak transfer date changed.
- The distance from shore for Nushagak set gillnets changed.

RUN STRENGTH INDICATORS

Fishery managers in Bristol Bay have several early indicators of sockeye salmon run size. These include the preseason forecast, the South Alaska Peninsula commercial salmon fishery, an offshore

test fishery operating from Port Moller, genetic stock identification, age composition information, early performance of the commercial fishery, inriver test fishery programs, and timely escapement information from a sonar project located on the Nushagak River and counting towers on the other Bristol Bay Rivers. These indicators are assessed based on the relative strengths of year classes, discrepancies from the forecast (relative to expected year class contributions), or differences in run timing, which are important to successful management of the commercial fishery. These pieces of information may not give a correct assessment of run size individually, but collectively they allow broad-scale examination of inseason data.

PRESEASON FORECASTS

Total inshore (excluding harvest in other areas) sockeye salmon production for Bristol Bay in 2023 was forecast to be 49.7 million (Head and Vega 2022; Table 2). The Bristol Bay sockeye salmon inshore harvest was predicted to be 36.7 million fish (Table 2). 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 2023 was the sum of individual predictions for 9 river systems (Kvichak, Alagnak, Naknek, Egegik, Ugashik, Wood, Igushik, Nushagak, and Togiak) and 4 major age classes (age 1.2, 1.3, 2.2, and 2.3, plus age 0.3 and 1.4 for Nushagak; Table 3). Adult escapement and return data from brood years 1972–2018 were used in the analyses.

Forecasts for each age class returning to a river system were derived from models based on the relationship between adult returns of that age class and either total returns or sibling returns from the same brood years (Head and Vega 2022). In general, models with statistically significant parameters and/or the best past performance (accuracy and precision) were chosen. Performance was evaluated using mean absolute deviation, mean absolute percent error, mean arctangent absolute percent error, and mean percent error between forecasted and observed returns. These performance metrics were calculated and considered for each model across the most recent 3-year and 5-year timeframes. In certain cases, competing models were averaged in a hybrid model approach. The forecast range is the upper and lower values of the 80% confidence interval for the total run forecast. The confidence bounds were calculated from the deviation of actual runs and run forecasts from 2003 through 2022.

PORT MOLLER TEST FISHERY

From 1967 to 1985, the Alaska Department of Fish and Game (ADF&G) operated a test fishery near the community of Port Moller, approximately 150–200 miles southwest of the Bristol Bay fishing districts. A large vessel (70–100′) fished gillnets at specific stations on a transect line, perpendicular to the migration path of sockeye salmon returning to Bristol Bay. Collected data were used to estimate strength, timing, age, and size composition of the run about 6–9 days prior to arrival at the commercial fishing districts. The project was popular with the salmon industry because it gave an early indication of run size, which influenced production capacity and the price paid to commercial fishing participants. The project did not operate in 1986. The project was operated from 1987 through 2002 by the Fisheries Research Institute (FRI; University of Washington, Seattle WA), with financial assistance from industry. The project was then operated from 2003 through the present by Bristol Bay Science and Research Institute (BBSRI), with financial and technical support from ADF&G and industry (Raborn and Link 2023).

Since 2018, the project has been using a second vessel to extend the sampling transect and further investigate migratory pathways traveled by the returning sockeye salmon. In addition, some sites between traditional stations were sampled to assess possible patchiness of the run along the test fishing transect. A deeper net was deployed, beginning in 2019, to assess fish traveling deeper in the water column.

In 2023, the Port Moller Test Fishery (PMTF) operated from June 12 to July 13 (Figure 1). There was only 1 complete day lost to weather in 2023; however, some stations were periodically missed due to rough seas. Between the 2 vessels, coverage was almost complete along a line between Port Moller and Cape Newenham for most of the project duration. Fish were present throughout the transect, with stations 4–10 having the highest mean station indices.

GENETICS

Over the last 20 years, ADF&G has built and tested a genetic baseline capable of identifying salmon stock compositions of mixed-fishery samples from within Bristol Bay. The genetics program has 2 primary objectives: (1) to provide managers, researchers, and permit holders with a preliminary estimate of stock compositions of sockeye salmon returning to Bristol Bay through the PMTF (Dann et al. 2013); and (2) to provide researchers with sockeye salmon stock composition estimates, by year, within fishing districts to estimate total runs and develop brood tables (Cunningham et al. 2018, Dann et al. 2011).

Genetic sampling was added to the PMTF in 2004. The intent was to use inseason genetic analysis to identify components of the annual sockeye salmon run in time to inform management decisions for individual stocks. Historically, ADF&G genetics staff completed analysis and delivered results in 3 to 5 days depending on several factors (e.g., timing of airline flights or weather on the fishing grounds). Prior to the 2021 season, an onboard genetics lab was installed on the R/V *Ocean Cat* to test the feasibility of genotyping at sea to reduce vessel transit time and provide more timely results (i.e., within 3 days of samples being taken) to management staff and fishery participants. This proved to be a success and has continued in subsequent seasons. The travel time for fish from Port Moller to Bristol Bay is approximately 6 to 9 days depending on several factors (e.g., district, water temperature, or wind). Therefore, results from genetic sampling are typically available before the fish they represent reach the fishing districts of Bristol Bay (Figure 2).

ECONOMICS AND MARKET PRODUCTION

In 2023, the exvessel value of inshore commercial salmon harvest was an estimated $117.6 million (Table 4), which was 38% below the $191.4 million 20-year average (2003–2022) (Appendix A22). The average sockeye salmon price in 2023 was $0.52/pound before incentives and postseason adjustments. Prices paid for the other salmon species ranged from $0.06/pound for pink salmon to $0.97/pound for Chinook salmon (Table 4).

During the 2023 season, 43 processors/buyers registered to process fish from Bristol Bay. Of those processors, 2 companies canned, 40 froze, 17 exported fresh, 2 cured salmon, and 12 extracted roe. Product was exported by air by 30 companies and exported by sea by 26 companies (Table 5).

RUN AND HARVEST PERFORMANCE BY SPECIES

Sockeye Salmon

The 2023 inshore sockeye salmon run of approximately 54.5 million fish was 10% above the preseason forecast of 49.7 million (Table 2). The sockeye salmon runs to the Alagnak, Igushik, and Nushagak Rivers came in under forecast, with the remaining river systems coming in above forecast in 2023. Sockeye salmon dominated the inshore commercial harvest, totaling 40.6 million fish, which is the 6th largest sockeye salmon harvest in Bristol Bay since harvest records began in 1893 (Table 6; Tiernan et. al 2023). Sockeye salmon sustainable escapement goals (SEG) were met or exceeded in all systems with established goals (Tables 1 and 2; Vega et al. 2022).

The average weight of sockeye salmon (all ages) during the 2023 commercial fishing season was 5.5 pounds. This was just below the 20-year average (2003–2022) weight of 5.6 pounds (Appendix A20). Average weight decreased from a 6.0-pound average in 2013 as run sizes increased (Figure 3; Appendices A11 and A20).

Chinook Salmon

The 2023 inshore commercial harvest was 7,973 Chinook salmon (Table 6). Harvests in all 5 districts were below the 20-year average (2003–2022). Harvest in the Nushagak District (the largest producer of Chinook salmon in Bristol Bay) was 5,785 fish, which was below the 20-year average (2003–2022) of 27,607 fish. The inshore commercial harvest of Chinook salmon from 2020 to 2023 ranged from 6,944 to 10,006, which are the 4 lowest annual harvests since at least 1955 (Appendix A4). The low harvest in recent years correlates with reduced chinook abundance and the implementation of conservative management strategies to reduce harvest and increase escapements.

The Nushagak River Chinook salmon inriver run estimate at Portage Creek Sonar was 31,499 fish, which does not meet the escapement goal of 55,000–120,000 (Tables 1 and 7; Appendix A17). However, it is likely that some Chinook salmon went undetected at the sonar because they were masked by the high sockeye salmon passage. It has been observed in previous years that when sockeye salmon passage is high at the sonar project site, test fishing nets become saturated; this situation has been shown to bias the Chinook salmon count low. This was supported by reported inseason sport fish catch rates along with postseason aerial surveys that indicated the run was larger than the final sonar count.

Chum Salmon

In 2023, the inshore commercial harvest of 341,504 chum salmon was the 4th lowest harvest on record but slightly above the past 3 years. Chum salmon harvests were below the 20-year averages (2003–2022) in all districts (Appendix A5). The Nushagak River sonar project is the only chum salmon escapement assessment project in Bristol Bay. The escapement of 110,379 fish was below the lower-bound SEG of 200,000 (Tables 1 and 7; Appendix A19).

Pink Salmon

Bristol Bay has a dominant even-year pink salmon cycle. In 2023, the baywide pink salmon harvest was 3,140 fish (Table 6 and Appendix A6). There is a lower-bound SEG of 165,000 for even years only that is based on the Nushagak River sonar. However, the sonar project has not operated during the pink salmon run in recent years because of budget priorities.

Coho Salmon

The inshore commercial harvest of coho salmon was 17,579 fish, which was below the 20-year average (2003–2022) of 97,620 fish. The harvest was below average in all districts (Appendix A7). The largest commercial harvests of coho salmon were in the Egegik and Nushagak districts, where 7,963 and 7,872 fish were harvested, respectively (Table 6). There is an established SEG of 60,000–120,000 based on the Nushagak River sonar project; however, in 2023 the project operated until July 25 because of budget priorities and did not report a coho salmon count (Tables 1 and 7).

SEASON SUMMARY BY DISTRICT

Naknek-Kvichak District

The 2023 inshore run forecast for the rivers in the Naknek-Kvichak District was 18.4 million sockeye salmon, composed of a projected 7.8 million for escapement and 10.6 million for harvest. The run forecast by river system was 7.9 million for the Kvichak River, 4.1 million for the Alagnak River, and 6.4 million for the Naknek River (Table 2). The SEG for the Naknek River is a range of 800,000–2.0 million sockeye salmon. The SEG for the Kvichak River is a range of 2.0–10.0 million sockeye salmon. The Alagnak River has a lower-bound SEG of 210,000 sockeye salmon (Table 1). The actual total run to the Naknek-Kvichak District in 2023 was 19.3 million sockeye salmon, consisting of a commercial harvest of 13.3 million and a total escapement of 6.0 million (Appendix A12).

The department does not forecast Chinook, chum, coho, or pink salmon for systems in Naknek-Kvichak District. Commercial harvest of Chinook salmon has remained relatively small because of a mesh size restriction that prohibits gillnets with a mesh size larger than 5.5 inches from June 1 until July 22 in the Naknek-Kvichak, Egegik, and Ugashik Districts. Additionally, the *Naknek-Kvichak District Commercial Set and Drift Gillnet Sockeye Salmon Fisheries Management and Allocation Plan* (5 AAC 06.364(f)) directs the department to open commercial fishing periods for drift gillnets only between the 7-foot flood and 7-foot ebb tide stage for the conservation of Chinook salmon.

Sockeye salmon counting towers were operated on the Naknek, Kvichak, and Alagnak Rivers during the 2023 season. Fish counts were started at the Naknek River tower on June 20, the Kvichak River tower on June 22, and the Alagnak River tower on July 1 (Table 8).

The early season fishing schedule opened fishing for both gear groups in the Naknek-Kvichak District. Fishing periods were from 9:00 AM Monday until 9:00 AM Friday, beginning 9:00 AM Thursday, June 1, and ending 9:00 AM Friday, June 23. The first deliveries occurred on June 16 and the early season fishing schedule ended with a harvest of almost 29,000 sockeye salmon (Table 9). Beginning June 24, subsequent fishing periods were based on inseason indicators of abundance for the Naknek, Kvichak, and Alagnak Rivers.

Drift gillnet effort was expected to be low in the Naknek-Kvichak District early in the season because of recent high harvests and earlier run timing in other districts. In 2017, 2018, 2019, 2021, and 2022 the Nushagak District experienced sockeye salmon harvests that were 3 to 6 times larger than the historical average. Nushagak, Wood, and Egegik Rivers had large forecasts again for 2023 (Tables 2 and 3). The Nushagak and Egegik districts typically experience earlier run timing than the Naknek-Kvichak District, and this pattern has been amplified in the previous 8 seasons when substantial harvests in the Naknek-Kvichak District did not occur until July. These trends in run sizes and run timing have led to a popular strategy for drift gillnetters to start the season in the

Nushagak or Egegik District and transfer to Naknek-Kvichak or Ugashik District later in the season. Through June 27, 1,511 permits had registered to fish in Bristol Bay, but only 233 permits had registered to fish in the Naknek-Kvichak District (Table 10).

Harvest from a 10-hour fishing period June 24 in Naknek-Kvichak District for both gear groups yielded only 14,280 sockeye salmon. Both Naknek and Kvichak towers had 0 fish observed on the first day of counts. Escapement remained low through June 25 with less than 500 sockeye salmon estimated to have passed the Naknek River Tower. Fishing was closed on June 25 and 26, but on the morning of June 26 subsistence reports from setnets in the Naknek River indicated that fish had arrived. There was an announcement at 9:00 AM for an 8.5-hour period to start at 6:30 AM, June 27. Verbal reports during the fishing period indicated low to moderate catches. Harvest from this period was 182,288 sockeye salmon and 19 Chinook salmon from 179 drift gillnet deliveries and 177 set gillnet deliveries (Table 9). Naknek River escapement through the afternoon of June 27 was up to about 65,000 fish and on track with the midpoint of the escapement goal curve. Total escapement on the Kvichak River was only 168 fish, with 30,000 estimated in-river (Table 11). Commercial fishing during the next 2 tides was closed.

Chinook salmon have been experiencing low productivity across the state, including in the Naknek and Alagnak Rivers. Chinook catches in both the commercial and sport fisheries were drastically lower beginning in 2020 (Appendix A4). With low to moderate numbers of sockeye around, a decent number of Chinook salmon in the commercial and reported sport fish catches, the department adopted a conservative fishing approach to help boost Chinook salmon escapements while the volume of sockeye salmon was low enough to allow breaks in fishing time.

An 8-hour fishing period began at 9:00 PM, June 28. The catch from this period was low with 178,132 sockeye salmon and 16 Chinook salmon from 243 drift gillnet deliveries and 167 set gillnet deliveries (Table 9). The fishery was closed for the next 2 tides and opened again for an 8-hour period that started at 8:00 AM on June 30. Harvest and participation increased with a catch of 288,446 sockeye salmon from 269 drift gillnet deliveries and 246 set gillnet deliveries. On June 29, the Kvichak River tower escapement was the highest to date at 27,804, but the daily escapements decreased over the next 6 days. From June 28 to July 2, Naknek River escapements ranged from 2,292 to 18,576 sockeye salmon (Table 8). On July 1 and 2, fishing opened on just the daytime tide for both gear groups in the full district. At 3:00 PM on July 2, an 8-hour period was announced for the same tide the following day. However, toward the end of the fishing period on July 2 there were reports of a large volume of fish at the mouth of the river. Also, subsistence reports from the morning indicated that escapement was going to increase. At 6:00 PM on July 2, an 18.5-hour period was announced to start at midnight July 3. Harvest from this 18.5-hour period was 1,485,067 sockeye salmon and there were only 430 drift gillnet permits registered to fish in the district. Naknek River escapement was 79,188 on July 3 and 195,582 on July 4 for a cumulative of 406,542, which is halfway to the lower bound of the escapement goal range.

On July 3, Kvichak River total escapement was only at 79,000 and an aerial survey estimated only 2,000 fish in the river. Harvest allocation was 87% drift gillnet, 9% Naknek set gillnet, and 4% Kvichak set gillnet. The *Naknek-Kvichak District Commercial Set and Drift Gillnet Sockeye Salmon Fisheries Management and Allocation Plan* (5 AAC 06.364(b)) specifies 84%, 8%, and 8% respectively. With the lack of escapement and harvest allocation on the Kvichak (West) side of the district, the drift fleet was restricted to the Naknek Section only for an 18.5-hour period on July 4, whereas the set gillnet fleet went on daily extensions. The harvest on July 4 was only 383,389 sockeye salmon. However, the Kvichak inriver estimate increased to 100,000 fish

(Table 11). On July 5, the drift gillnet fleet was restricted to the Naknek Section during the morning tide and allowed to fish in the entire district on the afternoon/evening tide. Harvest from these 2 periods was 1,068,661 sockeye salmon (Table 9).

Through July 5, the Kvichak River cumulative escapement was only 95,946. From midnight to 2:00 PM on July 6, another 95,994 had passed and by the end of the day cumulative escapement was up to 413,334 (Table 8). This increased escapement finally put the Kvichak River on the lower bound of the escapement goal curve. With more Kvichak fish present in the district a conservative approach was taken to attempt to meet the mid-point of the escapement goal range (4 million sockeye salmon) as outlined in the *Bristol Bay Commercial Set and Drift Gillnet Sockeye Salmon Fisheries Management and Allocation Plan* (5 AAC 06.355(a)). From July 6 to 11 the drift gillnet fleet fished every high tide in the Naknek Section, while the set gillnet fleet was given daily extensions in both sections, except on July 8 and 9 when the set gillnet fleet was closed for 2 tides in a row. Sockeye salmon harvest ranged from 95,881 on July 7 to 899,892 on July 10 (Table 9). During this time, severe weather with strong easterly winds are thought to have pushed fish away from the eastside districts. On July 9, Naknek River daily escapement was only 3,762 fish.

On the afternoon of July 11, escapements were quickly approaching the lower bound of the escapement goals on Naknek and Kvichak Rivers. The Alagnak River escapement goal had been met on July 7 (Tables 1 and 8). With escapement goals nearly assured, the drift gillnet fleet was given an 8.5-hour period in the full district that started at 7:30 AM on July 12. The harvest was a disappointing 221,807 sockeye salmon that day. By the morning of July 12, the Naknek River escapement had surpassed the lower bound of the escapement goal range. There was also good news from the Kvichak inriver test fishery when they reported an average tidal index from the morning tide of 3,142 fish per 100 fathom hours that resulted in an Estimated River Fish (ERF) of 500,000 fish between the test fish project and the counting tower (Table 11). Through July 11, cumulative escapement at the tower was at 1,607,406, so confidence was high that the lower bound of the escapement goal would be met within the next 2 days. On average, it takes fish 2 days to swim from the test fish project at Levelock to the counting tower at Igiugig, a distance of 69 miles. An aerial survey of the Kvichak River was carried out by the research biologist on the afternoon of July 12 with a Robinson R44 helicopter. Another tide's worth of fish had made it into the river and the inriver estimate based on the survey, test fish indices, and hourly passage rate was 1.1 million fish. On July 13 and 14, there were 1,094,328 sockeye salmon counted past the tower (Table 8).

After 2 days of very slow fishing on July 11 and 12, a very large, fast-moving push of fish arrived at the outside district line in the middle of the bay at about 11:00 AM on July 13. Many permit holders reported having never seen fish move so aggressively before. The fishing period was an 8-hour full district period for the drift fleet that was scheduled to close at 4:30 PM. At 3:00 PM, there was an announcement to extend the period for 2 hours until 6:30 PM. Harvest was 1.9 million sockeye salmon, which was the largest daily harvest since 1999. On July 14, the fish spread throughout the district and the harvest was another 1.3 million sockeye salmon (Table 9).

On July 13, the fishing period for the set gillnet fleet was extended until the end of the emergency order period, 9:00 AM July 17. The drift gillnet fleet had 19-hour periods based around the high tides on July 14, 15, and 16. The district was open to continuous fishing from 1:00 AM, July 17, until 9:00 AM, August 6. The fall fishing schedule was 9:00 AM Monday to 9:00 AM Sunday until the season closed on September 30. Harvest tapered off to less than 10,000 fish on July 30, and the last delivery was made on August 21.

Registration peaked toward the end of the registration period of June 1 to July 17 with 713 drift gillnet permits registered to fish on July 16 (Table 10). The harvest percentages during the allocation period of June 1 to July 17 in the Naknek-Kvichak district was 81% drift gillnet, 10% Naknek set gillnet, and 9% Kvichak set gillnet (Appendix A9).

Run timing plays an important role in run assessment and management of the fishery. Late run timing has been observed since 2015 and this trend continued in 2023. The midpoint of the sockeye salmon run was July 12, which is 5 days later than the most recent 20-year average (2003–2022). The midpoint of the harvest occurred on July 12. The 2 largest daily harvests of the season happened 10 days apart with 1,485,067 caught on July 3 and 1,904,488 caught on July 13 (Table 9).

The counting tower operations were successful in 2023. The Naknek River tower operated through July 21 and had a final escapement estimate of 1,156,206 sockeye salmon. The Kvichak River tower operated through July 27 and had a final escapement estimate of 3,751,686 sockeye salmon. The Alagnak River tower also operated through July 27 and had a final escapement estimate of 1,099,050 sockeye salmon (Table 8). Naknek and Kvichak River escapements were within the respective escapement goal ranges, and Alagnak River escapement was above the lower-bound escapement goal (Tables 1 and 2).

The total harvest of sockeye salmon was 13.3 million, 36% above the 20-year average (2003–2022) harvest of 9.8 million fish and the 6th highest harvest in those years (Appendix A3). The total harvest of Chinook salmon was 1,036 fish and the 4th year in a row below the 20-year average (2003–2022) harvest of 1,721 (Appendix A4). The chum salmon harvest of 55,091 fish was the 4th year in a row of similarly low catches (Appendix A5). There was a commercial harvest of 278 pink salmon and 1,126 coho salmon (Appendices A6 and A7). This harvest was processed by 22 processing companies that purchased fish in the Naknek-Kvichak District in 2023 (Table 5).

Egegik District

The 2023 Egegik River total inshore run of sockeye salmon was forecast to be approximately 11.1 million fish consisting of 9.4 million fish for harvest and 1.7 million fish for escapement. The Egegik River SEG range is 800,000–2.0 million fish. The actual total run to the Egegik River in 2023 was 14.6 million sockeye salmon consisting of a harvest of 13.0 million and an escapement of 1.6 million (Table 2).

Commercial salmon fishing opened in the Egegik District on June 1, with a schedule of 9:00 AM Monday to 9:00 AM Wednesday, and 9:00 AM Thursday to 9:00 AM Friday. This schedule was implemented to allow for escapement of Chinook salmon while providing opportunity on early returning sockeye salmon. Effort and harvest was relatively small through the first couple weeks of the season (Table 12). The early season schedule closed on June 16, with subsequent openings being determined by inseason indicators of abundance.

Two assessment projects operate in the Egegik River and provide passage and escapement data used for timely management of the commercial fishery. The counting tower located at the outlet of Becherof Lake began operations in the evening of Friday, June 17, with notably cold water (4°C) exiting the lake. Initial counts from the first couple days were low. Daily inriver test fishing, which provides an index of sockeye salmon passage into the lower Egegik River, just upstream of Wolverine Creek, also began operations on June 17. Most of the initial catches indicated small numbers of fish entering the river; however, the evening tides on June 17 and 18 had some drifts

that indicated passage rates at the tower may begin to increase (Table 13). The district remained closed through the weekend.

Although escapement had not increased, a commercial fishing period for both gear groups was announced for the afternoon of June 19 to gauge if fish were starting to enter the district after the weekend closure. Harvest from this period totaled 73,519 sockeye salmon, showing an increase in abundance (Table 12). Total escapement continued to track below needed levels through the morning of June 20. It was thought that escapement counts would have increased by this time due to inriver test fish data from a couple days prior (Table 13). An aerial survey was flown over the lagoon, located just below the tower site, and indicated that a large number of fish were holding in the lagoon, possibly due to the colder-than-normal river temperature. It was noted that they appeared to be mobilizing and counts would begin to improve. Over the next 48 hours escapement counts would increase and begin to track at the escapement goal curve, with a cumulative total of 56,500 fish through June 22 (Table 13). Because of this, commercial fishing periods were announced daily on June 21–23 for 1 tide per day. Combined harvest for these 3 days was about 638,000 sockeye salmon, with over half of those being harvested on June 22 (Table 12).

After the fish that had built up in the lagoon passed the tower, the next few days experienced a sharp decrease in daily escapements and abundance within the district. Between June 24 and June 27, the Bristol Bay area experienced periods of sustained 20–25 mph easterly winds with gusts exceeding 30 mph. Winds at this speed and direction have been known to slow fish movement into the eastside districts, while also reducing the efficiency of fishing gear. Additionally, the inriver test fish project had not indicated any meaningful movements of fish into the river since June 18 (Table 13). The district was closed on June 24 to allow for fish to spread throughout the district and provide additional escapement. Genetic stock composition estimates at PMTF from June 21–June 24 indicated a sizable abundance (>30%) of Egegik-bound fish (Figure 2). Typically, the travel time between PMTF and the district is 5–7 days. Commercial fishing periods were announced for June 25–27 for 1 tide per day. The period on June 25 was set gillnet only, in an attempt to balance harvest percentages. These fishing periods were also intended to have gear ready in case a substantial push of fish materialized. Combined harvest from these periods totaled just 148,208 sockeye salmon (Table 12). There was also a decrease in delivery numbers, indicating that the weather was likely impacting fishing participation in the district. Daily escapement counts during these same 3 days averaged just 1,600 fish per day. The total through June 27 was 77,346 fish, which tracked below the escapement goal curve (Table 8). With low abundances of fish in the district and no indications that escapement was going to increase, the district was closed on June 28.

The winds had subsided by the morning of June 28 and there was a quiet anticipation that a push would be on the horizon. Inriver test fish data from the morning tide indicated that a small group of fish had moved through the district and tower counts should begin to improve compared to the previous several days (Table 13). By the afternoon radio call, passage rates had increased at the tower and a commercial period was announced for June 29. Harvest from this period was just 129,217 sockeye salmon (Table 12); however, reports from the fleet indicated that a large abundance of fish was building along the northwest corner and western boundary of the district. Daily escapement had improved for June 28 and 29 but was tracking below the escapement goal curve. A commercial fishing period was announced for June 30. Initial reports from the start of the period indicated large catches throughout the district. The inriver test fish project also experienced their largest indices to date (Table 13). Another period was announced for the following tide. The

harvest from June 30 was about 1.1 million fish, bringing the season total to 2.1 million (Table 12). Commercial fishing continued for each tide on July 1 and 2, producing a combined harvest of 1.9 million fish. The highest daily harvest occurred on July 1 (Table 12) and passage rates at the tower significantly increased with daily escapements of 132,996 and 213,319 fish between July 1 and 2, respectively. This brought the total escapement to 465,030 (Table 8). With the run materializing and escapement numbers tracking with the escapement goal curve, commercial fishing time was increased.

The timeframe from July 3 through July 9 was one of declining overall abundance compared to the previous days. Daily escapement counts ranged from 137,646 on July 3 to 16,266 fish on July 9, bringing the season total through July 9 to 801,120 sockeye salmon, which exceeded the lower bound of the established goal range (Tables 1 and 8). Commercial fishing opportunities were announced for each tide over this timeframe. Daily harvests ranged from 877,654 on July 6 to 114,895 on July 8, with a combined harvest of 3.2 million fish (Table 12). Additionally, between July 7 and July 9 Bristol Bay experienced similar weather as noted in late June, which potentially affected daily harvests (Table 12). With lower abundances being experienced in the district and decreasing daily escapement counts, management shifted to a less aggressive approach until conditions improved.

By July 10 the strong winds had subsided. PMTF indicated that there were still good numbers of fish destined for Egegik prior to this most recent wind event. However, commercial fishing periods were shifted to just 1 tide a day July 10–12. Combined harvest from these 3 days was 692,000 fish, a slight increase from July 8 and 9 (Table 12). Daily escapements improved with the reduction in fishing time (Table 8). Commercial fishing was open again on July 13 and right out of the gate, reports came in of very strong catches. Passage rates at the tower remained steady and another period was announced for the following tide. Harvest from July 13 was almost 907,000 sockeye salmon, which brought the season total to 8.8 million (Table 12). Management shifted back to an aggressive approach to provide opportunity on the harvestable surplus of sockeye salmon.

From July 14 through July 17, overall catches began to decrease but remained strong for this point of the season (Table 12). Escapement had a notable bump during this timeframe as 530,200 fish were counted, bringing the season total to 1.4 million or the midpoint of the goal range (Table 8). The transfer period was not waived through EO this season as the midpoint was not reached until after the allocation period had ended at 9:00 AM on July 17. The combined harvest during this timeframe was 1.9 million fish (Table 12). Commercial fishing in Egegik District was liberalized to 24 hours per day from July 17 through August 6, before the fall schedule took effect beginning August 7. At the end of the allocation period the cumulative catch was 10.5 million sockeye salmon and an additional 2.2 million fish were harvested before the last buyer ended operations for the year on September 4.

The 2023 total run of sockeye salmon to the Egegik District totaled 14.2 million, with a harvest of 12.6 million and an escapement of 1.6 million fish (Appendix A13). The run was 31% above forecast (Table 2) and exhibited an average run timing. The midpoint of July 7 was near the 20-year average (2003–2022) of July 6. Harvest of all species in 2023 was 12.7 million fish (Table 12). The escapement goal was met with a final escapement of 1.6 million sockeye salmon (Table 6).

The 2023 Egegik sockeye salmon run was composed of mostly ocean-age-3 fish (Table 14), which originated from 2017 and 2018 escapements of 2.6 million and 1.6 million sockeye salmon,

respectively (Appendix A10). Age-1.3 and 2.3 were above forecast, whereas age-1.2 and 2.2 came in below forecast. Age-2.3 were the most abundant age class, making up 46.1% of the 2023 run (Table 14).

During the period from June 1 to July 17 in 2023, a total of 361 hours were fished by the drift gillnet group and 470 hours were fished by the set gillnet group. This equates to 32.7% and 42.6%, respectively, of the 1,104 available hours (Table 12). By the end of the allocation period on July 17, harvest percentages were at 81% drift gillnet and 19% set gillnet (Appendix A9).

The 2023 harvest of 12.6 million sockeye salmon in the Egegik District ranked 7th highest on record and above the 20-year average (2003–2022) of approximately 8.4 million fish (Appendix A3). The fishery harvested 89% of the run into the district, similar to the 20-year average (2003–2022) of 84% (Appendix A13). Harvest peaked at 1.1 million fish on July 1 (Table 12). The highest daily escapement occurred on July 2 when 213,400 fish were counted (Table 8). Effort peaked on June 23, when 466 drift gillnet permits were registered in the district, including 116 dual permits (Table 10). There were 12 processors registered to purchase fish in the Egegik District in 2023 (Table 5).

Commercial harvest of other salmon species in the Egegik District was 51,407 fish, or about 0.4% of the total salmon harvest (Table 12). The Chinook salmon harvest was 286 fish, which was below the 20-year average (2003–2022) of 757 fish (Appendix A4). The district chum salmon harvest of 43,042 fish was below the 20-year average (2003–2022) of 76,011 fish (Appendix A5). Pink salmon harvest was 116 (Appendix A6). The coho salmon harvest of 7,963 fish was below the 20-year average (2003–2022) of 14,092 fish (Appendix A7).

Ugashik District

The 2023 Ugashik River total inshore run of sockeye salmon was forecast to be approximately 3.3 million fish, consisting of 2.5 million fish for harvest and 730,000 fish for escapement. The Ugashik River SEG range is 500,000 to 1.4 million fish. The actual total run of sockeye salmon to Ugashik District was 4.3 million fish consisting of a harvest of 3.2 million and an escapement of 1.1 million (Table 2).

Commercial fishing in the Ugashik District opened on June 1 to a fishing schedule of 9:00 AM Monday to 9:00 AM Friday (Table 15). Because the preseason forecast for the Kvichak River allowed all fishing districts to start the season in their full areas, the schedule of 4 days per week was continued until 9:00 AM Friday, June 23. Effort and harvests were relatively small during this timeframe (Table 15). Additional fishing time after the schedule was dependent on inseason indicators of abundance.

There are 2 assessment projects that operate in the Ugashik River that provide passage and escapement data used for timely management of the commercial fishery. The Ugashik inriver test fishery is operated about 3 miles upstream of Ugashik Village and provides a daily index of sockeye salmon passage into the lower part of the Ugashik River. It became operational on June 24. The counting tower project, used to assess escapement, is operated about 24 miles upstream of Ugashik Village at the outlet of Lower Ugashik Lake. It began operations on June 28 (Table 16).

Initial inriver test fish catches indicated low numbers of fish moving upriver (Table 16). Additionally, PMTF did not indicate any significant numbers of fish bound for Ugashik to date (Figure 2).The district remained closed until June 27, when a commercial period was opened to provide insight on run entry and strength into the district. Harvest from this period did not show

any signs of improvement with just 15,300 fish being harvested, mostly by drift gear along the outside portions of the district (Table 15). The counting tower project counted 126 fish on the first day of counts. This corroborated inriver test fishery data from the previous days, showing that there was a low abundance of fish in river (Table 16).

As inriver test fish data and tower counts continued to be small, the coming days experienced some small improvements in the district. Commercial fishing remained closed until a period was announced for June 30. Although escapement was tracking well below the escapement goal curve, the relatively small drift effort combined with short duration opener was a low-risk management strategy for assessing run abundance in the district. Harvest on June 30 doubled the catch from the previous period at 30,346 fish but was below average for the date (Table 15). With still no improvement in escapement and PMTF still indicating small numbers of Ugashik bound fish entering the bay, conservative management continued. The next commercial fishing periods were announced for July 3 and July 5 to evaluate if the improving trend would continue. Harvests from these periods did indicate a building abundance (Table 15). Coinciding with the increasing commercial harvest, inriver test fish began to experience their first notable catches of the season, starting on July 3 (Table 16). This was a good signal that fish were beginning to move, however, with total escapement through July 5 only at 4,500 fish, the district was closed on July 6 to allow additional fish to escape through the district.

Abundances increased over the subsequent days, which lead to consistent fishing opportunities. During the evening tide on July 6, inriver test fish data experienced one of their highest daily indices of the season (Table 16). This elevated passage continued into the morning of July 7 and a commercial period was announced for the evening tide. Harvest from this period was 185,700 sockeye salmon, which was nearly double that of the previous period (Table 15). This was an above average daily harvest for this date of the season. During this same tide, inriver test fish data suggested that passage into the river continued at an elevated level (Table 16). The tower counts began to increase on July 7, with the highest daily escapement count to date, of almost 11,000 fish. These fish were the first part of the abundance increase that was first detected at the test fishery on July 3, showing a travel time of approximately 4-5 days. Commercial fishing periods were announced for July 8 and 9, due to test fish data indicating that the escapement counts would continue to increase over the coming days. Harvest from these periods was 156,000 and 119,100 fish, respectively (Table 15). During this timeframe Ugashik District experienced strong southeasterly winds, likely decreasing fishing efficiency. Total harvest through July 9 was about 737,500 sockeye salmon, with most of it being harvested over the most recent periods (Table 15). Escapement counts increased over these 2 days, but not to the degree that was anticipated based on the test fish data. Age data from the district catch was made available on July 8 and age-1.2 fish were returning well below their forecasted proportion. With escapement still tracking low, shifting to a more conservative management strategy was needed to increase confidence in achieving the escapement goal.

The weather began to improve on July 10, with escapement counts following suit shortly after. Between July 10 and 12, inriver test fish data began to trend downward but still suggested good numbers of fish moving upriver (Table 16). Aerial surveys were carried out on July 11 and 12 to determine if fish were holding in the lagoon due to the recent windstorm. Sizable schools of fish were observed in the upper part of the lagoon and along the northern shore, indicating that they were starting their push to the lake. Daily escapement on July 12 was 110,418 fish, bringing the season total to 258,440, on track with the midpoint of the escapement goal range (Table 8).

Commercial fishing periods were announced for July 13 and July 14 with reduced hours. The harvest from these periods was about 364,000 sockeye salmon, indicating there was still an abundance of fish in district (Table 15). Escapement over those same 2 days totaled 182,622, increasing the season cumulative to 441,062 (Table 8). With the lower end of the escapement goal (500,000 fish) likely to be met soon, and inriver test fish data suggesting the passage rate at the tower would continue for the foreseeable future, commercial fishing periods continued through the allocation period on July 17 with increased hours for each period (Table 15). On July 15 the set gillnet fleet did not fish because of a suspension by the processor. Escapement counts remained elevated with an additional 192,726 fish being counted on July 15 and 16, bringing the total to 633,788 fish and exceeding the lower bound of the goal (Table 16).

Commercial fishing was liberalized on July 17 to 24 hours per day until August 4, when the fall season schedule took effect. Throughout the rest of the season another 707,000 sockeye salmon were harvested, with the last deliveries occurring on August 15 (Table 15). By the end of the allocation period (July 17), set gillnet permit holders caught approximately 19% of the sockeye salmon harvest and drift gillnet permit holders caught 81%. The allocation specified in the regulation is 10% set gillnet and 90% drift gillnet (Appendix A9). Between June 1 and July 17, set gillnet permit holders were provided a total of 424 hours of fishing time and drift gillnet permit holders were provided 380 hours (Table 15).

The Ugashik District commercial catch of sockeye salmon was approximately 2.3 million fish, which is below the 20-year average (2003–2022) of 3.4 million fish (Appendix A3). The sockeye salmon escapement to the Ugashik River of 1,128,896 fish achieved the SEG range of 500,000–1.4 million fish (Tables 1 and 8). The 2023 total run of sockeye salmon to the Ugashik District of 4.3 million fish was below the 20-year average (2003–2022) of 4.7 million fish (Appendix A14). The 2023 Ugashik District sockeye salmon fishery harvested approximately 67% of the sockeye salmon run to the district, compared to the 20-year (2003–2022) average harvest rate of 72% (Appendix A14). The midpoint of the escapement was July 16 compared to the 20-year (2003–2022) average of July 12. There were 10 processors registered to purchase fish in the Ugashik District this season (Table 5).

The harvest of 271 Chinook salmon was below the 20-year average (2003–2022) of 955 fish (Appendix A4). The chum salmon harvest of 17,227 fish was below the 20-year average (2003–2022) of 65,473 fish (Appendix A5). Historically, Chinook and chum salmon escapements have been assessed via 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. Pink salmon harvest was 42 fish (Appendix A6). The harvest of coho salmon was incidental to sockeye salmon in 2023 with a harvest of 211 fish (Appendix A7). In 2023, escapement surveys were not flown due to budget constraints.

Nushagak District

The 2023 inshore run forecast for the Nushagak District was 16.3 million sockeye salmon with 2.6 million projected for escapement and 13.7 million projected for harvest. The run forecast for each river system was 7.8 million fish expected to return to the Wood River, 6.8 million for the Nushagak River, and 1.7 million for the Igushik River (Table 2). The 2023 Nushagak District total inshore sockeye salmon run was 16.9 million fish, 4% above the preseason forecast of 16.3 million fish (Tables 2 and 14). Commercial sockeye salmon harvest in Nushagak District reached 12.0

million fish, 12% below the preseason projected surplus of 13.6 million fish and 22% above the 2003–2023 average harvest of 9.8 million sockeye salmon (Table 2; Appendices A3 and A15).

The Board adopted a King Salmon Conservation Action Plan (action plan) in the spring of 2023 (ADF&G 2023). Under this action plan, Optimum Escapement Goals (OEGs) were adopted for Nushagak and Wood River sockeye salmon (Table 1). These goals were not in place when the forecast was released in the fall of 2022 and the projected surplus did not account for the higher OEGs established by the Board.

Prior to the season the department released a preseason outlook (Sands et al. 2023) to inform stakeholders of the approach the department would be taking for management. The following is an excerpt from the Nushagak District preseason outlook that explains the strategy based on the new *Nushagak District King Salmon Stock of Concern Management Plan* (5 AAC 06.391).

> *There are three triggers that guide when to start fishing under the new Nushagak King Salmon Action Plan regulations, commercial fishing with drift gillnets in the Nushagak District and set gillnets in the Nushagak Section may begin once any one of the following triggers is met:*
>
> - *The Nushagak River trigger is 420,000 sockeye salmon projected past the sonar.*
> - *The Wood River trigger is 800,000 sockeye salmon projected past the counting tower.*
> - *If neither of the above conditions are met by 9:00 AM June 28, then fishing may be allowed in the Nushagak District at that time.*
>
> *In addition to the triggers that regulate the start of fishing, the board adopted Optimal Escapement Goals (OEGs) larger than department SEGs, which can reduce effort after commercial fishing starts. Those OEGs are structured such that 15% of the preseason forecast is added to the upper end of each SEG range. Lower bounds of both SEGs remain unchanged.*
>
> - *The 2023 upper bound of the Wood River OEG is 3.0 million sockeye salmon.*
> - *The 2023 upper bound of the Nushagak River OEG is 2.0 million sockeye salmon.*

The strategy for 2023 was to start directed sockeye salmon openings once one or more of the triggers had been met. From that point on, the department would make tide-by-tide decisions attempting to balance escapements of Chinook, chum, and sockeye salmon with fishing opportunity. It was indicated that set gillnet permit holders should expect to have occasional closures into the second week of July and drift gillnet openings would be timed to give opportunity for Chinook and chum salmon to pass through the district. Permit holders were asked to avoid areas where they may catch higher numbers of Chinook and chum salmon. Commercial fishing openings would be scheduled based on sockeye salmon escapement levels in the Nushagak and Wood Rivers. Mesh size was limited to 5.5 inches or smaller beginning June 1 for the conservation of Chinook salmon. If the run came in as forecast, it was likely that the Wood River Special Harvest Area would be used in 2023 to harvest surplus sockeye salmon. In this case, fishing opportunity would be afforded to the gear type behind on harvest percentage relative to the allocation.

The sonar escapement enumeration project at Portage Creek was fully operational on June 6 (Table 7). As the Chinook salmon run developed, it tracked below historical passage expectations from the beginning. This continued for the entire season, with the final escapement index at only

31,499 fish. Under the new King Salmon stock of concern action plan, management of the sockeye salmon fishery was initially focused on efforts to protect Chinook salmon and achieve the escapement goal. Under previous regulations, sockeye salmon openings would have been triggered on June 22 when 100,000 sockeye salmon escapement was projected past the Wood River tower. Under the new action plan, commercial fishing for sockeye salmon did not start until late on June 25, when both triggers were met for 420,000 sockeye salmon projected past the Nushagak sonar and 800,000 sockeye salmon projected past the Wood River tower. This additional delay in starting the sockeye salmon fishery allowed over 10,000 Chinook salmon to pass through the district and escape into the river.

Decisions really started the morning of June 23, when staff received the escapement counts for the previous day. The Nushagak River sockeye salmon escapement for June 22 was 95,388, bringing the cumulative to 126,618, and the Wood River sockeye salmon escapement was 91,824, for a cumulative of 103,506 (Tables 7 and 17). Both numbers represented large increases in the escapement rates and triggers for opening commercial fishing were likely to be met in the next few days. Based on these increased escapement numbers, staff announced that the fleet should be prepared to respond to short-notice openings as early as the morning of June 24. Sockeye salmon escapement stayed strong but did not increase in either river on June 23. The counts for the morning of June 24 were still below both trigger points and staff announced the earliest possible fishing would be the morning of June 25. By the evening of June 24, staff were confident the triggers would be met on June 25 but decided to wait until the morning of June 25 to announce fishing for later that evening.

Once fishing began, openings occurred on every tide, although there were periods where all drift gear and all Nushagak Section set gillnet gear were out of the water every day until July 2 (Table 18). Staff considered weather, escapement, and harvest information and flew aerial surveys to try to find the best way to allow harvest opportunity on sockeye salmon while still having fishing breaks with all gear out of the water to allow passage of king and chum salmon.

Unfortunately, the total Chinook salmon return to the Nushagak River was well below average. The peak daily escapement and the midpoint of the escapement was June 25 (Table 7). The Chinook salmon run produced a commercial harvest of 5,785 Chinook salmon in the Nushagak District in 2023 (Tables 6 and 18). This harvest is 18% of the 2003-2023 average harvest of 33,026 fish for the Nushagak District (Appendices A4 and A17). The Chinook salmon sonar index for the Nushagak River was 31,499, well below the 55,000-salmon lower end of the escapement goal range (Tables 2 and 7; Appendix A17).

The later start to commercial fishing resulted in more sockeye salmon escapement early in the season. For the Wood River, this meant the trigger to open the Wood River Special Harvest Area (WRSHA) was achieved on June 27. At that time the drift gillnet fleet harvest percentage was less than the 74% allocation. Therefore, the WRSHA was opened to commercial fishing with drift gillnets starting at 5:00 PM, June 27. By the end of the day on June 28, the drift gillnet fleet harvest percentage had exceeded the 74% allocation. Therefore, the WRSHA was opened to set gillnet fishing beginning on June 29 and continued for the rest of the season until the WRSHA closed on July 20.

Igushik set gillnet fishing opened on June 1 to continuous fishing and remained open until June 12, when additional buyers were able to begin operations for the season (Table 18). Once a major buyer began operations, fishing was limited to no more than 15 hours a day until June 25, when

the fishing was extended until further notice. Escapement into the Igushik River was stronger than usual from the 4th day of counting on June 27 (Table 17). Escapement continued at an above-average pace and the 150,000-salmon lower end of the escapement goal was exceeded on July 2 (Table 17).

Sockeye salmon escapement in the district's 3 major river systems was 2,648,616 for Wood River, 542,496 for Igushik River, and 1,772,676 for Nushagak River (Tables 7 and 17). Igushik River sockeye salmon escapement was above the escapement goal range (150,000–400,000), while the Nushagak and Wood Rivers' escapements were within the upper end of the OEG ranges established by the Board, 370,000–2.0 million and 700,000–3.0 million respectively (Table 1).

Fishing remained open continuously in the Nushagak District for both drift and set gillnets, but effort gradually diminished over the remainder of the season (Table 18). Without sonar counts, it was impossible to quantify the pink or coho salmon runs in 2023. Pink salmon do not occur in large numbers on odd years in Bristol Bay, so pink salmon abundance in the Nushagak District was minimal. With no significant pink salmon run and decreasing sockeye salmon abundance, most major processors ceased buying operations in the third week of July and fishing quickly tapered off. There was very little, if any, directed fishing for coho salmon because most permit holders were still focused on sockeye salmon harvesting opportunities on the Eastside of Bristol Bay.

The coho salmon harvest of 7,872 was below the 20-year average (2003–2022) of 64,910 (Table 18 and Appendix A7). The total Nushagak District pink salmon harvest was 514, which was not surprising considering it was not a pink year (Table 18 and Appendix A6). The final chum salmon harvest of 173,252 was below the 20-year (2003–2022) average of 571,181 (Table 18 and Appendix A5). The final 2023 Nushagak District sockeye salmon harvest was 11,967,229 and above the 20-year (2003–2022) average of 9.7 million (Table 18 and Appendix A3). Total reported Chinook salmon harvest was 5,785 and well below the 20-year (2003–2022) average of 32,491 (Table 18 and Appendix A4).

Togiak District

The 2023 inshore run forecast for the Togiak River was 680,000 sockeye salmon, composed of a projected 190,000-fish escapement and 490,000-fish harvest (Table 2). Smaller sockeye salmon runs to other drainages in the district (primarily the Kulukak River) occur and contribute approximately 50,000 fish to the district harvest each year, but these are not included in the preseason forecast. The SEG for the Togiak River is 120,000–270,000 sockeye salmon (Table 1). The total inshore run to the district in 2023 was 712,123 sockeye salmon, coming in below the 20-year (2003–2022) average of 853,604 (Table 2; Appendix A16). The commercial harvest of 443,905 sockeye salmon was also below the 20-year (2003–2022) average of 616,760 (Table 19; Appendices A3 and A16).

The Togiak District is managed differently than other districts in Bristol Bay. *Togiak District Sockeye Salmon Management Plan* (5 AAC 06.369) outlines fixed fishing schedule of 60 hours per week in the Kulukak Section, 4 days per week in the Togiak River Section (except for a peak fishing schedule of 5.5 days per week from July 1 to July 15), and 5 days per week in the Matogak, Osviak, and Cape Peirce sections. In addition, transferring into the Togiak District prior to midpoint of the escapement goal (195,000 sockeye salmon; Table 1) is prohibited by regulation if the permit or vessel had been previously registered in any of the 4 other Bristol Bay districts. Conversely, permit holders registered to fish in the Togiak District are prohibited from fishing in

any other Bristol Bay district until the midpoint of the escapement goal has been reached (5 AAC 06.370).

The department does not forecast Chinook salmon for systems in the Togiak District. However, based on recent harvests, the Chinook salmon run was again anticipated to be below average. As a result, the department managed the early portion of the season conservatively and monitored effort closely through June. Effort remained low throughout much of June, but as effort increased, the department restricted fishing time to 48 hours beginning June 28 for Chinook salmon conservation. Total Chinook salmon harvest for the Togiak District was 605 fish, well below the 10- and 20-year averages of 2,532 and 4,817, respectively (Table 19; Appendix A18).

The Togiak River counting tower began documenting escapement on July 6. Escapement counts started out relatively strong and remained steady for the majority of the season, with only 6 days where daily passage was below 5,000 sockeye salmon. Escapement peaked on July 20 with 13,452 fish, followed by daily counts over 10,000 for 7 of the final 18 days of the project (Table 17). Tower operations continued until August 7, ending with a daily count of 6,522 sockeye salmon. Escapement into Togiak Lake was 268,218 sockeye salmon, just within the escapement goal range of 120,000–270,000 fish (Tables 1 and 17).

Commercial harvest of non-sockeye salmon species in the Togiak District was 56,095 fish in 2023, or about 11% of the total commercial harvest (Table 19). The commercial Chinook salmon harvest of 605 fish represented only 13% of the 20-year (2003–2022) average (Appendix A4), and the chum salmon harvest of 52,893 fish was 36% of the 20-year (2003–2022) average (Appendix A5). The pink salmon harvest was 2,190 fish. The coho salmon harvest of 407 fish was 2.8% of the 20-year (2003–2022) average (Appendix A7). There was no market for coho salmon and 2023 was not a pink salmon year.

In 2023, the Togiak District fishery harvested approximately 62% of the sockeye salmon run to the district, which lands below the 20-year (2003–2022) average harvest rate of 72% (Appendix A16). There were 2 processors registered to purchase fish in the Togiak District in 2023 (Table 5).

2023 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 4). Togiak village lies at the center of the district, 108 kilometers west of Dillingham.

Pacific herring (*Clupea pallasii*) have been documented throughout Bristol Bay, but a large concentration returns to the Togiak area each spring to spawn and are 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 while herring spawn on rockweed kelp (*Fucus*) 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 Magnuson–Stevens Act) resulted in a rapid expansion of the Togiak herring fishery in 1977.

The Togiak herring fishery is the largest in Alaska. Between 2003 and 2019 the Togiak sac roe harvest has averaged 20,606 tons, worth an average of $2.5 million annually (Appendices B2 and B5). Given the volatile nature of the herring sac roe market, historic harvest and value are of limited utility when contemplating future harvest or value. Since 2020, sac roe harvest and value has been confidential due to low processor participation, and there was no fishery in 2023 because of a lack in market interest (Appendices B2 and B5). No spawn-on-kelp fishery has occurred since 2003.

STOCK ASSESSMENT

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

Fundamental aerial survey techniques used in Togiak have remained largely unchanged since 1978 and are described in Lebida and Whitmore (1985). Herring school surface area is estimated through a handheld tube with a measured grid and a known focal length from a known altitude. Standard conversion factors of 1.52 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. The department has transitioned to aerial survey data collection methods that use Geographic Information Systems (GIS), allowing real-time data entry and analysis. The 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. The department used these methods to conduct 6 aerial surveys in 2023 (Table 20).

Herring ages 2 through 20 have been observed in the Togiak District. However, herring are generally considered to begin recruiting into the fishery at age 4 and to be fully recruited by age 9. Herring abundance is related to year class survival and is strongly driven by large recruitment events that occur approximately every 8 to 10 years.

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 and effort levels can vary substantially from year to year. Gillnets, purse seines, and hand purse seines are legal gear. Herring market conditions are one of the leading factors influencing effort each year, but other factors also influence fleet size. Herring prices paid to permit holders the prior year and run timing also affect effort. For over a decade, processors have utilized cooperative fleets for the purse seine fishery. Under limited markets, processors choose the makeup of their fishing fleets to maximize their efficiency, thereby influencing the number of participants.

Fishing effort in the sac roe fishery increased through the late 1980s, decreased early in the 1990s, increased again to a peak in 1996, and has generally declined since that time. Since 1994, gillnet

effort increased from 146 vessels to a peak of 461 in 1996, followed by a general decline to an all-time low of 1 in 2018 and again in 2020 (Appendix B1). In 2022, there was no gillnet participation at all. Purse seine participation fluctuated between 100 and 300 vessels from 1994 to 1998, before declining to an all-time low of 2 vessels in 2020 (Appendix B1). The 2020 participation of 2 purse seine vessels and 1 gillnet vessel was partly due to complications from COVID-19. Participation increased in 2021 to 10 for purse seine and 3 for gillnet. In 2022, there were 8 purse seine participants. In 2023 there was no Togiak herring fishery due to lack of processing availability and market interest.

Industry participation in the fishery peaked between 1979 and 1982, when 33 processors participated in the herring fishery. From 1994 through 1997, between 16 and 22 processors have purchased herring from Togiak. Since 1998, industry participation has steadily declined to a low of 4 companies in 2012 and 2015 to present (Appendix B1). In 2020, a single processor participated. Processing capacity on the grounds has also declined from a high of 4,850 tons per day in 1996, to a low of 1,420 tons per day in 2007. Capacity since 2020 is confidential (Appendix B1). Two processors participated in the 2021 and 2022 Togiak herring fisheries, but in 2023 there were no processors interested in buying Togiak herring.

2023 Season Summary

The following is a summary of the 2023 Togiak herring fishery in the Togiak District, Bristol Bay. Herring are commercially harvested for sac roe using gillnet and purse seine gear when they migrate into the district to spawn, typically in April and May. In July, a food and bait fishery also occurs near Dutch Harbor, primarily composed of the Togiak herring stock, and the allocation is based on the forecasted biomass of Togiak herring. The Dutch Harbor fishery is summarized separately. All data included in this summary are preliminary.

Commercial Fishery

Togiak District herring fisheries are managed in accordance with the *Bristol Bay Herring Management Plan* (5 AAC 27.865), which specifies a maximum allowable exploitation rate of 20% and allocates the harvestable surplus among all the fisheries harvesting Togiak herring stocks. The 2023 preseason biomass forecast was 316,203 tons with an exploitation rate of 20% (63,241 tons). The projected harvest guideline for each fishery was as follows: 1,500 tons of herring equivalent (350,000 lb of product) for the spawn-on-kelp fishery, 4,322 tons for the Dutch Harbor food and bait fishery, and the remaining 57,419 tons allocated to the sac roe fishery. The management plan further specifies that the department will manage the sac roe fishery so that 80% of the harvest is taken by purse seine (45,935 tons in 2023) and 20% of the harvest is taken by gillnet (11,484 tons in 2023).

The *Bristol Bay Herring Management Plan* and other regulations direct the department to conduct an orderly, manageable fishery and strive for the highest level of product value while minimizing waste.

Department staff took a poll of processing companies prior to the 2023 season to assess processing capacity and to inquire about additional concerns or issues. The poll indicated no companies intended to participate in the 2023 Togiak herring fishery.

Purse Seine

With no processor interest, the Togiak herring purse seine fishery did not open in 2023.

Gillnet

The Togiak herring gillnet fishery did not open in 2023 because there were no participants.

EXVESSEL VALUE / EXPLOITATION

With no Togiak harvest, any Dutch Harbor harvest would be confidential. Information on exploitation from previous years is available (Appendix B2).

AGE COMPOSITION

Age composition samples are collected from fishery participants. No samples were available in 2023, data from previous years is available in Appendix B3.

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TABLES AND FIGURES

Table 1.–Summary of current escapement goals for salmon stocks in Bristol Bay Management Area; 2023.

System	Escapement goal	Enumeration method	Goal type	Initial year
CHINOOK SALMON				
Nushagak River	55,000–120,000	sonar	SEG	2013
	95,000	sonar	Inriver Run Goal	2012
CHUM SALMON				
Nushagak River	200,000	sonar	lower-bound SEG	2013
COHO SALMON				
Nushagak River	60,000–120,000	sonar	SEG	2013
PINK SALMON				
Nushagak River (even years only)	165,000	sonar	lower-bound SEG	2013
SOCKEYE SALMON				
Kvichak River	2,000,000–10,000,000	tower count	SEG	2010
Alagnak River	>210,000	tower count	lower-bound SEG	2018
Naknek River	800,000–2,000,000	tower count	SEG	2015
Egegik River	800,000–2,000,000	tower count	SEG	2015
Ugashik River	500,000–1,400,000	tower count	SEG	2015
Wood River	700,000–1,800,000	tower count	SEG	2015
	700,000–3,000,000	tower count	OEG	2023
Igushik River	150,000–400,000	tower count	SEG	2015
Nushagak River	370,000–900,000	sonar	SEG	2015
	370,000–2,000,000	sonar	OEG	2023
Togiak River	120,000–270,000	tower count	SEG	2007

Table 2.–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 millions of fish, Bristol Bay, 2023.

	Inshore Run			Escapement		Inshore Catch		
River System [a]	Forecast [b]	Actual [d]	Percent deviation [c]	Escapement goal range	Actual	Projected harvest [b]	Actual [d]	Percent deviation [c]
Kvichak River	7.91	8.63	9	2.00–10.00	3.75	3.91	4.87	25
Alagnak River	4.07	2.50	-39	0.21 minimum	1.10	2.01	1.40	-30
Naknek River	6.37	6.80	7	0.80–2.00	1.15	4.67	5.65	21
Egegik River	11.10	14.56	31	0.80–2.00	1.56	9.40	13.00	38
Ugashik River	3.26	4.30	32	0.50–1.40	1.13	2.53	3.18	26
Wood River	7.79	10.25	32	0.70–1.80	2.65	6.27	7.61	21
Igushik River	1.72	1.36	-21	0.15–0.40	0.54	1.39	0.82	-41
Nushagak River	6.76	5.36	-21	0.37–0.90	1.77	5.99	3.59	-40
Togiak River	0.68	0.71	4	0.12–0.27	0.27	0.49	0.44	-10
TOTAL BRISTOL BAY [e]	49.66	54.47	10	5.65–19.09	13.93	36.66	40.56	11

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

[b] Does not include South Peninsula projected harvest.

[c] Percent deviation = ([Actual–Forecast] / Forecast)*100.

[d] Catch and inshore run is based on postseason genetic mixed stock analysis and does not account for the district harvested. Includes personal use and test fishery catches.

[e] Total may not equal sum of all districts due to rounding.

Table 3.–Forecast of total sockeye salmon returns by age class, river system and district, in millions of fish, Bristol Bay, 2023 (Head and Vega 2022).

District and	Ocean-age-2			Ocean-age-3			
River System	1.2 (2019)	2.2 (2018)	Total	1.3 (2018)	2.3 (2017)	Total	Total
NAKNEK-KVICHAK DISTRICT							
Kvichak River	2.77	1.20	3.97	3.76	0.41	4.17	8.14
Alagnak River	1.62	0.17	1.79	2.19	0.20	2.39	4.18
Naknek River	2.55	0.55	3.10	2.87	0.58	3.45	6.55
	6.94	1.92	8.86	8.82	1.19	10.01	18.87
EGEGIK DISTRICT	1.16	2.42	3.58	5.23	2.60	7.83	11.41
UGASHIK DISTRICT	1.36	0.54	1.90	1.25	0.20	1.45	3.35
NUSHAGAK DISTRICT							
Wood River	4.85	0.43	5.28	2.27	0.46	2.73	8.01
Igushik River	0.64	0.01	0.65	1.11	0.01	1.12	1.77
Nushagak River [a]	1.72	0.13	1.85	4.48	0.30	4.78	6.95
	7.21	0.57	7.78	7.86	0.77	8.63	16.73
TOGIAK DISTRICT [b]	0.23	0.00	0.23	0.47	0.00	0.47	0.70
TOTAL BRISTOL BAY [cd]							
Number	16.90	5.45	22.35	23.63	4.76	28.9	51.06
Percent	33%	11%	44%	46%	9%	56%	100%

[a] Nushagak River forecast total includes minor contributions from age-0.3 and age-1.4 fish.

[b] Several smaller river systems not forecast. These systems contribute approximately 50,000 sockeye salmon to Togiak District harvest each year.

[c] Sockeye salmon of several minor age classes are expected to contribute an additional 1–2% to the total return; these fish are not accounted for in table.

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

Table 4.–Mean round weight, price per pound, and total exvessel value of the commercial salmon catch by species, Bristol Bay, 2023.

Species	Total catch (lb)	Mean weight (lb)	Mean price ($/lb)	Exvessel value ($)
Sockeye	224,803,017	5.5	0.52	116,897,569
Chinook	88,899	11.2	0.97	86,232
Chum	1,970,478	5.8	0.29	571,439
Pink	10,676	3.4	0.06	641
Coho	104,160	5.9	0.30	31,248
Total	226,977,231			117,587,128

Table 5.–Commercial salmon processors and buyers operating in Bristol Bay, 2023.

	Name of operator/buyer	Base of operations	District [a]	Type of processing [b]	Export
1	Alaska General Seafoods	Kenmore, WA	E,K,N	C,EF,F	AIR,SEA
2	Alaska's Best Seafoods, LLC.	Dillingham, AK	N	EF,F,RE	AIR,SEA
3	Anthony Wood	King Salmon, AK	K	EF,F	AIR,SEA
4	Copper River Seafoods	Anchorage, AK	E,K,N,T	EF,F,RE	AIR,SEA
5	Diamond O Fish House	Wasilla, AK	K	F	AIR
6	E&E (Coffee Point Seafoods)	Renton, WA	E,U	EF,F,RE	AIR
7	Ekuk Fisheries LLC.	Seattle, WA	N	F,RE	SEA
8	Favco Inc.	Anchorage, AK	N	EF	AIR
9	Freedom Fisheries LLC.	Naknek, AK	K	F	SEA
10	Friedman Family Fisheries	Baltimore, MD	N	F	SEA
11	George Joy	Warrenton, OR	E	EF	AIR
12	Greta Horn	Naknek, AK	N	F	SEA
13	High Tide Fisheries	Duluth, MN	K	F	SEA
14	Jojo's Wild Salmon LLC.	Chugiak, AK	N	EF,F	AIR
15	Just Wild Salmon	College Place, WA	N	F	SEA
16	Kevin Cossairt	Nez Perce, ID	K	F	AIR
17	Kristene Stanford	Wasilla, AK	N	EF	AIR
18	Leader Creek Fisheries Inc.	Seattle, WA	E,K,N,U	F	SEA
19	Little Alaska Fish Co.	Dillingham, AK	N	EF,F,RE	AIR
20	M.I.F. Seafood	Seaside, CA	K	EF,F,RE,S	AIR
21	Nakeen Homepack LLC.	Polson, MT	K	F	AIR,SEA
22	Naknek Kvichak Wild Salmon	Igiugig, AK	K	F	AIR
23	North Pacific Seafoods Inc. (Togiak Fisheries)	Seattle, WA	T	F	SEA
24	North Pacific Seafoods Inc.	Seattle, WA	E,K,N,U	EF,F,RE	AIR,SEA
25	North Soul	Palmer, AK	U	F	AIR
26	OBI Seafoods	Seattle, WA	E,K,N,U	C,EF,F,RE	AIR,SEA
27	Owens Commercial Fisheries	Rockford, MI	N	F,RE	AIR
28	Peter Pan Seafoods	Bellevue, WA	E,K,N,U	EF,F,RE,S	AIR,SEA
29	Roger Pietron	Cushing, MN	U	F	AIR
30	Salmon Shop LLC.	Wichita, KS	K	F	SEA
31	Sarah Salvucci	Anchorage, AK	U	F	AIR
32	Silver Bay Seafoods	Seattle, WA	E,K,N,U	F,RE	SEA
33	Small Boat Salmon	Homer, AK	N	F	AIR
34	Sunrise Salmon	Fergus Falls, MN	K	F	AIR,SEA
35	Trident Seafoods Corp.	Seattle, WA	E,K,N,U	EF,F,RE	SEA
36	Tulchina Fisheries	Naknek, AK	K	F	AIR
37	Two If By Seafoods	Saint John, WA	K	F	AIR,SEA
38	Victor Popa	Fallbrook, CA	E	F	AIR,SEA

-continued-

Table 5.–Page 2 of 2.

	Name of operator/buyer	Base of operations	District [a]	Type of processing [b]	Export
39	Wild Alaska Salmon and Seafood	King Salmon, AK	K	EF, F	AIR,SEA
40	Wild Bay Seafood Co.	Gig Harbor, WA	K	F	SEA
41	Wild Premium	Raymond, WA	E	EF,F	AIR
42	Willbros Salmon Co.	Ruidoso, NM	K	F	AIR,SEA
43	Wilsons' Wild Salmon	Hailey, ID	K	F	SEA

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

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

Table 6.–Commercial salmon catch by district and species, in numbers of fish, Bristol Bay, 2023.

River System	Sockeye	Chinook	Chum	Pink	Coho	Total
Naknek-Kvichak District	13,264,949	1,036	55,091	278	1,126	13,322,480
Egegik District	12,620,330	286	43,042	116	7,963	12,671,737
Ugashik District	2,281,785	261	17,226	42	197	2,299,511
Nushagak District	11,967,229	5,785	173,252	514	7,872	12,154,652
Togiak District	443,905	605	52,893	2,190	407	500,000
Bristol Bay Total	40,578,198	7,973	341,504	3,140	17,565	40,948,380

Note: Based on fish tickets as of November 15, 2023. Does not include personal use or test fish harvest.

Table 7.–Daily and cumulative passage estimates by salmon species, Nushagak River sonar project, Bristol Bay, 2023.

	Sockeye		Chinook [a]		Chum		Coho [b]	
Date	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
6/6	123	123	267	267	414	414	–	–
6/7	66	189	234	501	522	936	–	–
6/8	58	247	207	708	437	1,373	–	–
6/9	46	293	130	838	256	1,629	–	–
6/10	50	343	115	953	189	1,818	–	–
6/11	122	465	295	1,248	573	2,391	–	–
6/12	301	766	1,464	2,712	1,289	3,680	–	–
6/13	809	1,575	3,315	6,027	2,026	5,706	–	–
6/14	1,092	2,667	1,702	7,729	1,863	7,569	–	–
6/15	1,453	4,120	903	8,632	932	8,501	–	–
6/16	2,672	6,792	932	9,564	1,712	10,213	–	–
6/17	4,541	11,333	191	9,755	230	10,443	–	–
6/18	3,287	14,620	81	9,836	719	11,162	–	–
6/19	5,444	20,064	72	9,908	490	11,652	–	–
6/20	1,582	21,646	25	9,933	343	11,995	–	–
6/21	9,584	31,230	620	10,553	848	12,843	–	–
6/22	95,388	126,618	100	10,653	926	13,769	–	–
6/23	71,969	198,587	40	10,693	1,431	15,200	–	–
6/24	62,318	260,905	3,066	13,759	16,408	31,608	–	–
6/25	256,796	517,701	4,279	18,038	9,147	40,755	–	–
6/26	251,174	768,875	652	18,690	2,766	43,521	–	–
6/27	118,202	887,077	2,233	20,923	6,603	50,124	–	–
6/28	82,065	969,142	1,570	22,493	2,753	52,877	–	–
6/29	68,788	1,037,930	589	23,082	3,416	56,293	–	–
6/30	33,371	1,071,301	278	23,360	2,850	59,143	–	–
7/1	22,019	1,093,320	319	23,679	1,158	60,301	–	–
7/2	31,986	1,125,306	406	24,085	3,386	63,687	–	–
7/3	49,502	1,174,808	1,239	25,324	2,875	66,562	–	–
7/4	57,075	1,231,883	1,954	27,278	2,075	68,637	–	–
7/5	96,385	1,328,268	763	28,041	3,185	71,822	–	–
7/6	63,675	1,391,943	382	28,423	1,289	73,111	–	–
7/7	36,675	1,428,618	232	28,655	1,240	74,351	–	–
7/8	24,591	1,453,209	211	28,866	1,082	75,433	–	–
7/9	14,193	1,467,402	188	29,054	2,444	77,877	–	–
7/10	11,559	1,478,961	479	29,533	1,678	79,555	–	–
7/11	122,903	1,601,864	521	30,054	2,001	81,556	–	–
7/12	53,373	1,655,237	106	30,160	503	82,059	–	–

-continued-

Table 7.–Page 2 of 2.

	Sockeye		Chinook [a]		Chum		Coho [b]	
Date	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
7/13	11,295	1,666,532	204	30,364	2,115	84,174	–	–
7/14	9,636	1,676,168	106	30,470	843	85,017	–	–
7/15	25,100	1,701,268	52	30,522	1,836	86,853	–	–
7/16	19,715	1,720,983	42	30,564	3,535	90,388	–	–
7/17	8,499	1,729,482	128	30,692	1,327	91,715	–	–
7/18	4,132	1,733,614	174	30,866	1,994	93,709	–	–
7/19	5,870	1,739,484	307	31,173	2,253	95,962	–	–
7/20	4,689	1,744,173	88	31,261	2,297	98,259	–	–
7/21	7,413	1,751,586	0	31,261	1,569	99,828	–	–
7/22	6,511	1,758,097	0	31,261	3,754	103,582	–	–
7/23	5,315	1,763,412	0	31,261	2,413	105,995	–	–
7/24	3,294	1,766,706	29	31,290	2,244	108,239	–	–
7/25	5,970	1,772,676	209	31,499	2,140	110,379	–	–

Note: All counts rounded to nearest whole fish.

[a] Counts are considered inriver abundance estimates, not a final escapement.

[b] Coho salmon were not counted in 2023.

Table 8.–Daily sockeye salmon escapement tower counts by river system, eastside Bristol Bay, 2023.

	Kvichak River		Naknek River		Alagnak River		Egegik River		Ugashik River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/17	—	—	—	—	—	—	6	6	—	—
6/18	—	—	—	—	—	—	24	30	—	—
6/19	—	—	—	—	—	—	1,392	1,422	—	—
6/20	—	—	0	0	—	—	13,644	15,066	—	—
6/21	—	—	210	210	—	—	29,382	44,448	—	—
6/22	0	0	78	288	—	—	12,054	56,502	—	—
6/23	0	0	72	360	—	—	6,924	63,426	—	—
6/24	84	84	48	408	—	—	9,126	72,552	—	—
6/25	18	102	78	486	—	—	1,788	74,340	—	—
6/26	30	132	33,492	33,978	—	—	1,932	76,272	—	—
6/27	36	168	42,732	76,710	—	—	1,074	77,346	—	—
6/28	6,774	6,942	12,192	88,902	—	—	16,890	94,236	126	126
6/29	27,804	34,746	16,656	105,558	—	—	13,998	108,234	432	558
6/30	17,286	52,032	2,292	107,850	—	—	10,404	118,638	1,206	1,764
7/1	14,898	66,930	18,576	126,426	12,660	12,660	132,996	251,634	504	2,268
7/2	11,946	78,876	5,346	131,772	5,280	17,940	213,396	465,030	546	2,814
7/3	6,972	85,848	79,188	210,960	2,262	20,202	137,646	602,676	684	3,498
7/4	3,186	89,034	195,582	406,542	2,346	22,548	51,234	653,910	852	4,350
7/5	6,912	95,946	75,774	482,316	34,776	57,324	40,566	694,476	102	4,452
7/6	317,388	413,334	85,086	567,402	113,250	170,574	17,598	712,074	624	5,076
7/7	427,404	840,738	85,188	652,590	97,938	268,512	55,014	767,088	10,932	16,008
7/8	345,702	1,186,440	12,522	665,112	87,474	355,986	17,766	784,854	28,614	44,622
7/9	252,216	1,438,656	3,762	668,874	58,074	414,060	16,266	801,120	20,826	65,448
7/10	112,434	1,551,090	22,914	691,788	26,682	440,742	3,714	804,834	28,856	94,304
7/11	56,316	1,607,406	110,640	802,428	41,952	482,694	15,612	820,446	53,718	148,022
7/12	352,704	1,960,110	16,884	819,312	174,096	656,790	52,854	873,300	110,418	258,440
7/13	812,460	2,772,570	10,008	829,320	156,144	812,934	50,298	923,598	82,482	340,922
7/14	281,868	3,054,438	85,206	914,526	13,770	826,704	158,196	1,081,794	100,140	441,062
7/15	59,238	3,113,676	97,050	1,011,576	23,892	850,596	165,462	1,247,256	106,956	548,018
7/16	127,014	3,240,690	57,618	1,069,194	67,566	918,162	130,056	1,377,312	85,770	633,788
7/17	187,848	3,428,538	20,262	1,089,456	64,524	982,686	76,464	1,453,776	94,878	728,666
7/18	123,732	3,552,270	12,300	1,101,756	25,404	1,008,090	29,232	1,483,008	131,406	860,072
7/19	47,520	3,599,790	9,390	1,111,146	12,894	1,020,984	19,224	1,502,232	140,634	1,000,706
7/20	23,202	3,622,992	24,330	1,135,476	6,792	1,027,776	20,412	1,522,644	70,338	1,071,044
7/21	26,118	3,649,110	20,730	1,156,206	18,792	1,046,568	12,348	1,534,992	33,528	1,104,572
7/22	38,322	3,687,432	—	—	19,182	1,065,750	15,360	1,550,352	5,862	1,110,434
7/23	19,368	3,706,800	—	—	6,258	1,072,008	8,310	1,558,662	2,076	1,112,510
7/24	11,070	3,717,870	—	—	9,078	1,081,086	4,038	1,562,700	2,064	1,114,574
7/25	17,268	3,735,138	—	—	8,808	1,089,894	—	—	8,004	1,122,578
7/26	10,842	3,745,980	—	—	7,344	1,097,238	—	—	4,560	1,127,138
7/27	5,706	3,751,686	—	—	1,812	1,099,050	—	—	1,050	1,128,188
7/28	—	—	—	—	—	—	—	—	708	1,128,896

Note: Unless otherwise noted, dashes represent days that the project was not operational.

Table 9.–Commercial salmon catch by date and species, in numbers of fish, Naknek-Kvichak District, Bristol Bay, 2023.

Date		Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
		Drift	Set	Drift	Set						
6/16	[a]	9	9	1	0	–	–	–	–	–	–
6/17		0	0	–	–	–	–	–	–	–	–
6/18		0	0	–	–	–	–	–	–	–	–
6/19		15	15	13	11	2,557	3	17	0	0	2,577
6/20		24	24	26	40	7,759	27	169	0	0	7,955
6/21		24	24	25	25	1,790	2	20	0	0	1,812
6/22		24	24	30	41	1,697	9	15	1	0	1,722
6/23		9	9	2	18	644	23	31	0	0	698
6/24		10	10	53	19	14,280	7	120	0	0	14,407
6/25		0	0	–	–	–	–	–	–	–	–
6/26		0	0	–	–	–	–	–	–	–	–
6/27		8.5	8.5	179	177	182,288	19	1,418	0	0	183,670
6/28		3	3	156	87	115,615	10	676	0	0	116,301
6/29		5	5	87	80	62,517	6	189	0	0	62,712
6/30		8	8	269	246	288,446	25	909	0	0	289,380
7/1		8	8	288	170	212,796	23	901	0	0	213,720
7/2		7.5	7.5	365	272	642,322	58	959	0	0	643,339
7/3		18.5	24	596	687	1,485,067	72	2,141	0	0	1,487,280
7/4	[b]	18.5	24	306	503	383,389	64	789	0	0	384,242
7/5	[c]	16.5	24	590	598	1,068,661	44	1,378	0	0	1,070,083
7/6	[b]	16	24	516	358	304,201	29	851	0	0	305,081
7/7	[b]	16.5	24	378	374	95,881	32	420	0	0	96,333
7/8	[b]	15.5	13	292	99	167,360	5	373	0	0	167,738
7/9	[b]	14.5	6	483	159	568,618	12	1,033	0	0	569,663
7/10	[b]	16.5	24	865	732	899,892	38	1,671	0	0	901,601
7/11	[b]	15.5	24	680	418	205,372	27	675	0	0	206,074
7/12	[c]	15.5	24	675	269	221,807	24	745	0	0	222,576
7/13	[c]	20	24	1,103	254	1,904,488	64	5,268	0	0	1,909,820
7/14		18	24	800	452	1,347,175	38	3,184	0	0	1,350,397
7/15		18	24	496	421	693,650	45	1,858	0	0	695,553
7/16		19	24	574	360	446,001	48	1,462	0	0	447,511
7/17		23	24	570	300	350,392	38	3,309	1	0	353,740
7/18		24	24	428	189	207,151	19	2,643	0	0	209,813
7/19		24	24	542	233	514,166	78	6,144	34	33	520,455
7/20		24	24	386	186	280,901	42	3,666	39	16	284,664

-continued-

Table 9.–Page 2 of 2.

Date		Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
		Drift	Set	Drift	Set						
7/21		24	24	345	155	141,459	18	2,313	64	52	143,906
7/22		24	24	264	91	118,021	27	2,080	30	57	120,215
7/23		24	24	161	77	89,041	14	1,622	54	37	90,768
7/24		24	24	120	105	72,443	9	1,665	12	5	74,134
7/25		24	24	98	73	33,286	11	753	4	146	34,200
7/26		24	24	52	93	45,501	9	539	3	63	46,115
7/27		24	24	55	71	35,964	2	1,276	6	70	37,318
7/28		24	24	28	45	13,943	0	334	0	25	14,302
7/29		24	24	22	48	13,284	3	397	2	55	13,741
7/30		24	24	10	36	7,057	4	121	9	7	7,198
7/31	[a]	24	24	4	33	–	–	–	–	–	–
8/1	[a]	24	24	3	31	–	–	–	–	–	–
8/2	[a]	24	24	7	31	–	–	–	–	–	–
8/3	[a]	24	24	1	14	–	–	–	–	–	–
8/4	[a]	24	24	1	14	–	–	–	–	–	–
8/5	[a]	24	24	0	4	–	–	–	–	–	–
8/6	[a]	24	24	0	4	–	–	–	–	–	–
8/7	[a]	24	24	0	1	–	–	–	–	–	–
8/8	[a]	24	24	0	2	–	–	–	–	–	–
8/9	[a]	24	24	0	3	–	–	–	–	–	–
8/10	[a]	24	24	0	1	–	–	–	–	–	–
8/11	[a]	24	24	0	3	–	–	–	–	–	–
8/12	[a]	24	24	0	1	–	–	–	–	–	–
8/13	[a]	24	24	0	1	–	–	–	–	–	–
8/14	[a]	24	24	0	2	–	–	–	–	–	–
8/15	[a]	24	24	0	2	–	–	–	–	–	–
8/16		24	24	0	0	–	–	–	–	–	–
8/17		24	24	0	0	–	–	–	–	–	–
8/18		24	24	0	0	–	–	–	–	–	–
8/19		24	24	0	0	–	–	–	–	–	–
8/20		24	24	0	0	–	–	–	–	–	–
8/21	[a]	24	24	1	0	–	–	–	–	–	–
Total				12,946	8,719	13,264,949	1,036	55,091	278	1,126	13,322,480

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

[a] Less than 3 permit holders or companies operated; harvest confidential.

[b] Drift gillnet gear was open in the Naknek Section only.

[c] Drift gillnet gear was open in the Naknek Section only, during 1 of 2 periods.

Table 10.–Daily district registration of drift gillnet permit holders and dual vessel registration, by district, Bristol Bay, 2023.

	Naknek-Kvichak		Egegik		Ugashik		Nushagak		Togiak [a]	Total [b]
Date	total	dual	total	dual	total	dual	total	dual	total	
6/1	0	0	0	0	0	0	0	0	0	0
6/2	3	0	8	1	0	0	1	0	0	12
6/3	3	0	8	1	0	0	1	0	0	12
6/4	4	0	8	1	0	0	1	0	0	13
6/5	4	0	8	1	0	0	1	0	0	13
6/6	4	0	9	1	0	0	1	0	0	14
6/7	5	0	9	1	0	0	1	0	0	15
6/8	8	0	11	1	0	0	2	0	0	21
6/9	9	0	22	2	0	0	2	0	1	34
6/10	9	0	30	3	1	0	3	0	2	45
6/11	9	0	32	4	1	0	3	0	2	47
6/12	10	0	38	6	1	0	5	0	2	56
6/13	12	0	48	7	5	0	7	1	4	76
6/14	13	0	59	8	6	0	7	1	6	91
6/15	17	0	76	11	7	0	8	1	8	116
6/16	22	2	105	20	10	1	9	1	9	155
6/17	25	2	117	23	13	4	11	1	9	175
6/18	25	1	124	22	15	5	15	2	9	188
6/19	32	2	174	36	21	7	17	2	9	253
6/20	58	7	291	79	54	16	19	2	9	431
6/21	80	11	318	89	72	19	24	3	10	504
6/22	108	15	408	112	96	26	31	4	10	653
6/23	114	14	466	116	51	12	63	8	11	705
6/24	129	13	430	102	45	10	171	39	14	789
6/25	141	15	412	97	46	9	296	75	14	909
6/26	147	15	445	106	48	10	690	201	14	1,344
6/27	233	35	444	107	59	13	758	222	17	1,511
6/28	250	37	428	105	60	13	749	215	18	1,505
6/29	303	46	423	103	56	11	741	211	18	1,541
6/30	348	60	421	104	63	12	733	206	18	1,583
7/01	385	70	422	105	62	12	730	206	18	1,617
7/02	418	79	424	105	58	11	716	205	21	1,637
7/03	430	82	419	103	59	12	672	185	21	1,601
7/04	440	86	435	104	61	12	582	149	22	1,540
7/05	492	108	432	105	61	12	552	139	22	1,559
7/06	581	142	427	103	64	13	505	123	22	1,599
7/07	611	151	424	103	67	14	454	113	23	1,579
7/08	615	153	401	98	97	25	415	102	23	1,551
7/09	632	159	389	92	109	27	350	91	23	1,503
7/10	660	162	391	94	151	41	331	84	23	1,556
7/11	674	164	396	95	224	56	327	84	23	1,644
7/12	691	169	387	93	233	60	330	86	24	1,665
7/13	696	169	387	93	232	59	294	71	24	1,633
7/14	704	170	384	90	231	59	337	89	24	1,680
7/15	710	171	387	92	233	60	338	89	24	1,692
7/16	713	171	384	92	231	60	339	89	24	1,691
Average [c]	370	80	371	90	93	23	374	100	18	1,226

Note: Total permit sum includes dual boat registrations.

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

[b] Total does not include permits in transfer status.

[c] Seasonal averages calculated for June 16–July 16.

Table 11.–Comparison of daily sockeye escapement estimates by tower count and river test fish enumeration methods, Kvichak River, Bristol Bay 2023.

	Tower count		River test fishing				
				Index points			
Date	Daily	Cum.	Fish per index (FPI) [a]	Daily	Cum.	Estimated cumulative escapement	Estimated river fish [b]
6/22	0	0	–	–	–	–	–
6/23	0	0	–	0	0	–	–
6/24	84	84	–	3	3	–	–
6/25	18	102	–	3	6	–	–
6/26	30	132	–	594	599	–	–
6/27	36	168	–	167	766	–	30,000
6/28	6,774	6,942	–	47	813	–	35,000
6/29	27,804	34,746	–	84	897	–	25,000
6/30	17,286	52,032	–	46	943	–	10,000
7/1	14,898	66,930	64	202	1,146	73,325	10,000
7/2	11,946	78,876	75	98	1,244	93,287	30,000
7/3	6,972	85,848	69	109	1,353	93,375	20,000
7/4	3,186	89,034	75	1,578	2,931	219,818	100,000
7/5	6,912	95,946	72	3,138	6,069	436,977	330,000
7/6	317,388	413,334	77	1,392	7,461	574,481	450,000
7/7	427,404	840,738	141	1,053	8,514	1,200,461	700,000
7/8	345,702	1,186,440	139	479	8,993	1,249,963	450,000
7/9	252,216	1,438,656	159	83	9,075	1,442,998	450,000
7/10	112,434	1,551,090	160	811	9,886	1,581,811	150,000
7/11	56,316	1,607,406	171	1,968	11,854	2,027,065	200,000
7/12	352,704	1,960,110	136	1,898	13,752	1,870,291	500,000
7/13	812,460	2,772,570	165	219	13,971	2,305,288	800,000
7/14	281,868	3,054,438	202	217	14,188	2,866,002	400,000
7/15	59,238	3,113,676	219	470	14,658	3,210,044	150,000
7/16	127,014	3,240,690	219	658	15,316	3,354,153	100,000
7/17	187,848	3,428,538	228	289	15,605	3,557,948	450,000
7/18	123,732	3,552,270	234	–	–	–	300,000
7/19	47,520	3,599,790	–	–	–	–	–
7/20	23,202	3,622,992	–	–	–	–	–
7/21	26,118	3,649,110	–	–	–	–	–
7/22	38,322	3,687,432	–	–	–	–	–
7/23	19,368	3,706,800	–	–	–	–	–
7/24	11,070	3,717,870	–	–	–	–	–
7/25	17,268	3,735,138	–	–	–	–	–
7/26	10,842	3,745,980	–	–	–	–	–
7/27	5,706	3,751,686	–	–	–	–	–

Note: Unless otherwise noted, blank cells represent days with no data or project was not operational.

[a] Estimated river fish (ERF) produced before a time lag relationship could be established (7/1) were based on supplementary information and not mean FPI values. A smaller net mesh size was used in 2023, which makes comparisons with historical FPIs uninformative.

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

Table 12.–Commercial salmon catch by species, in numbers of fish, Egegik District, Bristol Bay, 2023.

Date		Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
		Drift	Set	Drift	Set						
6/1	[a]	15	15	0	1	–	–	–	–	–	–
6/2		9	9	0	0	–	–	–	–	–	–
6/3		0	0	–	–	–	–	–	–	–	–
6/4		0	0	–	–	–	–	–	–	–	–
6/5	[a]	15	15	0	2	–	–	–	–	–	–
6/6	[a]	24	24	0	1	–	–	–	–	–	–
6/7		9	9	0	0	–	–	–	–	–	–
6/8		15	15	2	5	245	1	3	0	0	249
6/9		9	9	0	0	–	–	–	–	–	–
6/10		0	0	–	–	–	–	–	–	–	–
6/11		0	0	–	–	–	–	–	–	–	–
6/12		15	15	8	19	1,832	1	0	0	0	1,833
6/13		24	24	4	10	1,266	0	0	0	0	1,266
6/14		9	9	3	12	1,004	0	4	0	0	1,008
6/15		15	15	51	112	27,869	3	94	0	0	27,966
6/16		9	9	5	2	1,058	0	4	0	0	1,062
6/17		0	0	–	–	–	–	–	–	–	–
6/18		0	0	–	–	–	–	–	–	–	–
6/19		4.5	8	175	157	73,519	8	421	0	0	73,948
6/20		0	0	–	–	–	–	–	–	–	–
6/21		4.5	8	276	184	137,001	19	241	0	0	137,261
6/22		4.5	8	338	192	359,561	12	333	0	0	359,906
6/23		4.5	8	332	131	141,718	15	280	0	0	142,013
6/24		0	0	–	–	–	–	–	–	–	–
6/25		0	8	–	70	7,406	7	8	0	0	7,421
6/26		4.5	8	283	84	53,999	20	172	0	0	54,191
6/27		4	8	280	187	86,803	14	312	0	0	87,129
6/28		0	0	–	–	–	–	–	–	–	–
6/29		4.5	8	309	133	129,217	14	508	0	0	129,739
6/30		7.75	11	540	741	1,094,983	21	1,800	0	0	1,096,804
7/1		9.75	14.25	593	489	1,111,254	21	1,587	0	0	1,112,862
7/2		10.25	15.25	627	551	831,595	17	1,181	0	0	832,793
7/3		10	15	493	375	684,175	21	846	0	0	685,042
7/4		11.25	19.5	374	267	431,220	3	494	0	0	431,717
7/5		12	20	288	189	476,586	7	615	0	0	477,208
7/6		11.5	16	478	663	877,654	10	751	0	0	878,415

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Table 12.–Page 2 of 3.

	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/7	11.5	16	469	383	418,286	6	750	0	0	419,042
7/8	10	8	339	139	114,895	1	325	0	0	115,221
7/9	11.5	16	275	227	171,892	4	301	0	0	172,197
7/10	5.5	8	282	253	232,236	4	387	0	0	232,627
7/11	5	7.25	293	256	275,935	5	712	0	0	276,652
7/12	6	10.75	221	199	183,911	1	733	0	0	184,645
7/13	9	11.5	534	679	906,904	7	1,672	0	0	908,583
7/14	10	15.25	580	456	645,630	2	1,713	0	0	647,345
7/15	8.5	13.25	371	475	443,938	8	1,260	0	0	445,206
7/16	13	21	501	329	528,601	8	1,798	0	0	530,407
7/17	24	24	336	296	256,883	3	983	0	0	257,869
7/18	24	24	258	171	242,086	2	1,198	0	0	243,286
7/19	24	24	342	165	298,662	5	2,900	22	65	301,654
7/20	24	24	182	158	173,356	1	1,269	16	7	174,649
7/21	24	24	161	118	110,153	2	1,182	19	15	111,371
7/22	24	24	131	73	120,187	4	1,343	17	9	121,560
7/23	24	24	114	56	114,846	1	1,506	16	14	116,383
7/24	24	24	132	41	88,048	2	1,719	0	0	89,769
7/25	24	24	158	15	89,833	1	2,076	4	3	91,917
7/26	24	24	94	10	63,010	1	1,046	0	0	64,057
7/27	24	24	92	12	69,797	1	1,154	0	1	70,953
7/28	24	24	72	4	34,770	0	435	0	0	35,205
7/29	24	24	55	7	39,317	0	1,245	0	0	40,562
7/30	24	24	46	10	43,061	1	568	0	0	43,630
7/31	24	24	65	14	47,475	0	571	20	13	48,079
8/1	24	24	61	14	60,394	0	569	0	57	61,020
8/2	24	24	58	14	65,607	1	539	2	18	66,167
8/3	24	24	54	19	47,460	1	337	0	16	47,814
8/4	24	24	44	9	27,595	0	364	0	0	27,959
8/5	24	24	19	3	14,177	0	136	0	0	14,313
8/6	9	9	0	0	–	–	–	–	–	–
8/7	15	15	24	10	15,936	0	10	0	57	16,003
8/8	24	24	25	5	17,328	0	273	0	301	17,902
8/9	24	24	15	14	16,405	0	121	0	413	16,939
8/10	24	24	20	8	26,668	0	546	0	646	27,860
8/11	24	24	14	10	21,985	0	215	0	302	22,502
8/12	24	24	16	6	19,734	0	381	0	546	20,661

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Table 12.–Page 3 of 3.

Date	Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Drift	Set	Drift	Set						
8/13	9	9	2	0	791	0	4	0	10	805
8/14	15	15	13	6	15,889	0	339	0	631	16,859
8/15	24	24	13	7	10,206	0	264	0	602	11,072
8/16	24	24	9	1	4,049	0	158	0	425	4,632
8/17	24	24	6	4	4,631	0	93	0	574	5,298
8/18	24	24	4	4	3,467	0	99	0	145	3,711
8/19	24	24	0	0	–	–	–	–	–	–
8/20	9	9	0	0	–	–	–	–	–	–
8/21	15	15	2	1	1,478	0	4	0	486	1,968
8/22	24	24	1	3	691	0	7	0	561	1,259
8/23 [a]	24	24	1	1	–	–	–	–	–	–
8/24	24	24	2	1	564	0	18	0	573	1,155
8/25	24	24	0	0	–	–	–	–	–	–
8/26	24	24	0	0	–	–	–	–	–	–
8/27	9	9	0	0	–	–	–	–	–	–
8/28	15	15	2	2	312	0	6	0	413	731
8/29	24	24	1	3	489	0	2	0	551	1,042
8/30 [a]	24	24	1	0	–	–	–	–	–	–
8/31	24	24	0	0	–	–	–	–	–	–
9/1 [a]	24	24	1	0	–	–	–	–	–	–
9/2	24	24	0	0	–	–	–	–	–	–
9/3	9	9	0	0	–	–	–	–	–	–
9/4 [a]	15	15	0	1	–	–	–	–	–	–
Totals	1,534	1,621	11,970	9,269	12,620,330	286	43,042	116	7,963	12,671,737

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

[a] Less than 3 permit holders or companies operated; harvest confidential.

Table 13.–Comparison of daily sockeye escapement estimates by tower count and river test fish enumeration methods, Egegik River, Bristol Bay 2023.

	Tower count		River test fishing				
				Index points		Estimated cumulative	Estimated
Date	Daily	Cum.	Fish per index pt.[a]	Daily	Cum.	escapement	river fish[b]
6/17	6	6	–	352	352	–	–
6/18	24	30	–	470	822	–	–
6/19	1,392	1,422	–	180	1,002	–	–
6/20	13,644	15,066	–	167	1,169	–	–
6/21	29,382	44,448	–	162	1,331	–	–
6/22	12,054	56,502	38	100	1,432	54,399	50,000
6/23	6,924	63,426	42	185	1,616	67,879	25,000
6/24	9,126	72,552	44	71	1,687	74,225	20,000
6/25	1,788	74,340	45	7	1,694	76,209	15,000
6/26	1,932	76,272	44	23	1,717	75,530	5,000
6/27	1,074	77,346	44	171	1,888	83,052	2,500
6/28	16,890	94,236	45	205	2,093	94,170	5,000
6/29	13,998	108,234	50	105	2,197	109,865	15,000
6/30	10,404	118,638	52	282	2,479	128,929	5,000
7/1	132,996	251,634	57	1,003	3,482	198,501	40,000
7/2	213,396	465,030	101	1,037	4,519	456,450	225,000
7/3	137,646	602,676	134	1,064	5,583	748,151	200,000
7/4	51,234	653,910	133	745	6,328	841,609	250,000
7/5	40,566	694,476	[c]	401	6,728	[c]	[c]
7/6	17,598	712,074	110	1,237	7,966	876,255	150,000
7/7	55,014	767,088	106	362	8,328	882,802	200,000
7/8	17,766	784,854	96	340	8,668	832,162	150,000
7/9	16,266	801,120	94	142	8,811	828,215	50,000
7/10	3,714	804,834	92	98	8,909	819,583	25,000
7/11	15,612	820,446	91	–	–	–	10,000
7/12	52,854	873,300	–	–	–	–	–
7/13	50,298	923,598	–	–	–	–	–
7/14	158,196	1,081,794	–	–	–	–	–
7/15	165,462	1,247,256	–	–	–	–	–
7/16	130,056	1,377,312	–	–	–	–	–
7/17	76,464	1,453,776	–	–	–	–	–
7/18	29,232	1,483,008	–	–	–	–	–
7/19	19,224	1,502,232	–	–	–	–	–
7/20	20,412	1,522,644	–	–	–	–	–
7/21	12,348	1,534,992	–	–	–	–	–
7/22	15,360	1,550,352	–	–	–	–	–
7/23	8,310	1,558,662	–	–	–	–	–
7/24	4,038	1,562,700	–	–	–	–	–

Note: Unless otherwise noted, blank cells represent days with no data or project was not operational.

[a] Estimated river fish (ERF) produced before a time lag relationship could be established (6/22) were based on supplementary information and not mean FPI values. A smaller net mesh size was used in 2023, which makes comparisons with historical FPIs uninformative.

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

[c] Missed tides due to weather conditions.

Table 14.–Inshore run of sockeye salmon by age class, river system, and district, in thousands of fish, Bristol Bay, 2023.

District and River System [a]		1.2	2.2	Ocean-age-2	1.3	2.3	Ocean-age-3	1.4	Total [b]
NAKNEK-KVICHAK									
Kvichak River									
	Number	1,215	362	1,577	5,511	1,513	7,024	9	8,625
	Percent	14.1	4.2	18.3	63.9	17.5	81.4	0.1	99.8
Alagnak River									
	Number	467	46	513	1,149	830	1,979	6	2,501
	Percent	18.7	1.8	20.5	45.9	33.2	79.1	0.2	99.9
Naknek River									
	Number	1,149	240	1,389	4,549	744	5,293	86	6,804
	Percent	16.9	3.5	20.4	66.9	10.9	77.8	1.3	99.5
Total	Number	2,831	648	3,479	11,209	3,087	14,296	101	17,930
	Percent	15.8	3.6	19.4	62.5	17.2	79.7	0.6	99.7
EGEGIK RIVER									
	Number	261	1,000	1,261	6,333	6,718	13,051	23	14,565
	Percent	1.8	6.9	8.7	43.5	46.1	89.6	0.2	98.4
UGASHIK RIVER									
	Number	386	402	788	2,327	978	3,305	33	4,305
	Percent	9.0	9.3	18.3	54.1	22.7	76.8	0.8	95.8
NUSHAGAK									
Wood River									
	Number	3,323	395	3,718	5,464	1,007	6,471	2	10,254
	Percent	32.4	3.9	36.3	53.3	9.8	63.1	0.0	99.4
Igushik River									
	Number	300	24	324	1,011	22	1,033	7	1,364
	Percent	22.0	1.8	23.8	74.1	1.6	75.7	0.5	100.0
Nushagak River									
	Number	292	49	341	4,583	305	4,888	111	5,358
	Percent	5.4	0.9	6.4	85.5	5.7	91.2	2.1	99.7
Total	Number	3,915	468	4,383	11,058	1,334	12,392	120	16,976
	Percent	23.1	2.8	25.8	65.1	7.9	73.0	0.7	99.5
TOGIAK RIVER [c]									
	Number	132	7	139	544	8	552	4	711
	Percent	18.6	1.0	19.5	76.5	1.1	77.6	0.6	97.7
TOTAL BRISTOL BAY [d]									
	Number	7,526	2,524	10,050	31,471	12,125	43,596	280	54,486
	Percent	13.8	4.6	18.4	57.8	22.3	80.0	0.5	99.0

[a] The inshore run data does not include the South Peninsula catch of Bristol Bay sockeye or immature high seas bycatch.

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

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

[d] Totals may not equal column sums due to rounding.

Table 15.–Commercial catch by date and species, in numbers of fish, Ugashik District, Bristol Bay, 2023.

Date	Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Drift	Set	Drift	Set						
6/1	15	15	0	0	–	–	–	–	–	–
6/2	9	9	0	0	–	–	–	–	–	–
6/3	0	0	–	–	–	–	–	–	–	–
6/4	0	0	–	–	–	–	–	–	–	–
6/5	15	15	0	0	–	–	–	–	–	–
6/6	24	24	0	0	–	–	–	–	–	–
6/7	24	24	0	0	–	–	–	–	–	–
6/8	24	24	0	0	–	–	–	–	–	–
6/9	9	9	0	0	–	–	–	–	–	–
6/10	0	0	–	–	–	–	–	–	–	–
6/11	0	0	–	–	–	–	–	–	–	–
6/12 [a]	15	15	1	0	–	–	–	–	–	–
6/13	24	24	0	0	–	–	–	–	–	–
6/14	24	24	4	0	40	1	3	0	0	44
6/15 [a]	24	24	2	0	–	–	–	–	–	–
6/16	9	9	0	0	–	–	–	–	–	–
6/17	0	0	–	–	–	–	–	–	–	–
6/18	0	0	–	–	–	–	–	–	–	–
6/19	15	15	41	5	7,888	32	29	0	0	7,949
6/20	24	24	26	4	10,585	45	0	0	0	10,630
6/21	24	24	109	7	28,993	33	96	0	0	29,122
6/22	24	24	33	6	14,285	21	1	0	0	14,307
6/23	9	9	6	0	612	0	0	0	0	612
6/24	0	0	–	–	–	–	–	–	–	–
6/25	0	0	–	–	–	–	–	–	–	–
6/26	0	0	–	–	–	–	–	–	–	–
6/27	5	10	42	11	15,307	13	211	0	0	15,531
6/28	0	0	–	–	–	–	–	–	–	–
6/29	0	0	–	–	–	–	–	–	–	–
6/30	5	10	51	41	30,346	15	267	0	0	30,628
7/1	0	0	–	–	–	–	–	–	–	–
7/2	0	0	–	–	–	–	–	–	–	–
7/3	5	10	46	107	71,804	12	123	0	0	71,939
7/4	0	0	–	–	–	–	–	–	–	–
7/5	7	12	52	121	96,786	0	306	0	0	97,092
7/6	0	0	–	–	–	–	–	–	–	–
7/7	5	10	66	136	185,735	2	398	0	0	186,135
7/8	6.5	10	74	91	156,041	7	506	0	0	156,554
7/9	5	9.5	92	109	119,113	4	282	0	0	119,399
7/10	0	0.5	–	0	0	0	0	0	0	0
7/11	0	0	–	–	–	–	–	–	–	–
7/12	0	0	–	–	–	–	–	–	–	–

-continued-

Table 15.–Page 2 of 2.

Date	Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Drift	Set	Drift	Set						
7/13	4	6.5	175	90	200,853	16	1,064	0	0	201,933
7/14	4	9.5	186	116	163,102	10	1,132	0	0	164,244
7/15	10	12	150	1	218,898	3	581	0	0	219,482
7/16	12	12	115	89	254,372	8	2,215	0	0	256,595
7/17	15	15	188	124	248,385	8	2,092	0	0	250,485
7/18	24	24	188	85	145,469	11	1,433	0	0	146,913
7/19	24	24	133	63	77,372	7	1,306	25	77	78,787
7/20	24	24	105	62	64,146	3	1,117	16	76	65,358
7/21	24	24	60	50	44,875	3	1,114	1	1	45,994
7/22	24	24	66	47	45,394	3	837	0	0	46,234
7/23	24	24	32	29	20,059	3	398	0	0	20,460
7/24	24	24	30	20	16,630	1	483	0	0	17,114
7/25	24	24	26	20	20,770	4	607	0	1	21,382
7/26	24	24	21	15	12,571	1	217	0	2	12,791
7/27	24	24	9	8	4,643	0	83	0	0	4,726
7/28	24	24	2	3	1,090	1	19	0	2	1,112
7/29	24	24	2	6	1,428	0	47	0	0	1,475
7/30 [a]	24	24	0	1	–	–	–	–	–	–
7/31	24	24	1	6	1,161	0	75	0	0	1,236
8/1	24	24	0	4	487	0	19	0	5	511
8/2	24	24	2	4	1,691	0	84	0	2	1,777
8/3	24	24	0	3	496	0	33	0	0	529
8/4 [a]	24	24	1	2	–	–	–	–	–	–
8/5	24	24	0	0	–	–	–	–	–	–
8/6	9	9	0	0	–	–	–	–	–	–
8/7	15	15	0	0	–	–	–	–	–	–
8/8	24	24	0	0	–	–	–	–	–	–
8/9	24	24	0	0	–	–	–	–	–	–
8/10	24	24	0	0	–	–	–	–	–	–
8/11	9	9	0	0	–	–	–	–	–	–
8/12	0	0	–	–	–	–	–	–	–	–
8/13	0	0	–	–	–	–	–	–	–	–
8/14 [a]	15	15	0	1	–	–	–	–	–	–
8/15 [a]	24	24	0	1	–	–	–	–	–	–
Totals	1,101	1,144	2,137	1,488	2,282,217	271	17,227	42	211	2,299,968

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

[a] Less than 3 permit holders or companies operated; harvest confidential.

Table 16.–Comparison of daily sockeye escapement estimates by tower count and river test fish enumeration methods, Ugashik River, Bristol Bay 2023.

	Tower count		River test fishing				
				Index points		Estimated cumulative	Estimated
Date	Daily	Cum.	Fish per index Pt.[a]	Daily	Cum.	escapement	river fish[b]
6/24	–	–	–	39	39	–	–
6/25	–	–	–	38	78	–	–
6/26	–	–	–	46	124	–	–
6/27	–	–	–	33	156	–	–
6/28	126	126	–	13	170	–	–
6/29	432	558	–	6	176	–	–
6/30	1,206	1,764	–	36	212	–	–
7/1	504	2,268	11	40	252	2,773	1,500
7/2	546	2,814	13	63	315	4,093	1,500
7/3	684	3,498	[c]	120	435	[c]	[c]
7/4	852	4,350	16	82	517	8,272	6,000
7/5	102	4,452	[c]	378	895	[c]	[c]
7/6	624	5,076	14	1,476	2,371	33,194	8,000
7/7	10,932	16,008	16	1,949	4,320	69,122	50,000
7/8	28,614	44,622	31	845	5,165	160,116	120,000
7/9	20,826	65,448	19	1,763	6,928	131,627	80,000
7/10	28,856	94,304	15	688	7,616	114,235	80,000
7/11	53,718	148,022	22	720	8,335	183,379	10,000
7/12	110,418	258,440	34	551	8,886	302,140	150,000
7/13	82,482	340,922	37	782	9,669	357,746	200,000
7/14	100,140	441,062	45	1,239	10,908	490,857	200,000
7/15	106,956	548,018	53	1,421	12,329	653,430	225,000
7/16	85,770	633,788	62	–	–	–	250,000
7/17	94,878	728,666	–	–	–	–	–
7/18	131,406	860,072	–	–	–	–	–
7/19	140,634	1,000,706	–	–	–	–	–
7/20	70,338	1,071,044	–	–	–	–	–
7/21	33,528	1,104,572	–	–	–	–	–
7/22	5,862	1,110,434	–	–	–	–	–
7/23	2,076	1,112,510	–	–	–	–	–
7/24	2,064	1,114,574	–	–	–	–	–
7/25	8,004	1,122,578	–	–	–	–	–
7/26	4,560	1,127,138	–	–	–	–	–
7/27	1,050	1,128,188	–	–	–	–	–
7/28	708	1,128,896	–	–	–	–	–

Note: Unless otherwise noted, dashes represent days with no data or that the project was not operational.

[a] No estimates produced before a time lag relationship could be established (7/1). A smaller net mesh size was used in 2023 which makes comparisons with historical FPIs uninformative.

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

[c] Missed tides due to weather conditions.

Table 17.–Daily sockeye salmon escapement tower counts by river system, Bristol Bay westside, 2023.

	Wood River		Igushik River		Togiak River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/17	930	930	–	–	–	–
6/18	2,484	3,414	–	–	–	–
6/19	2,238	5,652	–	–	–	–
6/20	966	6,618	–	–	–	–
6/21	5,064	11,682	–	–	–	–
6/22	91,824	103,506	–	–	–	–
6/23	88,602	192,108	–	–	–	–
6/24	87,456	279,564	48	48	–	–
6/25	343,806	623,370	7,542	7,590	–	–
6/26	430,056	1,053,426	684	8,274	–	–
6/27	325,302	1,378,728	19,014	27,288	–	–
6/28	106,860	1,485,588	42,402	69,690	–	–
6/29	59,676	1,545,264	28,518	98,208	–	–
6/30	51,810	1,597,074	27,384	125,592	–	–
7/1	39,378	1,636,452	20,028	145,620	–	–
7/2	57,174	1,693,626	16,974	162,594	–	–
7/3	60,420	1,754,046	3,420	166,014	–	–
7/4	66,276	1,820,322	4,494	170,508	–	–
7/5	77,880	1,898,202	5,106	175,614	–	–
7/6	74,916	1,973,118	12,648	188,262	9,360	9,360
7/7	40,308	2,013,426	16,566	204,828	6,906	16,266
7/8	28,248	2,041,674	13,494	218,322	6,012	22,278
7/9	21,930	2,063,604	17,802	236,124	4,944	27,222
7/10	95,766	2,159,370	16,920	253,044	3,708	30,930
7/11	136,914	2,296,284	26,412	279,456	2,196	33,126
7/12	112,578	2,408,862	13,908	293,364	4,818	37,944
7/13	41,808	2,450,670	22,596	315,960	7,710	45,654
7/14	23,592	2,474,262	22,494	338,454	10,026	55,680
7/15	40,176	2,514,438	15,402	353,856	7,404	63,084
7/16	39,726	2,554,164	12,876	366,732	7,818	70,902
7/17	22,512	2,576,676	36,144	402,876	5,700	76,602
7/18	10,620	2,587,296	34,638	437,514	6,840	83,442
7/19	12,552	2,599,848	23,538	461,052	12,600	96,042
7/20	9,096	2,608,944	12,396	473,448	13,452	109,494
7/21	18,084	2,627,028	9,168	482,616	10,674	120,168

-continued-

Table 17.–Page 2 of 2.

	Wood River		Igushik River		Togiak River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.
7/22	10,152	2,637,180	11,748	494,364	7,512	127,680
7/23	6,456	2,643,636	11,256	505,620	7,236	134,916
7/24	4,980	2,648,616	7,218	512,838	6,582	141,498
7/25	–	–	6,786	519,624	8,838	150,336
7/26	–	–	6,024	525,648	11,682	162,018
7/27	–	–	3,186	528,834	11,202	173,220
7/28	–	–	2,556	531,390	9,996	183,216
7/29	–	–	1,908	533,298	8,724	191,940
7/30	–	–	3,996	537,294	5,310	197,250
7/31	–	–	3,354	540,648	9,666	206,916
8/1	–	–	1,848	542,496	12,084	219,000
8/2	–	–	–	–	11,304	230,304
8/3	–	–	–	–	12,648	242,952
8/4	–	–	–	–	10,956	253,908
8/5	–	–	–	–	4,314	258,222
8/6	–	–	–	–	3,474	261,696
8/7	–	–	–	–	6,522	268,218

Note: Dashes represent days when projects were not operational.

Table 18.–Commercial salmon catch by date and species, in numbers of fish, Nushagak District, Bristol Bay, 2023.

Date		Hours fished (drift/set)		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
		Nushagak	Igushik	Drift	Set						
6/1		0/0	0/13.5 [a]	–	0	–	–	–	–	–	–
6/2		0/0	0/24	–	0	–	–	–	–	–	–
6/3		0/0	0/24	–	0	–	–	–	–	–	–
6/4		0/0	0/24	–	0	–	–	–	–	–	–
6/5		0/0	0/24	–	0	–	–	–	–	–	–
6/6		0/0	0/24	–	0	–	–	–	–	–	–
6/7		0/0	0/24	–	0	–	–	–	–	–	–
6/8		0/0	0/24	–	0	–	–	–	–	–	–
6/9		0/0	0/24	–	0	–	–	–	–	–	–
6/10		0/0	0/24	–	0	–	–	–	–	–	–
6/11		0/0	0/24	–	0	–	–	–	–	–	–
6/12		0/0	0/20	–	0	–	–	–	–	–	–
6/13		0/0	0/12	–	0	–	–	–	–	–	–
6/14	[b]	0/0	0/12	–	2	–	–	–	–	–	–
6/15		0/0	0/12	–	0	–	–	–	–	–	–
6/16	[b]	0/0	0/12	–	7	–	–	–	–	–	–
6/17	[b]	0/0	0/12.5	–	7	–	–	–	–	–	–
6/18	[b]	0/0	0/16	–	12	–	–	–	–	–	–
6/19	[b]	0/0	0/15	–	19	–	–	–	–	–	–
6/20	[b]	0/0	0/15	–	32	–	–	–	–	–	–
6/21	[b]	0/0	0/15	–	34	–	–	–	–	–	–
6/22	[b]	0/0	0/15	–	46	–	–	–	–	–	–
6/23	[b]	0/0	0/15	–	36	–	–	–	–	–	–
6/24	[b]	0/0	0/15	–	77	–	–	–	–	–	–
6/25		4/5	4/18	327	257	388,741	480	9,062	0	0	398,283
6/26		8.5/13	8.5/24 [a]	875	371	794,980	590	11,302	0	0	806,872
6/27		6.5/9	6.5/24	712	225	548,152	201	7,463	0	0	555,816
6/28	[c]	14.5/16	14.5/24	788	493	990,345	595	10,834	0	0	1,001,774
6/29	[c]	10.5/17	10.5/24	689	431	455,751	297	5,401	6	0	461,455
6/30	[c]	10/13	10/24	826	337	660,351	286	7,251	5	0	667,893
7/1	[c]	13/19	13/24	975	352	1,081,917	431	11,248	3	0	1,093,599
7/2	[c]	14.5/24	14.5/24	530	345	791,684	301	7,535	5	0	799,525
7/3	[c]	8/11	8/24	348	326	405,939	177	4,889	0	0	411,005
7/4	[c]	17.5/23	17.5/24	690	499	796,037	220	8,303	2	0	804,562
7/5	[c]	24/24	24/24	387	295	582,214	155	5,542	2	0	587,913
7/6	[c]	23/24	23/24	432	320	338,390	117	4,498	5	0	343,010
7/7	[c]	15/24[b]	15/24	348	444	160,522	145	2,583	8	1	163,259
7/8	[c]	19.5[b]/24	19.5/24	250	224	155,885	137	2,390	9	0	158,421
7/9	[c]	24/24	24/24	271	330	634,522	74	5,367	2	1	639,966
7/10	[c]	24/24	24/24	319	720	606,121	91	5,437	2	1	611,652
7/11	[c]	24/24	24/24	363	417	224,321	99	3,667	20	3	228,110
7/12	[c]	24[b]/24	24/24	247	435	190,404	84	3,819	29	4	194,340

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Table 18.–Page 2 of 3.

Date		Hours fished (drift/set) Nushagak	Igushik	Deliveries Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/13	c	24/24	24/24	284	263	502,635	65	6,867	29	3	509,599
7/14	c	24/24	24/24	392	502	577,340	72	11,013	6	18	588,449
7/15	c	24/24	24/24	266	350	329,774	86	9,274	21	37	339,192
7/16	c	24/24	24/24	307	294	220,387	68	7,807	28	34	228,324
7/17	c	24/24	24/24	155	347	103,966	41	2,984	40	27	107,058
7/18	c	24/24	24/24	73	209	53,992	24	2,783	48	123	56,970
7/19	c	24/24	24/24	93	167	98,348	40	5,766	42	655	104,851
7/20	c	24/24	24/24	87	228	87,995	38	4,571	44	1,471	94,119
7/21		24/24	24/24	33	127	33,839	12	1,548	60	956	36,415
7/22		24/24	24/24	11	98	21,220	18	662	50	622	22,572
7/23		24/24	24/24	10	78	16,805	6	639	39	794	18,283
7/24		24/24	24/24	12	49	17,920	6	526	0	880	19,332
7/25		24/24	24/24	0	52	9,389	6	218	3	201	9,817
7/26		24/24	24/24	2	48	11,353	3	134	6	1,218	12,714
7/27		24/24	24/24	1	19	5,801	5	90	0	0	5,896
7/28	b	24/24	24/24	0	8	–	–	–	–	–	–
7/29	b	24/24	24/24	0	12	–	–	–	–	–	–
7/30	b	24/24	24/24	0	8	–	–	–	–	–	–
7/31	b	24/24	24/24	0	10	–	–	–	–	–	–
8/1	b	24/24	24/24	0	4	–	–	–	–	–	–
8/2	b	24/24	24/24	0	2	–	–	–	–	–	–
8/3	b	24/24	24/24	0	3	–	–	–	–	–	–
8/4		24/24	24/24	0	0	–	–	–	–	–	–
8/5		24/24	24/24	0	0	–	–	–	–	–	–
8/6		24/24	24/24	0	0	–	–	–	–	–	–
8/7	b	24/24	24/24	0	1	–	–	–	–	–	–
8/8	b	24/24	24/24	0	2	–	–	–	–	–	–
8/9	b	24/24	24/24	0	2	–	–	–	–	–	–
8/10	b	24/24	24/24	0	1	–	–	–	–	–	–
8/11		24/24	24/24	0	0	–	–	–	–	–	–
8/12		24/24	24/24	0	0	–	–	–	–	–	–
8/13		24/24	24/24	0	0	–	–	–	–	–	–
8/14		24/24	24/24	0	0	–	–	–	–	–	–
8/15		24/24	24/24	0	0	–	–	–	–	–	–
8/16		24/24	24/24	0	0	–	–	–	–	–	–
8/17		24/24	24/24	0	0	–	–	–	–	–	–
8/18		24/24	24/24	0	0	–	–	–	–	–	–
8/19	b	24/24	24/24	0	1	–	–	–	–	–	–
8/20	b	24/24	24/24	0	1	–	–	–	–	–	–
8/21	b	24/24	24/24	0	1	–	–	–	–	–	–
8/22		24/24	24/24	0	0	–	–	–	–	–	–
8/23		24/24	24/24	0	0	–	–	–	–	–	–

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Table 18.–Page 3 of 3.

Date	Hours fished (drift/set)		Deliveries							
	Nushagak	Igushik	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
8/24	24/24	24/24	0	0	–	–	–	–	–	–
8/25	24/24	24/24	0	0	–	–	–	–	–	–
8/26	24/24	24/24	0	0	–	–	–	–	–	–
8/27	24/24	24/24	0	0	–	–	–	–	–	–
8/28	24/24	24/24	0	0	–	–	–	–	–	–
8/29	24/24	24/24	0	0	–	–	–	–	–	–
8/30	24/24	24/24	0	1	–	–	–	–	–	–
8/31	24/24	24/24	0	0	–	–	–	–	–	–
9/1	24/24	24/24	0	0	–	–	–	–	–	–
9/2	24/24	24/24	0	0	–	–	–	–	–	–
9/3	24/24	24/24	0	0	–	–	–	–	–	–
9/4	24/24	24/24	0	0	–	–	–	–	–	–
9/5	24/24	24/24	0	0	–	–	–	–	–	–
9/6	24/24	24/24	0	0	–	–	–	–	–	–
9/7	24/24	24/24	0	1	–	–	–	–	–	–
9/8	24/24	24/24	0	0	–	–	–	–	–	–
9/9	24/24	24/24	0	1	–	–	–	–	–	–
9/10	24/24	24/24	0	0	–	–	–	–	–	–
9/11	24/24	24/24	0	0	–	–	–	–	–	–
9/12	24/24	24/24	0	1	–	–	–	–	–	–
Total	2204.5/2262	2204.5/2346	11,103	9,984	11,967,229	5,785	173,252	514	7,872	12,154,652

[a] Fishing extended until further notice.

[b] Less than 3 permit holders or companies operated; harvest confidential.

[c] Setnet fishing in WRSHA was open between 6/28–7/20. Catch is included in totals.

Table 19.–Commercial salmon catch by date and species, in numbers of fish, Togiak District, Bristol Bay, 2023.

	Deliveries							
Date	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/19	1	5	290	0	118	0	0	408
6/20	2	11	479	3	101	0	0	583
6/21	3	15	917	13	201	0	0	1,131
6/22	3	14	457	16	361	0	0	834
6/23	1	7	231	10	229	0	0	470
6/26	4	16	1,109	17	196	0	0	1,322
6/27	6	35	2,824	49	370	0	0	3,243
6/28	1	22	1,198	34	101	0	0	1,333
6/29	2	3	407	2	736	0	0	1,145
6/30	12	36	3,759	24	1,558	6	0	5,347
7/1	10	44	4,682	42	502	19	0	5,245
7/3	17	51	5,162	43	674	22	0	5,901
7/4	19	51	5,155	32	735	29	0	5,951
7/5	15	51	5,056	32	769	45	0	5,902
7/6	22	72	7,418	11	1,081	70	0	8,580
7/7	20	98	8,652	25	2,054	64	0	10,795
7/8	9	45	6,032	14	563	30	0	6,639
7/10	26	71	10,447	16	1,151	64	0	11,678
7/11	41	111	13,496	26	2,817	208	0	16,547
7/12	32	103	11,387	23	3,243	137	0	14,790
7/13	28	96	11,943	19	3,290	120	0	15,372
7/14	33	98	19,401	18	3,561	136	0	23,116
7/15	19	106	16,092	16	1,803	76	0	17,987
7/16	8	85	12,976	7	892	80	0	13,955
7/17	36	99	21,469	12	1,738	82	0	23,301
7/18	44	104	25,717	17	2,316	99	0	28,149
7/19	42	94	22,491	24	2,727	73	0	25,315
7/20	27	84	10,748	8	1,527	35	0	12,318
7/21	33	107	18,508	12	2,588	83	1	21,192
7/22	23	94	16,898	4	1,090	91	0	18,083
7/23	3	24	2,620	0	158	13	0	2,791
7/24	31	87	16,138	8	1,661	78	0	17,885
7/25	44	109	18,947	3	1,957	124	1	21,032
7/26	32	91	13,567	3	2,018	62	0	15,650
7/27	16	59	8,943	4	899	45	0	9,891
7/28	25	113	14,783	5	1,840	73	1	16,702
7/29	14	33	8,020	0	652	11	2	8,685
7/30	9	25	4,323	0	207	10	0	4,540
7/31	23	70	15,685	1	542	33	3	16,264

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Table 19.–Page 2 of 2.

Date	Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Drift	Set						
8/1	51	93	19,417	6	1,383	55	21	20,882
8/2	20	92	12,124	1	527	29	4	12,685
8/3	18	95	8,833	2	560	27	7	9,429
8/4	22	42	9,172	0	469	12	28	9,681
8/5	3	5	1,307	0	19	0	0	1,326
8/6	0	3	79	0	0	0	0	79
8/7	17	44	4,575	1	246	16	44	4,882
8/8	18	62	5,584	0	249	12	26	5,871
8/9	19	51	6,193	0	186	15	57	6,451
8/10	3	43	2,741	2	111	1	39	2,894
8/11	0	28	2,081	0	46	3	19	2,149
8/12	3	26	2,223	0	44	1	45	2,313
8/13	0	6	243	0	3	0	4	250
8/14	2	9	425	0	9	1	35	470
8/15	1	14	422	0	15	0	70	507
8/16 [a]	0	2	–	–	–	–	–	–
Total	912	3,049	443,905	605	52,893	2,190	407	499,592

[a] Less than 3 permit holders or companies operated; harvest confidential.

Table 20.–Daily observed estimates in short tons of herring, by index area, Togiak District, 2023.

				Estimated biomass by index area [a]												
Date	Start Time	Survey Rating [b]	Spawn	NUS	KUK	MET	NVK	UGL	TOG	TNG	MTG	OSK	PYT	CPN	HAG	Daily total
3-May	11:00	0.0	0.1	0	0	188	911	0	0	0	0	0	0	0	0	1,099
6-May	15:00	2.2	0.6	5,209	20,754	23,612	4,160	740	24,054	261	0	0	0	0	764	79,554
7-May	15:30	2.3	1.8	213	110,565	15,413	10,874	10,310	15,814	8,823	1,277	0	0	0	5,259	178,548
9-May	13:00	3.8	1.2	5,554	821	104	10	25	56	0	0	0	0	0	0	6,570
12-May	13:00	2.7	3.0	6,456	74,116	12,150	1,763	3,940	6,455	28,721	4,284	324	1,950	0	883	141,042
13-May	10:00	3.2	1.0	346	140,829	1,710	533	571	12,474	0	0	0	0	0	0	156,463
Total linear miles of spawn			7.7										Peak biomass estimate			178,548

Note: NS = no survey.

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

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

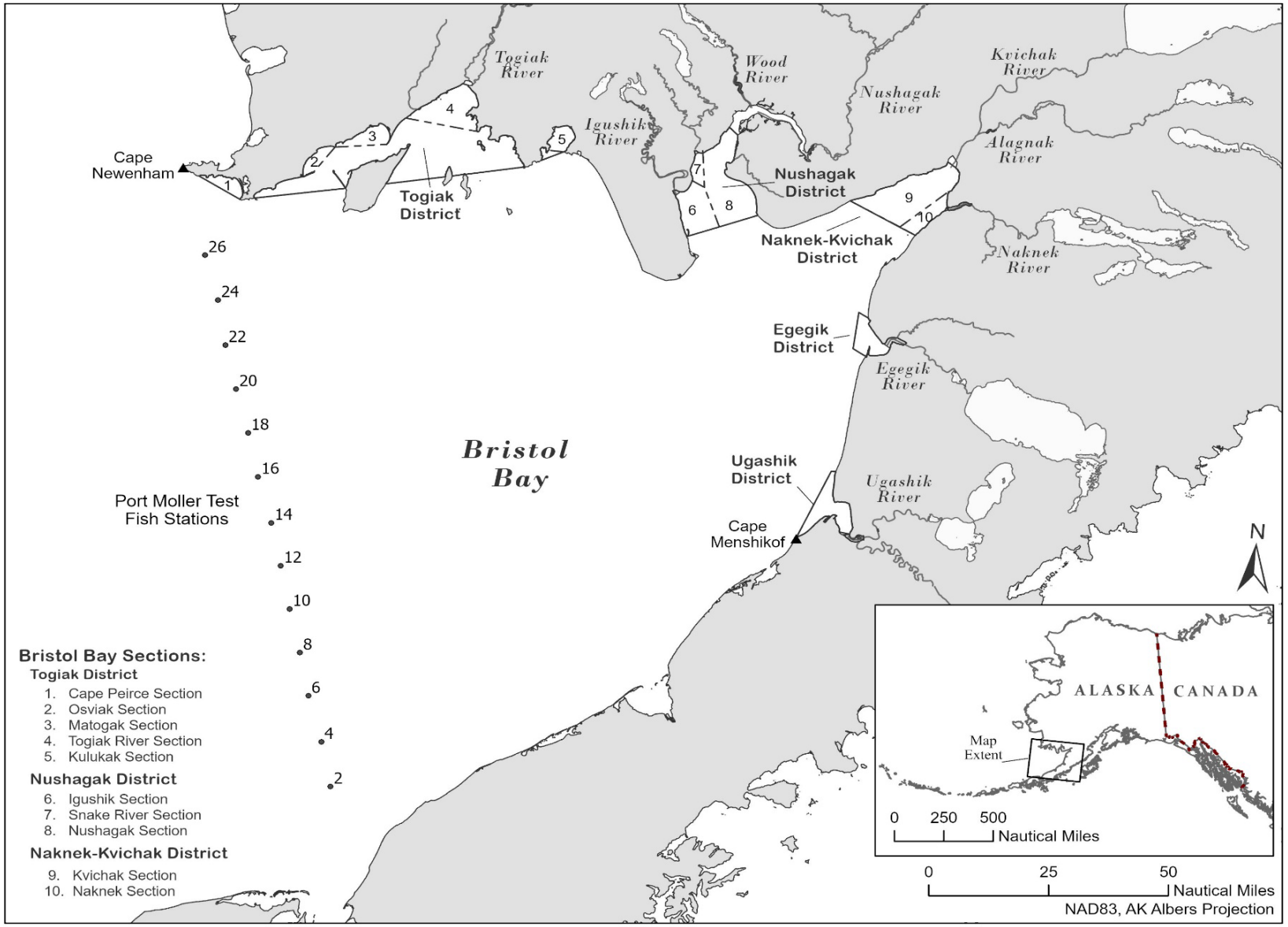

Figure 1.–Bristol Bay area commercial fisheries salmon management districts, sections, rivers, and the Port Moller Test Fishery Stations.

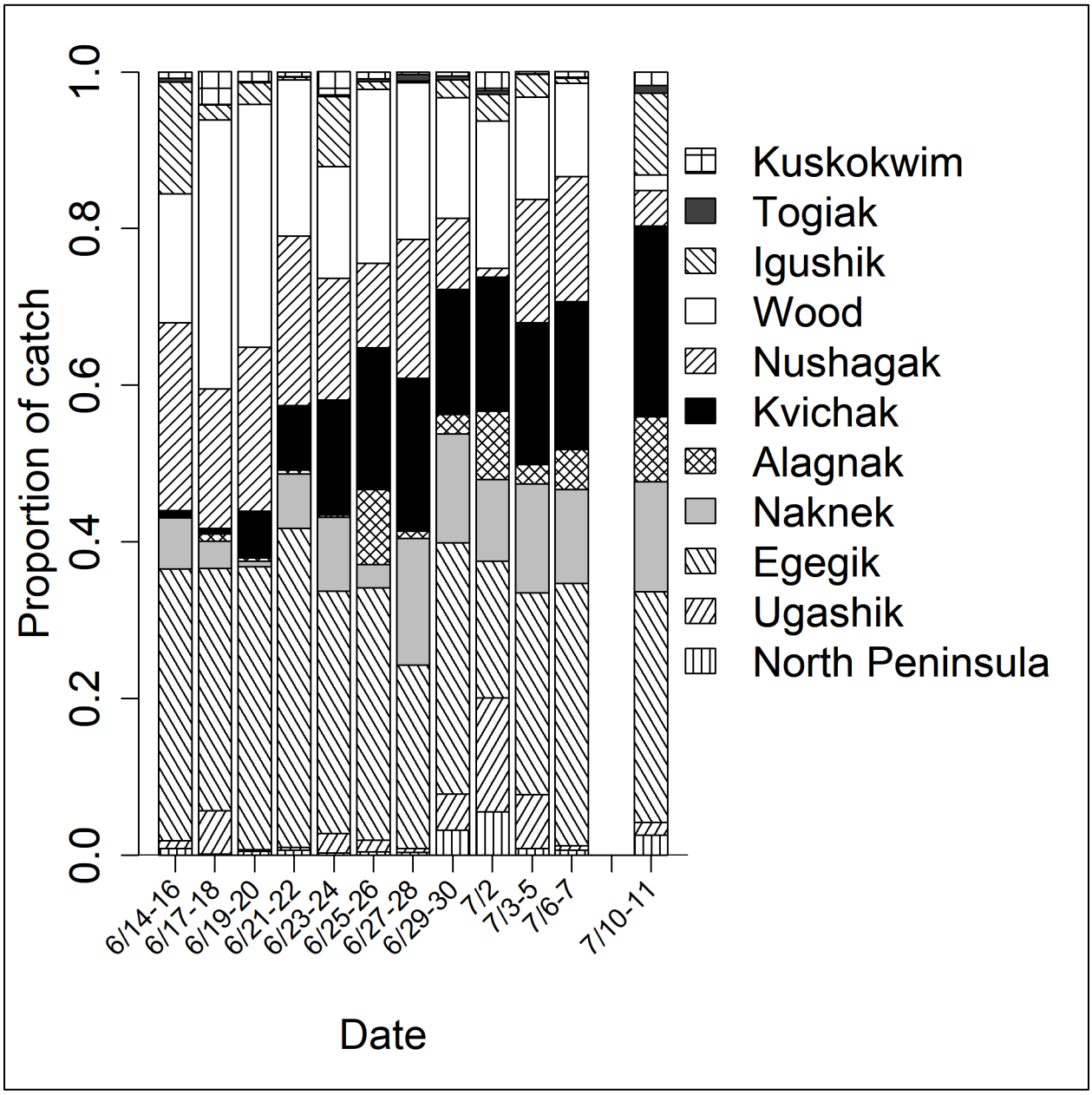

Figure 2.–Stock composition estimates for sockeye salmon sampled from the Port Moller Test Fishery, 2023.

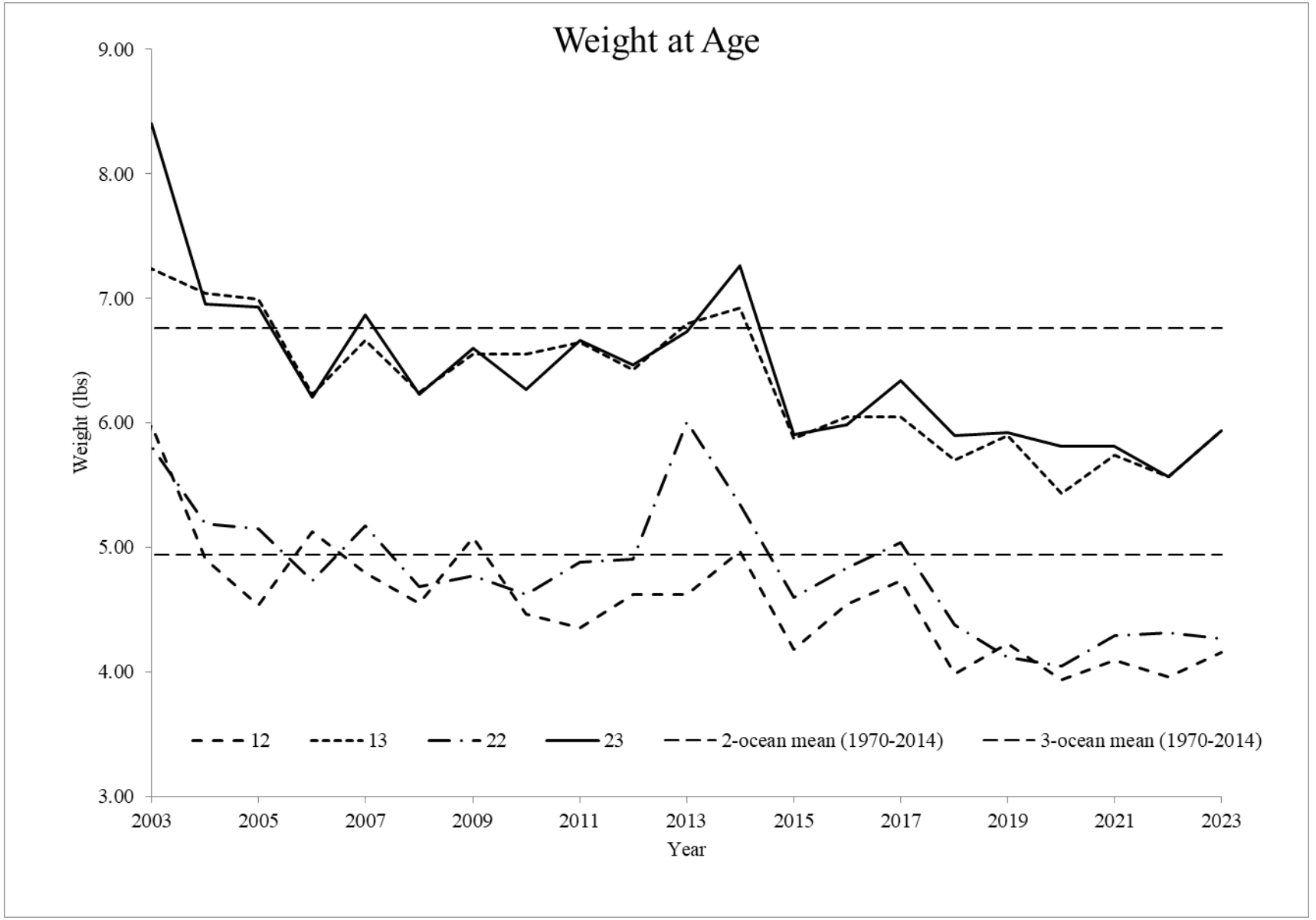

Figure 3.–Average weight (lb), by age class, of Bristol Bay sockeye salmon sampled in the commercial fishery catch, 2003–2023.

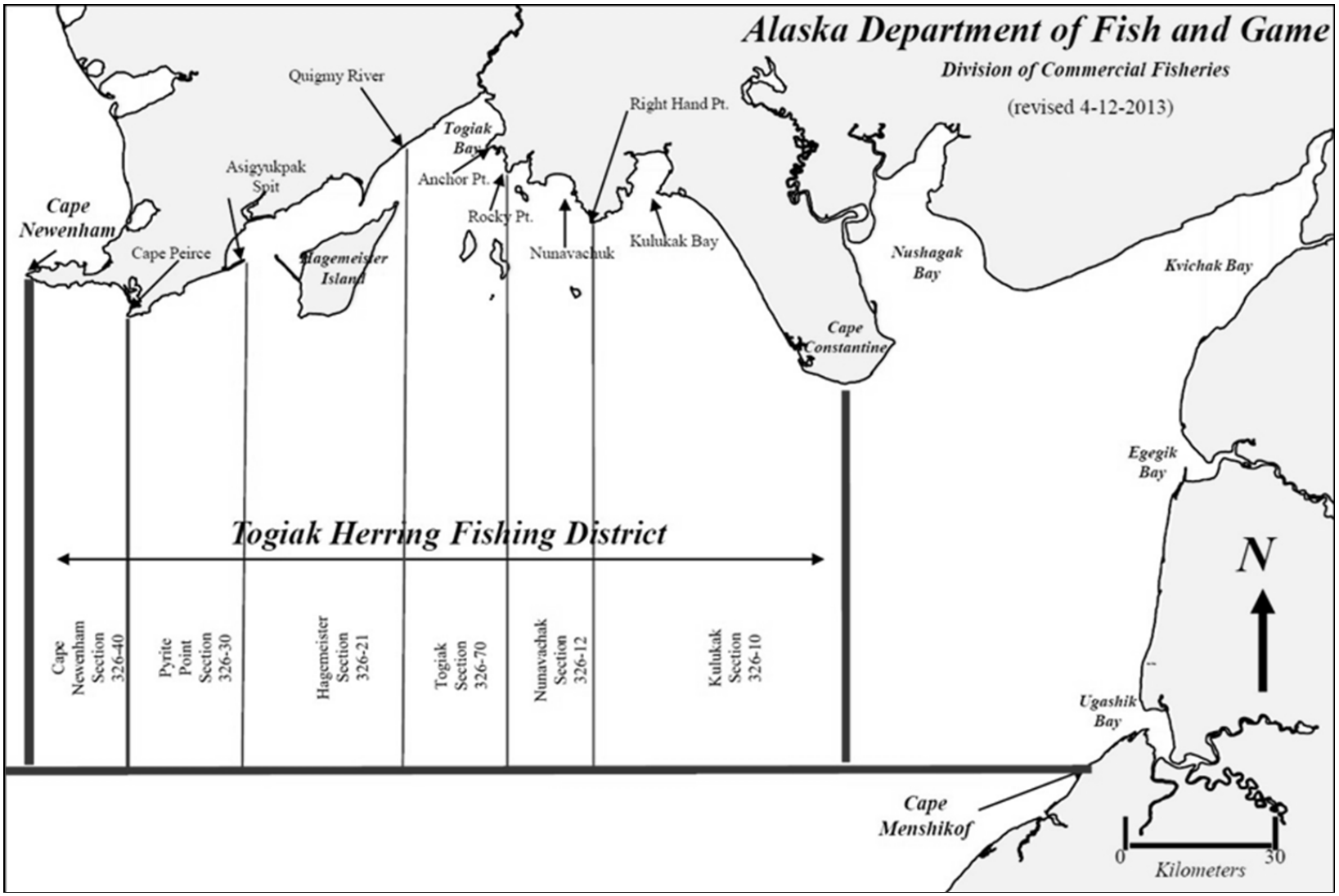

Figure 4.–Togiak Herring District, Bristol Bay.

APPENDIX A: SALMON

Appendix A1.–Escapement of sockeye salmon by river system, Bristol Bay, 2003–2023.

	River [a]								
Year	Kvichak	Naknek	Alagnak [b]	Egegik	Ugashik	Nushagak [c]	Wood	Igushik	Togiak
2003	1,686,804	1,831,170	3,676,146	1,152,120	790,202	642,093	1,459,782	194,088	232,302
2004	5,500,134	1,939,674	5,396,592	1,290,144	815,104	543,872	1,543,392	109,650	135,637
2005	2,320,332	2,744,622	4,218,990	1,621,734	799,612	1,106,703	1,496,550	365,712	155,778
2006	3,068,226	1,953,228	1,773,966	1,465,158	1,003,158	548,410	4,008,102	305,268	312,126
2007	2,810,208	2,945,304	2,466,414	1,432,500	2,599,186	518,041	1,528,086	415,452	269,646
2008	2,757,912	2,472,690	2,180,502	1,259,568	596,332	492,546	1,724,676	1,054,704	205,680
2009	2,266,140	1,169,466	970,818	1,146,276	1,364,338	484,149	1,319,232	514,188	313,946
2010	4,207,410	1,463,928	1,187,730	927,054	830,886	468,696	1,804,344	518,040	188,298
2011	2,264,352	1,177,074	883,794	961,200	1,029,853	428,191	1,098,006	421,380	190,970
2012	4,164,444	900,312	861,747	1,233,900	670,578	432,438	764,211	193,326	203,148
2013	2,088,576	938,160	1,095,950	1,113,630	898,110	894,148	1,183,348	387,036	128,118
2014	4,458,540	1,474,428	189,452	1,382,466	640,158	618,477	2,764,614	340,590	151,934
2015	7,348,572	1,920,954	5,452,026	2,160,792	1,564,638	796,684	1,941,474	651,172	218,700
2016	4,462,728	1,691,910	1,677,769	1,837,260	1,635,270	680,512	1,309,707	469,230	200,046
2017	3,163,404	1,899,972	2,041,824	2,600,982	1,186,446	2,852,308	4,274,224	578,700	190,098
2018	4,398,708	2,221,152	1,581,426	1,608,357	1,167,792	1,247,460	7,507,254	770,772	511,770
2019	2,371,242	2,911,470	820,458	2,340,210	1,547,748	709,431	2,073,276	256,074	351,846
2020	4,030,968	4,112,160	2,386,518	2,389,728	1,745,940	1,228,059	2,243,886	323,814	261,126
2021	4,703,520	2,796,534	3,236,904	1,832,196	2,859,930	4,697,299	4,410,156	878,952	280,836
2022	4,224,882	1,921,296	1,668,222	1,786,152	1,436,784	3,455,272	3,747,612	378,768	242,412
2023	3,751,686	1,156,206	1,099,050	1,562,700	1,128,896	1,772,676	2,648,616	542,496	268,218
20-Year Avg.	3,614,855	2,024,275	2,188,362	1,577,071	1,259,103	1,142,239	2,410,097	456,346	237,221
2018–2022 Avg.	3,945,864	2,792,522	1,938,706	1,991,329	1,751,639	2,267,504	3,996,437	521,676	329,598

[a] Tower count unless otherwise noted.

[b] From 2012–2016, aerial surveys were conducted, estimates were expanded by a factor of 2.55 (Clark 2005).

[c] Sonar estimate.

Appendix A2.–Salmon entry permit registration by gear and residency, Bristol Bay, 2003–2023.

	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 and set [b]
2003	923	944	1,867	1,389	74%	7	713	288	1,001	714	71%	1	2,868
2004	912	948	1,860	1,426	77%	3	703	286	989	797	81%	1	2,849
2005	895	967	1,862	1,526	82%	3	688	300	988	829	84%	1	2,850
2006	893	966	1,859	1,567	84%	1	683	302	985	844	86%	0	2,844
2007	881	981	1,862	1,621	87%	1	672	311	983	836	85%	0	2,845
2008	887	976	1,863	1,636	88%	0	678	302	980	850	87%	0	2,843
2009	864	999	1,863	1,642	88%	0	674	307	981	855	87%	0	2,844
2010	866	997	1,863	1,731	93%	0	672	311	983	861	88%	0	2,846
2011	1005	857	1,862	1,747	94%	0	660	321	981	878	90%	0	2,843
2012	849	1,013	1,862	1,740	93%	0	654	325	979	883	90%	0	2,841
2013	862	1,000	1,862	1,709	92%	0	646	332	978	854	87%	0	2,840
2014	848	1,015	1,863	1,751	94%	0	636	341	977	881	90%	0	2,840
2015	834	1,030	1,864	1,744	94%	0	639	336	975	885	91%	0	2,839
2016	826	1,038	1,864	1,715	92%	0	637	336	973	858	88%	0	2,837
2017	842	1,021	1,863	1,728	93%	0	635	337	972	881	91%	0	2,835
2018	838	1,025	1,863	1,735	94%	0	634	336	970	879	91%	0	2,833
2019	840	1,022	1,862	1,767	95%	0	632	333	965	893	93%	0	2,827
2020	825	1,037	1,862	1,724	93%	0	627	337	964	841	87%	0	2,826
2021	832	1,030	1,862	1,753	94%	0	612	352	964	870	90%	0	2,826
2022	853	1,010	1,863	1,760	94%	0	608	354	962	851	88%	0	2,825
2023	855	1,009	1,864	1,703	91%	0	599	359	958	848	89%	0	2,822
20-Year Avg.	869	994	1,863	1,671	90%	1	655	322	978	852	87%	0	2,840
2003–12 Avg.	898	965	1,862	1,603	86%	2	680	305	985	835	85%	0	2,847
2013–22 Avg.	840	1,023	1,863	1,739	93%	0	631	339	970	869	90%	0	2,833

[a] Allowable permit gear: 150 fathoms for drift and 50 for set.

[b] Includes interim use permits.

Appendix A3.–Sockeye salmon commercial catch by district, in numbers of fish, Bristol Bay, 2003–2023.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2003	3,348,504	2,291,502	1,748,934	6,665,965	706,008	14,760,913
2004 [a]	4,715,070	10,209,227	3,139,229	6,104,048	437,234	24,604,808
2005	6,728,469	8,015,950	2,216,635	7,096,031	465,094	24,522,179
2006	7,151,741	7,408,983	2,429,637	10,876,552	626,442	28,493,355
2007	9,022,511	6,495,908	5,026,615	8,404,111	816,581	29,765,726
2008	10,381,844	7,403,885	2,334,022	6,903,157	651,315	27,674,223
2009	8,514,944	11,527,462	2,555,263	7,730,168	559,442	30,887,279
2010	10,858,209	5,070,816	4,031,832	8,424,030	667,850	29,052,737
2011	9,016,321	4,810,362	2,643,495	4,886,552	744,626	22,101,356
2012	10,152,917	5,062,390	2,418,653	2,663,014	622,909	20,919,883
2013	4,853,030	4,779,133	2,168,216	3,163,805	467,329	15,431,513
2014 [b]	13,791,290	6,928,621	1,511,416	6,448,463	443,287	29,123,077
2015	16,531,193	8,749,567	5,473,800	5,592,816	371,903	36,719,279
2016	13,466,245	8,739,699	6,630,231	8,109,797	645,797	37,591,769
2017	8,256,304	11,980,502	5,705,712	12,322,519	516,488	38,781,525
2018	8,917,710	5,149,621	2,771,945	24,230,150	867,770	41,937,196
2019	11,527,837	14,683,614	1,037,030	14,755,905	1,018,644	43,023,030
2020	14,311,034	13,364,669	2,598,269	8,860,302	445,572	39,579,846
2021	9,253,721	8,552,456	5,205,169	18,283,479	676,163	41,970,988
2022	14,362,397	16,543,931	6,321,339	22,718,969	584,812	60,531,448
2023	13,264,949	12,620,330	2,282,217	11,967,229	443,905	40,578,630
2003–2022 Avg.	9,758,065	8,388,415	3,398,372	9,711,992	616,763	31,873,607
2013–2022 Avg.	11,527,076	9,947,181	3,942,313	12,448,621	603,777	38,468,967
2018–2022 Avg.	11,674,540	11,658,858	3,586,750	17,769,761	718,592	45,408,502

[a] Total includes General District harvest of 1,656,994 fish.

[b] Includes 3,958 fish that were not assigned to a district.

Appendix A4.–Chinook salmon commercial catch by district, in numbers of fish, Bristol Bay, 1955–2023.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1955	11,448	3,079	3,160	56,463	1,279	75,429
1956	6,006	1,448	616	57,441	866	66,377
1957	5,524	4,139	883	79,122	1,752	91,420
1958	8,391	3,155	2,368	87,245	2,048	103,207
1959	15,298	3,282	5,493	54,299	5,917	84,289
1960	17,778	2,991	2,209	81,416	7,309	111,703
1961	10,206	3,266	3,483	60,953	10,748	88,656
1962	8,816	2,070	2,929	61,283	8,949	84,047
1963	4,713	2,355	3,030	45,979	6,192	62,269
1964	12,902	3,618	3,694	108,606	10,716	139,536
1965	9,793	2,313	4,042	85,910	10,909	112,967
1966	5,456	1,949	1,916	58,184	9,967	77,472
1967	3,705	2,285	1,582	96,240	13,381	117,193
1968	6,398	3,472	2,153	78,201	13,499	103,723
1969	19,016	2,801	2,107	80,803	20,181	124,908
1970	19,037	3,765	1,498	87,547	28,664	140,511
1971	10,254	2,187	779	82,769	27,026	123,015
1972	2,262	1,097	166	46,045	19,976	69,546
1973	951	1,475	292	30,470	10,856	44,044
1974	480	1,133	1,200	32,053	10,798	45,664
1975	964	237	111	21,454	7,226	29,992
1976	4,064	1,138	338	60,684	29,744	95,968
1977	4,373	3,694	2,167	85,074	35,218	130,526
1978	6,930	3,126	5,935	118,548	57,000	191,539
1979	10,415	5,547	9,568	157,321	30,022	212,873
1980	7,907	5,329	5,809	64,324	12,339	95,708
1981	10,378	5,834	3,636	194,869	24,348	239,065
1982	12,425	4,834	7,170	195,287	33,786	253,502
1983	8,955	4,758	9,276	137,123	38,497	198,609
1984	8,972	4,680	4,767	61,378	22,179	101,976
1985	5,697	4,015	5,840	67,783	37,106	120,441
1986	3,188	1,883	2,982	65,783	19,880	93,716
1987	5,175	2,959	4,065	45,983	17,217	75,399
1988	6,538	3,103	3,444	16,648	15,614	45,347

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Appendix A4.–Page 2 of 2.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1989	6,611	2,034	2,112	17,637	11,366	39,760
1990	5,068	1,144	1,839	14,812	11,130	33,993
1991	3,584	510	589	19,718	6,039	30,440
1992	5,724	694	2,146	47,563	12,640	68,767
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 [a]	1,496	1,632	891	96,759	9,310	114,280 [a]
2005	1,458	486	1,818	62,764	10,605	77,131
2006	2,333	915	2,608	84,881	16,221	106,958
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	4,397	31,372
2010	1,060	223	460	26,056	5,134	32,933
2011	1,962	567	372	26,927	6,650	36,478
2012	2,306	282	212	11,952	4,612	19,364
2013	1,360	144	52	10,213	2,642	14,411
2014	1,648	461	83	11,862	1,708	15,762
2015	2,926	753	226	50,675	2,663	57,243
2016	2,797	1,144	1,435	23,783	3,831	32,990
2017	2,477	866	1,219	32,194	4,643	41,399
2018	2,398	1,520	1,407	35,938	3,457	44,720
2019	2,743	3,344	2,062	21,509	3,568	33,226
2020	816	711	1,349	6,363	767	10,006
2021	990	475	444	4,306	729	6,944
2022	1,154	239	372	4,661	1,307	7,733
2023	1,036	286	271	5,785	605	7,983
20-Year Avg.	1,721	757	955	32,491	4,817	37,091
2003–12 Avg.	1,512	549	1,045	44,832	7,102	48,923
2013–22 Avg.	1,931	966	865	20,150	2,532	26,443

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

Appendix A5.–Chum salmon commercial catch by district, in numbers of fish, Bristol Bay, 2003–2023.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2003	34,481	37,116	52,908	740,372	68,154	933,031
2004	29,972	75,061	49,358	458,916	94,025	732,481
2005	204,777	62,029	39,513	966,069	124,695	1,397,083
2006	457,855	153,777	168,428	1,240,235	223,364	2,243,659
2007	383,927	157,991	242,025	953,292	202,486	1,939,721
2008	237,260	92,901	135,292	492,341	301,967	1,259,761
2009	255,520	118,212	64,974	745,161	141,375	1,325,242
2010	337,911	57,324	62,987	424,234	118,767	1,001,223
2011	218,710	39,246	34,287	296,909	113,234	702,386
2012	133,959	35,375	31,352	272,163	206,614	679,463
2013	272,754	36,792	32,624	586,117	209,946	1,138,233
2014 [a]	87,188	33,173	19,677	242,261	100,195	482,531
2015	350,169	69,057	69,967	502,820	103,773	1,095,786
2016	237,035	74,641	72,534	397,761	187,508	969,479
2017	249,696	147,330	88,126	804,878	204,518	1,494,548
2018	310,872	75,524	71,854	1,020,227	158,329	1,636,806
2019	134,517	156,260	20,249	855,428	227,731	1,394,185
2020	36,381	50,055	16,339	136,605	53,510	292,890
2021	34,338	20,317	20,793	115,456	21,346	212,250
2022	34,124	28,033	16,176	172,370	52,770	303,473
2023	55,091	43,042	17,227	173,252	52,893	341,505
20-year Avg.	202,072	76,011	65,473	571,181	145,715	1,061,712
2003–12 Avg.	229,437	82,903	88,112	658,969	159,468	1,221,405
2013–22 Avg.	174,707	69,118	42,834	483,392	131,963	902,018

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

Appendix A6.–Pink salmon commercial catch by district, in numbers of fish, Bristol Bay, 2003–2023.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2003	24	0	0	188	32	244
2004 [a]	7,749	0	187	26,150	18,293	52,380
2005	32	0	1	554	2,108	2,695
2006	25,149	700	0	39,011	80,748	145,608
2007	9	9	2	384	533	937
2008	20,682	1,033	16	138,284	125,409	285,424
2009	23	0	1	320	544	888
2010	8,237	1,655	0	1,289,970	39,734	1,339,596
2011	13	0	5	257	352	627
2012	3,535	285	0	877,466	28,055	909,341
2013	467	0	0	208	187	862
2014	7,473	4,835	227	1,166,997	118,682	1,298,214
2015	112	0	2	807	1,219	2,140
2016	12,058	343	1,498	537,525	217,190	768,614
2017	174	214	143	7,230	26,797	34,558
2018	30,507	2,742	971	142,287	67,747	244,254
2019	530	221	183	2,021	3,875	6,830
2020	1,345	1,755	381	26,216	42,216	71,913
2021	224	281	28	1,122	1,941	3,596
2022	18,925	4,317	362	31,405	60,205	115,214
2023	278	116	42	514	2,190	3,140
20-Year Avg.	13,566	1,767	364	427,531	79,828	523,056
2004–12 Avg.	13,070	735	41	474,176	58,448	546,470
2014–22 Avg.	14,062	2,798	688	380,886	101,208	499,642

Note: Averages include even-numbered years only.

[a] Total includes General District harvest of 1.

Appendix A7.–Coho salmon commercial catch by district, in numbers of fish, Bristol Bay, 2003–2023.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2003	42	40,577	994	583	1,047	43,243
2004	2,142	2,324	4,744	47,706	15,463	72,379
2005	3,314	20,611	8,162	42,456	8	74,551
2006	5,163	26,788	3,087	44,385	449	79,872
2007	2,180	18,111	1,954	29,578	157	51,980
2008	7,059	29,682	2,220	76,932	1,159	117,052
2009	732	10,594	2,602	35,171	9,209	58,308
2010	901	9,984	407	72,909	24,065	108,266
2011	633	440	84	4,712	7,605	13,474
2012	431	2,493	0	97,382	15,977	116,283
2013	467	812	479	124,182	11,420	137,360
2014	646	11,473	435	242,604	32,134	287,292
2015	1,253	730	2,533	6,614	26,080	37,210
2016	1,110	546	171	79,538	9,346	90,711
2017	4,754	14,274	7	167,347	54,503	240,885
2018	11,549	21,139	1,633	84,320	43,243	161,884
2019	1,418	18,233	550	33,018	27,778	80,997
2020	1,033	26,342	818	76,133	10,095	114,421
2021	1,053	15,952	151	27,467	3,583	48,206
2022	1,039	10,730	11	5,155	1,100	18,035
2023	1,126	7,963	211	7,872	407	17,579
20-Year Avg.	2,346	14,092	1,552	64,910	14,721	97,620
2003–12 Avg.	2,260	16,160	2,425	45,181	7,514	73,541
2013–22 Avg.	2,432	12,023	679	84,638	21,928	121,700

Appendix A8.–Total salmon commercial catch by district, in numbers of fish, Bristol Bay, 2003–2023.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2003	3,385,814	2,369,459	1,804,199	7,452,178	778,472	15,790,122
2004 [a]	4,758,330	10,288,807	3,194,507	6,734,064	574,325	27,233,322
2005	6,940,395	8,099,368	2,266,400	8,168,138	602,660	26,076,961
2006	7,641,821	7,591,163	2,603,760	12,285,064	947,228	31,069,036
2007	9,414,797	6,674,941	5,272,187	9,440,219	1,027,528	31,829,672
2008	10,651,517	7,528,622	2,472,742	7,629,892	1,082,937	29,365,710
2009	8,774,759	11,658,846	2,623,819	8,774,759	714,804	32,546,987
2010	11,208,947	5,144,104	4,095,854	10,222,381	866,201	31,537,487
2011	9,240,963	4,853,480	2,678,405	5,216,149	872,551	22,403,764
2012	10,293,536	5,101,370	2,450,220	3,918,549	878,294	22,641,969
2013	5,127,632	4,816,881	2,201,371	3,884,525	691,600	16,722,009
2014 [b]	13,888,262	6,978,563	1,531,838	8,112,236	696,139	31,211,033
2015	16,885,517	8,819,956	5,546,460	6,152,464	505,638	37,910,035
2016	13,719,245	8,816,373	6,705,869	9,148,404	1,063,672	39,453,563
2017	8,513,405	12,143,186	5,795,207	13,334,168	806,949	40,592,915
2018	9,273,036	5,250,546	2,847,810	25,512,922	1,140,546	44,024,860
2019	11,667,045	14,861,672	1,060,074	15,667,881	1,281,596	44,538,268
2020	14,350,609	13,443,532	2,617,156	9,105,619	552,160	40,069,076
2021	9,290,326	8,589,035	5,226,585	18,431,830	703,762	42,241,538
2022	14,417,639	16,587,250	6,338,260	22,932,560	700,194	60,975,903
2023	13,322,480	12,671,737	2,299,968	12,154,652	500,000	40,948,837
20-Year Avg.	9,972,180	8,480,858	3,466,636	10,606,200	824,363	33,411,712
2003–12 Avg.	8,231,088	6,931,016	2,946,209	7,984,139	834,500	27,049,503
2013–22 Avg.	11,713,272	10,030,699	3,987,063	13,228,261	814,226	39,773,920

[a] Total includes General District harvest.

[b] Total includes 3,995 fish that were not assigned to a district.

Appendix A9.–Commercial sockeye salmon catch, in percent, by gear type and district, Bristol Bay, 2003–2023.

	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
2003	91	9	0	65 [c]	35 [c]	81	19	89	11	83	15	2		–	–	63	37	79	21
2004	79	11	10	88	12	86	14	88	12	84	15	1		–	–	55	45	79	21
2005	–	–	–	81	19	82	18	87	13	84	14	2		–	–	56	44	66	34
2006	86	8	5	81	19	84	16	88	12	87	11	2		–	–	53	47	85	15
2007	82	12	6	80	12	84	16	92	8	80	17	3		–	–	59	41	81	19
2008	81	12	7	–	–	85	15	92	8	79	16	5		–	–	60	40	82	18
2009	80	12	9	–	–	85	15	87	13	76	20	4		–	–	60	40	82	18
2010	81	10	9	–	–	84	16	90	10	78	17	6		71	29	61	39	82	18
2011	84	10	7	–	–	83	17	87	13	76	16	7		–	–	60	40	81	19
2012	85	7	8	–	–	83	17	90	10	67	27	6		45	55	67	33	73	27
2013	84	9	7	–	–	85	15	90	10	78	17	5		–	–	65	35	84	16
2014	83	9	8	–	–	89	11	82	18	73	16	7		–	–	58	42	82	18
2015	84	8	8	–	–	81	19	91	9	69	22	9		–	–	50	50	81	19
2016	83	8	9	–	–	82	18	91	9	67	22	11		–	–	56	44	81	19
2017	70	17	13	–	–	87	13	92	8	76	18	4		–	–	56	44	80	20
2018	71	17	12	84	16	80	20	78	22	82	13	2		–	100	51	49	81	19
2019	77	14	9	–	–	81	19	66	34	78	18	3		–	100	49	51	79	21
2020	80	12	8	–	–	86	14	74	26	69	26	3		100	–	47	53	79	21
2021	75	13	12	–	–	84	16	87	13	84	13	3		–	100	44	56	81	19
2022	75	14	11	–	–	79	21	89	11	82	13	2		–	100	51	49	80	20
2023	81	10	9	–	–	81	19	81	19	77	17	3		–	100	38	62	79	21
2002–11 Avg.	83	11	7	77	22	84	16	89	11	80	16	3		69	31	59	41	80	20
2012–21 Avg.	79	11	9	84	16	84	16	84	16	74	19	5		73	89	54	46	80	20
Allocation [d]	84	8	8	84	16	86	14	90	10	74	20	6	NA		NA	NA	NA	NA	NA

Note: Dashes indicate years in which fishing did not occur.

[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] Inseason numbers are presented for 1998–present because they were used to make management decisions regarding allocation.

Appendix A10.–Sockeye salmon escapement by district, in numbers of fish, Bristol Bay, 2003–2023.

Year	Naknek-Kvichak [a]		Egegik [b]	Ugashik [c]	Nushagak [d]		Togiak [e]		Total
2003	5,627,974	[f]	1,152,120	790,202	2,295,963	[g]	261,851	[h]	10,128,110
2004	12,836,100	[f]	1,290,144	815,104	2,196,864	[g]	154,681	[h]	17,292,893
2005	9,283,980	[f]	1,621,734	799,612	2,968,962	[g]	155,778	[h]	14,830,066
2006	6,795,420	[f]	1,465,158	1,003,158	4,861,780	[g]	312,126		14,437,642
2007	8,221,926	[f]	1,432,500	2,599,186	2,461,579	[g]	269,646		14,984,837
2008	7,411,104	[f]	1,259,568	596,332	3,271,926	[g]	205,680		12,744,610
2009	4,406,424	[f]	1,146,276	1,364,338	2,317,569	[g]	313,946		9,548,553
2010	6,859,068	[f]	927,054	830,886	2,791,080	[g]	188,298		11,596,386
2011	4,325,220	[f]	961,200	1,029,853	1,947,577		190,970		8,454,820
2012	5,926,503		1,233,900	695,018	1,389,975		203,148		9,448,544
2013	4,122,686		1,113,630	898,110	2,465,791		128,118		8,728,335
2014	6,133,492		1,382,466	640,158	3,723,697		151,934		12,031,747
2015	15,033,216		2,160,792	1,564,638	3,389,330		218,700		22,366,676
2016	7,930,458		1,837,260	1,635,270	2,459,450		200,046		14,062,484
2017	7,105,200	[f]	2,600,982	1,186,446	7,705,277		195,330		18,793,235
2018	8,201,286	[f]	1,608,354	1,167,792	9,525,486		511,770		21,014,688
2019	6,103,170	[f]	2,340,210	1,547,748	3,038,781		351,846		13,381,755
2020	10,529,646	[f]	2,389,728	1,745,940	3,795,795		261,126		18,722,235
2021	10,736,958	[f]	1,832,196	2,859,930	9,986,407		280,836		25,696,327
2022	7,814,400	[f]	1,786,152	1,436,784	7,581,652		239,646		18,858,634
2023	6,006,942	[f]	1,562,700	1,128,896	4,963,788		268,218		13,930,544
20-Year Avg.	7,770,212		1,576,387	1,254,067	4,008,747		239,774		14,856,129
2003–12 Avg.	7,169,372		1,248,965	1,052,369	2,650,328		225,612		12,346,646
2013–22 Avg.	8,371,051		1,905,177	1,468,282	5,367,167		253,935		17,365,612

[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 system in 2003–2004.

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

[e] Includes Togiak River tower count, except where noted.

[f] Alagnak tower count.

[g] Snake River not surveyed.

[h] Only partial and/or late survey of Togiak streams, which includes Togiak River, Lake tributaries, Kulukak system, and other miscellaneous river systems.

Appendix A11.–Inshore total run of sockeye salmon by district, in numbers of fish, Bristol Bay, 2003–2023.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak [a]	Togiak	Total
2003	8,976,478	3,443,622	2,539,136	8,961,928	967,859	24,889,023
2004	17,551,170	11,499,371	3,954,333	8,300,912	591,915	41,897,701
2005	16,012,449	9,637,684	3,016,247	10,064,993	620,872	39,352,245
2006	13,947,161	8,874,141	3,432,795	15,738,332	938,568	42,930,997
2007	17,244,437	7,928,408	7,625,801	10,865,690	1,086,227	44,750,563
2008	17,792,948	8,663,453	2,930,354	10,175,083	856,995	40,418,833
2009	12,921,368	12,673,738	3,919,601	10,047,737	873,388	40,435,832
2010	17,717,277	5,997,870	4,862,718	11,215,110	856,148	40,649,123
2011	13,341,541	5,771,562	3,673,348	6,834,129	935,596	30,556,176
2012	16,079,420	6,296,290	3,113,671	4,052,989	826,057	30,368,427
2013	9,148,587	5,950,083	3,070,893	5,648,098	621,670	24,439,331
2014	19,924,521	8,310,816	2,147,598	10,171,331	595,192	41,149,458
2015	31,565,141	10,631,593	7,038,933	8,983,050	590,604	58,809,321
2016	21,396,703	10,576,959	8,265,501	10,569,247	845,843	51,654,253
2017	15,361,504	14,581,484	6,892,158	20,027,749	711,818	57,574,713
2018	17,118,996	6,757,975	3,939,737	33,755,636	1,379,540	62,951,884
2019	17,638,837	17,023,824	2,584,778	17,794,604	1,370,490	56,412,533
2020	24,840,681	15,754,397	4,344,209	12,656,061	706,698	58,302,046
2021	19,990,679	10,384,206	8,065,099	28,269,886	956,999	67,666,869
2022	22,176,797	18,330,083	7,758,123	30,300,621	824,458	79,390,082
2023	19,271,891	14,182,994	3,411,113	16,931,017	712,123	54,509,138
20-Year Avg.	17,537,335	9,954,378	4,658,752	13,721,659	857,847	46,729,971
2003–12 Avg.	15,158,425	8,078,614	3,906,800	9,625,690	855,363	37,624,892
2013–22 Avg.	19,916,245	11,830,142	5,410,703	17,817,628	860,331	55,835,049

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

Appendix A12.–Inshore commercial catch and escapement of sockeye salmon in the Naknek-Kvichak District in numbers of fish, Bristol Bay, 2003–2023.

		Escapement				
Year	Catch	Kvichak [a]	Alagnak		Naknek [a]	Total	Total run
2003	3,350,656	1,686,804	3,676,146	[a]	1,831,170	7,194,120	10,542,573
2004	4,716,715	5,500,134	5,396,592	[a]	1,939,374	12,836,100	17,551,170
2005	6,730,812	2,320,422	4,219,026	[a]	2,744,622	9,284,070	15,990,456
2006	7,151,741	3,068,226	1,773,966	[a]	1,953,228	6,795,420	13,949,170
2007	9,027,161	2,810,208	2,466,414	[a]	2,945,304	8,221,926	17,244,437
2008	10,385,172	2,757,912	2,180,502	[a]	2,472,690	7,411,104	17,792,948
2009	8,517,450	2,266,140	970,818	[a]	1,169,466	4,406,424	12,925,769
2010	10,861,016	4,207,410	1,187,730	[a]	1,463,928	6,859,068	17,720,084
2011	9,019,372	2,264,352	883,794	[a]	1,177,074	4,325,220	13,344,592
2012	10,152,917	4,164,444	861,747	[b]	900,312	5,926,503	16,079,420
2013	4,853,030	2,088,576	1,095,950	[b]	938,160	4,122,686	8,975,716
2014	13,791,053	4,458,540	200,500	[b]	1,474,428	6,133,468	19,924,521
2015	16,531,193	7,349,712	5,770,650	[b]	1,920,954	15,041,316	31,572,509
2016	13,466,245	4,462,728	1,775,820	[b]	1,691,910	7,930,458	21,396,703
2017	8,256,304	3,163,404	2,047,894	[a]	1,899,426	7,110,724	15,367,028
2018	8,917,710	4,398,708	1,581,426	[a]	2,221,152	8,201,286	17,118,996
2019	11,527,837	2,371,242	820,458	[a]	2,911,470	6,103,170	17,631,007
2020	14,311,035	4,030,968	2,386,518	[a]	4,112,160	10,529,646	24,840,861
2021	9,253,721	4,703,520	3,236,904	[a]	2,796,534	10,736,958	19,990,679
2022	14,362,397	4,224,882	1,668,222	[a]	1,921,296	7,814,400	22,176,797
2023	13,264,949	3,751,686	1,099,050	[a]	1,156,206	6,006,942	19,271,891
20-Year Avg.	9,759,177	3,614,917	2,210,054		2,024,233	7,849,203	17,606,772
2003–12 Avg.	7,991,301	3,104,605	2,361,674		1,859,717	7,325,996	15,314,062
2013–22 Avg.	11,527,053	4,125,228	2,058,434		2,188,749	8,372,411	19,899,482

[a] Tower counts.

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

Appendix A13.–Inshore commercial catch and escapement of sockeye salmon in the Egegik District, by river system, in numbers of fish, Bristol Bay, 2003–2023.

		Escapement			
Year	Catch	Egegik [a]	Shosky Cr.[b]	King Salmon River[b]	Total Run
2003	2,291,502	1,152,030	[c]	90	3,443,622
2004	10,209,227	1,290,144	[c]	[c]	11,499,371
2005	8,015,950	1,621,584	0	[c]	9,637,534
2006	7,408,983	1,465,128	0	[c]	8,874,111
2007	6,495,908	1,432,500	0	1,500	7,929,908
2008	7,403,885	1,259,568	0	250	8,663,703
2009	11,527,462	1,146,276	0	4	12,673,742
2010	5,070,816	926,904	[c]	150	5,997,870
2011	4,810,362	961,200	[c]	[c]	5,771,562
2012	5,062,390	1,233,900	[c]	300	6,296,590
2013	4,779,133	1,113,630	[c]	[c]	5,892,763
2014	6,928,621	1,382,466	[c]	[c]	8,311,087
2015	8,749,567	2,160,792	[c]	[c]	10,486,748
2016	8,739,699	1,837,260	[c]	[c]	10,576,959
2017	11,980,502	2,600,982	[c]	[c]	14,581,484
2018	5,149,621	1,608,354	[c]	[c]	6,757,975
2019	14,683,614	2,340,210	[c]	[c]	17,023,824
2020	13,364,669	2,389,728	[c]	[c]	15,754,397
2021	8,552,456	1,832,196	[c]	[c]	10,384,652
2022	16,543,931	1,786,152	[c]	[c]	18,330,083
2023	12,620,330	1,562,700	[c]	[c]	14,183,030
20-Year Avg.	8,388,415	1,577,050			9,944,399
2003–12 Avg.	6,829,649	1,248,923			8,078,801
2013–22 Avg.	9,947,181	1,905,177			11,809,997

[a] Tower counts.

[b] Aerial survey.

[c] No survey conducted.

Appendix A14.–Inshore commercial catch and escapement of sockeye salmon in the Ugashik District, by river system, in numbers of fish, Bristol Bay, 2003–2023.

		Escapement			
Year	Catch	Ugashik River [a]	King Salmon River [b]	Dog Salmon River [b]	Total run
2003	1,731,657	758,532	27,620	4,000	2,521,809
2004	3,077,745	776,364	22,850	15,890	3,892,849
2005	2,216,906	779,172	[c]	20,440	3,016,518
2006	2,428,334	978,718	[c]	24,440	3,431,492
2007	4,996,077	2,523,686	5,420	70,020	7,595,203
2008	2,319,790	588,632	[c]	7,700	2,916,122
2009	2,555,268	1,346,630	[c]	17,920	3,919,818
2010	4,031,625	805,686	[c]	25,200	4,862,511
2011	2,641,882	1,003,753	[c]	26,100	3,671,735
2012	2,415,580	670,578	8	24,432	3,110,598
2013	2,168,216	898,110	[c]	[c]	3,066,326
2014	1,507,440	640,158	[c]	[c]	2,147,598
2015	5,473,800	1,564,638	[c]	[c]	7,038,438
2016	6,630,231	1,635,270	[c]	[c]	8,265,501
2017	5,705,712	1,186,446	[c]	[c]	6,892,158
2018	2,771,945	1,167,792	[c]	[c]	3,939,737
2019	1,037,030	1,547,748	[c]	[c]	2,584,778
2020	2,598,269	1,745,940	[c]	[c]	4,344,209
2021	5,205,169	2,859,930	[c]	[c]	8,065,099
2022	6,321,339	1,436,784	[c]	[c]	7,758,123
2023	2,282,217	1,128,896	[c]	[c]	3,411,113
20-Year Avg.	3,391,701	1,245,728	13,975	23,614	4,652,031
2003–12 Avg.	2,841,486	1,023,175	13,975	23,614	3,893,866
2013–22 Avg.	3,941,915	1,468,282			5,410,197

[a] Tower counts plus fish observed during postseason surveys.

[b] Aerial surveys.

[c] Not surveyed.

Appendix A15.–Inshore commercial catch and escapement of sockeye salmon in the Nushagak District by river system, in numbers of fish, Bristol Bay, 2003–2023.

		Escapement				
Year	Catch	Wood [a]	Igushik [a]	Nushagak [b]	Total	Total run
2003	6,667,538	1,459,782	194,088	642,093	2,295,963	8,963,501
2004	6,104,492	1,543,342	109,650	543,872	2,196,864	8,301,356
2005	7,096,296	1,496,550	365,709	1,106,703	2,968,962	10,065,258
2006	10,876,552	4,008,102	305,268	548,410	4,861,780	15,738,332
2007	8,404,532	1,528,086	415,452	518,041	2,461,579	10,866,111
2008	6,903,367	1,724,676	1,054,704	492,546	3,271,926	10,175,293
2009	7,731,518	1,319,232	514,188	484,149	2,317,569	10,049,087
2010	8,424,702	1,804,344	518,040	468,696	2,818,215	11,242,917
2011	4,887,305	1,098,006	421,380	428,191	1,968,744	6,856,049
2012	2,663,014	764,202	193,770	432,438	1,392,410	4,055,424
2013	3,163,805	1,183,348	387,744	894,172	2,466,552	5,630,357
2014	6,447,650	2,764,614	340,590	618,477	3,723,681	10,171,331
2015	5,593,702	1,941,474	651,172	796,648	3,389,294	8,982,996
2016	8,886,077	1,309,707	469,230	680,513	2,459,450	11,345,527
2017	12,322,519	4,274,224	578,700	2,852,306	7,705,230	20,027,749
2018	24,230,150	7,507,254	770,772	1,247,460	9,525,486	33,755,636
2019	14,755,905	2,073,276	256,074	709,349	3,038,699	17,794,604
2020	8,860,302	2,243,886	323,814	1,228,059	3,795,759	12,656,061
2021	18,283,479	4,410,156	878,952	4,697,299	9,986,407	28,269,886
2022	22,718,969	3,747,612	378,768	3,455,272	7,581,652	30,300,621
2023	11,967,229	2,648,616	542,496	1,772,676	4,963,788	16,931,017
20-year Avg.	9,751,094	2,410,094	456,403	1,142,235	4,011,311	13,762,405
2003–12 Avg.	6,975,932	1,674,632	409,225	566,514	2,655,401	9,631,333
2013–22 Avg.	12,526,256	3,145,555	503,582	1,717,956	5,367,221	17,893,477

[a] Tower counts.

[b] Total escapements determined for the entire drainage using Nushagak River sonar (at Portage Creek) estimate.

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

Appendix A16.–Inshore commercial catch and escapement of sockeye salmon in the Togiak District by river system, in numbers of fish, Bristol Bay, 2003–2023.

Year	Catch [a]	Escapement [b]	Total Run
2003 [c]	706,008	232,302	938,310
2004 [c]	437,234	129,462	566,696
2005 [c]	465,094	149,178	614,272
2006	626,442	312,126	938,568
2007	816,581	269,646	1,086,227
2008	651,315	205,680	856,995
2009	559,459	313,946	873,405
2010	667,885	190,970	858,855
2011	744,634	188,298	932,932
2012	622,820	203,148	825,968
2013	467,329	128,118	595,447
2014	443,258	151,934	595,192
2015	371,903	218,700	590,603
2016	645,797	200,046	845,843
2017	516,488	195,330	711,818
2018	867,770	511,770	1,379,540
2019	1,018,644	351,846	1,370,490
2020	445,572	261,126	706,698
2021	676,163	280,836	956,999
2022	584,812	242,412	827,224
2023	443,905	268,218	712,123
20-Year Avg.	616,760	236,844	853,604
2003-12 Avg.	629,747	219,476	849,223
2013-22 Avg.	603,774	254,212	857,985

[a] Catches in all sections were combined.

[b] Tower count.

[c] Aerial survey estimate included into escapement count.

Appendix A17.–Chinook salmon harvest, escapement, and total runs in the Nushagak District, in numbers of fish, Bristol Bay, 2003–2023.

	Harvests by fishery				Inriver	Spawning	Total
Year	Commercial [a]	Sport	Subsistence [b]	Total	abundance [c]	escapement [d]	run
2003	43,485	5,955	17,847	67,287	166,507	158,307	225,594
2004	100,846	6,906	15,066	122,818	242,183	233,422	356,240
2005	62,764	8,565	12,422	83,751	234,123	223,950	307,701
2006	84,881	7,473	9,143	101,497	124,683	117,364	218,861
2007	51,831	9,669	12,975	74,475	60,459	50,960	125,435
2008	18,968	6,700	11,720	37,388	97,330	91,364	128,752
2009	24,693	6,354	12,108	43,155	81,480	74,781	117,936
2010	26,056	3,907	8,190	38,153	60,185 [e]	56,092	94,245
2011	26,927	4,844	11,466	43,237	108,278 [e]	101,995	145,232
2012	11,952	5,931	9,634	27,517	174,085 [e]	167,589	195,106
2013	10,213	6,685	11,090	27,988	113,709	104,794	132,782
2014	11,868	6,260	15,832	33,960	70,460	62,679	96,639
2015	50,675	7,234	11,714	69,623	98,019	91,090	160,713
2016	24,937	8,411	16,115	49,463	125,368	118,077	167,540
2017	33,376	5,995	10,739	50,110	56,961	52,297	102,407
2018	36,626	8,192	11,835	56,653	97,239	91,354	148,007
2019	22,725	6,306	10,129	39,160	46,763	41,258	80,418
2020	7,452	1,950	8,253	17,655	43,032	40,313	57,968
2021	4,820	4,047	6,387	15,254	55,222	51,006	66,260
2022	5,431	3,421	6,876	15,728	44,434	42,713	58,441
2023	5,785	4,783 [f]	8,696 [f]	19,264	31,499	31,499	50,763
20-Year Avg.	33,026	6,240	11,477	50,744	105,026	98,570	149,314
2003–12 Avg.	45,240	6,630	12,057	63,928	134,931	127,582	191,510
2013–22 Avg.	20,812	5,850	10,897	37,559	75,121	69,558	107,118

Note: The 2023 total run and spawning escapement are preliminary estimates, based on 5-year average harvests.

[a] Commercial harvest includes personal use reported from commercial harvest.

[b] Subsistence harvest is intended to represent Nushagak River bound Chinook salmon. It excludes upper Wood River and Igushik harvest.

[c] 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).

[d] Spawning escapement estimated from the following: 1997 from comprehensive aerial surveys; 1992–1996 and 1998–2021 from inriver abundance estimated by sonar minus inriver sport and subsistence harvests above the sonar.

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

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

Appendix A18.–Chinook salmon harvest, escapement, and total runs in the Togiak River drainage, in numbers of fish, Togiak District, Bristol Bay, 2003–2023.

Year	Harvests by fishery				Spawning escapement [b]		Total run	
	Commercial	Sport [a]	Subsistence	Total				
2003	3,231	706	1,208	5,145	3,050	[c]		[d]
2004	9,310	1,388	1,094	11,792	12,324		24,116	
2005	10,605	1,734	1,528	13,867	10,200		24,067	
2006	16,221	1,064	1,630	18,915		[e]		[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	4,397	606	827	5,830		[e]		[d]
2010	5,134	591	1,162	6,887	10,096	[f]	16,983	
2011	6,650	871	966	8,487	2,140		10,627	
2012	4,612	859	933	6,404	1,503		7,907	
2013	2,642	900	691	4,233		[e]		[d]
2014	1,708	2,166	607	4,481	3,994		8,475	
2015	2,663	983	876	4,522	2,922		7,444	
2016	3,831	787	1,140	5,758		[e]		[d]
2017	4,643	978	949	6,570		[e]		[d]
2018	3,457	641	481	4,579		[e]		[d]
2019	3,568	1,617	599	5,784		[e]		[d]
2020	767	425	672	1,864		[e]		[d]
2021	729	890	768	2,387		[e]		[d]
2022	1,307	477	561	2,345		[e]		[d]
2023	605	810 [g, h]	616 [g]	2,031		[e]		[d]
20-Year Avg.	4,817	989	963	6,768	4,837		14,231	
2003–12 Avg.	7,102	991	1,192	9,285	5,182		16,740	
2013–22 Avg.	2,532	986	734	4,252	3,458		7,960	

[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.

[f] U.S. Fish and Wildlife Service radiotelemetry-derived escapement estimate.

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

[h] Due to regulatory changes this is likely an overestimate of actual harvest.

Appendix A19.–Inshore commercial catch and escapement of chum salmon in the Nushagak and Togiak Districts, in numbers of fish, 2003–2023.

	Nushagak District			Togiak District		
Year	Catch	Escapement [a]	Total Run	Catch	Escapement [b]	Total Run
2003	740,372	374,992	1,115,364	68,154	39,090 [c]	[d]
2004	458,916	360,265	819,181	94,025	103,810	197,835
2005	966,069	519,618	1,485,687	124,695	108,346	233,041
2006	1,240,235	661,003	1,901,238	223,364	26,900 [c]	[d]
2007	953,292	161,483	1,114,775	202,486	– [e]	[d]
2008	492,341	326,300	818,641	301,967	279,580 [c]	[d]
2009	745,161	438,481	1,183,642	141,375	– [e]	[d]
2010	424,234	273,914	698,148	118,767	– [e]	[d]
2011	296,909	248,278	545,187	113,234	– [e]	[d]
2012	272,163	364,499	636,662	206,614	– [e]	[d]
2013	340,881	623,326	628,134	208,786	– [e]	[d]
2014	242,261	552,797	795,058	100,195	– [e]	[d]
2015	502,981	288,929	791,910	103,773	– [e]	[d]
2016	397,761	419,810	817,571	187,508	– [e]	[d]
2017	804,878	415,488	1,220,366	204,518	– [e]	[d]
2018	1,020,227	811,283	1,831,510	158,329	– [e]	[d]
2019	855,428	651,164	1,506,592	227,731	– [e]	[d]
2020	136,605	112,731	249,336	53,510	– [e]	[d]
2021	115,456	125,352	240,808	21,346	– [e]	[d]
2022	172,370	116,692	289,062	52,770	– [e]	[d]
2023	173,252	110,379	283,631	52,893	– [e]	[d]
20-Year Avg.	558,927	392,320	934,444	145,657	111,545	21,544
2003–12 Avg.	658,969	372,883	1,031,852	159,468	111,545	43,088
2013–22 Avg.	458,885	411,757	837,035	131,847	–	–

Note: Dashes represent no data.

[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 in 2006 (Buck et al. 2012).

[b] Escapement estimates based on aerial surveys. Estimate includes Togiak, Kulukak, Matogak, Osviak, Slug, Quigmy, Negukthlik, and Ungalikthluk Rivers except where noted.

[c] Partial survey count.

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

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

Appendix A20.–Average round weight (lb) of the commercial salmon catch by species, Bristol Bay, 2003–2023.

Year	Sockeye	Chinook	Chum	Pink	Coho
2003	6.3	16.0	6.5	4.0	6.9
2004	5.8	15.4	6.6	4.1	6.8
2005	6.3	16.6	7.1	3.5	6.3
2006	5.7	17.0	7.7	3.7	6.4
2007	5.8	13.5	6.1	3.5	6.4
2008	5.8	15.5	6.5	3.6	6.5
2009	5.9	15.2	6.3	3.3	6.5
2010	5.5	14.7	6.4	3.2	8.9
2011	6.2	13.0	7.0	3.2	6.8
2012	5.7	13.9	6.7	3.1	5.4
2013	6.0	15.3	6.4	3.9	6.0
2014	5.6	15.4	6.1	3.7	6.4
2015	5.2	15.1	6.1	3.7	6.7
2016	5.4	12.6	6.0	4.0	5.8
2017	5.5	11.2	6.4	3.9	6.3
2018	5.1	10.5	6.3	3.6	6.5
2019	5.1	11.6	6.2	3.2	6.0
2020	5.1	9.6	6.0	3.3	5.5
2021	4.7	9.4	5.3	3.3	6.2
2022	5.0	9.0	5.5	3.4	6.1
2023	5.5	11.2	5.8	3.4	5.9
20-Year Avg.	5.6	14.0	6.4	3.6	6.5
2002–11 Avg.	5.9	15.5	6.7	3.6	6.8
2012–21 Avg.	5.3	12.5	6.2	3.6	6.1

Appendix A21.–Average price paid in dollars per pound for salmon, by species, Bristol Bay, 2003–2023.

Year	Sockeye	Chinook	Chum	Pink	Coho
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	1.18	1.31	0.34	0.39	0.55
2013	1.61	1.48	0.30	0.14	0.79
2014	1.35	1.32	0.41	0.24	0.84
2015	0.64	0.56	0.30	0.06	0.39
2016	0.96	0.84	0.30	0.18	0.58
2017	1.30	0.94	0.29	0.15	0.70
2018	1.60	1.02	0.37	0.27	0.68
2019	1.53	0.83	0.32	0.10	0.70
2020	1.09	0.92	0.30	0.09	0.80
2021	1.73	1.09	0.39	0.15	0.72
2022	1.39	1.12	0.40	0.15	0.53
2023 [a]	0.52	0.97	0.29	0.06	0.30
20-Year Avg.	1.01	0.86	0.25	0.15	0.56
2002–11 Avg.	0.73	0.69	0.16	0.12	0.45
2012–21 Avg.	1.30	1.03	0.33	0.18	0.68

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

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

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

Appendix A22.–Estimated exvessel value of the commercial salmon catch by species, in thousands of dollars, Bristol Bay, 2003–2023.

Year	Sockeye	Chinook	Chum	Pink [a]	Coho	Total [b]
2003	46,897	236	423	1	238	47,795
2004	76,175	634	423	171	150	77,553
2005	96,044	720	946	0	168	97,878
2006	110,372	1,240	1,441	19	191	113,263
2007	119,196	542	1,583	0	120	121,441
2008	118,028	297	1,344	170	401	120,240
2009	142,457	387	1,347	0	177	144,368
2010	176,784	495	1,743	1,567	470	181,059
2011	154,851	455	1,542	1	62	137,726
2012	139,675	338	1,475	860	345	142,693
2013	148,681	366	2,049	0	654	151,750
2014	217,311	311	1,214	1,209	1,990	222,035
2015	123,547	347	1,758	0	92	125,744
2016	192,349	361	1,688	547	312	195,257
2017	271,549	431	2,594	18	1,071	275,663
2018	345,093	477	2,891	238	720	349,419
2019	337,838	449	2,549	2	290	341,128
2020	219,336	87	487	21	436	220,367
2021	342,469	68	394	2	165	343,098
2022	419,277	86	645	60	41	420,109
2023 [c]	116,898	86	571	1	31	117,587
20 Year Avg.	189,896	416	1,427	244	405	191,429
2002–11 Avg.	118,048	534	1,227	279	232	118,402
2012–21 Avg.	261,745	298	1,627	210	577	264,457

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

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

Note: Exvessel values not adjusted for inflation. Missing data indicate no value reported and zeros indicate value reported but <500.

[a] Averages include even years only.

[b] Total may vary from actual sum due to rounding.

[c] Preliminary exvessel value does not include postseason adjustments or bonuses. Derived from preliminary season summary price per pound times commercial catch.

APPENDIX B: HERRING

Appendix B1.–Herring sac roe industry participation, fishing effort and harvest, Togiak District, 2003–2023.

			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]
2003	7	1,920	4/25-5/7	75	142	6,505	10.9	35	110.2	15,158	8.9	21,663
2004	6	2,150	4/29-5/9	54	162	4,980	10.4	31	78.0	13,888	9.5	18,868
2005	8	2,330	4/30-5/8	56	149	5,841	11.2	33	83.0	15,071	9.6	20,912
2006	7	2,060	5/12-5/21	49	144	7,132	10.8	28	113.0	16,821	9.2	23,953
2007	5	1,420	5/10-5/25	25	366	4,012	11.2	21	244.0	13,120	10.0	17,132
2008	7	1,950	5/16-5/31	27	312	4,832	11.4	28	292.0	15,691	8.4	20,523
2009	6	2,015	5/16-5/31	32	314	4,140	10.2	21	266.0	12,967	10.3	17,107
2010	6	2,690	5/11-5/27	35	338	7,540	10.1	26	266.0	18,816	9.7	26,356
2011	5	2,413	5/8-5/31	25	318	5,907	12.1	22	268.0	16,970	9.6	22,877
2012	4	1,970	5/14-6/1	18	534	4,027	12.1	16	328.0	12,994	9.4	17,021
2013	6	2,675	5/11-5/28	37	408	8,244	10.9	26	224.0	19,366	9.0	27,610
2014	6	3,065	4/27-5/13	24	412	6,016	11.9	17	412.0	19,544	9.7	25,560
2015	4	1,880	4/27-5/11	6	328	1,156	11.1	16	328.0	20,240	11.3	21,396
2016	4	2,530	4/17-5/2	3	366	80	12.2	17	306.0	14,799	12.3	14,879
2017	4	1,950	4/28-5/12	15	342	1,342	12.0	19	195.0	15,787	11.4	17,129
2018	4	1,950	4/22-5/14	1	378	[d]	[d]	20	254.0	15,856	10.0	15,856
2019	4	2,100	4/16-5/03	3	376	[d]	[d]	19	234.0	22,542	11.8	22,542
2020	1	[d]	5/3-5/15	1	297	[d]	[d]	2	297.0	[d]	[d]	[d]
2021	2	[d]	5/3-5/15	3	204	[d]	[d]	10	262.0	[d]	[d]	[d]
2022	2	[d]	4/27-5/14	0	0	[d]	[d]	8	328.0	[d]	[d]	[d]
2023	0	–	–	–	–	–	–	–	–	–	–	0
20-year Avg.	5	2,180		24	294	4,784	11	21	244	16,449	10	20,469
2003–12 Avg.	6	2,092		40	278	5,492	11	26	205	15,150	9	20,641
2013–22 Avg.	4	2,307		9	311	3,368	12	15	284	18,305	11	20,710

Note: Blank cells represent no data.

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

[b] Total vessels fished.

[c] Harvest in short tons and includes deadloss and test fish harvest.

[d] Less than 3 permit holders or companies operated; harvest confidential.

Appendix B2.–Exploitation of Togiak herring stock (in short tons), 2003–2023.

Year	Biomass estimate [a] (short tons)	Dutch Harbor food/bait	Sac roe				Total Harvest	Exploitation Rate
			Gillnet[b]	Purse seine[c]	Waste[d]	Total [e]		
2003	126,213	1,487	6,505	14,778	380	21,283	22,825	18.1%
2004	143,124	1,258	4,980	13,785	103	18,765	20,023	14.0%
2005	108,585	1,154	5,841	14,287	784	20,128	21,282	19.6%
2006	129,976	953	7,132	16,321	500	23,453	24,406	18.8%
2007	134,566	1,214	4,012	12,800	320	16,812	18,026	13.4%
2008	136,495	1,536	4,832	15,691		20,523	22,059	16.2%
2009	121,800	1,941	4,140	12,967		17,107	19,048	15.6%
2010	146,775	1,938	7,540	18,816		26,356	28,294	19.3%
2011	140,860	1,795	5,907	16,970		22,877	24,672	17.5%
2012	123,745	1,807	4,027	12,994		17,021	18,828	15.2%
2013	169,020	1,764	8,243	19,366	1,593	27,609	29,373	17.4%
2014	157,448	1,645	6,016	19,544	54	25,560	27,205	17.3%
2015	163,480	1,972	1,156	20,240	500	21,396	23,368	14.3%
2016	162,244	208	80	14,799		14,879	15,087	9.3%
2017	130,852	1,270	1,342	15,787	466	17,129	18,399	14.1%
2018	136,756	1,188	[f]	15,856		15,856	17,044	12.5%
2019	217,548	1,805	[f]	22,542	1,000	23,542	25,347	11.7%
2020	215,826	447	[f]	[f]				
2021	236,742	[f]	[f]	[f]			12,068	5.1%
2022	357,536	[f]	0	[f]	0		11,754	3.3%
2023	319,590	[f]	0	0	0	0	0	0.0%
20-year Avg.	162,980	1,410	4,485	16,326	518	20,606	21,006	14.3%
2003–12 Avg.	131,214	1,508	5,492	14,941	418	20,432	21,946	16.8%
2013–22 Avg.	194,745	1,287	2,806	18,305	602	20,853	19,961	11.6%

Note: Blank cells represent no data.

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

[b] Includes bait harvest.

[c] Includes test fish harvest.

[d] Aerial survey estimated waste.

[e] Does not include waste.

[f] Less than 3 permit holders or companies operated, harvest confidential.

Appendix B3.–Age composition by weight of total inshore herring run, Togiak District, 2003–2023.

Year	Age Composition (%) ≤ 4	5	6	7	8	≥ 9	Spawning Biomass [a] (short tons)
2003	[b]	3.0	37.0	25.0	4.0	31.0	47,074
2004	[b]	[b]	3.8	43.7	24.6	27.5	53,625
2005	[b]	[b]	0.8	11	41.4	46.4	163,737
2006	1.8	5.4	2.8	5.4	25.9	58.7	179,580
2007	0.7	7.3	15.5	5.5	9.4	61.7	143,827
2008	6.2	9	14.6	15.5	8.1	46.5	136,839
2009	9.4	14.7	14.5	14.9	12.2	34	142,154
2010	1.4	16.1	18.1	13.2	13.2	38.3	146,913
2011	[b]	4	25.3	21.7	15.7	33.3	62,333
2012	0.5	6.6	16.9	35.8	17.6	22.7	167,738
2013	0.1	2	9.6	24.7	28.8	34.8	169,020
2014	0.7	4.3	9.6	23.5	27.6	34.3	203,267
2015	1.0	4.0	12.8	11.4	24.7	46.1	228,807
2016 [c]	–	–	–	–	–	–	136,993
2017	3.4	1.6	5.4	13.0	19.0	56.7	90,269
2018	10.3	15.3	7.5	12.7	16.8	37.4	16,001
2019	1.8	22.4	25.3	14.1	12.3	24.0	177,980
2020	12.7	14.4	22.4	20.3	11.0	19.2	177,337
2021	43.1	30.8	17.0	6.7	1.9	0.5	232,181
2022	7.9	24.4	34.5	9.7	16.1	7.4	89,635
2023 [c]	–	–	–	–	–	–	319,590 [d]

[a] Includes commercial catch, escapement, and documented waste. Age contribution of the commercial purse seine harvest (by weight) was used to represent the total run. Dataset reviewed fall 2017.

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

[c] Not available; the commercial harvest was not sampled.

[d] Biomass estimate derived from aerial surveys.

Appendix B4.–Aerial survey estimates of herring biomass (in short tons) and spawn deposition (in miles), Togiak District, 2003–2023.

Year	Preseason forecast [a]	Biomass estimate [b]	Spawn estimate
2003	126,213	47,074	95
2004	143,124	53,625	36
2005	96,029	163,737	28
2006	129,976	179,580	18
2007	134,566	143,827	19
2008	134,516	136,839	49
2009	121,800	142,154	15
2010	146,775	146,913	8
2011	140,860	62,333	36
2012	123,745	167,738	31
2013	169,094	169,020	47
2014	157,448	203,267	92
2015	163,480	228,807	63
2016	164,247	136,993	43
2017	130,852	90,269	[c]
2018	136,756	16,001	[c]
2019	217,548	177,980	71
2020	215,826	177,337	30
2021	236,742	232,181	59
2022	357,536	262,291	11
2023	316,203	319,590	8
20-Year Avg.	162,357	146,898	42
2013–2022 Avg.	194,953	169,415	52

[a] Forecasts based on age structured analysis.

[b] Dataset reviewed fall 2017.

[c] Not collected.

Appendix B5.–Exvessel value of the commercial herring and spawn-on-kelp harvest, in thousands of dollars, Togiak District, 2003–2023.

Year	Herring sac roe	Total
2003	2,664	2,914
2004	2,077	2,659
2005	3,308	3,308
2006	3,168	3,168
2007	2,254	2,254
2008	2,748	2,748
2009	2,803	2,803
2010	3,481	3,481
2011	2,555	2,555
2012	3,698	3,698
2013	4,204	4,204
2014	1,394	1,394
2015	1,031	1,031
2016	1,521	1,521
2017	1,907	1,907
2018	1,629	1,629
2019	1,706	1,706
2020	[a]	
2021	[a]	
2022	[a]	
2023	[b]	
20-year Avg.	2,479	2,528
2003–12 Avg.	2,876	2,959
2013–22 Avg.	1,913	1,913

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

[a] Less than 3 permit holders or companies operated; harvest confidential.

[b] No buyers operated.

Appendix B6.–Guideline and actual harvests of herring sac roe (short tons) and spawn on kelp (lb), Togiak District, 2003–2023.

	Gillnet sac roe			Purse seine sac roe		
Year	Guideline [a]	Actual	% Difference [b]	Guideline [a]	Actual [c]	% Difference [b]
2003	6,624	6,505	-2	15,457	15,158	-2
2004	7,568	4,980	-34	17,658	13,888	-21
2005	5,667	5,841	3	13,224	15,071	14
2006	7,059	7,132	1	16,471	16,821	2
2007	7,090	4,012	-43	16,544	13,120	-21
2008	6,864	4,832	-30	16,017	15,602	-3
2009	6,378	4,167	-35	14,882	12,404	-17
2010	7,772	7,540	-3	18,134	18,816	4
2011	7,442	5,907	-21	17,364	16,970	-2
2012	6,487	4,027	-38	15,135	12,994	-14
2013	9,017	8,244	-9	21,040	19,366	-9
2014	8,367	6,468	-23	19,523	19,544	0
2015	8,704	1,220	-86	20,309	20,374	0
2016	8,635	80	-99	20,148	14,799	-27
2017	6,883	1,342	-81	16,060	15,787	-2
2018	7,212	[d]	–	16,829	15,856	-6
2019	5,386	[d]	–	24,800	23,542	-5
2020	7,750	[d]	–	30,999	[d]	—
2021	8,528	[d]	–	34,111	[d]	—
2022	13,021	0	-100	52,086	[d]	—
2023	11,484	0	-100	45,935	0	-100
20-year Avg.	7,623	4,519	-37	20,840	16,477	-6
2003–12 Avg.	6,895	5,494	-20	16,089	15,084	-6
2013–22 Avg.	8,350	2,892	-66	25,590	18,467	-7

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

[b] (Actual–guideline)/ guideline * 100.

[c] Includes deadloss and test fish harvest.

[d] Less than 3 permit holders or companies operated, harvest confidential.