

**Fishery Management Report No. 23-16**

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**Sport Fisheries in the North Gulf Coast Management Area in 2022 to Inform the Alaska Board of Fisheries in 2023**

by

**Brittany J. Blain-Roth**

and

**Donald E. Arthur**

October 2023

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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<b>Weights and measures (metric)</b>		<b>General</b>		<b>Mathematics, statistics</b>	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
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	$e$
hectare	ha	at	@	catch per unit effort	CPUE
kilogram	kg	compass directions:		coefficient of variation	CV
kilometer	km	east	E	common test statistics	(F, t, $\chi^2$ , etc.)
liter	L	north	N	confidence interval	CI
meter	m	south	S	correlation coefficient	
milliliter	mL	west	W	(multiple)	R
millimeter	mm	copyright	©	correlation coefficient	
		corporate suffixes:		(simple)	r
<b>Weights and measures (English)</b>		Company	Co.	covariance	cov
cubic feet per second	ft <sup>3</sup> /s	Corporation	Corp.	degree (angular)	°
foot	ft	Incorporated	Inc.	degrees of freedom	df
gallon	gal	Limited	Ltd.	expected value	$E$
inch	in	District of Columbia	D.C.	greater than	>
mile	mi	et alii (and others)	et al.	greater than or equal to	≥
nautical mile	nmi	et cetera (and so forth)	etc.	harvest per unit effort	HPUE
ounce	oz	exempli gratia		less than	<
pound	lb	(for example)	e.g.	less than or equal to	≤
quart	qt	Federal Information Code	FIC	logarithm (natural)	ln
yard	yd	id est (that is)	i.e.	logarithm (base 10)	log
		latitude or longitude	lat or long	logarithm (specify base)	log <sub>2</sub> , etc.
<b>Time and temperature</b>		monetary symbols		minute (angular)	'
day	d	(U.S.)	\$, ¢	not significant	NS
degrees Celsius	°C	months (tables and figures): first three letters	Jan, ..., Dec	null hypothesis	$H_0$
degrees Fahrenheit	°F	registered trademark	®	percent	%
degrees kelvin	K	trademark	™	probability	P
hour	h	United States (adjective)	U.S.	probability of a type I error	
minute	min	United States of America (noun)	USA	(rejection of the null hypothesis when true)	$\alpha$
second	s	U.S.C.	United States Code	probability of a type II error	
		U.S. state	use two-letter abbreviations (e.g., AK, WA)	(acceptance of the null hypothesis when false)	$\beta$
<b>Physics and chemistry</b>				second (angular)	"
all atomic symbols				standard deviation	SD
alternating current	AC			standard error	SE
ampere	A			variance	
calorie	cal			population	Var
direct current	DC			sample	var
hertz	Hz				
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

***FISHERY MANAGEMENT REPORT NO. 23-16***

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MANAGEMENT AREA IN 2022  
TO INFORM THE ALASKA BOARD OF FISHERIES IN 2023**

by  
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## ABSTRACT

This report provides a detailed summary of the sport fisheries in the North Gulf Coast Management Area (NGCMA) through 2022 that will be discussed at the 2023 Lower Cook Inlet Finfish Alaska Board of Fisheries (BOF) meeting. These include the saltwater Chinook and sockeye salmon fisheries and groundfish fisheries. Included for each sport fishery are a description and historical overview, current management strategies, and recent fishery performance of effort, catch, and harvest. Included for each fishery is information specific to the proposals that the BOF will address. An appendix guiding the reader to specific information relevant to each proposal is also included. Overall, sport fishing effort in NGCMA has showed a slight decline in recent years due to reduced effort in 2020. Recent fishery harvest trends in saltwater fisheries show increases in harvest of rockfish (*Sebastes* spp.), Chinook salmon (*Oncorhynchus tshawytscha*), and sockeye salmon (*O. nerka*).

Keywords: North Gulf Coast Management Area, Alaska Board of Fisheries, effort, harvest, Chinook salmon, Pacific halibut, rockfish, lingcod, fisheries management, sport fisheries, terminal fisheries, personal use

## INTRODUCTION

This fisheries management report provides information regarding sport fisheries in the North Gulf Coast Management Area (NGCMA) that will be discussed at the 2023 Lower Cook Inlet Finfish Alaska Board of Fisheries (BOF) meeting. These fisheries are managed by the Alaska Department of Fish and Game (ADF&G), Division of Sport Fish (SF) based out of the Anchorage office. This report covers the background and recent fishery performance of the saltwater Chinook salmon (*Oncorhynchus tshawytscha*) and sockeye salmon (*O. nerka*) fisheries and groundfish fisheries. Background information includes a fishery description, history, management and regulatory structure, and any additional fishery and stock monitoring that has occurred. Recent fisheries performance information includes effort, catch, and harvest in 2022 compared to a historical period (1999–2018) and the last reporting period (2019–2021). The recent performance also includes any management actions that occurred in 2022 and pertinent fishery or stock monitoring information. Appendix A1 contains a table guiding the reader to specific information relevant to each BOF proposal.

The mission of SF is to protect and improve the state’s fishery resources by managing for sustainable yield of wild stocks of sport fish, providing diverse sport fishing opportunities, and providing information to assist the BOF in optimizing social and economic benefits from sport fisheries. To implement these goals, SF has in place a fisheries management process that includes an annual regional review of fisheries status and research needs, development of fisheries stock assessments, a formal operational planning process, and use of biological and fishing effort data and input from user groups to assess the need for and development of management plans and regulatory proposals.

SF management and research activities are funded by ADF&G and Federal Aid in Fisheries Restoration funds. ADF&G funds are derived from the sale of state sport fishing licenses. Federal Aid funds are derived from federal taxes on fishing tackle and equipment established by the Federal Aid in Sport Fish Restoration Act (also referred to as the Dingell-Johnson Act or D-J Act). D-J funds are provided to the states at a match of up to 3-to-1 with state funds. Additional funding specified for providing, protecting, and managing access to fish and game is provided through a tax on boat gas and equipment established by the Wallop-Breaux (W-B) Act. Other peripheral funding sources may include contracts with various government agencies and the private sector, or in a few cases, State of Alaska general funds (GF).

This area management report provides information for the NGCMA and its fisheries for 2022. This report is organized into primary sections including a management area overview and major fisheries sections for fisheries addressed by the 2023 Lower Cook Inlet Finfish BOF meeting. The overview contains a description of the management area, a list of management plans and policies relevant to the BOF meeting, and a summary of effort, harvest, and catch. Each major fishery section includes a description, and fisheries performance and management actions taken during the 2022 reporting period.

## MANAGEMENT AREA OVERVIEW

### MANAGEMENT AREA DESCRIPTION

The NGCMA consists of all waters between Gore Point (156°96'25"W longitude) and Cape Fairfield (148°50'25"W longitude) (Figure 1). The eastern boundary of the NGCMA used to be located 15 miles farther east at Cape Puget. At the 2008 BOF meeting, the eastern boundary was moved to Cape Fairfield to align the commercial, subsistence, and sport fish regulatory boundaries to one location. The City of Seward is the only community in the management area.

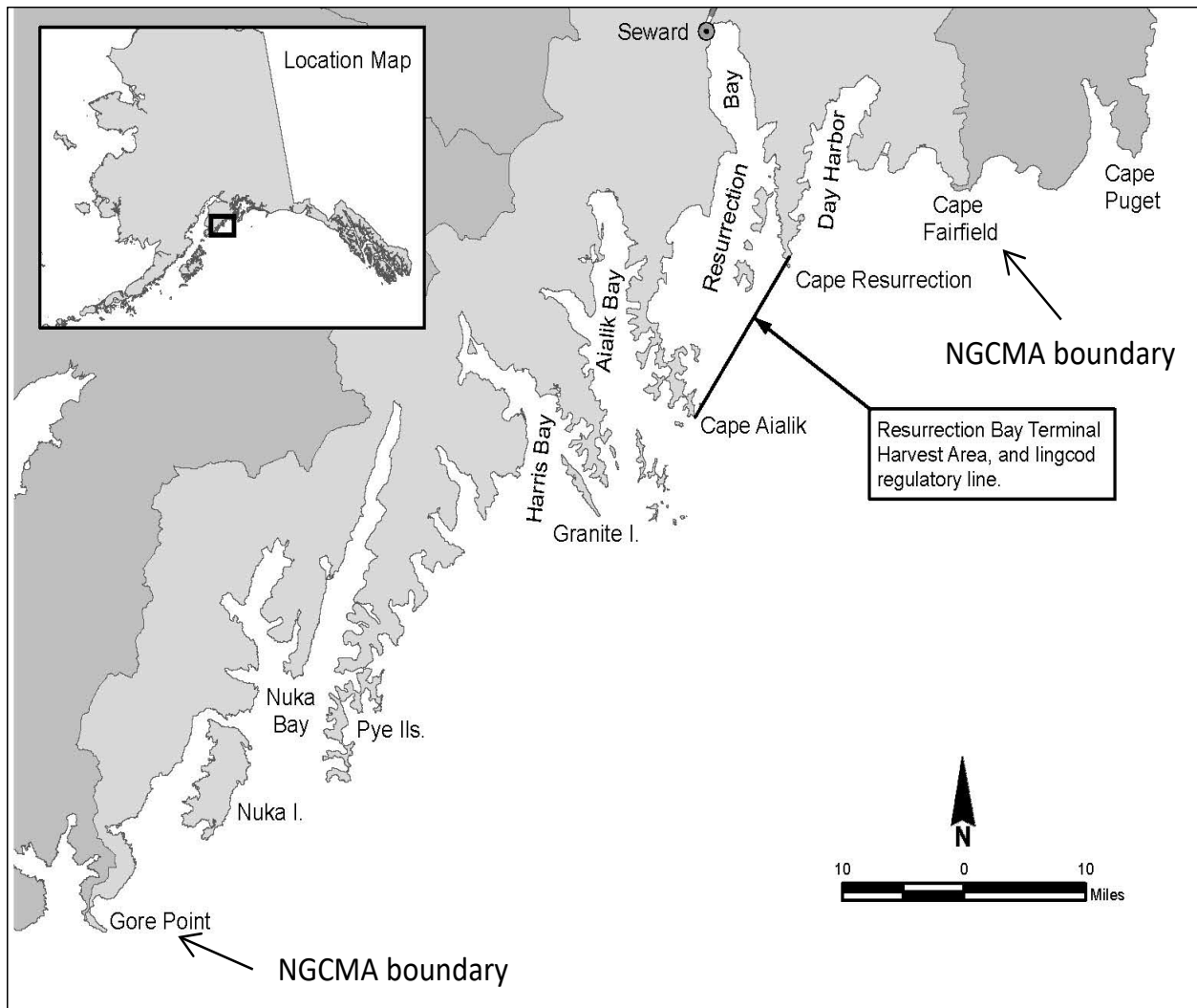


Figure 1.—Map of the North Gulf Coast Management Area and Resurrection Bay Terminal Harvest Area.



The Port of Seward, at the head of Resurrection Bay, is the gateway to sport fishing in the NGCMA. Tourism, including a sport fish charter industry, is important to the economy of Seward. Access to area sport fisheries is by road, rail, air, and boat. Most sport fisheries in the NGCMA require a boat or plane for access, so participation and effort (angler-days) from boat anglers, both nonguided and charter, dominate these fisheries (see *Sport Fishing Effort, Harvest, and Catch* section). Local Seward beaches, which are adjacent to stocking sites, are the only easily accessible shore fisheries for salmon in the NGCMA. In contrast to boat-accessible fisheries, road-accessible streams and lakes provide only minor sport fisheries. Principal land managers include private individuals, the City of Seward, U.S. National Park Service, U.S. Forest Service, Native corporations, and the State of Alaska.

## **FISHERY RESOURCES**

Most area sport fisheries occur in salt water and target 5 species of Pacific salmon (coho or silver [*O.s kisutch*], Chinook or king, [*O. tshawytscha*], pink or humpy [*O. gorbuscha*], chum or dog [*O. keta*], sockeye or red [*O. nerka*]) and Dolly Varden (*Salvelinus malma*). The NGCMA supports a large marine coho salmon sport fishery (see *Sport Fishing Effort, Harvest, and Catch* section). The Seward Silver Salmon Derby sponsored by the Seward Chamber of Commerce highlights this popular fishery each year in August. In the NGCMA, coho salmon are a mix of hatchery and wild fish; Chinook and sockeye salmon are a result of hatchery production; pink and chum salmon and Dolly Varden are all wild fish. Groundfish species are also targeted by sport anglers and include Pacific halibut (*Hippoglossus stenolepis*), rockfish (*Sebastes* spp.), and lingcod (*Ophiodon elongatus*). When weather permits, charter boats travel daily to the marine waters of the Prince William Sound Management Area to target the abundant groundfish resources. There is also a relatively small salmon shark (*Lamna ditropis*) fishery.

All freshwater drainages in Resurrection Bay, except the Resurrection River drainage downstream of the Seward Highway and Nash Road in Seward, are closed to salmon fishing but are open to Dolly Varden, rainbow trout (*O. mykiss*), and Arctic grayling (*Thymallus arcticus*) sport fishing.

## **ESTABLISHED MANAGEMENT PLANS AND POLICIES RELEVANT TO THE LOWER COOK INLET FINFISH BOF MEETING**

Regulations governing the sport fisheries of NGCMA are found in Alaska statute and administrative codes (AAC). Cook Inlet–Resurrection Bay freshwater sport regulations are found in 5 AAC 56.000 (Kenai Peninsula Area), Cook Inlet–Resurrection Bay saltwater sport regulations are found in 5 AAC 58.000, and Statewide sport provisions and definitions are found in 5 AAC 75.000.

Management plans that specifically affect NGCMA sport fisheries under consideration by the BOF for the 2023 Lower Cook Inlet Finfish meeting are as follows: ADF&G Statewide Stocking Plan; *North Gulf Coast King Salmon Sport Fishery Management Plan* (5 AAC 58.065); *Trail Lakes Hatchery Salmon Hatchery Management Plan* (5 AAC 21.373); *Resurrection Bay Salmon Management Plan* (5 AAC 21.376); *Policy for the management of sustainable salmon fisheries* (5 AAC 39.222) (Appendix B1).

The management plans for North Gulf Coast and Resurrection Bay provide for the sustained yield of area fisheries, as well as establishing allocation and management guidelines for ADF&G managers. No formal escapement goals have been established for Chinook salmon in the North Gulf Coast; however, the purpose of the Chinook salmon fishery enhancement program is to

provide sport fishing opportunities in Resurrection Bay. The management objectives of this program are as follows: (1) produce a return of 4,000–6,000 early-run adult Chinook salmon to Resurrection Bay, and (2) generate 10,000 angler-days of annual sport fishing effort directed at stocked Chinook salmon in Resurrection Bay (Statewide Stocking Plan for Sport Fisheries<sup>1</sup>).

## **STOCKING PROGRAM**

The importance of salmon in the NGCMA was identified early, and ADF&G began stocking salmon in the 1950s. The stocking of hatchery fish has increased and diversified the opportunities available to sport anglers in the NGCMA, especially for Resurrection Bay saltwater anglers, both fishing by boat and from shore. These stocking activities consist of 2 types of programs: large private nonprofit hatchery releases to enhance fish abundance for both commercial and sport fisheries, and smaller ADF&G hatchery releases targeted at enhancing sport fisheries. The total hatchery releases of salmon in the NGCMA have averaged just over 4.0 million fish per year over the last 10 years (calculated from Appendix C1; excludes coho salmon, not shown). Mostly sockeye salmon are released. All hatchery salmon releases contribute to the common property of all fisheries. Stocking programs directed toward enhancing sport fisheries include the releasing of coho and Chinook salmon smolt by state-operated hatcheries and the release of coho salmon raised by Cook Inlet Aquaculture Association (CIAA). CIAA also releases sockeye salmon into Resurrection Bay fresh and salt waters primarily intended for commercial harvest but also caught by sport anglers. There is no stocking of pink or chum salmon.

The Seward Lagoon Chinook and coho salmon “terminal” fishery consists of returning salmon that will not naturally reproduce because there is no spawning area in the saltwater location where released smolt imprint. Stocked sport fisheries are managed so that all returning fish are harvested. ADF&G SF has strategically selected saltwater locations where returning adult salmon are accessible to anglers fishing from shore or a small boat.

### **Stocked Salmon Fisheries Management Objectives**

The BOF has established 3 salmon management plans for NGCMA. These plans provide for the sustained yield of area fisheries, as well as establish allocation and management guidelines for ADF&G managers (Appendix B1). Management plans and policies established for Resurrection Bay include the following:

- 1) Trail Lakes Hatchery Salmon Management Plan 5 AAC 21.373. This management plan establishes guidelines for the enhancement of coho and sockeye salmon in Bear Lake near Seward. The plan provides for the enhancement of sockeye salmon in Bear Lake intended for commercial use in Resurrection Bay, provided the enhancement does not negatively impact coho salmon smolt production from Bear Lake. Surplus sockeye salmon are split 50:50—50% to CIAA cost recovery and 50% to the commercial fishing fleet.
- 2) Resurrection Bay Salmon Management Plan 5 AAC 21.376. This management plan provides allocation and management guidelines for Resurrection Bay salmon fisheries. The plan stipulates that coho and Chinook salmon fisheries of Resurrection Bay be managed primarily for recreational (sport fishery) uses and provides for a commercial fishery for other salmon species only if the prosecution of these fisheries does not interfere with the sport fishery in Resurrection Bay.

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<sup>1</sup> <http://www.adfg.alaska.gov/index.cfm?adfg=fishingsportstockinghatcheries.stockingplan> (accessed September 2022).

3) North Gulf Coast King Salmon Sport Fishery Management Plan 5 AAC 58.065. This management plan directs Chinook salmon fishery effort to hatchery stocks and stabilizes the sport harvest of Chinook salmon in the North Gulf Coast.

## **SPORT FISHING EFFORT, HARVEST, AND CATCH**

### **STATEWIDE HARVEST SURVEY**

Since 1977, sport angler effort and harvest in the NGCMA have been estimated using the ADF&G Alaska Sport Fishing Survey (commonly known as the Statewide Harvest Survey, or SWHS; Mills 1979–1980, 1981a, 1981b, 1982–1991, 1992a, 1992b, 1993, 1994; Howe et al. 1995, 1996).<sup>2</sup> The SWHS is a mail survey that is used to estimate annual sport fishing effort and harvest. Final estimates are available during the early fall of the following year. The survey is designed to estimate effort in angler-days and the number of fish caught and harvested by location. Although harvest and catch are estimated for individual species, the SWHS is not designed to estimate directed effort towards individual species.

The SWHS has been modified over time to add additional stratifications to the estimates and to incorporate changes to the regulatory structure. Starting in 1986, the survey was modified to produce estimates by nonguided and charter anglers. Beginning in 1990, the survey was modified to also estimate catch (number of fish released plus number of fish harvested) by location. Since 1993, angler residency data have been available. The SWHS has also been modified several times to facilitate producing Chinook salmon catch and harvest estimates for saltwater fisheries.

The precision of the SWHS estimates is related to the number of household respondents who reported participating in those fisheries. For any given fishery, SWHS estimates based on fewer than 12 household respondents are not used. Estimates based on 12 or more, but less than 30 household respondents can be useful for detecting relative trends. Estimates based on 30 or more respondents generally represent fishing effort, catch, and harvest levels (Mills and Howe 1992).

In this report, data from the SWHS are generally divided into 2 periods: (1) historical 20-year period from 1999 through 2018 with annual data and averages, and (2) the previous reporting period, 2019–2021 (Arthur et al. *In prep*). These historical and previous reporting period averages provide context for the effort, catch, and harvest estimates and trends in this reporting period.

### **SPORT FISH GUIDE LICENSING AND CHARTER LOGBOOK PROGRAM**

Beginning in 1995, ADF&G required sport fishing guide businesses and guides to register before fishing in Alaska. Since 1998, SF has operated a program to register and license both sport fishing guides and sport fishing guide businesses and to collect information on sport fishing participation, effort, and harvest by saltwater and freshwater charter clients (Sigurdsson and Powers 2009). In 1998, the BOF adopted statewide sport fishing guide regulations (5 AAC 75.075) that required all sport fishing guides and businesses to register annually with ADF&G. At this time, the BOF also adopted statewide regulations that required logbooks for saltwater charter vessels. The logbooks collected information on charter activity (location, effort, and harvest) necessary to the BOF for allocation and management decisions specific to Chinook salmon (*O. tshawytscha*), rockfish

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<sup>2</sup> Hereafter, “SWHS” will refer to these references for 1977–1995 data and to the Alaska Sport Fishing Survey database [Internet] Anchorage, AK for data 1996–present: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

(*Sebastes* spp.), and lingcod (*O. elongatus*), and for the North Pacific Fishery Management Council (NPFMC) for allocation of Pacific halibut (*H. stenolepis*).

In 2004, the Alaska Legislature adopted House Bill 452, which established licensing requirements for sport fishing guide business owners and sport fishing guides on a statewide basis (effective 2005). This legislation also required logbook reporting for all freshwater guiding businesses in addition to the existing saltwater reporting requirements. The logbook data provide location of fishing effort, level of participation, and number of species kept and released by clients. This information is used for the regulation, development, and management of fisheries and has been published annually since 2009 (data since 2006; see Sigurdsson and Powers 2009–2014). From 2002 through 2005, for both technical and policy-based reasons, the Charter Logbook program did not required reporting of Pacific halibut catch and harvest (Sigurdsson and Powers 2009). Since 2006, the Charter Logbook data have been consistently reported and these data are used in this report. Charter Logbook data can also provide both spatial and temporal distribution of the charter sport fishing effort because guides are required to record a daily trip log including a statistical area code for the primary area fished; however, these data are not reported here.

The freshwater sport fishing Charter Logbook program ended following the 2018 fishing season. This action was a result of ADF&G’s budget reduction process; no estimates from this program are presented here. The saltwater Charter Logbook program was continued because ADF&G agreed to provide these data for Southeast Alaska Chinook salmon treaty obligations and federal (National Oceanic and Atmospheric Administration Fisheries) halibut management actions. Saltwater Charter Logbook data for 2022 are presented in this report, and prior data are divided into 3 periods: (1) historical 2006–2013 prior to the implementation of the Halibut Catch Sharing Plan (see groundfish section), (2) a transitional period from 2014–2018, and (3) previous reporting period 2019–2021.

## **AREA EFFORT AND HARVEST OVERVIEW**

The NGCMA historically accounts for, on average (1999–2018), 4% of the total statewide and 6% of the total Southcentral region sport fishing effort (Table 1). Saltwater sport fisheries dominate the NGCMA because only a small portion of the Resurrection Bay drainage is open to salmon fishing in fresh waters. On average (1999–2018), over 99% of the NGCMA sport fishing effort occurred in NGCMA salt waters (Table 2), and during this period, an average of 34,570 anglers that sport fished in NGCMA were chartered boat anglers (average 37%; Table 3). Boat anglers (nonguided and charter combined) have historically accounted for 87% of the angler-days of saltwater effort in the NGCMA (Table 3).

Groundfish and “other” species harvest has historically made up about half of the NGCMA harvest, and salmon have made up most of the other half. The “other” groundfish category in Table 4, which is predominately Pacific halibut, composed the largest proportion of the groundfish harvest until about 2016, when rockfish harvest became the majority of the nonsalmon harvest in the NGCMA (Table 4). Historically (1999–2018), most of the NGCMA salmon harvest was coho salmon, composing nearly 85% of the total salmon harvest on average, whereas Chinook salmon only made up approximately 3% (calculated from Table 4).

The saltwater charter industry at the Port of Seward started to decline in 2009 when the number of licensed charter businesses declined to below 100; furthermore, the number of registered charter vessels in operation also declined to below 150 vessels (Table 5). In 2014, the number of businesses and vessels started to increase followed by a general decrease about 5 years later. The

number of vessels has ranged from 156 (2006) to 92 (2020). Angler-days of effort has ranged from 25,432 (2006) to 12,129 (2020), with an average of 21,190 from 2014 to 2018. The low number of angler days in 2020 was because of a significant decline in nonresident anglers due to the COVID-19 pandemic. Historically, salmon or a combination of salmon and groundfish were the target trips, but salmon-specific trips have declined in recent years (Table 5). On average (2006–2021), 70% of charter effort comes from nonresident anglers (calculated from Table 5). Weather, fuel prices, economic reasons, or regulations could all be factors that influence the number of charter trips in a year. Even with the variation between years, Seward is the second highest in number of charter businesses in Southcentral Alaska, behind the port of Homer (Ben Jevons, Charter Logbook Program Coordinator, ADF&G, Anchorage, personal communication).

Table 1.—Number of angler-days expended in the North Gulf Coast Management Area compared to Southcentral and statewide, 1999–2022.

Year	Effort (angler-days)			Percent of statewide effort	Percent of Southcentral effort
	Statewide	Southcentral	NGC		
1999	2,499,152	1,659,966	84,742	3	5
2000	2,627,805	1,844,824	83,830	3	5
2001	2,621,941	1,560,562	91,477	3	6
2002	2,259,091	1,569,513	97,351	4	6
2003	2,219,398	1,535,501	95,579	4	6
2004	2,473,961	1,709,671	117,941	5	7
2005	2,461,933	1,712,610	115,605	5	7
2006	2,294,548	1,605,983	102,239	4	6
2007	2,543,674	1,799,352	119,553	5	7
2008	2,315,601	1,622,920	102,635	4	6
2009	2,216,445	1,522,346	99,195	4	7
2010	2,000,167	1,371,492	85,566	4	6
2011	1,919,313	1,326,950	90,812	5	7
2012	1,885,692	1,252,263	72,536	4	6
2013	2,202,957	1,488,383	96,461	4	6
2014	2,309,853	1,571,650	96,940	4	6
2015	2,212,331	1,470,381	95,364	4	6
2016	1,982,300	1,314,668	86,840	4	7
2017	2,006,244	1,312,586	93,631	5	7
2018	1,878,008	1,245,252	86,678	5	7
2019	2,075,431	1,378,500	102,209	5	7
2020	1,566,516	1,124,785	75,197	5	7
2021	1,978,718	1,337,679	104,545	5	8
2022	1,827,809	1,204,944	90,421	5	8
Average					
1999–2018	2,246,521	1,524,844	95,749	4	6
2019–2021	1,873,555	1,280,321	93,984	5	7

Source: Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited September 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Table 2.—Sport fishing effort in angler-days for salt and fresh water in North Gulf Coast Management Area, 1999–2022.

Year	Salt water		Fresh water		All effort
	Effort	Percent	Effort	Percent	
1999	84,467	99.9	105	0.1	84,572
2000	83,395	99.7	253	0.3	83,648
2001	92,016	99.6	367	0.4	92,383
2002	97,988	99.4	558	0.6	98,546
2003	96,596	99.1	924	0.9	97,520
2004	114,338	99.7	360	0.3	114,698
2005	115,605	99.3	761	0.7	116,366
2006	102,565	99.4	667	0.6	103,232
2007	119,656	99.7	383	0.3	120,039
2008	102,737	99.6	461	0.4	103,198
2009	99,416	99.3	726	0.7	100,142
2010	85,566	99.5	424	0.5	85,990
2011	90,152	99.3	660	0.7	90,812
2012	72,018	99.3	518	0.7	72,536
2013	94,444	97.9	2,017	2.1	96,461
2014	96,164	99.2	776	0.8	96,940
2015	94,664	99.3	700	0.7	95,364
2016	85,204	98.1	1,636	1.9	86,840
2017	92,731	99.0	900	1.0	93,631
2018	86,470	99.8	208	0.2	86,678
2019	100,596	98.4	1,613	1.6	102,209
2020	74,415	99.0	782	1.0	75,197
2021	102,963	98.5	1,582	1.5	104,545
2022	90,208	99.8	213	0.2	90,421
Average					
1999–2018	95,310	99.3	670	0.7	95,980
2019–2021	92,658	98.6	1,326	1.4	93,984

Source: Alaska Sport Fishing Survey database [Internet], 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited September 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Table 3.–SWHS estimates of saltwater sport fishing effort by user group in the North Gulf Coast Management Area, 1999–2022.

Year	Saltwater effort	Charter boat		Private boat		Shore	
		Effort	Percent	Effort	Percent	Effort	Percent
1999	84,637	22,962	27.1	45,143	53.3	16,532	19.5
2000	83,551	27,184	32.5	41,560	49.7	14,807	17.7
2001	91,477	29,573	32.3	44,195	48.3	17,709	19.4
2002	97,351	33,138	34.0	47,074	48.4	17,139	17.6
2003	95,579	37,762	39.5	43,303	45.3	14,514	15.2
2004	117,941	29,943	25.4	71,681	60.8	16,317	13.8
2005	115,605	33,248	28.8	64,007	55.4	18,350	15.9
2006	102,239	30,201	29.5	59,815	58.5	12,223	12.0
2007	119,553	45,913	38.4	59,591	49.8	14,049	11.8
2008	102,635	37,050	36.1	55,834	54.4	9,751	9.5
2009	99,195	36,993	37.3	50,515	50.9	11,687	11.8
2010	85,566	34,714	40.6	42,507	49.7	8,345	9.8
2011	90,152	35,831	39.7	46,594	51.7	7,727	8.6
2012	72,018	32,968	45.8	31,831	44.2	7,219	10.0
2013	94,444	40,714	43.1	44,619	47.2	9,111	9.6
2014	96,164	36,177	37.6	50,417	52.4	9,570	10.0
2015	94,664	39,216	41.4	43,746	46.2	11,702	12.4
2016	85,204	38,945	45.7	36,751	43.1	9,508	11.2
2017	92,731	35,934	38.8	42,710	46.1	14,087	15.2
2018	86,470	32,943	38.1	38,286	44.3	15,241	17.6
2019	100,596	33,881	33.7	43,426	43.2	23,289	23.2
2020	74,415	20,963	28.2	34,373	46.2	19,079	25.6
2021	102,963	35,395	34.4	41,243	40.1	26,325	25.6
2022	90,208	34,380	38.1	28,786	31.9	27,042	30.0
Average							
1999–2018	95,359	34,570	37.0	48,009	50.0	12,779	13.0
2019–2021	92,658	30,080	32.0	39,681	43.0	22,898	25.0

Source: Alaska Sport Fishing Survey database [Internet], 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited September 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Table 4.—Sport fishing harvest by species in the North Gulf Coast Management Area, 1999–2022.

Year	Salmon						Dolly Varden	Groundfish and other saltwater fish			
	Chinook	Coho	Pink	Sockeye	Chum	Total		Lingcod	Rockfish	Other <sup>a</sup>	Total
1999	2,640	75,620	4,560	1,064	663	84,547	221	3,445	25,237	29,856	88,394
2000	2,655	70,771	3,883	1,485	1,179	79,973	242	5,565	32,031	34,150	105,896
2001	2,281	96,470	3,840	1,263	650	104,504	216	3,694	32,460	31,841	99,836
2002	3,380	98,559	4,280	3,112	430	109,761	915	4,158	39,833	38,799	121,589
2003	2,792	86,011	4,470	2,077	263	95,613	653	4,209	30,394	44,764	124,131
2004	3,302	107,916	5,603	2,984	1,063	120,868	679	5,066	47,331	59,792	171,981
2005	2,768	135,946	7,051	5,460	1,178	152,403	146	5,451	38,512	57,355	158,673
2006	3,388	82,699	3,452	4,977	715	95,231	194	6,277	38,673	50,315	145,580
2007	3,522	105,970	5,941	5,761	318	121,512	220	9,047	44,384	65,487	184,405
2008	1,834	79,956	6,172	5,732	1,218	94,912	157	9,163	48,917	61,551	181,182
2009	1,981	91,235	4,399	10,619	580	108,814	165	6,797	46,047	51,604	156,052
2010	2,657	70,555	3,250	4,949	275	81,686	116	7,399	47,214	50,576	155,765
2011	2,419	88,376	2,401	9,592	438	103,226	170	7,235	46,675	56,190	166,290
2012	1,461	44,036	6,055	5,593	578	57,723	102	6,780	40,467	44,051	135,349
2013	2,763	80,938	5,908	6,453	1,491	97,553	175	6,426	51,777	54,030	166,263
2014	2,593	78,197	4,782	5,913	630	92,115	171	5,474	56,748	56,544	175,310
2015	3,750	90,370	7,514	7,119	993	109,746	148	5,444	59,370	61,134	187,082
2016	2,541	25,991	1,720	12,921	238	43,411	68	4,754	80,081	52,674	190,183
2017	3,690	86,103	7,831	12,868	654	111,146	23	3,536	48,006	36,221	123,984
2018	4,460	42,789	3,096	16,922	214	67,481	27	3,695	49,750	35,055	123,555
2019	4,416	49,686	5,812	27,313	563	87,790	70	3,673	56,236	39,418	138,745
2020	4,657	29,294	4,207	17,359	300	55,817	34	3,069	38,167	28,856	98,948
2021	6,625	48,428	7,735	34,461	800	98,049	57	3,804	62,860	40,510	147,684
2022	4,563	40,310	5,368	43,800	543	94,584	92	3,776	68,350	32,926	137,978
Average											
1999–2018	2,844	81,925	4,810	6,343	688	96,611	240	5,681	45,195	48,599	148,075
2019–2021	5,233	42,469	5,918	26,378	554	80,552	54	3,515	52,421	36,261	128,459

Source: Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited September 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

<sup>a</sup> Other may include halibut, smelt, herring, sablefish, cod, greenling, sculpin, and sharks.



Table 5.—Charter Logbook data for the North Gulf Coast Management Area, 2006–2022.

Year	Businesses	Vessels	Angler-days			Number of trips with primary target				
			Resident	Nonresident	Other <sup>a</sup>	Total	Salmon	Groundfish	Both	Total
2006	113	156	6,093	16,643	2,696	25,432	1,442	877	1,271	3,569
2007	115	154	5,825	17,140	446	23,411	1,227	822	1,522	3,538
2008	111	151	5,074	15,887	549	21,510	920	931	1,385	3,166
2009	92	135	4,508	11,868	455	16,831	1,043	513	1,118	2,652
2010	89	130	4,265	12,813	1,560	18,638	983	822	950	2,716
2011	81	121	4,833	13,940	1,729	20,502	908	540	1,454	2,874
2012	83	119	5,187	13,520	1,836	20,543	793	787	1,174	2,715
2013	66	104	4,846	14,306	1,978	21,130	1,018	533	1,268	2,803
2014	72	121	5,510	14,764	1,375	21,649	908	516	1,413	2,796
2015	73	122	4,511	14,817	1,588	20,916	732	423	1,659	2,774
2016	66	109	4,506	14,083	1,522	20,111	477	885	1,307	2,651
2017	69	108	4,477	14,824	1,325	20,626	865	495	1,271	2,601
2018	70	112	4,739	16,720	1,189	22,648	729	973	1,199	2,868
2019	65	110	4,276	16,381	1,049	21,706	578	836	1,482	2,869
2020	54	92	4,585	6,841	703	12,129	168	702	937	1,780
2021	64	99	4,380	18,369	887	23,636	464	1,210	1,478	3,079
2022	65	98	4,231	18,179	1,232	23,642	507	1,014	1,406	2,819
Average										
2006–2013	94	134	5,079	14,515	1,406	21,000	1,042	728	1,268	3,004
2014–2018	70	114	4,749	15,042	1,400	21,190	742	658	1,370	2,738
2019–2021	61	100	4,414	13,864	880	19,157	403	916	1,299	2,576

Source: Charter Logbook database [Internet]. 2006–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited September 2023). URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests.

Note: Inception date for database is 2006. Averages cover the historical period 2006–2013 prior to the implementation of Halibut Catch Sharing Plan, a transitional reporting period 2014–2018, and the previous reporting period 2019–2021.

<sup>a</sup> Includes complementary, crew, or unreported angler-days.

## **AREA FISHERIES 2022 PERFORMANCE**

In 2020, due to the COVID-19 pandemic, the lowest angler effort was estimated in over 20 years, but this rebounded in 2022. In 2022, NGCMA sport fisheries effort (angler-days) was 90,421, which was slightly lower than both the previous fishery performance period average (2019–2021) of 93,984 angler-days and the historical 20-year average (1999–2018) of 95,749 (Table 1). Private boat anglers accounted for 31.9% of the effort (28,786 angler days; Table 3), and overall effort in NGCMA sport fisheries remained at 5% of the total sport fishing effort in Alaska (Table 1). Based on Charter Logbook data, nonresident angler-days were above average, making up approximately 77% of the angler-days of effort in the NGCMA (Table 5).

In NGCMA salt waters, Chinook salmon support year-round fisheries, whereas coho, pink, sockeye, and chum salmon are caught during their spawning migration through North Gulf Coast and Resurrection Bay salt waters. In 2022, NGCMA coho salmon, chum salmon, lingcod, and other groundfish were harvested below their respective historical (1999–2018) averages, but Chinook salmon, sockeye salmon, and rockfish harvests were above the historical reporting period averages (Table 4). Sockeye salmon harvest was 6 times higher than the historical average, and this may be explained by the increased popularity of shore fishing for sockeye salmon at the mouth of the Resurrection River and Spring Creek. Indeed, the proportion of shore to total effort by anglers (30%) doubled in 2022 from the historical average (1999–2018) of 13% for the NGCMA (Table 3).

## **CHINOOK SALMON**

### **CHINOOK SALMON FISHERY DESCRIPTION**

In the NGCMA, all fresh waters are closed to Chinook salmon fishing. Saltwater salmon sport fisheries are primarily boat-based troll or mooching fisheries in addition to shore-based fishing in the town of Seward, which is the primary access point into the NGCMA. Saltwater fisheries are primarily monitored with SWHS data and Charter Logbook data. Based on Charter Logbook data, annual charter saltwater effort towards salmon (number of trips) has been generally less than effort towards groundfish (Table 5).

There is little wild production of Chinook salmon in NGCMA; therefore, the Chinook salmon sport fishery in NGCMA is assumed to be supported almost entirely by hatchery-produced fish. Resurrection Bay is the only location in NGCMA waters that is stocked with Chinook salmon, and in the past, hatchery stocking had created 2 distinct Chinook salmon runs. The late-run Chinook salmon program was canceled in 1998 due to lack of available broodstock. Currently, early-run hatchery Chinook salmon return to release sites as mature adults from late May through mid-July and are harvested in salt waters through the summer months. However, Chinook salmon may feed in the area throughout the year and mostly nonguided anglers are assumed to be harvesting these fish during the winter months. In 2007, an annual youth-only Chinook salmon sport fishery was approved by the BOF and now occurs in the Seward Lagoon and outflow stream in June and recently has been extended into July by emergency order (e.g., Appendix D1).

## **CHINOOK SALMON STOCKING PROGRAM**

The current ADF&G Statewide Stocking Plan<sup>3</sup> sets a stocking target of 305,000 Chinook salmon smolt for Seward Lagoon, Resurrection Bay. The purpose of this stocking is to provide Chinook salmon sport-fishing opportunities in Resurrection Bay. The primary Chinook salmon broodstock source is Crooked Creek, and if the number of spawning pairs from the primary brood source is inadequate, the secondary brood source is Ship Creek. A variety of brood sources have been used in the past, but the Chinook salmon brood sources from 2016 through 2018 were only taken from Crooked Creek and Ship Creek (Appendix C2). The amount of Chinook salmon stocked into NGCMA has varied in the past (Appendix C1), but since the new William Jack Hernandez Sport Fish Hatchery (WJHSFH) became operational in 2011, the size of stocked fish has become more consistent. The WJHSFH can raise larger smolt in a single year versus the 2 years it took in the colder waters at the former Fort Richardson Sport Fish Hatchery. Chinook salmon are currently raised in the WJHSFH and released between mid-May to mid-June into the Seward Lagoon. The amount of time that a Chinook salmon typically spends feeding in marine waters can vary from 3 to 6 years, so it is difficult to associate a particular stocking event or year class to the yearly catch. From 2019 through 2021, the average number of Chinook salmon released into the Seward Lagoon was 310,786 fish (calculated from Appendix C1), and each fish averaged 14.15 g (obtained from hatchery records). This is an increase of about 71,741 more Chinook salmon smolt than the last 10-year (2010–2018) average (239,045; calculated from Appendix C1).

## **CHINOOK SALMON FISHERY 2022 PERFORMANCE**

In 2022, the annual Chinook salmon harvest (4,563) for the entire NGCMA salt waters was above the historical average (1999–2018) but slightly below the previous reporting period average (2019–2021; Table 6). It was, however, the third highest on record since 2002 based on SWHS estimates (Table 6). The 2022 SWHS-estimated charter harvest (2,653) was above both the historical and previous reporting period averages. Harvest by charter anglers composed 58% of the total harvest, which was more than both the previous reporting period average (44%) and the historical average (42%; calculated from Table 6). Based on the 2022 Charter Logbook reports, the number of trips targeting salmon (507) was lower than the historical average (2006–2021) of 828 trips (calculated from Table 4).

### **Seward Lagoon Youth-only Chinook Salmon**

Little is known about the number of Chinook salmon harvested in the Seward Lagoon Youth-only fishery. Youth anglers are observed participating and catching fish in this fishery but because youth anglers do not need a fishing license and the SWHS is a household survey, harvest estimates do not show up on the SWHS in measurable numbers, so actual harvest in the Seward Lagoon is unknown. This fishery was extended by emergency order in 2022 for the first time to allow for additional harvest opportunity on these stocked fish (Appendix D1).

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<sup>3</sup> <https://www.adfg.alaska.gov/index.cfm?adfg=fishingSportStockingHatcheries.stockingPlan>.

Table 6.—SWHS estimates of Chinook salmon catch and harvest in the North Gulf Coast Management Area, 2002–2022.

Year	Boat						Shore		Total	
	Charter		Nonguided		Total		Catch	Harvest	Catch	Harvest
	Catch	Harvest	Catch	Harvest	Catch	Harvest				
1999	594	303	1,185	779	1,779	1,082	2,432	1,558	4,211	2,640
2000	854	717	1,478	717	2,332	1,434	1,565	1,221	3,897	2,655
2001	907	572	1,278	870	2,185	1,442	1,093	839	3,278	2,281
2002	1,509	982	1,853	1,247	3,362	2,229	1,503	1,151	4,865	3,380
2003	1,581	862	2,025	1,186	3,606	2,048	854	744	4,460	2,792
2004	1,402	865	3,611	1,744	5,013	2,609	841	693	5,854	3,302
2005	3,142	1,179	2,864	1,151	6,006	2,330	484	438	6,490	2,768
2006	1,924	1,064	3,866	1,999	5,790	3,063	370	325	6,160	3,388
2007	2,703	1,366	2,191	1,576	4,894	2,942	645	580	5,539	3,522
2008	1,667	793	1,473	731	3,140	1,524	362	310	3,502	1,834
2009	1,597	910	2,106	1,045	3,703	1,955	26	26	3,729	1,981
2010	2,454	1,209	2,237	1,320	4,691	2,529	460	128	5,151	2,657
2011	2,052	1,165	1,784	1,172	3,836	2,337	82	82	3,918	2,419
2012	1,502	966	1,109	482	2,611	1,448	27	13	2,638	1,461
2013	2,344	1,473	2,432	1,182	4,776	2,655	129	108	4,905	2,763
2014	1,988	1,368	1,733	910	3,721	2,278	433	315	4,154	2,593
2015	3,282	2,283	1,792	1,034	5,074	3,317	538	433	5,612	3,750
2016	2,308	1,603	1,500	735	3,808	2,338	243	203	4,051	2,541
2017	3,228	1,973	2,746	1,551	5,974	3,524	166	166	6,140	3,690
2018	2,728	2,148	4,367	1,899	7,095	4,047	495	413	7,590	4,460
2019	4,365	2,674	3,384	1,402	7,749	4,076	358	340	8,107	4,416
2020	2,463	1,921	2,534	1,700	4,997	3,621	1,078	1,036	6,075	4,657
2021	4,169	3,249	7,204	3,231	11,373	6,480	188	145	11,561	6,625
2022	3,539	2,653	3,433	1,779	6,972	4,432	131	131	7,103	4,563
Average										
1999–2018	2,201	1,306	2,335	1,233	4,535	2,540	450	360	4,986	2,900
2019–2021	3,666	2,615	4,374	2,111	8,040	4,726	541	507	8,581	5,233

Source: Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited January 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

# **SOCKEYE SALMON**

## **SOCKEYE SALMON FISHERY DESCRIPTION**

Sockeye salmon return to NGCMA streams from late May through July and spawn from mid-July through September. Most of the NGCMA sockeye salmon fishery takes place at the mouth of the Resurrection River and targets hatchery stocks returning to Bear Lake. The majority of the harvest occurs in salt water with some also occurring in the open freshwater area at the head of the bay. Smaller sockeye salmon fisheries occur on wild stocks throughout the management area and are accessible only by boat or air. These generally do not receive enough responses in the SWHS to accurately estimate effort or harvest.

## **SOCKEYE SALMON STOCKING PROGRAM**

ADF&G does not have a sockeye salmon stocking program in NGCMA waters; however, Cook Inlet Aquaculture Association (CIAA) operates the Trail Lake Hatchery and a weir at Bear Lake. Over 2 million sockeye salmon fry have been released at Bear Lake annually since 2002, and with the exception of 2011 and 2020, since 2008 over 1.3 million sockeye salmon smolt have been released annually into salt water (calculated from Appendix C1). The original sockeye salmon broodstock came from Big River Lakes in West Cook Inlet or Upper Russian Lake on the Kenai Peninsula. Since 1993, all sockeye salmon broodstock have been obtained from fish returning to Bear Lake. Bear Lake broodstock are allowed to enter the lake and mature under natural conditions and then are collected at spawning areas in the lake. This method of collection was found to minimize broodstock mortality and allows for more natural spawning behavior. Anadromous sockeye salmon typically utilize lakes for spawning more than other types of salmon and spend 1 to 3 years in fresh water before heading into salt water where they spend 1 to 4 years in the ocean prior to returning to spawn (Burgner 1991). Most sockeye salmon returning to the Bear Creek weir spend 1 year in fresh water after emerging from the gravel and 2 or 3 years in salt water (40.6% and 50.2%, respectively<sup>4</sup>). Bear Lake has a desired escapement range of 5,160 to 12,760 sockeye salmon for broodstock and natural spawning requirements (Hammarstrom and Ford 2009; Hollowell et al. 2023). This goal has been achieved every year since 1994 (Hammarstrom and Ford 2009; Hollowell et al. 2023).

## **SOCKEYE SALMON FISHERY 2022 PERFORMANCE**

The Bear Lake sockeye salmon escapement goal was met in 2022, and an emergency order was issued to increase the bag and possession limit on sockeye salmon (Appendix D1). This has occurred annually since 2016. The 2022 sockeye salmon harvest for the entire NGCMA salt waters was 43,800, which was a substantial increase from the historical (1999–2018) average of 6,343 and the previous reporting period (2019–2021) average of 26,378 (Table 7). Harvest by anglers on guided charters is minimal for this fishery because most of the harvest is by shore anglers. In 2022, harvest by shore anglers accounted for 87% of the total harvest of sockeye salmon, which was higher than the historical average of 51%.

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<sup>4</sup> Cherry, C. 2017. Bear Lake salmon enhancement progress report, 2016. Available at: [https://www.ciaa.net/wp-content/uploads/gravity\\_forms/4-dbe33ae58f69dc15c40040d6c8672867/2021/06/2016\\_BEAR-LAKE-RPT.pdf?\\_gl=1\\*knqx8u\\*\\_ga\\*MjE2NDc3MDQ5LjE2ODYwNzE0MjA.\\*\\_ga\\_ZVG1L8L536\\*MTY5ODc4MzA1Ni4xMi4xLjE2OTg3ODMzOTguMjEuMC4w&\\_ga=2.265933263.1755448984.1698783057-216477049.1686071420](https://www.ciaa.net/wp-content/uploads/gravity_forms/4-dbe33ae58f69dc15c40040d6c8672867/2021/06/2016_BEAR-LAKE-RPT.pdf?_gl=1*knqx8u*_ga*MjE2NDc3MDQ5LjE2ODYwNzE0MjA.*_ga_ZVG1L8L536*MTY5ODc4MzA1Ni4xMi4xLjE2OTg3ODMzOTguMjEuMC4w&_ga=2.265933263.1755448984.1698783057-216477049.1686071420) (accessed October 31, 2023).

Table 7.—SWHS estimates of sockeye salmon catch and harvest in the North Gulf Coast Management Area, 1999–2022.

Year	Boat						Shore		Total	
	Charter		Nonguided		Total		Catch	Harvest	Catch	Harvest
	Catch	Harvest	Catch	Harvest	Catch	Harvest				
1999	151	108	719	697	870	805	280	259	1,150	1,064
2000	460	331	1,609	477	2,069	808	712	677	2,781	1,485
2001	1,046	705	534	293	1,580	998	374	265	1,954	1,263
2002	317	252	2,629	2,087	2,946	2,339	900	773	3,846	3,112
2003	460	215	1,405	1,222	1,865	1,437	938	640	2,803	2,077
2004	227	154	2,571	2,051	2,798	2,205	888	779	3,686	2,984
2005	716	634	2,604	2,134	3,320	2,768	2,960	2,692	6,280	5,460
2006	1,409	1,248	2,664	1,705	4,073	2,953	2,292	2,024	6,365	4,977
2007	2,156	1,621	2,610	2,159	4,766	3,780	2,765	1,981	7,531	5,761
2008	1,836	974	1,799	1,579	3,635	2,553	4,240	3,179	7,875	5,732
2009	965	784	2,462	1,909	3,427	2,693	8,532	7,926	11,959	10,619
2010	972	928	626	439	1,598	1,367	3,702	3,582	5,300	4,949
2011	913	821	1,896	1,420	2,809	2,241	7,949	7,351	10,758	9,592
2012	2,036	1,420	436	336	2,472	1,756	4,117	3,837	6,589	5,593
2013	1,861	1,252	2,816	2,025	4,677	3,277	3,487	3,176	8,164	6,453
2014	982	881	2,015	1,971	2,997	2,852	3,405	3,061	6,402	5,913
2015	1,567	1,264	2,232	1,865	3,799	3,129	4,804	3,990	8,603	7,119
2016	381	301	2,515	2,515	2,896	2,816	10,304	10,105	13,200	12,921
2017	1,200	1,002	3,446	2,989	4,646	3,991	9,503	8,877	14,149	12,868
2018	418	362	5,548	5,146	5,966	5,508	12,295	11,414	18,261	16,922
2019	970	795	3,226	3,106	4,196	3,901	27,717	23,412	31,913	27,313
2020	674	542	3,939	3,637	4,613	4,179	14,166	13,180	18,779	17,359
2021	2,898	1,869	4,144	3,901	7,042	5,770	33,296	28,691	40,338	34,461
2022	693	652	5,577	5,168	6,270	5,820	38,578	37,980	44,848	43,800
Average										
1999–2018	1,004	763	2,157	1,751	3,160	2,514	4,222	3,829	7,383	6,343
2019–2021	1,514	1,069	3,770	3,548	5,284	4,617	25,060	21,761	30,343	26,378

Source: Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited January 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

# GROUNDFISH FISHERIES

## GROUNDFISH FISHERY DESCRIPTION

The NGCMA supports a diversity of sport groundfish fisheries but groundfish effort historically has been focused primarily on Pacific halibut. The Pacific halibut sport fishery is a federally managed sport fishery, and changes to its regulations influence effort and harvest trends for all other groundfish sport fisheries in NGCMA. With North Pacific Fisheries Management Council (NPFMC) adopting the Pacific halibut Catch Sharing Plan in 2014, annual harvests of Pacific halibut have generally declined since 2013. Estimated harvest of halibut has ranged from 27,196 to 62,759 (1999–2022) in the NGCMA (Arthur et al. *In prep*).

Pelagic and nonpelagic rockfish species and lingcod are also frequently harvested in NGCMA, but most anglers typically do not target them exclusively. Rockfish and lingcod are state-managed groundfish stocks for sport and commercial fisheries. Fishing effort is highest during the months of May–September when large charter (guided) and private (nonguided) fleets target Pacific halibut throughout the management area. Most anglers access these boat-based fisheries through the Seward harbor.

Data from the SWHS are primarily used to assess all charter and unguided sport groundfish harvests in NGCMA. Charter Logbook data also provide comparisons of harvest and effort estimates for guided anglers. These data provide both spatial and temporal distribution of the guided sport fishing effort because guides are required to record a daily trip log, including a statistical area code for the primary area fished.

## ROCKFISH FISHERY

### Rockfish Fishery Description

Over 30 species of rockfish (genus *Sebastes*) inhabit the Gulf of Alaska. In NGCMA, rockfish are harvested in directed sport and commercial jig fisheries, and as bycatch in state and federally managed sport and commercial groundfish fisheries. Since 1991, 23 species have been identified in the sport harvest from the NGCMA, but black (*S. melanops*), yelloweye (*S. ruberrimus*), quillback (*S. maliger*), dark (*S. ciliatus*), and dusky (*S. variabilis*) rockfish typically make up the majority of the harvest. The sport fishery is managed using 2 species assemblages based on habitat preference, and these are defined in statewide sport regulations (5 AAC 75.995) as pelagic and nonpelagic. The pelagic assemblage includes black, dusky, dark, widow (*S. entomelas*), yellowtail (*S. flavidus*), and deacon (*S. diaconus*) rockfish; and the nonpelagic assemblage includes all other species. The State of Alaska has management authority for all sport rockfish fisheries in state waters (within 3 nautical miles of shore), as well as federal waters of the Exclusive Economic Zone (EEZ). Historically, it has been assumed that most rockfish are taken incidentally while fishing for other species or while targeting rockfish only after fishing for other species.

### Historical Rockfish Harvest and Abundance

The NGCMA harvest makes up, on average (2013–2022), approximately 30% of the Southcentral Region sport rockfish harvest.<sup>5</sup> Historically, nonguided anglers harvested more rockfish than

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<sup>5</sup> (ADF&G) Alaska Department of Fish and Game. 2018. Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish <http://www.adfg.alaska.gov/sf/sportfishingsurvey/> (cited September 22, 2018).

charter anglers in the NGCMA (Table 8); however in 2010, this trend changed, and since 2014, with the implementation of the halibut Catch Sharing Plan, chartered anglers are estimated to have taken nearly 70% of the rockfish harvest in the NGCMA on average between 2014 and 2018 (Table 8).

During the previous reporting period (2019–2021), 27.7% of the total rockfish catch was released on average, which is a change from historical levels when more rockfish were typically released on average (Arthur et al. *In prep*). The magnitude of the released component is important because of the potential for high rates of immediate or delayed mortality. Release mortality is a concern because rockfish have a specialized gas-filled swim bladder that makes them susceptible to barotrauma;<sup>6</sup> however, the mandatory use of a deepwater release device will reduce discard mortality (Hochhalter and Reed 2011).

Biological data from the sport rockfish harvest is collected annually from port sampling in the Port of Seward. The biological data include species composition, which can be used in combination with SWHS estimates to produce harvest estimates by species for both charter and unguided anglers (Table 8). Black rockfish have composed approximately 70% of the rockfish harvest in NGCMA salt waters on average during both 2014–2018 and 2019–2021, and yelloweye rockfish have composed around 10% (Table 8). Age, sex, and length data are also collected from port sampling and have provided useful indices of the state of the fishery. Yearly mean age and length of black rockfish remained fairly stable through 2014 followed by a decreasing trend in 2015 (Figure 2), when annual mean age and length have been below the 1996–2013 historical average (Figure 2). For yelloweye rockfish, declines in mean length and age started in 2011 (Figure 3), but annual harvest has generally increased since 2017 (Table 8).

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<sup>6</sup> ADF&G (Alaska Department of Fish and Game). 2023. Rockfish Conservation, Statewide Rockfish Initiative. <http://www.adfg.alaska.gov/index.cfm%3Fadfg%3DfishingSportFishingInfo.rockfishconservation> (accessed March 10, 2023).



Table 8.—Estimates of rockfish harvest from Charter Logbook data expanded to include unguided harvest proportions from SWHS data and species proportions from the port sampling data for North Gulf Coast Management Area salt waters, 2006–2022.

Year	Black rockfish			Other pelagic rockfish			Yelloweye rockfish			Other nonpelagic rockfish			Total rockfish		
	Non-guided	Charter	Total	Non-guided	Charter	Total	Non-guided	Charter	Total	Non-guided	Charter	Total	Non-guided	Charter	Total
2006	14,740	13,096	27,836	993	811	1,804	3,971	2,150	6,121	2,902	1,061	3,963	22,606	17,118	39,724
2007	14,382	15,463	29,845	2,649	328	2,977	2,178	2,099	4,277	3,070	927	3,997	22,280	18,817	41,097
2008	15,296	16,144	31,440	1,509	873	2,382	2,852	2,434	5,286	2,648	1,170	3,818	22,305	20,621	42,926
2009	14,298	10,365	24,663	3,830	2,728	6,557	1,705	1,585	3,290	2,536	630	3,166	22,369	15,307	37,676
2010	11,695	13,092	24,787	1,261	1,261	2,522	2,599	2,398	4,997	2,331	1,874	4,205	17,886	18,625	36,511
2011	8,204	12,812	21,016	995	3,655	4,651	1,861	2,178	4,039	2,067	1,328	3,395	13,127	19,973	33,100
2012	5,923	13,298	19,221	333	2,054	2,387	887	2,353	3,240	713	2,070	2,783	7,856	19,775	27,631
2013	9,484	14,866	24,349	944	2,672	3,616	1,138	2,253	3,391	711	1,506	2,217	12,276	21,297	33,573
2014	11,023	18,445	29,468	1,235	3,464	4,699	2,281	1,839	4,120	1,520	1,713	3,233	16,059	25,461	41,520
2015	10,466	23,308	33,774	1,283	4,913	6,196	1,576	2,151	3,727	1,118	2,280	3,398	14,442	32,652	47,094
2016	9,880	30,541	40,421	1,538	5,614	7,152	1,603	2,797	4,400	1,407	3,189	4,596	14,427	42,141	56,568
2017	6,447	15,526	21,974	1,630	2,766	4,396	815	1,797	2,612	1,334	2,192	3,526	10,227	22,281	32,508
2018	5,531	24,773	30,303	1,758	3,482	5,240	2,072	2,817	4,889	1,480	3,188	4,668	10,840	34,260	45,100
2019	11,588	28,587	40,175	3,601	6,051	9,651	3,732	3,489	7,221	2,488	2,781	5,269	21,408	40,908	62,316
2020	5,863	19,883	25,746	790	3,640	4,430	2,092	2,109	4,201	1,674	1,627	3,301	10,419	27,259	37,678
2021	13,694	40,264	53,958	1,393	3,996	5,388	2,437	2,741	5,178	1,277	2,795	4,072	18,800	49,796	68,596
2022	13,019	41,020	54,039	484	6,751	7,235	2,033	2,550	4,583	1,597	3,142	4,739	17,133	53,463	70,596
Averages															
Pre CSP															
2006–2013	11,753	13,642	25,395	1,564	1,798	3,362	2,149	2,181	4,330	2,122	1,321	3,443	17,588	18,942	36,530
Post CSP															
2014–2018	8,669	22,519	31,188	1,489	4,048	5,537	1,669	2,280	3,950	1,372	2,512	3,884	13,199	31,359	44,558
2019–2021	10,381	29,578	39,960	1,928	4,562	6,490	2,754	2,780	5,533	1,813	2,401	4,214	16,875	39,321	56,196

Source: Charter Logbook database [Internet]. 2006–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited September 2023). URL not publicly available as some information is confidential. Contact Research and Technical Services for data requests. Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited January 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>. Schuster, M., S. C. Meyer, and A. B. St. Saviour, ADF&G Division of Sport Fish, unpublished data.

Note: CSP means catch sharing plan for halibut management.

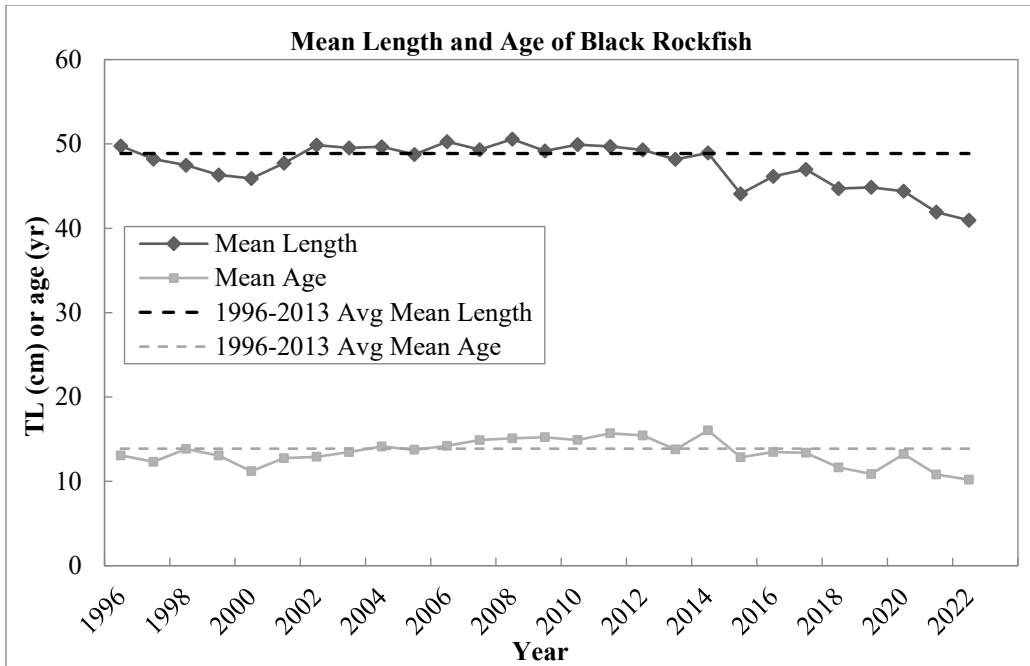


Figure 2.—Estimates of annual mean total length (TL) and mean age compared to historical averages (1996–2013) of sport harvested black rockfish in the North Gulf Coast Management Area, 1996–2022.

Source: Schuster, M., ADF&G SF, unpublished data, which were first collected in 1996.

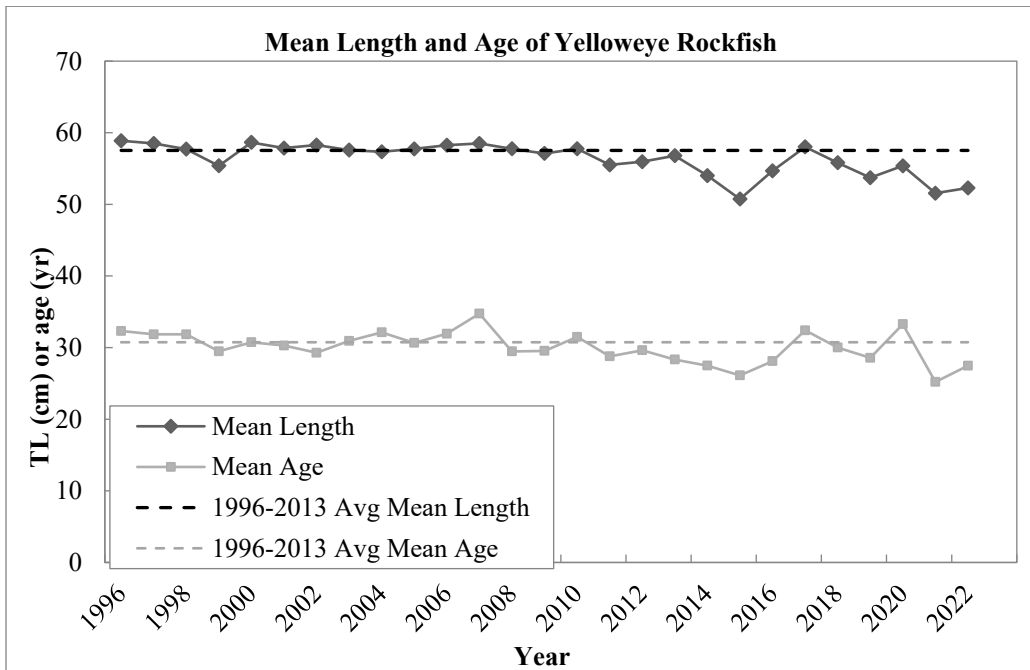


Figure 3.—Estimates of annual mean total length (TL) and mean age compared to historical averages (1996–2013) of sport harvested yelloweye rockfish in the North Gulf Coast Management Area, 1996–2022.

Source: Schuster, M., ADF&G SF, unpublished data, which were first collected in 1996.

## **Rockfish Fishery Management and Regulations**

Rockfish management can be challenging because rockfish grow slowly, mature late, and exhibit low rates of natural mortality (Love et al. 2002). Beginning in September 2017, the Statewide Rockfish Initiative (SRI) was formed within ADF&G to focus on rockfish stocks, and black and yelloweye rockfish stocks in particular. Data and information were shared across divisions and regions, and work continues to be done to address the lack of stock assessments in many of the management areas. The Division of Sport Fish groundfish harvest monitoring program provides estimates of species, age, length, and sex composition, as well as the spatial distribution of the rockfish sport harvest. This program is effective at describing harvest, but these data alone cannot be used to evaluate stock status or develop management objectives. A meaningful index of abundance and further analysis are ongoing projects to better estimate of rockfish stock status.

Although there is no management plan for the NGCMA sport rockfish fishery, ADF&G and the BOF have attempted to take a conservative approach to manage rockfish fisheries in the NGCMA and the rest of Alaska. Sport bag limits have been reduced regionwide in recognition of the failure of other Pacific rockfish fisheries and the life history characteristics that make rockfish susceptible to overharvest. More restrictive bag limits have been set for the longer-lived and less productive nonpelagic species to discourage targeted harvest while still allowing for retention of incidental catch. Seasons or size limits for rockfish have not been implemented to date in the NGCMA. Along with regulation changes, efforts have been made to educate anglers regarding the risks and consequences of rockfish overharvest and to foster best fishing practices, such as the use of deepwater release mechanisms (DRM), to increase the survival of released rockfish.

The sport rockfish fishery in the NGCMA was unregulated until 1973 when the BOF adopted bag and possession limits of 10 for the Cook Inlet–Resurrection Bay Saltwater Area. In 1989, the BOF revised the Cook Inlet–Resurrection Bay Area bag limit to 5 rockfish per day and 10 in possession. In 1995, the BOF approved an ADF&G proposal to limit harvest of nonpelagic species, recognizing the relative difference in productivity between these groups. Even though increasingly conservative steps have been taken to restrict harvest, it is unknown whether these efforts are providing optimal yield or adequately protecting rockfish populations. In 2007 (effective 2008), the BOF separated out the NGCMA from Lower Cook Inlet Management Area regarding rockfish regulations and reduced the bag limit to 4 per day and 8 in possession, which aligns with the Prince William Sound Management Area (PWSMA) to date. The only difference between the NGCMA and the PWSMA is a possession limit of 1 nonpelagic rockfish in PWSMA that was adopted by the BOF in 2017.

The current regulations in the NGCMA, effective since 2008, include a year-round season, a daily bag limit of 4 rockfish per day, and a possession limit of 8 rockfish, of which no more than 1 daily and 2 in possession may be nonpelagic species. Bag and possession limits, special restrictions, and state authority in the EEZ are found in area regulations in 5 AAC 58. The terms “rockfish,” “nonpelagic rockfish,” and “pelagic rockfish” are defined in statewide regulations 5 AAC 75.995. Guides are required to report the numbers of pelagic, yelloweye, and other rockfish kept and released daily by each angler in Charter Logbooks. Logbook requirements are outlined in AS 16.40.280 and 5 AAC 75.076.

Overfishing is by far the primary management concern for rockfish. This concern is largely based on rockfish life history characteristics such as extreme longevity, high site fidelity, relatively late age at maturity, high recruitment variability, and susceptibility to mortality from decompression

trauma (Leaman and Beamish 1984; Parker et al. 2000; Munk 2001). Many species recruit to the fishery before reaching sexual maturity, and fisheries develop on the standing stock rather than on the surplus production. Removal of the older spawning stock reduces spawning biomass, potentially further inhibiting population recovery.

### **Rockfish Fishery 2022 Performance**

Rockfish harvest reconstruction estimates derived from expanding Charter Logbook rockfish harvest by the SWHS proportions of charter and nonguided harvest and apportioned to species or assemblage with port sampling data, likely provide much more accurate and precise harvest estimates (Howard et al. 2020). The harvest reconstruction estimate for NGCMA rockfish of 70,596 in 2022 is a continued increase from the previous and historical reporting period averages (Table 8). In 2022, based on SWHS rockfish harvest proportions by users, 76% of the total rockfish harvest was by charter anglers, which was an increase from the average percentage estimated for 2006–2013 of 55% (calculated from Table 8). Using the 2022 harvest reconstruction, 87% of the total rockfish harvest was pelagic rockfish (calculated from Table 8). With species apportionment from port sampling data, black rockfish composed 76% of the 2022 nonguided harvest and 77% of the charter harvest, which was above the average percentages (67% and 72%, respectively) for 2006–2013 (calculated from Table 8). The 2022 total black rockfish harvest (54,039) was an increase from the previous reporting period average (2019–2021) of 39,960. The 2022 yelloweye rockfish harvest (4,583) was a decrease from the previous reporting period average (2019–2021) of 5,533. Both the “other pelagic” harvest (7,235) and “other nonpelagic” harvest (4,739) in 2022 had decreased from the previous reporting period average harvests (2019–2021).

The age and length compositions of NGCMA harvests of black rockfish in 2022 continued to show significant changes from historical harvests. Both mean length and age remained below their respective 1996–2013 historical averages (Figure 2). The 2022 mean length was 41 cm, the lowest ever estimated, and a 7.9 cm decline from the 1996–2013 historical average of 48.9 cm. Mean age was 10.2 years in 2022, which was also the lowest estimated and 3.7 years lower than the historical period average (1996–2013) mean age (Figure 2).

These trends suggest that the increased rockfish harvest in recent years is primarily supported by a young, strong cohort of black rockfish that was first harvested in 2017. Harvest of a singular, strong, and young cohort may represent a substantial increase in recruitment from this cohort and (or) that fewer black rockfish from older cohorts still exist in NGCMA. Given that harvest has increased, and anglers are still catching good numbers of pelagic rockfish without any additional increase in the number of trips or more time spent fishing per trip, it is likely that this cohort’s recruitment is larger than most others historically. Determining if older individuals are still surviving will likely require fishery independent assessment.

Although sample size was small, the 2022 yelloweye rockfish age and length compositions also showed changes in the NGCMA harvest (Figure 3). In 2022, mean length of the yelloweye rockfish harvest was 52.3 cm, which was the third lowest mean length observed in port sampling monitoring and 5.2 cm below the 1996–2013 average of 57.5 cm. In 2022, mean age was 27.5 years, which was an increase from 2021 but below the 1996–2013 average of 30.7 years (Figure 3).

Although effort towards rockfish by charter and nonguided anglers cannot be directly estimated by SWHS or Charter Logbook harvest reports, it is likely that effort shifts observed in the previous reporting period continued in 2022. For charter anglers, the halibut catch sharing plan (CSP)

provisions included an additional closure day for the 2022 season, and with progressively more restrictive charter halibut regulations, it is likely that this trend will continue in future years.

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**APPENDIX A: CROSS REFERENCED BOARD OF  
FISHERIES INFORMATION**

Appendix A1.–Cross reference of tables and figures specific to the 2023 Lower Cook Inlet Finfish Alaska Board of Fisheries meeting proposals.

Proposal number	Stock or species	Background and recent performance pages	Tables	Figures
12	Chinook (king) salmon	Pages 12–14	6 (p. 14)	1 (p. 2)
18	Rockfish	Pages 17–22	8 (p. 19)	2,3 (p. 20)
19	Rockfish	Pages 17–22	8 (p. 19)	2,3 (p. 20)

**APPENDIX B: NORTH GULF COAST MANAGEMENT  
PLANS**

### **5 AAC 21.373 Trail Lakes Hatchery Salmon Management Plan**

(a) The department, in consultation with the hatchery operator, shall manage the Resurrection Bay North Subdistrict, China Poot Subdistrict, Tutka Bay Subdistrict, and the Kirschner Lake Section of the Bruin Bay Subdistrict to provide for a common property fishery and to achieve the hatchery broodstock and cost recovery goals set by the hatchery operator and approved by the department for the Trail Lakes Hatchery. The department will manage the sport fisheries in accordance with regulations in 5 AAC 56–62 and 5 AAC 75. The commissioner may issue emergency orders to liberalize or restrict sport fisheries based on achievement of broodstock goals.

(b) The Trail Lakes Hatchery special harvest areas are as follows:

(1) Bear Lake Special Harvest Area: the marine waters of Resurrection Bay in the Eastern District north of the latitude of Caines Head at lat 59°58.93'N, and the fresh waters of Bear Creek, Salmon Creek, and Resurrection River downstream from, and including, the Bear Creek weir, excluding all freshwaters downstream from the Seward Highway and Nash Road to a line between the ADF&G saltwater/freshwater regulatory markers at lat 60°07.49'N, long 149°24.72'W and lat 60°07.25'N, long 149°22.54'W;

(2) China Poot and Hazel Lake Special Harvest Area: the marine waters of China Poot Bay Subdistrict in the Southern District inshore of, and enclosed by, a line connecting lat 59°34.66'N, long 151°19.27'W, then to lat 59°35.08'N, long 151°19.77'W, then to lat 59°33.09'N, long 151°25.22'W, and then to lat 59°32.84'N, long 151°24.90'W;

(3) Tutka Bay Lagoon Special Harvest Area: the marine waters of Tutka Bay Subdistrict in the Southern District southeast and shoreward of a line from lat 59°30.23'N, long 151°28.23'W to lat 59°28.63'N, long 151°30.37'W, including Tutka Bay Lagoon;

(4) Kirschner Lake Special Harvest Area: the marine waters of Bruin Bay Subdistrict in the Kamishak Bay District northwest of a line connecting lat 59°25.17'N, long 153°50.50'W and lat 59°23.17'N, long 153°56.90'W.

(c) Notwithstanding 5 AAC 21.320 and 5 AAC 21.330, and except as otherwise provided by emergency order issued under AS 16.05.060, the permit holder for the Trail Lakes Hatchery, and the permit holder's agents, contractors, or employees authorized under 5 AAC 40.005 (g) may harvest salmon in the

(1) Bear Lake Special Harvest Area, from 6:00 a.m. May 15 until 6:00 p.m. October 31 using weirs, purse seines, hand purse seines, and beach seines;

(2) China Poot and Hazel Lake Special Harvest Area, from 6:00 a.m. June 1 until 6:00 p.m. July 31 using purse seines, hand purse seines, and beach seines;

(3) Tutka Bay Lagoon Special Harvest Area, from 6:00 a.m. June 1 until 6:00 p.m. September 15 using purse seines, hand purse seines, and beach seines; (4) Kirschner Lake Special Harvest Area, from 6:00 a.m. June 1 until 6:00 p.m. August 15 using purse seines, hand purse seines, and beach seines.

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### **5 AAC 21.375. Bear Lake Management Plan**

Repealed. (Eff. 6/10/89, Register 110; am 2/13/2005, Register 173; repealed 8/23/2009, Register 191)

### **5 AAC 21.376. Resurrection Bay Salmon Management Plan**

(a) Since the beginning of significant commercial harvests of pink and chum salmon in Resurrection Bay, there have been some conflicts between recreational and commercial fishermen. The issues are the protection of coho and king salmon for the recreational fishery, and the management of surplus pink and chum salmon stocks in a manner that provides for a commercial fishery while minimizing the incidental catch of coho and king salmon.

(b) The commissioner shall, by emergency order,

(1) manage Resurrection Bay coho and king salmon stocks primarily for recreational use; (2) manage the indigenous pink and chum salmon stocks primarily for commercial use, insofar as that harvest does not interfere in time or area with the recreational fishery;

(3) manage the commercial fishery in Resurrection Bay in a manner that does not interfere with the recreational fishery.

History: Eff. 6/10/89, Register 110; 6/11/2005, Register 174

### **5 AAC 58.065. North Gulf Coast King Salmon Sport Fishery Management Plan**

(a) The purpose of the management plan under this section is to meet the Board of Fisheries' goal of directing the king salmon sport fishing effort on hatchery stocks in Resurrection Bay and stabilizing the sport harvest of king salmon in the North Gulf Coast.

(b) In the king salmon sport fishery,

(1) from January 1 through December 31, outside of the Resurrection Bay Terminal Harvest Area, the bag and possession limit for king salmon is one fish, with no size limit;

(2) within the Resurrection Bay Terminal Harvest Area,

(A) from May 1 through August 31, the bag and possession limit for king salmon is two fish; with no size limit;

(B) from September 1 through April 30, the bag and possession limit for king salmon is one fish, with no size limit;

(3) in the North Gulf Coast, the annual limit and harvest record specified in 5 AAC 58.022 does not apply.

(c) For the purposes of this section, the

(1) North Gulf Coast consists of the salt waters between Gore Point at lat 59°12.00'N, long 150°57.85'W and the longitude of Cape Fairfield (long 148°50.25'W);

(2) Resurrection Bay Terminal Harvest Area consists of the salt waters north of a line between Cape Resurrection and Aialik Cape.

(Eff. 12/29/2002, Register 164; am 4/24/2009, Register 190; am 2/23/2014, Register 209)

Authority: AS 16.05.251



## **APPENDIX C: STOCKING**

Appendix C1.—Hatchery releases by species, location, and year, North Gulf Coast Management Area, 1999–2022.

Year	Chinook salmon				Sockeye salmon				
	Smolt				Fry	Smolt and presmolt			
	Lowell Creek	Seward Lagoon	Seward SeaLife	Total	Bear Lake	Bear Lake	Bear Creek	Saltwater release	Total
1999	85,502	88,066	0	173,568	1,380,000	0	0	0	1,380,000
2000	109,461	212,873	0	322,334	1,796,000	0	0	0	2,019,000
2001	114,748	113,147	0	227,895	145,000	0	0	0	145,000
2002	93,296	100,314	0	193,610	2,407,700	802,600	0	0	3,210,300
2003	110,331	109,976	0	220,307	1,467,000	334,000	0	0	1,801,000
2004	89,388	109,600	30,066	229,054	2,406,000	603,000	0	0	3,009,000
2005	100,088	114,847	96,702	311,637	2,416,000	1,006,000	0	0	3,422,000
2006	0	226,621	76,596	303,217	2,413,900	0	979,000	0	3,392,900
2007	0	0	117,842	117,842	2,437,000	619,000	0	0	3,056,000
2008	0	0	142,469	142,469	2,400,000	0	0	1,600,000	4,000,000
2009	0	0	0	0	2,543,000	0	0	1,675,000	4,218,000
2010	109,779	110,671	0	220,450	2,200,000	0	0	1,650,000	3,850,000
2011	0	223,881	0	223,881	2,488,000	0	0	0	2,488,000
2012	0	219,743	0	219,743	2,490,000	0	0	1,305,000	3,795,000
2013	0	141,550	0	141,550	2,548,000	0	0	2,090,000	4,638,000
2014	0	183,464	0	183,464	2,405,000	0	0	1,742,000	4,147,000
2015	0	298,542	0	298,542	2,415,000	0	0	1,758,000	4,173,000
2016	0	320,711	0	320,711	2,374,000	0	0	1,680,165	4,054,165
2017	0	328,337	0	328,337	2,468,000	0	288,000	1,528,000	4,284,000
2018	0	324,509	0	324,509	2,555,000	0	0	1,488,000	4,043,000
2019	0	317,382	0	317,382	2,880,000	0	0	1,510,000	4,390,000
2020	0	317,194	0	317,194	2,446,000	0	0	0	2,446,000
2021	0	297,783	0	297,783	2,543,927	0	0	1,466,109	4,010,036
2022	0	248,803	0	248,803	2,115,385	0	0	1,393,778	3,509,163

Source: Marianne McNair, ADF&G, Commercial Fisheries Management and Development Division, Juneau; Cook Inlet Aquaculture Association, Trail Lakes Hatchery; ADF&G, Division of Sport Fish stocking records.



Appendix C2.–Broodstock origin of Chinook salmon stocked in Resurrection Bay tributaries, 1976–2022.

Salmon species	State of origin	Brood stock	Brood year
Chinook			
	AK	Kenai River	1985
	AK	Crooked Creek	1978–1979, 1983, 1989–1994, 1999–2006, 2008–2009, 2011–2012, 2014–2022
	AK	Kasilof River	1990–1993, 1995–1996, 1998
	AK	Willow Creek	1995–1997
	AK	Deception Creek	1999, 2004, 2006, 2008, 2010, 2018
	AK	Ship Creek	1976–1978, 2004, 2006, 2009–2011, 2013–2014, 2016–2017
	AK	Ninilchik River	1996, 2019
Sockeye			
	AK	Big River	1990–1993, 2009–2018
	AK	Upper Russian Lake	1990–1992, 2009–2018
	AK	Bear Creek/Lake	1993–2009, 2018–2021
	AK	Packers Lake	1994–1995, 1997–1998
	AK	Meadow Creek	1995–1998
	AK	Tustumena Lake	1995, 1997–1998

*Source:* Marianne McNair, ADF&G, Commercial Fisheries Management and Development Division, Juneau; Cook Inlet Aquaculture Association, Trail Lakes Hatchery; ADF&G, Division of Sport Fish stocking records



## **APPENDIX D: EMERGENCY ORDERS**

**Emergency Orders issued in 2022:**

- 1) EO 2-RS-8-36-22 increased the bag and possession limits for Resurrection Bay sockeye salmon to 12 fish in both fresh and salt waters, effective 12:01 AM, Friday, 24 June through 11:59 PM, Sunday, 31 July 2022.
- 2) EO 2-KS-2-41-22 extended the youth-only Chinook salmon sport fishery in the Seward Lagoon, effective 12:01 AM, Friday, 1 July through 11:59 PM, Wednesday, 13 July 2022.
- 3) EO 2-SS-8-65-22 extended the youth-only coho salmon sport fishery in the Seward Lagoon, effective 12:01 AM, Thursday, 8 September through 11:59 PM, Friday, 30 September 2022.