

Fishery Management Report No. 21-16

2020 Bristol Bay Area Annual Management Report

by

Aaron Tiernan

Travis Elison

Tim Sands

Jordan Head

Stacy Vega

and

Gayle Neufeld

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	all standard mathematical signs, symbols and abbreviations	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H _A
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	<i>e</i>
hectare	ha			catch per unit effort	CPUE
kilogram	kg			coefficient of variation	CV
kilometer	km	at	@	common test statistics	(F, t, χ^2 , etc.)
liter	L			confidence interval	CI
meter	m			compass directions:	correlation coefficient
milliliter	mL	east	E	(multiple)	R
millimeter	mm	north	N	correlation coefficient (simple)	r
Weights and measures (English)		south	S	covariance	cov
cubic feet per second	ft ³ /s	west	W	degree (angular)	°
foot	ft	copyright	©	degrees of freedom	df
gallon	gal	corporate suffixes:		expected value	<i>E</i>
inch	in	Company	Co.	greater than	>
mile	mi	Corporation	Corp.	greater than or equal to	≥
nautical mile	nmi	Incorporated	Inc.	harvest per unit effort	HPUE
ounce	oz	Limited	Ltd.	less than	<
pound	lb	District of Columbia	D.C.	less than or equal to	≤
quart	qt	et alii (and others)	et al.	logarithm (natural)	ln
yard	yd	et cetera (and so forth)	etc.	logarithm (base 10)	log
Time and temperature		exempli gratia		logarithm (specify base)	log ₂ , etc.
day	d	(for example)	e.g.	minute (angular)	'
degrees Celsius	°C	Federal Information Code	FIC	not significant	NS
degrees Fahrenheit	°F	id est (that is)	i.e.	null hypothesis	H ₀
degrees kelvin	K	latitude or longitude	lat or long	percent	%
hour	h	monetary symbols		probability	P
minute	min	(U.S.)	\$, ¢	probability of a type I error	
second	s	months (tables and figures): first three letters	Jan,...,Dec	(rejection of the null hypothesis when true)	α
Physics and chemistry		registered trademark	®	probability of a type II error	
all atomic symbols		trademark	™	(acceptance of the null hypothesis when false)	β
alternating current	AC	United States		second (angular)	"
ampere	A	(adjective)	U.S.	standard deviation	SD
calorie	cal	United States of America (noun)	USA	standard error	SE
direct current	DC	U.S.C.	United States Code	variance	
hertz	Hz			population sample	Var
horsepower	hp				var
hydrogen ion activity (negative log of)	pH				
parts per million	ppm	U.S. state	use two-letter abbreviations		
parts per thousand	ppt, ‰		(e.g., AK, WA)		
volts	V				
watts	W				

FISHERY MANAGEMENT REPORT NO. 21-16

2020 BRISTOL BAY AREA ANNUAL MANAGEMENT REPORT

Aaron Tiernan, Travis Elison, Jordan Head, and Stacy Vega
Alaska Department of Fish and Game, Division of Commercial Fisheries, Anchorage

Tim Sands
Alaska Department of Fish and Game, Division of Commercial Fisheries, Dillingham

and

Gayle Neufeld
Alaska Department of Fish and Game, Division of Subsistence, Anchorage

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

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*Aaron Tiernan, Travis Elison, Jordan Head, and Stacy Vega
Alaska Department of Fish and Game, Division of Commercial Fisheries,
333 Raspberry Road, Anchorage, AK, 99518, USA*

*Tim Sands
Alaska Department of Fish and Game, Division of Commercial Fisheries,
546 Kenny Wren Road, P.O. Box 230, Dillingham, AK 99576, USA
and*

*Gayle Neufeld
Alaska Department of Fish and Game, Division of Subsistence,
333 Raspberry Road, Anchorage, AK, 99518, USA*

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ADF&G, Division of Sport Fish, Research and Technical Services, 333 Raspberry Rd, Anchorage AK 99518 (907) 267-2375

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ABSTRACT

The 2020 Bristol Bay Area Annual Management Report is the 59th 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 2020 inshore sockeye salmon run of 58.3 million fish was 25% above the preseason forecast of 46.6 million fish. Sockeye salmon dominated the inshore commercial harvest, totaling 39.6 million of the 40.1 million salmon commercially harvested. Total Bristol Bay sockeye salmon escapement was 18.7 million fish, and escapements goals were either met or exceeded in all systems with established goals. In total, 10,000 Chinook, 293,000 chum, 72,000 pink, and 114,000 coho salmon were also harvested in the commercial fishery. The Nushagak River Chinook salmon escapement was 43,032 fish, which was below the established escapement goal. This report also summarizes 2020 subsistence salmon fishing activities in the Bristol Bay region. The 2020 Togiak District herring preseason biomass forecast was 216,000 short tons. Total harvest from the commercial herring fishery is confidential because fewer than three processors registered for the fishery in 2020. All 2020 commercial salmon harvest data are based on fish tickets; these data can change if more information becomes available.

Keywords: Pacific salmon *Oncorhynchus* spp., sockeye salmon *Oncorhynchus nerka*, Chinook salmon *O. tshawytscha*, chum salmon *O. keta*, coho salmon *O. kisutch*, pink salmon *O. gorbuscha*, Pacific herring *Clupea pallasii*, commercial fisheries, 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 includes all coastal and inland waters east of a line from Cape Newenham to Cape Menshikof (Figure 1). The area includes nine 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 five management districts (Naknek-Kvichak, Egegik, Ugashik, Nushagak, and Togiak) that correspond to major river systems. The management objective for each river is to achieve salmon escapements within established escapement goal ranges while harvesting fish in excess of those ranges, consistent with regulatory management plans (5 AAC 06.355–5 AAC 06.369).

OVERVIEW OF BRISTOL BAY SALMON FISHERIES

The five 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 (2000–2019) averaged 27.0 million sockeye, 40,200 Chinook, 1.1 million chum, 510,000 pink (even-years only), and 96,400 coho salmon (Appendices A3–A7). Since 2000, the annual exvessel value of the commercial salmon harvest within Bristol Bay has averaged \$147.9 million. Sockeye salmon were the most valuable and averaged \$146.4 million annually (Appendix A24). Subsistence salmon harvests totaled 112,000 salmon in 2020, with 93,000 of those fish being sockeye salmon (Appendices A27–A29). Sport

fisheries harvest 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. Each stock is managed to achieve a spawning escapement goal based on sustained yield. Escapement goals are achieved by regulating fishing time and area by emergency order (EO) and/or adjusting weekly fishing schedules. Legal gear for the commercial salmon fishery includes both drift (150 fathoms) and set (50 fathoms) gillnets. The Alaska Board of Fisheries (BOF) passed a regulation in 2003 that allows two drift permit holders to concurrently fish from the same vessel and jointly operate up to 200 fathoms of drift gillnet gear. Drift gillnet permits are the most numerous and 1,862 are in Bristol Bay (Area T), of which 1,724 were registered to fish in 2020 (Appendix A2). There are a total of 964 set gillnet permits in Bristol Bay, and 841 made at least one delivery in 2020 (Appendix A2).

2020 COMMERCIAL SALMON FISHERY

RUN STRENGTH INDICATORS

Fishery managers in Bristol Bay have several early indicators of sockeye salmon run size. Those 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, individual district test fishery programs, early performance of the commercial fishery, inriver test fishery programs, and timely escapement information from counting towers and a sonar project. These pieces of information may not give a correct assessment of run size individually, but collectively allow broad-scale examination of inseason data. This includes the relative strengths of year classes, discrepancies from the forecast (relative to expected year class contributions), or differences in run timing important to successful management of the commercial fishery.

Due to State of Alaska budget cuts, many of these run assessment projects have not been funded by the state's General Fund since the 2015 fishing season. In 2016, the Bristol Bay Fisheries Collaborative (BBFC) formed as a grassroots stakeholder group to temporarily provide financial support for Bristol Bay commercial fisheries management. Members making financial contributions included fishermen's associations, individual fishermen, 12 different processing companies, five different shipping companies, six different boroughs and villages, and Bristol Bay Native Corporation. In 2020, BBFC provided full or partial funding for the Port Moller Test Fishery, the Ugashik, Egegik, and Kvichak inriver test fisheries, and aerial surveys of the Naknek, Kvichak, and Alagnak drainages. These projects were operated by the Alaska Department of Fish and Game (ADF&G) and the Bristol Bay Science and Research Institute (BBSRI), individually or collaboratively.

2018 ALASKA BOARD OF FISHERIES

The Alaska Board of Fisheries (board) met in Dillingham in November 2018 to review proposals regarding the Bristol Bay Salmon fishery. Actions taken at that meeting resulted in the following regulatory changes for the Bristol Bay fishery:

- A mesh size restriction of 5.5 inches or less was established in the Ugashik and Naknek-Kvichak districts from June 1 through July 22 to help conserve Chinook salmon (called "king salmon" in regulation). The Egegik District already had the same restriction by regulation.

- The late-season fishing schedule for Naknek-Kvichak, Egegik, and Ugashik districts was changed to allow fishing from 9:00 AM Monday to 9:00 AM Sunday, beginning 9:00 AM July 17, or as established by emergency order.
- The Kvichak Section boundary line (north line) was moved slightly north near Graveyard Point to the newly defined coordinate of 58° 52.10' N lat, 157° 00.80' W long.
- The *Alagnak River Sockeye Salmon Special Harvest Area Management Plan* (5 AAC 06.373) was amended to provide opportunity while conserving Kvichak River sockeye salmon. Board actions repealed the connection to the king salmon escapement goal and provided direction to minimize harvest of king salmon.
- The minimum distance between set gillnets in the Wood River Special Harvest Area was increased to 250 feet.
- The definition of districts was clarified to include special harvest areas and further clarified gillnet specifications and operations within special harvest areas.

PRESEASON FORECASTS

Total inshore (excluding harvest in other areas) sockeye salmon production for Bristol Bay in 2020 was forecast to be 46.6 million. The Bristol Bay sockeye salmon inshore harvest was predicted to be 34.6 million fish (Table 1). Runs were expected to be large enough to meet spawning escapement goals for all river systems in Bristol Bay.

The forecast for the sockeye salmon run to Bristol Bay in 2020 was the sum of individual predictions for nine river systems (Kvichak, Alagnak, Naknek, Egegik, Ugashik, Wood, Igushik, Nushagak, and Togiak) and four major age classes (age 1.2, 1.3, 2.2, and 2.3, plus age 0.3 and 1.4 for Nushagak; Table 2). Adult escapement and return data from brood years 1972–2016 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. 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 2001 through 2019.

SOUTH UNIMAK/SHUMAGIN ISLANDS FISHERY

From 1975 to 2000, the South Unimak and Shumagin Islands commercial fisheries were managed under a guideline harvest level (GHL), which was based on a percentage of the Bristol Bay inshore sockeye salmon harvest. The original intent was to prevent overharvest of sockeye salmon runs bound for river systems in Bristol Bay. From 1986 to 2000, a chum salmon cap was implemented because of concerns about large chum salmon harvest and a weak Yukon River fall chum salmon run. In 2001, the BOF modified the *South Unimak/Shumagin Islands June Fishery Management Plan* (5 AAC 09.365) to eliminate the sockeye salmon GHL and the chum salmon cap and instead established a June fishing schedule. In 2004, the BOF established a fishing schedule that began at

6:00 AM on June 7 and ended at 10:00 PM on June 29 for all gear types. Fishing periods were 88 hours in duration separated by a 32-hour closure (Poetter 2014a). In 2013, the BOF modified the purse seine and drift gillnet fishing schedules to begin the season at 6:00 AM on June 10 and end at 10:00 PM on June 28, which reduced fishing time by 64 hours (Poetter 2014b). Preliminary 2020 catch information for these fisheries can be found in Appendix A25.

PORT MOLLER TEST FISHERY

From 1967 to 1985, ADF&G operated a test fishery 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 price paid to fishermen. 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 BBSRI, with financial and technical support from ADF&G and industry (Raborn and Link 2020).

In 2020, the Port Moller Test Fishery (PMTF) operated from June 12 to July 13. During this period, there were 9 days without fishing because of poor weather. 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 to assess fish traveling deeper in the water column. Between the two vessels, coverage was almost complete along a line between Port Moller and Cape Newenham for two weeks; fish were present throughout the transect, similar to recent years. In 2020, changes in stock composition between adjacent days were less pronounced than changes between the inner and outer transects on a given day. Nushagak District and Naknek Kvichak District stocks were more prevalent along the outer transect, while Egegik and Ugashik stocks were more so along the inner transect (Raborn and Link 2020).

GENETICS

Over the last 18 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 two 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 Port Moller test fishery project starting 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. ADF&G genetics staff can complete analysis and deliver results in 3 to 5 days depending on several factors (e.g., timing of airline flights or weather on the fishing grounds). 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 2020, the exvessel value of inshore commercial salmon harvest was an estimated \$141.1 million (Table 3), which was 32% below the \$208.4 million 10-year (2010–2019) average (Appendix A24). The average sockeye salmon price in 2020 was \$0.70/pound before incentives and postseason adjustments. Prices paid for the other salmon species ranged from \$0.05/pound to \$0.70/pound (Table 3).

During the 2020 season, 35 processors/buyers registered to process fish from Bristol Bay. Of those processors, 3 companies canned, 33 froze, 14 exported fresh, 3 cured salmon, and 6 extracted roe. Product was exported by air by 22 companies and exported by sea by 24 companies (Table 4).

RUN AND HARVEST PERFORMANCE BY SPECIES

Sockeye Salmon

The 2020 inshore sockeye salmon run of approximately 58.3 million fish was 25% above the preseason forecast of 46.6 million (Table 1). The sockeye salmon runs to the Wood, Togiak, and Ugashik Rivers came in under forecast, with the remaining river systems coming in above forecast in 2020. Sockeye salmon dominated the inshore commercial harvest, totaling 39.6 million fish, which was the third largest since 2000 and the fifth largest sockeye salmon harvest recorded in Bristol Bay since 1893 (Table 5 and Appendix A3). Sockeye salmon sustainable escapement goals (SEG) were met or exceeded in all systems with established goals (Table 1; Erickson et al. 2018). Two other benchmarks were set in 2020: the sixth highest total inshore salmon harvest (40.0 million) since 1975 and the highest sockeye salmon total run and escapement on record for Naknek River (10.2 million and 4.1 million fish, respectively).

Average sockeye salmon weights in 2020 varied from previous years. Fish that spent three years at sea averaged 5.5 pounds, which is close to historical averages (5.5–6 pounds), whereas fish that spent two years at sea averaged between 4 and 4.5 pounds, roughly a pound less than the historical average. The combined average weight of 5.1 pounds was below the long-term average of 5.8 pounds (Appendix A22).

Chinook Salmon

The 2020 baywide commercial harvest of 10,000 Chinook salmon was the lowest since 1955 (Appendix A4). The Naknek-Kvichak, Egegik, and Togiak district harvests were below the 20-year (2000–2019) average. The Ugashik District harvest was above average. Harvest in the Nushagak District (the largest producer of Chinook salmon in Bristol Bay) was 6,000 fish, which was below the 2000–2019 average of 34,000 fish (Appendix A4). The Nushagak River Chinook salmon escapement was 43,000 fish (Table 6), which was below the SEG of 55,000–120,000 fish and the inriver goal of 95,000 fish.

Chum Salmon

In 2020, the commercial harvest of 293,000 chum salmon was the lowest on record. Chum salmon harvests were below the 2000–2019 averages in all districts (Appendix A5).

Pink Salmon

Bristol Bay has a dominant even-year pink salmon cycle. In 2020, the baywide pink salmon harvest was 72,000 fish, which is well below the 2000–2018 even-year average of 510,000 fish (Appendix A6). The majority of pink salmon harvest was incidental to sockeye salmon directed fisheries.

Coho Salmon

Commercial harvest of coho salmon was 114,000 fish, which was above the 2000–2019 average of 96,000 fish. The largest commercial harvest was in the Nushagak District, where the 76,000 fish harvest was above the 2000–2019 average of 65,000 fish (Appendix A7). The Nushagak River sonar project was operational until July 25 and did not count any coho salmon (Table 6).

SEASON SUMMARY BY DISTRICT

Naknek-Kvichak District

The 2020 inshore run forecast for the Naknek-Kvichak District was 19.0 million sockeye salmon, composed of a projected 6.7 million for escapement and 12.3 million for harvest. The forecast by river system was 9.9 million for the Kvichak River, 3.9 million for the Alagnak River, and 5.2 million for the Naknek River (Table 1). The SEG for 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. The total inshore run to the district for 2020 was 24.8 million sockeye salmon, consisting of a commercial harvest of 14.3 million and a total escapement of 10.5 million (Table 1).

ADF&G does not forecast Chinook, chum, coho, or pink salmon for systems in Naknek-Kvichak District. Commercial harvest of Chinook salmon has remained relatively small because of 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.

Salmon counting towers were operated on the Naknek, Kvichak, and Alagnak rivers during the 2020 season. Fish counts were started at the Naknek River tower on June 19, the Kvichak River tower on June 22, and the Alagnak River tower on June 30 (Table 7). This was the fourth season of operations for the Alagnak River tower since 2011. The Naknek River escapement was 4.1 million, the Kvichak River escapement was 4.0 million, and the Alagnak River escapement was 2.4 million sockeye salmon. Naknek River escapement was above the escapement goal range and the highest on record, Kvichak River escapement was within the escapement goal range, and Alagnak River escapement was above the lower bound escapement goal (Appendix A1).

Additional funding was allocated to tower projects in 2020 to extend the operational dates and establish hard end dates for the projects. This greatly improved overall project operations. Prior to this change, towers generally ceased operation after 3 consecutive days with daily passage that was less than one percent of the total season passage. The established dates for the last day of counting were July 21 for Naknek River tower, July 27 for Kvichak River tower, and July 28 for Alagnak River tower.

Fishing with drift gillnets was restricted to the Naknek Section during the early season schedule, while both sections were open to set gillnets. Fishing periods were from 9:00 AM Monday until

9:00 AM Friday, beginning 9:00 AM Monday, June 1, and ending 9:00 AM Wednesday, June 24 (Table 8). The first deliveries occurred on June 15 (Table 9) and the early season fishing schedule ended with a small harvest. Following the closure on June 24, subsequent fishing periods were based on inseason indicators of abundance in 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 and 2018, the Nushagak District experienced record-breaking sockeye salmon runs. In 2019, the Egegik District had the third largest run on record since 1952. Both Egegik River and Wood River had large forecasts again for 2020. The Nushagak and Egegik districts typically experience earlier run timing than the Naknek-Kvichak District and this pattern has been amplified in the previous five seasons when substantial harvests in the Naknek-Kvichak District did not occur until July. These trends in run sizes and run timing has led to a popular strategy of starting the season in the Nushagak or Egegik district and transferring to Naknek-Kvichak or Ugashik district later in the season.

In March of 2020, the governor issued a Public Health Disaster Emergency Declaration for the COVID-19 pandemic. Travel to Alaska required a 14-day quarantine and individual companies and the fleet developed mitigation plans. The mitigation plans resulted in reduced capacity for some processing plants. There was also concern that outbreaks within individual plants could lead to shutdowns and further reduce the processing capacity. Because of the anticipated limited harvesting capacity of the fleet and potentially limited processing capacity, the preseason management strategy was to fish one tide per day as the fish run began building in the district.

Naknek River escapement was around 25,000 sockeye salmon through June 23, which was near the five-year (2015–2019) average (Table 7). The Naknek Section was opened to drift gillnets and the Naknek-Kvichak District was opened to set gillnets for 7 hours each on the evening tide of June 24. On June 24, harvest was almost 16,000 sockeye salmon (Table 9) and escapement was 12,270 (Table 7). On the morning of June 25, another 7-hour period was announced for both gear groups on the evening tide (Table 8). The Naknek tower count through 2:00 PM was 13,374 fish, so there was a 3:00 PM announcement to extend the set gillnet period for 15 hours and to open the Naknek Section to drift gillnets the morning of June 26. Set gillnet extensions and drift gillnet periods were announced one tide at a time and each tide was fished until the morning tide on June 28. Daily sockeye salmon harvests ranged from 173,032 on June 26 to 16,345 fish on June 27. Sockeye salmon escapements ranged from 15,486 on June 25 to 33,522 fish on June 27 (Tables 7 and 9).

There were very few fish in the district on June 27 and 28, but fishing resumed on the evening tide of June 28 with only 389 registered drift vessels (Table 10). Indices from PMTF began steadily increasing on June 20; Naknek River made up over 15 percent of the first 3 genetic stock composition estimates (Figure 2), so the abundance of Naknek River fish was expected to increase in the district at any time. At about 8:30 AM June 29, reports started coming in that large sets were being made during high tide at Johnson Hill. Harvest on June 29 was 258,657 sockeye salmon. At noon on June 30, it was announced that the current fishing periods would close at 3:00 PM and the next fishing period for both gear groups would start the following morning. The Naknek River tower had passed 390 fish by 6:00 AM on June 30 and by 2:00 PM the count was up to 122,814 fish. It was too late to keep the set gillnets in the water, and they were significantly ahead on allocation (25%) so a drift gillnet only period was announced at 3:00 PM for that night's tide (Table 8). The fish that entered the district on June 29 began passing the Naknek River tower about 24 hours later and the daily escapement on June 30 was 159,030 for a cumulative of 278,982 fish (Table 7). At

this escapement, the Naknek River was projected to exceed the upper end of the escapement goal range (800,000–2.0 million fish).

On July 1, the set gillnet fishing period was extended for 24.5 hours and an 18.5-hour drift period was announced to start that evening. Fishing was relatively slow from June 30 through the morning of July 2. At about noon on July 2 reports came in from Johnson Hill that there was another big push of fish on the ebb tide. The harvest on July 2 was 171,295 and increased to 571,932 the following day. Daily escapements were very low on July 2 and 3 with only 2,130 and 4,188, respectively. The fish that entered the district on July 2 started passing the tower at about 5:00 AM on July 4. Escapement that day was 334,374 for a cumulative of 642,144 sockeye salmon. Naknek River escapement was projecting to exceed the escapement goal, so drift gillnet fishing was opened every tide in the Naknek Section and fishing with set gillnets was extended each day in the entire district (Table 8). Daily harvests from July 5 to 8 ranged from about 900,000 to 1.16 million sockeye salmon. Some processing companies began putting permit holders on limits (i.e., harvest limitations or caps imposed by processors on permit holders or suspension of buying, by fishing period) on the evening of July 7 and some limits were in place through July 10. On July 6, Naknek River escapement was 478,884 for a cumulative of 1.2 million, which was within the escapement goal range (Tables 7–9).

The Kvichak River had a forecast of almost 10 million sockeye salmon, but it got off to a slow start compared to the five-year (2015–2019) average. Kvichak River was less than 10 percent of the PMTF genetic stock composition estimates between June 19 and 25 (Figure 2), and cumulative escapement remained below 100,000 fish through July 4 (Table 7). However, Kvichak River fish made up about 24 percent of the PMTF stock composition estimate from June 29–30, indicating the run would soon be building (Figure 2). The Kvichak River test fish project, located at the Levelock, started operating on June 25. No sockeye salmon were caught until June 27 (Table 11), and very few until the evening tide on July 4, when the tidal index jumped to 1,161. The fish began passing the counting tower about 48 hours later. Daily escapement was 106,980 on July 6 and increased each day until July 12 when 536,448 sockeye salmon passed the tower for a cumulative of 2.3 million fish (Table 7), putting the run within the Kvichak River escapement goal range.

From July 12 to 15, drift gillnet fishing periods alternated between the Naknek Section on the night tides and the Naknek-Kvichak District during the daytime tides. Prior to July 12, all drift gillnet periods had been restricted to the Naknek Section only. The three highest daily harvests during the season were all over one million sockeye salmon and they all occurred when drift gillnets were restricted to the Naknek Section (Table 9). Participation peaked at the end of the registration period, (9:00 AM July 17) with 722 drift gillnet permits registered to fish in the district (Table 10). The harvest allocation during the allocation period of June 1 to July 17 was 80% drift gillnet, 12% Naknek set gillnet, and 8% 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 16 to August 2. The fall schedule was initiated on August 2 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 15.

The Naknek River tower operated through July 21 and had a final escapement estimate of 4,112,160 sockeye salmon. The Kvichak River tower operated through July 27 and had a final escapement estimate of 4,030,968 sockeye salmon. The Alagnak River tower operated through July 28 and had a final escapement estimate of 2,386,518 sockeye salmon (Table 7).

The sockeye salmon total harvest of 14.3 million was 69% above the 2000–2019 average harvest of 8.4 million fish (Appendix A3). The Chinook salmon total harvest of 816 fish was the lowest on record (Appendix A4). The chum salmon harvest of 36,381 fish was the lowest since 2004 (Appendix A5). There was a commercial harvest of 1,345 pink salmon and 1,033 coho salmon (Appendices A6 and A7).

Egegik District

The 2020 Egegik District total inshore run of sockeye salmon was forecast to be 10.2 million fish, consisting of 8.5 million fish for harvest and 1.7 million fish for escapement (Table 1). The Egegik River SEG range is 800,000–2.0 million fish. The inshore run for 2020 totaled 15.8 million sockeye salmon, with a harvest of 13.4 million and an escapement of 2.4 million fish (Table 1).

The district opened to commercial salmon fishing for a set schedule of three days per week at 9:00 AM Monday, June 1. Fishing was permitted from 9:00 AM Monday to 9:00 AM Wednesday and 9:00 AM Thursday to 9:00 AM Friday through June 17 (Table 8). The first deliveries were recorded June 8 (Table 12). Harvest was small and remained so through the end of the schedule. Through June 17, the total harvest was approximately 7,000 sockeye salmon. After June 17, the district went to active management and additional fishing time was based on inseason indicators of abundance.

With harvest numbers from the last 3 days of the preseason schedule still not indicating a large influx of fish into the district, the next fishing periods were set for June 19 and 21. Harvest between those two periods increased but was still showing small abundances of fish (Table 12). The Egegik River tower began operating June 18; escapement counts through June 21 had totaled approximately 21,400 sockeye salmon, which is low for this time period (Table 13). Daily inriver test fishing, which provides an index of sockeye salmon passage into the lower Egegik River, began operating June 21 at established sites just upstream of Wolverine Creek (Table 13). Initial catches from the test fishery indicated small numbers of fish moving into the Egegik River.

In an effort to balance allocation between gear groups and increase escapement while not leaving the district completely unguarded in case a strong push materialized, a 5-hour drift gillnet period was announced for June 22 (Table 8). Harvest from this period was approximately 20,000 sockeye salmon, which was consistent with previous opportunities (Table 12). Inriver test fish indices from June 22 increased slightly during the evening tide, but because escapement levels were tracking behind needed levels, the district was closed for June 23 to allow for increased escapement.

On the morning of June 24, passage rates at the Egegik River counting tower had increased and an 8-hour opportunity was announced for both gear groups for later that afternoon. Harvest from this period was approximately 57,000 sockeye salmon, an increase from previous fishing periods (Table 12). Good passage rates at the counting tower continued throughout the day, resulting in a final daily count of 49,900 sockeye salmon. Escapement was now tracking to achieve the SEG with a total count of just under 100,000 sockeye salmon for the season (Table 13).

Another 8-hour fishing period for both gear groups was provided on June 25, yielding a harvest of approximately 82,600 sockeye salmon (Table 12). The increase showed that fish were beginning to build in the district. Passage rates at the counting tower on June 25 had decreased from the previous day, but total escapement was still tracking at a desired level (Table 13). Genetic stock composition estimates from PMTF from June 22–23 became available in the evening of June 25 and indicated that a high abundance of Egegik-bound fish were entering the bay (Figure 2).

On June 26, tower counts had decreased, and inriver test fish data indicated relatively few fish were moving upstream. A fishing period was provided for the afternoon tide for both gear groups, but with reduced fishing time for the drift fleet to allow for increased escapement. Harvest from this period was approximately 114,000 sockeye salmon, an increase from the previous day, even with a reduction in fishing time for the drift fleet (Table 12).

Inriver test fish indices through the morning of June 27 continued to be low, indicating few fish were passing through the commercial district and into the river. Passage rates at the counting tower were still slow, but overall escapement was tracking to meet the lower end of the escapement goal range. The district was closed for June 27 in an effort to increase escapement. Genetic stock composition estimates from PMTF from June 24–25 became available on June 27 and again indicated a high abundance of Egegik-bound fish entering the bay. On June 28, a 6-hour drift and 8-hour set gillnet period was provided to gauge fish entry into the district over the previous 36 hours. Harvest was approximately 116,000 sockeye salmon, which was below average for this time period (Table 12). Cumulative harvest to date was 456,000 sockeye salmon, also below average for this point in the season. Looking at inseason harvest and escapement information, in addition to the preseason forecast and PMTF data, it was becoming apparent that this run was showing characteristics of late run timing.

Fishing opportunity was again provided on June 29, with 4 hours for the drift gillnet fleet and 8 hours for the set gillnet fleet. Harvest from this period was approximately 81,400 sockeye salmon, which was similar to recent periods, indicating fish abundances hadn't changed over the last couple days. Through June 29, cumulative escapement was about 193,700 sockeye salmon, which is below average but still tracking toward the lower end of the escapement goal range (Table 13). The district was closed on June 30 to allow for more escapement upriver.

Inriver test fish indices had their first substantial increase on the afternoon tide of June 30 and remained high through July 1, indicating the first large pulse of sockeye salmon had moved inriver (Table 13). Fishing opportunity was announced for July 1 for both gear groups, with harvest totaling approximately 379,400 sockeye salmon, a sizable increase from previous periods (Table 12). This brought cumulative harvest for the season to 929,700 sockeye salmon. Escapement on July 1 was 69,000 sockeye salmon. This increased passage was from the large inriver test fish indices that occurred on June 30, indicating a travel time of approximately one day between assessment sites. The increased passage rate was sustained through July 2, bringing the cumulative escapement to 377,400 fish (Table 13). As a result of the increased escapement, fishing opportunities were provided over consecutive tides on July 2 and 3. Total harvest from these two days was 988,800 sockeye salmon, doubling the season harvest to date (Table 12).

With escapement numbers still tracking to achieve the escapement goal range, fishing opportunities continued for almost every tide between July 4 and July 7. Single tides were taken off on July 5 and July 7 to allow fish to move through the district. This was an effort to even out gear allocation percentages and allow for escapement upriver. Harvest ranged from 551,000 fish on July 5 to 1.0 million fish the following day. Combined harvest from that time period was 2.8 million sockeye salmon (Table 12). Due to the COVID-19 pandemic restrictions in combination with high harvest levels, some processors began placing limits on permit holders on the evening of July 7. Inriver test fish indices increased on July 5, peaked on July 7, and remained elevated through July 9 (Table 13). Passage rates at the counting tower began to increase late in the evening of July 5. Daily escapements exceeded 100,000 fish on July 6 and 7, bringing the

season total through July 7 to 755,000 fish (Table 13). The lower end of the escapement goal was achieved July 8.

Genetic stock composition estimates from PMTF from July 4 (all stations represented) became available on July 7 and once again indicated a high abundance of Egegik-bound fish entering the bay (Figure 2). Combining the genetic data with increasing daily escapements and high harvest levels, the sockeye salmon run was tracking above the preseason forecast. From July 8 to July 10, commercial fishing was provided on each tide for both gear groups; approximately 6 hours per tide for the drift gillnet fleet and 8 hours per tide for the set gillnet fleet (Table 8). Harvest over those three days was 2.2 million sockeye salmon. Escapement counts at the tower totaled approximately 772,700 fish, bringing the cumulative count to 1.5 million sockeye salmon, which is above the midpoint of the escapement goal range (1.4 million fish; Table 13). Because of this, the 48-hour transfer waiting period into the Egegik District was waived the following day, as per regulations.

By July 11, most processor limits placed on permit holders had been lifted. Additional fishing opportunities were provided for both gear groups from July 11 through July 16. Drift gillnets were provided approximately 15.5 hours of fishing time per day and set gillnets averaged 17 hours per day. Cumulative harvest from those six days was 3.9 million fish (Table 12). Daily escapement counts exceeded 60,000 fish through July 16, bringing the cumulative count to 2.2 million fish (Table 13). The upper end of the escapement goal range (2 million sockeye salmon) was exceeded on July 14. With the upper end of escapement goal range exceeded and harvest levels beginning to decrease, commercial fishing within the Egegik District was liberalized to 24 hours per day from July 17 through August 1. The fall schedule took effect beginning August 2.

The 2020 Egegik sockeye salmon run was above forecast and exhibited one of the later run timings on record; the midpoint was July 9 compared to the 20-year average (2000–2019) of July 4. By the end of the allocation period (July 17), the cumulative catch was 10.8 million sockeye salmon, but another 2.6 million fish were caught before the last buyer ended operations for the year. Harvest of all species in 2020 was 13.4 million fish. The escapement goal range was exceeded, with a final escapement of 2.4 million sockeye salmon (Tables 12 and 13).

The 2020 Egegik sockeye salmon run was composed of mostly ocean age-2 and age-3 fish (Table 14), which originated from 2015 and 2016 escapements of 2.2 million and 1.8 million sockeye salmon, respectively (Table 13; Appendix A10). Age-2.2 fish were under forecast for the season. Age-1.3 were over forecast, making up approximately 79% of the 2020 run.

During the period from June 16 to July 17 in 2020, a total of 270 hours were fished by the drift gillnet group and 327 hours were fished by the set gillnet group, which equated to 42% and 50%, respectively, of the 672 available hours (Table 12). By the end of the allocation period on July 17, harvest percentages were at 86% drift gillnet and 14% set gillnet, as specified in regulation (Appendix A9).

The 2020 harvest of 13.4 million sockeye salmon in the Egegik District ranked second highest out of the last 20 years and fifth highest on record since 1952. It was well above the 20-year average (2000–2019) of approximately 7.2 million fish, and 57% above the preseason forecast (Table 1; Appendix A14). The midpoint of the run was July 9, five days later than the 20-year average (2000–2019). The fishery still harvested 84% of the run into the district, similar to the 20-year average (2000–2019) of 83% (Appendix A14). Harvests peaked at 1.0 million fish on July 6 and again on July 11 (Table 12). Escapement peaked on July 10 (328,554 sockeye salmon; Table 13).

Effort peaked on July 7, when 573 drift gillnet permits were registered in the district, including 140 dual permits (Table 10). There were 13 processors registered to purchase fish in the Egegik District in 2020 (Table 4).

Commercial harvest of other salmon species in the Egegik District was 78,863 fish, or about 0.5% of the total salmon harvest (Table 12). The Chinook salmon harvest was 711 fish, which was below the 20-year average (2000–2019) of 802 fish (Appendix A4). The district chum salmon harvest of 50,055 fish was below the 20-year average (2000–2019) of 75,884 fish (Appendix A5). Pink salmon harvest was 1,755 fish, which was above the 20-year average (2000–2019) of 1,163 fish (Appendix A6). The coho salmon harvest of 26,342 fish was above the 20-year average (2000–2019) of 13,084 fish (Appendix A7).

Ugashik District

The 2020 inshore sockeye salmon run to the Ugashik District of 4.3 million ranked the sixth highest out of the last 20 years and was just below forecast (Table 1; Appendix A15). The commercial catch of approximately 2.6 million sockeye salmon was similar to the 20-year average (2000–2019) of 2.9 million fish (Table 15; Appendix A3). Sockeye salmon escapement to the Ugashik River was 1,745,940 and exceeded the SEG range of 500,000–1.4 million fish (Tables 1 and 16).

Pacific walrus returned to the same beach used during the 2016, 2017, and 2019 seasons, which is located about 0.5 miles north of the district boundary. As with past seasons, EO authority was used to move the district boundary one mile south from the location defined in regulation to provide an additional buffer space for the walrus (Table 8). Although this did not eliminate interactions between the drift gillnet fleet and walrus, the buffer zone worked as intended by closing commercial fishing and reducing the number of vessels in the area around the haul out.

The Ugashik District was opened to a fishing schedule of four days per week (9:00 AM Monday to 9:00 AM Friday) beginning 9:00 AM Monday, June 1 by EO (Table 8). The first landings occurred on June 11 (Table 15). Because the preseason forecast for the Kvichak River allowed all fishing districts to start the season in their full areas, the schedule of 4 days per week was continued until 9:00 AM Friday, June 19. After that point, the department switched to an active management strategy (Table 8). Fishing operators were advised that additional fishing time would depend on inseason indicators of abundance. The district was closed until June 25, when a 10-hour period was provided for both gear groups to provide insight on run entry and strength into the district. Harvest of sockeye salmon was only 8,800 fish, signifying the number of fish in the district had not increased.

The Ugashik District inriver test fishery is operated about three 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 26 and immediately caught low numbers of fish. The escapement tower project, operating about 24 miles upstream of Ugashik Village, began June 27 and counted 966 sockeye salmon that day (Table 16). Tower count data corroborated inriver test fishery data that entry of fish into the river was low and that there were few fish in the river below the escapement project.

The district was closed until June 28, when an 8-hour opportunity was provided to both gear groups to gauge if fish abundance had increased over the last few days. Harvest from this period was 9,300 sockeye salmon, which still indicated a low abundance of fish present (Table 15). Information

from the inriver test fishery confirmed that passage into the river was slow, which led to the fishing district being closed through July 1.

To get an indication of run entry over the previous few days, coupled with the relatively small number of registered drift vessels compared to other districts, another 8-hour fishing period was provided to both drift and set gillnets on July 2 (Tables 10 and 15). Harvest was 15,900 fish and indicated there was still little movement of fish into the district (Table 15). Information from the inriver test fishery confirmed that passage into the river remained slow (Table 16). The district remained closed over the next two days to allow for increased escapement.

Inriver test fishery indices remained consistently low through July 4 (Table 16). However, on July 4, the department received numerous verbal reports of large numbers of fish entering the district. Although the drift fleet remained small, another fishing period was provided on July 5. Both gear groups were allowed for 8 hours, resulting in a harvest of approximately 115,000 sockeye salmon (Table 15). Cumulative escapement through July 5 was 34,000 fish, which was low for this point in the season (Table 16).

As harvest reports began to come in on the evening of July 5, it was apparent that a strong push of fish had moved into the district and that this run had begun to materialize. Inriver test fish indices also saw an increase on the evening of July 5. With this information, another fishing period was announced for July 6. Harvest from this period was 62,700 sockeye salmon bringing the season total to 212,000 fish (Table 15). Escapement remained low on July 6, bringing the cumulative to 37,300 fish, which was tracking below the escapement goal range (Table 16). Due to this, the district was closed for July 7.

Indices from the inriver test fishery began to improve on July 6 and continued into the morning of July 7, indicating an increase in numbers of fish migrating upriver (Table 16). Another 8-hour fishing period for both gear groups was provided for July 8, yielding a harvest of 71,100 sockeye salmon (Table 15). Although escapement at the tower did not notably increase on July 8, it was expected that it would in the coming days because of the increased test fish indices. In an effort to further boost escapement, the district was closed on July 9.

Inriver test fish indices continued to increase on July 8 and remained high through the remainder of the season. Escapement counts at Ugashik tower began to increase as well by the afternoon of July 9, indicating a 4- to 5-day travel time between assessment projects. With this new information, a 10-hour fishing period was announced for July 10. This resulted in a harvest of 114,600 sockeye salmon (Table 15). Daily escapement for July 10 was 75,200 fish for a cumulative of 156,800 fish (Table 16). Total escapement was now tracking to achieve the escapement goal range, and there were indications that passage rates would remain elevated for the coming days.

With escapement tracking at desired levels and test fish data indicating enough fish entering the river, 12-hour fishing periods were announced for July 11 and 12. Preliminary harvest reports from July 11 suggested good numbers of fish continuing to enter the district and fishing on July 12 was extended by an additional 12 hours. Due to the COVID-19 pandemic restrictions, in combination with high harvest levels, companies placed limits on permit holders on the evening July 11, which lasted over the next three days. Harvest from these periods brought the cumulative harvest to 638,400 through July 13. Daily escapement during this time frame continued to increase to a peak daily count of 184,900 fish on July 13, which surpassed the lower end of the escapement goal range with a cumulative season count of 619,300 fish (Table 16).

Additional 12-hour fishing periods were provided on July 14 and 15. Harvest from those periods was 206,700 and 316,200 sockeye salmon, respectively, with the latter being the season's peak daily harvest (Table 15). Through July 15, total escapement was approximately 902,000 fish and at current passage rates, the midpoint of the escapement goal (950,000 fish) would be surpassed the following day (Table 16). Fishing continued through the rest of July and an additional 1,427,700 sockeye salmon were harvested. By regulation, the allocation period runs from June 1 to July 17 but approximately 48% of the harvest occurred after July 16 and was not included in the allocation calculation. The last deliveries were recorded August 23 and cumulative catch through that date was 2,598,300 sockeye salmon (Table 15). By the end of the allocation period (July 17), set gillnetters caught approximately 26% of the sockeye salmon harvest and drift gillnetters caught 74%. The allocation specified in regulation is 10% set gillnet and 90% drift gillnet (Appendix A9). Between June 23 and July 17, set gillnet permit holders were provided a total of 140 hours of fishing time, which was 72 hours more fishing time than in 2019, and drift gillnet permit holders were permitted to fish a total of 140 hours, which was 77.5 hours more than in 2019 (Table 15).

The reported harvest of 1,349 Chinook salmon was above the 20-year average (2000–2019) of 974 fish (Appendix A4). Chinook and chum salmon escapements are 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 2020, escapement surveys for these species were not flown due to budget constraints. The chum salmon harvest of 16,339 fish was below the 20-year average (2000–2019) of 68,585 fish (Appendix A5). Reported pink salmon harvest was 381 fish and was above the even year average (2000–2019) of 290 fish (Appendix A6). There was limited commercial effort for coho salmon in 2020; reported harvest was 818 fish (Appendix A7). In summary, the 2020 Ugashik District sockeye salmon fishery harvested approximately 60% of the sockeye salmon run to the district, compared to the 20-year (2000–2019) average harvest rate of 70% (Appendix A15). The midpoint of the run was July 15 compared to the 20-year (2000–2019) average of July 11. There were 12 processors registered to purchase fish in the Ugashik District this season (Table 4).

Nushagak District

The 2020 Nushagak District total inshore sockeye salmon run was 12.7 million fish, 5% above the preseason forecast of 12.0 million fish (Table 1). Commercial sockeye salmon harvest in Nushagak District reached 8.9 million fish, 9% below the preseason projected harvest of 9.7 million fish and 13% above the 2000–2019 average harvest of 7.9 million sockeye salmon (Table 1; Appendices A3 and A16). Escapement in the district's three major river systems was 2,243,886 for Wood River, 323,814 for Igushik River, and 1,228,059 sockeye salmon for Nushagak River (Tables 6 and 17). Wood and Nushagak Rivers' sockeye salmon escapements exceeded the upper end of the SEG ranges (Appendix A1). Igushik River's sockeye salmon escapement was within the SEG.

In 2020, there was no forecast for Nushagak District 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 2020 season (Appendix A19). As the Chinook salmon run developed it was clear that it was a poor run, and it would not support directed Chinook salmon openings. Additionally, with an above average sockeye salmon forecast and a larger than usual fleet, it was expected that incidental harvest of Chinook salmon would account for any potential surplus. Incidental harvest of Chinook salmon totaled 6,363 fish in the Nushagak District in 2020 (Table 18). This harvest is 18% of the 2000–2019 average harvest of 34,920 fish for the Nushagak

District (Appendix A4). Chinook salmon escapement into Nushagak River was 43,032 fish (Table 6), below the lower end (55,000 fish) of the escapement goal range.

The sonar escapement enumeration project at Portage Creek was fully operational on June 6 (Table 6). Nushagak Chinook salmon escapement was weak all season and never projected to meet the lower end of the escapement goal range, which was 55,000 fish. The cumulative escapement through June 18 was 8,545 (Table 6), which projected out to a total escapement of approximately 54,016. The preseason plan, outlined in the outlook (Appendix C1), indicated commercial fishing for sockeye salmon would begin in the Nushagak District when Wood River escapement reached 100,000 sockeye salmon if Nushagak Chinook escapement was projecting below 95,000 fish. Management emphasis would also switch from Chinook salmon to sockeye salmon at this point. With Nushagak Chinook salmon escapement projecting below the minimum escapement, the management strategy was 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 remained low relative to the previous three years and only 58,890 fish had passed the tower through June 23 (Table 17). On June 24, escapement past the tower seemed to be increasing. Staff flew an aerial survey in the morning and did not see substantial numbers of fish in the upper river. However, subsistence reports indicated that there were some sockeye salmon moving into the lower end of the Wood River. Staff flew another survey on the evening of June 24, and under very poor conditions saw a significant increase in the number of fish in the river relative to the morning survey. With what seemed to be a strong push of sockeye salmon in the Wood River based on the aerial survey, staff announced openings for the set and drift gillnet fleets for the morning of June 25 (Table 19).

The sockeye salmon escapement on the Wood River for June 24 was 67,884 fish, bringing the cumulative escapement to 126,774 fish (Table 17). The sockeye salmon harvest on June 25 was 168,000 fish (Table 18). This was a suitable harvest for the first opening of the year, but smaller than expected considering the daily escapement in the Wood River. Harvest stayed at a relatively low level for the next several days and fishing opportunity was limited to short, 4- to 6-hour openings for the drift fleet alternating between one and two tides a day, but not fishing more than 11 hours in a day until July 6.

Sockeye salmon harvest and escapement between June 25 and July 5 were unexceptional. The peak Wood River sockeye salmon escapement during this time was on June 26 at 50,562 fish (Table 17). The peak harvest was June 29, when 254,213 sockeye salmon were harvested. Harvest and escapement dropped after the peaks and the harvest hit a low of 39,611 sockeye salmon on July 2 (Table 18). The Wood River sockeye salmon escapement was at the low of 12,498 fish on July 5 (Table 17). These low harvest and escapement numbers convinced some in the fleet that the run was over or smaller than expected and there was a substantial outmigration of fleet to other districts where harvest was increasing.

On June 26, there were 703 drift gillnet permits registered to fish in the Nushagak District on 532 vessels. On July 4 there were 525 drift gillnet permits on 417 vessels. On July 5, fish arrived and harvest was 982,648 sockeye salmon. There were some processing capacity issues that developed relatively quickly. The harvest in the eastside districts was also strong which made it difficult for some processors to keep up with processing. The harvest on July 6 was 1,029,953 sockeye salmon. This was the peak harvest day for the season and in the five days from July 5 to July 9, 4.2 million

sockeye salmon were harvested in the Nushagak District (Table 18). This was 47% of the total sockeye salmon harvest for the season.

Sockeye salmon escapement also increased after July 5. The Wood River sockeye salmon escapement jumped from the daily low on July 5 to a high on July 9. The July 9 escapement was 270,660 fish bringing the cumulative escapement to 1.2 million (Table 17). Because the Wood River had exceeded the 1.1 million mark and was now projected to exceed 1.4 million, it was appropriate to open the Wood River Special Harvest Area (WRSHA). As per regulation, the gear type that is behind relative to the allocation plan is afforded the extra opportunity to harvest fish in the WRSWA. In 2020, the drift gillnet fleet was behind, so the WRSWA opened to drift gillnet gear on July 10. Through July 9, the harvest percentage for the drift gillnet fleet was 73.2% relative to the allocation plan goal of 74%. At this point, there were only 423 drift gillnet permits on 343 vessels registered to fish in the Nushagak District and the number was continuing to drop. The gap between harvest percentage and allocation continued to widen as the drift gillnet fleet fell further behind. The WRSWA was open at first on a tide-by-tide basis, then on July 12 it was extended for 25 hours at a time and remained open until noon on July 19 (Table 19).

Commercial fishing with set gillnets in the Nushagak Section also began on June 25. As with the drift openings, management was conservative for the set gillnet fleet. Staff tried to balance allowing breaks in fishing to allow Chinook salmon to pass through the district and at the same time consider the need to guard against a large influx of sockeye salmon that the forecast and PMTF indicated were coming. Set gillnet openings started at 12 hours a day for the first three days but then concerns of a storm blowing through and possibly pushing fish with it resulted in staff extending openings for two days on June 27.

With harvest lower than expected and escapement under control, staff continued to open and close the set gillnet fishery, trying to provide opportunity and allow for breaks in fishing to let Chinook salmon pass. On July 1, the set gillnet fishery was extended for 25 hours and then extended again on July 2 for 18.5 hours. At this point, staff were receiving reports of large volumes of fish outside the district and were prepared for when the fish decided to move into the district. Fishing opened for a 19-hour period between July 3 and 4 and was then extended twice more before being extended until further notice on July 6.

Igushik set gillnet fishing opened on June 15 for eight hours a day (Tables 18 and 19). This schedule was maintained until June 25 when the fishing schedule was aligned to mirror the Nushagak Section set gillnet fishing schedule. Sockeye salmon escapement was slower than expected in the Igushik River in 2020. The Igushik Section was closed to drift gillnet fishing between July 11 and July 14 to allow additional escapement into the Igushik River. Staff did consider restricting the set gillnet fishery in Igushik, but sockeye salmon escapement into the river surged starting July 10 and by July 14 was over the 150,000-lower end of the escapement goal range. At that time, the Igushik Section was reopened to drift gillnet fishing until further notice.

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 2020, 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 was minimal and peaked at 38 deliveries on August 11 (Table 18). Without sonar counts, the pink and coho salmon runs were not quantified in 2020. Coho salmon harvest of 76,133 fish, was fair, being above the 20-year (2000–2019) average but below the 10-year (2010–2019) average (Appendix A7). The total Nushagak District pink salmon harvest was 26,216 fish, which is below the 20-year (2000–2019) average of 425,620 fish (Tables 5 and 18; Appendix A6). The final chum salmon harvest was 136,605 fish (Tables 5 and 18; Appendix A5). The final sockeye salmon harvest was 8,860,302 fish (Tables 5 and 18; Appendix A3).

Togiak District

The 2020 inshore run forecast for the Togiak River was 880,000 sockeye salmon, composed of a projected 200,000 fish escapement and 690,000 fish harvest (Table 1). Smaller sockeye salmon runs to other drainages in the district (primarily the Kulukak River) occur, but these are not included in the preseason forecast; 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. The total inshore run to the district in 2020 was 706,698 sockeye salmon, which is below the 20-year average (Table 1; Appendix A18). The commercial harvest of 445,572 sockeye salmon was also below average (Table 20; Appendices A3 and A18).

The Togiak District is managed differently than other districts in Bristol Bay. This district uses a fixed fishing schedule of 60 hours per week in Kulukak Section; four days per week in Togiak River Section (except for a peak fishing schedule of 5.5 days per week from July 1 to July 15); and five days per week in Osviak, Matogak, and Cape Peirce Sections. In addition, transferring into Togiak District prior to July 27 is prohibited by regulation if the permit and or vessel had been registered in any of the four other Bristol Bay districts. Conversely, permit holders that have fished 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 and the department took no management actions to restrict fishing time until effort increased the week of June 24, when the Togiak River Section opening was reduced by 24 hours (Table 19). Total Chinook salmon harvest for the Togiak District was 767 fish, which is below the 10-year (3,595 fish) and 20-year (5,291 fish) averages (Table 20; Appendix A20).

The escapement counting tower on the Togiak River began counting on July 4. Escapement counts were low until July 16, when they increased to normal levels. It was not until July 16 that escapement projected to be above the 120,000-minimum escapement goal. However, Togiak has been experiencing later run timing in recent years, so although staff did not extend fishing time beyond what is called for in the management plan, fishing time was not reduced except in June for the conservation of Chinook salmon. After July 16, escapement continued at an above average pace and spiked between July 27 and July 31 when over 70,000 sockeye salmon were counted (Table 17). July 29 was the peak escapement date for the year with 20,910 sockeye salmon counted past the tower. This strong escapement prompted increased fishing time with a 24-hour extension on July 24 and the maximum allowable 48-hour extensions on July 31, August 7, and August 14 (Table 19). Tower operations ended on August 9 with a daily count of 5,136 sockeye salmon.

Escapement into Togiak Lake was 261,126 sockeye salmon, within the escapement goal range of 120,000–270,000 fish (Table 17; Appendix A1).

Commercial harvest of non-sockeye salmon species in the Togiak District was 106,588 fish in 2020, or about 19 % of the total (Table 20). The commercial Chinook salmon harvest of 767 fish represented only 14% of the 20-year (2000–2019) average, and the chum salmon harvest of 53,510 fish was 33% of the 20-year (2000–2019) average (Appendices A4 and A5). Pink salmon harvest was 42,216 fish, representing 61% of the 20-year (2000–2019) average (Appendix A6). Harvest of coho salmon totaled 10,095 fish, which was 71% of the 20-year (2000–2019) average (Appendix A7).

In 2020, the Togiak District commercial fishery harvested approximately 63% of the sockeye salmon run to the district, compared to the 20-year (2000–2019) average harvest rate of 64% (Appendix A18). Escapement peaked on July 29, when 20,910 sockeye salmon passed the counting tower (Table 17). Effort peaked on July 31, when 115 permits delivered fish. Four processors registered to purchase fish in the Togiak District in 2020 (Table 4).

2020 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 Menchikof. The Bristol Bay area is divided into three herring fishing districts: the Bay District, including all waters east of the longitude of Cape Constantine; the Togiak District, including all waters between the longitude of Cape Newenham and the longitude of Cape Constantine; and the General District, including all waters west of the longitude of Cape Newenham. Togiak District spans approximately 192 kilometers (Figure 3). Togiak village lies at the center of the district, 108 kilometers west of Dillingham.

Pacific herring (*Clupea pallasii*) have been documented throughout Bristol Bay, but 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, whereas herring spawn on rockweed kelp (*Fucus* spp.) is harvested by hand.

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

The Togiak herring fishery is the largest in Alaska. Between 2000 and 2019, the Togiak sac roe harvest has averaged 22,489 short tons¹, worth an average of \$2.7 million annually (Appendices B2 and B5). Given the volatile nature of the herring sac roe market, historic harvest and value are of limited utility when contemplating future harvest or value. In 2020, sac roe harvest value is confidential due to a single processor being present for the fishery (Appendix B5). No spawn-on-kelp fishery has occurred since 2003.

¹ One short ton equals 2,000 pounds.

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 were 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 using a handheld tube with a measured grid and a known focal length from a known altitude. Standard conversion factors of 1.52 short tons (water depths of 16 ft or less), 2.58 short tons (water depths between 16 and 26 ft), and 2.83 short tons (water depths greater than 26 ft) per 538 ft² of surface area is applied to herring school surface areas to estimate the total biomass observed each flight. Over the last 10 years, ADF&G has transitioned to aerial survey data collection methods that use Geographic Information Systems (GIS), allowing real-time data entry and analysis. The new GIS-based program, among other improvements, allows observers to use the survey aircraft to estimate length and width dimensions of very large herring schools, providing a more objective and reliable estimate.

Herring ages two 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 approximately every 8 to 10 years.

SAC ROE HERRING FISHERY OVERVIEW

Fishing and Industry Participation

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

Fishing effort in the sac roe fishery increased through the late 1980s, decreased early in the 1990s, increased again to a peak in 1996, and has generally declined since that time. Since 1994, gillnet effort increased from 146 vessels to a peak of 461 in 1996, followed by a general decline to an all-time low of one vessel in 2018 and again in 2020. 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 two purse seine vessels and one gillnet vessel was partly due to complications from COVID-19.

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 a low of 4 companies in 2012 and 2015 to present (Appendix B1). In 2020, processor participation involved one company (Table 21). Processing capacity on the grounds has also declined from a high of 4,850 short tons per day in 1996, to a low in 2007 of 1,420 short tons per day. Capacity in 2020 is confidential (Appendix B1).

2020 SEASON SUMMARY

Togiak District aerial surveys began April 27. Department staff observed herring in the district for the first time on May 3. Survey ratings were above average for most of the season. Fish behavior, however, was atypical with herring staying offshore and deep as opposed to moving into the shallows of Togiak and Kulukak bays. In general, department staff were able to get good biomass estimates from aerial surveys with the peak biomass estimate of 119,442 short tons on May 6 and an overall estimate of 177,337 for 2020 (Table 22 and Appendix B4).

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 2020 preseason biomass forecast was 215,826 short tons with an exploitation rate of 20% (43,165 short tons). The projected harvest guideline for each fishery was as follows: 1,500 short tons of herring equivalent (350,000 pounds of product) for the spawn-on-kelp fishery, 2,917 short tons for the Dutch Harbor food and bait fishery, and the remaining 38,749 short 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 (30,999 short tons in 2020) and 20% of the harvest is taken by gillnet (7,750 short tons in 2020).

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 2020 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. A more detailed account of the issued emergency orders can be found in Table 23.

Department staff took a poll of processing companies prior to the 2020 season to assess processing capacity and to inquire about additional concerns or issues. The poll indicated that one company intended to participate in the 2020 Togiak herring fishery. That company indicated it planned to buy both gillnet and purse seine fish. A second company intended to participate in the fishery, but issues associated with the COVID-19 pandemic made it impossible for them to participate.

Purse Seine

The Togiak purse seine fishery opened until further notice at 3:00 PM on May 3, but the first harvest was not until May 4. Only two purse seine vessels participated in the Togiak herring fishery in 2020. All harvest for the fishery is confidential due to the low participation. 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 fishermen ended participation on May 16.

Gillnet

The Togiak herring gillnet fishery opened until further notice at 3:00 PM May 3, but the first harvest was not until May 9. Only one vessel participated in the Togiak herring fishery in 2020 and harvest is therefore confidential. The fishery continued until the vessel ended participation on May 16.

Spawn-on-Kelp

No companies registered to buy herring spawn-on-kelp in 2020; therefore, there were no openings and no commercial harvest.

AGE COMPOSITION

A total of 1,040 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 the spawning biomass, and 4) provide data for next year's forecast. The 2020 spawning biomass was both very young and composed of fish that were small for their age. Age-4 and younger herring made up 22% of the spawning biomass while age-5 and age-6 made up 41% of the spawning biomass and the remaining 36% of the spawning biomass were age-7 and older (Appendix B3). Mean weight of herring caught in the purse seine harvest was 251 grams. No herring were sampled from the gillnet harvest. This biomass is considered healthy and stable.

EXPLOITATION

All information related to harvest, value, and exploitation is confidential in 2020 due to low participation in the fishery (Appendix B2).

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the department to evaluate inseason run progression, set escapement goals, and forecast future returns. The herring sampling program is used to produce biomass estimates. Without this information, sustainable management of these fisheries would not be possible.

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TABLES AND FIGURES

Table 1.—Comparison of inshore sockeye salmon forecast versus actual run, escapement goals versus actual escapements, and projected versus actual commercial catch, by river system and district, in thousands of fish, Bristol Bay, 2020.

District and river system ^a	Inshore run			Escapement		Inshore catch		
	Forecast ^b	Actual	Percent deviation ^c	Range	Actual	Projected harvest ^b	Actual	Percent deviation ^c
NAKNEK-KVICHAK DISTRICT								
Kvichak River	9,920	9,998	1	2,000–10,000	4,031	5,920	5,967	1
Alagnak River	3,890	4,604	18	210 minimum	2,387	2,320	2,218	-4
Naknek River	5,210	10,238	97	800–2,000	4,112	4,110	6,126	49
Total	19,020	24,840	31	3,010-12,320	10,530	12,340	14,311	16
EGEGIK DISTRICT	10,230	15,754	54	800–2,000	2,389	8,530	13,365	57
UGASHIK DISTRICT	4,450	4,344	-2	500–1,400	1,745	3,280	2,598	-21
NUSHAGAK DISTRICT								
Wood River	8,250	7,885	-4	700–1,800	2,244	6,720	5,641	-16
Igushik River	1,020	1,195	17	150–400	324	740	871	18
Nushagak-Mulchatna	2,770	3,576	29	370–900	1,228	2,260	2,348	4
Total	12,030	12,656	5	1,220–3,100	3,796	9,720	8,860	-9
TOGIAC DISTRICT	880	707	-20	120–270	261	690	446	-35
TOTAL BRISTOL BAY ^d	46,600	58,301	25	5,650–19,090	18,721	34,560	39,580	15

^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 Total may not equal sum of all districts due to rounding.

Table 2.—Forecast of total sockeye salmon returns by age class, river system and district, in thousands of fish, Bristol Bay, 2020.

District and river system	Ocean-age-2			Ocean-age-3			
	1.2 (2016)	2.2 (2015)	Total	1.3 (2015)	2.3 (2014)	Total	Total
Naknek-Kvichak District							
Kvichak River	5,070	2,230	7,300	3,040	70	3,110	10,410
Alagnak River	1,940	480	2,420	1,610	60	1,670	4,090
Naknek River	780	170	950	4,190	330	4,520	5,470
Total	7,790	2,880	10,670	8,840	460	9,300	19,970
Egegik District							
Egegik District	1,880	3,130	5,010	4,660	1,080	5,740	10,750
Ugashik District							
Ugashik District	2,310	870	3,180	1,460	40	1,500	4,680
Nushagak District							
Wood River	5,810	140	5,950	2,680	40	2,720	8,670
Igushik River	370	0	370	680	10	690	1,060
Nushagak River ^a	670	30	700	2,120	60	2,180	2,880
Total	6,850	170	7,020	5,480	110	5,590	12,610
Togiak District ^b							
Togiak District ^b	300	10	310	610	10	620	930
Total Bristol Bay ^{c, d}							
Number	19,140	7,060	26,200	21,040	1,680	22,720	48,920
Percent	39%	14%	54%	43%	3%	46%	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.

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

Table 3.—Mean round weight, price per pound, and total exvessel value of the commercial salmon catch by species, Bristol Bay, 2020.

Species	Total catch (lb)	Mean weight (lb)	Mean price (\$/lb)	Exvessel value (\$)
Sockeye	200,204,234	5.1	0.70	140,142,964
Chinook	96,415	9.6	0.50	48,208
Chum	1,770,555	6.0	0.25	442,639
Pink	235,045	3.3	0.05	11,752
Coho	624,064	5.5	0.70	436,845
Total	202,930,313			141,082,407

Table 4.—Commercial salmon processors and buyers operating in Bristol Bay, 2020.

	Name of operator/buyer	Base of operations	District ^a	Method ^b	Export
1	Alaska's Best Seafood, LLC	Dillingham, AK	N	EF, F, RE	AIR, SEA
2	Alaska General Seafoods	Kenmore, WA	K,E,N	C,EF,F,RE	AIR,SEA
3	Anthony Wood	King Salmon, AK	K	EF, F	AIR, SEA
4	Big Creek Fisheries	Everett, WA	E,U	EF, F	AIR,SEA
5	Cape Greig	Seattle, WA	U	F	SEA
6	Coffee Point Seafoods	Seattle, WA	E	EF,F,RE	AIR,SEA
7	Copper River Seafoods	Anchorage, AK	E,K,N,T,U	EF,F,RE	AIR,SEA
8	Diamond O Fish House	Wasilla, AK	K	F,S	AIR
9	Ekuk Fisheries LLC.	Seattle, WA	N	F	SEA
10	High Tide Fisheries	Naknek, AK	K	F,S	SEA
11	Kevin Cossart	Bonnars Ferry, ID	K	F	AIR
12	Icicle Seafoods (OBI)	Seattle, WA	E,K,N,U	C,EF,F,RE	AIR,SEA
13	Just Wild Salmon	College Place, WA	N	F	SEA
14	Leader Creek Fisheries	Seattle, WA	E,K,N,U	F	SEA
15	Madison's Salmon Co.	Anchorage, AK	K	F	AIR
16	Nakeen Homepack	King Salmon, AK	K	F	SEA
17	North Pacific Seafoods (Togiak Fisheries)	Seattle, WA	T	F	SEA
18	North Pacific Seafoods (Red Salmon Cannery)	Seattle, WA	E,K,N,U	F,EF	SEA
19	North Pacific Seafoods (Pederson Point)	Seattle, WA	K	F	SEA
20	Ocean Beauty Seafoods (OBI)	Seattle, WA	E,K,N,U	EF,F,RE	AIR,SEA
21	Pearl Bay Seafoods	Homer, AK	E,N,T	F	SEA
22	Peter Pan Seafoods	Seattle, WA	E,K,N,T,U	EF,F,RE,S	AIR,SEA
23	Small Boat Salmon	Anchorage, AK	N	EF	AIR
24	Silver Bay Seafoods	Seattle, WA	E,K,N,U	F	AIR,SEA
25	Sunrise Salmon	Fergus Falls, MN	K	F	AIR
26	Terpening Fishing LLC	Homer, AK	U	F	AIR
27	Trident Seafoods	Seattle, WA	E,K,N,U	C,F,EF	AIR,SEA
28	Tulchina Fisheries	Naknek, AK	K	EF, F	AIR
29	Two If By Seafoods	Issaquah, WA	K	F	AIR
30	Ugashik Wild Salmon Company	Anchorage, AK	U	F	AIR
31	F/V King Louie Victor Popa	Fallbrook, CA	E	F	SEA
32	Wild Alaska Salmon and Seafood	King Salmon, AK	K	EF, F	AIR,SEA
33	Wild Bay Seafood Co.	Gig Harbor, WA	K	F	SEA
34	Wild Legacy Seafoods	Homer, AK	N	EF	AIR
35	Willbros Salmo Co.	Ruidoso, NM	K	F	AIR
36	Wilsons' Wild Salmon	Naknek, AK	K	F	SEA

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

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

Table 5.—Commercial salmon catch by district, river, and species, in numbers of fish, Bristol Bay, 2020.

District and river system	Sockeye	Chinook	Chum	Pink	Coho	Total
Naknek-Kvichak District						
Kvichak River	5,967,076					5,967,076
Alagnak River	2,217,805					2,217,805
Naknek River	6,126,153					6,126,153
Total	14,311,034	816	36,381	1,345	1,033	14,350,609
Egegik District	13,364,669	711	50,055	1,755	26,342	13,443,532
Ugashik District	2,598,269	1,349	16,339	381	818	2,617,156
Nushagak District						
Wood River	5,641,358					5,641,358
Igushik River	871,200					871,200
Nushagak River	2,347,744					2,347,744
Total	8,860,302	6,363	136,605	26,216	76,133	9,105,619
Togiak District	445,572	767	53,510	42,216	10,095	552,160
Total Bristol Bay	39,579,846	10,006	292,890	71,913	114,421	40,069,076

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

Table 6.—Daily and cumulative escapement estimates by salmon species, Nushagak River sonar project, Bristol Bay, 2020.

Date	Sockeye		Chinook ^a		Chum		Coho ^b	
	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
6/6	389	389	72	72	8	8		
6/7	579	968	111	183	33	41		
6/8	539	1,507	124	307	21	62		
6/9	648	2,155	88	395	62	124		
6/10	1,089	3,244	149	544	31	155		
6/11	904	4,148	94	638	32	187		
6/12	1,114	5,262	8	646	25	212		
6/13	1,688	6,950	-4	642	37	249		
6/14	1,459	8,409	70	712	29	278		
6/15	1,282	9,691	173	885	102	380		
6/16	3,548	13,239	495	1,380	117	497		
6/17	4,779	18,018	2,877	4,257	1,830	2,327		
6/18	12,025	30,043	4,288	8,545	5,491	7,818		
6/19	10,962	41,005	164	8,709	779	8,597		
6/20	9,186	50,191	985	9,694	1,139	9,736		
6/21	8,377	58,568	916	10,610	841	10,577		
6/22	14,746	73,314	875	11,485	328	10,905		
6/23	12,793	86,107	1,179	12,664	54	10,959		
6/24	27,539	113,646	3,281	15,945	3,354	14,313		
6/25	73,946	187,592	5,650	21,595	9,404	23,717		
6/26	55,080	242,672	3,391	24,986	3,191	26,908		
6/27	27,267	269,939	1,974	26,960	3,417	30,325		
6/28	14,736	284,675	2,596	29,556	7,682	38,007		
6/29	30,606	315,281	1,095	30,651	3,843	41,850		
6/30	31,564	346,845	1,227	31,878	8,760	50,610		
7/1	56,933	403,778	1,874	33,752	2,369	52,979		
7/2	36,615	440,393	25	33,777	2,336	55,315		
7/3	13,866	454,259	161	33,938	589	55,904		
7/4	4,981	459,240	108	34,046	1,211	57,115		
7/5	5,427	464,667	263	34,309	1,505	58,620		
7/6	10,142	474,809	602	34,911	1,436	60,056		
7/7	109,690	584,499	2,912	37,823	17,658	77,714		
7/8	123,474	707,973	3	37,826	13,926	91,640		
7/9	152,674	860,647	17	37,843	6,261	97,901		
7/10	99,072	959,719	311	38,154	2,359	100,260		
7/11	49,583	1,009,302	1,001	39,155	724	100,984		
7/12	50,963	1,060,265	793	39,948	1,102	102,086		
7/13	44,754	1,105,019	141	40,089	393	102,479		
7/14	37,189	1,142,208	17	40,106	4,607	107,086		
7/15	19,878	1,162,086	685	40,791	480	107,566		

-continued-

Table 6.—Page 2 of 2.

Date	Sockeye		Chinook		Chum		Coho ^b	
	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative	Daily	Cumulative
7/16	13,110	1,175,196	452	41,243	598	108,164		
7/17	14,280	1,189,476	561	41,804	1,203	109,367		
7/18	9,369	1,198,845	-3	41,801	498	109,865		
7/19	4,389	1,203,234	8	41,809	591	110,456		
7/20	5,184	1,208,418	80	41,889	136	110,592		
7/21	4,548	1,212,966	98	41,987	136	110,728		
7/22	4,967	1,217,933	711	42,698	184	110,912		
7/23	3,364	1,221,297	116	42,814	439	111,351		
7/24	3,182	1,224,479	76	42,890	384	111,735		
7/25	3,580	1,228,059	142	43,032	996	112,731		

Note: All counts rounded to nearest whole fish.

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

^b Coho were not counted in 2020 because sonar operations ended prior to the arrival of the coho run.

Table 7.—Daily sockeye salmon escapement tower counts by river system, eastside Bristol Bay, 2020.

Date	Kvichak River		Naknek River		Alagnak River		Egegik River		Ugashik River	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/17										
6/18							1,146	1,146		
6/19			678	678			5,034	6,180		
6/20			4,074	4,752			2,490	8,670		
6/21			9,084	13,836			12,762	21,432		
6/22	78	78	4,008	17,844			12,534	33,966		
6/23	132	210	7,140	24,984			13,488	47,454		
6/24	0	210	12,270	37,254			49,908	97,362		
6/25	0	210	15,486	52,740			19,506	116,868		
6/26	66	276	19,194	71,934			17,580	134,448		
6/27	102	378	33,522	105,456			9,564	144,012	966	966
6/28	1,302	1,680	5,430	110,886			30,480	174,492	1,704	2,670
6/29	882	2,562	9,066	119,952			19,212	193,704	1,932	4,602
6/30	2,058	4,620	159,030	278,982	2,946	2,946	14,340	208,044	2,994	7,596
7/1	15,810	20,430	22,470	301,452	15,510	18,456	69,006	277,050	3,552	11,148
7/2	32,046	52,476	2,130	303,582	12,258	30,714	100,344	377,394	5,886	17,034
7/3	39,114	91,590	4,188	307,770	2,652	33,366	26,994	404,388	4,680	21,714
7/4	7,416	99,006	334,374	642,144	762	34,128	22,386	426,774	8,094	29,808
7/5	8,064	107,070	38,646	680,790	86,094	120,222	40,356	467,130	4,194	34,002
7/6	106,980	214,050	478,884	1,159,674	40,302	160,524	183,018	650,148	3,252	37,254
7/7	170,142	384,192	262,140	1,421,814	85,266	245,790	104,736	754,884	7,332	44,586
7/8	200,460	584,652	585,294	2,007,108	119,220	365,010	195,336	950,220	9,006	53,592
7/9	232,164	816,816	502,830	2,509,938	136,644	501,654	248,796	1,199,016	27,948	81,540
7/10	429,006	1,245,822	102,552	2,612,490	315,420	817,074	328,554	1,527,570	75,222	156,762
7/11	490,938	1,736,760	265,002	2,877,492	244,836	1,061,910	178,830	1,706,400	153,090	309,852
7/12	536,448	2,273,208	440,688	3,318,180	246,942	1,308,852	129,096	1,835,496	124,554	434,406
7/13	469,806	2,743,014	92,052	3,410,232	295,320	1,604,172	130,752	1,966,248	184,860	619,266
7/14	628,572	3,371,586	217,554	3,627,786	130,044	1,734,216	61,950	2,028,198	135,258	754,524
7/15	176,034	3,547,620	263,298	3,891,084	171,090	1,905,306	101,310	2,129,508	147,498	902,022
7/16	187,764	3,735,384	73,182	3,964,266	134,514	2,039,820	88,536	2,218,044	123,144	1,025,166
7/17	121,974	3,857,358	33,768	3,998,034	43,140	2,082,960	61,902	2,279,946	119,376	1,144,542
7/18	53,820	3,911,178	32,520	4,030,554	48,654	2,131,614	27,240	2,307,186	97,392	1,241,934
7/19	32,334	3,943,512	33,456	4,064,010	44,250	2,175,864	17,472	2,324,658	85,488	1,327,422
7/20	27,576	3,971,088	27,924	4,091,934	34,776	2,210,640	12,954	2,337,612	47,166	1,374,588
7/21	13,662	3,984,750	20,226	4,112,160	41,922	2,252,562	20,856	2,358,468	52,614	1,427,202
7/22	11,532	3,996,282			27,636	2,280,198	15,414	2,373,882	49,464	1,476,666
7/23	4,428	4,000,710			33,528	2,313,726	9,816	2,383,698	51,234	1,527,900
7/24	11,844	4,012,554			25,854	2,339,580	6,030	2,389,728	62,778	1,590,678
7/25	9,288	4,021,842			17,748	2,357,328			36,834	1,627,512
7/26	5,946	4,027,788			14,742	2,372,070			38,442	1,665,954
7/27	3,180	4,030,968			10,992	2,383,062			41,394	1,707,348
7/28					3,456	2,386,518			38,592	1,745,940

Table 8.—Commercial and subsistence fishing emergency orders, by period, district and statistical area, Bristol Bay eastside, 2020.

Number	Start date	Start time		End date	End time	Effective time
Naknek/Kvichak District						
Driftnet						
AKN.55	7/12	6:00 AM	To	7/12	2:00 PM	8.0 hours
AKN.58	7/13	7:00 AM	To	7/13	2:30 PM	7.5 hours
AKN.61	7/14	7:30 AM	To	7/14	3:00 PM	7.5 hours
AKN.64	7/15	8:00 AM	To	7/15	3:30 PM	7.5 hours
AKN.67	7/15	9:30 PM	To	7/16	5:30 AM	8.0 hours
AKN.70	7/16	9:00 AM	To	8/2	9:00 AM	401.0 hours
AKN.70	8/2	9:00 AM		Fall schedule		^a
Setnet						
AKN.01	6/1	9:00 AM	To	6/24	9:00 AM	
AKN.11	6/24	2:30 PM	To	6/24	9:30 PM	7.0 hours
AKN.14	6/25	3:30 PM	To	6/25	10:30 PM	7.0 hours
AKN.16	6/25	10:30 PM	To	6/26	1:30 PM	15.0 hours ^b
AKN.17	6/26	1:30 PM	To	6/26	11:30 PM	10.0 hours ^b
AKN.19	6/27	11:30 PM	To	6/27	1:30 PM	15.0 hours ^b
AKN.20	6/27	1:30 PM	To	6/28	12:30 AM	11.0 hours ^b
AKN.23	6/28	7:00 PM	To	6/29	2:30 PM	19.5 hours
AKN.24	6/29	2:30 PM	To	6/30	3:30 PM	24.5 hours ^b
AKN.26	7/1	8:00 AM	To	7/1	4:00 PM	8.0 hours
AKN.29	7/1	4:00 PM	To	7/2	4:30 PM	24.5 hours ^b
AKN.32	7/2	4:30 PM	To	7/3	5:30 PM	24.5 hours ^b
AKN.34	7/3	5:30 PM	To	7/4	6:00 PM	24.5 hours ^b
AKN.36	7/4	6:00 PM	To	7/5	7:00 PM	25.0 hours ^b
AKN.39	7/5	7:00 PM	To	7/6	8:00 PM	25.0 hours ^b
AKN.42	7/6	8:00 PM	To	7/7	9:00 PM	24.5 hours ^b
AKN.44	7/7	9:00 PM	To	7/8	11:59 AM	15.0 hours ^b
AKN.47	7/8	11:59 AM	To	7/9	12:30 PM	24.5 hours ^b
AKN.49	7/9	12:30 PM	To	7/10	1:00 PM	24.5 hours ^b
AKN.52	7/10	1:00 PM	To	7/11	1:30 PM	24.5 hours ^b
AKN.55	7/11	1:30 PM	To	7/12	2:00 PM	24.5 hours ^b
AKN.58	7/12	2:00 PM	To	7/13	2:30 PM	24.5 hours ^b
AKN.61	7/13	2:30 PM	To	7/14	3:00 PM	24.5 hours ^b
AKN.64	7/14	3:00 PM	To	7/15	3:30 PM	24.5 hours ^b
AKN.67	7/15	3:30 PM	To	7/16	4:00 PM	24.5 hours ^b
AKN.70	7/16	4:00 PM	To	8/2	9:00 AM	401.0 hours
AKN.70	8/2	9:00 AM		Fall schedule		

-continued-

Table 8.–Page 2 of 5.

Number	Start date	Start time		End date	End time	Effective time
Naknek Section						
Driftnet						
AKN.01	6/1	9:00 AM	To	6/24	9:00 AM	^c
AKN.11	6/24	2:30 PM	To	6/24	9:30 PM	7.0 hours
AKN.14	6/25	3:30 PM	To	6/25	10:30 PM	7.0 hours
AKN.16	6/26	4:30 AM	To	6/26	1:30 PM	9.0 hours
AKN.17	6/26	5:00 PM	To	6/26	11:30 PM	6.5 hours
AKN.19	6/27	5:00 AM	To	6/27	1:30 PM	8.5 hours
AKN.20	6/27	6:30 PM	To	6/28	12:30 AM	6.0 hours
AKN.23	6/28	7:00 PM	To	6/29	2:00 AM	7.0 hours
AKN.23	6/29	7:00 AM	To	6/29	2:30 PM	7.5 hours
AKN.24	6/29	8:00 PM	To	6/30	3:30 AM	7.5 hours
AKN.24	6/30	7:30 AM	To	6/30	3:00 PM	7.5 hours
AKN.26	7/1	8:00 AM	To	7/1	4:00 PM	8.0 hours
AKN.28	6/30	9:00 PM	To	7/1	5:00 AM	8.0 hours
AKN.29	7/1	10:00 PM	To	7/2	4:30 PM	18.5 hours ^b
AKN.32	7/2	11:00 PM	To	7/3	7:00 AM	8.0 hours
AKN.32	7/3	10:30 AM	To	7/3	5:30 PM	7.0 hours
AKN.34	7/4	12:01 AM	To	7/4	6:00 PM	18.0 hours
AKN.36	7/5	1:00 PM	To	7/5	9:30 AM	8.5 hours
AKN.36	7/5	1:00 AM	To	7/5	7:00 PM	6.0 hours
AKN.39	7/6	1:30 AM	To	7/6	10:30 AM	9.0 hours
AKN.39	7/6	2:00 PM	To	7/6	8:00 PM	6.0 hours
AKN.42	7/7	2:30 AM	To	7/7	11:00 AM	8.5 hours
AKN.42	7/7	3:00 PM	To	7/7	9:00 PM	6.0 hours
AKN.44	7/8	3:00 AM	To	7/8	11:59 AM	9.0 hours
AKN.47	7/8	3:30 PM	To	7/8	10:00 PM	6.5 hours
AKN.47	7/9	4:00 AM	To	7/9	12:30 PM	8.5 hours
AKN.49	7/9	4:30 PM	To	7/9	11:00 PM	6.5 hours
AKN.49	7/10	4:30 AM	To	7/10	1:00 PM	8.5 hours
AKN.52	7/10	5:30 PM	To	7/10	11:59 PM	6.5 hours
AKN.52	7/11	5:00 AM	To	7/11	1:30 PM	8.5 hours
AKN.55	7/11	6:00 PM	To	7/11	1:30 AM	7.5 hours
AKN.58	7/12	7:00 PM	To	7/13	2:30 AM	7.5 hours
AKN.61	7/13	8:00 PM	To	7/14	4:00 AM	8.0 hours
AKN.64	7/14	9:00 PM	To	7/15	4:30 AM	7.5 hours
AKN.67	7/16	9:00 AM	To	7/16	4:00 PM	8.0 hours

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Table 8.–Page 3 of 5.

Number	Start date	Start time		End date	End time	Effective time
Egegik District						
Driftnet						
AKN.02	6/1	9:00 AM	To	6/17	9:00 AM	192.0 hours ^d
AKN.03	6/1	12:01 AM	To	6/17	11:59 PM	408.0 hours ^e
AKN.07	6/19	10:30 AM	To	6/19	4:30 PM	6.0 hours
AKN.09	6/21	12:30 PM	To	6/21	6:30 PM	6.0 hours
AKN.10	6/22	12:15 PM	To	6/22	5:15 PM	5.0 hours
AKN.12	6/24	1:15 PM	To	6/24	9:15 PM	8.0 hours
AKN.15	6/25	3:00 PM	To	6/25	11:00 PM	8.0 hours
AKN.18	6/26	3:45 PM	To	6/26	9:45 PM	6.0 hours
AKN.21	6/28	4:45 AM	To	6/28	10:45 AM	6.0 hours
AKN.25	6/29	7:30 PM	To	6/29	11:30 PM	4.0 hours
AKN.27	7/1	7:30 AM	To	7/1	1:00 PM	5.5 hours
AKN.30	7/1	9:00 PM	To	7/2	2:30 AM	5.5 hours
AKN.30	7/2	8:30 AM	To	7/2	2:00 PM	5.5 hours
AKN.33	7/2	9:45 PM	To	7/3	3:15 AM	5.5 hours
AKN.33	7/3	9:15 AM	To	7/3	3:15 PM	6.0 hours
AKN.35	7/3	9:45 PM	To	7/4	3:15 AM	4.5 hours
AKN.35	7/4	9:15 AM	To	7/4	3:15 PM	5.0 hours
AKN.37	7/5	12:00 PM	To	7/5	4:30 PM	4.5 hours
AKN.40	7/6	1:30 AM	To	7/6	5:30 AM	4.0 hours
AKN.40	7/6	12:30 PM	To	7/6	5:30 PM	5.0 hours
AKN.43	7/7	2:00 PM	To	7/7	8:00 PM	6.0 hours
AKN.45	7/8	1:30 AM	To	7/8	6:30 AM	5.0 hours
AKN.45	7/8	2:15 PM	To	7/8	8:15 PM	6.0 hours
AKN.48	7/9	2:30 AM	To	7/9	8:00 AM	5.5 hours
AKN.48	7/9	3:00 PM	To	7/9	9:00 PM	6.0 hours
AKN.50	7/10	3:15 AM	To	7/10	9:15 AM	6.0 hours
AKN.50	7/10	4:00 PM	To	7/10	10:00 PM	6.0 hours
AKN.53	7/11	3:30 AM	To	7/11	11:30 AM	8.0 hours
AKN.53	7/11	4:30 PM	To	7/12	12:30 PM	8.0 hours
AKN.56	7/12	4:45 AM	To	7/12	12:45 PM	8.0 hours
AKN.56	7/12	5:30 PM	To	7/13	1:30 AM	8.0 hours

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Table 8.–Page 4 of 5.

Number	Start date	Start time		End date	End time	Effective time
Egegik District						
Driftnet						
AKN.59	7/13	5:15 AM	To	7/13	1:15 PM	8.0 hours
AKN.59	7/13	6:15 PM	To	7/14	2:15 AM	8.0 hours
AKN.62	7/14	5:30 AM	To	7/14	1:30 PM	8.0 hours
AKN.62	7/14	7:45 PM	To	7/15	3:45 AM	8.0 hours
AKN.65	7/15	6:30 AM	To	7/15	2:30 PM	8.0 hours
AKN.65	7/15	8:00 PM	To	7/16	4:00 AM	8.0 hours
AKN.68	7/16	7:30 AM	To	7/16	3:30 PM	8.0 hours
AKN.68	7/16	8:30 PM	To	7/17	4:30 AM	8.0 hours
AKN.71	7/16	3:30 PM	To	8/2	9:00 AM	401.5 hours ^b
AKN.71	8/2	9:00 AM	To	Fall schedule		
Setnet						
AKN.02	6/1	9:00 AM	To	6/17	9:00 AM	192.0 hours ^d
AKN.03	6/1	12:01 AM	To	6/17	11:59 PM	408.0 hours ^e
AKN.07	6/19	9:30 AM	To	6/19	5:30 PM	8.0 hours
AKN.09	6/21	11:30 AM	To	6/21	7:30 PM	8.0 hours
AKN.12	6/24	1:15 PM	To	6/24	9:15 PM	8.0 hours
AKN.15	6/25	3:00 PM	To	6/25	11:00 PM	8.0 hours
AKN.18	6/26	3:45 PM	To	6/26	11:45 PM	8.0 hours
AKN.21	6/28	4:45 AM	To	6/28	12:45 PM	8.0 hours
AKN.25	6/29	7:00 PM	To	6/30	3:00 AM	8.0 hours
AKN.27	7/1	7:30 AM	To	7/1	3:30 PM	8.0 hours
AKN.30	7/1	9:00 PM	To	7/2	5:00 AM	8.0 hours
AKN.30	7/2	8:30 AM	To	7/2	4:30 PM	8.0 hours
AKN.33	7/2	9:45 PM	To	7/3	5:45 AM	8.0 hours
AKN.33	7/3	9:15 AM	To	7/3	4:15 AM	8.0 hours
AKN.35	7/3	10:30 PM	To	7/4	6:30 AM	8.0 hours
AKN.35	7/4	10:00 AM	To	7/4	6:00 PM	8.0 hours
AKN.37	7/5	11:00 AM	To	7/5	7:00 PM	8.0 hours
AKN.40	7/6	12:15 AM	To	7/6	8:15 AM	8.0 hours
AKN.40	7/6	12:00 PM	To	7/6	8:00 PM	8.0 hours
AKN.43	7/7	1:30 PM	To	7/7	9:30 PM	8.0 hours
AKN.45	7/8	1:30 AM	To	7/8	9:30 AM	8.0 hours
AKN.45	7/8	2:15 PM	To	7/8	10:15 PM	8.0 hours
AKN.48	7/9	2:30 AM	To	7/9	10:30 AM	8.0 hours
AKN.48	7/9	3:00 PM	To	7/9	11:00 PM	8.0 hours
AKN.50	7/10	3:15 AM	To	7/10	11:15 AM	8.0 hours
AKN.50	7/10	4:00 PM	To	7/10	11:59 PM	8.0 hours

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Table 8.–Page 5 of 5.

Number	Start date	Start time		End date	End time	Effective time	
Egegik District							
Setnet							
AKN.53	7/11	3:30 AM	To	7/12	12:30 AM	21.0 hours	
AKN.56	7/12	4:45 AM	To	7/12	12:45 PM	8.0 hours	
AKN.56	7/12	5:30 PM	To	7/13	1:30 AM	8.0 hours	
AKN.59	7/13	5:15 AM	To	7/13	1:15 PM	8.0 hours	
AKN.59	7/13	6:15 PM	To	7/14	2:15 AM	8.0 hours	
AKN.62	7/14	5:30 AM	To	7/14	1:30 PM	8.0 hours	
AKN.62	7/14	7:45 PM	To	7/15	3:45 AM	8.0 hours	
AKN.65	7/15	6:30 AM	To	7/15	2:30 PM	8.0 hours	
AKN.65	7/15	8:00 PM	To	7/16	4:00 AM	8.0 hours	
AKN.68	7/16	7:30 AM	To	7/16	3:30 PM	8.0 hours	
AKN.68	7/16	8:30 PM	To	7/17	4:30 AM	8.0 hours	
AKN.71	7/16	3:30 PM	To	8/2	9:00 AM	401.5 hours	^b
AKN.71	8/2	9:00 AM	To	Fall schedule			
Ugashik District							
Drift & setnet							
AKN.04	6/1	9:00 AM	To	6/19	9:00 AM		^c
AKN.05	6/1	12:01 AM	To	6/19	11:59 PM		^c
AKN.06	6/1	12:01 AM	To	9/30	11:59 PM		^f
AKN.08	6/19	11:59 PM	To	6/22	11:59 PM	72.0 hours	^c
AKN.13	6/25	1:00 PM	To	6/25	11:00 PM	10.0 hours	
AKN.22	6/28	3:30 PM	To	6/28	11:30 PM	8.0 hours	
AKN.31	7/2	6:30 AM	To	7/2	2:30 PM	8.0 hours	
AKN.38	7/5	9:30 AM	To	7/5	5:30 PM	8.0 hours	
AKN.41	7/6	10:30 AM	To	7/6	6:30 PM	8.0 hours	
AKN.46	7/8	12:15 PM	To	7/8	8:15 PM	8.0 hours	
AKN.51	7/10	2:00 PM	To	7/10	11:59 PM	10.0 hours	
AKN.54	7/11	2:30 PM	To	7/12	2:30 AM	12.0 hours	
AKN.57	7/12	3:15 PM	To	7/13	3:15 AM	12.0 hours	
AKN.60	7/13	3:15 AM	To	7/13	3:15 PM	12.0 hours	^b
AKN.63	7/14	4:00 AM	To	7/14	4:00 PM	12.0 hours	
AKN.66	7/15	5:00 AM	To	7/15	5:00 PM	12.0 hours	
AKN.69	7/15	5:00 PM	To	7/15	10:00 PM	5.0 hours	^b
AKN.69	7/16	4:00 AM	To	7/16	10:00 PM	18.0 hours	
AKN.72	7/16	10:00 PM	To	8/3	9:00 AM	419.0 hours	^b
AKN.72	8/3	9:00 AM	To	Fall schedule			

^a Start of the fall schedule.^b Fishing period extension.^c Weekly schedule: 9:00 AM Monday until 9:00 AM Friday.^d Weekly schedule: 9:00 AM Monday to 9:00 AM Wednesday and 9:00 AM Thursday to 9:00 AM Friday.^e Subsistence.^f Moves north line of Ugashik District.

Table 9.—Commercial salmon catch by date and species, in numbers of fish, Naknek-Kvichak District, Bristol Bay, 2020.

Date		Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
		Drift	Set	Drift	Set						
6/15	ab	15	15								
6/16	ab	24	24								
6/17	ab	24	24								
6/18	ab	24	24								
6/19	a	9	9								
6/20	a	0	0								
6/21	a	0	0								
6/22	a	15	15	70	40	8,896	21	108	0	0	9,025
6/23	a	24	24	51	70	11,114	25	95	0	0	11,234
6/24	a	16	16	103	97	15,591	44	159	0	0	15,794
6/25	a	7	8.5	130	102	41,956	11	393	0	0	42,360
6/26	a	15.5	24	328	258	173,032	49	1,465	0	0	174,546
6/27	a	13	24	107	157	16,345	12	128	0	0	16,485
6/28	a	5.5	5.5	96	57	11,219	6	91	0	0	11,316
6/29	a	13.5	24	412	181	258,657	21	1,112	0	0	259,790
6/30	a	14	15	268	224	101,322	15	245	0	0	101,582
7/1	a	15	16	312	82	99,352	16	264	0	0	99,632
7/2	a	17.5	24	338	56	171,295	12	265	0	0	171,572
7/3	a	14	24	529	274	571,932	23	823	0	0	572,778
7/4	a	18	24	543	436	353,441	62	503	0	0	354,006
7/5	a	14.5	24	655	402	903,393	33	809	0	0	904,235
7/6	a	15	24	768	550	1,000,374	31	1,028	0	0	1,001,433
7/7	a	14.5	24	743	443	1,161,200	24	1,968	0	1	1,163,193
7/8	a	15.5	24	639	366	903,588	18	1,397	0	0	905,003
7/9	a	15	24	738	334	670,876	22	959	0	0	671,857
7/10	a	15	24	717	457	912,368	26	934	0	0	913,328
7/11	a	16	24	842	529	1,185,109	14	1,792	0	0	1,186,915
7/12	c	14.5	24	873	394	554,650	17	1,582	0	0	556,249
7/13	c	14	24	942	352	805,962	19	2,707	0	0	808,688
7/14	c	14.5	24	995	483	972,888	22	2,019	0	0	974,929
7/15	c	14.5	24	914	422	630,425	16	1,573	0	0	632,014
7/16		21	24	958	247	583,346	38	1,974	0	0	585,358
7/17		24	24	662	260	373,426	31	1,509	0	0	374,966
7/18		24	24	579	273	352,779	21	2,364	0	0	355,164
7/19		24	24	506	246	270,842	21	2,057	0	2	272,922
7/20		24	24	537	138	300,977	19	2,127	0	30	303,153
7/21		24	24	340	162	229,949	19	2,196	7	46	232,217
7/22		24	24	334	152	294,211	16	2,266	49	46	296,588
7/23		24	24	254	110	90,852	12	2,336	24	34	93,258

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Table 9.—Page 2 of 2.

Date	Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Drift	Set	Drift	Set						
7/24	24	24	206	105	101,868	10	597	74	72	102,621
7/25	24	24	153	88	63,129	9	423	40	49	63,650
7/26	24	24	101	68	38,926	11	249	47	60	39,293
7/27	24	24	70	58	28,816	9	87	30	11	28,953
7/28	24	24	30	60	17,199	9	73	54	61	17,396
7/29	^a 24	24	31	51	10,532	7	133	80	75	10,827
7/30	^a 24	24								
7/31	^a 24	24								
8/1	^a 24	24								
8/2	^a 9	9								
8/3	^a 15	15								
8/4	^a 24	24								
8/5	^a 24	24								
8/6	^a 24	24								
8/7	^a 24	24								
8/8	^a 24	24								
8/9	^a 9	9								
8/10	^a 15	15								
8/11	^a 24	24								
8/12	^a 24	24								
8/13	^a 24	24								
8/14	^a 24	24								
8/15	^a 24	24								
Total	1,140	1,300			14,311,035	816	36,381	1,345	1,033	14,350,610

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 four permit holders or companies operated, harvest confidential.

^c Drift gillnet gear was open in the Naknek Section only during one of two periods.

Table 10.—Daily district registration of drift gillnet permit holders and dual vessel registration, by district, Bristol Bay, 2020.

Date	Naknek-Kvichak		Egegik		Ugashik		Nushagak		Togiak	Total ^b
	Total	Dual	Total	Dual	Total	Dual	Total	Dual	Total ^a	
6/1	0	0	3	0	0	0	1	0	0	4
6/2	5	1	17	1	1	0	12	4	1	36
6/3	5	1	18	1	1	0	14	5	1	41
6/4	5	1	18	1	2	0	15	5	3	44
6/5	5	1	20	1	2	0	15	5	4	46
6/6	5	1	20	1	2	0	15	5	4	46
6/7	5	1	21	1	2	0	15	5	4	47
6/8	5	1	23	1	2	0	15	5	4	50
6/9	11	1	34	3	7	0	27	5	5	85
6/10	11	1	37	3	7	0	33	5	6	100
6/11	12	1	43	4	7	0	35	5	12	111
6/12	12	1	46	5	7	0	37	5	14	116
6/13	14	1	50	6	8	1	42	6	14	128
6/14	25	1	74	7	8	1	42	6	14	163
6/15	25	1	102	15	8	1	46	8	14	196
6/16	35	1	136	26	12	3	65	11	15	265
6/17	39	1	146	27	12	3	78	11	17	294
6/18	40	1	147	27	12	3	96	14	19	315
6/19	57	1	177	33	8	1	112	17	20	378
6/20	61	1	196	39	8	1	152	26	24	442
6/21	67	1	223	43	8	1	175	30	25	499
6/22	80	6	266	55	8	1	201	33	26	585
6/23	112	14	277	54	8	1	270	45	30	698
6/24	131	15	271	53	8	1	335	57	31	776
6/25	181	24	300	60	14	3	528	110	31	1,054
6/26	270	48	329	67	25	7	697	168	31	1,354
6/27	350	74	393	88	29	9	682	160	33	1,488
6/28	389	85	408	92	30	9	675	159	34	1,537
6/29	434	99	410	92	31	9	677	160	35	1,588
6/30	459	103	431	96	29	8	676	160	36	1,632
7/01	466	104	440	100	30	8	662	156	37	1,635
7/02	473	105	446	101	34	8	636	145	37	1,626
7/03	495	114	450	102	37	9	589	128	37	1,608
7/04	511	120	462	107	42	10	540	110	37	1,592
7/05	518	120	500	121	47	10	479	101	37	1,581
7/06	531	123	529	134	48	10	478	101	37	1,625
7/07	544	126	573	140	48	10	488	105	39	1,692
7/08	548	126	570	141	50	10	484	102	39	1,694
7/09	550	126	567	141	44	7	466	96	42	1,670
7/10	558	129	556	136	46	7	437	86	43	1,640
7/11	589	139	516	124	48	7	360	62	43	1,557
7/12	616	148	471	115	61	13	299	53	44	1,491
7/13	696	172	482	115	91	23	294	52	44	1,607
7/14	715	175	483	115	144	34	282	47	44	1,668
7/15	722	177	480	116	158	37	282	47	44	1,686
7/16	722	176	474	114	174	40	279	46	44	1,684
Average ^c	386	86	391	89	43	10	402	84	35	1,257

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 2020.

Date	River test fishing						
	Tower count		Fish per index point ^a	Index points		Estimated cumulative escapement	Estimated river fish ^b
	Daily	Cum.		Daily	Cum.		
6/22	78	78					
6/23	132	210					
6/24	0	210					
6/25	0	210		0	0		
6/26	66	276		0	0		
6/27	102	378	0	97	97		
6/28	1,302	1,680	14	22	119	300	300
6/29	882	2,562	833	6	125	5,300	5,000
6/30	2,058	4,620	3	192	317	5,800	500
7/1	15,810	20,430	104	96	413	15,800	10,000
7/2	32,046	52,476	1,250	16	429	35,800	20,000
7/3	39,114	91,590	6,667	3	432	55,800	20,000
7/4	7,416	99,006	17	581	1,013	65,800	10,000
7/5	8,064	107,070	492	305	1,318	215,800	150,000
7/6	106,980	214,050	173	2,310	3,628	615,800	400,000
7/7	170,142	384,192	431	1,277	4,905	1,165,800	550,000
7/8	200,460	584,652	81	3,718	8,623	1,465,800	300,000
7/9	232,164	816,816	138	3,628	12,251	1,965,800	500,000
7/10	429,006	1,245,822	515	1,943	14,194	2,965,800	1,000,000
7/11	490,938	1,736,760	337	2,080	16,274	3,665,800	700,000
7/12	536,448	2,273,208	798	1,253	17,527	4,665,800	1,000,000
7/13	469,806	2,743,014	1,826	438	17,965	5,465,800	800,000
7/14	628,572	3,371,586	278	1,796	19,761	5,965,800	500,000
7/15	176,034	3,547,620	316	2,217	21,978	6,665,800	700,000
7/16	187,764	3,735,384	889	675	22,653	7,265,800	600,000
7/17	121,974	3,857,358	665	376	23,029	7,515,800	250,000
7/18	53,820	3,911,178				7,615,800	100,000
7/19	32,334	3,943,512					
7/20	27,576	3,971,088					
7/21	13,662	3,984,750					
7/22	11,532	3,996,282					
7/23	4,428	4,000,710					
7/24	11,844	4,012,554					
7/25	9,288	4,021,842					
7/26	5,946	4,027,788					
7/27	3,180	4,030,968					

^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 with a stronger 2-ocean component and similar inshore total run as that projected for 2015. 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 2020.

Date	Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Drift	Set	Drift	Set						
6/1	15	15	0	0						
6/2	24	24	0	0						
6/3	9	9	0	0						
6/4	15	15	0	0						
6/5	9	9	0	0						
6/6										
6/7										
6/8 ^a	15	15								
6/9 ^a	24	24								
6/10	9	9	0	0						
6/11	15	15	5	10	395	4	9	0	0	408
6/12 ^a	9	9								
6/13										
6/14										
6/15	15	15	84	67	5,216	25	118	0	0	5,359
6/16	24	24	12	22	969	3	14	0	0	986
6/17	9	9	9		237	0	6	0	0	243
6/18										
6/19	6	8	144	116	20,777	27	352	0	0	21,156
6/20										
6/21	6	8	196	124	38,545	30	595	0	0	39,170
6/22	5	0	177		20,016	17	454	0	0	20,487
6/23										
6/24	8	8	227	164	57,247	68	1,046	0	0	58,361
6/25	8	8	247	160	82,646	71	1,911	0	0	84,628
6/26	6	8	275	158	113,864	35	2,365	0	0	116,264
6/27										
6/28	6	8	296	139	115,855	48	1,481	0	0	117,384
6/29	4	5	299	166	81,480	21	647	0	0	82,148
6/30	0	3	12	18	12,973	0	76	0	0	13,049
7/1	8.5	11	656	436	379,397	54	1,989	0	0	381,440
7/2	10.25	15.25	599	343	396,189	30	2,296	0	0	398,515
7/3	10.25	15.25	639	381	592,659	31	1,452	0	0	594,142
7/4	8.5	14.5	417	279	590,925	17	1,071	0	0	592,013
7/5	4.5	8	404	324	550,940	26	725	0	0	551,691
7/6	9	16	738	578	1,018,734	27	1,685	0	0	1,020,44

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Table 12.–Page 2 of 3.

Date	Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Drift	Set	Drift	Set						
7/7	6	8	403	254	641,627	11	1,205	0	0	642,843
7/8	11	16	661	349	831,352	17	1,904	0	0	833,273
7/9	11.5	16	716	329	781,957	22	2,031	0	0	784,010
7/10	12	16	735	261	590,845	19	1,474	0	0	592,338
7/11	15.5	20.5	705	432	1,009,343	12	1,802	0	0	1,011,157
7/12	15	15	676	280	653,754	11	3,388	0	0	657,153
7/13	15.25	15.25	645	325	544,703	11	585	0	0	545,299
7/14	14.5	14.5	751	501	781,598	10	1,798	0	0	783,406
7/15	15.75	15.75	686	329	535,658	8	1,198	0	0	536,864
7/16	20.5	20.5	516	206	362,639	4	919	0	0	363,562
7/17	24	24	377	267	323,365	4	1,467	0	0	324,836
7/18	24	24	346	168	245,554	3	1,841	0	0	247,398
7/19	24	24	290	224	252,213	8	1,139	0	0	253,360
7/20	24	24	312	153	253,113	9	1,076	23	25	254,246
7/21	24	24	225	128	214,207	6	868	48	60	215,189
7/22	24	24	280	180	314,726	8	2,193	70	79	317,076
7/23	24	24	231	166	205,589	3	821	85	101	206,599
7/24	24	24	219	84	153,879	0	1,412	78	123	155,492
7/25	24	24	207	80	135,321	1	1,291	84	137	136,834
7/26	24	24	144	58	89,722	1	439	88	210	90,460
7/27	24	24	123	41	82,000	0	391	68	220	82,679
7/28	24	24	115	25	68,380	1	417	90	198	69,086
7/29	24	24	87	21	48,856	3	275	59	174	49,367
7/30	24	24	61	24	38,341	3	238	50	360	38,992
7/31	24	24	18	5	13,360	1	58	25	94	13,538
8/1	24	24	32	20	21,506	0	145	81	461	22,193
8/2 ^a	9	9								
8/3	15	15	10	6	13,163	0	77	5	184	13,429
8/4	24	24	23	6	14,832	0	28	172	291	15,323
8/5	24	24	14	4	8,362	0	240	5	233	8,840
8/6	24	24	15	6	12,386	0	110	23	412	12,931
8/7	24	24	12	2	7,647	0	82	25	501	8,255
8/8	24	24	10	4	7,136	0	141	65	432	7,774
8/9 ^a	9	9								
8/10	15	15	8	5	4,956	0	100	59	1,135	6,250
8/11	24	24	13	4	6,573	0	102	132	2,436	9,243
8/12	24	24	16	3	5,070	0	80	120	2,577	7,847

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Table 12.–Page 3 of 3.

Date	Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Drift	Set	Drift	Set						
8/13	24	24	11	4	4,279	0	119	107	2,266	6,771
8/14	24	24	6	2	3,109	0	135	83	1,474	4,801
8/15	24	24	5	1	1,266	0	45	75	505	1,891
8/16	9	9	0	0						
8/17 ^a	15	15								
8/18 ^a	24	24								
8/19 ^a	24	24								
8/20 ^a	24	24								
8/21	24	24	0	0						
8/22	24	24	0	0						
8/23	9	9	0	0						
8/24 ^a	15	15								
8/25 ^a	24	24								
8/26 ^a	24	24								
8/27 ^a	24	24								
8/28	24	24	0	0						
8/29	24	24	0	0						
8/30	9	9	0	0						
8/31	15	15	0	0						
9/1 ^a	24	24								
9/2 ^a	24	24								
9/3 ^a	24	24								
Total	1,389	1,446	15,155	8,461	13,364,669	711	50,055	1,755	26,342	13,443,478

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

^a Fewer than 4 permits; data are confidential.

Table 13.—Comparison of daily sockeye escapement estimates by tower count and river test fish enumeration methods, Egegik River, Bristol Bay 2020.

Date	Tower count		River test fishing				
	Daily	Cum.	Fish per index point. ^a	Index points		Estimated cumulative escapement	Estimated river fish ^b
				Daily	Cum.		
6/18	1,146	1,146					
6/19	5,034	6,180					
6/20	2,490	8,670					
6/21	12,762	21,432	0	275	275	1,000	1,000
6/22	12,534	33,966	4	271	546	5,000	4,000
6/23	13,488	47,454	20	201	747	10,000	5,000
6/24	49,908	97,362	20	256	1,003	20,000	10,000
6/25	19,506	116,868	93	108	1,111	35,000	15,000
6/26	17,580	134,448	97	154	1,265	73,000	38,000
6/27	9,564	144,012	295	129	1,394	103,000	30,000
6/28	30,480	174,492	224	134	1,528	123,000	20,000
6/29	19,212	193,704	174	115	1,643	148,000	25,000
6/30	14,340	208,044	27	943	2,586	168,000	20,000
7/1	69,006	277,050	10	1,969	4,555	198,000	30,000
7/2	100,344	377,394	380	79	4,634	228,000	30,000
7/3	26,994	404,388	441	68	4,702	358,000	130,000
7/4	22,386	426,774	1,625	80	4,782	708,000	350,000
7/5	40,356	467,130	425	824	5,606	908,000	200,000
7/6	183,018	650,148	687	291	5,897	1,078,000	170,000
7/7	104,736	754,884	84	2,023	7,920	1,118,000	40,000
7/8	195,336	950,220	42	950	8,870	1,218,000	100,000
7/9	248,796	1,199,016	74	1,359	10,229	1,378,000	160,000
7/10	328,554	1,527,570	319	502	10,731	1,678,000	300,000
7/11	178,830	1,706,400	852	352	11,083	1,798,000	120,000
7/12	129,096	1,835,496	571	210	11,293	1,978,000	180,000
7/13	130,752	1,966,248				2,178,000	200,000
7/14	61,950	2,028,198				2,278,000	100,000
7/15	101,310	2,129,508					
7/16	88,536	2,218,044					
7/17	61,902	2,279,946					
7/18	27,240	2,307,186					
7/19	17,472	2,324,658					
7/20	12,954	2,337,612					
7/21	20,856	2,358,468					
7/22	15,414	2,373,882					
7/23	9,816	2,383,698					
7/24	6,030	2,389,728					

^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 river 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, 2020.

		Age class							
		1.2	2.2	Ocean- age-2	1.3	2.3	Ocean- age-3	1.4	
District and river system ^a									Total ^b
Naknek-Kvichak District									
Kvichak River									
	Number	2,682	120	2,802	7,177	3	7,180	14	9,998
	Percent	26.8	1.2	28.0	71.8	0.0	71.8	0.1	100.0
Alagnak River									
	Number	1,849	20	1,869	2,727	1	2,728	0	4,604
	Percent	40.2	0.4	40.6	59.2	0.0	59.3	0.0	99.8
Naknek River									
	Number	2,616	284	2,900	7,167	114	7,281	0	10,238
	Percent	25.6	2.8	28.3	70.0	1.1	71.1	0.0	99.4
Total									
	Number	7,147	424	7,571	17,071	118	17,189	14	24,840
	Percent	28.8	1.7	30.5	68.7	0.5	69.2	0.1	99.7
Egegik District									
	Number	1,764	987	2,751	12,205	197	12,402	0	15,502
	Percent	11.4	6.4	17.7	78.7	1.3	80.0	0.0	97.7
Ugashik District									
	Number	3,001	319	3,320	1,589	29	1,618	2	5,048
	Percent	59.4	6.3	65.8	31.5	0.6	32.1	0.0	97.9
Nushagak District									
Wood River									
	Number	5,642	38	5,680	2,157	12	2,169	1	7,885
	Percent	71.6	0.5	72.0	27.4	0.2	27.5	0.0	99.6
Igushik River									
	Number	547	8	555	638	0	638	0	1,195
	Percent	45.8	0.7	46.4	53.4	0.0	53.4	0.0	99.8
Nushagak River									
	Number	1,680	10	1,690	1,844	13	1,857	23	3,576
	Percent	47.0	0.3	47.3	51.6	0.4	51.9	0.6	99.8
Total									
	Number	7,869	56	7,925	4,639	25	4,664	24	12,656
	Percent	62.2	0.4	62.6	36.7	0.2	36.9	0.2	99.7
Togiak District ^c									
	Number	217	4	221	478	1	479	2	707
	Percent	30.7	0.6	31.3	67.6	0.1	67.8	0.3	99.3
Total Bristol Bay ^d									
	Number	19,998	1,790	21,788	35,982	370	36,352	42	58,753
	Percent	34.0	3.0	37.1	61.2	0.6	61.9	0.1	99.0

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

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

^c Does not include rivers other than Togiak River.

^d Totals may not equal column sums due to rounding.

Table 15.—Commercial catch by date and species, in numbers of fish, Ugashik District, Bristol Bay, 2020.

Date	Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Drift	Set	Drift	Set						
6/1	15	15	0	0						
6/2	24	24	0	0						
6/3	24	24	0	0						
6/4	24	24	0	0						
6/5	9	9	0	0						
6/6										
6/7										
6/8	15	15	0	0						
6/9	24	24	0	0						
6/10	24	24	0	0						
6/11 ^a	24	24								
6/12	9	9	0	0						
6/13										
6/14										
6/15	15	15	0	0						
6/16 ^a	24	24								
6/17 ^a	24	24								
6/18	24	24	0	0						
6/19	9	9	0	0						
6/20										
6/21										
6/22										
6/23										
6/24										
6/25	10	10	13	52	8,784	146	34	0	0	8,964
6/26										
6/27										
6/28	8	8	19	42	9,323	97	58	0	0	9,478
6/29										
6/30										
7/1										
7/2	8	8	26	47	15,933	111	216	0	0	16,260
7/3										
7/4										
7/5	8	8	37	105	115,105	169	200	0	0	115,474
7/6	8	8	35	72	62,726	79	90	0	0	62,895
7/7										
7/8	8	8	41	89	71,102	125	183	0	0	71,410
7/9										
7/10	10	10	44	127	114,594	78	269	0	0	114,941
7/11	9.5	9.5	45	92	94,674	43	455	0	0	95,172
7/12	11.25	11.25	74	15	84,420	22	562	0	0	85,004
7/13	15.25	15.25	71	79	61,488	35	301	0	0	61,824

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Table 15.–Page 2 of 2.

Date	Hours fished		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total	
	Drift	Set	Drift	Set							
7/14	12	12	114	110	206,722	74	921	0	0	207,717	
7/15	12	12	155	139	316,232	63	1,084	0	0	317,379	
7/16	20	20	162	134	180,672	76	1,295	0	0	182,043	
7/17	24	24	281	82	189,348	42	1,556	0	0	190,946	
7/18	24	24	174	60	116,873	29	1,238	0	0	118,140	
7/19	24	24	197	74	186,969	43	1,931	0	0	188,943	
7/20	24	24	117	62	120,503	37	595	0	0	121,135	
7/21	24	24	181	64	169,924	23	1,480	12	17	171,456	
7/22	24	24	104	47	89,463	15	1,480	1	3	90,962	
7/23	24	24	93	41	64,413	7	404	33	34	64,891	
7/24	24	24	107	34	90,560	5	796	78	92	91,531	
7/25	24	24	57	35	42,448	2	264	21	26	42,761	
7/26	24	24	73	35	69,853	6	352	37	37	70,285	
7/27	24	24	58	24	39,515	9	208	38	63	39,833	
7/28	24	24	37	22	31,573	8	170	47	22	31,820	
7/29	24	24	30	8	18,266	1	59	74	64	18,464	
7/30	24	24	14	18	9,510	0	68	21	68	9,667	
7/31	24	24	8	8	7,832	0	27	9	77	7,945	
8/1	a	24	24	7	2	8,691	0	38	10	69	8,808
8/2		24	24								
8/3		9	9	0	0						
8/4											
8/5											
8/6	a	15	15								
8/7	a	24	24	0	0						
8/8		24	24								
8/9		24	24	0	0						
8/10		9	9	0	0						
8/11											
8/12											
8/13	a	15	15	0	0						
8/14		24	24	0	0						
8/15		24	24	0	0						
8/16		24	24								
8/17		9	9	0	0						
8/18											
8/19											
8/20	a	15	15	0	0						
8/21		24	24	0	0						
8/22		24	24	0	0						
8/23		24	24								
Total			764	764	2,379	1,725	2,598,269	1,349	16,339	381	818

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

^a Fewer than 4 permits; data are confidential.

Table 16.—Comparison of daily sockeye escapement estimates by tower count and river test fish enumeration methods, Ugashik River, Bristol Bay 2020.

Date	Tower count		River test fishing				
	Daily	Cum.	Fish per index point. ^a	Index points Daily	Cum.	Estimated cumulative escapement	Estimated river fish ^b
6/26				117	117		
6/27	966	966	0	164	281		
6/28	1,704	2,670	92	163	444	15,000	15,000
6/29	1,932	4,602	68	221	665	30,000	15,000
6/30	2,994	7,596	105	143	808	45,000	15,000
7/1	3,552	11,148	82	182	990	60,000	15,000
7/2	5,886	17,034	61	165	1,155	70,000	10,000
7/3	4,680	21,714	44	226	1,381	80,000	10,000
7/4	8,094	29,808	115	130	1,511	95,000	15,000
7/5	4,194	34,002	83	241	1,752	115,000	20,000
7/6	3,252	37,254	29	525	2,277	130,000	15,000
7/7	7,332	44,586	31	1,308	3,585	170,000	40,000
7/8	9,006	53,592	23	2,158	5,743	220,000	50,000
7/9	27,948	81,540	36	2,070	7,813	295,000	75,000
7/10	75,222	156,762	38	2,660	10,473	395,000	100,000
7/11	153,090	309,852	53	3,400	13,873	575,000	180,000
7/12	124,554	434,406	114	2,194	16,067	825,000	250,000
7/13	184,860	619,266	115	2,611	18,678	1,125,000	300,000
7/14	135,258	754,524	181	1,379	20,057	1,375,000	250,000
7/15	147,498	902,022	118	2,542	22,599	1,675,000	300,000
7/16	123,144	1,025,166	92	3,534	26,133	2,000,000	325,000
7/17	119,376	1,144,542	267	1,216	27,349	2,325,000	325,000
7/18	97,392	1,241,934	272	919	28,268	2,575,000	250,000
7/19	85,488	1,327,422				2,775,000	200,000
7/20	47,166	1,374,588					
7/21	52,614	1,427,202					
7/22	49,464	1,476,666					
7/23	51,234	1,527,900					
7/24	62,778	1,590,678					
7/25	36,834	1,627,512					
7/26	38,442	1,665,954					
7/27	41,394	1,707,348					
7/28	38,592	1,745,940					

^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 July 2 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 17.—Daily sockeye salmon escapement tower counts by river system, Bristol Bay westside, 2020.

Date	Wood River		Igushik River		Togiak River	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
6/17	6,900	6,900				
6/18	6,990	13,890				
6/19	5,352	19,242				
6/20	4,866	24,108				
6/21	13,260	37,368				
6/22	11,022	48,390				
6/23	10,500	58,890	426	426		
6/24	67,884	126,774	2,268	2,694		
6/25	41,778	168,552	3,336	6,030		
6/26	50,562	219,114	4,302	10,332		
6/27	38,280	257,394	1,128	11,460		
6/28	39,414	296,808	4,428	15,888		
6/29	37,998	334,806	3,984	19,872		
6/30	49,398	384,204	4,266	24,138		
7/1	48,780	432,984	6,522	30,660		
7/2	49,410	482,394	3,570	34,230		
7/3	45,426	527,820	3,396	37,626		
7/4	27,054	554,874	3,636	41,262	24	24
7/5	12,498	567,372	3,516	44,778	762	786
7/6	37,614	604,986	1,410	46,188	822	1,608
7/7	127,770	732,756	1,764	47,952	1,416	3,024
7/8	246,228	978,984	882	48,834	864	3,888
7/9	270,660	1,249,644	5,106	53,940	2,472	6,360
7/10	193,950	1,443,594	19,026	72,966	2,928	9,288
7/11	137,496	1,581,090	21,084	94,050	1,902	11,190
7/12	113,328	1,694,418	21,828	115,878	2,838	14,028
7/13	110,400	1,804,818	28,980	144,858	4,092	18,120
7/14	111,972	1,916,790	26,340	171,198	6,276	24,396
7/15	72,942	1,989,732	15,984	187,182	7,734	32,130
7/16	66,246	2,055,978	23,526	210,708	10,920	43,050
7/17	37,680	2,093,658	22,140	232,848	9,018	52,068
7/18	24,024	2,117,682	13,926	246,774	5,988	58,056
7/19	29,178	2,146,860	14,916	261,690	5,844	63,900
7/20	27,570	2,174,430	11,610	273,300	6,666	70,566
7/21	24,498	2,198,928	6,984	280,284	11,442	82,008

-continued-

Table 17.–Page 2 of 2.

Date	Wood River		Igushik River		Togiak River	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
7/22	17,238	2,216,166	10,044	290,328	9,930	91,938
7/23	16,518	2,232,684	5,760	296,088	9,726	101,664
7/24	4,452	2,237,136	4,632	300,720	10,110	111,774
7/25	6,750	2,243,886	2,598	303,318	4,602	116,376
7/26			3,990	307,308	7,614	123,990
7/27			2,910	310,218	10,284	134,274
7/28			2,826	313,044	12,786	147,060
7/29			1,944	314,988	20,910	167,970
7/30			2,856	317,844	15,162	183,132
7/31			1,182	319,026	12,144	195,276
8/1			2,064	321,090	6,720	201,996
8/2			2,724	323,814	5,874	207,870
8/3					5,364	213,234
8/4					6,924	220,158
8/5					10,296	230,454
8/6					13,944	244,398
8/7					9,330	253,728
8/8					2,262	255,990
8/9					5,136	261,126

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, 2020.

		Hours fished (drift/set)		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
		Nushagak	Igushik	Drift	Set						
6/15	^a	0/0	0/8								
6/16	^a	0/0	0/8								
6/17	^a	0/0	0/8								
6/18	^a	0/0	0/8								
6/19	^a	0/0	0/8								
6/20	^a	0/0	0/8								
6/21	^a	0/0	0/8								
6/22	^a	0/0	0/8								
6/23	^a	0/0	0/8								
6/24	^a	0/0	0/8								
6/25		5/12	5/12	497	304	167,742	1315	14,679	1	6	183,743
6/26		5/12	5/12	449	203	140,966	624	7,441	1	0	149,032
6/27		9/19	9/19	637	305	196,175	632	6,470	0	0	203,277
6/28		8.5/24	8.5/24	612	319	244,252	481	5,940	0	0	250,673
6/29		5.5/19	5.5/19	419	227	254,213	252	5,061	1	0	259,527
6/30		5.5/12	5.5/12	455	284	193,698	231	4,209	0	0	198,138
7/1		6.5/15	6.5/15	515	314	106,081	256	3,214	3	0	109,554
7/2		10/24	10/24	382	238	39,611	245	2,334	2	0	42,192
7/3		4.5/17	4.5/17	390	259	66,524	259	3,502	0	0	70,285
7/4		7.5/24	7.5/24	334	230	196,931	277	4,778	3	0	201,989
7/5		11/24	4/24	580	436	982,648	397	11,085	0	0	994,130
7/6		14/24	7/24	629	648	1,029,953	249	7,641	0	0	1,037,843
7/7		13.5/24	8/24	573	619	927,155	128	7,478	0	0	934,761
7/8		24/24	22/24	512	343	705,171	61	7,443	1	0	712,676
7/9		22/24	14/24	432	483	549,810	78	5,314	2	0	555,204
7/10		14/24	1/24	594	481	495,614	91	6,419	2	0	502,126
7/11		13.5/24	11/24	370	472	505,812	100	5,320	5	0	511,237
7/12		15.5/24	24/24	328	539	440,471	98	5,650	5	2	446,226
7/13		24/24	24/24	309	443	272,887	96	3,468	9	3	276,463
7/14		24/24	24/24	332	360	273,837	74	3,336	15	13	277,275
7/15		24/24	24/24	335	356	274,177	54	3,193	15	20	277,459
7/16		24/24	24/24	263	377	185,537	61	2,239	10	41	187,888
7/17		24/24	24/24	245	270	126,743	45	1,741	58	69	128,656
7/18		24/24	24/24	230	269	146,944	28	2,734	58	98	149,862
7/19		24/24	24/24	122	271	65,776	44	1,166	71	169	67,226
7/20		24/24	24/24	72	218	46,025	16	995	64	147	47,247
7/21		24/24	24/24	63	177	58,186	17	956	130	223	59,512
7/22		24/24	24/24	38	159	36,965	18	603	230	506	38,322
7/23		24/24	24/24	38	149	38,506	15	491	717	318	40,047

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Table 18.—Page 2 of 2.

Date	Hours fished (drift/set)		Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Nushagak	Igushik	Drift	Set						
7/24	24/24	24/24	15	90	10,877	12	191	151	944	12,175
7/25	24/24	24/24	20	88	16,442	6	177	490	384	17,499
7/26	24/24	24/24	9	61	6,199	4	109	492	310	7,114
7/27	24/24	24/24	21	50	6,878	6	169	1,005	1,142	9,200
7/28	24/24	24/24	15	46	4,020	11	105	1,210	1,253	6,599
7/29	24/24	24/24	8	4	2,191	2	31	312	280	2,816
7/31 ^a	24/24	24/24								
8/1 ^a	24/24	24/24								
8/2	24/24	24/24	10	8	988	2	42	2,183	914	4,129
8/3	24/24	24/24	13	11	1,612	2	52	2,902	2,146	6,714
8/4	24/24	24/24	18	3	581	1	35	2,351	2,456	5,424
8/5	24/24	24/24	10	6	503	2	28	1,419	1,931	3,883
8/6	24/24	24/24	21	3	727	3	33	1,929	3,063	5,755
8/7	24/24	24/24	11	5	456	0	8	648	1,577	2,689
8/8	24/24	24/24	18	0	231	0	31	624	3,528	4,414
8/9	24/24	24/24	18	2	207	0	23	822	1,676	2,728
8/10	24/24	24/24	32	4	751	1	46	1,341	4,728	6,867
8/11	24/24	24/24	29	9	728	1	24	1,706	3,808	6,267
8/12	24/24	24/24	18	9	583	0	28	1,825	2,202	4,638
8/13	24/24	24/24	23	12	620	2	23	1,070	5,873	7,588
8/14	24/24	24/24	12	9	219	0	16	472	4,956	5,663
8/15	24/24	24/24	18	9	319	0	10	373	5,968	6,670
8/16	24/24	24/24	14	7	339	1	9	243	3,397	3,989
8/17	24/24	24/24	12	5	195	0	6	219	3,867	4,287
8/18	24/24	24/24	17	3	466	0	12	220	4,890	5,588
8/19	24/24	24/24	11	6	183	0	5	149	3,537	3,874
8/20	24/24	24/24	12	7	184	0	9	278	3,681	4,152
8/21 ^a	24/24	24/24								
8/22 ^a	24/24	24/24								
8/23 ^a	24/24	24/24								
8/27 ^a	24/24	24/24								
8/30 ^a	24/24	24/24								
8/31 ^a	24/24	24/24								
9/1 ^a	24/24	24/24								
9/5 ^a	24/24	24/24								
9/9 ^a	24/24	24/24								
9/13 ^a	24/24	24/24								
Total	1346.5/1520	1310/1602	11,177	10,435	8,860,302	6,363	136,605	26,216	76,133	9,105,619

^a Fewer than 4 permit holders or companies operated; harvest confidential.

Table 19.—Commercial fishing emergency orders, by district and statistical area, Bristol Bay westside, 2020.

Number ^a	Start date	Start time		End date	End time	Effective time
Nushagak District						
Nushagak Section						
Drift gillnet						
DLG.04	6/17	10:00 AM	to			b
DLG.10	6/25	10:00 AM	to	6/25	3:00 PM	5.0 hours
DLG.11	6/26	7:00 AM	to	6/26	12:00 PM	5.0 hours
DLG.12	6/27	7:30 AM	to	6/27	12:30 PM	5.0 hours
DLG.13	6/27	7:30 PM	to	6/27	11:30 PM	4.0 hours
DLG.13	6/28	8:00 AM	to	6/28	1:00 PM	5.0 hours
DLG.14	6/28	8:30 PM	to	6/29	12:30 AM	4.0 hours
DLG.14	6/29	9:00 AM	to	6/29	2:00 PM	5.0 hours
DLG.15	6/30	10:00 AM	to	6/30	3:30 PM	5.5 hours
DLG.16	7/1	10:30 AM	to	7/1	4:30 PM	6 hours
DLG.17	7/1	11:30 PM	to	7/2	4:30 AM	5 hours
DLG.17	7/2	11:00 AM	to	7/2	4:30 PM	5.5 hours
DLG.19	7/3	12:00 PM	to	7/3	4:30 PM	4.5 hours
DLG.20	7/4	11:00 AM	to	7/4	6:30 PM	7.5 hours
DLG.21	7/5	2:00 AM	to	7/5	6:00 AM	4.0 hours
DLG.21	7/5	1:00 PM	to	7/5	8:00 PM	7.0 hours
DLG.22	7/6	3:30 AM	to	7/6	10:30 AM	7.0 hours
DLG.23	7/6	2:30 PM	to	7/6	9:30 PM	7.0 hours
DLG.24	7/7	4:30 AM	to	7/7	10:30 AM	6.0 hours
DLG.24	7/7	3:30 PM	to	7/7	11:00 PM	7.5 hours
DLG.25	7/8	4:30 AM	to	7/8	1:00 PM	8.5 hours
DLG.25	7/8	4:00 PM	to	7/8	11:30 PM	7.5 hours
DLG.26	7/8	4:00 PM	to	7/9	4:00 PM	24.0 hours
DLG.27	7/9	4:00 PM	to	7/9	10:00 PM	6.0 hours
DLG.27	7/10	5:00 AM	to	7/10	1:00 PM	8.0 hours
DLG.27	7/10	6:00 PM	to	7/11	1:00 AM	7.0 hours
DLG.28	7/11	6:30 AM	to	7/11	1:30 PM	7.0 hours
DLG.30	7/11	6:30 PM	to	7/12	3:00 AM	8.5 hours
DLG.30	7/12	7:00 AM	to	7/12	4:00 PM	9.0 hours
DLG.31	7/12	8:30 PM	to			d
DLG.39	8/1	9:00 AM				e
Nushagak District						
Nushagak Section						
Set gillnet						
DLG.04	6/17	10:00 AM	to			b
DLG.10	6/25	3:30 AM	to	6/25	3:30 PM	12.0 hours
DLG.11	6/26	4:00 AM	to	6/26	4:00 PM	12.0 hours
DLG.12	6/27	5:00 AM	to	6/27	5:00 PM	12.0 hours

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Table 19.–Page 2 of 4.

Number ^a	Start date	Start time		End date	End time	Effective time	
DLG.13	6/27	5:00 PM	to	6/28	6:00 PM	25.0 hours	^c
DLG.14	6/28	6:00 PM	to	6/29	7:00 PM	25.0 hours	^c
DLG.15	6/30	7:30 AM	to	6/30	7:30 PM	12.0 hours	
DLG.16	7/1	9:00 AM	to	7/1	9:00 PM	12.0 hours	
DLG.17	7/1	9:00 PM	to	7/2	10:00 PM	25.0 hours	^c
DLG.18	7/2	10:00 PM	to	7/3	4:00 PM	18.0 hours	^c
DLG.19	7/3	4:00 PM	to	7/3	4:30 PM	.5 hours	^c
DLG.20	7/3	11:30 PM	to	7/4	6:30 PM	19.0 hours	
DLG.21	7/4	6:30 PM	to	7/5	6:30 PM	24.0 hours	^c
DLG.22	7/5	6:30 PM	to	7/6	8:00 PM	25.5 hours	^c
DLG.24	7/6	8:00 PM	to				^{c,d}
DLG.39	8/1	9:00 AM					^e
Nushagak District							
Igushik Section							
Drift gillnet							
DLG.04	6/17	10:00 AM	to				^b
DLG.10	6/25	10:00 AM	to	6/25	3:00 PM	5.0 hours	
DLG.11	6/26	7:00 AM	to	6/26	12:00 PM	5.0 hours	
DLG.12	6/27	7:30 AM	to	6/27	12:30 PM	5.0 hours	
DLG.13	6/27	7:30 PM	to	6/27	11:30 PM	4.0 hours	
DLG.13	6/28	8:00 AM	to	6/28	1:00 PM	5.0 hours	
DLG.14	6/28	8:30 PM	to	6/29	12:30 AM	4.0 hours	
DLG.14	6/29	9:00 AM	to	6/29	2:00 PM	5.0 hours	
DLG.15	6/30	10:00 AM	to	6/30	3:30 PM	5.5 hours	
DLG.16	7/1	10:30 AM	to	7/1	4:30 PM	6 hours	
DLG.17	7/1	11:30 PM	to	7/2	4:30 AM	5 hours	
DLG.17	7/2	11:00 AM	to	7/2	4:30 PM	5.5 hours	
DLG.19	7/3	12:00 PM	to	7/3	4:30 PM	4.5 hours	
DLG.20	7/4	11:00 AM	to	7/4	6:30 PM	7.5 hours	
DLG.21	7/5	2:00 AM	to	7/5	6:00 AM	4.0 hours	
DLG.22	7/6	3:30 AM	to	7/6	10:30 AM	7.0 hours	
DLG.26	7/8	4:00 PM	to	7/9	4:00 PM	24.0 hours	
DLG.27	7/9	4:00 PM	to	7/9	10:00 PM	6.0 hours	^c
DLG.27	7/10	5:00 AM	to	7/10	1:00 PM	8.0 hours	
DLG.27	7/10	6:00 PM	to	7/11	1:00 AM	7.0 hours	
DLG.33	7/14	1:00 PM	to				^d
DLG.39	8/1	9:00 AM					^e

-continued-

Table 19.—Page 3 of 4.

Number ^a	Start date	Start time		End date	End time	Effective time
Nushagak District						
Igushik Section						
Set gillnet						
DLG.03	6/15	8:30 AM	to	6/15	4:30 PM	8.0 hours
DLG.03	6/16	9:30 AM	to	6/16	5:30 PM	8.0 hours
DLG.03	6/17	10:00 AM	to	6/17	6:00 PM	8.0 hours
DLG.04	6/17	10:00 AM				b
DLG.04	6/18	10:30 AM	to	6/18	6:30 PM	8.0 hours
DLG.04	6/19	11:30 AM	to	6/19	7:30 PM	8.0 hours
DLG.04	6/20	12:00 PM	to	6/20	8:00 PM	8.0 hours
DLG.07	6/21	1:00 PM	to	6/21	9:00 PM	8.0 hours
DLG.07	6/22	1:30 PM	to	6/22	9:30 PM	8.0 hours
DLG.08	6/23	2:30 PM	to	6/23	10:30 PM	8.0 hours
DLG.08	6/24	3:30 PM	to	6/24	11:30 PM	8.0 hours
DLG.10	6/25	3:30 AM	to	6/25	3:30 PM	12.0 hours
DLG.11	6/26	4:00 AM	to	6/26	4:00 PM	12.0 hours
DLG.12	6/27	5:00 AM	to	6/27	5:00 PM	12.0 hours
DLG.13	6/27	5:00 PM	to	6/28	6:00 PM	25.0 hours ^c
DLG.14	6/28	6:00 PM	to	6/29	7:00 PM	25.0 hours ^c
DLG.15	6/30	7:30 AM	to	6/30	7:30 PM	12.0 hours
DLG.16	7/1	9:00 AM	to	7/1	9:00 PM	12.0 hours
DLG.17	7/1	9:00 PM	to	7/2	10:00 PM	25.0 hours ^c
DLG.18	7/2	10:00 PM	to	7/3	4:00 PM	18.0 hours ^c
DLG.19	7/3	4:00 PM	to	7/3	4:30 PM	0.5 hours ^c
DLG.20	7/3	11:30 PM	to	7/4	6:30 PM	19.0 hours
DLG.21	7/4	6:30 PM	to	7/5	6:30 PM	24.0 hours ^c
DLG.22	7/5	6:30 PM	to	7/6	8:00 PM	25.5 hours ^c
DLG.24	7/6	8:00 PM	to	7/7	8:00 PM	24.0 hours ^c
DLG.25	7/7	8:00 PM	to	7/8	8:00 PM	24.0 hours ^c
DLG.26	7/8	8:00 PM	to			c,d
DLG.39	8/1	9:00 AM				e
Togiak						
Drift and set gillnet						
DLG.05	6/25	9:00 AM	to	6/26	9:00 AM	24.0 hours ^f
DLG.37	7/24	9:00 AM	to	7/25	9:00 AM	24.0 hours ^g
DLG.38	7/31	9:00 AM	to	8/2	9:00 AM	48.0 hours ^g
DLG.40	8/7	9:00 AM	to	8/9	9:00 AM	48.0 hours ^g
DLG.41	8/14	9:00 AM	to	8/16	9:00 AM	48.0 hours ^g

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Table 19.–Page 4 of 4.

Number ^a	Start date	Start time		End date	End time	Effective time
WRSHA						
Drift gillnet						
DLG.28	7/10	6:00 PM	to	7/10	11:00 PM	5.0 hours
DLG.28	7/11	6:00 AM	to	7/11	11:00 AM	5.0 hours
DLG.30	7/11	7:00 PM	to	7/12	12:30 AM	5.5 hours
DLG.30	7/12	7:00 AM	to	7/12	12:30 PM	5.5 hours
DLG.31	7/12	12:30 PM	to	7/13	1:30 PM	25.0 hours ^c
DLG.32	7/13	1:30 PM	to	7/14	2:30 PM	25.0 hours ^c
DLG.33	7/14	2:30 PM	to	7/15	3:30 PM	25.0 hours ^c
DLG.34	7/15	3:30 PM	to	7/20	5:00 PM	121.5 hours ^c
DLG.35			to	7/19	12:00 PM	(- 29.0 hours) ^h

^a Prefix code on emergency orders indicate where announcement originated (“DLG” for Dillingham field office).

^b Restricts mesh size.

^c Extends current fishing period.

^d Commercial fishing open until further notice.

^e Removes mesh size restriction.

^f Reduces the weekly fishing schedule in Togiak River Section.

^g Extends the weekly fishing schedule in Togiak River Section.

^h Adjusts prior fishing period.

Table 20.—Commercial salmon catch by date and species, in numbers of fish, Togiak District, Bristol Bay, 2020.

Date ^a	Deliveries		Sockeye	Chinook	Chum	Pink	Coho	Total
	Drift	Set						
6/15 ^b								
6/16 ^b								
6/17 ^b								
6/18	0	3	14	1	6	0	0	21
6/22	4	6	106	9	44	0	0	159
6/23	4	13	232	6	86	0	0	324
6/24	2	12	309	7	72	0	0	388
6/25	2	6	134	10	489	1	0	634
6/26	2	2	109	4	402	0	0	515
6/29	15	27	1,574	77	547	3	0	2,201
6/30	21	47	2,110	67	932	2	0	3,111
7/1	20	51	2,333	41	1,787	5	0	4,166
7/2	13	43	1,541	43	2,116	9	0	3,709
7/3	7	38	1,465	22	1,168	3	0	2,658
7/4	6	27	1,697	26	1,075	7	0	2,805
7/6	22	63	5,985	27	1,331	6	0	7,349
7/7	21	88	9,710	53	2,314	4	0	12,081
7/8	40	83	12,488	68	2,687	5	0	15,248
7/9	41	82	12,381	30	2,272	13	0	14,696
7/10	33	99	12,341	25	2,146	10	0	14,522
7/11	32	69	13,988	20	1,959	6	0	15,973
7/13	63	117	27,159	40	3,386	13	0	30,598
7/14	69	142	22,540	33	3,347	23	0	25,943
7/15	67	128	17,586	20	3,785	19	0	21,410
7/16	24	68	6,591	20	2,309	21	0	8,941
7/17	18	47	7,821	13	1,769	17	0	9,620
7/18 through 8/28 ^b								

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

^b Information confidential because fewer than three permit holders or processors involved in fishery.

Table 21.–Commercial herring sac roe and spawn-on-kelp buyers in Togiak District, 2020.

Operator/Buyer	Base of operation	Product purchased		
		Sac Roe		Spawn-on-Kelp
		Gillnet	Purse Seine	
1 Icicle Seafoods	P/Vs Gordon Jensen	X	X	

Table 22.–Daily observed estimates in short tons of herring, by index area, Togiak District, 2020.

Date	Start time	Survey rating ^b	Miles of spawn	Estimated biomass by index area ^a													Daily total
				NUS	KUK	MET	NVK	UGL	TOG	TNG	MTG	OSK	PYR	CPN	HAG	WAL	
27-Apr	10:00	1.0	0.0	0	0	0	0	0	0	0	NS	NS	NS	NS	0	NS	0
30-Apr	13:30	3.5	0.0	0	0	0	0	0	0	NS	NS	NS	NS	NS	NS	NS	0
3-May	11:00	1.6	3.0	0	51	1,595	828	448	1,645	999	117	294	NS	NS	30,917	NS	36,894
5-May	11:00	2.6	13.7	0	3,566	0	1,170	1,588	4,125	914	1,726	4,021	NS	NS	NS	NS	17,110
6-May	14:30	1.9	12.5	3,262	6,420	6,940	3,479	7,500	51,499	18,956	5,011	9,636	119	NS	6,620	NS	119,442
12-May	10:00	4.0	0.0	0	9,137	18	590	0	96	NS	NS	NS	NS	NS	NS	NS	9,841
13-May	11:30	2.5	0.0	0	39,248	307	145	2,211	908	1,091	122	3,781	NS	NS	244	NS	48,057
15-May	14:30	2.3	0.8	0	48,654	30	0	0	102	3,711	449	3,305	741	0	NS	NS	56,992
Total linear miles of spawn			30.0	Peak biomass estimate													119,442

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.

Table 23.—Emergency order (EO) commercial fishing periods for herring sac roe and spawn-on-kelp, Togiak District, 2020.

EO #	Area ^a					Date and Time
Herring sac roe gillnet						
DLG-02	Egg Island Section		5/3	3:00 PM	to	End of season
DLG-03	Open area to include from Right Hand Pt. to 58° 50.50' north latitude (near Mud Bay in Nunavachak Bay).	Area change	5/7	9:00 AM	to	End of season
DLG-06	Close Egg Island Section for 24 hours. Reopen Egg Island Section and area east to 159° 30.00' west longitude.	Area change	5/7	9:00 AM	to	9:00 am May 8
DLG-07	Close all gillnet fishing and reopen in Egg Island Section from 9:00 AM until further notice	Area change	5/13	2:45 PM	to	End of season
Herring sac roe purse seine						
DLG-01	Anchor Pt. to Right Hand Pt., Togiak Reef to Cape Newenham		5/3	3:00 PM	to	End of season
DLG-04	Close from Right Hand Pt. to 58° 50.50' north latitude (near Mud Bay in Nunavachak Bay).	Area change	5/7	6:00 AM	to	End of season
DLG-05	Open from Right Hand Pt. east to 159° 30.00' west longitude for 24 hours	Area change	5/7	9:00 AM	to	9:00 am May 8
DLG-08	Open all areas from 2:45 PM May 13 until 9:00 AM May 14. Then close Egg Island Section; all other areas remain open until further notice.	Area change	5/13	2:45 PM	to	End of season
Herring spawn on kelp ^b						

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

^b There was no market for spawn on kelp and therefore no commercial fishery.

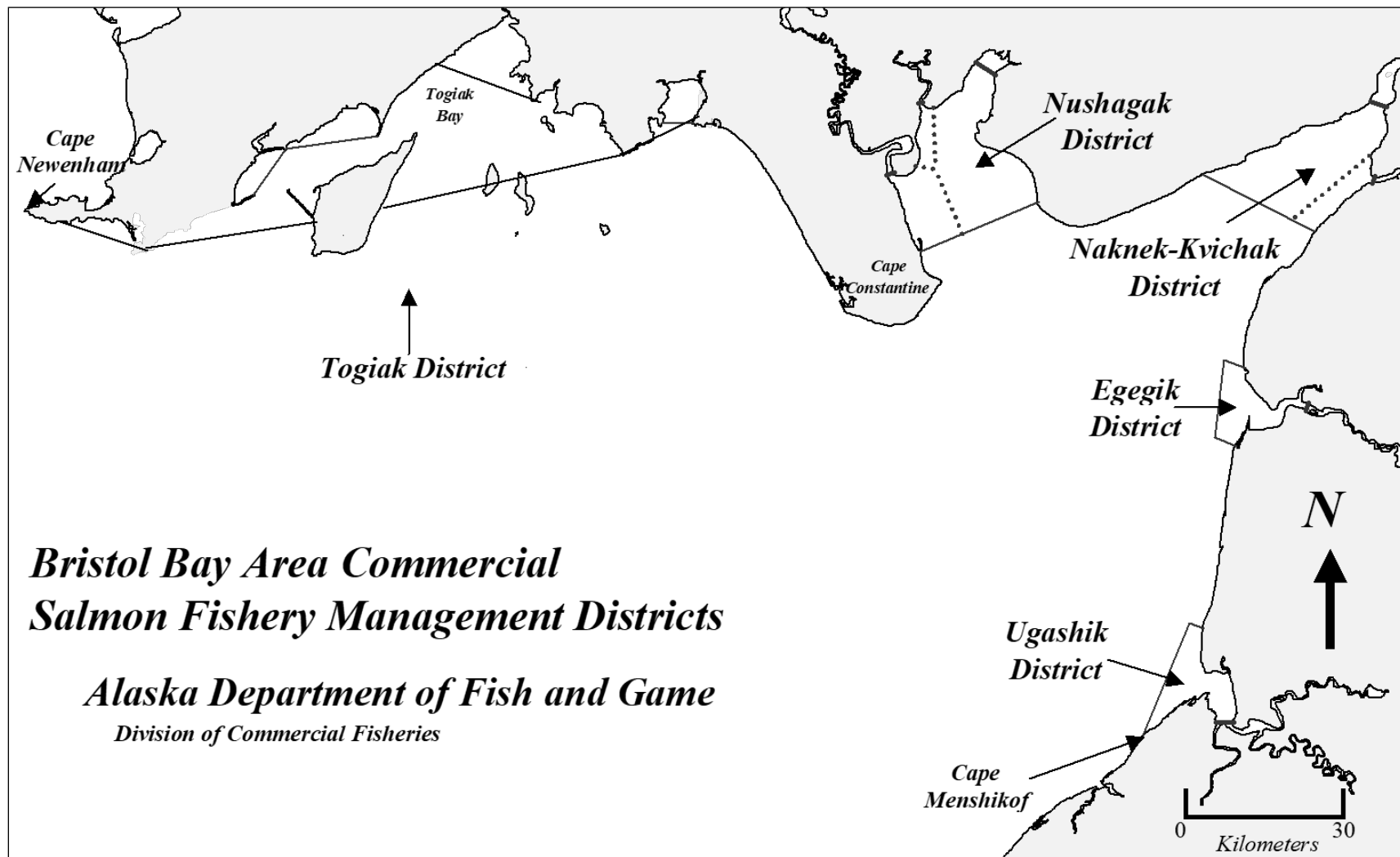


Figure 1.—Bristol Bay area commercial fisheries salmon management districts.

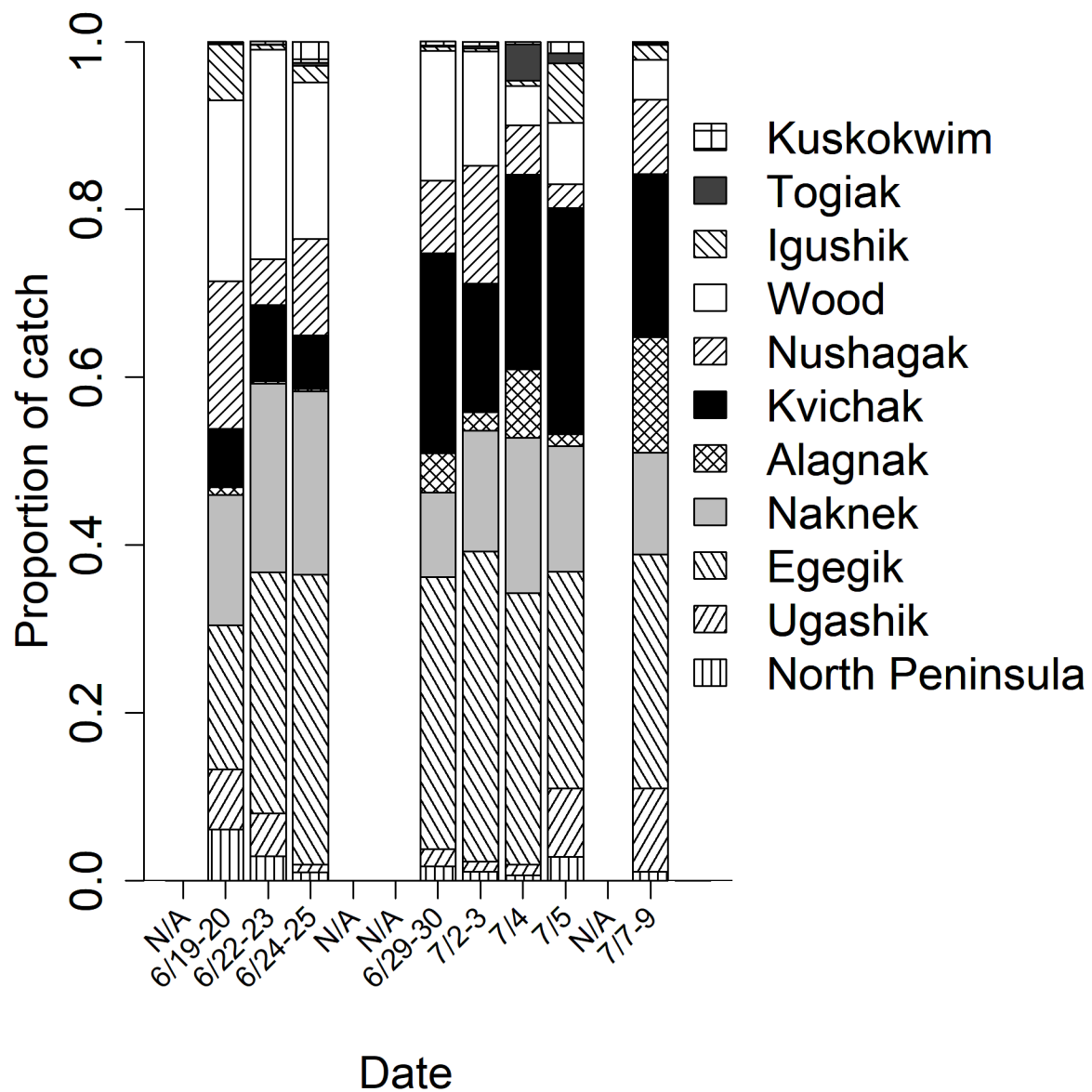


Figure 2.—Stock composition estimates for sockeye salmon sampled from the Port Moller test fishery, 2020.

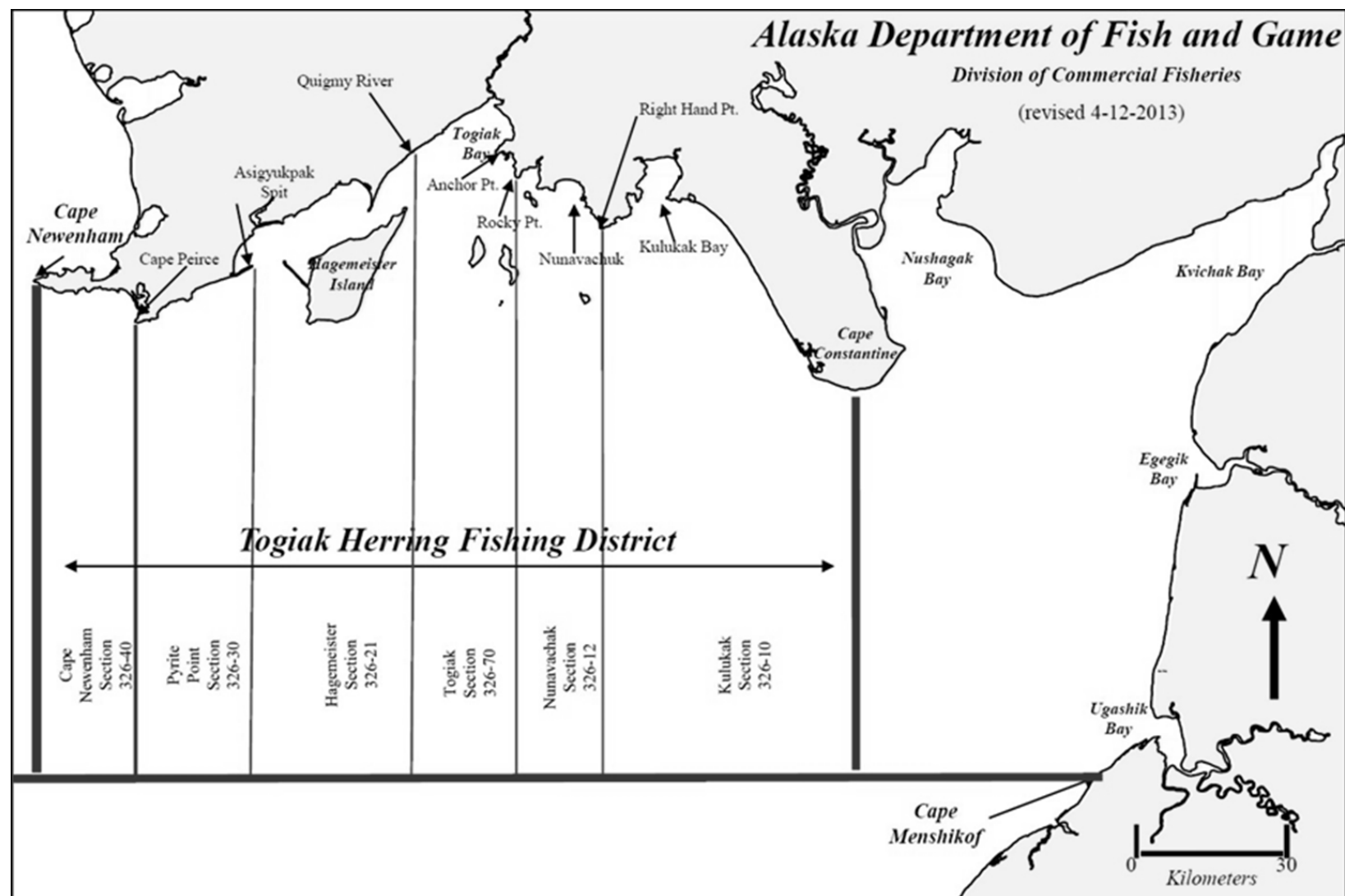


Figure 3.—Togiak Herring District, Bristol Bay.

APPENDIX A: SALMON

Appendix A1.—Escapement goal ranges and actual counts of sockeye salmon by river system, in thousands of fish, Bristol Bay, 2000–2020.

Year	Kvichak River			Naknek River ^a		
	Range		Actual	Range		Actual
	Lower	Upper		Lower	Upper	
2000	6,000	10,000	1,828	800	1,400	1,375
2001	2,000	10,000	1,095	800	2,000	1,830
2002	2,000	10,000	704	800	2,000	1,264
2003	2,000	10,000	1,687	800	2,000	1,831
2004	2,000	10,000	5,500	800	2,000	1,939
2005	2,000	10,000	2,320	800	2,000	2,745
2006	2,000	10,000	3,068	800	2,000	1,953
2007	2,000	10,000	2,810	800	2,000	2,945
2008	2,000	10,000	2,758	800	1,400	2,473
2009	2,000	10,000	2,266	800	1,400	1,170
2010	2,000	10,000	4,207	800	1,400	1,464
2011	2,000	10,000	2,264	800	1,400	1,177
2012	2,000	10,000	4,164	800	1,400	900
2013	2,000	10,000	2,089	800	1,400	938
2014	2,000	10,000	4,459	800	1,400	1,474
2015	2,000	10,000	7,342	800	2,000	1,921
2016	2,000	10,000	4,463	800	2,000	1,692
2017	2,000	10,000	3,163	800	2,000	1,900
2018	2,000	10,000	4,399	800	2,000	2,221
2019	2,000	10,000	2,371	800	2,000	2,911
2020	2,000	10,000	4,031	800	2,000	4,112
20-Year avg.			3,148			1,806
2000–09 Avg.			2,404			1,953
2010–19 Avg.			3,892			1,660

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Year	Egegik River			Ugashik River		
	Range		Actual	Range		Actual
	Lower	Upper		Lower	Upper	
2000	800	1,400	1,032	500	1,200	620
2001	800	1,400	969	500	1,200	834
2002	800	1,400	1,036	500	1,200	892
2003	800	1,400	1,152	500	1,200	759
2004	800	1,400	1,290	500	1,200	776
2005	800	1,400	1,622	500	1,200	779
2006	800	1,400	1,465	500	1,200	978
2007	800	1,400	1,433	500	1,200	2,599
2008	800	1,400	1,260	500	1,200	569
2009	800	1,400	1,146	500	1,200	1,346
2010	800	1,400	927	500	1,200	805
2011	800	1,400	961	500	1,200	1,030
2012	800	1,400	1,234	500	1,200	671
2013	800	1,400	1,114	500	1,200	898
2014	800	1,400	1,382	500	1,200	640
2015	800	2,000	2,161	500	1,400	1,565
2016	800	2,000	1,837	500	1,400	1,635
2017	800	2,000	2,601	500	1,400	1,186
2018	800	2,000	1,608	500	1,400	1,168
2019	800	2,000	2,340	500	1,400	1,547
2020	800	2,000	2,389	500	1,400	1,745
20-Year avg.			1,429			1,065
2000–09 Avg.			1,241			1,015
2010–19 Avg.			1,617			1,115

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Year	Wood River			Igushik River		
	Range		Actual	Range		Actual
	Lower	Upper		Lower	Upper	
2000	700	1,200	1,300	150	250	413
2001	700	1,500	1,459	150	300	410
2002	700	1,500	1,284	150	300	123
2003	700	1,500	1,460	150	300	194
2004	700	1,500	1,543	150	300	110
2005	700	1,500	1,497	150	300	366
2006	700	1,500	4,008	150	300	305
2007	700	1,500	1,528	150	300	415
2008	700	1,500	1,725	150	300	1,055
2009	700	1,500	1,319	150	300	514
2010	700	1,500	1,804	150	300	518
2011	700	1,500	1,098	150	300	421
2012	700	1,500	764	150	300	193
2013	700	1,500	1,183	150	300	387
2014	700	1,500	2,765	150	300	341
2015	700	1,800	1,941	150	400	651
2016	700	1,800	1,310	150	400	469
2017	700	1,800	4,274	150	400	579
2018	700	1,800	7,507	150	400	771
2019	700	1,800	2,073	150	400	256
2020	700	1,800	2,244	150	400	324
20-Year avg.			2,092	425		
2000–09 Avg.			1,712	391		
2010–19 Avg.			2,472	459		

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Year	Nushagak River			Togiak River		
	Range		Actual ^c	Range		Actual
	Lower ^b	Upper		Lower	Upper	
2000	235	760	446	100	200	312
2001	340	760	897	100	200	297
2002	235	760	349	100	200	162
2003	340	760	642	100	200	232
2004	340	760	544	100	200	129
2005	340	760	1,107	100	200	149
2006	340	760	541	100	200	312
2007	340	760	518	120	270	270
2008	340	760	493	120	270	206
2009	340	760	484	120	270	314
2010	340	760	469	120	270	188
2011	340	760	428	120	270	191
2012	340	760	432	120	270	203
2013	370	840	895	120	270	128
2014	370	840	618	120	270	152
2015	370	900	797	120	270	219
2016	370	900	1,226	120	270	200
2017	370	900	2,852	120	270	195
2018	370	900	1,247	120	270	512
2019	370	900	1,459	120	270	351
2020	370	900	1,228	120	270	261
20-Year avg.			822			236
2000–09 Avg.			602			238
2010–19 Avg.			1,042			238

^a An optimal escapement goal of up to 2.0 million sockeye was set by the BOF in 2001, when fishing in the Naknek River SHA.

^b The optimum escapement goal of 235,000 sockeye was set by the BOF in 1999.

^c Nushagak River sonar escapement estimates prior to 2006 were adjusted due to a change in sonar technology (Buck et al. 2012).

Appendix A2.—Salmon entry permit registration by gear and residency, Bristol Bay, 2000–2020.

Year	Drift gillnet ^a						Set gillnet ^a						Total
	Alaska resident	Non- resident	Drift total	Permits fished	% Fished	Interim use	Alaska resident	Non- resident	Set total	Permits fished	% Fished	Interim use	Drift and set ^b
2000	945	945	1,890	1,823	95%	38	735	277	1,012	921	90%	6	2,902
2001	958	925	1,883	1,566	82%	24	729	281	1,010	834	82%	2	2,893
2002	945	933	1,878	1,183	62%	16	717	289	1,006	680	67%	2	2,884
2003	923	944	1,867	1,389	74%	7	713	288	1,001	714	71%	1	2,868
2004	912	948	1,860	1,426	77%	3	703	286	989	797	81%	1	2,849
2005	895	967	1,862	1,526	82%	3	688	300	988	829	84%	1	2,850
2006	893	966	1,859	1,567	84%	1	683	302	985	844	86%	0	2,844
2007	881	981	1,862	1,621	87%	1	672	311	983	836	85%	0	2,845
2008	887	976	1,863	1,636	88%	0	678	302	980	850	87%	0	2,843
2009	864	999	1,863	1,642	88%	0	674	307	981	855	87%	0	2,844
2010	866	997	1,863	1,731	93%	0	672	311	983	861	88%	0	2,846
2011	1,005	857	1,862	1,747	94%	0	660	321	981	878	90%	0	2,843
2012	849	1,013	1,862	1,740	93%	0	654	325	979	883	90%	0	2,841
2013	862	1,000	1,862	1,709	92%	0	646	332	978	854	87%	0	2,840
2014	848	1,015	1,863	1,751	94%	0	636	341	977	881	90%	0	2,840
2015	834	1,030	1,864	1,744	94%	0	639	336	975	885	91%	0	2,839
2016	826	1,038	1,864	1,715	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
20-Year avg.	886	980	1,866	1,637	88%	5	672	313	984	846	1	1	2,850
2000–09 Avg.	910	958	1,869	1,538	82%	9	699	294	994	816	1	1	2,862
2010–19 Avg.	861	1,002	1,863	1,737	93%	0	645	331	975	875	1	0	2,838

^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, 2000–2020.

Year	Naknek- Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
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	26,261,802
2005	6,728,469	8,015,950	2,216,635	7,096,031	465,094	24,522,179
2006	7,151,741	7,408,983	2,429,637	10,876,552	626,442	28,493,355
2007	9,022,511	6,495,908	5,026,615	8,404,111	816,581	29,765,726
2008	10,381,844	7,403,885	2,334,022	6,903,157	651,315	27,674,223
2009	8,514,944	11,527,462	2,555,263	7,730,168	559,442	30,887,279
2010	10,858,209	5,070,816	4,031,832	8,424,030	667,850	29,052,737
2011	9,016,321	4,810,362	2,643,495	4,886,552	744,626	22,101,356
2012	10,152,917	5,062,390	2,418,653	2,663,014	622,909	20,919,883
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	29,127,035
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
20-Year avg.	8,433,034	7,190,984	2,871,760	7,915,926	623,378	27,118,129
2000–09 Avg.	6,128,962	6,786,535	2,304,287	6,772,146	610,095	22,767,725
2010–19 Avg.	10,737,106	7,595,433	3,439,233	9,059,705	636,660	31,468,532

^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, 2000–2020.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2000	1,077	1,067	893	12,120	7,862	23,019
2001	995	967	1,021	11,746	1,021	15,750
2002	1,002	284	623	40,039	2,801	44,749
2003	611	135	478	43,485	3,231	47,940
2004	1,496	1,632	891	96,759	9,310	114,280 ^a
2005	1,458	486	1,818	62,764	10,759	77,285
2006	2,333	915	2,608	84,881	16,225	106,962
2007	1,520	528	1,473	51,831	7,769	63,121
2008	1,344	416	1,191	18,968	3,087	25,006
2009	1,026	308	948	24,693	4,602	31,577
2010	1,060	223	460	26,056	5,553	33,352
2011	1,962	567	372	26,927	6,731	36,559
2012	2,306	282	212	11,952	4,829	19,581
2013	1,360	144	52	10,213	2,718	14,487
2014	1,648	461	83	11,862	1,841	15,895
2015	2,926	753	226	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
20-Year avg.	1,727	802	974	34,920	5,325	40,256
2000–09 Avg.	1,286	674	1,194	44,729	6,667	48,379
2010–19 Avg.	2,168	930	753	25,111	3,983	32,945

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

Appendix A5.—Chum salmon commercial catch by district, in numbers of fish, Bristol Bay, 2000–2020.

Year	Naknek- Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2000	68,218	38,777	36,349	114,456	140,175	397,975
2001	16,526	33,579	43,404	526,739	211,701	831,949
2002	19,189	23,516	35,792	276,787	112,987	468,271
2003	34,481	37,116	52,908	740,372	68,154	933,031
2004	29,972	75,061	49,358	458,916	94,025	732,481
2005	204,777	62,029	39,513	966,069	124,695	1,397,083
2006	457,855	153,777	168,428	1,240,235	223,364	2,243,659
2007	383,927	157,991	242,025	953,292	202,486	1,939,721
2008	237,260	92,901	135,292	492,341	301,967	1,259,761
2009	255,520	118,212	64,974	745,161	141,375	1,325,242
2010	337,911	57,324	62,987	424,234	118,767	1,001,223
2011	218,710	39,246	34,287	296,909	113,234	702,386
2012	133,959	35,375	31,352	272,163	206,614	679,463
2013	272,754	36,792	32,624	586,117	209,946	1,138,233
2014 ^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
20-year avg.	202,027	75,884	68,585	595,858	162,577	1,106,191
2000–09 Avg.	170,773	79,296	86,804	651,437	162,093	1,152,917
2010–19 Avg.	233,281	72,472	50,366	540,280	163,062	1,059,464

^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, 2000–2020.

Year	Naknek- Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2000	19,659	32	4	38,309	695	58,699
2001	23	0	0	308	97	428
2002	10	1	1	204	311	527
2003	24	0	0	188	32	244
2004 ^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
20-Year Avg.	13,506	1,163	290	425,620	69,686	510,266
2000–09 Avg.	14,650	353	42	48,392	45,091	108,528
2010–19 Avg.	12,362	1,972	539	802,849	94,282	912,004

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, 2000–2020.

Year	Naknek- Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2000	952	13,166	1,269	112,852	2,758	130,997
2001	3	12,603	976	3,218	284	17,084
2002	0	7,099	464	93	754	8,410
2003	42	40,577	994	583	1,047	43,243
2004	2,142	2,324	4,744	47,706	15,463	72,379
2005	3,314	20,611	8,162	42,456	8	74,551
2006	5,163	26,788	3,087	44,385	449	79,872
2007	2,180	18,111	1,954	29,578	157	51,980
2008	7,059	29,682	2,220	76,932	1,159	117,052
2009	732	10,594	2,602	35,171	9,209	58,308
2010	901	9,984	407	72,909	24,065	108,266
2011	633	440	84	4,712	7,605	13,474
2012	431	2,493	0	97,382	15,977	116,283
2013	467	812	479	124,182	11,420	137,360
2014	646	11,473	435	242,604	32,134	287,292
2015	1,253	730	2,533	6,614	26,080	37,210
2016	1,110	546	171	79,538	9,346	90,711
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
20-Year avg.	2,237	13,084	1,639	65,280	14,172	96,412
2000–09 Avg.	2,159	18,156	2,647	39,297	3,129	65,388
2010–19 Avg.	2,316	8,012	630	91,263	25,215	127,436

Appendix A8.—Total salmon commercial catch by district, in numbers of fish, Bristol Bay, 2000–2020.

Year	Naknek- Kvichak	Egegik	Ugashik	Nushagak	Togiak	Total
2000	4,818,024	7,082,486	1,577,446	6,645,252	946,486	21,069,694
2001	5,299,384	2,919,874	526,114	5,277,729	1,032,116	15,055,217
2002	1,439,831	4,641,902	1,610,548	3,157,042	350,596	11,199,919
2003	3,385,814	2,369,459	1,804,199	7,452,178	778,472	15,790,122
2004 ^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
20-Year avg.	8,698,003	7,291,288	2,913,947	8,718,807	827,239	28,507,832
2000–09 Avg.	6,621,862	6,939,174	2,389,070	7,447,752	778,986	24,329,870
2010–19 Avg.	10,981,759	7,678,613	3,491,311	10,116,968	880,319	33,103,590

^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, 2000–2020.

Year	Naknek-Kvichak						Nushagak												Total	
	Setnet sec.			NRSHA ^a		Egegik		Ugashik		Setnet sec.			WRSHA ^b		Togiak					
	Drift	Nak.	Kvi.	Drift	Set	Drift	Set	Drift	Set	Drift	Nush.	Igushik	Drift	Set	Drift	Set	Drift	Set		
2000	84	11	5			84	16	87	13	77	17	6	68	32	57	43	80	20		
2001	82	16	2	74 ^c	26 ^c	86	14	80	20	77	18	5			66	34	80	20		
2002				64 ^c	36 ^c	85	15	88	12	77	22	1	67	33	62	38	79	21		
2003	91	9	0	65 ^c	35 ^c	81	19	89	11	83	15	2			63	37	79	21		
2004	79	11	10	88	12	86	14	88	12	84	15	1			55	45	79	21		
2005				81	19	82	18	87	13	84	14	2			56	44	66	34		
2006	86	8	5	81	19	84	16	88	12	87	11	2			53	47	85	15		
2007	82	12	6	80	12	84	16	92	8	80	17	3			59	41	81	19		
2008	81	12	7			85	15	92	8	79	16	5			60	40	82	18		
2009	80	12	9			85	15	87	13	76	20	4			60	40	82	18		
2010	81	10	9			84	16	90	10	78	17	6	71	29	61	39	82	18		
2011	84	10	7			83	17	87	13	76	16	7			60	40	81	19		
2012	85	7	8			83	17	90	10	67	27	6	45	55	67	33	73	27		
2013	84	9	7			85	15	90	10	78	17	5			65	35	84	16		
2014	83	9	8			89	11	82	18	73	16	7			58	42	82	18		
2015	84	8	8			81	19	91	9	69	22	9			50	50	81	19		
2016	83	8	9			82	18	91	9	67	22	11			56	44	81	19		
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	0	3	51	49	81	19		
2019	77	14	9			81	19	66	34	78	18	3		2	49	51	79	21		
2020	80	12	8			86	14	74	26	69	26	3	3		47	53	79	21		
2000–09 Avg.	83	11	6	76	23	84	16	88	12	80	17	3	68	33	59	41	79	21		
2010–19 Avg.	80	11	9	84	16	84	17	86	14	74	19	6	39	22	57	43	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, 2000–2020.

Year	Naknek- Kvichak ^a	Egegik ^b	Ugashik ^c	Nushagak ^d	Togiak ^e	Total
2000	3,654,568	1,032,138	638,420	2,159,628 ^f	390,080	7,874,834
2001	3,194,708	968,872	866,368	2,765,440 ^f	338,616 ^g	8,134,004
2002	2,303,463	1,036,092	905,584	1,755,993 ^f	199,507	6,200,639
2003	5,627,974 ^h	1,152,120	790,202	2,295,963 ^f	261,851 ^g	10,128,110
2004	12,836,100 ^h	1,290,144	815,104	2,196,864 ^f	154,681 ^g	17,292,893
2005	9,283,980 ^h	1,621,734	799,612	2,968,962 ^f	155,778 ^g	14,830,066
2006	6,795,420 ^h	1,465,158	1,003,158	4,861,780 ^f	312,126 ⁱ	14,437,642
2007	8,221,926 ^h	1,432,500	2,599,186	2,461,579 ^f	269,646 ⁱ	14,984,837
2008	7,411,104 ^h	1,259,568	596,332	3,271,926 ^f	205,680 ⁱ	12,744,610
2009	4,406,424 ^h	1,146,276	1,364,338	2,317,569 ^f	313,946 ⁱ	9,548,553
2010	6,859,068 ^h	927,054	830,886	2,791,080 ^f	188,298 ⁱ	11,596,386
2011	4,325,220 ^h	961,200	1,029,853	1,947,577	190,970 ⁱ	8,454,820
2012	5,926,503	1,233,900	695,018	1,389,975	203,148 ⁱ	9,448,544
2013	4,122,686	1,113,630	898,110	2,465,791	128,118 ⁱ	8,728,335
2014	6,133,492	1,382,466	640,158	3,723,697	151,934 ⁱ	12,031,747
2015	15,033,216	2,160,792	1,564,638	3,389,330	218,700 ⁱ	22,366,676
2016	7,930,458	1,837,260	1,635,270	2,459,450	200,046 ⁱ	14,062,484
2017	7,105,200 ^h	2,600,982	1,186,446	7,705,277	195,330 ⁱ	18,793,235
2018	8,201,286 ^h	1,608,354	1,167,792	9,525,486	511,770 ⁱ	21,014,688
2019	6,103,170 ^h	2,340,210	1,547,748	3,038,781	351,846 ⁱ	13,381,755
2020	10,529,646 ^h	2,389,728	1,745,940	3,795,795	261,126 ⁱ	18,722,235
20-Year avg.	6,773,798	1,428,523	1,078,711	3,274,607	247,104	12,802,743
2000–09 Avg.	6,373,567	1,240,460	1,037,830	2,705,570	260,191	11,617,619
2010–19 Avg.	7,174,030	1,616,585	1,119,592	3,843,644	234,016	13,987,867

^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.

ⁱ Togiak River tower count.

Appendix A11.—Inshore total run of sockeye salmon by district, in numbers of fish, Bristol Bay, 2000–2020.

Year	Naknek-Kvichak	Egegik	Ugashik	Nushagak ^a	Togiak	Total
2000	8,381,629	8,061,535	2,177,210	8,526,836	1,185,076	28,332,286
2001	8,475,246	3,841,534	1,346,877	7,500,240	1,148,712	22,312,609
2002	3,722,401	5,646,466	2,478,818	4,595,417	433,250	16,876,352
2003	8,976,478	3,443,622	2,539,136	8,961,928	967,859	24,889,023
2004	17,551,170	11,499,371	3,954,333	8,300,912	591,915	41,897,701
2005	16,012,449	9,637,684	3,016,247	10,064,993	620,872	39,352,245
2006	13,947,161	8,874,141	3,432,795	15,738,332	938,568	42,930,997
2007	17,244,437	7,928,408	7,625,801	10,865,690	1,086,227	44,750,563
2008	17,792,948	8,663,453	2,930,354	10,175,083	856,995	40,418,833
2009	12,921,368	12,673,738	3,919,601	10,047,737	873,388	40,435,832
2010	17,717,277	5,997,870	4,862,718	11,215,110	856,148	40,649,123
2011	13,341,541	5,771,562	3,673,348	6,834,129	935,596	30,556,176
2012	16,079,420	6,296,290	3,113,671	4,052,989	826,057	30,368,427
2013	9,148,587	5,950,083	3,070,893	5,648,098	621,670	24,439,331
2014	19,924,521	8,310,816	2,147,598	10,171,331	595,192	41,149,458
2015	31,565,141	10,631,593	7,038,933	8,983,050	590,604	58,809,321
2016	21,396,703	10,576,959	8,265,501	10,569,247	845,843	51,654,253
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
20-Year avg.	15,215,891	8,608,420	3,950,525	11,191,456	871,791	39,838,083
2000–09 Avg.	12,502,529	8,026,995	3,342,117	9,477,717	870,286	34,219,644
2010–19 Avg.	17,929,253	9,189,846	4,558,934	12,905,194	873,296	45,456,522

^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, 2000–2020.

Year	Catch	Escapement				Total	Total run
		Kvichak ^a	Alagnak		Naknek ^a		
2000	4,728,095	1,827,780	451,300 ^b		1,375,488	3,654,568	8,381,629
2001	5,281,837	1,095,348	267,000 ^b		1,830,360	3,192,708	8,473,246
2002	1,419,630	703,884	335,661 ^b		1,263,918	2,303,463	3,722,401
2003	3,350,656	1,686,804	3,676,146 ^a		1,831,170	7,194,120	10,542,573
2004	4,716,715	5,500,134	5,396,592 ^a		1,939,374	12,836,100	17,551,170
2005	6,730,812	2,320,422	4,219,026 ^a		2,744,622	9,284,070	15,990,456
2006	7,151,741	3,068,226	1,773,966 ^a		1,953,228	6,795,420	13,949,170
2007	9,027,161	2,810,208	2,466,414 ^a		2,945,304	8,221,926	17,244,437
2008	10,385,172	2,757,912	2,180,502 ^a		2,472,690	7,411,104	17,792,948
2009	8,517,450	2,266,140	970,818 ^a		1,169,466	4,406,424	12,925,769
2010	10,861,016	4,207,410	1,187,730 ^a		1,463,928	6,859,068	17,720,084
2011	9,019,372	2,264,352	883,794 ^a		1,177,074	4,325,220	13,344,592
2012	10,152,917	4,164,444	861,747 ^b		900,312	5,926,503	16,079,420
2013	4,853,030	2,088,576	1,095,950 ^b		938,160	4,122,686	8,975,716
2014	13,791,053	4,458,540	200,500 ^b		1,474,428	6,133,468	19,924,521
2015	16,531,193	7,349,712	5,770,650 ^b		1,920,954	15,041,316	31,572,509
2016	13,466,245	4,462,728	1,775,820 ^b		1,691,910	7,930,458	21,396,703
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
20-Year avg.	8,434,297	3,148,299	1,898,170		1,806,222	6,852,690	15,285,219
2000–09 Avg.	6,130,927	2,403,686	2,173,743		1,952,562	6,529,990	12,657,380
2010–19 Avg.	10,737,668	3,892,912	1,622,597		1,659,881	7,175,390	17,913,058

^a Tower counts.

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

Appendix A13.—Inshore sockeye salmon total run by river system Naknek-Kvichak District, in thousands of fish, Bristol Bay, 2000–2020.

Year	Kvichak		Alagnak		Naknek		Total run ^a
	Number	%	Number	%	Number	%	
2000	2,850	34	754	9 ^b	4,778	57	8,382
2001	1,440	17	424	5 ^b	6,609	78	8,473
2002	707	19	335	9 ^b	2,680	72	3,722
2003	2,003	19	2,530	24 ^c	6,010	57	10,543
2004	7,371	42	6,494	37 ^c	3,686	21	17,551
2005	2,878	18	5,277	33 ^c	7,835	49	15,990
2006	5,859	42	2,790	20 ^c	5,301	38	13,949
2007	4,311	25	4,311	25 ^c	8,794	51	17,244
2008	5,694	32	5,872	33 ^c	6,228	35	17,793
2009	5,558	43	2,714	21 ^c	4,653	36	12,926
2010	9,392	53	2,658	15 ^c	5,670	32	17,720
2011	7,073	53	2,002	15 ^c	4,270	32	13,345
2012	10,372	65	2,417	15 ^b	3,216	20	16,079
2013	4,587	51	2,377	26 ^b	2,249	25	8,976
2014	13,489	68	896	4 ^b	5,540	28	19,925
2015	15,470	49	11,682	37 ^b	4,420	14	31,572
2016	11,615	54	4,857	23 ^b	4,925	23	21,397
2017	6,524	42	4,125	27 ^c	4,718	31	15,367
2018	7,393	43	2,851	17 ^c	6,876	40	17,119
2019	7,499	43	1,769	10 ^c	8,363	47	17,631
2020	9,998	40	4,604	19 ^c	10,238	41	24,841
20-Year avg.	6,604	41	3,357	20	5,341	39	15,285
2000–09 Avg.	3,867	29	3,150	22	5,657	49	12,657
2010–19 Avg.	9,341	52	3,563	19	5,025	29	17,913

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

^b Escapement from aerial survey estimate.

^c Escapement from tower count.

Appendix A14.—Inshore commercial catch and escapement of sockeye salmon in the Egegik District, by river system, in numbers of fish, Bristol Bay, 2000–2020.

Year	Catch	Escapement			Total run
		Egegik ^a	Shosky Cr. ^b	King Salmon River ^b	
2000	6,996,138	1,032,138			8,028,276
2001	2,836,555	968,862	10		3,805,427
2002	4,525,293	1,036,092			5,561,385
2003	2,253,721	1,152,030		90	3,405,841
2004	9,881,907	1,290,144			11,172,051
2005	8,015,950	1,621,584	0		9,637,534
2006	7,388,027	1,465,128	0		8,853,155
2007	6,474,027	1,432,500	0	1,500	7,908,027
2008	7,379,871	1,259,568	0	250	8,639,689
2009	11,527,282	1,146,276	0	4	12,673,562
2010	5,059,029	926,904		150	5,986,083
2011	4,806,939	961,200			5,768,139
2012	5,057,490	1,233,900		300	6,291,690
2013	4,779,133	1,113,630	^c	^c	5,892,763
2014	6,928,655	1,382,466	^c	^c	8,311,121
2015	8,325,956	2,160,792	^c	^c	10,486,748
2016	8,739,699	1,837,260	^c	^c	10,576,959
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
20-Year avg.	7,139,470	1,428,501	2	382	8,568,087
2000–09 Avg.	6,727,877	1,240,432	2	461	7,968,495
2010–19 Avg.	7,551,064	1,616,570		225	9,486,395

Note: Blank cells represent no data.

^a Tower count.

^b Aerial survey.

^c No survey conducted.

Appendix A15.—Inshore commercial catch and escapement of sockeye salmon in the Ugashik District, by river system, in numbers of fish, Bristol Bay, 2000–2020.

Year	Catch	Escapement			Total run
		Ugashik River ^a	King Salmon River ^b	Dog Salmon River ^b	
2000	1,517,236	620,040	12,900	5,480	2,155,656
2001	474,759	833,628	22,940	9,800	1,341,127
2002	1,570,418	892,104	11,460	2,020	2,476,002
2003	1,731,657	758,532	27,620	4,000	2,521,809
2004	3,077,745	776,364	22,850	15,890	3,892,849
2005	2,216,906	779,172	^c	20,440	3,016,518
2006	2,428,334	978,718	^c	24,440	3,431,492
2007	4,996,077	2,523,686	5,420 ^c	70,020	7,595,203
2008	2,319,790	588,632	^c	7,700	2,916,122
2009	2,555,268	1,346,630	^c	17,920	3,919,818
2010	4,031,625	805,686	^c	25,200	4,862,511
2011	2,641,882	1,003,753	^c	26,100	3,671,735
2012	2,415,580	670,578	8	24,432	3,110,598
2013	2,168,216	898,110	^c	^c	3,066,326
2014	1,507,440	640,158	^c	^c	2,147,598
2015	5,473,800	1,564,638	^c	^c	7,038,438
2016	6,630,231	1,635,270	^c	^c	8,265,501
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
20-Year avg.	2,863,583	1,060,884	14,743	19,496	3,942,299
2000–09 Avg.	2,288,819	1,009,751	17,198	17,771	3,326,660
2010–19 Avg.	3,438,346	1,112,018	8	25,244	4,557,938

^a Tower counts plus fish observed during post season surveys.

^b Aerial surveys.

^c Not surveyed.

Appendix A16.—Inshore commercial catch and escapement of sockeye salmon in the Nushagak District by river system, in numbers of fish, Bristol Bay, 2000–2020.

Year	Catch	Escapement			Total	Total Run
		Wood ^a	Igushik ^a	Nushagak ^b		
2000	6,367,502	1,300,026	413,316	446,286	^c 2,159,628	8,527,130
2001	4,735,718	1,458,732	409,596	897,112	^c 2,765,440	7,501,158
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
20-Year avg.	7,955,113	2,092,133	424,630	757,831	3,277,173	11,232,286
2000–09 Avg.	6,772,743	1,712,221	390,513	602,837	2,705,570	9,478,314
2010–19 Avg.	9,137,483	2,472,045	458,747	912,825	3,848,776	12,986,259

^a Tower count.

^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 A17.—Inshore sockeye salmon total run by river system, in thousands of fish, Nushagak District, 2000–2020.

Year	Wood		Igushik		Nushagak				
	Total run	%	Total run	%	Sonar ^a	Catch total	Total run	%	Total run ^b
2000	5,278	62	1,748	21	446	1,054	1,500	18	8,526
2001	3,987	53	1,315	18	897	1,301	2,198	29	7,500
2002	3,715	81	207	5	349	325	674	15	4,596
2003	5,647	63	1,018	11	642	1,655	2,297	26	8,962
2004	5,375	65	564	7	544	1,801	2,345	28	8,284
2005	4,771	47	1,878	19	1,107	2,346	3,453	34	10,102
2006	11,064	70	1,435	9	548	2,690	3,238	21	15,737
2007	6,523	60	1,762	16	518	2,062	2,580	24	10,865
2008	5,236	56	2,394	26	493	1,152	1,645	18	9,275
2009	7,195	72	926	9	484	1,443	1,927	19	10,048
2010	7,698	66	1,365	12	469	2,153	2,622	22	11,712
2011	4,328	63	1,036	15	428	1,042	1,470	21	6,855
2012	2,449	60	703	17	432	469	901	22	4,055
2013	3,174	46	745	11	891	2,090	2,981	43	6,900
2014	7,521	74	992	10	618	1,040	1,658	16	10,171
2015	5,070	56	1,657	18	797	1,458	2,255	25	8,982
2016	5,487	52	1,964	19	681	2,438	3,119	30	10,570
2017	11,010	55	1,318	7	2,852	4,848	7,700	38	20,028
2018	22,426	66	1,905	6	1,248	8,177	9,425	28	33,756
2019	12,197	69	1,342	8	709	3,547	4,256	24	17,795
2020	7,950	62	1,205	9	1,228	2,375	3,603	28	12,758
20-Year avg.	7,008	62	1,314	13	758	2,155	2,912	25	11,236
2000–09 Avg.	5,879	63	1,325	14	603	1,583	2,186	23	9,390
2010–19 Avg.	8,136	61	1,303	12	913	2,726	3,639	27	13,082

^a 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).

^b Due to rounding, district total runs may not equal the sum of the rows. District total run is the sum of Wood, Igushik, Nushagak, and Snake River total run numbers.

Appendix A18.—Inshore commercial catch and escapement of sockeye salmon in the Togiak District by river system, in numbers of fish, Bristol Bay, 2000–2020.

Year	Catch ^a	Escapement ^b	Total run
2000	794,996	311,970	1,106,966
2001 ^c	810,097	296,676	1,106,773
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
20-Year avg.	623,375	236,177	859,552
2000-09 Avg.	610,097	238,339	848,436
2010-19 Avg.	636,653	234,016	870,669

^a Catches in all sections were combined.

^b Tower count.

^c Aerial survey estimate included into escapement count.

Appendix A19.—Chinook salmon harvest, escapement, and total runs in the Nushagak District, in numbers of fish, Bristol Bay, 2000–2020.

Year	Harvest by fishery				Inriver abundance ^c	Spawning escapement ^d	Total run
	Commercial ^a	Sport	Subsistence ^b	Total			
2000	12,120	6,016	9,226	27,362	117,288	110,682	138,044
2001	11,746	5,899	11,344	28,989	191,988	184,317	213,306
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	5,671	10,739	49,786	56,961	52,297	102,083
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	7,333	7,163 ^f	12,106 ^f	26,602	43,032	33,063	59,666
20-Year avg.	35,336	6,534	11,982	53,852	122,421	115,354	169,206
2000–09 Avg.	45,137	6,723	12,290	64,150	149,735	141,985	206,135
2010–19 Avg.	25,536	6,344	11,674	43,554	95,107	88,723	132,277

^a Commercial harvest includes personal use reported from commercial harvest.

^b Subsistence harvest is intended to represent Nushagak River bound king 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 in 2006 (Buck et al. 2012).

^d Spawning escapement estimated from the following: 1997—from comprehensive aerial surveys. 1992–1996, 1998–2008—from inriver abundance estimated by sonar minus inriver harvests.

^e Revised passage estimates are 60,185 in 2010, 108,278 in 2011, and 174,085 in 2012.

^f Data not available at the time of publication. Five-year average used.

Appendix A20.—Chinook salmon harvest, escapement, and total runs in the Togiak River drainage, in numbers of fish, Togiak District, Bristol Bay, 2000–2020.

Year	Harvests by fishery				Spawning escapement ^b	Total run
	Commercial	Sport ^a	Subsistence	Total		
2000	7,258	470	1,116	8,844	11,813	20,657
2001	9,518	1,006	1,612	12,136	13,110	25,246
2002	2,682	76	703	3,461	9,515	12,976
2003	3,078	706	1,208	4,992	3,050 ^c	^d
2004	7,673	1,388	1,094	10,155	12,324	22,479
2005	10,125	1,734	1,528	13,387	10,200	23,587
2006	15,078	1,064	1,630	17,772	^e	^d
2007	7,142	1,501	1,234	9,877	0 ^c	^d
2008	2,891	592	1,337	4,820	2,140 ^c	^d
2009	4,429	606	827	5,862	^e	^d
2010	5,160	591	1,162	6,913	10,096 ^f	17,009
2011	5,780	871	966	7,617	2,140	9,757
2012	4,357	859	933	6,149	1,503	7,652
2013	2,458	900	691	4,049	^e	^d
2014	1,477	2,166	607	4,250	3,994	8,244
2015	2,448	983	876	4,307	2,922	7,229
2016	3,831	787	1,140	5,758	^e	^d
2017	3,413	978	949	5,340	^e	^d
2018	3,457	641	481	4,579	^e	^d
2019	3,568	1,617	599	5,784	^e	^d
2020	3,378	1,001 ^g	949	5,328	^e	^d
20-Year avg.	5,291	977	1,035	7,303	6,370	15,484
2000–09 Avg.	6,987	914	1,229	9,131	7,769	20,989
2010–19 Avg.	3,595	1,039	840	5,475	4,131	9,978

^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 USFWS radio telemetry-derived escapement estimate.

^g Data not available at the time of publication. Five-year average used.

Appendix A21.—Inshore commercial catch and escapement of chum salmon in the Nushagak and Togiak Districts, in numbers of fish, 2000–2020.

Year	Nushagak District			Togiak District		
	Catch	Escapement ^a	Total run	Catch	Escapement ^b	Total run
2000	114,456	179,394	293,850	140,175	80,860 ^c	^d
2001	526,739	716,850	1,243,589	211,701	252,610	464,311
2002	276,787	533,095	809,882	112,987	154,360	267,347
2003	740,372	374,992	1,115,364	68,154	39,090 ^c	^d
2004	458,916	360,265	819,181	94,025	103,810	197,835
2005	966,069	519,618	1,485,687	124,695	108,346	233,041
2006	1,240,235	661,003	1,901,238	223,364	26,900 ^c	^d
2007	953,292	161,483	1,114,775	202,486	^e	^d
2008	492,341	326,300	818,641	301,967	279,580 ^c	^d
2009	745,161	438,481	1,183,642	141,375	^e	^d
2010	424,234	273,914	698,148	118,767	^e	^d
2011	296,909	248,278	545,187	113,234	^e	^d
2012	272,163	364,499	636,662	206,614	^e	^d
2013	340,881	623,326	628,134	208,786	^e	^d
2014	242,261	552,797	795,058	100,195	^e	^d
2015	502,981	288,929	791,910	103,773	^e	^d
2016	397,761	419,810	817,571	187,508	^e	^d
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
20-Year avg.	583,605	446,048	1,012,849	162,519	130,695	58,127
2000–09 Avg.	607,743	416,279	1,024,022	157,510	129,082	126,399
2010–19 Avg.	515,772	464,949	947,114	162,946		

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 A22.—Average round weight (lb) of the commercial salmon catch by species, Bristol Bay, 2000–2020.

Year	Sockeye	Chinook	Chum	Pink	Coho
2000	6.1	15.7	6.9	3.7	7.6
2001	6.7	17.4	8.2	2.8	7.1
2002	6.1	18.2	7.1	3.8	6.8
2003	6.3	16.0	6.5	4.0	6.9
2004	5.8	15.4	6.6	4.1	6.8
2005	6.3	16.6	7.1	3.5	6.3
2006	5.7	17.0	7.7	3.7	6.4
2007	5.8	13.5	6.1	3.5	6.4
2008	5.8	15.5	6.5	3.6	6.5
2009	5.9	15.2	6.3	3.3	6.5
2010	5.5	14.7	6.4	3.2	8.9
2011	6.2	13.0	7.0	3.2	6.8
2012	5.7	13.9	6.7	3.1	5.4
2013	6.0	15.3	6.4	3.9	6.0
2014	5.6	15.4	6.1	3.7	6.4
2015	5.2	15.1	6.1	3.7	6.7
2016	5.4	12.6	6.0	4.0	5.8
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
20-Year avg.	5.8	14.7	6.6	3.6	6.6
2000–09 Avg.	6.0	16.1	6.9	3.6	6.7
2010–19 Avg.	5.5	13.3	6.4	3.6	6.5

Appendix A23.—Average price paid in dollars per pound for salmon, by species, Bristol Bay, 2000–2020.

Year	Sockeye	Chinook	Chum	Pink	Coho
2000	0.67	0.46	0.09	0.08	0.41
2001	0.42	0.31	0.11	0.09	0.33
2002	0.49	0.33	0.09	0.06	0.32
2003	0.51	0.32	0.08	0.07	0.27
2004	0.51	0.37	0.09	0.09	0.31
2005	0.62	0.58	0.11	0.02	0.29
2006	0.66	0.71	0.12	0.03	0.38
2007	0.67	0.64	0.13	0.03	0.41
2008	0.75	0.83	0.17	0.17	0.55
2009	0.80	0.89	0.17	0.07	0.56
2010	1.07	1.18	0.28	0.36	0.66
2011	1.17	1.04	0.37	0.29	0.74
2012	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 ^a	0.70	0.50	0.25	0.05	0.70
20-Year avg.	0.93	0.78	0.21	0.14	0.53
2000–09 Avg.	0.68	0.55	0.11	0.07	0.42
2010–19 Avg.	1.24	1.05	0.33	0.22	0.66

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

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

^a Price does not include postseason adjustments or bonuses.

Appendix A24.—Estimated exvessel value of the commercial salmon catch by species, in thousands of dollars, Bristol Bay, 2000–2020.

Year	Sockeye	Chinook	Chum	Pink ^a	Coho	Total ^b
2000	78,214	152	228	16	687	79,297
2001	38,211	135	712		43	39,101
2002	31,962	277	287	0	18	32,544
2003	46,897	236	423		238	47,794
2004	76,175	634	423	171	150	77,553
2005	96,044	720	946		168	97,878
2006	110,372	1,240	1,441	19	191	113,263
2007	119,196	542	1,583		120	121,441
2008	118,028	297	1,344	171	401	120,241
2009	142,457	387	1,347		177	144,368
2010	176,784	495	1,743	1,567	470	181,059
2011	154,851	455	1,542		62	137,726
2012	139,675	338	1,475	860	345	142,693
2013	148,681	366	2,049		654	151,750
2014	217,311	311	1,214	1,209	1,990	222,035
2015	123,547	347	1,758		92	125,744
2016	192,349	361	1,688	547	312	195,257
2017	271,549	431	2,594		1,071	275,645
2018	344,253	477	2,891	238	720	348,579
2019	300,883	193	2,158	1	267	303,502
2020 ^c	140,143	48	442	11	437	141,081
20-Year avg.	146,372	420	1,392	436	409	147,874
2000–09 Avg.	85,756	462	873	75	219	87,348
2010–19 Avg.	206,988	377	1,911	737	598	208,399

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

Note: The exvessel value includes any post-season 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. Blank cells represent no data.

^a Averages include even years only.

^b Total may vary from actual sum due to rounding.

^c Exvessel value does not include postseason adjustments or bonuses. Derived from price per pound multiplied by the commercial catch.

Appendix A25.—South Unimak and Shumigan Island preseason sockeye salmon quota, actual sockeye and chum salmon harvest in thousands of fish, Alaska Peninsula, 2000–2020.

Year	South Unimak			Shumigan Island			Total		
	Sockeye		Chum	Sockeye		Chum	Sockeye		Chum
	Actual	Quota ^a		Actual	Quota ^a		Actual	Quota ^a	
2000	892	1,650	169	359	363	70	1,251	2,013	239
2001	271		185	130		149	401		334
2002	356		201	235		178	591		379
2003	336		121	117		161	453		282
2004	532		131	816		357	1,348		488
2005	437		144	567		282	1,004		426
2006	491		96	441		204	932		300
2007	738		153	852		144	1,023		297
2008	1,064		285	650		126	1,714		411
2009	594		201	573		496	1,167		697
2010	488		100	331		171	819		271
2011	937		231	422		192	1,359		423
2012	900		212	628		181	1,528		393
2013	1,049		189	508		208	1,557		397
2014	413		208	252		181	665		389
2015	618		42	497		136	1,115		178
2016	877		149	416		122	1,293		271
2017	1,071		179	883		461	1,954		640
2018	415		234	407		303	822		537
2019	388		273	246		332	634		605
2020	223		243	119		248	342		491
20-Yr avg.	643	1,650	175	467	363	223	1,082		398
2000–09 Avg.	571	1,650	169	474	363	217	988		385
2010–19 Avg.	716	1,590	182	459	350	229	1,175		410

Note: Blank cells represent no data.

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

Appendix A26.—Subsistence salmon harvest by species, in numbers of fish, by district and location fished, Bristol Bay, 2020.

Area and river system	Number of permits issued ^a	Estimated salmon harvest ^b					
		Chinook	Sockeye	Coho	Chum	Pink	Total
Naknek-Kvichak District	395	297	51,900	699	49	51	52,995
Naknek River Subdistrict	238	297	20,097	699	49	51	21,192
Kvichak River/Iliamna Lake Subdistrict:	158	0	31,803	0	0	0	31,803
Igiugig	1	0	30	0	0	0	30
Iliamna Lake-General	52	0	4,157	0	0	0	4,157
Kijik							
King Salmon Creek							
Kokhanok	21	0	16,309	0	0	0	16,309
Kvichak River	8	0	1,023	0	0	0	1,023
Lake Clark	47	0	3,105	0	0	0	3,105
Levelock							
Newhalen River	22	0	5,773	0	0	0	5,773
Pedro Bay	7	0	1,035	0	0	0	1,035
Pile Bay	1	0	161	0	0	0	161
Six Mile Lake	1	0	210	0	0	0	210
Egegik District	8	10	275	153	2	0	440
Ugashik District	3	10	43	0	0	0	53
Nushagak District	538	8,884	38,597	4,769	1,598	412	54,260
Igushik/Snake River	9	68	911	32	0	4	1,015
Nushagak Bay commercial	41	910	3,048	489	77	3	4,527
Nushagak Bay noncommercial	367	3,705	24,945	3,145	820	371	32,986
Nushagak River	74	3,237	3,491	557	552	15	7,852
Site unknown	11	102	405	82	1	2	592
Wood River	63	862	5,797	465	148	17	7,289
Togiak District	32	949	2,451	493	427	19	4,339
Total	963	10,151	93,265	6,114	2,076	481	112,087

Source: ADF&G Division of Subsistence.

Note: Harvests are extrapolated for all permits issued, based on those returned and area fished as recorded on the permit. Due to rounding, the sum of columns and rows may not equal the estimated total. Of 1,106 permits issued for the management area, 806 were returned (72.9%).

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

^b Preliminary data as of January 21, 2021.

Appendix A27.—Subsistence salmon harvest by district and species, Bristol Bay, 2000–2020.

Year	Permits issued	Sockeye	Chinook	Chum	Pink	Coho	Total
Naknek-Kvichak District							
2000	562	61,817	894	560	845	937	65,053
2001	506	57,250	869	667	383	740	59,909
2002	471	52,805	837	909	1,137	943	56,632
2003	489	61,443	1,221	259	198	812	63,934
2004	481	71,110	1,075	469	1,080	566	74,300
2005	462	69,211	1,047	546	275	1,224	72,302
2006	468	69,097	881	341	757	720	71,796
2007	480	69,837	672	405	262	1,104	72,280
2008	481	69,823	719	404	801	1,437	73,184
2009	461	67,970	392	167	36	669	69,235
2010	437	62,309	422	233	835	645	64,445
2011	484	67,164	550	215	56	690	68,675
2012	483	72,708	785	127	474	485	74,579
2013	460	62,143	502	403	88	399	63,535
2014	473	65,810	562	272	386	573	67,603
2015	486	69,720	678	263	126	796	71,583
2016	422	53,502	938	254	349	609	55,653
2017	441	50,574	723	283	129	1,116	52,825
2018	452	48,775	943	174	183	1,155	51,230
2019	433	43,461	580	288	91	542	44,962
2020	395	51,900	297	49	51	699	52,995
20-Year avg.	472	62,326	765	362	425	808	64,686
2000–09Avg.	486	65,036	861	473	577	915	67,862
2010–19 Avg.	457	59,617	668	251	272	701	61,509
Egegik District							
2000	31	842	16	11	0	262	1,131
2001	57	2,493	111	105	16	928	3,653
2002	53	1,892	65	34	12	356	2,359
2003	62	3,240	84	32	10	297	3,663
2004	46	2,618	169	410	91	1,423	4,711
2005	45	2,267	81	231	2	526	3,106
2006	41	1,641	94	34	7	641	2,418
2007	28	980	165	72	26	334	1,577
2008	37	1,502	91	35	4	295	1,928
2009	26	778	31	6	5	133	953
2010	37	1,657	93	59	8	275	2,091
2011	37	1,772	91	23	2	377	2,265
2012	38	1,172	37	19	7	190	1,425
2013	44	2,108	45	17	5	205	2,380
2014	36	972	150	4	2	237	1,366
2015	32	1,253	150	38	13	353	1,806
2016	26	366	27	3	0	167	563
2017	23	1,243	129	13	6	430	1,821
2018	22	540	48	16	9	548	1,161
2019	19	770	39	6	2	284	1,100
2020	8	275	10	2	0	153	440
20-Year avg.	37	1,505	86	58	11	413	2,074
2000–09Avg.	43	1,825	91	97	17	520	2,550
2010–19 Avg.	31	1,185	81	20	5	307	1,598

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Year	Permits issued	Sockeye	Chinook	Chum	Pink	Coho	Total
Ugashik District							
2000	31	1,927	51	34	1	467	2,481
2001	24	1,197	61	8	2	357	1,624
2002	23	1,294	51	14	2	460	1,821
2003	23	1,113	31	30	0	392	1,567
2004	21	804	64	9	4	234	1,116
2005	22	818	27	18	2	249	1,114
2006	25	962	41	6	16	339	1,364
2007	17	1,056	43	88	79	281	1,546
2008	14	1,660	47	17	9	222	1,955
2009	15	1,061	33	4	41	131	1,270
2010	18	896	21	4	0	135	1,056
2011	15	531	15	3	2	136	687
2012	20	997	31	25	0	228	1,281
2013	14	537	19	10	0	106	672
2014	20	566	50	1	0	224	842
2015	20	935	53	8	0	217	1,214
2016	19	1,100	106	20	9	199	1,432
2017	15	444	18	5	2	113	581
2018	18	1,479	81	13	18	293	1,883
2019	17	877	65	7	2	57	1,009
2020	3	43	10	0	0	0	53
20-Year avg.	20	1,029	45	16	9	243	1,342
2000–09 Avg.	22	1,205	44	21	14	309	1,594
2010–19 Avg.	18	836	46	10	3	171	1,066
Nushagak District							
2000	541	24,451	9,470	3,463	1,662	5,983	45,029
2001	554	26,939	11,760	3,011	378	5,993	48,080
2002	520	22,777	11,281	5,096	1,179	4,565	44,897
2003	527	25,491	18,686	5,064	403	5,432	55,076
2004	511	17,491	15,610	3,869	1,944	4,240	43,154
2005	502	23,916	12,529	5,006	793	5,596	47,841
2006	461	20,773	9,971	4,448	1,591	3,590	40,373
2007	496	25,127	13,330	3,006	430	3,050	44,944
2008	571	26,828	12,960	4,552	1,923	5,133	51,395
2009	530	26,922	12,737	4,510	355	6,777	51,300
2010	528	22,326	9,150	3,660	1,672	2,983	39,791
2011	525	28,006	12,461	3,055	230	5,746	49,498
2012	517	20,587	10,350	3,072	1,309	2,642	37,960
2013	584	30,283	11,602	4,368	206	7,717	54,176
2014	581	27,073	16,049	5,731	2,110	7,463	58,425
2015	591	25,240	12,117	2,953	295	5,644	46,248
2016	649	27,425	16,576	4,602	4,409	4,792	57,803
2017	562	31,206	11,060	3,965	254	5,732	52,218
2018	589	25,547	12,206	3,635	840	4,735	46,963
2019	620	28,445	10,206	2,996	267	5,234	47,148
2020	538	38,597	8,884	1,598	412	4,769	54,260
20-Year avg.	548	25,343	12,506	4,003	1,113	5,152	48,116
2000–09 Avg.	521	24,071	12,833	4,202	1,066	5,036	47,209
2010–19 Avg.	575	26,614	12,178	3,804	1,159	5,269	49,023

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Year	Permits issued	Sockeye	Chinook	Chum	Pink	Coho	Total
Togiak District							
2000	54	3,013	1,116	569	90	342	5,130
2001	92	2,576	1,612	367	61	388	6,590
2002	36	2,890	703	605	10	241	3,878
2003	92	2,357	1,208	483	451	883	7,428
2004	46	2,221	1,094	383	108	204	3,584
2005	45	2,299	1,528	301	26	295	4,448
2006	61	2,728	1,630	492	355	408	5,613
2007	48	2,548	1,234	420	19	110	4,332
2008	91	3,770	1,337	701	114	541	6,463
2009	40	2,220	827	365	5	272	3,689
2010	64	3,256	1,162	735	113	514	5,779
2011	68	3,462	966	497	42	545	5,512
2012	53	5,265	933	764	84	293	7,339
2013	64	3,695	691	375	33	208	5,002
2014	59	4,586	607	669	190	486	6,539
2015	48	2,387	876	312	23	650	4,249
2016	70	3,772	1,140	376	198	521	6,007
2017	69	5,436	949	556	107	900	7,948
2018	34	2,326	481	192	85	181	3,264
2019	28	1,779	599	143	26	98	2,645
2020	32	2,451	949	427	19	493	4,339
20-Year avg.	58	3,129	1,035	465	107	404	5,272
2000–09 Avg.	61	2,662	1,229	469	124	368	5,116
2010–19 Avg.	56	3,596	840	462	90	440	5,428
Total Bristol Bay Area							
2000	1,219	92,050	11,547	4,637	2,599	7,991	118,824
2001	1,226	92,041	14,412	4,158	839	8,406	119,856
2002	1,093	81,088	12,936	6,658	2,341	6,565	109,587
2003	1,182	95,690	21,231	5,868	1,062	7,816	131,667
2004	1,100	93,819	18,012	5,141	3,225	6,667	126,865
2005	1,076	98,511	15,212	6,102	1,098	7,889	128,811
2006	1,050	95,201	12,617	5,321	2,726	5,697	121,564
2007	1,062	107,778	15,484	3,972	796	4,870	132,901
2008	1,178	103,583	15,153	5,710	2,851	7,627	134,924
2009	1,063	98,951	14,020	5,052	442	7,982	126,447
2010	1,082	90,444	10,852	4,692	2,627	4,623	113,238
2011	1,129	100,935	14,083	3,793	332	7,494	126,637
2012	1,107	100,728	12,136	4,007	1,874	3,837	122,582
2013	1,162	98,765	12,858	5,173	333	8,635	125,764
2014	1,158	99,008	17,417	6,677	2,689	8,984	134,775
2015	1,169	99,535	13,874	3,573	458	7,659	125,100
2016	1,180	86,165	18,787	5,255	4,964	6,287	121,458
2017	1,103	88,903	12,880	4,821	498	8,291	115,393
2018	1,105	78,666	13,758	4,030	1,135	6,913	104,502
2019	1,106	75,332	11,489	3,441	388	6,214	96,864
2020	963	93,265	10,151	2,076	481	6,114	112,087
20-Year avg.	1,128	93,860	14,438	4,904	1,664	7,022	121,888
2000–09 Avg.	1,125	95,871	15,062	5,262	1,798	7,151	125,145
2010–19 Avg.	1,130	91,848	13,813	4,546	1,530	6,894	118,631

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

Appendix A28.—Subsistence harvest of sockeye salmon by community, Kvichak River drainage, Bristol Bay, 2000–2020.

Year	Levelock	Igiugig	Pedro Bay	Kokhanok	Iliamna- Newhalen ^a	Nondalton	Port Alsworth	Other ^b	Total
2000	1,467	1,981	1,815	7,175	6,679	11,953	3,200	2,720	36,990
2001	908	779	2,118	9,447	8,132	7,566	1,958	1,901	32,808
2002	625	2,138	2,687	9,847	9,417	5,508	1,201	1,578	33,001
2003	737	1,081	2,135	9,771	13,824	8,016	1,370	1,591	38,495
2004	1,000	1,026	4,803	11,869	21,652	8,789	2,455	1,631	53,225
2005	914	1,017	4,162	16,801	12,010	8,824	2,457	2,078	48,263
2006	0	1,252	4,319	19,028	11,487	8,885	2,418	2,461	49,850
2007	102	1,803	5,487	15,105	11,453	7,902	3,211	2,410	47,473
2008	30	1,558	4,884	14,755	13,569	8,916	3,307	2,544	49,563
2009	759	1,457	7,802	15,759	9,871	5,709	3,155	2,260	46,772
2010	940	2,901	5,609	13,973	8,815	3,185	3,250	2,015	40,688
2011	933	1,931	3,898	9,895	15,433	7,947	4,026	1,163	45,226
2012	750	2,608	4,028	16,530	12,933	9,247	4,420	1,855	52,370
2013	984	345	3,971	13,392	7,632	10,550	3,377	2,305	42,556
2014	1,170	513	3,999	6,440	11,388	9,004	4,296	4,206	41,016
2015	398	1,153	2,519	8,098	9,691	8,722	6,588	2,207	39,377
2016	1,265	297	2,036	7,087	9,900	2,320	4,090	3,241	30,236
2017	168	700	1,678	5,430	6,403	6,548	3,623	3,282	27,832
2018	401	410	1,228	4,558	8,567	4,228	3,753	2,618	25,764
2019	38	412	1,731	4,708	6,994	1,367	3,778	2,931	22,012
2020 ^c	0	296	991	16,280	7,796	932	2,648	2,861	31,803
20-Year avg.	679	1,268	3,545	10,983	10,793	7,259	3,297	2,350	40,176
2000–09 Avg.	654	1,409	4,021	12,956	11,809	8,207	2,473	2,117	43,644
2010–19 Avg.	705	1,127	3,070	9,011	9,776	6,312	4,120	2,582	36,708

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

^a Includes Chekok.

^b Subsistence harvests by non-Kvichak River watershed residents.

^c Preliminary data as of January 21, 2021.

Appendix A29.—Subsistence salmon harvests by community, Nushagak District, Bristol Bay, 2000–2020.

Year	Dillingham ^a	Manokotak	Aleknagik	Ekwok	New Stuyahok	Koliganek	Other ^b	Total
2000	27,931	3,173	1,111	3,946	3,715	2,792	2,362	45,029
2001	26,435	3,700	2,129	2,218	7,294	2,209	4,096	48,080
2002	25,004	3,254	1,517	2,735	6,043	3,098	3,247	44,897
2003	26,955	4,214	2,044	2,291	10,817	5,721	3,034	55,076
2004	23,308	2,052	2,206	1,891	6,714	3,619	3,364	43,154
2005	21,898	1,576	1,795	1,388	9,673	8,422	3,088	47,841
2006	22,184	1,655	2,048	1,499	6,160	3,886	2,941	40,373
2007	25,237	2,442	1,382	1,267	8,284	3,054	3,278	44,944
2008	27,446	5,429	3,309	1,902	5,690	4,423	3,196	51,395
2009	30,184	2,068	2,646	2,345	6,855	3,700	3,502	51,300
2010	22,903	2,665	1,570	1,380	5,608	2,406	3,259	39,791
2011	26,850	1,433	3,016	1,805	7,980	3,539	4,875	49,498
2012	22,037	1,212	2,457	1,253	5,062	2,834	3,105	37,960
2013	26,302	1,375	2,368	2,448	11,104	7,290	3,290	54,176
2014	31,838	1,658	3,560	2,700	7,613	4,654	6,403	58,425
2015	26,049	2,946	2,186	1,618	2,860	2,085	8,504	46,248
2016	37,493	2,486	2,349	1,418	5,716	2,510	5,830	57,803
2017	30,194	2,320	2,767	1,622	5,785	2,286	7,243	52,217
2018	25,867	722	2,351	965	5,213	2,807	9,037	46,963
2019	27,401	1,788	1,257	571	3,889	2,752	10,062	47,148
2020	32,693	975	2,175	783	4,860	2,699	10,076	54,260
20-Year Avg.	26,676	2,408	2,203	1,863	6,604	3,704	4,686	48,116
2000–09 Avg.	25,658	2,956	2,019	2,148	7,125	4,092	3,211	47,209
2010–19 Avg.	27,693	1,860	2,388	1,578	6,083	3,316	6,161	49,023

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

^a Includes Portage Creek, Clarks Point, and Ekuk.

^b Subsistence harvests by non-watershed residents.

APPENDIX B: HERRING

Appendix B1.—Sac roe herring industry participation, fishing effort and harvest, Togiak District, 2000–2020.

Year	Number of buyers	Daily processing capacity ^a	Gillnet					Purse seine				Total harvest ^c
			Fishery dates	Effort ^b	Duration (hours)	Harvest ^c	Roe %	Effort ^b	Duration (hours)	Harvest ^c	Roe %	
2000	12	2,100	5/6-5/14	227	67	5,464	10.6	90	15.8	14,957	10.1	20,421
2001	11	2,255	5/6-5/13	96	84	6,491	10.6	64	26.0	15,879	9.2	22,370
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
20-Year avg.	6	2,167		45	282	4,940	11	29	205	16,115	10	20,561
2000–09 Avg.	8	2,012		72	184	5,461	11	39	129	14,539	9	20,000
2010–19 Avg.	5	2,322		17	380	4,289	12	20	282	17,691	10	21,123

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 Harvest is confidential due to there being less than three registered processors.

Appendix B2.—Exploitation of Togiak herring stock (in short tons), 2000–2020.

	Biomass estimate ^a	Dutch Harbor	Sac roe				Total	Exploitation
Year	(short tons)	food/bait	Gillnet ^b	Purse seine ^c	Waste ^d	Total ^e	harvest	rate
2000	130,904	2,014	5,464	14,857	100	20,321	22,335	17.1%
2001	119,818	1,439	6,491	15,660	219	22,151	23,590	19.7%
2002	120,196	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			
20-Year avg.	141,020	1,562	4,940	15,993	466	20,489	22,066	15.6%
2000–09 Avg.	127,168	1,584	5,461	14,294	306	19,755	21,371	16.9%
2010–19 Avg.	154,873	1,539	4,289	17,691	723	21,223	22,762	14.8%

Note: Blank cells represent no data.

^a Preseason forecast unless peak biomass estimate inseason exceeded preseason forecast.

^b Includes bait harvest.

^c Includes test fish harvest.

^d Aerial survey estimated waste.

^e Does not include waste.

^f Data is confidential because there were fewer than three registered processors.

Appendix B3.—Age composition by weight of total inshore herring run, Togiak District, 2000–2020.

Year	Age composition (%)						Spawning biomass ^a (short tons)
	≤ 4	5	6	7	8	≥ 9	
2000	^b	1	2	17	16	63	93,214
2001	5	21	5	4	27	39	115,155
2002	1	25	28	4	5	36	61,377
2003	^b	3	37	25	4	31	47,074
2004	^b	^b	3.8	43.7	24.6	27.5	53,625
2005	^b	^b	0.8	11	41.4	46.4	163,737
2006	1.8	5.4	2.8	5.4	25.9	58.7	179,580
2007	0.7	7.3	15.5	5.5	9.4	61.7	143,827
2008	6.2	9	14.6	15.5	8.1	46.5	136,839
2009	9.4	14.7	14.5	14.9	12.2	34	142,154
2010	1.4	16.1	18.1	13.2	13.2	38.3	146,913
2011	^b	4	25.3	21.7	15.7	33.3	62,333
2012	0.5	6.6	16.9	35.8	17.6	22.7	167,738
2013	0.1	2	9.6	24.7	28.8	34.8	169,020
2014	0.7	4.3	9.6	23.5	27.6	34.3	203,267
2015	1.0	4.0	12.8	11.4	24.7	46.1	228,807
2016 ^c	-	-	-	-	-	-	136,993
2017	3.4	1.6	5.4	13.0	19.0	56.7	90,269
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	22.1	19.8	21.6	17.8	8.2	10.4	177,337

^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 (Buck et al. *in prep*).

^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, 2000–2020.

Year	Preseason forecast ^a	Biomass Estimate ^b	Spawn estimate
2000	130,904	93,214	46
2001	119,818	115,155	57
2002	120,196	61,377	32
2003	126,213	47,074	95
2004	143,124	53,625	36
2005	96,029	163,737	28
2006	129,976	179,580	18
2007	134,566	143,827	19
2008	134,516	136,839	49
2009	121,800	142,154	15
2010	146,775	146,913	8
2011	140,860	62,333	36
2012	123,745	167,738	31
2013	169,094	169,020	47
2014	157,448	203,267	92
2015	163,480	228,807	63
2016	164,247	136,993	43
2017	130,852	90,269	^c
2018	136,756	16,001	^c
2019	217,548	177,980	71
2020	215,826	177,337	30
2001–2019 Avg.	140,397	126,795	44
2010–2019 Avg.	155,081	139,932	49

^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, 2000–2020.

Year	Herring sac roe	Total
2000	3,718	4,000
2001	3,283	3,090
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	^a	
20-Year avg.	2,711	2,786
2000–09 Avg.	3,073	3,215
2010–19 Avg.	2,357	2,313

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 Data are confidential. Fewer than three processors were registered for the fishery.

Appendix B6.—Guideline and actual harvests of sac roe herring (short tons) and spawn-on-kelp (lb), Togiak District, 2000–2020.

Year	Gillnet sac roe			Purse seine sac roe		
	Guideline ^a	Actual	% Difference ^b	Guideline ^a	Actual ^c	% Difference ^b
2000	5,738	5,464	-5	17,215	14,957	-13
2001	6,268	6,491	4	14,624	15,879	9
2002	6,288	5,216	-17	14,673	11,833	-19
2003	6,624	6,505	-2	15,457	15,158	-2
2004	7,568	4,980	-34	17,658	13,888	-21
2005	5,667	5,841	3	13,224	15,071	14
2006	7,059	7,132	1	16,471	16,821	2
2007	7,090	4,012	-43	16,544	13,120	-21
2008	6,864	4,832	-30	16,017	15,602	-3
2009	6,378	4,167	-35	14,882	12,404	-17
2010	7,772	7,540	-3	18,134	18,816	4
2011	7,442	5,907	-21	17,364	16,970	-2
2012	6,487	4,027	-38	15,135	12,994	-14
2013	9,017	8,244	-9	21,040	19,366	-9
2014	8,367	6,468	-23	19,523	19,544	0
2015	8,704	1,220	-86	20,309	20,374	0
2016	8,635	80	-99	20,148	14,799	-27
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	
20-Year avg.	7,072	4,970	-29	17,305	16,139	-7
2000–09 Avg.	6,554	5,464	-16	15,677	14,473	-7
2010–2019 Avg.	7,591	4,354	-45	18,934	17,805	-6

^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 Confidential due to participation levels.

APPENDIX C: 2020 BRISTOL BAY SALMON OUTLOOK

Division of Commercial Fisheries
Sam Rabung, Director

Dillingham Area Office
PO Box 230
Dillingham, AK 99576



Alaska Department of Fish and Game
Doug Vincent-Lang, Commissioner

PO Box 115526
Juneau, AK 99811-5526
www.adfg.alaska.gov

Advisory Announcement

CONTACTS:

Tim Sands and Jordan Head,
(907) 842-5227

For Immediate Release: April 15, 2020

Travis Elison and Aaron Tiernan
(907) 246-3341

BRISTOL BAY 2019 OUTLOOK FOR COMMERCIAL SALMON FISHING

COVID-19

Under Alaska's Health Mandates 10, 11, and 12, commercial fishing is an Essential Business and is part of Alaska's Essential Services and Critical Infrastructure. Commercial fishermen should ensure that all travel and other activities in support of commercial fishing operations follow protocols in Alaska COVID-19 Health Mandates. COVID-19 Health Mandates may be found here: <https://gov.alaska.gov/home/covid19-healthmandates/>.

The department is continuing preseason preparations for normal operations of all run assessment projects and fishery management functions following the protocols in Alaska COVID-19 Health Mandates. We ask that forms required for fishery participation be submitted electronically and well in advance of the season when possible. See below for details.

INTRODUCTION

This document provides general information to fishermen, processors, and the public concerning the upcoming Bristol Bay salmon season. Included is the general framework for management of each of the five major districts and the 2020 salmon forecast.

During the season, Bristol Bay salmon fishing announcements are broadcast on marine VHF Channel 07A. Current fishing announcements are aired on local radio stations – KAKN and KDLG. As conditions in the fishery change, for the most current information, fishermen should stand by at regular announcement times: 9:00 a.m., 12:00 noon, 3:00 p.m., 6:00 p.m., and 8:00 p.m., unless otherwise stated. Information is also available via telephone; for east-side fisheries (Naknek-Kvichak, Egegik, and Ugashik), dial 246-INFO (4636), for west-side fisheries (Nushagak and Togiak) dial 842-5226. Fishermen are asked to note that regular office hours at the Dillingham ADF&G office will be 8:00 a.m. to 5:00 p.m. Monday thru Friday. In addition to the regular office hours, from June 20 to July 12 the Dillingham office will be open on weekends from 8:00 a.m. until 12:00 noon. In King Salmon the office hours are as follows: June 1 to June 14 and after July 17: 8:00 a.m. to 12:00 p.m., and 1:00 p.m. to 4:30 p.m., closed for lunch and weekends. From June 15 to July 17: 8:00 a.m. to 5:00 p.m. seven days per week.

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ADF&G Forms

Regarding district registration cards: set gillnet permit holders are only required to fill out and return set gillnet registration cards if they fish in the Nushagak District. Drift gillnet permit holders must fill out and return district registration cards prior to commercial fishing in any district in Bristol Bay. PDF files of district registration cards, permit holder agent authorization forms, and dual drift registration forms are posted on the ADF&G Bristol Bay homepage online and can be printed, completed, mailed to the address on the printout, or submitted electronically to Dillingham at tim.sand@alaska.gov and karen.brito@alaska.gov or King Salmon at travis.elison@alaska.gov and mary.emery@alaska.gov. If electronic submission or mail submission is not possible, forms will be available May 1 and may be submitted to Anchorage, King Salmon, or Dillingham office personnel. These resources are available online at:

<http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareabristolbay.salmon#management>

Inseason Fishery Information

Fishery updates, announcements, catch and escapement information, and Port Moller Test Fishery genetic stock composition estimates will be available at:

<http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareabristolbay.salmon>

The Port Moller Test Fishery daily catch updates and interpretations of the data will be posted at the following web site once the project becomes operational on June 10:

<https://www.bbsri.org/port-moller-test-fishery>

Alaska Wildlife Troopers – Summer 2020 Outlook – Bristol Bay

Enforcement Priorities:

- Continued strong focus on fishing district lines and open/closed fishing periods in all districts using all available assets.
- Routine boarding of drift gillnet and processor vessels as well as beach patrols to verify licensing and permitting regulations are met. Fishermen and processors are reminded that at the time of delivery of fish, a fish ticket must be generated and must include the signature of a company representative and the full name and signature of the CFEC permit holder (BOTH permit holders if dual drift operation). The permit holder(s) must be present at the time of delivery in order to sign the fish ticket. Crew members cannot sign fish tickets for permit holders. Fish tickets also must include the number or pounds of fish by species retained by a commercial fisherman for that person's own use.
- Continued enforcement of state boating safety laws in cooperation with the U.S. Coast Guard.
- Continued enforcement and educational outreach regarding potential conflicts between resource users and marine mammals in cooperation with National Marine Fisheries Service.
- Increased checks for compliance with legal gear length and depths as well as continued focus on basic vessel ID and gear ID such as buoy and cork markings, and lighting requirements.

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- AWT has noted an increase in violations for grounding and failure to report lost gillnets. Fisherman are reminded to review gillnet specifications and operations regulations and be aware that fishing a drift gillnet when the net, or vessel to which it is attached, is grounded is prohibited by regulation and the loss of a gillnet, or portion of the gillnet, is required to be reported to a local department office in Dillingham or King Salmon within 15 hours.

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

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

SALMON OUTLOOK

BAYWIDE

The 2020 Bristol Bay inshore sockeye salmon run is forecasted to be approximately 46.6 million fish. Based on the forecast and using the mid-points of the lower or upper portion of escapement goal ranges, depending on forecasted run size, 34.6 million fish are potentially available for commercial inshore harvest (Table 1). The department manages fisheries based on inseason information regarding abundance. The inseason management approach uses a suite of assessment tools to provide information on abundance and run timing in each district, and that information will be used by the department to determine fishing opportunity.

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

2020 Regulatory Changes

The Alaska Board of Fisheries (BOF) met in Anchorage in March 2020 and took action on proposal 279, which repealed 5AAC 06.333(a)(3). The result of this action will allow the use of dual permit operations to continue in the Nushagak District and the Ugashik District after June 29 if/when the Naknek River Special Harvest Area is in use.

NAKNEK-KVICHAK DISTRICT

An inshore run of approximately 19.0 million sockeye salmon is expected for the Naknek-Kvichak District in 2020. Based on the forecast, the projected harvest in the Naknek-Kvichak District is approximately 12.3 million sockeye salmon: 5.9 million from the Kvichak River, 2.3 million from the Alagnak River, and 4.1 million from the Naknek River (Table 1). Sockeye salmon returning to the Naknek-Kvichak District are predicted to be 39% age-1.2, 44% age-1.3, 14% age-2.2, and 2% age-2.3 fish.

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The Naknek River escapement goal range is 800,000 to 2.0 million sockeye salmon. The Kvichak River escapement goal range is 2.0 million to 10.0 million sockeye salmon. The Alagnak River escapement goal is a minimum of 210,000 sockeye salmon. Escapements will be managed within the lower or upper portions of the escapement goals proportional to the run size based on the preseason forecast and inseason assessment of run size.

Fishing in the Naknek-Kvichak District will be open four days per week from 9:00 a.m. Monday to 9:00 a.m. Friday, beginning 9:00 a.m. Monday, June 1 and ending 9:00 a.m. Wednesday, June 24. Drift gillnets will be restricted to fishing in the Naknek Section only, while set gillnets will be allowed to fish in the entire Naknek-Kvichak District. From June 24 until July 17, fishing periods will be based on sockeye salmon escapements, abundance in the district, and gear group harvest percentages. District test fishing for inseason management may be conducted periodically depending on run characteristics. As in previous years, some openings could occur on short notice.

EGEGIK DISTRICT

A forecasted inshore run of approximately 10.2 million sockeye salmon is expected for the Egegik River in 2020. The escapement goal range for sockeye salmon is 800,000 to 2.0 million fish. Based on the forecast, the potential surplus of fish available for harvest is 8.5 million (Table 1). Approximately 43% of the run is expected to be age-1.3 fish, followed by age-2.2 (29%), age-1.2 (17%), and age 2.3 (10%).

For 2020, separate gear openings and extensions will be used to adjust harvest to achieve allocation percentages. Fishermen are reminded that regulations direct the department to avoid “to the extent practicable,” continuous fishing with set gillnet gear in the Egegik District, therefore, Egegik set gillnet fishermen should expect breaks in fishing.

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

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

UGASHIK DISTRICT

The forecasted Ugashik River sockeye salmon inshore run in 2020 is 4.5 million fish. The escapement goal range is 500,000 to 1.4 million sockeye salmon. Based on the forecast, 3.3 million fish are potentially available for harvest. Approximately 49% of the run is expected to be age-1.2, 31% age-1.3, 19% age-2.2, and 1% age-2.3 fish.

The Ugashik District allocation plan specifies 10% for set gillnet and 90% for the drift gillnet group. As in previous years, separate gear openings and adjusting length of commercial periods will be used to address allocation between gear groups in 2020.

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Beginning 9:00 a.m. Monday, June 1, commercial fishing in the Ugashik District will be allowed on a 9:00 a.m. Monday to 9:00 a.m. Friday schedule through 9:00 a.m. Friday, June 19. Based on the Kvichak River sockeye salmon forecast, fishing will begin in the full Ugashik District. Additional fishing time after June 19 will depend on fishery performance and run strength indicators. Permit holders should note that the regulation restricting opportunity to no more than 48 hours between June 16 and June 23 will not be in effect in 2020.

In addition, subsistence fishing will be permitted in the waters of the Ugashik commercial district from 12:01 a.m. Monday, June 1 until 11:59 p.m. Friday, June 19.

It is unknown at this time whether walrus will return to the Cape Greig area. If they do, then the department will use the adjusted line from 2016. If they do not, the district boundaries will revert to those in regulation at 5 AAC 06.200(d). The first announcement of the 2020 season will clarify which boundary will be in place for the summer.

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

NUSHAGAK DISTRICT

Nushagak River king salmon are managed according to the *Nushagak-Mulchatna King Salmon Management Plan* (5 AAC 06.361). This plan directs the commercial fishery to be managed for an inriver goal of 95,000 king salmon. King salmon escapement in the Nushagak River did not meet the lower end of the escapement goal range in 2019. In order to avoid consecutive years of escapement below the escapement goal range, a conservative approach to management of the commercial fishery in the Nushagak District will be used. The department will closely monitor king salmon escapement and does not anticipate any directed king salmon openings in 2020.

The Nushagak District sockeye salmon inshore run forecast is approximately 12.0 million fish: 2.3 million for escapement and 9.7 million potentially available for harvest in the Nushagak District commercial salmon fishery (Table 1). The total inshore run by river system is: Wood River 8.7 million (escapement goal range 700,000 to 1.8 million), Igushik River 1.1 million (escapement goal range 150,000 to 400,000), and Nushagak River 2.9 million (escapement goal range of 370,000 to 900,000). Approximately 54% of the forecasted run is expected to be age-1.2 sockeye salmon, < 2% age-2.2, 43% age-1.3, and < 1% age-2.3 fish.

The strategy for 2020 is to start directed sockeye salmon openings once we have an escapement of at least 100,000 sockeye salmon past the Wood River tower. This is contingent upon the Nushagak River king salmon escapement projecting to be at least 95,000 fish. If Nushagak River king salmon escapement is projecting below 95,000 fish, the department may wait to allow directed sockeye salmon openings to for additional king salmon to pass through the commercial fishing district.

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Openings will be scheduled based on sockeye salmon escapement levels in the Nushagak and Wood rivers. Mesh size will be limited to 5.5 inches or smaller. If the Nushagak River sockeye salmon escapement decreases relative to expected escapements, the department may first warn and then impose the 4.75-inch mesh restriction in the Nushagak District. Based on changes made by the BOF in December 2015, the department would also open the Wood River Special Harvest Area (WRSHA) at this time. Subsequently, if Nushagak River sockeye salmon escapement falls below the projected 370,000 fish curve, then the department may limit fishing to only the WRSHA to protect Nushagak River sockeye salmon. Commercial openings in the district may follow as allowed by escapement levels in the Nushagak River.

Igushik River sockeye salmon will be managed independently of the Nushagak-Wood River sockeye salmon stocks. Set gillnet fishing will begin in the Igushik Section when there is a market available. Initial openings will be 8-hours per day and additional time will be added if large harvests or escapement information indicate more time is warranted. Drift gillnet openings in the Igushik Section will be added as needed to control sockeye salmon escapement. Igushik River sockeye salmon returns can be quite variable relative to forecasted run strength. Management will incorporate a readiness to respond with increasing early set gillnet openings and attempt to maintain the 6% sockeye salmon harvest allocation to the Igushik Section set gillnet group by only adding drift gillnet openings as needed.

The department will switch to pink and coho salmon management within the Nushagak District around July 23, when sockeye salmon harvest decreases. Sonar counts will cease approximately July 25. After that, management decisions will be based on catch per unit effort, subsistence reports, and possibly aerial surveys.

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

TOGIAC DISTRICT

The 2020 inshore run of Togiak River sockeye salmon is forecast to be approximately 880,000 fish. Based on the forecast, approximately 690,000 sockeye salmon will potentially be available for commercial harvest. The escapement goal range is 120,000 to 270,000 sockeye salmon. Approximately 32% of the run is expected to be age 1.2; 1% of the run is expected to be age 2.2; 66% is expected to be age 1.3; and 1% is expected to be age 2.3.

Unlike other fishing districts in Bristol Bay that require emergency orders to announce fishing periods, Togiak District follows a regular weekly schedule that allows fishing in Togiak Bay Section four days per week, fishing in Kulukak Section two and a half days per week, and fishing in Matogak, Osviak, and Cape Peirce Sections five days per week. Following the *Registration and Reregistration* regulations, permit holders are restricted from fishing in the Togiak District until 9:00 a.m. July 27 if they have fished in any other district in Bristol Bay, and conversely, restricts permit holders from fishing in any other district until 9:00 a.m. July 27 if they have fished in the Togiak District. A 2015 BOF action now requires vessel transfers to be restricted in Togiak District similarly to the restriction of permit transfers. Other recent regulation changes prevent drift gillnet fishing effort near the Togiak River mouth through July 15 and restricts mesh size to 5.5 inches or smaller between June 15 and July 15 for the conservation of king salmon.

King salmon run strength to the Togiak River has been considered below average for several years.

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The department is anticipating another poor king salmon run, and permit holders can expect emergency orders to reduce the weekly fishing schedule in the last two weeks of June in the Togiak River Section.

Harvest of coho and pink salmon will be dependent on market presence. If a market for coho salmon is present, the department will continue to follow the regular weekly schedule unless it is determined that more conservative action is needed.

Acknowledgements

The department would like to again thank stakeholders for funding assistance via the Bristol Bay Fisheries Collaborative (BBFC) in 2019. The BBFC began in 2016 and as an agreement between ADF&G 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 to support and maintain it. This agreement is supported by ADF&G, the Bristol Bay Regional Seafood Development Association (BBRSDA), processors, municipalities, villages, support industries, individual setnet fishermen, and other stakeholders. A list of organizations that committed financial support to the BBFC in 2019, as well as additional information about this agreement can be found at <https://www.bbsri.org/bbfc>.

In 2019, BBSRI and BBRSDA funded a second test boat in the Port Moller Test Fishery. This vessel targeted stations offshore of the traditional test fishing stations. Information from the two-vessel program provided much more accurate stock composition estimates and characterized the inshore arrival of the run better than information from a single-boat program.

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Table 1.–Forecast of total run, escapement, and harvest of major age classes of sockeye salmon returning to Bristol Bay river systems in 2020.

DISTRICT	River	Millions of Sockeye Salmon							South Peninsula ^a	BB Inshore
		Forecasted Production by Age Class				Total	Forecasted			
		1.2	2.2	1.3	2.3		Escapement	Harvest		
NAKNEK-KVICHAK										
	Kvichak	5.07	2.23	3.04	0.07	10.42	4.00	5.92	0.50	9.92
	Alagnak	1.94	0.48	1.61	0.06	4.08	1.57	2.32	0.20	3.89
	Naknek	0.78	0.17	4.19	0.33	5.47	1.10	4.11	0.26	5.21
	Total	7.80	2.88	8.84	0.46	19.97	6.67	12.34	0.96	19.01
EGEGIK										
		1.88	3.13	4.66	1.08	10.75	1.70	8.53	0.52	10.23
UGASHIK										
		2.31	0.87	1.46	0.04	4.67	1.18	3.28	0.22	4.45
NUSHAGAK										
	Wood	5.81	0.14	2.68	0.04	8.66	1.53	6.72	0.42	8.25
	Igushik	0.37	0.00	0.68	0.01	1.07	0.28	0.74	0.05	1.02
	Nushagak	0.67	0.03	2.12	0.06	2.90 ^b	0.50	2.26	0.14	2.77
	Total	6.85	0.18	5.47	0.10	12.63	2.30	9.72	0.61	12.03
TOGIAC										
		0.30	0.01	0.61	0.01	0.93	0.20	0.69 ^c	0.04	0.88
BRISTOL BAY										
		19.14	7.06	21.04	1.68	48.95	12.04	34.56	2.35	46.60
		39%	14%	43%	3%	100%				

Note: This table is a summary. Slight differences may appear due to rounding.

^a Projected harvest is based on WASSIP estimates of the combined median harvest rates of the South Alaska Peninsula June, post-June, and North Peninsula fisheries in 2006–2008.

^b Nushagak River forecast total includes age-0.3 and age-1.4 fish.

^c Forecasts for Kulukak, Kanik, Osviak, and Matogak river systems are not included. These systems contribute approximately 50,000 sockeye salmon to Togiak District harvest each year.

APPENDIX D: 2020 TOGIAK HERRING OUTLOOK

Division of Commercial Fisheries
Sam Rabung, Director

Dillingham Area Office
PO Box 230
Dillingham, AK 99576



Alaska Department of Fish and Game
Doug Vincent-Lang, Commissioner

PO Box 115526
Juneau, AK 99811-5526
www.adfg.alaska.gov

Advisory Announcement

CONTACT: Tim Sands,
Area Management Biologist
(907) 842-5227

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2020 TOGIAK HERRING OUTLOOK

The 2020 Togiak District herring biomass is forecast to be 215,826 tons (Figure 1). This forecast is based on an age-structured analysis (ASA) model that has been used for all Togiak herring forecasts produced since 1993. Herring ages 6 and 7 are expected to comprise 70% of the projected biomass, ages 8 and above are expected to make up 25% of the biomass, with the remainder being largely age 4 and 5 herring (Figure 2).

The commercial fishery and spawn timing of Togiak herring are related to several factors including water temperatures at the spawning grounds in the Togiak District and sea surface temperatures in the southeastern Bering Sea. The department uses a sea surface temperature model (SST) based on temperatures near Unalaska to predict the timing of the Togiak herring run. Additionally, the department tracks ice coverage of the Bering Sea throughout February and March to help inform predictions in run timing, as we consider this a useful index for predicting the maturity of herring bound for the Togiak District to spawn. Based on our SST and sea ice models, the 2020 fishery is projecting a first spawn and first harvest to occur in the first week of May.

The Bristol Bay Herring Management Plan (5 AAC 27.865) sets a maximum exploitation rate of 20% for the Togiak District stock. For the 2019 Togiak herring fishery, an exploitation rate of 14% was applied due to poor survey and sampling information from previous years. Aerial survey and catch sampling data obtained in 2019 were sufficient to make a confident biomass estimate, therefore, we will manage to a 20% exploitation rate in 2020. Harvest allocation, in accordance with the management plan will be:

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Fishery	Harvest allocation
Spawn-on-kelp	1,500 tons
Dutch Harbor food and bait	2,917 tons
Togiak fishery	38,749 tons
Purse seine (80%)	30,999 tons
Gillnet (20%)	7,750 tons

Participants are reminded that the Alaska Board of Fisheries met in December 2018 and changed the allocation plan for the Togiak herring fishery. The allocation of the Togiak quota was previously 70% to the purse seine fishery and 30% to the gillnet fishery. The changes, reflected above, now allocate 80% to purse seine and 20% to gillnet. Additionally, participants are reminded that up to 50% of any unharvested gillnet quota may also be reallocated in season to the purse seine fishery. Given the size of the 2020 guideline harvest limit (GHL) and expected effort level for the 2020 fishery, it is likely less than half of the GHL will be taken and unlikely that inseason reallocation of quota will be needed.

TOGIAK FISHERY

The management strategy for the Togiak herring fishery is designed to provide maximum harvest opportunity. In 2020, purse seine and gillnet fisheries will be managed to maximize product quality through long openings, which should allow permit holders to make smaller sets and harvest the highest quality fish. Long openings also allow processors to have flexible control of harvest volume so that holding time between harvest and processing is minimized. A preseason poll indicates that two processors will participate in the 2020 Togiak herring fishery with a total fleet size of three gillnet and seven purse seine vessels. For the last decade, the department has opened the herring fishery as soon as the threshold biomass of 35,000 tons has been documented and we again will use this strategy in 2020. This strategy allows individual companies to maximize their processing capacity and decide what quality fish is suitable for their individual market.

Purse Seine

For at least the last decade, the purse seine fishery has operated as individual processor-controlled fleets. We anticipate that this will be the case in 2020, and therefore, fishing time and area(s) will be maximized allowing for the harvest of market quality herring. This approach should result in fresher, higher quality roe, thereby maximizing product quality and value. The department will not be coordinating any test fishing efforts in 2020. However, the department will work with processors that want to make test sets to monitor roe quality prior to the threshold biomass being documented.

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Gillnet

Management of the gillnet fishery will be similar to previous years. Ample fishing time and area will be allowed in an effort to take as much gillnet herring as possible. In 2020, the department will primarily focus the gillnet fleet in the area east of Right Hand Point. The department will consider opening areas west of Right Hand Point to the gillnet fleet if weather conditions are unfavorable in the eastern section. As in past years, the plan is to open the gillnet area to fishing when threshold biomass is documented. Processors and fishermen may organize test fishing to monitor product quality once the area is open to determine when to begin fishing for production. Until it is determined that commercial quality fish are present, participants should test cautiously with a small portion of gear to reduce waste.

ADF&G OPERATIONS 2020

Beginning in mid-April, fishery information will be available by calling the recorded message in Dillingham at (907) 842-5226. Recordings will be updated regularly throughout the season as information becomes available. The department will conduct aerial surveys of the Togiak District beginning in mid-April, depending on weather conditions. The department will monitor marine VHF channel 7 from Dillingham and is available by calling (907) 842-5227. Fishing announcements and regular fishery updates will be communicated directly to each processor, published on the department website, and distributed by fax and email. Harvest will be sampled from Naknek shore-based processing plants. The department will coordinate directly with plant managers as the season progresses to meet our sampling needs.

Visit <http://www.adfg.alaska.gov/index.cfm?adfg=cfnews.main> to subscribe to herring updates and announcements. Harvest and fishery opening information will also be available at the Division of Commercial Fisheries website at:

http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyareabristolbay.herring_announcements.

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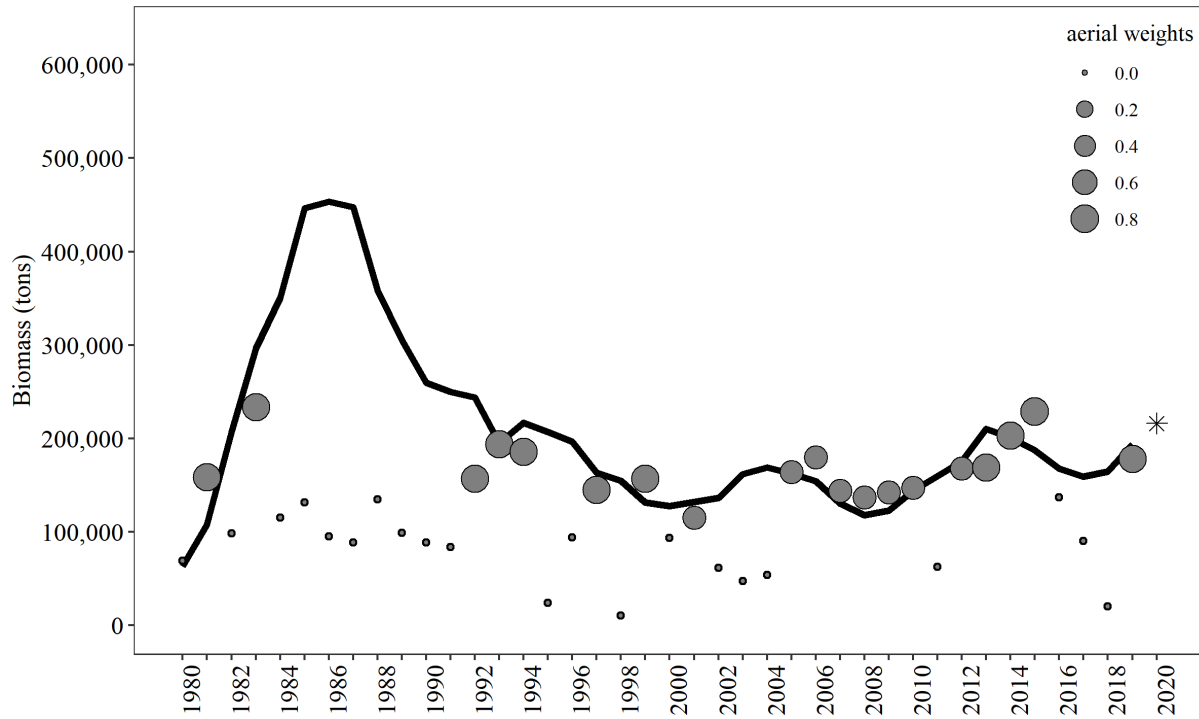


Figure 1.–Model-estimated mature biomass (black line). Annual abundance estimates with confidence weighting (black dots) ranging from 0 (very low confidence) to 1 (full confidence). The estimated mature biomass forecast for 2020 is indicated by a black star.

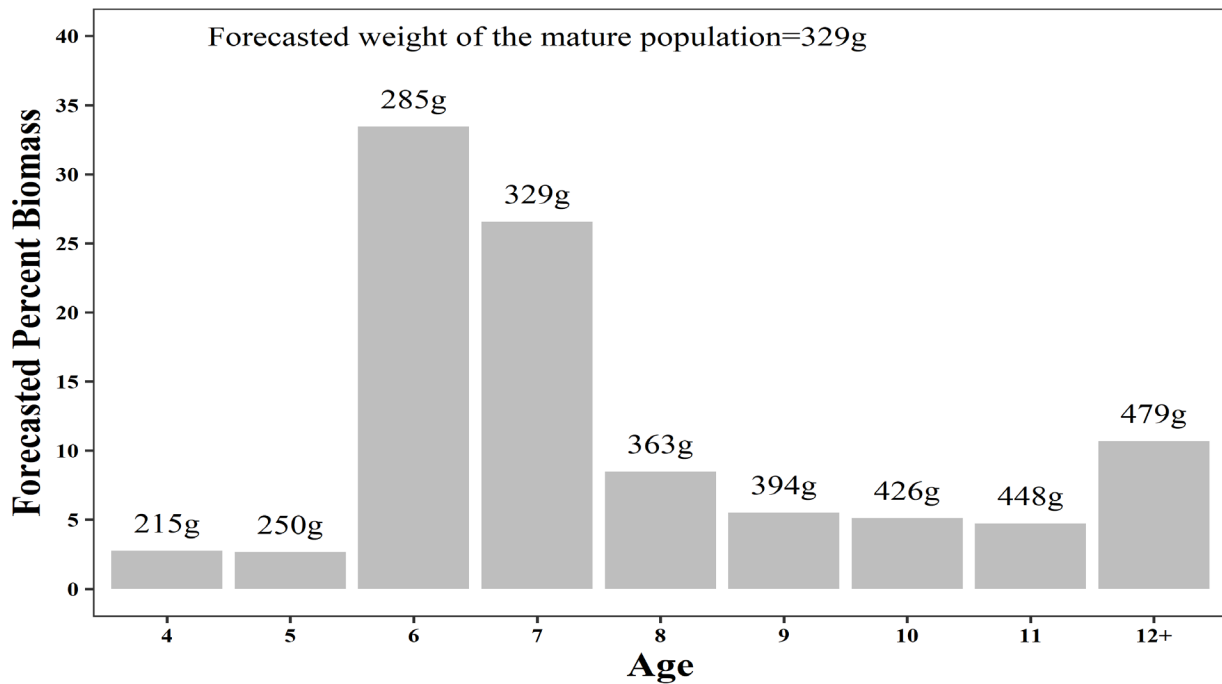


Figure 2.–Forecasted percent mature biomass by age with average weight (grams) for each age class. The average weight across all age classes of the forecasted 2020 mature biomass is estimated to be 329g.