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2022 Bristol Bay Area Annual Management Report

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

Symbols and Abbreviations

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Weights and measures (metric)

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

Weights and measures (English)

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

Time and temperature

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

Physics and chemistry

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

General

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

Mathematics, statistics

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

FISHERY MANAGEMENT REPORT NO. 23-08

2022 BRISTOL BAY AREA ANNUAL MANAGEMENT REPORT

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ABSTRACT

The *2022 Bristol Bay Area Annual Management Report* is the 61st 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 2022 inshore sockeye salmon run of 79.1 million fish was 8% above the preseason forecast of 73.4 million fish. Sockeye salmon dominated the inshore commercial harvest, totaling 60.3 million of the 61.0 million salmon commercially harvested. Total Bristol Bay sockeye salmon escapement was 18.9 million fish, and escapement goals were either met or exceeded in all systems with established goals. Two notable sockeye salmon abundance records were set in 2022: total inshore run and total harvest. In total, 7,733 Chinook, 303,473 chum, 115,214 pink, and 18,035 coho salmon were also harvested in the commercial fishery. Chinook salmon sonar estimate into Nushagak River was 44,434, below the 55,000-fish lower end of the escapement goal range. The 2022 Togiak District herring preseason biomass forecast was 357,536 short tons. The combined total harvest from Togiak and Dutch Harbor commercial herring fisheries was 11,754 short tons in 2022. All 2022 commercial salmon and herring 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; Erickson et al. 2018) while providing harvest opportunity for fish in excess of those ranges, consistent with regulatory management plans (5 AAC 06.355–5 AAC 06.369).

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 (2002–2021) averaged 29.4 million sockeye, 39,000 Chinook, 1.1 million chum, 511,600 pink (even years only), and 97,100 coho salmon (Appendices A3–A7). Since 2002, the annual exvessel value of the commercial salmon harvest within Bristol Bay has averaged $172.1 million. Sockeye salmon were the most valuable and averaged $172 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 1,862 permits, of which 1,760 were registered to fish in 2022 (Appendix A2). There are 964 set gillnet permits in Bristol Bay, and 851 made at least 1 delivery in 2022 (Appendix A2).

2022 COMMERCIAL SALMON FISHERY

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 2022 was forecast to be 73.4 million (Buck et al. 2021; Table 2). The Bristol Bay sockeye salmon inshore harvest was predicted to be 59.9 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 2022 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 (Buck et al. 2021). 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 time frames. 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 2002 through 2021.

PORT MOLLER TEST FISHERY

From 1967 to 1985, 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 salmon processors 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 2020).

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 2022, the Port Moller Test Fishery (PMTF) operated from June 10 to July 14 (Figure 1). There were no complete days lost to weather in 2022; 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 6–16 having the highest mean station indices.

GENETICS

Over the last 19 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 with a preliminary estimate of stock compositions of sockeye salmon returning to Bristol Bay through the Port Moller Test Fishery (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 1–3 days of samples being taken) to management staff and fishery participants. This proved to be a success and was continued for the 2022 season. 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 2022, the exvessel value of inshore commercial salmon harvest was an estimated $343.3 million (Table 4), which was 99% above the $172.1 million 20-year average (2002–2021) (Appendix A22). The average sockeye salmon price in 2022 was $1.13/pound before incentives and postseason adjustments. Prices paid for the other salmon species ranged from $0.14/pound for pink salmon to $0.87/pound for Chinook salmon (Table 4).

During the 2022 season, 40 processors/buyers registered to process fish from Bristol Bay. Of those processors, 3 companies canned, 35 froze, 17 exported fresh, 4 cured salmon, and 15 extracted roe. Product was exported by air by 31 companies and exported by sea by 24 companies (Table 5).

RUN AND HARVEST PERFORMANCE BY SPECIES

Sockeye Salmon

The 2022 inshore sockeye salmon run of approximately 79.1 million fish was the largest run on record and 8% above the preseason forecast of 73.4 million (Table 2). The sockeye salmon runs to the Naknek, Nushagak, and Togiak Rivers came in under forecast, with the remaining river systems coming in above forecast in 2022. Sockeye salmon dominated the inshore commercial harvest, totaling 60.5 million fish, which is the largest sockeye salmon harvest in Bristol Bay since harvest records began in 1893 (Table 6 and Appendix A3). Sockeye salmon sustainable escapement goals (SEG) were met or exceeded in all systems with established goals (Tables 1 and 2; Erickson et al. 2018).

Sockeye salmon average weight for the 2022 commercial fishing season was 5.0 pounds. This was approximately half a pound less than the 20-year average (2002–2021) weight of 5.6 pounds (Appendix A20). Average weights of all age classes have decreased from a 6.0-pound average in 2013 as run sizes increased (Figure 3 and Appendix A11). Many permit holders have shifted to using smaller gillnet mesh sizes in response to smaller fish sizes.

Chinook Salmon

The 2022 inshore commercial harvest of 7,733 Chinook salmon was the second lowest since 1955 (Appendix A4). Harvests in all 5 districts were below the 20-year average (2002–2021). Harvest in the Nushagak District (the largest producer of Chinook salmon in Bristol Bay) was 4,661 fish, which was below the 20-year average (2002–2021) of 34,260 fish (Appendix A4).

The Nushagak River Chinook salmon inriver run estimate at Portage Creek Sonar was 44,434 fish, which does not meet the escapement goal of 55,000–120,000 (Table 7 and 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, when sockeye salmon passage is high at the sonar project, that 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 2022, the inshore commercial harvest of 303,473 chum salmon was the third lowest harvest on record. Chum salmon harvests were below the 20-year averages (2002–2021) in all districts (Appendix A5).

The Nushagak River sonar project is the only chum salmon escapement assessment project in Bristol Bay. The escapement of 116,692 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 2022, the baywide pink salmon harvest was 115,214 fish, which is below the most recent 20-year average (2002–2021, even years only) of 511,587 fish (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 18,035 fish, which was below the 20-year average (2002–2021) of 97,139 fish. The harvest was below average in all districts. The largest commercial harvest was in the Egegik District, where the 10,730 fish harvest was below the 20-year average (2002–2021) of 13,910 fish (Appendix A7). The Nushagak River sonar project was operational until July 25 because of budget priorities and did not report a coho salmon count (Table 7). There is an established SEG of 60,000–120,000 based on the Nushagak River sonar project (Table 1).

SEASON SUMMARY BY DISTRICT

Naknek-Kvichak District

The 2022 inshore run forecast for the rivers in the Naknek-Kvichak District was 20.7 million sockeye salmon, composed of a projected 7.7 million for escapement and 13.0 million for harvest. The forecast by river system was 8.2 million for the Kvichak River, 4.1 million for the Alagnak River, and 8.4 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 total run to the Naknek-Kvichak District in 2022 was 22.2 million sockeye salmon, consisting of a commercial harvest of 14.4 million and a total escapement of 7.8 million (Appendix A12).

ADF&G does not forecast Chinook, chum, coho, or pink salmon for systems in Naknek-Kvichak District. Commercial harvest of Chinook salmon has remained relatively small because of 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 2022 season. Fish counts were started at the Naknek River tower on June 20, the Kvichak River tower on June 23, and the Alagnak River tower on June 29 (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 Wednesday, June 1, and ending 9:00 AM Friday, June 24. The first deliveries occurred on June 14 and the early season fishing schedule ended with a harvest of almost 300,000 sockeye salmon (Table 9). Following the end of the early season fishing schedule on 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, and 2021 the Nushagak District experienced sockeye salmon harvest that were 3 to 6 times larger than the historical average. Nushagak, Wood, and Egegik Rivers had large forecasts again for 2022 (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 7 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 fishers to start the season in the Nushagak or Egegik District and transfer to Naknek-Kvichak or Ugashik District later in the season. Through June 24, 1,467 permits had registered to fish in Bristol Bay, but only 133 permits had registered to fish in the Naknek-Kvichak District (Table 10).

Escapement at Naknek tower was 246 sockeye salmon on the first day of counts, and 2 days later the first push of fish made it to the tower with 26,778 passing on June 22 and 47,586 passing on June 23 (Table 8). This immediately put the escapement above the upper end of the escapement goal curve. Escapement at Kvichak tower was 0 on the first day of counts on June 22. However, 48,778 passed the tower on June 25, which put the Kvichak River escapement ahead of the upper end of the escapement goal curve. With escapements ahead on both the Naknek and Kvichak rivers, there was continuous fishing with set gillnets using daily extensions. Drift gillnets fished either 2 periods or 1 long period each day, depending on the tides, with daily fishing ranging from 16 to 18.5 hours total. Through July 3, all fishing periods were in the Naknek-Kvichak District for both gear groups.

Kvichak River escapement was slow on July 1 and 2, bringing the cumulative escapement close to the lower end of the escapement goal curve. Through July 2, the harvest percentages were 68 percent drift, 16 percent Naknek set, and 16 percent Kvichak set. A series of management actions were taken to reduce harvest on Kvichak fish while continuing to harvest Naknek fish and attempt to balance allocations. The Kvichak Section was closed to both gear groups for 19 hours from July 3 to 4 while fishing continued in the Naknek Section. On July 5 and 6, drift gillnets were restricted to the Naknek Section during each daytime tide while set gillnets continued fishing continuously in the whole district.

Through July 5, Naknek River total escapement was 869,754 sockeye salmon, which is within the escapement goal range. Alagnak River total escapement was 203,034 fish, which is just below the escapement goal (Table 8). With escapement goals for the Naknek and Alagnak Rivers basically met, set gillnets in the Naknek Section were opened until further notice. Kvichak River total escapement was 672,150 fish and 200,000 fish were estimated to be inriver from the Kvichak

inriver test fish project (Table 11). With these passage rates, Kvichak River was projecting to be in the lower half of the escapement goal range. Stock composition estimates from the PMTF indicated that the proportion of Kvichak fish would be increasing over the next several days (Figure 2). By July 6, there were only 312 permits registered to fish in the district (Table 10) so fishing in the whole district continued during each high tide for drift gillnets and fishing was continuous for set gillnets. On July 10, Kvichak River escapement was 254,382 for a cumulative escapement of 2,020,992, which was within the escapement goal range (Table 8).

Registration peaked toward the end of the registration period of June 1 to July 17 with 657 drift gillnet permits registered to fish on July 16 (Table 10). The harvest percentages during the allocation period of June 1 to July 17 was 75% drift gillnet, 14% Naknek set gillnet, and 11% Kvichak set gillnet. Regulation specifies the allocation be divided as follows: 84% drift gillnet, 8% Naknek set gillnet, and 8% Kvichak set gillnet (Appendix A9).

The district was opened to continuous fishing from July 17 to August 8. The fall schedule was initiated on August 8 and allows for fishing from 9:00 AM Mondays to 9:00 AM Sundays. The season ended September 30, but the last deliveries occurred on August 23 (Table 9).

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 2022. The midpoint of the sockeye salmon run was July 10, which is 4 days later than the most recent 20-year average (2002–2021). The midpoint of the harvest occurred on July 9. The largest daily harvest happened on July 11 with 1,135,301 fish caught and July 9 with 1,047,425 fish caught (Table 9).

The counting tower operations were successful in 2022. The Naknek River tower operated through July 21 and had a final escapement estimate of 1,921,296 sockeye salmon. The Kvichak River tower operated through July 26 and had a final escapement estimate of 4,224,882 sockeye salmon. The Alagnak River tower operated through July 26 and had a final escapement estimate of 1,668,222 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 14.4 million, 58% above the 20-year average (2002–2021) harvest of 9.1 million fish and the second highest harvest in those years (Appendix A3). The total harvest of Chinook salmon was 1,154 fish, below the 20-year average (2002–2021) harvest of 1,714 (Appendix A4). The chum salmon harvest of 34,124 fish was the lowest since 2004 and the third year in a row of similarly low catches (Appendix A5). There was a commercial harvest of 18,925 pink salmon and 1,039 coho salmon (Appendices A6 and A7). This harvest was processed by 22 processing companies that purchased fish in the Naknek-Kvichak District in 2022 (Table 5).

Egegik District

The 2022 Egegik River total inshore run of sockeye salmon was forecast to be approximately 16.0 million fish, consisting of 14.3 million fish for harvest and 1.7 million fish for escapement (Table 2). The Egegik River SEG range is 800,000–2.0 million fish. The 2022 total run of sockeye salmon to the Egegik District totaled 18.3 million sockeye salmon, with a harvest of 15.2 million and an escapement of 1.8 million fish (Appendix A13).

June 1 marked the opening of commercial salmon fishing in the Egegik District. An early season schedule of 9:00 AM Monday to 9:00 AM Wednesday and 9:00 AM Thursday to 9:00 AM Friday

was put in place to provide for Chinook salmon escapement. This schedule was in effect until June 17, when additional fishing time was then determined by inseason indicators of abundance. The first deliveries occurred on June 6 (Table 12). Daily deliveries during the early season schedule were relatively small, but toward the end they were starting to increase. Total sockeye salmon harvest was 137,000 fish through June 17 (Table 12), which was highest harvest for this time since 2013.

The Egegik River tower began operations on June 17 and escapement counts through June 18 totaled approximately 19,500 sockeye salmon, which is above average for this time (Table 13). Although harvest and escapement numbers indicated suitable numbers of fish being present, the next commercial fishing period did not occur until June 19 to allow for additional escapement. Daily inriver test fishing, which provides an index of sockeye salmon passage into the lower Egegik River, also began operations on June 17 at established sites just upstream of Wolverine Creek (Table 13). Initial catches from the test fishery indicated adequate numbers of fish moving into the Egegik River.

A fishing period was announced for the evening tide on June 20 because inseason indicators were suggesting above-average abundances of sockeye salmon in district. Harvest from the period was approximately 165,000 fish, a marked increase from the previous day. The daily escapements decreased on June 20; however, the cumulative count of 55,400 sockeye salmon was above average for this early in the season (Table 13). Another fishing period was announced for the evening tide on June 21. Harvest from this period was 239,300 fish, again doubling that of the previous day's harvest. Inriver test fish indices began to increase on the morning of June 21, and by early morning June 22, those fish were being counted at the tower project. This indicated a travel time between assessment projects of approximately 1 day (Table 13).

Cumulative escapement though 6:00 AM on June 22 was tracking with the midpoint of the escapement goal range and with increased passage rates being expected, additional fishing periods were provided on consecutive tides on June 22 and 23. Total harvest from these periods was 778,000 fish, bringing the season cumulative through June 23 to 1.4 million fish (Table 12). The total harvest to date was above average for this point in the season. Escapement through June 23 was 145,500 fish, which moved the escapement projection to exceed the upper end of the escapement goal range (Table 13). A fishing period for both gear groups was announced for June 24, producing a harvest of 110,000 fish. Although the daily harvest had decreased from the previous days, total harvest was still above average. Daily escapement on June 24 was 60,000 fish, bringing the season total to 205,300 and escapement was still projecting to exceed the escapement goal. Due to the large forecast to the Nushagak District, the number of vessels registered in Egegik on June 24 was 335, which was low compared to recent years (Table 10). Coupling that with the above-average harvest and escapement numbers, fishing opportunity would continue to be announced for each tide.

Daily escapements at the Egegik River tower decreased from June 25 through July 3; however, with a cumulative count of 787,500 fish through July 3, escapement was still tracking ahead of needed levels (Table 13). Fishing periods for both gear groups were announced for each tide over that time frame, with a shift to longer periods of 19 to 20 hours for the set gillnets. These longer setnet periods were due to the high abundance of salmon in district, relatively low number of drift vessels registered in the district, and the timing of tides. Total sockeye harvest over this period was 5.5 million fish, bringing the season cumulative to 6.9 million fish (Table 12). At this time, it was apparent that the run would be either at or above the preseason forecast.

From July 4 through July 6, daily escapements increased. The lower bound of the escapement goal (800,000 fish) was exceeded on July 4 (Table 13). Commercial fishing opportunity was still being provided on each tide as the abundance of sockeye salmon continued to increase. The highest daily catch of the season occurred on July 4, with 1.2 million fish being harvested. The following 2 days experienced the second and third highest daily catches of the season with 914,100 fish on July 5 and 946,300 fish on July 6. Over these 3 days, 3.1 million fish were harvested, bringing the season total to 10.0 million fish (Table 12). At this point, total harvest was above the most recent 20-year (2002–2021) complete season average, despite it being early July (Appendix A3). Additionally, due to the high abundances of sockeye returning to Egegik and Ugashik districts during this time, the setnet fleet saw suspensions and limits imposed by processors from July 5 to July 8.

Through July 6, cumulative escapement was approximately 1.0 million fish and indications from the inriver test fish project suggested that there were still strong numbers of fish entering the river, despite the fleet fishing on every tide (Table 13). Over the next 4 days, an additional 397,300 fish were counted at the tower, bringing the total to 1.4 million fish through July 10 (Table 13). This period of time also saw a decrease in drift effort from 343 vessels on July 7 to 277 on July 10, as vessels elected to either transfer to Ugashik or Naknek-Kvichak Districts (Table 10).

With the midpoint of the escapement goal (1.4 million) being achieved, the 48-hour transfer period was waived on July 11. Consistent fishing opportunity on each tide continued until the end of the allocation period on July 17, with drift periods being increased to 8 hours in length and the setnet fleet still fishing 19–20-hour periods (Table 12). Daily escapement and harvest began to decrease over this time as the run began to wane. Between July 11 and July 17, an additional 280,400 fish were counted as escapement and harvest totaled 2.4 million fish (Tables 12 and 13). By July 17, escapement was within the upper half of the escapement goal range and harvest levels continued to decrease. Commercial fishing in Egegik District was liberalized to 24 hours per day from July 17 through August 7, then the fall schedule took effect beginning August 8.

The 2022 Egegik sockeye salmon run was above forecast and exhibited average run timing as the midpoint of July 5 was right on the 20-year average (2002–2021). By the end of the allocation period (July 17) the cumulative catch was 15.2 million sockeye salmon, with an additional 1.3 million fish being caught before the last buyer ended operations for the year on August 31. Harvest of all species in 2022 was 16.6 million fish (Tables 12).

The 2022 Egegik sockeye salmon run was composed of mostly ocean age-2 and 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-2.2 and -1.3 were overforecasted, whereas age-1.2 and -2.3 were under forecasted. Age-2.2 were the most abundant age class, making up 37% of the 2022 run (Table 14).

From June 16 through 9:00 AM July 17, a total of 393 hours were fished by the drift gillnet group and 480 hours were fished by the set gillnet group, which equated to 57% and 70%, respectively, of the 672 available hours (Table 12). By the end of the allocation period on July 17, harvest percentages were at 79% drift gillnet and 21% set gillnet (Appendix A9).

The 2022 harvest of 16.5 million sockeye salmon in the Egegik District ranked second highest on record (Appendix A3). Harvest was above the 20-year average (2002–2021) of approximately 7.7 million fish (Appendix A13). The fishery harvested 90% of the run into the district, similar to the 20-year average (2002–2021) of 82% (Appendix A13). Harvest peaked at 1.2 million fish on July 4 (Table 12). Highest daily escapement occurred on June 25 when 131,800 fish were counted

(Table 13). Effort peaked on July 1, when 362 drift gillnet permits were registered in the district, including 154 dual permits (Table 10). There were 11 processors registered to purchase fish in the Egegik District in 2022 (Table 4).

Combined commercial harvest of other salmon species in the Egegik District was 43,300 fish, or about 0.2% of the total salmon harvest (Table 12). Chinook salmon harvest was 239 fish, which was below the 20-year average (2002–2021) of 760 fish (Appendix A4). Chum salmon harvest of 28,033 fish was below the 20-year average (2002–2021) of 75,785 fish (Appendix A5). Pink salmon harvest was 4,317 fish, which is above the most recent 20-year average (Appendix A6). The coho salmon harvest of 10,730 fish was below the 20-year average (2002–2021) of 13,910 fish (Appendix A7).

Ugashik District

The 2022 Ugashik River total inshore run of sockeye salmon was forecast to be approximately 6.1 million fish, consisting of 4.9 million fish for harvest and 1.2 million fish for escapement (Table 2). The commercial catch of approximately 6.3 million sockeye salmon was above the recent 20-year average (2002–2021) of 3.2 million fish and was the third highest district harvest on record (Table 15; Appendix A3). The sockeye salmon escapement to the Ugashik River of 1,436,784 fish exceeded the SEG range of 500,000–1.4 million fish (Tables 1 and 16). The 2022 total run of sockeye salmon to the Ugashik District of 7.7 million fish, ranked third highest since 1963 (Appendix A14).

The Ugashik District opened for the season on June 1 to a fishing schedule of 9:00 AM Monday to 9:00 AM Friday, with the first landings occurring on June 8 (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 Wednesday, June 24. Cumulative harvest through June 24 was 46,000 fish. After that time, additional fishing time was dependent on inseason indicators of abundance. Pacific walrus did not return to the beach they have used during recent seasons, which is located about 0.5 miles north of the district boundary, meaning the northern boundary line of the district would not be adjusted to begin the season.

The Ugashik District 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. Inriver test fishing began June 23 and initial catches indicated low numbers of fish moving upriver. On the morning of June 24, reports came in of a strong harvest in the Outer Port Heiden Section (OPH) of Area M the day prior. Typically, when OPH has a group of fish move through, 2 days later they will be present in Ugashik. With the large preseason forecast combined with the small amount of drift effort in district, a 12-hour fishing period was announced for June 25. Harvest from this period totaled 73,200 fish, a large increase from the previous day's harvest of 460 fish (Table 15). The majority of these fish were harvested on the outside portion of the district and had yet to move inside the river mouth.

Inriver test fish catches were still suggesting low numbers of fish moving into the river, so the district was closed on June 26 to allow for additional fish to move inriver. The next fishing opportunity was announced for June 27 to assess whether the run was continuing to build within district. The harvest of 121,700 sockeye salmon from just 43 vessels indicated that the run was continuing to build (Tables 10 and 15). The escapement tower project, operating about 24 miles upstream of Ugashik Village at the outlet of Lower Ugashik Lake, began operations on June 27 and counted 1,590 fish (Table 16). Tower count data corroborated inriver test fishery data from

the previous days, that passage rates of fish into the river was low. Genetic stock composition estimates at PMTF from June 24–25 became available on June 27 and indicated a sizable abundance of Ugashik bound fish entering the bay for this time (Figure 2).

Fishing periods were announced for the next 2 days on June 28 and 29 of 12 hours each. With the relatively small drift fleet and the above-average harvest levels, these periods were to continue assessing run entry into the district. Total harvest from these 2 days was 291,400 fish, nearly a 50% increase from the previous 2 fishing opportunities combined (Table 15). These fishing periods had more than 2,000 sockeye per delivery, which were the third and fourth consecutive ones at that level since June 25. For comparison, the largest sockeye per delivery from the other districts of Bristol Bay during this time was in the Egegik District with 1,670 sockeye per delivery on June 27.

When salmon begin building and to mill in the outer portions of the district, their abundances can grow to numbers that are uncontrollable by a small fleet once they decide to migrate upriver. This can lead to large escapements in excess of the escapement goal, as was the case in 2021. With just 66 vessels registered, another 12-hour fishing period was scheduled for June 30 (Tables 10 and 15). On the morning of the June 30, inriver test fishery catches increased during the overnight tide, a positive sign for escapement. Once the last deliveries were counted, catch from this period totaled 272,300 fish, bringing the season total to 804,300 sockeye salmon, well above the long-term average for this point of the season. Inriver test fish catches continued to increase throughout the day on the 30, prompting an announcement for another 12-hour period on July 1 (Tables 15 and 16).

Vessel registrations increased as fish abundance numbers began to rise, with the number of vessels registered in the district doubling from June 29 through July 1 (Table 10). With the increase in effort, harvest rates continued to be very good on July 1, with 176,500 fish being caught among 100 vessels. Escapement into the river continued to increase throughout the day, with both the inriver test fish and counting tower projects experiencing larger numbers of fish moving by each project. Daily escapement counted at the tower totaled 14,430 fish. This was probably the bump seen at the test fishery the previous day, indicating a little over 1 day travel time between the assessment projects.

Between July 2 and July 7, daily catches at the inriver test fishery continued to signify that good numbers of fish were entering the river and corresponding escapement counts at the tower confirmed these catches. Total escapement over this period of time totaled 340,800 fish, bringing the cumulative to 362,000, which projected to exceed the upper bound of the escapement goal range. Fishing periods continued to be offered daily from July 2 to July 8, but the duration of these periods were reduced from 12 to 8 hours over that time frame (Table 15). This was due to the increasing effort in the district, because the registered vessel count went from 104 on July 2 to 165 on July 7 (Table 10). Average daily harvest during this time was approximately 300,000 fish, which indicated that the abundance of fish continued to build (Table 15). Cumulative harvest through July 7 was 2.9 million fish. Additionally, Ugashik and Egegik Districts experienced strong harvests during the same time frame, and this had a negative impact on the setnet fleet in Ugashik because they were either placed on limits or buying was suspended between July 4 and 13.

Escapement counts at the tower project continued to be strong through July 13, when the run began to diminish. The lower bound of the escapement goal range was achieved on July 8 and the midpoint of 950,000 fish was exceeded on July 12, when the district transfer period was waived

(Table 16). Daily fishing opportunity continued through this time frame, with the duration of these periods being increased to 16 hours due to the escapement goal being achieved and still projecting to exceed the upper end of the range. High harvest rates continued as well, with 2.1 million fish being harvested between July 8 and 13, bringing the cumulative to 4.9 million sockeye salmon (Table 15). Ugashik District experienced 16 consecutive fishing periods with 2,000 or more sockeye per delivery, with the streak coming to an end on July 12.

Fishing periods continued to be announced through the remainder of the allocation period on July 17, after which fishing was liberalized to 24 hours per day until August 4, when the fall season schedule took effect. Throughout the rest of the season another 1.4 million sockeye salmon would be harvested, with the last deliveries occurring on August 6. By the end of the allocation period (July 17), set gillnetters caught approximately 11% of the sockeye salmon harvest and drift gillnetters caught 89%. The allocation specified in regulation is 10% set gillnet and 90% drift gillnet (Appendix A9). Between June 25 and July 17, set gillnet permit holders were provided a total of 303.5 hours of fishing time and drift gillnet permit holders were permitted to fish a total of 283.5 hours (Table 15).

The reported harvest of 372 Chinook salmon was below the 20-year average (2002–2021) of 968 fish (Appendix A4). 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. In 2022, aerial escapement surveys for these species were not flown due to budget constraints. The chum salmon harvest of 16,176 fish was below the 20-year average (2002–2021) of 66,454 fish (Appendix A5). Reported pink salmon harvest was 362 fish (Appendix A6). Reported coho salmon harvest was 11 fish (Appendix A7). In summary, the 2022 Ugashik District sockeye salmon fishery harvested approximately 81% of the sockeye salmon run to the district, compared to the 20-year (2002–2021) average harvest rate of 71% (Appendix A14). The midpoint of the escapement was July 10 compared to the 20-year (2002–2021) average of July 11. There were 11 processors registered to purchase fish in the Ugashik District this season (Table 5).

Nushagak District

The 2022 Nushagak District total inshore sockeye salmon run was 30.3 million fish, 2% above the preseason forecast of 29.5 million fish (Appendix A10) Commercial sockeye salmon harvest in Nushagak District reached 22.7 million fish, 15% below the preseason projected surplus of 26.9 million fish and 158% above the 2002-2021 average harvest of 8.8 million sockeye salmon (Table 2; Appendix A3 and A15). Escapement in the district's 3 major river systems was 3,747,612 for Wood River, 378,768 for Igushik River, and 3,455,272 sockeye salmon for Nushagak River (Tables 7 and A15). Igushik River sockeye salmon escapement was within the escapement goal range, whereas Nushagak and Wood rivers' escapements exceeded the upper end of the escapement goal ranges (Appendix A1).

In 2022, there was no forecast for Nushagak River Chinook salmon. The preseason plan for Chinook salmon management was to not expect directed openings for Chinook salmon; this decision was based on the lower-than-average Chinook salmon runs in recent years and the lack of a reliable forecast for the 2022 season (Appendix A18). The sonar escapement enumeration project at Portage Creek was fully operational on June 6 (Table 7). Initially, the Chinook salmon run seemed strong. By June 12, the sonar was projecting over the 95,000 inriver goal. Strong escapement continued until June 23. Historically, the midpoint of escapement occurs between June

24 and 26. Escapement turned out to have peaked early and the overall run was compressed. The last surge of Chinook salmon escapement was on June 22 and 23 with a combined escapement of 9,600 fish bringing the cumulative to 34,000 and projecting 104,000 for the year. Despite having projections above the 95,000 inriver goal the department did not allow for directed Chinook salmon openings. With an above-average sockeye salmon forecast, and a larger than usual fleet, it was expected that incidental harvest of Chinook salmon would control any potential surplus. Following the 2 strong days of June 22 and 23, Chinook salmon daily and cumulative escapement was far below average for the rest of the season. The peak daily escapement was on June 18 (average the 24) and the midpoint of the escapement was June 20 (average June 26; Table 7). The Chinook salmon run produced a commercial harvest of 4,661 Chinook salmon in the Nushagak District in 2022 (Table 18; Appendix A4). This harvest was 14% of the 2002–2021 average harvest of 34,260 fish for the Nushagak District (Appendices A4). The Chinook salmon sonar estimate for the Nushagak River was 44,434, well below the 55,000-fish lower bound of the escapement goal range (Table 7 and Appendix A17).

The preseason plan, outlined in the outlook, indicated commercial fishing for sockeye salmon would begin in the Nushagak District when Wood River sockeye salmon escapement reached 100,000, if Nushagak Chinook escapement was projecting below 95,000. Management emphasis would also switch from Chinook salmon to sockeye salmon at this juncture; however, efforts would be made to keep drift fishing time to 12 hours or less daily for as many days as possible to protect Chinook salmon.

Despite Chinook salmon escapement projecting above the 95,000 inriver escapement goal, the department wanted to wait as long as possible before opening commercial fishing in the district while still protecting against a big influx of sockeye salmon. Staff closely watched Wood River sockeye salmon escapement, where enumeration began on June 17, for signs of such an influx.

Wood River sockeye salmon escapement surged with a midnight to 6:00 AM count on June 19 of 20,670 bringing the cumulative to 45,000 fish (Table 17). With the potential for an 80,000 fish escapement day, the department released a 9:00 AM announcement putting the fleet on short notice. Additional information was gathered from the subsistence fishery, test fishery, and aerial surveys and concluded there was not a sustained push of fish occurring. The decision was made to wait, and an 8:00 PM announcement advised the earliest possible openings would be the evening of June 20. On the morning of June 20, the midnight to 6:00 AM Wood River sockeye salmon escapement was 5,500 for a cumulative of 74,000. Although Nushagak Chinook salmon escapement was strong at 21,500 fish through June 19 (Table 7), the department was still concerned because of previous poor years and less than expected subsistence reports at this point in the season. Once again managers gathered as much data as possible and decided to wait at least another tide before fishing. A 9:00 AM announcement on June 20 pushed the earliest possible opening until June 21 in the morning. With another late aerial survey to assess Wood River sockeye salmon movement in the lower river, and continued updates from the test fishery, staff again updated the fleet with an 8:00 PM announcement saying earliest possible fishing would now be the evening of June 21. The morning of June 21 still indicated fish passage was slow, 8,000 midnight to 6:00 AM at Wood River tower. Staff released a 9:00 AM announcement pushing back the earliest possible fishing until June 22 in the morning. Throughout the day on June 21 staff monitored the various indicators but still saw no sign of increased fish movement through the district in the test fishery or inriver via subsistence reports and an aerial survey. An 8:00 PM announcement on June 21 pushed back the earliest possible opening until the evening of June 22. The morning of June 22 Wood River tower

counts were still slow with 9,500 fish counted from midnight to 6:00 AM, but test fish results in the district indicated fish were starting to move. Staff released a 9:00 AM announcement for the earliest possible fishing period the morning of June 23. Additional indicators showed signs of increased fish movement throughout the day. Staff released a 6:00 PM announcement on June 22, opening commercial fishing in the district from 8:30 AM until 3:00 PM for set gillnets and from 9:30 AM until 1:30 PM for drift gillnets.

The first commercial opening for the drift gillnet fleet and the Nushagak Section set gillnet fleet harvested 853,000 sockeye salmon and 436 Chinook salmon (Table 18). Although fishing started for the season and Chinook salmon escapement was projecting above the 95,000 inriver goal, staff were still conservative out of concern for Chinook salmon. The preseason plan was to limit drift fishing to 12 hours or less per day and take at least 1 tide off for all fishing every 2 days. With the timing of the tides this meant an opening the morning of June 24 and another opening late that evening, closing at 3:30 AM on June 25. Taking the afternoon tide off on June 25, the next opening was scheduled for 12:30 AM June 26. The afternoon of June 25 there were several reports from the commercial district of large volumes of fish moving along the east side of the district. At this point, it was too late to announce an opening, so the previously announced opening scheduled for 12:30 AM June 26 was fished as planned. June 26 produced a harvest of 1.7 million sockeye salmon in the Nushagak District. Another tide was taken off for the drift gillnet fleet on June 27, but set gillnets started fishing late on June 25 and did not close for the rest of the season.

After June 27, the drift fleet had opportunity on every tide. The drift fleet started fishing at 3:30 AM on June 30. When staff arrived in the office in the morning, reports indicated fishing was exceptional, which prompted managers to extend fishing until 6:00 PM, July 1 (Table 18). Beginning June 30, the surge of sockeye salmon into the Nushagak District was unprecedented, surpassing the records set in 2021. Inseason, the daily processor reports indicated a daily harvest of 2.5 million on June 30. This reported harvest of 2.5 million sockeye salmon shattered the record single-day harvest set in 2021 of 1.8 million fish. The final fish ticket harvest number for June 30 is 3.1 million, which exceeds the total harvest for the Nushagak District in some entire seasons, such as 2002 and 2012 (Table 18; Appendix A3). The reported daily harvest exceeded 1 million sockeye salmon 8 of the 9 days between June 30 and July 8. Another 5 million sockeye salmon were harvested after July 8. The drift fleet fished 2 tides, about 14.5 hours, per day from July 9 until fishing was extended until further notice on July 13 (Table 18). The 22.7 million sockeye salmon harvest ranks second highest of all time, only behind the 24 million harvested in 2018 (Appendix A3).

On June 28, the Wood River sockeye salmon escapement exceeded 1.1 million, allowing managers to open the Wood River Special Harvest Area (WRSHA). The WRSHA was opened to commercial fishing with set gillnets providing more opportunity to control Wood River sockeye salmon escapement. The set gillnet fleet was behind in the harvest percentage in the regular district and therefore was afforded the additional opportunity in the WRSHA. The WRSHA remained open, though not continuously, until July 20 when it was closed for the season.

Igushik set gillnet fishing opened on June 1 for 24 hours a day until June 12, when additional buyers were able to start buying operations (Table 18). Once a major buyer began operations fishing was limited to no more than 12 hours a day until June 24 when the fishing was extended until further notice. Escapement into the Igushik River was above average from the second day of counting on June 27 (Table 17). Escapement continued at an above-average pace and the 150,000

lower end of the escapement goal was exceeded on July 6. The 378,768 total escapement was within the 150,000–400,000 escapement goal range (Tables 1 and 2).

As the sockeye salmon run ended, fishing effort dropped steadily, and processing effort also diminished. With decreased fishing effort and reduced processing capacity, the department transitioned from sockeye salmon management to coho salmon management. In 2022, the sonar counting station was operational on the Nushagak River until July 25. This meant that sonar counts were not available for management of the coho salmon fishery. With no escapement information for pink or coho salmon, staff used harvest information to determine if fishing was warranted.

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 is impossible to quantify the pink or coho salmon runs in 2022. Pink salmon do occur in large numbers in even years in Bristol Bay; however, anecdotal information suggests that 2022 did not seem to be an exceptional year for pink salmon abundance in the Nushagak District. With no significant pink salmon run, most major processors ceased buying operations in the third week of July and fishing quickly tapered off as did sockeye salmon abundance. There was very little if any directed fishing for coho salmon because fishers were still focused on sockeye salmon opportunities on the east side of Bristol Bay or just were not interested in fishing for coho salmon.

The coho salmon harvest of 5,155 fish was below the recent 20-year average of 64,657 (Appendix A7). The total Nushagak District pink salmon harvest was 31,405, insignificant relative to the 20-year average of 424,411 but not surprising considering the lack of interest from industry (Tables 6, 18; Appendix A6). The final chum salmon harvest was 172,370 (Tables 6, 18; Appendix A5).

Togiak District

The 2022 inshore run forecast for the Togiak River was 1,150,000 sockeye salmon composed of a projected 230,000 fish escapement and 918,000 fish harvest (Table 2). Smaller sockeye salmon runs to other drainages in the district (primarily the Kulukak River) occur, but these are not included in the preseason forecast; however, they contribute approximately 50,000 sockeye salmon to the district harvest each year. The SEG for the Togiak River is 120,000–270,000 sockeye salmon (Table 1). The total inshore run to the district in 2022 was 827,224 sockeye salmon, coming in just below the average relative to the last 20 years (Appendix A16). The commercial harvest of 584,812 fish is also slightly below the 20-year average of 599,210 (Table 19; Appendices A3 and A16).

The Togiak District is managed differently than other districts in Bristol Bay. This district uses a fixed fishing schedule of 60 hours per week in 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 July 27 was prohibited by regulation, if the permit and/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 July 27.

ADF&G 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 and Chinook salmon harvest closely through June. Effort remained low throughout much of June, but as effort increased, the department chose to restrict fishing time for 24 hours on June 30 for

Chinook salmon conservation. Total Chinook salmon harvest for the Togiak District was 1,307 fish, well below the 10- and 20-year averages (Tables 6, 19; Appendix A18).

Togiak River counting tower began documenting sockeye salmon escapement on July 5 (Table 17). Escapement counts started out relatively slow and remained steady for the first couple weeks of counts. With relatively low counts for the first 2 weeks, department staff were concerned that the run might be later or weaker than predicted. An aerial survey of Togiak River was flown on July 21 and found that the sockeye were holding in large schools inriver, before making the push to Togiak Lake. Escapement peaked on July 28 with 30,816 fish counted, directly followed by 23,712 fish on July 29 (Table 17). Tower operations continued until August 8, which had a daily count of 2,766 fish. Escapement into Togiak Lake was 242,412 sockeye salmon, which is within the escapement goal range of 120,000–270,000 fish (Table 17; Appendix A1).

Combined commercial harvest of non-sockeye salmon species in the Togiak District was 115,382 fish in 2022, or about 16% of the total (Table 19). The commercial chum salmon harvest of 52,770 fish was 35% of the 20-year average (2002–2021; Appendix A5). The pink salmon harvest of 60,205 represented almost 83% of the 20-year average for Togiak. Harvest for coho salmon totaled 1,100, which was 7.5% of the 20-year average (2002–2021; Appendix A7).

In 2022, the Togiak District Fishery harvested approximately 71% of the sockeye salmon run to the district, which falls in line with the 20-year average harvest rate of 72% (Appendix A18). Peak effort occurred on July 27 when 111 permits delivered fish. There were 3 processors registered to purchase fish in the Togiak District in 2022 (Table 5).

2022 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 is the focus of herring sac roe and spawn-on-kelp fisheries. In the Togiak District, herring are commercially harvested for sac roe using gillnets and purse seines 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 Magnusson–Stevens Act) resulted in a rapid expansion of the Togiak herring fishery in 1977.

The Togiak herring fishery is the largest in Alaska. Between 2002 and 2021 the Togiak sac roe harvest has averaged 20,406 tons, worth an average of $2.5 million annually (Appendices B2 and B5). Given the volatile nature of the herring sac roe market, historical harvest and value are of

limited utility when contemplating future harvest or value. In 2022, sac roe harvest value is confidential (Appendix B5). No spawn-on-kelp fishery has occurred since 2003. In July, a food and bait fishery also occurs near Dutch Harbor; this fishery is 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.

STOCK ASSESSMENT

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

Fundamental aerial survey techniques used in Togiak have remained largely unchanged since 1978 and are described in Lebida and Whitmore (1985). Herring school surface area is estimated through a handheld tube with a measured grid and a known focal length from a known altitude. Standard conversion factors of 1.52 tons (water depths of 16 ft or less), 2.58 tons (water depths between 16 and 26 ft), and 2.83 tons (water depths greater than 26 ft) per 538 ft^2 of surface area is applied to herring school surface areas to estimate the total biomass observed during each flight. Over the last 20 years, ADF&G has transitioned to aerial survey data collection methods that use Geographic Information Systems (GIS), allowing real-time data entry and analysis. This 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 assess spawning biomass while flying 6 different aerial surveys in 2022 (Table 21).

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

HERRING SAC ROE FISHERY OVERVIEW

Fishing and Industry Participation

Unlike most herring fisheries in Alaska, the Togiak sac roe fishery is not a limited entry fishery. Gillnets, purse seines, and hand purse seines are legal gear. Since fishing effort is not limited, effort levels can vary substantially from year to year. Herring market conditions are one of the leading factors influencing effort 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 (Appendix B1). 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 (Appendix B1).

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 companies have purchased herring from Togiak. Since 1998, industry participation has steadily declined to 1 company in 2020 (Appendix B1). Processing capacity on the grounds has also declined from a high of 4,850 tons per day in 1996, to a low in 2007 of 1,420 tons per day. Capacity since 2020 is confidential (Appendix B1). Two companies participated in the 2021 and 2022 Togiak herring fisheries (Table 20; Appendix B1).

2022 SEASON SUMMARY

The following is a summary of the 2022 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 during the months of April and May.

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 2022 preseason biomass forecast was 357,536 tons with an exploitation rate of 20% (71,507 tons; Appendix B2). 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, 4,900 tons for the Dutch Harbor Food and Bait fishery, and the remaining 65,107 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 (52,086 tons in 2022) and 20% of the harvest is taken by gillnet (13,021 tons in 2022).

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. For at least the past decade, the seine fleet has been composed of processor-organized cooperatives. During the 2022 season, management staff allowed long-duration purse seine openings across a large area of the district and let processors limit harvest for their individual fleets based on processing capacity.

Department staff took a poll of processing companies prior to the 2022 season to assess processing capacity and to inquire about additional concerns or issues. The poll indicated 2 companies intended to participate in the 2022 Togiak herring fishery. One company indicated they planned to buy both gillnet and purse seine fish. A second company intended to buy only purse seine fish.

Purse Seine

The Togiak purse seine fishery opened until further notice at 8:00 AM on April 27, with harvest first reported on April 28. Eight purse seine vessels participated in the Togiak herring fishery in 2022. All harvest for the fishery is confidential due to less than 3 processors participating in the fishery. Weather was good for most of the season and did not appear to prevent fishing for any significant amount of time. The fishery continued until fishers ended participation on May 14.

Gillnet

The Togiak herring gillnet fishery did not open in 2022 because there were no participants.

EXVESSEL VALUE / EXPLOITATION

All information related to harvest, value, and exploitation is confidential in 2022 due to low participation in the fishery.

AGE COMPOSITION

A total of 1,983 herring were sampled over the course of the fishery from commercial harvest to: (1) determine age composition of the harvest, (2) estimate the age composition of the biomass, (3) determine the size at age of herring in this year's spawning biomass, and (4) provide data for next year's forecast. The observed age composition from the purse seine fishery was 11% age-4 and younger fish, 58% age-5 and age-6, and 33% age-7 and older (Appendix B3). Mean weight of herring caught in the purse seine fishery was 276 grams. The 2022 spawning biomass showed above median recruitment and is considered healthy and stable.

EXPLOITATION

All information related to harvest, value, and exploitation is confidential in 2022 due to low participation in the fishery. The combined Dutch Harbor Food and Bait fishery and Togiak herring fishery harvest is 11,754 tons. This makes the exploitation rate 3.3% based on the preseason forecast (Appendix B2).

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The department would again like to thank the Bristol Bay Fisheries Collaborative (BBFC) for their funding assistance over the last several years. Created in 2016, BBFC provided financial support to assist with the management of the salmon fishery. BBFC was an agreement between the department and the Bristol Bay Science and Research Institute (BBSRI) to work together with stakeholders to restore a world-class fisheries management system and raise funds for its support and maintenance. Additionally, the department would like to thank BBSRI and Bristol Bay Regional Seafood Development Association for their funding and efforts to operate the Port Moller Test Fishery. Included with these efforts was the deployment of a second vessel, which provided a better index of the arrival timing, abundance, and stock composition of this year's return than was possible with a single vessel. Additionally, a large effort was taken by BBSRI to install a genetic laboratory on board the R/V *Ocean Cat*. This onboard laboratory was used at full capacity in 2022 and resulted in timelier genetic stock composition data and reduced logistics, which allowed for increased test fishing effort.

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TABLES AND FIGURES

Table 1.–Summary of current escapement goals for salmon stocks in Bristol Bay Management Area; 2022.

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
Igushik River	150,000–400,000	tower count	SEG	2015
Nushagak River	370,000–900,000	sonar	SEG	2015
	260,000–760,000	sonar	OEG	2012
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 thousands of fish, Bristol Bay, 2022.

	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	8,159	14,003	72	2,000–10,000	4,225	4,159	9,778	135
Alagnak River	4,123	4,300	4	210 minimum	1,668	2,102	2,632	25
Naknek River	8,396	6,791	-19	800–2,000	1,921	6,696	4,870	-27
Egegik River	15,990	16,967	6	800–2,000	1,786	14,290	15,181	6
Ugashik River	6,096	7,372	21	500–1,400	1,437	4,921	5,935	21
Wood River	9,398	11,392	21	700–1,800	3,748	7,864	7,644	-3
Igushik River	1,959	2,762	41	150–400	379	1,622	2,383	47
Nushagak River	18,133	14,764	-19	370–900	3,455	17,366	11,309	-35
Togiak River	1,151	798	-31	120–270	240	918	558	-39
TOTAL BRISTOL BAY [e]	73,405	79,149	8	5,650–19,090	18,859	59,938	60,290	1

[a] The Bristol Bay inshore forecast does not include several minor river systems, including the Snake River drainage in Nushagak District, and the Kulukak, Osviak, Matogak and Slug River systems in Togiak District. Catches, escapements, and total runs for these smaller systems are not included in this table so that forecast efficacy may be gauged. Totals may not equal column sums 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 thousands of fish, Bristol Bay, 2022 (Buck et al. 2021).

	2-Ocean			3-Ocean			
District and river system	1.2 (2018)	2.2 (2017)	Total	1.3 (2017)	2.3 (2016)	Total	Total
NAKNEK-KVICHAK DISTRICT							
Kvichak River	4,356	1,244	5,600	2,575	192	2,767	8,367
Alagnak River	1,932	85	2,017	2,050	161	2,211	4,228
Naknek River	3,540	591	4,131	4,158	322	4,480	8,611
Total	9,828	1,920	11,748	8,783	675	9,458	21,206
EGEGIK DISTRICT	7,973	3,521	11,494	3,529	1,376	4,905	16,399
UGASHIK DISTRICT	1,949	686	2,635	3,271	345	3,616	6,251
NUSHAGAK DISTRICT							
Wood River	7,004	185	7,189	2,333	108	2,441	9,630
Igushik River	452	6	458	1,538	14	1,552	2,010
Nushagak River [a]	3,100	64	3,164	15,325	60	15,385	18,597
Total	10,556	255	10,811	19,196	182	19,378	30,237
TOGIAK DISTRICT [b]	370	5	375	802	3	805	1,180
TOTAL BRISTOL BAY [cd]							
Number	30,676	6,387	37,063	35,581	2,581	38,162	75,273
Percent	41%	8%	49%	47%	3%	51%	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 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, 2022.

Species	Total catch (lb)	Mean weight (lb)	Mean price ($/lb)	Exvessel value ($)
Sockeye	303,051,811	5.0	1.13	342,448,546
Chinook	69,661	9.0	0.87	60,605
Chum	1,679,140	5.5	0.38	638,073
Pink	397,229	3.4	0.14	55,612
Coho	109,213	6.1	0.63	68,804
Total	305,307,054			343,271,641

Table 5.–Commercial salmon processors and buyers operating in Bristol Bay, 2022.

	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,RE	AIR,SEA
2	Alaska Native Fisheries	Naknek, AK	N	S	AIR
3	Alaska's Best Seafoods, LLC.	Dillingham, AK	N	EF,F,RE	AIR,SEA
4	Anthony Wood	King Salmon, AK	K	EF, F	AIR,SEA
5	Copper River Seafoods	Anchorage, AK	E,K,N,T,U	EF,F,RE	AIR,SEA
6	E&E (Coffee Point Seafoods)	Renton, WA	E	EF,F,RE	AIR
7	E&E (P/V Cape Greig)	Renton, WA	E,K,N,U	F	SEA
8	Ekuk Fisheries LLC.	Seattle, WA	N	F,RE	SEA
9	Favco Inc.	Anchorage, AK	N	F	AIR
10	Freedom Fisheries LLC.	Naknek, AK	K	F	AIR
11	Friedman Family Fisheries	Baltimore, MD	N	F	SEA
12	Greta Horn	Naknek, AK	N	S	AIR
13	High Tide Fisheries	Duluth, MN	K	F	AIR,SEA
14	Jojo's Wild Salmon LLC.	Chugiak, AK	N	EF,F,RE	AIR
15	Just Wild Salmon	College Place, WA	N	F	SEA
16	Kristene Stanford	Wasilla, AK	N	EF	AIR
17	Leader Creek Fisheries Inc.	Seattle, WA	E,K,N,U	F,RE	SEA
18	Little Alaska Fish Co.	Dillingham, AK	N	EF,F,RE	AIR
19	Nakeen Homepack LLC.	King Salmon, AK	K	EF,F,RE	AIR,SEA
20	Naknek Kvichak Wild Salmon	Igiugig, AK	K	F	AIR
21	Net to Table Seafood	Rockford, MI	N	EF,F	AIR
22	North Pacific Seafoods (Togiak fisheries)	Seattle, WA	T	F	SEA
23	North Pacific Seafoods	Seattle, WA	E,K,N,U	EF,RE	AIR,SEA
24	North Soul	Palmer, AK	U	S	AIR
25	OBI Seafoods	Seattle, WA	E,K,N,U	C,EF,F,RE	AIR,SEA
26	Pearl Bay Seafoods LLC.	Homer, AK	N,T,U	F,RE	AIR,SEA
27	Peter Pan Seafoods	Bellevue, WA	E,K,N,U	EF,F,RE,S	AIR,SEA
28	Salmon Shop LLC.	Wichita, KS	K	F	SEA
29	Silver Bay Seafoods	Seattle, WA	E,K,N,U	F,RE	SEA
30	Sunrise Salmon	Naknek, AK	K	F	AIR,SEA
31	Trident Seafoods Corp.	Seattle, WA	E,K,N,U	C,EF,F,RE	AIR,SEA
32	Tulchina Fisheries	Naknek, AK	K	EF, F	AIR
33	Two If By Seafoods	Saint John, WA	K	F	AIR,SEA
34	Ugashik Wild Salmon Company	Anchorage, AK	U	F	AIR
35	Victor Popa	Fallbrook, CA	E	F	AIR,SEA
36	Wild Alaska Salmon and Seafood	King Salmon, AK	K	EF, F	AIR,SEA
37	Wild Bay Seafood Co.	Gig Harbor, WA	K	F	SEA
38	Wild Premium	Raymond, WA	E	EF,F	AIR
39	Willbros Salmon Co.	Ruidoso, NM	K	F	AIR
40	Wilsons' Wild Salmon	Hailey, ID	K	F	AIR

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

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

Table 6.–Commercial salmon catch by district and species, in numbers of fish, Bristol Bay, 2022.

District	Sockeye	Chinook	Chum	Pink	Coho	Total
Naknek-Kvichak District	14,362,397	1,154	34,124	18,925	1,039	14,417,639
Egegik District	16,543,931	239	28,033	4,317	10,730	16,587,250
Ugashik District	6,321,339	372	16,176	362	11	6,338,260
Nushagak District	22,718,969	4,661	172,370	31,405	5,155	22,932,560
Togiak District	584,812	1,307	52,770	60,205	1,100	700,194
Bristol Bay total	60,531,448	7,733	303,473	115,214	18,035	60,975,903

Note: Based on fish tickets as of December 6, 2022. 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, 2022.

	Sockeye		Chinook [a]		Chum		Coho [b]	
Date	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
6/6	330	330	132	132	0	0		
6/7	244	574	98	230	0	0		
6/8	205	779	131	361	0	0		
6/9	448	1,227	134	495	0	0		
6/10	514	1,741	692	1,187	0	0		
6/11	630	2,371	774	1,961	0	0		
6/12	2,763	5,134	2,071	4,032	470	470		
6/13	6,502	11,636	2,959	6,991	565	1,035		
6/14	2,337	13,973	1,636	8,627	108	1,143		
6/15	2,947	16,920	322	8,949	97	1,240		
6/16	2,842	19,762	286	9,235	59	1,299		
6/17	3,152	22,914	1,633	10,868	196	1,495		
6/18	20,434	43,348	7,054	17,922	8,668	10,163		
6/19	72,252	115,600	3,618	21,540	4,434	14,597		
6/20	75,159	190,759	1,435	22,975	1,046	15,643		
6/21	40,096	230,855	1,557	24,532	509	16,152		
6/22	41,415	272,270	5,850	30,382	8,338	24,490		
6/23	118,530	390,800	3,781	34,163	13,457	37,947		
6/24	506,051	896,851	688	34,851	7,515	45,462		
6/25	215,234	1,112,085	475	35,326	2,661	48,123		
6/26	82,531	1,194,616	493	35,819	2,734	50,857		
6/27	806,837	2,001,453	2,659	38,478	2,892	53,749		
6/28	215,285	2,216,738	1,871	40,349	4,501	58,250		
6/29	102,710	2,319,448	171	40,520	3,913	62,163		
6/30	31,437	2,350,885	369	40,889	2,251	64,414		
7/1	82,871	2,433,756	0	40,889	2,473	66,887		
7/2	134,747	2,568,503	198	41,087	6,528	73,415		
7/3	67,956	2,636,459	68	41,155	1,510	74,925		
7/4	30,313	2,666,772	95	41,250	1,387	76,312		
7/5	109,153	2,775,925	723	41,973	1,039	77,351		
7/6	99,799	2,875,724	0	41,973	2,381	79,732		
7/7	81,145	2,956,869	112	42,085	115	79,847		
7/8	62,441	3,019,310	104	42,189	473	80,320		
7/9	50,881	3,070,191	191	42,380	996	81,316		
7/10	80,087	3,150,278	392	42,772	2,141	83,457		
7/11	81,639	3,231,917	44	42,816	1,693	85,150		
7/12	66,706	3,298,623	98	42,914	486	85,636		

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Table 7.–Page 2 of 2.

	Sockeye		Chinook [a]		Chum		Coho [b]	
Date	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
7/13	32,667	3,331,290	82	42,996	1,805	87,441		
7/14	20,224	3,351,514	388	43,384	1,096	88,537		
7/15	15,401	3,366,915	166	43,550	2,960	91,497		
7/16	8,753	3,375,668	159	43,709	797	92,294		
7/17	7,300	3,382,968	96	43,805	1,040	93,334		
7/18	6,905	3,389,873	135	43,940	2,551	95,885		
7/19	9,098	3,398,971	91	44,031	2,373	98,258		
7/20	7,457	3,406,428	87	44,118	1,396	99,654		
7/21	7,771	3,414,199	65	44,183	2,187	101,841		
7/22	14,910	3,429,109	0	44,183	2,182	104,023		
7/23	12,749	3,441,858	140	44,323	2,766	106,789		
7/24	5,793	3,447,651	23	44,346	757	107,546		
7/25	7,621	3,455,272	88	44,434	9,146	116,692		

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 2022.

Table 8.–Daily sockeye salmon escapement tower counts by river system, eastside Bristol Bay, 2022.

	Kvichak River		Naknek River		Alagnak River		Egegik River		Ugashik River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/17							3,048	3,048		
6/18							16,536	19,584		
6/19							29,616	49,200		
6/20			246	246			6,228	55,428		
6/21			1,026	1,272			3,960	59,388		
6/22	0		26,778	28,050			35,730	95,118		
6/23	1,176	1,176	47,586	75,636			50,340	145,458		
6/24	6,336	7,512	8,850	84,486			59,820	205,278		
6/25	47,778	55,290	18,690	103,176			131,754	337,032		
6/26	13,752	69,042	45,924	149,100			108,624	445,656		
6/27	4,236	73,278	93,528	242,628			24,966	470,622	1,590	1,590
6/28	83,628	156,906	53,934	296,562			94,086	564,708	2,628	4,218
6/29	84,132	241,038	18,222	314,784	21,594	21,594	48,138	612,846	810	5,028
6/30	32,304	273,342	32,226	347,010	7,524	29,118	38,916	651,762	1,830	6,858
7/1	4,764	278,106	99,570	446,580	4,536	33,654	35,376	687,138	14,430	21,288
7/2	15,528	293,634	164,310	610,890	19,614	53,268	54,078	741,216	41,616	62,904
7/3	138,504	432,138	37,308	648,198	51,492	104,760	46,284	787,500	31,890	94,794
7/4	159,222	591,360	76,698	724,896	46,026	150,786	44,628	832,128	23,022	117,816
7/5	80,790	672,150	144,858	869,754	52,248	203,034	92,790	924,918	46,644	164,460
7/6	222,462	894,612	67,488	937,242	137,808	340,842	107,628	1,032,546	90,066	254,526
7/7	303,612	1,198,224	59,664	996,906	92,622	433,464	96,066	1,128,612	107,514	362,040
7/8	304,038	1,502,262	104,832	1,101,738	66,144	499,608	118,146	1,246,758	143,922	505,962
7/9	264,348	1,766,610	66,642	1,168,380	87,906	587,514	99,006	1,345,764	113,502	619,464
7/10	254,382	2,020,992	117,696	1,286,076	102,804	690,318	84,036	1,429,800	186,774	806,238
7/11	316,158	2,337,150	204,876	1,490,952	109,908	800,226	72,048	1,501,848	115,632	921,870
7/12	290,622	2,627,772	111,618	1,602,570	155,058	955,284	53,574	1,555,422	64,200	986,070
7/13	454,830	3,082,602	46,722	1,649,292	138,324	1,093,608	56,682	1,612,104	145,602	1,131,672
7/14	383,220	3,465,822	82,590	1,731,882	104,490	1,198,098	37,092	1,649,196	65,670	1,197,342
7/15	127,824	3,593,646	50,214	1,782,096	42,480	1,240,578	21,588	1,670,784	52,998	1,250,340
7/16	128,040	3,721,686	34,602	1,816,698	66,762	1,307,340	25,398	1,696,182	36,036	1,286,376
7/17	137,418	3,859,104	20,412	1,837,110	50,340	1,357,680	13,998	1,710,180	14,718	1,301,094
7/18	48,024	3,907,128	30,558	1,867,668	28,074	1,385,754	17,580	1,727,760	14,844	1,315,938
7/19	58,200	3,965,328	25,212	1,892,880	47,838	1,433,592	22,842	1,750,602	11,208	1,327,146
7/20	113,130	4,078,458	15,876	1,908,756	78,924	1,512,516	15,192	1,765,794	12,942	1,340,088
7/21	88,998	4,167,456	12,540	1,921,296	68,430	1,580,946	20,358	1,786,152	20,466	1,360,554
7/22	31,170	4,198,626			35,700	1,616,646			17,064	1,377,618
7/23	19,044	4,217,670			29,766	1,646,412			6,408	1,384,026
7/24	5,136	4,222,806			11,922	1,658,334			8,694	1,392,720
7/25	1,524	4,224,330			3,570	1,661,904			5,256	1,397,976
7/26	552	4,224,882			6,318	1,668,222			6,888	1,404,864
7/27									13,728	1,418,592
7/28									18,192	1,436,784

Note: Unless otherwise noted, blank cells represent days that project was not operational.

Table 9.–Commercial salmon catch by date and species, in numbers of fish, Naknek-Kvichak District, Bristol Bay, 2022.

	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/14 [a]	24	24		2						0
6/15 [a]	24	24		5						0
6/16	24	24		12	670	0	0	0	0	670
6/17 [a]	9	9		3						0
6/18										0
6/19										0
6/20	15	15	8	26	4,404	20	13	0	0	4,437
6/21	24	24	3	42	15,730	41	31	0	0	15,802
6/22	24	24	51	189	113,511	35	185	0	0	113,731
6/23	24	24	88	177	60,769	36	333	0	0	61,138
6/24	24	24	123	154	101,765	22	767	0	0	102,554
6/25	18	24	120	210	151,692	51	1,103	0	0	152,846
6/26	16	24	196	327	305,442	44	561	0	0	306,047
6/27	18	24	188	359	284,622	65	571	0	0	285,258
6/28	18	24	277	358	183,720	25	385	0	0	184,130
6/29	18	24	213	301	165,268	67	248	0	0	165,583
6/30	18.5	24	255	401	361,800	27	361	0	0	362,188
7/1	17.5	24	404	569	744,038	51	945	0	0	745,034
7/2	18	24	283	414	344,211	53	662	0	0	344,926
7/3	18.5	24	336	381	604,787	38	1,351	0	0	606,176
7/4 [b]	15.5	24	509	468	748,730	37	1,001	0	0	749,768
7/5 [c]	16	24	442	572	590,517	57	903	0	0	591,477
7/6	15.5	24	413	410	517,417	46	1,273	0	0	518,736
7/7	15.5	24	509	560	750,262	21	1,131	0	0	751,414
7/8 [c]	15.5	24	379	399	545,795	31	1,452	0	0	547,278
7/9	15	24	619	520	1,047,425	27	1,457	0	0	1,048,909
7/10	18.5	24	467	390	897,375	28	1,480	0	0	898,883
7/11	18	24	692	449	1,135,301	42	1,796	0	0	1,137,139
7/12	17.5	24	507	536	731,748	23	1,551	0	0	733,322
7/13	18	24	392	387	596,712	41	1,761	0	0	598,514
7/14	18.5	24	587	434	983,524	40	1,597	0	0	985,161
7/15	19	24	629	362	555,516	39	1,070	0	0	556,625
7/16	19.5	24	527	235	327,563	24	1,258	0	0	328,845
7/17	21	24	347	128	364,739	10	1,272	0	0	366,021
7/18	24	24	423	28	455,053	9	1,758	0	0	456,820
7/19	24	24	422	117	256,542	21	1,315	0	0	257,878
7/20	24	24	297	72	126,633	12	771	0	0	127,416

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Table 9.–Page 2 of 2.

	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/21	24	24	327	96	131,158	14	1,137	247	0	132,556
7/22	24	24	216	67	66,603	6	612	9	0	67,230
7/23	24	24	105	43	22,049	5	178	20	0	22,252
7/24	24	24	32	21	13,625	4	348	1,112	98	15,187
7/25	24	24	5	28	5,436	1	19	1	2	5,459
7/26	24	24	34	67	19,257	16	273	1,913	21	21,480
7/27	24	24	7	52	9,485	3	225	3,024	3	12,740
7/28	24	24	3	61	3,396	5	48	709	228	4,386
7/29 [a]	24	24	6	22						
7/30 [a]	24	24	5	19						
7/31 [a]	24	24	1	26						
8/1 [a]	24	24	5	16						
8/2 [a]	24	24	5	11						
8/3 [a]	24	24	1	8						
8/4 [a]	24	24		7						
8/5 [a]	24	24		1						
8/6 [a]	24	24		3						
8/7 [a]	24	24		2						
8/8 [a]	24	24	1	1						
8/9 [a]	24	24		2						
8/10 [a]	24	24	1	4						
8/11 [a]	24	24		2						
8/12 [a]	9	9		5						
8/13										
8/14										
8/15 [a]	15	15		1						
8/16 [a]	24	24	1							
8/17	24	24								
8/18	24	24								
8/19	9	9								
8/20										
8/21										
8/22	15	15								
8/23 [a]	24	2	1							
Total			11,462	10,562	14,362,397	1,154	34,124	18,925	1,039	14,416,600

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

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

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

[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, 2022.

	Naknek-Kvichak		Egegik		Ugashik		Nushagak		Togiak[a]	
Date	Total	Dual	Total	Dual	Total	Dual	Total	Dual	Total	Total [b]
6/1	0	0	0	0	0	0	0	0	0	0
6/2	1	0	14	2	0	0	2	0	3	20
6/3	1	0	20	2	0	0	2	0	3	26
6/4	2	0	21	2	0	0	3	0	3	29
6/5	2	0	21	2	0	0	3	0	3	29
6/6	2	0	21	2	0	0	3	0	3	29
6/7	3	0	22	2	0	0	7	4	3	35
6/8	3	0	22	2	0	0	7	4	3	35
6/9	3	0	27	4	0	0	7	4	4	41
6/10	5	0	32	4	1	0	10	6	5	53
6/11	7	0	37	6	2	0	10	6	6	62
6/12	11	0	40	6	2	0	10	6	6	69
6/13	11	0	46	10	5	0	11	6	6	79
6/14	13	2	61	14	7	2	16	6	8	105
6/15	13	2	78	18	10	4	22	6	11	134
6/16	13	2	116	38	10	4	27	6	13	179
6/17	18	2	181	80	11	4	37	8	14	261
6/18	20	2	173	72	12	4	68	26	14	287
6/19	19	2	209	90	13	4	95	30	15	351
6/20	28	6	233	104	15	4	258	114	16	550
6/21	33	6	246	104	23	10	381	170	17	700
6/22	39	6	280	120	25	12	495	230	18	857
6/23	100	26	314	136	33	12	796	416	19	1,262
6/24	133	34	335	140	32	12	946	510	21	1,467
6/25	168	48	335	140	38	14	984	518	25	1,550
6/26	197	52	343	142	39	14	979	518	26	1,584
6/27	218	60	350	150	43	16	974	510	26	1,611
6/28	247	70	349	150	47	20	969	504	27	1,639
6/29	264	78	345	146	55	24	929	486	27	1,620
6/30	271	82	346	148	66	28	915	480	28	1,626
7/01	283	86	357	148	100	52	920	486	29	1,689
7/02	296	94	362	154	104	54	924	490	30	1,716
7/03	299	94	344	150	115	62	888	474	30	1,676
7/04	294	92	336	150	118	62	884	472	30	1,662
7/05	312	100	347	150	145	74	876	468	32	1,712
7/06	312	98	347	150	162	82	867	464	34	1,722
7/07	320	100	343	148	165	82	840	452	34	1,702
7/08	322	102	335	146	171	84	778	416	35	1,641
7/09	331	102	316	138	192	96	762	404	36	1,637
7/10	389	136	277	124	206	102	710	376	37	1,619
7/11	428	160	271	122	207	102	622	322	37	1,565
7/12	489	194	269	122	241	112	541	300	37	1,577
7/13	547	222	274	128	265	132	495	270	37	1,618
7/14	609	242	281	132	320	160	453	244	38	1,701
7/15	644	268	288	134	328	166	436	236	38	1,734
7/16	657	274	288	134	327	168	416	222	38	1,726
Average [c]	268	92	296	129	117	57	654	66	28	1,363

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 2022.

	Tower count		River test fishing				
				Index points			
Date	Daily	Cum.	Fish per index (FPI) [a]	Daily	Cum.	Estimated cumulative escapement	Estimated river fish [b]
6/23	1,176	1,176					
6/24	6,336	7,512	[a]	674	674		50,000
6/25	47,778	55,290	[a]	45	718		60,000
6/26	13,752	69,042		447	1,165		50,000
6/27	4,236	73,278		714	1,878		100,000
6/28	83,628	156,906		595	2,473		150,000
6/29	84,132	241,038	84	81	2,555	214,602	30,000
6/30	32,304	273,342	94	26	2,581	242,628	60,000
7/1	4,764	278,106	106	1,005	3,586	380,108	80,000
7/2	15,528	293,634	108	4,250	7,835	846,226	200,000
7/3	138,504	432,138	82	2,025	9,860	808,540	100,000
7/4	159,222	591,360	44	658	10,519	462,817	60,000
7/5	80,790	672,150	57	1,329	11,847	675,290	200,000
7/6	222,462	894,612	57	1,731	13,578	773,971	400,000
7/7	303,612	1,198,224	66	1,296	14,874	981,715	600,000
7/8	304,038	1,502,262	73	4,152	19,026	1,388,915	500,000
7/9	264,348	1,766,610	79	1,874	20,900	1,651,083	600,000
7/10	254,382	2,020,992	84	2,223	23,122	1,942,275	400,000
7/11	316,158	2,337,150	86	1,792	24,915	2,142,652	500,000
7/12	290,622	2,627,772	94	1,751	26,666	2,506,567	500,000
7/13	454,830	3,082,602					
7/14	383,220	3,465,822					
7/15	127,824	3,593,646					
7/16	128,040	3,721,686					
7/17	137,418	3,859,104					
7/18	48,024	3,907,128					
7/19	58,200	3,965,328					
7/20	113,130	4,078,458					
7/21	88,998	4,167,456					
7/22	31,170	4,198,626					
7/23	19,044	4,217,670					
7/24	5,136	4,222,806					
7/25	1,524	4,224,330					
7/26	552	4,224,882					

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

[a] The fish per index (FPI) used to estimate the daily estimated river fish (ERF) prior to using lag time relationships was calculated using a 4-year mean of median FPIs. This method was used until June 26 when FPIs were based on lag time relationships.

[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, 2022.

	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/1										
6/2	15	15								0
6/3	9	9								0
6/4										
6/5										
6/6 [a]	15	15		1						
6/7	24	24		5	324	0	0	0	0	324
6/8 [a]	9	9		1						
6/9	15	15	3	10	1,247	0	0	0	0	1,247
6/10 [a]	9	9		2						
6/11										
6/12										
6/13	15	15	26	91	23,339	3	18	0	0	23,360
6/14	24	24	21	134	21,966	8	28	0	0	22,002
6/15	9	9	6	11	4,686	4	7	0	0	4,697
6/16	15	15	120	166	78,809	10	125	0	0	78,944
6/17	9	9	16	15	6,986	1	9	0	0	6,996
6/18										
6/19	6	8	178	162	50,278	18	230	0	0	50,526
6/20	6	7.25	161	246	164,764	12	294	0	0	165,070
6/21	5.5	6.75	205	313	239,320	15	246	0	0	239,581
6/22	5.25	7.25	257	325	419,506	17	398	0	0	419,921
6/23	11.75	8	423	209	358,549	8	568	0	0	359,125
6/24	6	8	204	192	109,764	11	330	0	0	110,105
6/25	8.5	10.5	361	394	427,700	12	381	0	0	428,093
6/26	13.25	18.25	360	351	667,606	11	637	0	0	668,254
6/27	14.25	19.25	470	490	857,628	12	495	0	0	858,135
6/28	14.25	19.25	399	413	532,054	12	740	0	0	532,806
6/29	14.75	19.75	337	366	435,970	11	209	0	0	436,190
6/30	15	20	368	405	603,524	10	1,361	0	0	604,895
7/1	15	20	386	340	799,964	7	883	0	0	800,854
7/2	14.5	20	375	433	472,115	6	664	0	0	472,785
7/3	15	20.5	374	394	676,356	5	1,075	0	0	677,436
7/4	15	20.5	513	728	1,222,427	8	3,183	0	0	1,225,618
7/5	14.5	15.5	538	190	914,082	3	1,169	0	0	915,254
7/6	14.75	14.75	506	460	946,279	8	1,314	0	0	947,601

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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	13.75	14	455	463	828,771	4	700	0	0	829,475
7/8	13.75	15	497	439	729,925	6	747	0	0	730,678
7/9	15.5	19	419	423	754,418	3	929	0	0	755,350
7/10	15.25	19.25	365	377	532,594	0	487	0	0	533,081
7/11	15	19	319	435	533,402	3	445	0	0	533,850
7/12	15	19	284	385	409,553	1	354	0	0	409,908
7/13	15	19	251	399	364,277	3	478	0	0	364,758
7/14	15.25	19.25	255	255	410,559	1	357	0	0	410,917
7/15	16	20	277	411	418,927	1	475	0	0	419,403
7/16	16	20	230	236	178,081	0	450	0	0	178,531
7/17	22.25	22.25	144	44	134,860	0	236	0	0	135,096
7/18	24	24	64	29	83,277	1	158	0	0	83,436
7/19	24	24	152	122	181,690	0	418	0	0	182,108
7/20	24	24	108	51	78,969	0	151	0	0	79,120
7/21	24	24	109	83	115,542	2	405	0	1	115,950
7/22	24	24	112	65	111,473	0	399	33	9	111,914
7/23	24	24	56	77	42,606	0	281	16	7	42,910
7/24	24	24	29	28	20,583	0	148	31	10	20,772
7/25	24	24	17	1	16,624	0	15	2	0	16,641
7/26	24	24	64	28	102,577	0	469	46	12	103,104
7/27	24	24	71	20	62,553	0	455	114	51	63,173
7/28	24	24	64	42	45,118	1	614	35	110	45,878
7/29	24	24	50	3	38,136	0	279	85	225	38,725
7/30	24	24	38	17	39,486	0	300	0	0	39,786
7/31	24	24	42	23	35,090	0	405	103	110	35,708
8/1	24	24	24	35	23,267	0	508	158	102	24,035
8/2	24	24	19	6	16,088	0	210	287	120	16,705
8/3	24	24	18	13	24,211	0	245	73	78	24,607
8/4	24	24	18	14	22,094	0	418	355	289	23,156
8/5	24	24	8	7	8,230	0	60	0	0	8,290
8/6	24	24	23	6	24,182	0	178	388	286	25,034
8/7	24	24	16	2	11,544	0	187	402	354	12,487
8/8	9	9	2	2	1,646	0	87	0	90	1,823
8/9	15	15	10	7	14,367	0	139	207	403	15,116
8/10	24	24	27	7	22,009	0	288	660	597	23,554
8/11	24	24	18	6	16,435	0	235	310	771	17,751
8/12	24	24	15	5	19,162	0	360	632	918	21,072

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Table 12.–Page 3 of 3.

	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
8/13	24	24								
8/14	24	24								
8/15	9	9	13	6	14,640	0	294	324	1,172	16,430
8/16	15	15	1	2	2,414	0	74	0	342	2,830
8/17	24	24	9	7	10,901	0	76	56	644	11,677
8/18 [a]	24	24	1	1						
8/19	24	24								
8/20	24	24								
8/21	24	24								
8/22 [a]	9	9	1	1						
8/23	15	15	2	2	1,691	0	31	0	669	2,391
8/24 [a]	24	24	2	2						
8/25 [a]	24	24	1	1						
8/26	24	24								
8/27	24	24								
8/28	24	24								
8/29	24	24	1	1	538	0	22	0	360	920
8/30 [a]	9	9	2	1						
8/31	15	15	2	1	307	0	3	0	508	818
Totals	1,534	1,621	11,312	11,438	16,543,931	239	28,033	4,317	10,730	16,587,250

Note: Unless otherwise noted, blank cells 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 2022.

	Tower count		River test fishing				
				Index points			
Date	Daily	Cum.	Fish per index point [a]	Daily	Cum.	Estimated cumulative escapement	Estimated river fish [b]
6/17	3,048	3,048		840	840		
6/18	16,536	19,584		464	1,304		
6/19	29,616	49,200		60	1,364		
6/20	6,228	55,428		48	1,413		2,000
6/21	3,960	59,388		409	1,822		17,000
6/22	35,730	95,118	44	477	2,298	101,134	–
6/23	50,340	145,458	–	481	2,779	–	15,000
6/24	59,820	205,278	63	669	3,448	217,229	60,000
6/25	131,754	337,032	74	1,298	4,747	351,241	180,000
6/26	108,624	445,656	–	–	4,747	–	–
6/27	24,966	470,622	–	1,165	5,911	–	180,000
6/28	94,086	564,708	99	1,316	7,227	715,468	120,000
6/29	48,138	612,846	96	619	7,846	753,215	50,000
6/30	38,916	651,762	85	536	8,382	712,434	40,000
7/1	35,376	687,138	83	954	9,335	774,842	85,000
7/2	54,078	741,216	82	1,011	10,346	848,399	60,000
7/3	46,284	787,500	79	414	10,760	850,034	35,000
7/4	44,628	832,128	76	1,266	12,026	913,985	60,000
7/5	92,790	924,918	77	987	13,013	1,001,997	80,000
7/6	107,628	1,032,546	77	1,271	14,284	1,099,897	90,000
7/7	96,066	1,128,612	79	1,213	15,497	1,224,258	90,000
7/8	118,146	1,246,758	79	1,560	17,057	1,347,530	115,000
7/9	99,006	1,345,764	80	2,125	19,182	1,534,586	120,000
7/10	84,036	1,429,800	79	1,023	20,205	1,596,191	75,000
7/11	72,048	1,501,848					
7/12	53,574	1,555,422					
7/13	56,682	1,612,104					
7/14	37,092	1,649,196					
7/15	21,588	1,670,784					
7/16	25,398	1,696,182					
7/17	13,998	1,710,180					
7/18	17,580	1,727,760					
7/19	22,842	1,750,602					
7/20	15,192	1,765,794					
7/21	20,358	1,786,152					

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

[a] The fish per index (FPI) used to estimate the daily ERFs prior to using lag time relationships was calculated using a 4-year mean of median FPIs. This method was used until June 21 when FPIs were based on lag time relationships.

[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.

Table 14.–Inshore run of sockeye salmon by age class, river system, and district, in thousands of fish, Bristol Bay, 2022.

District and River System [a]		1.2	2.2	2-Ocean	1.3	2.3	3-Ocean	1.4	Total [b]
NAKNEK-KVICHAK									
Kvichak River									
	Number	6,152	2,005	8,157	4,768	168	4,936	1	13,095
	Percent	47.0	15.3	62.3	36.4	1.3	37.7	0.0	100.0
Alagnak River									
	Number	1,061	403	1,464	2,811	159	2,970	8	4,455
	Percent	23.8	9.0	32.9	63.1	3.6	66.7	0.2	99.7
Naknek River									
	Number	2,598	754	3,352	2,539	313	2,852	5	6,216
	Percent	41.8	12.1	53.9	40.8	5.0	45.9	0.1	99.9
Total	Number	9,811	3,162	12,973	10,118	640	10,758	14	23,766
	Percent	41.3	13.3	54.6	42.6	2.7	45.3	0.1	99.9
EGEGIK RIVER									
	Number	5,640	6,440	12,080	4,441	702	5,143	4	17,322
	Percent	32.6	37.2	69.7	25.6	4.1	29.7	0.0	99.5
UGASHIK RIVER									
	Number	1,114	500	1,614	5,312	243	5,555	5	7,184
	Percent	15.5	7.0	22.5	73.9	3.4	77.3	0.1	99.9
NUSHAGAK									
Wood River									
	Number	7,178	1,173	8,351	3,324	176	3,500	12	11,870
	Percent	60.5	9.9	70.4	28.0	1.5	29.5	0.1	99.9
Igushik River									
	Number	638	4	642	2,216	8	2,224	2	2,869
	Percent	22.2	0.1	22.4	77.2	0.3	77.5	0.1	100.0
Nushagak River									
	Number	1,600	350	1,950	13,434	91	13,525	106	15,585
	Percent	10.3	2.2	12.5	86.2	0.6	86.8	0.7	100.0
Total	Number	9,416	1,527	10,943	18,974	275	19,249	120	30,324
	Percent	31.1	5.0	36.1	62.6	0.9	63.5	0.4	100.0
TOGIAK RIVER [c]									
	Number	139	4	143	677	2	679	4	826
	Percent	16.8	0.5	17.3	82.0	0.2	82.2	0.5	100.0
TOTAL BRISTOL BAY [d]									
	Number	26,120	11,633	37,753	39,522	1,862	41,384	147	79,422
	Percent	32.9	14.6	47.5	49.8	2.3	52.1	0.2	99.8

[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, 2022.

	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/1	15	15	0	0						
6/2	24	24	0	0						
6/3	9	9	0	0						
6/4										
6/5										
6/6	15	15	0	0						
6/7	24	24	0	0						
6/8 [a]	24	24	0	1						
6/9 [a]	24	24	0	1						
6/10	9	9	0	0						
6/11										
6/12										
6/13 [a]	15	15	1	1						
6/14	24	24	4	1	250	5	0	0	0	255
6/15 [a]	24	24	1	1						
6/16	24	24	4	1	237	18	0	0	0	255
6/17	9	9	0	0						
6/18										
6/19										
6/20	15	15	14	4	6,410	21	84	0	0	6,515
6/21	24	24	15	6	11,916	11	48	0	0	11,975
6/22	24	24	22	15	15,936	19	47	0	0	16,002
6/23	24	24	25	21	10,333	9	64	0	0	10,406
6/24	9	9	4	5	459	0	1	0	0	460
6/25	12	12	27	31	73,244	43	110	0	0	73,397
6/26										
6/27	12	12	48	42	121,689	35	115	0	0	121,839
6/28	12	12	46	62	131,586	62	184	0	0	131,832
6/29	12	12	57	98	159,799	37	179	0	0	160,015
6/30	12	12	106	83	272,288	11	253	0	0	272,552
7/1	12	12	60	66	176,553	13	180	0	0	176,746
7/2	9	11	88	125	275,978	24	865	0	0	276,867
7/3	9	10.75	97	128	332,234	1	1,092	0	0	333,327
7/4	9	11.25	115	122	342,037	9	460	0	0	342,506
7/5	9	11.5	120	0	249,321	2	192	0	0	249,515
7/6	8	11.5	122	150	319,803	9	207	0	0	320,019
7/7	8.25	11.25	138	102	354,679	6	195	0	0	354,880
7/8	10.75	15.75	86	10	205,585	0	284	0	0	205,869
7/9	16	16	189	150	496,751	5	491	0	0	497,247
7/10	16	16	175	157	445,518	5	1,329	0	0	446,852
7/11	16	16	120	1	291,048	1	398	0	0	291,447
7/12	16	16	170	151	270,835	3	656	0	0	271,494

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Table 15.–Page 2 of 2.

	Hours fished		Deliveries							
Date	Drift	Set	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/13	15.5	15.5	267	149	396,557	1	908	0	2	397,468
7/14	15	15	228	99	338,176	1	997	0	0	339,174
7/15	15	15	194	129	174,484	4	379	0	0	174,867
7/16	15	15	194	85	147,992	3	375	0	0	148,370
7/17	24	24	98	16	76,165	0	248	0	0	76,413
7/18	24	24	76	8	47,796	0	138	0	0	47,934
7/19	24	24	85	51	58,265	1	187	0	0	58,453
7/20	24	24	82	24	54,633	1	206	0	0	54,840
7/21	24	24	62	9	61,571	0	804	0	0	62,375
7/22	24	24	67	44	90,166	0	680	362	9	91,217
7/23	24	24	26	27	27,898	0	262	0	0	28,160
7/24	24	24	40	19	51,330	0	547	0	0	51,877
7/25	24	24	4	0	4,149	0	53	0	0	4,202
7/26	24	24	65	34	98,887	0	1,122	0	0	100,009
7/27	24	24	22	28	27,768	0	260	0	0	28,028
7/28	24	24	53	14	36,162	0	368	0	0	36,530
7/29	24	24	24	2	11,266	0	236	0	0	11,502
7/30	24	24	13	0	15,052	0	318	0	0	15,370
7/31	24	24	16	0	15,322	0	285	0	0	15,607
8/1	24	24	7	0	4,943	0	111	0	0	5,054
8/2	24	24	4	0	1,098	0	26	0	0	1,124
8/3	24	24	9	0	7,610	2	128	0	0	7,740
8/4 [a]	24	24	3	0						
8/5	24	24	7	0	6,942	0	70	0	0	7,012
8/6	24	24	4	0	1,233	0	12	0	0	1,245
Totals	1,100	1,120	3,504	2,273	6,321,339	372	16,176	362	11	6,338,260

Note: Unless otherwise noted, blank cells 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 2022.

	Tower count		River Test Fishing				
			Fish per index	Index Points		Estimated cumulative	Estimated
Date	Daily	Cum.	point [a]	Daily	Cum.	escapement	river fish [b]
6/23				149	149		
6/24				59	208		
6/25				53	262		
6/26				158	419		
6/27	1,590	1,590		129	548		
6/28	2,628	4,218		64	611		
6/29	810	5,028		142	754		
6/30	1,830	6,858		1,017	1,770		
7/1	14,430	21,288	9	962	2,733	24,594	10,000
7/2	41,616	62,904	11	791	3,524	38,764	40,000
7/3	31,890	94,794	23	541	4,065	93,489	50,000
7/4	23,022	117,816	27	1,056	5,120	138,248	40,000
7/5	46,644	164,460	33	1,503	6,623	218,568	50,000
7/6	90,066	254,526	32	3,337	9,960	318,721	80,000
7/7	107,514	362,040	38	3,995	13,955	530,296	140,000
7/8	143,922	505,962	36	2,842	16,797	604,696	250,000
7/9	113,502	619,464	36	2,641	19,438	699,778	200,000
7/10	186,774	806,238	37	1,883	21,322	788,904	175,000
7/11	115,632	921,870	41	2,145	23,466	962,116	200,000
7/12	64,200	986,070	43	1,745	25,211	1,084,091	175,000
7/13	145,602	1,131,672	42	1,291	26,502	1,113,105	175,000
7/14	65,670	1,197,342	45	786	27,288	1,227,962	130,000
7/15	52,998	1,250,340					
7/16	36,036	1,286,376					
7/17	14,718	1,301,094					
7/18	14,844	1,315,938					
7/19	11,208	1,327,146					
7/20	12,942	1,340,088					
7/21	20,466	1,360,554					
7/22	17,064	1,377,618					
7/23	6,408	1,384,026					
7/24	8,694	1,392,720					
7/25	5,256	1,397,976					
7/26	6,888	1,404,864					
7/27	13,728	1,418,592					
7/28	18,192	1,436,784					

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

[a] The FPI used to estimate the daily ERFs prior to using lag time relationships was calculated using a 5 year mean of median FPIs. This method was used until July 1 when lag time relationships could be established.

[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.

Table 17.–Daily sockeye salmon escapement tower counts by river system, Bristol Bay westside, 2022.

	Wood River		Igushik River		Togiak River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/17	2,124	2,124				
6/18	22,350	24,474				
6/19	43,890	68,364				
6/20	21,690	90,054				
6/21	24,708	114,762				
6/22	32,094	146,856				
6/23	101,250	248,106				
6/24	288,672	536,778				
6/25	222,150	758,928				
6/26	176,094	935,022	2,580	2,580		
6/27	384,222	1,319,244	13,194	15,774		
6/28	277,926	1,597,170	14,202	29,976		
6/29	107,826	1,704,996	26,796	56,772		
6/30	76,542	1,781,538	14,982	71,754		
7/1	164,352	1,945,890	19,776	91,530		
7/2	184,296	2,130,186	11,370	102,900		
7/3	93,522	2,223,708	19,110	122,010		
7/4	62,760	2,286,468	11,970	133,980		
7/5	176,364	2,462,832	9,636	143,616	1,824	1,824
7/6	164,412	2,627,244	12,378	155,994	2,688	4,512
7/7	125,694	2,752,938	9,330	165,324	2,886	7,398
7/8	80,100	2,833,038	8,280	173,604	2,712	10,110
7/9	165,840	2,998,878	8,820	182,424	4,620	14,730
7/10	164,892	3,163,770	10,758	193,182	4,572	19,302
7/11	131,046	3,294,816	9,240	202,422	3,354	22,656
7/12	112,866	3,407,682	9,246	211,668	2,994	25,650
7/13	53,724	3,461,406	10,248	221,916	4,224	29,874
7/14	46,104	3,507,510	6,192	228,108	2,352	32,226
7/15	57,792	3,565,302	3,558	231,666	2,040	34,266
7/16	28,380	3,593,682	5,658	237,324	840	35,106
7/17	22,746	3,616,428	7,374	244,698	1,866	36,972
7/18	34,614	3,651,042	4,134	248,832	1,836	38,808
7/19	23,322	3,674,364	9,264	258,096	3,750	42,558
7/20	22,242	3,696,606	16,878	274,974	3,198	45,756
7/21	14,826	3,711,432	17,352	292,326	6,852	52,608

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Table 17.–Page 2 of 2.

	Wood River		Igushik River		Togiak River	
Date	Daily	Cum.	Daily	Cum.	Daily	Cum.
7/22	21,276	3,732,708	15,378	307,704	7,506	60,114
7/23	14,904	3,747,612	15,594	323,298	9,144	69,258
7/24			11,718	335,016	14,532	83,790
7/25			8,706	343,722	8,028	91,818
7/26			8,244	351,966	13,086	104,904
7/27			8,466	360,432	12,906	117,810
7/28			7,260	367,692	30,816	148,626
7/29			5,382	373,074	23,712	172,338
7/30			2,502	375,576	12,210	184,548
7/31			2,184	377,760	11,922	196,470
8/1			1,008	378,768	8,160	204,630
8/2					6,414	211,044
8/3					9,888	220,932
8/4					5,592	226,524
8/5					6,408	232,932
8/6					2,616	235,548
8/7					4,098	239,646
8/8					2,766	242,412

Note: Blank cells represent days when projects were not operational.

Table 18.–Commercial salmon catch by date and species, in numbers of fish, Nushagak District, Bristol Bay, 2022.

	Hours fished (drift/set)		Deliveries							
Date	Nushagak	Igushik	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/1 [a,b]	0/0	0/21	0	0						
6/2 [a]	0/0	0/24	0	0						
6/3 [a]	0/0	0/24	0	0						
6/4 [a]	0/0	0/24	0	1						
6/5 [a]	0/0	0/24	0	1						
6/6 [a]	0/0	0/24	0	1						
6/7 [a]	0/0	0/24	0	1						
6/8 [a]	0/0	0/24	0	1						
6/9 [a]	0/0	0/24	0	1						
6/10 [a]	0/0	0/24	0	1						
6/11 [a]	0/0	0/24	0	2						
6/12 [a]	0/0	0/24	0	1						
6/13 [a]	0/0	0/17	0	4						
6/14 [a]	0/0	0/12	0	7						
6/15 [a]	0/0	0/11	0	7						
6/16 [a]	0/0	0/11	0	19						
6/17 [a]	0/0	0/11	0	16						
6/18 [a]	0/0	0/12	0	12						
6/19 [a]	0/0	0/12	0	38						
6/20	0/0	0/12	0	0						
6/21 [a]	0/0	0/12	0	15						
6/22 [a]	0/0	0/12	0	28						
6/23	4/6.5	4/12	651	370	852,705	436	15,610	0	0	868,751
6/24	6.5/8	6.5/14.5 [b]	1,085	381	478,286	647	10,802	0	0	489,735
6/25	3.5/6	3.5/24	216	217	197,440	166	2,258	1	0	199,865
6/26	14.5/24	14.5/24	1,362	402	1,651,959	251	11,094	0	0	1,663,304
6/27	6/24	6/24	578	563	611,439	209	4,186	3	0	615,837
6/28 [c]	13.5/24 [b]	13.5/24	848	431	356,766	173	3,990	3	0	360,932
6/29 [c]	12/24	12/24	1,059	395	779,123	286	5,747	8	0	785,164
6/30 [c]	20.5/24	20.5/24	1,414	544	3,115,651	242	16,619	2	0	3,132,514
7/1 [c]	24/24	24/24	973	386	1,534,426	190	9,539	5	0	1,544,160
7/2 [c]	19.5/24	19.5/24	538	432	414,298	178	3,054	7	0	417,537
7/3 [c]	19.5/24	19.5/24	961	478	1,264,644	192	6,162	15	0	1,271,013
7/4 [c]	14.5/24	14.5/24	1,149	716	1,709,253	155	9,059	6	0	1,718,473
7/5 [c]	13.5/24	13.5/24	1,213	596	1,434,292	156	9,320	20	0	1,443,788
7/6	12.5/24	12.5/24	1,053	551	1,054,864	131	6,080	10	0	1,061,085
7/7 [c]	13.5/24	13.5/24	963	544	1,103,386	113	6,374	18	0	1,109,891
7/8 [c]	19.5/24	19.5/24	960	481	1,386,935	76	8,669	12	0	1,395,692
7/9 [c]	15.5/24	15.5/24	615	436	670,344	88	4,443	9	1	674,885
7/10 [c]	14.5/24	14.5/24	720	512	717,126	64	4,135	8	0	721,333
7/11 [c]	14.5/20	14.5/24	719	477	798,985	73	5,952	47	627	805,684
7/12 [b,c]	14.5/24	14.5/24	401	584	574,551	33	4,925	75	287	579,871

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Table 18.–Page 2 of 2.

	Hours fished (drift/set)		Deliveries							
Date	Nushagak	Igushik	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
7/13 [c]	19/24 [b]	19/24 [b]	539	514	526,578	79	4,882	230	3	531,772
7/14 [c]	24/24	24/24	380	379	468,805	54	4,454	314	3	473,630
7/15 [c]	24/24	24/24	396	414	336,733	42	4,947	203	4	341,929
7/16 [c]	24/24	24/24	196	431	227,259	38	2,602	256	11	230,166
7/17 [c]	24/24	24/24	107	92	79,997	7	919	112	8	81,043
7/18 [c]	24/24	24/24	62	140	91,566	8	1,268	286	8	93,136
7/19 [c]	24/24	24/24	103	188	120,562	17	2,378	1,030	22	124,009
7/20 [c]	24/24	24/24	27	92	32,570	0	526	347	9	33,452
7/21	24/24	24/24	63	76	36,805	5	571	821	34	38,236
7/22	24/24	24/24	49	87	35,296	5	516	2,043	127	37,987
7/23	24/24	24/24	15	51	13,481	3	428	3,112	191	17,215
7/24	24/24	24/24	2	24	5,103	0	75	1,839	246	7,263
7/25 [a]	24/24	24/24	1	1						
7/26 [a]	24/24	24/24	0	12						
7/27 [a]	24/24	24/24	1	20						
7/28 [a]	24/24	24/24	1	31						
7/29 [a]	24/24	24/24	2	28						
7/30 [a]	24/24	24/24	4	30						
7/31 [a]	24/24	24/24	0	26						
8/1 [a]	24/24	24/24	2	10						
8/3 [a]	24/24	24/24	0	1						
8/15 [a]	24/24	24/24	0	2						
8/19 [a]	24/24	24/24	0	1						
8/30 [a]	24/24	24/24	0	2						
9/11 [a]	24/24	24/24	0	1						
Total	871/1002.5	871/1465.5	19,428	12,305	22,718,969	4,661	172,370	31,405	5,155	22,932,560

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

[b] Fishing extended until further notice.

[c] Setnet fishing in WRSHA was open between 6/28–7/20. Catch is included in Table 18 totals.

Table 19.–Commercial salmon catch by date and species, in numbers of fish, Togiak District, Bristol Bay, 2022.

	Deliveries							
Date	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
6/20	2	9	169	19	25	0	0	213
6/21	3	12	154	25	58	0	0	237
6/22	3	18	438	37	73	0	0	548
6/23	3	9	535	38	278	2	0	853
6/24	2	9	1,105	34	375	3	0	1,517
6/27	11	17	1,267	44	214	4	0	1,529
6/28	26	49	3,302	101	856	4	0	4,263
6/29	14	47	3,801	126	911	12	0	4,850
6/30	10	12	1,499	27	290	1	0	1,817
7/1	11	14	3,740	28	143	2	0	3,913
7/2	19	19	5,440	37	460	9	0	5,946
7/4	31	83	8,428	57	1,731	17	0	10,233
7/5	47	130	16,864	149	2,429	25	0	19,467
7/6	37	117	14,710	83	2,380	38	0	17,211
7/7	49	97	11,677	62	2,223	41	0	14,003
7/8	39	93	12,826	72	2,297	43	0	15,238
7/9	24	86	9,717	39	995	23	0	10,774
7/10	23	77	11,904	57	1,572	43	0	13,576
7/11	33	96	11,509	40	2,581	98	0	14,228
7/12	38	121	18,763	37	3,142	87	2	22,031
7/13	50	127	23,607	35	2,442	125	0	26,209
7/14	34	114	13,004	28	2,038	79	0	15,149
7/15	40	135	19,209	18	1,936	128	0	21,291
7/16	39	106	18,823	22	2,678	116	1	21,640
7/18	36	51	9,321	7	1,055	39	2	10,424
7/19	57	111	29,356	19	2,087	166	0	31,628
7/20	15	37	12,006	1	320	25	0	12,352
7/21	47	107	26,757	17	2,166	457	1	29,398
7/22	28	61	14,739	6	1,445	352	2	16,544
7/23	5	1	2,719	0	266	73	0	3,058
7/25	11	21	8,772	1	337	73	0	9,183
7/26	41	89	19,136	6	1,442	1,516	1	22,101
7/27	113	183	53,219	5	2,706	8,670	20	64,620
7/28	57	110	26,899	7	1,924	3,157	4	31,991
7/29	67	101	28,603	4	1,501	2,780	16	32,904
7/30	35	95	16,837	2	1,074	3,772	1	21,686
7/31	15	37	6,953	2	254	1,429	0	8,638

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Table 19.–Page 2 of 2.

	Deliveries							
Date	Drift	Set	Sockeye	Chinook	Chum	Pink	Coho	Total
8/1	42	73	10,700	2	702	4,610	1	16,015
8/2	39	120	19,274	1	716	6,105	5	26,101
8/3	56	121	22,693	5	843	8,064	10	31,615
8/4	23	78	15,327	0	304	2,922	15	18,568
8/5	31	35	10,513	0	272	4,334	12	15,131
8/6	5	25	3,931	0	100	1,151	13	5,195
8/7	0	5	416	1	12	139	0	568
8/8	14	13	2,930	0	148	1,087	21	4,186
8/9	18	46	7,313	2	282	1,988	68	9,653
8/10	16	50	6,862	2	253	2,303	109	9,529
8/11	14	45	5,572	0	133	1,480	147	7,332
8/12	14	39	4,450	1	133	1,268	91	5,943
8/13	5	28	2,405	0	93	614	68	3,180
8/14	1	8	664	0	17	74	25	780
8/15	4	12	638	0	17	238	41	934
8/16	5	28	1,099	0	11	147	133	1,390
8/17	4	28	1,233	0	18	152	135	1,538
8/18	3	19	880	1	11	116	147	1,155
8/19 [a]	0	3						
Total	1,409	3,377	584,812	1,307	52,770	60,205	1,100	700,194

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

Table 20.–Commercial herring sac roe and spawn-on-kelp buyers in Togiak District, 2022.

			Product purchased		
			Sac roe		
	Operator/buyer	Base of operation	Gillnet	Purse seine	Spawn-on-kelp
1	Icicle Seafoods	S/P Wood River		X	
2	Silver Bay Seafoods	S/P Naknek		X	

Table 21.–Daily observed estimates in short tons of herring, by index area, Togiak District, 2022.

				Estimated biomass by index area [a]													
Date	Start time	Survey rating [b]	Miles of spawn	NUS	KUK	MET	NVK	UGL	TOG	TNG	MTG	OSK	PYR	CPN	HAG	WAL	Daily total
23-Apr	11:00	2.5	0.0	0	0	0	0	0	0	0	0	0	NS	NS	0	NS	0
26-Apr	15:00	2.5	0.0	21,854	14,791	4,797	29	6	13,700	362	0	0	NS	NS	13	NS	55,550
27-Apr	15:30	2.7	0.9	8,317	20,854	10,305	0	328	13,300	8,672	4,730	0	NS	NS	NS	NS	66,504
2-May	13:00	4.1	1.2	633	0	163	74	NS	NS	NS	NS	NS	NS	NS	NS	NS	869
3-May	13:00	3.2	2.6	3,260	3,414	1,765	8,440	865	1,046	623	1,211	710	NS	NS	223	NS	21,554
5-May	10:00	3.0	5.8	0	6,979	3,135	3,540	896	79	481	384	26	NS	NS	348	NS	15,866
Amount of spawn that was observed this season: 10.5														Peak biomass estimate:			66,504

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.

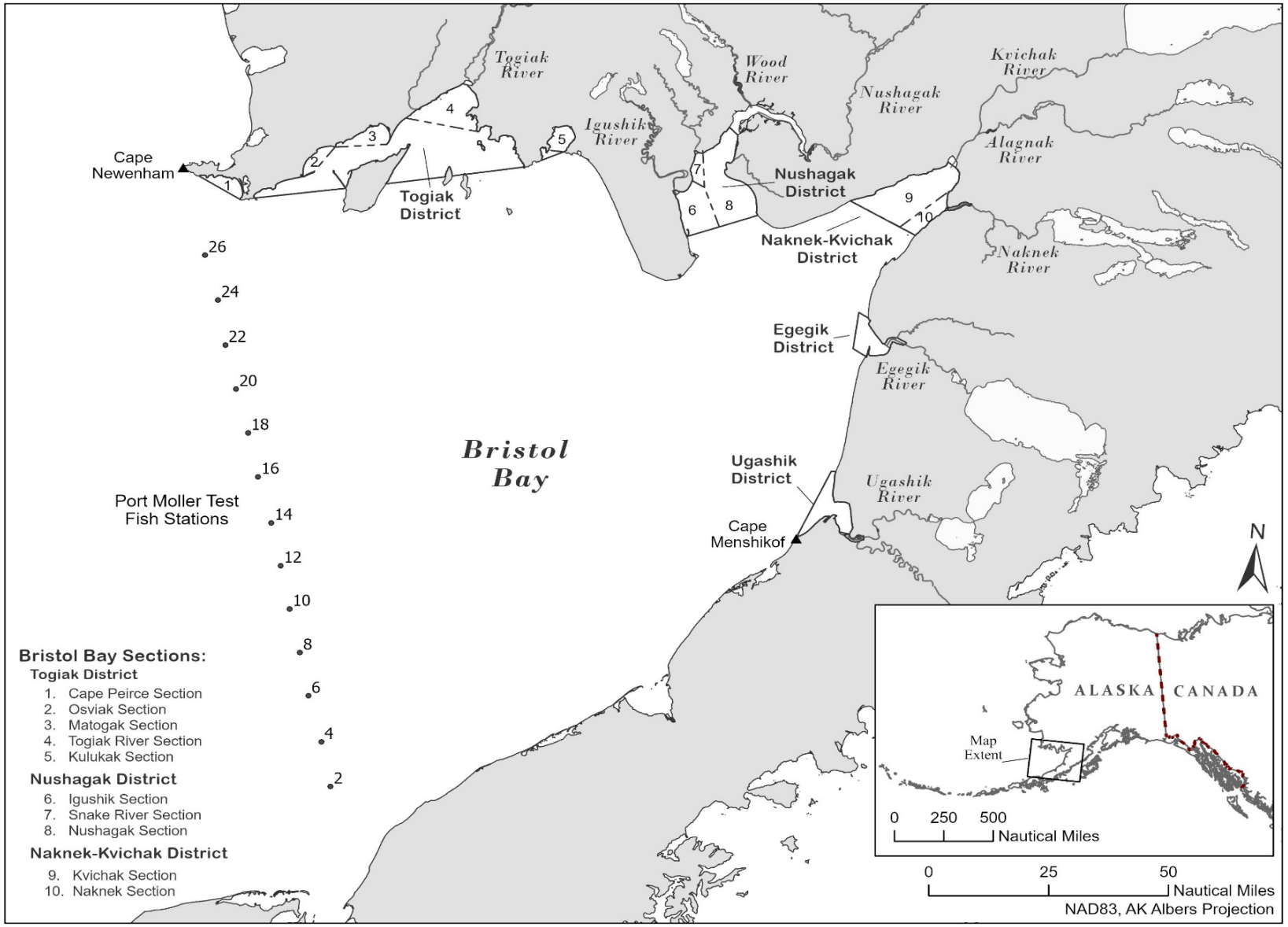

Figure 1.–Bristol Bay area commercial fisheries salmon management districts, sections, rivers, and the Port Moller Test Fishery Stations.

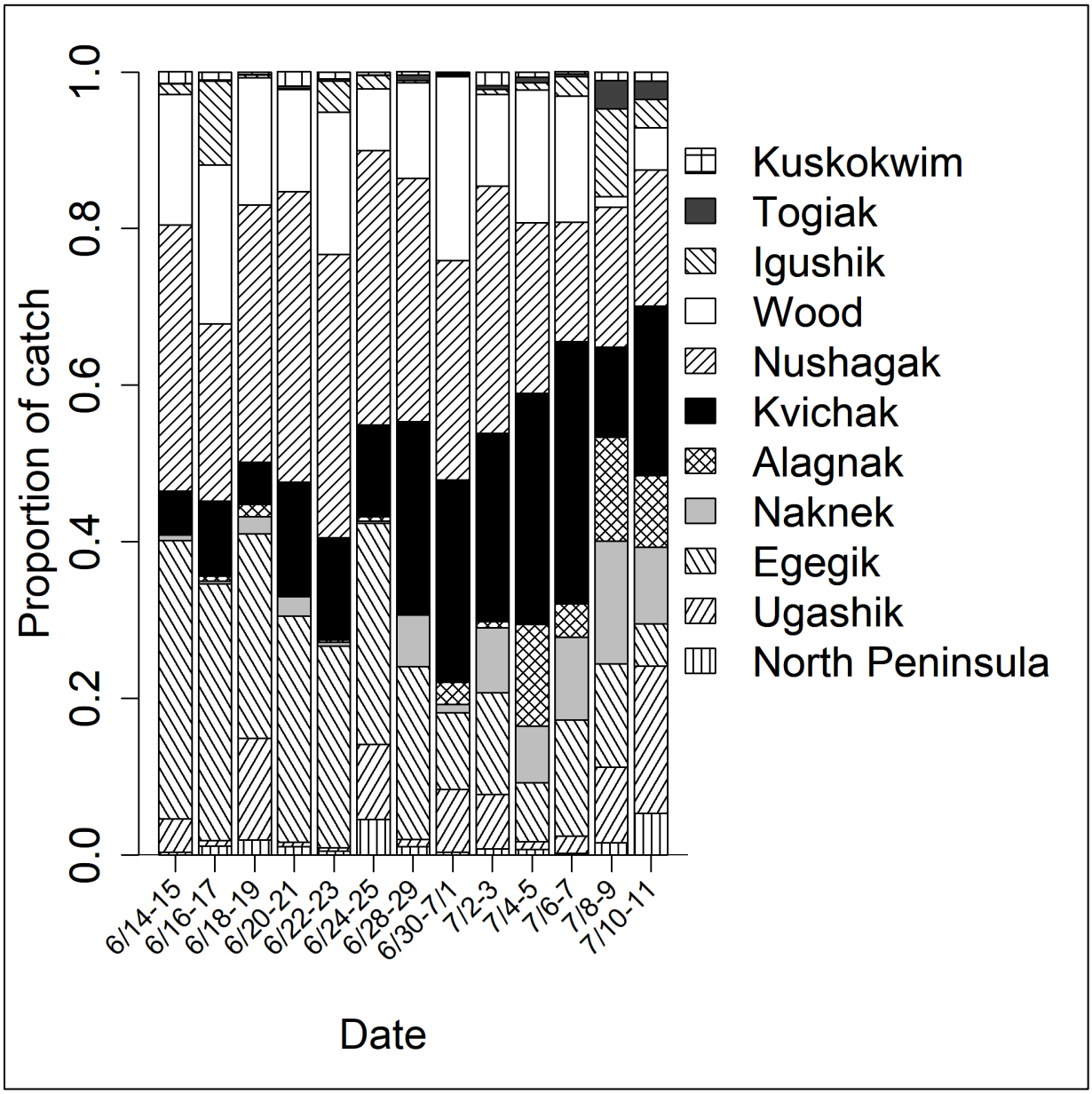

Figure 2.–Stock composition estimates for sockeye salmon sampled from the Port Moller Test Fishery, 2022.

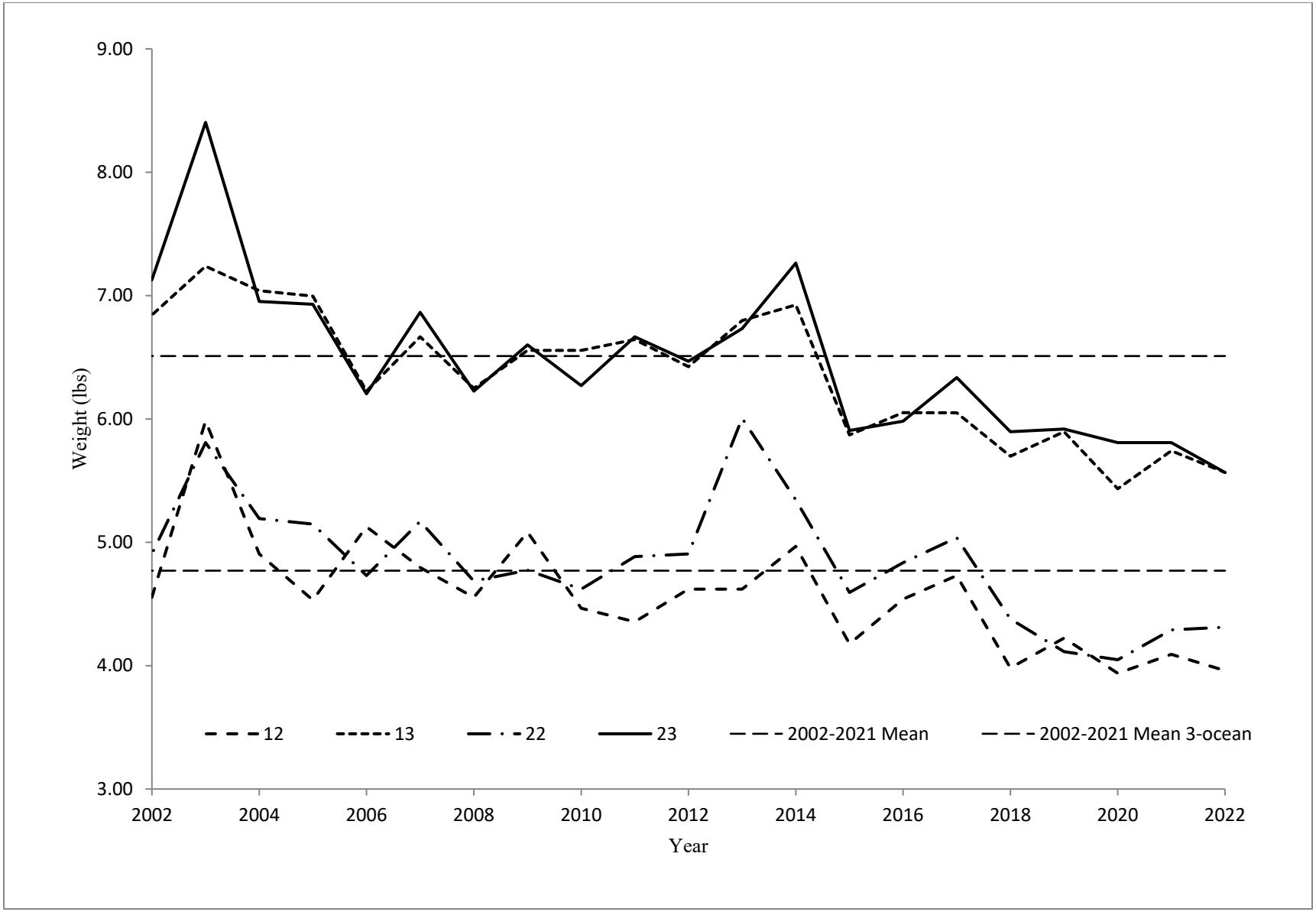

Figure 3.–Average weight (lb), by age class, of Bristol Bay sockeye salmon sampled in the commercial fishery catch, 2002–2022.

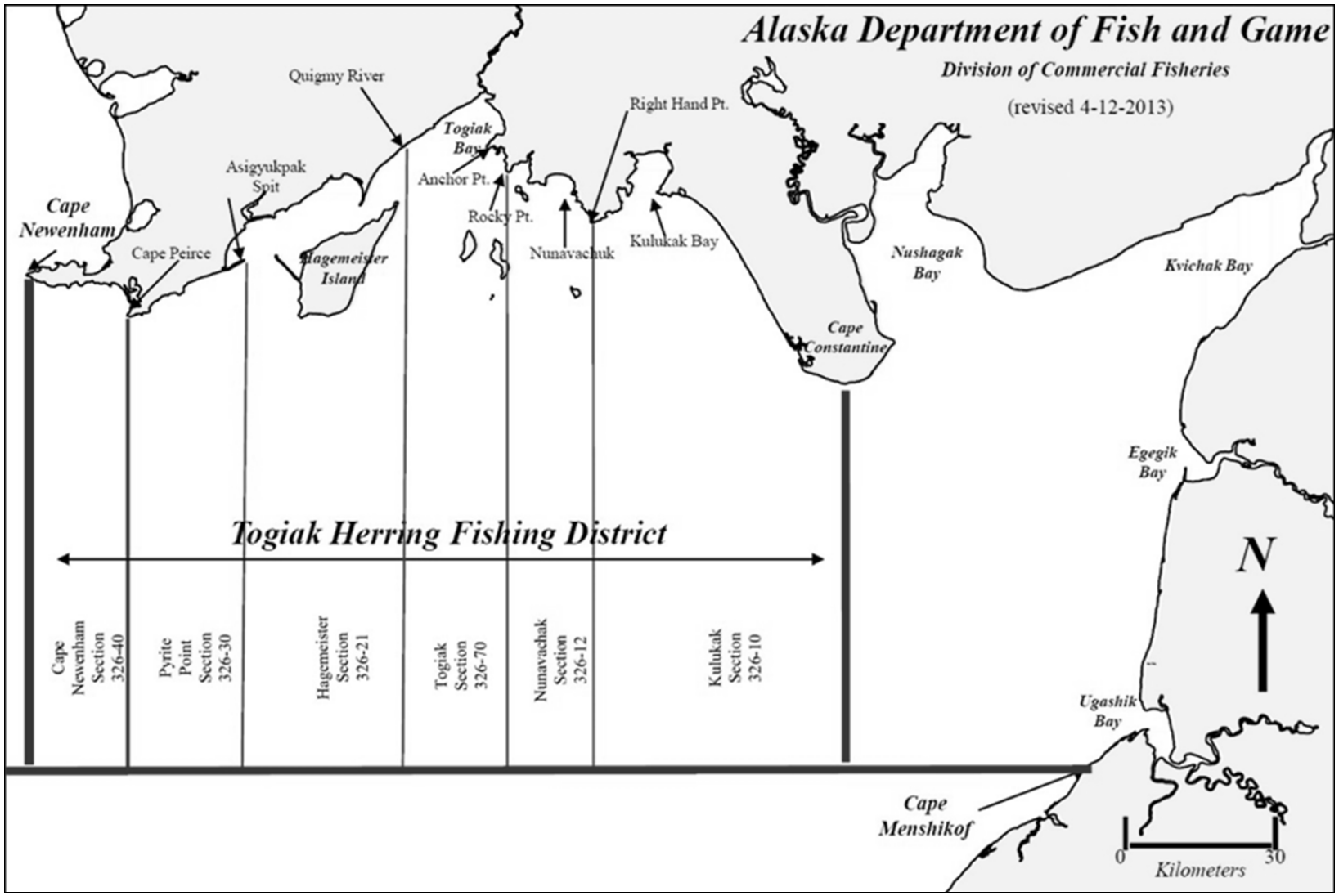

Figure 4.–Togiak Herring District, Bristol Bay.

APPENDIX A: SALMON

Appendix A1.–Escapement of sockeye salmon by river system, Bristol Bay, 1963–2022.

	River [a]								
Year	Kvichak	Naknek	Alagnak [b]	Egegik	Ugashik	Nushagak	Wood	Igushik	Togiak
1963	338,760	905,358	203,304	997,602	388,254	234,821	721,404	92,184	116,196
1964	957,120	1,349,604	248,700	849,576	472,770	134,853	1,076,112	128,532	104,874
1965	24,325,926	717,798	175,020	1,444,608	996,612	255,794	675,156	180,840	96,486
1966	3,755,185	1,016,445	174,336	804,246	704,436	233,578	1,208,682	206,360	104,198
1967	3,216,208	755,640	202,626	636,864	238,830	74,003	515,772	281,772	81,330
1968	2,557,440	1,023,222	193,872	338,654	70,896	142,360	649,344	194,508	49,918
1969	8,394,204	1,331,202	182,490	1,015,554	160,380	95,805	604,338	512,328	116,666
1970	13,935,306	732,502	177,060	919,734	735,024	452,892	1,161,964	370,920	202,896
1971	2,387,392	935,754	187,302	634,014	529,752	312,699	851,202	210,960	200,242
1972	1,009,962	586,518	151,188	546,402	79,428	39,851	430,602	60,018	78,570
1973	226,554	356,676	35,280	328,842	38,988	210,601	330,474	59,508	106,930
1974	4,433,844	1,241,058	214,848	1,275,630	61,854	204,190	1,708,836	358,752	103,592
1975	13,140,450	2,026,686	100,480	1,173,840	429,336	832,093	1,270,116	241,086	180,562
1976	1,965,282	1,320,750	81,822	509,160	356,308	520,303	817,008	186,120	189,390
1977	1,341,144	1,085,856	108,911	692,514	201,520	611,588	561,828	95,970	162,534
1978	4,149,288	813,378	584,970	895,698	82,435	734,040	2,267,238	536,154	306,176
1979	11,218,434	925,362	750,210	1,032,042	1,706,904	551,272	1,706,352	859,560	198,238
1980	22,505,268	2,644,698	759,645	1,060,860	3,335,284	3,669,136	2,969,040	1,987,530	526,750
1981	1,754,358	1,796,220	209,636	694,680	1,327,699	1,118,873	1,233,318	591,144	307,130
1982	1,134,840	1,155,552	610,215	1,034,628	1,185,551	664,580	976,470	423,768	288,674
1983	3,569,982	888,294	245,361	792,282	1,001,364	446,845	1,360,968	180,438	212,640
1984	10,490,670	1,242,474	549,194	1,165,345	1,270,318	655,739	1,002,792	184,872	150,978
1985	7,211,046	1,849,938	300,977	1,095,192	1,006,407	551,319	939,000	212,454	153,482
1986	1,179,322	1,977,645	586,959	1,152,180	1,015,582	1,095,241	818,652	307,728	203,384
1987	6,065,880	1,061,806	393,236	1,273,553	686,894	429,182	1,337,172	169,236	278,276
1988	4,065,216	1,037,862	496,307	1,612,745	654,412	534,460	866,778	170,454	309,012
1989	8,317,500	1,161,984	501,738	1,611,566	1,713,287	567,863	1,186,410	461,610	104,240
1990	6,970,020	2,092,578	430,338	2,191,582	749,478	752,513	1,069,440	365,802	166,297
1991	4,222,788	3,578,508	707,852	2,786,925	2,482,016	544,748	1,159,920	756,126	254,088
1992	4,725,864	1,606,650	577,940	1,945,632	2,194,927	768,816	1,286,250	304,920	209,516
1993	4,025,166	1,535,658	887,336	1,517,000	1,413,454	790,927	1,176,126	405,564	188,610
1994	8,355,936	990,810	618,464	1,897,977	1,095,068	563,334	1,471,890	445,920	174,172
1995	10,038,720	1,111,140	550,068	1,266,692	1,321,108	311,136	1,482,162	473,382	211,226

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Appendix A1.–Page 2 of 2

Year	River [a]								
	Kvichak	Naknek	Alagnak [b]	Egegik	Ugashik	Nushagak	Wood	Igushik	Togiak
1996	1,450,578	1,078,098	782,213	1,076,460	692,167	557,057	1,649,598	400,746	187,174
1997	1,503,732	1,025,664	556,193	1,104,004	656,641	412,591	1,512,396	127,704	152,223
1998	2,296,074	1,202,172	643,110	1,110,938	924,853	507,532	1,755,768	215,904	175,476
1999	6,196,914	1,625,364	1,182,180	1,728,397	1,662,042	344,972	1,512,426	445,536	196,136
2000	1,827,780	1,375,488	1,150,815	1,032,138	638,420	446,286	1,300,026	413,316	352,245
2001	1,095,348	1,830,360	680,850	968,872	866,368	897,112	1,458,732	409,596	303,346
2002	703,884	1,263,918	766,962	1,036,092	905,584	349,155	1,283,682	123,156	178,577
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
All year average	4,832,739	1,539,337	1,017,950	1,271,288	1,013,524	712,028	1,556,267	388,146	206,516
1972–2001 Avg.	4,505,281	1,641,067	1,166,286	1,347,303	1,110,020	801,457	1,687,116	414,444	222,233
2002–2021 Avg.	3,438,805	1,991,406	2,143,299	1,539,568	1,232,543	986,934	2,286,900	443,565	234,029
2017–2021 Avg.	3,733,568	2,788,258	2,013,426	2,154,295	1,701,571	2,146,911	4,101,759	561,662	319,135

[a] Tower count unless otherwise noted.

[b] From 1978–2001 and 2012–2016, aerial surveys were conducted and given an expansion factor to determine escapement.

Appendix A2.–Salmon entry permit registration by gear and residency, Bristol Bay, 2002–2022.

	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]
2002	945	933	1,878	1,183	62%	16	717	289	1,006	680	67%	2	2,884
2003	923	944	1,867	1,389	74%	7	713	288	1,001	714	71%	1	2,868
2004	912	948	1,860	1,426	77%	3	703	286	989	797	81%	1	2,849
2005	895	967	1,862	1,526	82%	3	688	300	988	829	84%	1	2,850
2006	893	966	1,859	1,567	84%	1	683	302	985	844	86%	0	2,844
2007	881	981	1,862	1,621	87%	1	672	311	983	836	85%	0	2,845
2008	887	976	1,863	1,636	88%	0	678	302	980	850	87%	0	2,843
2009	864	999	1,863	1,642	88%	0	674	307	981	855	87%	0	2,844
2010	866	997	1,863	1,731	93%	0	672	311	983	861	88%	0	2,846
2011	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	1,862	1,760	95%	0	608	354	964	851	88%	0	2,826
20-Year Avg.	873	990	1,863	1,642	88%	2	661	319	980	843	86%	0	2,843
2002–2011 Avg.	907	957	1,864	1,547	83%	3	686	302	988	814	82%	1	2,852
2012–2021 Avg.	840	1,023	1,863	1,737	93%	0	635	337	972	873	90%	0	2,834

[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, 1893–2022.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1893	100,000	0	200,000	640,000	0	940,000
1894	262,550	0	112,850	860,000	0	1,235,400
1895	413,651	54,321	65,219	938,946	0	1,472,137
1896	487,630	20,400	229,020	1,262,690	0	1,999,740
1897	1,410,287	203,458	463,698	1,240,080	0	3,317,523
1898	2,241,113	247,842	548,793	1,890,092	0	4,927,840
1899	1,649,127	284,650	661,524	2,517,436	0	5,112,737
1900	3,208,263	307,574	796,965	4,234,533	0	8,547,335
1901	3,622,638	427,886	769,002	5,401,051	0	10,220,577
1902	6,038,386	403,444	1,640,973	4,725,715	0	12,808,518
1903	7,516,329	781,038	1,703,536	6,319,189	0	16,320,092
1904	5,856,442	136,759	564,492	5,345,659	0	11,903,352
1905	6,773,275	140,000	532,779	7,387,935	0	14,833,989
1906	4,954,905	238,000	203,014	5,427,512	0	10,823,431
1907	6,782,072	481,578	302,402	2,627,351	0	10,193,403
1908	9,088,285	781,131	272,355	6,092,031	0	16,233,802
1909	9,532,722	840,620	218,223	4,906,318	0	15,497,883
1910	6,336,382	619,001	168,471	4,469,755	0	11,593,609
1911	4,587,344	1,158,176	112,521	2,957,073	0	8,815,114
1912	13,821,905	1,455,247	425,763	3,993,428	0	19,696,343
1913	13,691,550	902,728	577,615	5,409,933	0	20,581,826
1914	12,584,809	897,767	254,716	6,457,815	0	20,195,107
1915	7,156,488	1,217,252	509,076	5,904,862	0	14,787,678
1916	11,551,086	1,578,862	647,422	3,744,551	0	17,521,921
1917	15,762,582	1,856,600	1,047,111	5,847,239	0	24,513,532
1918	14,219,536	1,818,218	756,206	6,296,705	0	23,090,665
1919	4,929,761	607,688	146,590	1,477,336	0	7,161,375
1920	5,275,140	498,949	441,770	2,682,056	0	8,897,915
1921	9,690,857	1,136,670	1,135,265	3,717,284	0	15,680,076
1922	15,766,366	2,550,068	1,879,067	3,436,576	0	23,632,077
1923	14,361,488	1,116,057	782,545	1,921,874	0	18,181,964
1924	6,813,083	874,019	446,810	2,168,154	0	10,302,066
1925	3,355,293	212,987	438,103	3,903,125	0	7,909,508
1926	12,717,504	1,522,721	1,151,541	4,022,328	0	19,414,094
1927	8,917,893	1,285,059	211,409	657,467	0	11,071,828
1928	12,200,000	1,300,000	500,000	5,710,000	0	19,710,000
1929	6,711,975	1,107,325	445,673	3,923,675	0	12,188,648
1930	2,334,138	373,250	111,150	1,440,650	0	4,259,188
1931	8,845,850	1,203,063	639,263	2,102,438	0	12,790,614

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Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1932	10,203,563	1,342,913	526,988	2,866,088	0	14,939,552
1933	16,944,386	1,780,344	611,347	4,372,873	0	23,708,950
1934	13,339,666	1,871,974	750,602	4,638,268	0	20,600,510
1935	1,703,568	416,127	0	903,264	0	3,022,959
1936	16,778,943	1,432,588	815,215	1,560,138	0	20,586,884
1937	13,957,327	2,221,161	518,027	4,561,299	0	21,257,814
1938	20,967,834	1,112,759	296,491	2,322,704	0	24,699,788
1939	7,773,909	750,098	639,217	4,169,121	0	13,332,345
1940	2,960,644	210,939	36,022	1,519,082	0	4,726,687
1941	4,966,660	342,900	65,806	1,778,338	0	7,153,704
1942	3,224,192	0	653,392	2,465,779	0	6,343,363
1943	12,874,650	0	1,081,925	3,373,643	0	17,330,218
1944	6,626,906	363,854	1,041,603	3,513,241	0	11,545,604
1945	4,195,431	0	808,797	2,296,019	0	7,300,247
1946	5,077,201	327,208	617,995	2,028,144	0	8,050,548
1947	13,965,201	995,745	913,795	2,767,287	0	18,642,028
1948	9,182,953	1,092,590	1,463,048	2,805,798	0	14,544,389
1949	3,941,568	1,016,115	691,515	800,123	0	6,449,321
1950	4,366,471	791,329	787,384	1,212,091	0	7,157,275
1951	2,926,413	644,551	318,629	436,950	0	4,326,543
1952	9,401,060	886,852	280,146	698,071	0	11,266,129
1953	3,738,839	1,234,600	688,720	449,341	0	6,111,500
1954	1,819,666	1,437,791	1,067,531	315,357	12,280	4,652,625
1955	2,564,341	622,885	240,817	1,054,978	66,085	4,549,106
1956	5,987,750	1,187,099	341,499	1,263,186	101,933	8,881,467
1957	4,578,643	814,459	350,858	491,498	40,044	6,275,502
1958	922,611	500,684	433,813	1,092,156	36,402	2,985,666
1959	1,689,425	662,391	423,414	1,719,687	113,202	4,608,119
1960	9,847,848	1,446,884	752,634	1,517,988	139,648	13,705,002
1961	8,166,983	2,686,076	357,223	511,483	192,161	11,913,926
1962	2,281,284	638,862	243,159	1,461,766	92,945	4,718,016
1963	957,902	695,582	188,695	842,744	186,213	2,871,136
1964	2,243,701	1,103,935	576,768	1,420,941	250,775	5,596,120
1965	19,139,567	3,179,559	925,690	793,323	217,100	24,255,239
1966	5,397,538	2,101,174	445,458	1,170,271	199,799	9,314,240
1967	2,337,226	1,070,942	163,744	657,711	101,107	4,330,730
1968	1,216,858	671,554	82,457	749,281	72,699	2,792,849
1969	4,655,072	889,322	169,845	773,207	134,252	6,621,698
1970	17,803,805	1,403,509	171,541	1,188,534	153,377	20,720,766

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Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
1971	5,857,378	1,306,682	954,068	1,256,799	209,060	9,583,987
1972	1,102,365	839,820	17,440	381,347	75,261	2,416,233
1973	168,249	221,337	3,920	272,093	95,723	761,322
1974	538,163	172,253	2,151	510,571	139,341	1,362,479
1975	3,085,416	964,024	14,558	645,902	188,914	4,898,814
1976	2,547,276	1,329,788	174,923	1,265,422	301,883	5,619,292
1977	2,167,214	1,780,567	92,623	619,025	218,451	4,877,880
1978	5,123,668	1,207,294	7,995	3,137,166	452,016	9,928,139
1979	14,991,826	2,257,332	391,118	3,327,346	460,984	21,428,606
1980	15,120,457	2,623,066	885,875	4,497,787	634,561	23,761,746
1981	10,992,809	4,361,406	2,116,066	7,493,093	639,707	25,603,081
1982	5,005,802	2,447,514	1,139,192	5,916,187	595,696	15,104,391
1983	21,559,372	6,755,256	3,349,451	5,119,744	588,208	37,372,031
1984	14,546,710	5,190,413	2,658,376	1,992,681	322,126	24,710,306
1985	8,179,093	7,537,273	6,468,862	1,307,889	209,766	23,702,883
1986	2,892,171	4,852,935	5,002,949	2,719,313	308,688	15,776,056
1987	4,986,002	5,356,669	2,128,652	3,254,720	342,732	16,068,775
1988	3,480,836	6,456,598	1,523,520	1,706,716	822,126	13,989,796
1989	13,809,956	8,901,994	3,146,239	2,788,194	88,923	28,735,306
1990	17,272,367	10,333,858	2,118,796	3,521,467	197,589	33,444,077
1991	10,475,206	6,797,166	2,945,742	5,053,845	549,221	25,821,180
1992	9,395,948	15,646,575	3,320,966	2,789,741	726,446	31,879,676
1993	8,907,872	21,600,603	4,176,952	5,236,932	539,933	40,462,292
1994	16,327,858	10,750,213	4,352,797	3,393,139	400,039	35,224,046
1995	20,279,581	14,426,007	4,509,418	4,445,900	605,328	44,266,234
1996	8,215,028	10,809,115	4,411,055	5,693,563	462,897	29,591,658
1997	589,311	7,517,389	1,402,690	2,506,818	142,569	12,158,777
1998	2,595,439	3,528,845	730,274	2,990,597	190,427	10,035,582
1999	9,452,972	7,388,080	2,256,007	6,175,419	385,411	25,657,889
2000	4,727,061	7,029,397	1,538,790	6,367,208	794,996	20,457,452
2001	5,280,538	2,872,662	480,509	4,734,800	810,096	14,178,605
2002	1,418,938	4,610,374	1,573,234	2,839,424	233,743	10,675,713
2003	3,348,504	2,291,502	1,748,934	6,665,965	706,008	14,760,913
2004 [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

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Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
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
All year average	7,706,884	3,175,850	1,303,845	3,783,755	206,150	16,176,484
2002–2021 Avg.	9,110,892	7,791,737	3,160,967	8,718,014	599,210	29,380,820
2012–2021 Avg.	10,916,146	8,436,421	3,469,449	9,937,891	620,044	33,379,951
2017–2021 Avg.	10,453,321	10,746,172	3,463,625	15,690,471	704,927	41,058,517

[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, 2002–2022.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
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
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
20-Year average	1,714	760	968	34,260	4,891	39,040
2002–2011 Avg.	1,381	549	1,086	47,640	6,921	51,743
2012–2021 Avg.	2,046	970	849	20,880	2,862	27,607

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

Appendix A5.–Chum salmon commercial catch by district, in numbers of fish, Bristol Bay, 2002–2022.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2002	19,189	23,516	35,792	276,787	112,987	468,271
2003	34,481	37,116	52,908	740,372	68,154	933,031
2004	29,972	75,061	49,358	458,916	94,025	732,481
2005	204,777	62,029	39,513	966,069	124,695	1,397,083
2006	457,855	153,777	168,428	1,240,235	223,364	2,243,659
2007	383,927	157,991	242,025	953,292	202,486	1,939,721
2008	237,260	92,901	135,292	492,341	301,967	1,259,761
2009	255,520	118,212	64,974	745,161	141,375	1,325,242
2010	337,911	57,324	62,987	424,234	118,767	1,001,223
2011	218,710	39,246	34,287	296,909	113,234	702,386
2012	133,959	35,375	31,352	272,163	206,614	679,463
2013	272,754	36,792	32,624	586,117	209,946	1,138,233
2014 [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
20-year Avg.	201,326	75,785	66,454	576,402	148,726	1,069,951
2002–2011 Avg.	217,960	81,717	88,556	659,432	150,105	1,200,286
2012–2021 Avg.	184,691	69,852	44,352	493,372	147,347	939,617

[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, 2002–2022.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2002	10	1	1	204	311	527
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
20-Year Avg.	11,675	1,335	328	424,411	73,839	511,587
2002–2011 Avg.	12,365	678	41	298,724	52,899	364,707
2012–2021 Avg.	10,984	1,992	615	550,098	94,778	658,467

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, 2002–2022.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2002	0	7,099	464	93	754	8,410
2003	42	40,577	994	583	1,047	43,243
2004	2,142	2,324	4,744	47,706	15,463	72,379
2005	3,314	20,611	8,162	42,456	8	74,551
2006	5,163	26,788	3,087	44,385	449	79,872
2007	2,180	18,111	1,954	29,578	157	51,980
2008	7,059	29,682	2,220	76,932	1,159	117,052
2009	732	10,594	2,602	35,171	9,209	58,308
2010	901	9,984	407	72,909	24,065	108,266
2011	633	440	84	4,712	7,605	13,474
2012	431	2,493	0	97,382	15,977	116,283
2013	467	812	479	124,182	11,420	137,360
2014	646	11,473	435	242,604	32,134	287,292
2015	1,253	730	2,533	6,614	26,080	37,210
2016	1,110	546	171	79,538	9,346	90,711
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
20-Year Avg.	2,294	13,910	1,575	64,657	14,704	97,139
2002–2011 Avg.	2,217	16,621	2,472	35,453	5,992	62,754
2012–2021 Avg.	2,371	11,199	678	93,861	23,416	131,525

Appendix A8.–Total salmon commercial catch by district, in numbers of fish, Bristol Bay, 2002–2022.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2002	1,439,831	4,641,902	1,610,548	3,157,042	350,596	11,199,919
2003	3,385,814	2,369,459	1,804,199	7,452,178	778,472	15,790,122
2004 [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
20-Year Avg.	9,323,289	7,883,590	3,230,251	9,617,424	806,883	30,922,912
2002–2011 Avg.	7,345,717	6,885,069	2,862,242	7,907,989	781,730	25,905,298
2012–2021 Avg.	11,300,861	8,882,111	3,598,259	11,326,860	832,036	35,940,527

[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, 2002–2022.

	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
2002				64 [c]	36	85	15	88	12	77	22	1	67	33	62	38	79	21
2003	91	9	0	65 [c]	35	81	19	89	11	83	15	2			63	37	79	21
2004	79	11	10	88	12	86	14	88	12	84	15	1			55	45	79	21
2005				81	19	82	18	87	13	84	14	2			56	44	66	34
2006	86	8	5	81	19	84	16	88	12	87	11	2			53	47	85	15
2007	82	12	6	80	12	84	16	92	8	80	17	3			59	41	81	19
2008	81	12	7			85	15	92	8	79	16	5			60	40	82	18
2009	80	12	9			85	15	87	13	76	20	4			60	40	82	18
2010	81	10	9			84	16	90	10	78	17	6	71	29	61	39	82	18
2011	84	10	7			83	17	87	13	76	16	7			60	40	81	19
2012	85	7	8			83	17	90	10	67	27	6	45	55	67	33	73	27
2013	84	9	7			85	15	90	10	78	17	5			65	35	84	16
2014	83	9	8			89	11	82	18	73	16	7			58	42	82	18
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
2002–2011 Avg.	83	11	7	77	22	84	16	89	11	80	16	3	69	31	59	41	80	20
2012–2021 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: Blank cells indicate no data.

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

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

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

[d] The Alaska Board of Fisheries enacted an allocation plan in 1998; it was reviewed in December 2003.

Appendix A10.–Sockeye salmon escapement by district, in numbers of fish, Bristol Bay, 2002–2022.

Year	Naknek-Kvichak [a]	Egegik [b]	Ugashik [c]	Nushagak [d]	Togiak [e]	Total
2002	2,303,463	1,036,092	905,584	1,755,993	199,507	6,200,639
2003	5,627,974	1,152,120	790,202	2,295,963	261,851	10,128,110
2004	12,836,100	1,290,144	815,104	2,196,864	154,681	17,292,893
2005	9,283,980	1,621,734	799,612	2,968,962	155,778	14,830,066
2006	6,795,420	1,465,158	1,003,158	4,861,780	312,126	14,437,642
2007	8,221,926	1,432,500	2,599,186	2,461,579	269,646	14,984,837
2008	7,411,104	1,259,568	596,332	3,271,926	205,680	12,744,610
2009	4,406,424	1,146,276	1,364,338	2,317,569	313,946	9,548,553
2010	6,859,068	927,054	830,886	2,791,080	188,298	11,596,386
2011	4,325,220	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	2,600,982	1,186,446	7,705,277	195,330	18,793,235
2018	8,201,286	1,608,354	1,167,792	9,525,486	511,770	21,014,688
2019	6,103,170	2,340,210	1,547,748	3,038,781	351,846	13,381,755
2020	10,529,646	2,389,728	1,745,940	3,795,795	261,126	18,722,235
2021	10,736,958	1,832,196	2,859,930	9,986,407	280,836	25,696,327
2022	7,814,400	1,786,152	1,436,784	7,581,652	239,646	18,858,634
20-Year Avg.	7,494,665	1,539,568	1,233,765	3,717,464	237,767	14,223,229
2002–2011 Avg.	6,807,068	1,229,185	1,073,426	2,686,929	225,248	12,021,856
2012–2021 Avg.	8,182,262	1,849,952	1,394,105	4,747,999	250,285	16,424,603

[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 1991–2004.

[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, lake tributaries, Kulukak system, and other miscellaneous river systems, except where noted.

[f] Snake River not surveyed.

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

[h] Alagnak tower count.

Appendix A11.–Inshore total run of sockeye salmon by district, in numbers of fish, Bristol Bay, 2002–2022.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak [a]	Togiak	Total
2002	3,722,401	5,646,466	2,478,818	4,595,417	433,250	16,876,352
2003	8,976,478	3,443,622	2,539,136	8,961,928	967,859	24,889,023
2004	17,551,170	11,499,371	3,954,333	8,300,912	591,915	41,897,701
2005	16,012,449	9,637,684	3,016,247	10,064,993	620,872	39,352,245
2006	13,947,161	8,874,141	3,432,795	15,738,332	938,568	42,930,997
2007	17,244,437	7,928,408	7,625,801	10,865,690	1,086,227	44,750,563
2008	17,792,948	8,663,453	2,930,354	10,175,083	856,995	40,418,833
2009	12,921,368	12,673,738	3,919,601	10,047,737	873,388	40,435,832
2010	17,717,277	5,997,870	4,862,718	11,215,110	856,148	40,649,123
2011	13,341,541	5,771,562	3,673,348	6,834,129	935,596	30,556,176
2012	16,079,420	6,296,290	3,113,671	4,052,989	826,057	30,368,427
2013	9,148,587	5,950,083	3,070,893	5,648,098	621,670	24,439,331
2014	19,924,521	8,310,816	2,147,598	10,171,331	595,192	41,149,458
2015	31,565,141	10,631,593	7,038,933	8,983,050	590,604	58,809,321
2016	21,396,703	10,576,959	8,265,501	10,569,247	845,843	51,654,253
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
20-Year Avg.	16,614,615	9,320,197	4,394,786	12,436,399	838,286	43,604,284
2001–2010 Avg.	13,922,723	8,013,632	3,843,315	9,679,933	816,082	36,275,685
2011–2020 Avg.	19,306,507	10,626,763	4,946,258	15,192,865	860,491	50,932,884

[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, 2002–2022.

		Escapement				
Year	Catch	Kvichak [a]	Alagnak	Naknek [a]	Total	Total run
2002	1,419,630	703,884	335,661 [b]	1,263,918	2,303,463	3,722,401
2003	3,350,656	1,686,804	3,676,146 [a]	1,831,170	7,194,120	10,542,573
2004	4,716,715	5,500,134	5,396,592 [a]	1,939,374	12,836,100	17,551,170
2005	6,730,812	2,320,422	4,219,026 [a]	2,744,622	9,284,070	15,990,456
2006	7,151,741	3,068,226	1,773,966 [a]	1,953,228	6,795,420	13,949,170
2007	9,027,161	2,810,208	2,466,414 [a]	2,945,304	8,221,926	17,244,437
2008	10,385,172	2,757,912	2,180,502 [a]	2,472,690	7,411,104	17,792,948
2009	8,517,450	2,266,140	970,818 [a]	1,169,466	4,406,424	12,925,769
2010	10,861,016	4,207,410	1,187,730 [a]	1,463,928	6,859,068	17,720,084
2011	9,019,372	2,264,352	883,794 [a]	1,177,074	4,325,220	13,344,592
2012	10,152,917	4,164,444	861,747 [b]	900,312	5,926,503	16,079,420
2013	4,853,030	2,088,576	1,095,950 [b]	938,160	4,122,686	8,975,716
2014	13,791,053	4,458,540	200,500 [b]	1,474,428	6,133,468	19,924,521
2015	16,531,193	7,349,712	5,770,650 [b]	1,920,954	15,041,316	31,572,509
2016	13,466,245	4,462,728	1,775,820 [b]	1,691,910	7,930,458	21,396,703
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
20-Year Avg.	9,112,039	3,438,867	2,143,426	1,991,364	7,573,657	16,684,052
2002–2011 Avg.	7,117,973	2,758,549	2,309,065	1,896,077	6,963,692	14,078,360
2012–2021 Avg.	11,106,105	4,119,184	1,977,787	2,086,651	8,183,622	19,289,744

[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, 2002–2022.

		Escapement			
Year	Catch	Egegik [a]	Shosky Creek[b]	King Salmon River[b]	Total run
2002	4,525,293	1,036,092			5,561,385
2003	2,253,721	1,152,030		90	3,405,841
2004	9,881,907	1,290,144			11,172,051
2005	8,015,950	1,621,584	0		9,637,534
2006	7,388,027	1,465,128	0		8,853,155
2007	6,474,027	1,432,500	0	1,500	7,908,027
2008	7,379,871	1,259,568	0	250	8,639,689
2009	11,527,282	1,146,276	0	4	12,673,562
2010	5,059,029	926,904		150	5,986,083
2011	4,806,939	961,200			5,768,139
2012	5,057,490	1,233,900		300	6,291,690
2013	4,779,133	1,113,630	[c]	[c]	5,892,763
2014	6,928,655	1,382,466	[c]	[c]	8,311,121
2015	8,325,956	2,160,792	[c]	[c]	10,486,748
2016	8,739,699	1,837,260	[c]	[c]	10,576,959
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
20-Year Avg.	7,743,692	1,539,547			9,283,354
2002–2011 Avg.	6,731,205	1,229,143			7,960,547
2012–2021 Avg.	8,756,180	1,849,952			10,606,161

Note: Blank cells represent no data.

[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, 2002–2022.

		Escapement			
Year	Catch	Ugashik River [a]	King Salmon River [b]	Dog Salmon River [b]	Total run
2002	1,570,418	892,104	11,460	2,020	2,476,002
2003	1,731,657	758,532	27,620	4,000	2,521,809
2004	3,077,745	776,364	22,850	15,890	3,892,849
2005	2,216,906	779,172	[c]	20,440	3,016,518
2006	2,428,334	978,718	[c]	24,440	3,431,492
2007	4,996,077	2,523,686	5,420 [c]	70,020	7,595,203
2008	2,319,790	588,632	[c]	7,700	2,916,122
2009	2,555,268	1,346,630	[c]	17,920	3,919,818
2010	4,031,625	805,686	[c]	25,200	4,862,511
2011	2,641,882	1,003,753	[c]	26,100	3,671,735
2012	2,415,580	670,578	8	24,432	3,110,598
2013	2,168,216	898,110	[c]	[c]	3,066,326
2014	1,507,440	640,158	[c]	[c]	2,147,598
2015	5,473,800	1,564,638	[c]	[c]	7,038,438
2016	6,630,231	1,635,270	[c]	[c]	8,265,501
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
20-Year Avg.	3,154,155	1,218,494	13,472	21,651	4,387,925
2002–2011 Avg.	2,756,970	1,045,328	16,838	21,373	3,830,406
2012–2021 Avg.	3,551,339	1,391,661			4,945,444

[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, 2002–2022.

		Escapement				
Year	Catch	Wood [a]	Igushik [a]	Nushagak [b]	Total	Total run
2002	2,839,918	1,283,682	123,156	349,155 [c]	1,755,993	4,595,911
2003	6,667,538	1,459,782	194,088	642,093 [c]	2,295,963	8,963,501
2004	6,104,492	1,543,342	109,650	543,872 [c]	2,196,864	8,301,356
2005	7,096,296	1,496,550	365,709	1,106,703 [c]	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
20-year Avg.	8,757,141	2,286,897	443,623	986,929	3,720,028	12,477,169
2002–2011 Avg.	6,993,622	1,726,580	402,164	558,186	2,691,760	9,685,382
2012–2021 Avg.	10,520,660	2,847,214	485,082	1,415,672	4,748,297	15,268,957

[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, 2002–2022.

Year	Catch [a]	Escapement [b]	Total run
2002	233,743	162,402	396,145
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
20-Year Avg.	599,207	232,843	832,050
2002–2011 Avg.	590,840	215,401	806,241
2012–2021 Avg.	607,574	250,285	857,860

[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, 2002–2022.

	Harvests by fishery				Inriver	Spawning	
Year	Commercial [a]	Sport	Subsistence [b]	Total	abundance [c]	escapement [d]	Total run
2002	40,039	3,693	11,049	54,781	181,307	174,704	229,485
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	5,298 [f]	9,469 [f]	20,198	44,434	44,434	64,632
20-Year Avg.	34,757	6,254	11,686	52,696	111,870	105,170	157,866
2002–2011 Avg.	48,049	6,407	12,199	66,654	135,654	128,294	194,948
2012–2021 Avg.	21,464	6,101	11,173	38,738	88,086	82,046	120,784

Note: The 2022 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, 2002–2022.

	Harvests by fishery				Spawning	
Year	Commercial	Sport [a]	Subsistence	Total	escapement [b]	Total run
2002	2,801	76	703	3,580	9,515	13,095
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	910 [g]	694 [g]	2,911	[e]	[d]
20-Year Avg.	4,891	969	970	6,830	5,262	14,089
2002–2011 Avg.	6,921	913	1,169	9,002	6,183	17,778
2012–2021 Avg.	2,862	1,025	772	4,658	2,806	7,942

[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.

Appendix A19.–Inshore commercial catch and escapement of chum salmon in the Nushagak and Togiak Districts, in numbers of fish, 2002–2022.

	Nushagak District			Togiak District		
Year	Catch	Escapement [a]	Total run	Catch	Escapement [b]	Total run
2002	276,787	533,095	809,882	112,987	154,360	267,347
2003	740,372	374,992	1,115,364	68,154	39,090 [c]	[d]
2004	458,916	360,265	819,181	94,025	103,810	197,835
2005	966,069	519,618	1,485,687	124,695	108,346	233,041
2006	1,240,235	661,003	1,901,238	223,364	26,900 [c]	[d]
2007	953,292	161,483	1,114,775	202,486	[e]	[d]
2008	492,341	326,300	818,641	301,967	279,580 [c]	[d]
2009	745,161	438,481	1,183,642	141,375	[e]	[d]
2010	424,234	273,914	698,148	118,767	[e]	[d]
2011	296,909	248,278	545,187	113,234	[e]	[d]
2012	272,163	364,499	636,662	206,614	[e]	[d]
2013	340,881	623,326	628,134	208,786	[e]	[d]
2014	242,261	552,797	795,058	100,195	[e]	[d]
2015	502,981	288,929	791,910	103,773	[e]	[d]
2016	397,761	419,810	817,571	187,508	[e]	[d]
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]
20-Year Avg.	564,148	413,140	960,485	148,668	118,681	34,911
2002–2011 Avg.	659,432	389,743	1,049,174	150,105	118,681	69,822
2012–2021 Avg.	468,864	436,538	871,795	147,231		0

Note: Blank cells 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, 2002–2022.

Year	Sockeye	Chinook	Chum	Pink	Coho
2002	6.1	18.2	7.1	3.8	6.8
2003	6.3	16.0	6.5	4.0	6.9
2004	5.8	15.4	6.6	4.1	6.8
2005	6.3	16.6	7.1	3.5	6.3
2006	5.7	17.0	7.7	3.7	6.4
2007	5.8	13.5	6.1	3.5	6.4
2008	5.8	15.5	6.5	3.6	6.5
2009	5.9	15.2	6.3	3.3	6.5
2010	5.5	14.7	6.4	3.2	8.9
2011	6.2	13.0	7.0	3.2	6.8
2012	5.7	13.9	6.7	3.1	5.4
2013	6.0	15.3	6.4	3.9	6.0
2014	5.6	15.4	6.1	3.7	6.4
2015	5.2	15.1	6.1	3.7	6.7
2016	5.4	12.6	6.0	4.0	5.8
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
20-Year Avg.	5.6	14.0	6.4	3.6	6.5
2002–2011 Avg.	5.9	15.5	6.7	3.6	6.8
2012–2021 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, 2002–2022.

Year	Sockeye	Chinook	Chum	Pink	Coho
2002	0.49	0.33	0.09	0.06	0.32
2003	0.51	0.32	0.08	0.07	0.27
2004	0.51	0.37	0.09	0.09	0.31
2005	0.62	0.58	0.11	0.02	0.29
2006	0.66	0.71	0.12	0.03	0.38
2007	0.67	0.64	0.13	0.03	0.41
2008	0.75	0.83	0.17	0.17	0.55
2009	0.80	0.89	0.17	0.07	0.56
2010	1.07	1.18	0.28	0.36	0.66
2011	1.17	1.04	0.37	0.29	0.74
2012	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 [a]	1.13	0.87	0.38	0.14	0.63
20-Year Avg.	1.01	0.86	0.25	0.15	0.56
2002–2011 Avg.	0.73	0.69	0.16	0.12	0.45
2012–2021 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, 2002–2022.

Year	Sockeye	Chinook	Chum	Pink [a]	Coho	Total [b]
2002	31,962	277	287	0	18	32,544
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 [c]	342,449	61	638	55	68	343,271
20 Year Avg.	170,531	426	1,409	480	404	172,051
2002–2011 Avg.	107,277	528	1,108	385	200	107,387
2012–2021 Avg.	233,785	324	1,710	575	608	236,715

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 indicates 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, 2002–2022.

Year	Number of buyers	Daily processing capacity [a]	Fishery dates	Gillnet				Purse Seine				Total harvest [c]
				Effort [b]	Duration (hours)	Harvest [c]	Roe %	Effort [b]	Duration (hours)	Harvest [c]	Roe %	
2002	8	1,920	5/3–5/13	82	102	5,216	10.9	37	57.5	11,833	9.3	17,049
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]
20-Year Avg.	5	2,166		29	300	4,811	11	22	231	16,192	10	20,469
2002–2011 Avg.	7	2,087		46	235	5,611	11	28	178	15,034	9	20,644
2012–2021 Avg.	4	2,265		11	365	3,478	12	16	284	17,641	11	20,249

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), 2002–2022.

Year	Biomass estimate (short tons)[a]	Dutch Harbor food/bait	Sac roe				Total harvest	Exploitation rate
			Gillnet[b]	Purse seine[c]	Waste[d]	Total[e]		
2002	120,196	2,846	5,216	11,793	40	17,009	20,115	16.7%
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]	[f]	[f]	0		11,754	3.3%
20-year Avg.	151,113	1,486	4,811	16,074	522	20,406	21,446	15.0%
2002–2011 Avg.	130,859	1,612	5,611	14,821	355	20,431	22,075	16.9%
2012–2021 Avg.	171,366	1,345	3,477	17,641	723	20,374	20,747	13.0%

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, 2002–2022.

	Age composition (%)						Spawning biomass [a]
Year	≤4	5	6	7	8	≥9	(short tons)
2002	1.0	25.0	28.0	4.0	5.0	36.0	61,377
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

[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.

Appendix B4.–Aerial survey estimates of herring biomass (in short tons) and spawn deposition (in miles), Togiak District, 2002–2022.

Year	Preseason forecast [a]	Biomass estimate[b]	Spawn estimate
2002	120,196	61,377	32
2003	126,213	47,074	95
2004	143,124	53,625	36
2005	96,029	163,737	28
2006	129,976	179,580	18
2007	134,566	143,827	19
2008	134,516	136,839	49
2009	121,800	142,154	15
2010	146,775	146,913	8
2011	140,860	62,333	36
2012	123,745	167,738	31
2013	169,094	169,020	47
2014	157,448	203,267	92
2015	163,480	228,807	63
2016	164,247	136,993	43
2017	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
2002–2021 Avg.	150,490	136,853	43
2012–2021 Avg.	171,574	159,959	55

[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, 2002–2022.

Year	Herring sac roe	Total
2002	2,264	1,900
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]	
20-year Avg.	2,467	2,493
2002–2011 Avg.	2,732	2,779
2012–2021 Avg.	2,136	2,136

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.

Appendix B6.–Guideline and actual harvests of herring sac roe (short tons) and spawn on kelp (lb), Togiak District, 2002–2022.

	Gillnet sac roe			Purse seine sac roe		
Year	Guideline [a]	Actual	% Difference [b]	Guideline [a]	Actual [c]	% Difference [b]
2002	6,288	5,216	-17	14,673	11,833	-19
2003	6,624	6,505	-2	15,457	15,158	-2
2004	7,568	4,980	-34	17,658	13,888	-21
2005	5,667	5,841	3	13,224	15,071	14
2006	7,059	7,132	1	16,471	16,821	2
2007	7,090	4,012	-43	16,544	13,120	-21
2008	6,864	4,832	-30	16,017	15,602	-3
2009	6,378	4,167	-35	14,882	12,404	-17
2010	7,772	7,540	-3	18,134	18,816	4
2011	7,442	5,907	-21	17,364	16,970	-2
2012	6,487	4,027	-38	15,135	12,994	-14
2013	9,017	8,244	-9	21,040	19,366	-9
2014	8,367	6,468	-23	19,523	19,544	0
2015	8,704	1,220	-86	20,309	20,374	0
2016	8,635	80	-99	20,148	14,799	-27
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]	
20-year Avg.	7,286	4,845	-32	18,969	16,219	-7
2002–2011 Avg.	6,875	5,613	-18	16,042	14,968	-6
2012–2021 Avg.	7,697	3,564	-56	21,895	17,783	-8

[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.