

Fishery Management Report No. 24-03

**Sport Fisheries in the Northern Kenai Peninsula
Management Area, 2022**

by

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January 2024

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

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Weights and measures (metric)		General		Mathematics, statistics	
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, χ^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 (simple)	r
		corporate suffixes:		covariance	cov
Weights and measures (English)		Company	Co.	degree (angular)	$^\circ$
cubic feet per second	ft ³ /s	Corporation	Corp.	degrees of freedom	df
foot	ft	Incorporated	Inc.	expected value	E
gallon	gal	Limited	Ltd.	greater than	>
inch	in	District of Columbia	D.C.	greater than or equal to	\geq
mile	mi	et alii (and others)	et al.	harvest per unit effort	HPUE
nautical mile	nmi	et cetera (and so forth)	etc.	less than	<
ounce	oz	exempli gratia	e.g.	less than or equal to	\leq
pound	lb	(for example)		logarithm (natural)	ln
quart	qt	Federal Information Code	FIC	logarithm (base 10)	log
yard	yd	id est (that is)	i.e.	logarithm (specify base)	\log_2 , etc.
		latitude or longitude	lat or long	minute (angular)	'
Time and temperature		monetary symbols (U.S.)	\$, ¢	not significant	NS
day	d	months (tables and figures): first three letters	Jan, ..., Dec	null hypothesis	H_0
degrees Celsius	$^\circ\text{C}$	registered trademark	®	percent	%
degrees Fahrenheit	$^\circ\text{F}$	trademark	™	probability	P
degrees kelvin	K	United States (adjective)	U.S.	probability of a type I error (rejection of the null hypothesis when true)	α
hour	h	United States of America (noun)	USA	probability of a type II error (acceptance of the null hypothesis when false)	β
minute	min	U.S.C.	United States Code	second (angular)	"
second	s	U.S. state	use two-letter abbreviations (e.g., AK, WA)	standard deviation	SD
Physics and chemistry				standard error	SE
all atomic symbols				variance	
alternating current	AC			population sample	Var
ampere	A			sample	var
calorie	cal				
direct current	DC				
hertz	Hz				
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

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**SPORT FISHERIES IN THE NORTHERN KENAI PENINSULA
MANAGEMENT AREA, 2022**

by

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ABSTRACT

This report provides a detailed summary of the sport and personal use fisheries in the Northern Kenai Peninsula Management Area for 2022 specific to the proposals before the Alaska Board of Fisheries at its 2024 meeting. Estimates of sport fishing effort, harvest, and catch, and relevant stock assessments and management actions are summarized through 2022. Included for each fishery is information specific to the proposals that the BOF will address. An appendix guiding the reader to information relevant to each proposal is also included. This report covers the following sport fisheries: Kenai River Chinook salmon (*Oncorhynchus tshawytscha*) early and late runs, Kasilof River Chinook salmon early and late runs, Russian River sockeye salmon (*O. nerka*) early and late runs, Kenai River sockeye salmon late run, areawide coho salmon (*O. kisutch*), and guided sport fisheries. Kenai and Kasilof Rivers sockeye salmon personal use fisheries are also discussed.

Keywords: Northern Kenai Peninsula Management Area, Kenai River, Kasilof River, Russian River, Chinook salmon, *Oncorhynchus tshawytscha*, sockeye salmon, *Oncorhynchus nerka*, coho salmon, *Oncorhynchus kisutch*, rainbow trout, *Oncorhynchus mykiss*, Dolly Varden, *Salvelinus malma*, northern pike, *Esox lucius*, personal use dip net fisheries, Alaska Board of Fisheries

INTRODUCTION

This fisheries management report provides information regarding the sport and personal use fisheries in the Northern Kenai Peninsula Management Area (NKPMA) specifically addressed by the proposals before the Alaska Board of Fisheries (BOF) at its February 23–March 6, 2024, meeting. Included in this report are a description of the relevant fisheries; summaries of the fisheries effort, harvest, and catch; fisheries assessment information; and the management strategies that are developed from that information. Appendix B1 contains a table guiding the reader to information relevant to each BOF proposal.

The mission of Alaska Department of Fish and Game (ADF&G), Division of Sport Fish (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, use of biological and fishing effort data, and input from user groups to assess the need for and to develop 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 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.

This area management report provides information for the NKPMA and its fisheries for 2022. All other information, including relevant stock assessments and management actions, are provided through 2022. This report is organized into 2 primary sections: a management area overview including a description of the management area and a summary of effort, harvest, and catch for the area, and sections for significant area fisheries including harvest and catch by species and geographical region or drainage.

MANAGEMENT AREA OVERVIEW

MANAGEMENT AREA DESCRIPTION

The NKPMA includes all Kenai Peninsula freshwater drainages from the north bank of Ingram Creek south to the south bank of the Kasilof River (Figure 1). The NKPMA also includes all salt waters from the latitude of East Foreland south to the latitude of the Kasilof River. This area is administered from ADF&G's Soldotna office

Larger communities located within the NKPMA include Kenai and Soldotna. Smaller communities are Cooper Landing, Hope, Moose Pass, Nikiski, and Sterling. This management area is linked to the State of Alaska highway system via the Sterling and Seward Highways, which provide sport anglers access to many of the area's major fisheries. Remote areas of the NKPMA (west side of Cook Inlet) can be accessed via boat and aircraft equipped with wheels or floats.

FISHERY RESOURCES

The NKPMA offers diverse fishing opportunities for sport anglers. Anglers can target 4 species of Pacific salmon: Chinook (*Oncorhynchus tshawytscha*), sockeye (*O. nerka*), coho (*O. kisutch*), and pink (*O. gorbuscha*) salmon. Fisheries for these species occur primarily in fresh water and to a lesser degree in the salt waters of Cook Inlet. Anglers can also target salmon, rainbow trout (*O. mykiss*), Arctic char (*Salvelinus alpinus*), and Arctic grayling (*Thymallus arcticus*) stocked by ADF&G SF into various landlocked lakes. Popular fisheries for resident stocks of rainbow trout, Dolly Varden (*S. malma*), and lake trout (*S. namaycush*) also occur. Fisheries target naturalized stocks of Arctic grayling and illegally introduced stocks of northern pike (*Esox lucius*) as well. The area's anadromous stocks of Dolly Varden, steelhead (*O. mykiss*), and eulachon (*Thaleichthys pacificus*) also provide NKPMA sport fishing opportunities.

The NKPMA has limited opportunities for saltwater sport fisheries. Small numbers of anglers target halibut (*Hippoglossus stenolepis*), razor clams (*Siliqua patula*), and several species of hardshell clams in the waters adjacent to the mouths of the Kenai and Kasilof Rivers and Cook Inlet waters within the NKPMA management area.

Two runs of wild (population not supplemented with hatchery fish) Kenai River Chinook salmon combine to support the largest sport fishery for this species in Alaska. Stocked and naturally produced (population consisting of both wild and naturalized hatchery fish) Chinook salmon runs to Crooked Creek support an early-run fishery in the Kasilof River. A late run composed of wild Chinook salmon also provides sport fishing opportunities at the Kasilof River. Chinook salmon have also been stocked into 1 roadside landlocked lake to provide additional fishing opportunities, primarily during winter months.

The Russian and Kenai Rivers support robust fisheries for both early and late runs of sockeye salmon. These stocks maintain the largest sockeye salmon sport fisheries in Alaska. The NKPMA also supports personal use sockeye salmon dip net fisheries at the mouths of the Kenai and Kasilof Rivers, and a personal use set gillnet fishery at the mouth of the Kasilof River. The personal use fisheries on both the Kenai and Kasilof Rivers are managed with established seasons and provide sockeye salmon harvest opportunities for Alaska residents.

Wild coho salmon runs to the Kenai River support the largest freshwater coho salmon sport fishery in Alaska. The Kasilof River and numerous smaller streams also support smaller coho salmon

sport fisheries. Additional fishing opportunities for coho salmon are provided through a program of stocked landlocked lakes on the Kenai Peninsula.

Pink salmon return in large numbers to NKPMA drainages during even-numbered years. A significant sport fishery for this species occurs on the Kenai River. Harvests in the Kenai River have increased during even years because of liberalized bag and possession limits (6 pink salmon daily). Chum salmon (*O. keta*) runs to NKPMA streams on the east side of Cook Inlet are quite small and provide only minor sport fishing opportunities.

Wild rainbow trout populations occur in numerous lakes and streams throughout the NKPMA. Flowing waters that support major rainbow trout fisheries include the Kenai River, Russian River, and the streams and lakes of the Swanson River and Moose River drainages. The Kenai River supports the largest freshwater sport fishery for rainbow trout in Alaska. To provide alternative fishing opportunities, several landlocked lakes are also stocked with rainbow trout.

Steelhead currently provide sport fishing opportunities in the Kasilof and Kenai Rivers. The Kasilof River fishery was enhanced from the early 1980s through the mid-1990s with hatchery steelhead originating from Crooked Creek. Stocking was discontinued due to excessive straying into the Kenai River.

Dolly Varden are found in most freshwater drainages of the NKPMA. This species supports a major fishery in the Kenai River drainage. Numerous smaller streams and lakes also support Dolly Varden. Isolated populations of Arctic char are common in several lakes. These species provide additional sport angling opportunities at roadside as well as more remote locations.

Lake trout are found primarily in 4 lakes within the NKPMA: Hidden, Kenai, Skilak, and Tustumena Lakes, supporting a modest fishery for lake trout, with Hidden Lake receiving most of the fishing effort.

Arctic grayling were introduced to the NKPMA during the early 1950s and now support self-sustaining populations in remote areas of the Kenai River drainage. Estimates from the ADF&G Alaska Sport Fishing Survey (commonly referred to as the Statewide Harvest Survey [SWHS]¹) of sport fishing anglers indicate Crescent Lake supports modest participation and harvest. To provide additional fishing opportunities for this species, 3 roadside landlocked lakes (Arc, Scout and Tirmore Lakes) were stocked with Arctic grayling beginning in 2010, with 2019 being the most recent stocking for Scout Lake and 2020 for Tirmore and Arc Lakes.

ESTABLISHED MANAGEMENT PLANS AND POLICIES RELEVANT TO THE 2024 UCI FINFISH BOF MEETING

Upper Cook Inlet fisheries (commercial, sport, personal use, and subsistence) have been the focus of intensive, allocative debates for many years. These controversial issues have prompted the BOF to establish numerous management plans and regulatory policies that allocate the area's fisheries resources among various user groups. These plans provide for the sustained yield of fishery resources and establish management actions (in specific situations) and guidelines for ADF&G fisheries managers.

¹ Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited December 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Management plans and associated Alaska Administrative Codes (AAC) germane to NKPMA fisheries are as follows:

- *Upper Cook Inlet Salmon Management Plan (5 AAC 21.363)*
- *Kenai River and Kasilof River Early-run King Salmon Management Plan (5 AAC 57.160)*
- *Kenai River Late-run King Salmon Management Plan (5 AAC 21.359)*
- *Kenai River Late-run Sockeye Salmon Management Plan (5 AAC 21.360)*
- *Russian River Sockeye Salmon Management Plan (5 AAC 57.150)*
- *Kasilof River Salmon Management Plan (5 AAC 21.365)*
- *Upper Cook Inlet Personal Use Salmon Fishery Management Plan (5 AAC 77.540)*
- *Riparian Habitat Fishery Management Plan for the Kenai Peninsula Area (5 AAC 56.180)*
- *Riparian Habitat Fishery Management Plan for the Kenai River Drainage Area (5 AAC 57.180)*
- *Kenai River Coho Salmon Management Plan (5 AAC 57.170)*

OVERALL NKPMA SPORT FISHING EFFORT, HARVEST, AND CATCH

Statewide Harvest Survey

Sport fishing effort and harvest of sport fish species in Alaska have been estimated and reported annually since 1977 using a mail survey. The SWHS is a questionnaire mailed to a stratified random sample of (resident or nonresident) households with at least 1 valid fishing license. It provides estimates of effort in number of anglers and angler-days, harvest, and (since 1990) catch by location for guided and unguided anglers. It does not provide estimates of effort directed toward a single species. Survey results for each year are not available until the following year; hence, the results for 2023 will not be available until fall 2024.

Onsite creel surveys have been selectively implemented for fisheries that require inseason or hatchery stock composition information for management purposes. However, the following summaries of sport angler harvest and effort in the NKPMA are based only on estimates produced from the SWHS.

Of all the ADF&G SF management areas, the NKPMA supports the highest sport fishing effort. During 2000–2021, the NKPMA accounted for an average of 22% of the total statewide sport fishing effort (Table 1). Between 2012 and 2021, angler participation in the NKPMA ranged from a high of 577,890 angler-days in 2014 to 402,809 angler-days in 2020 (Table 1, Figure 2). Angler effort of 487,581 angler-days in 2022 was lower than average (2012–2021).

The Kenai River accounts for the largest sport fishery in the NKPMA. From 2012 to 2021, angler effort varied between 305,376 angler-days in 2020 to 455,578 angler-days in 2014 and accounted for between 75% to 82% of the area’s total sport angling effort (Table 1). Effort on the Kenai River in 2022 (393,873 angler-days) was above the 2012–2021 average (Table 1). Historically, as well as today, most of this effort occurs downstream from the Soldotna Bridge (i.e., Sterling Highway Bridge) to Cook Inlet (Table 2). Pacific salmon, rainbow trout, and Dolly Varden are the most abundant species harvested in the Kenai River (Table 3).

Other fresh waters of the Kenai Peninsula support major sport fisheries as well. Of these, the Russian River supports the largest fishery (Table 1), with most participation directed towards

early- and late-run sockeye salmon. The Kasilof River supports a major fishery directed at early-run Chinook salmon, as well as fisheries for late-run Chinook salmon and coho salmon. Other significant fisheries include the Swanson River sport fishery, which is primarily directed at coho salmon and rainbow trout; the Quartz Creek fishery for resident species, primarily Dolly Varden; and the NKPMA stocked lakes fishery, which supports much of the area's rainbow trout harvests (Tables 4 and 5). Total sport angling effort in sport fisheries other than the Kenai River, Kenai Lake, Resurrection Creek, and the stocked lakes has declined from the years prior to 2012 (Tables 1 and 4).

Personal use salmon fisheries at the mouths of the Kenai and Kasilof Rivers continue to be popular with the public. From 1999 to 2021, fishing effort in the Kenai and Kasilof Rivers personal use dip net fisheries averaged 23,220 and 6,809 days fished, respectively (Table 6). Effort in the personal use dip net fisheries declined from the average for the Kenai River (19,454 days fished) but increased substantially for the Kasilof River (10,669 days fished). This is reflected in the salmon harvests, with the Kenai River dip net fishery harvesting less than the historical average (286,213 vs. 293,986 salmon), and the Kasilof River dip net fishery harvesting substantially more (162,527 vs. 66,521 salmon; Table 6). Effort in the Kasilof River personal use gillnet fishery averaged 1,492 days fished during historical period and declined to 756 days fished in 2022 (Table 6). The harvest of salmon in the Kasilof River gillnet fishery also declined compared to the average with 6,372 compared to the average of 20,524 (Table 6). Sockeye salmon are the predominant species harvested in all NKPMA personal use fisheries (Table 6).

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. 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 and required logbooks for saltwater charter vessels. Since then, 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 from charter logbooks (Sigurdsson and Powers 2009). The saltwater charter logbooks provide information on charter activity (location, effort, and harvest) necessary to the BOF for allocation and management decisions specific to Chinook salmon (*O. tshawytscha*), rockfish (*Sebastes*), and lingcod (*Ophiodon elongates*); and necessary for the North Pacific Fishery Management Council (NPFMC) for allocation of Pacific halibut (*Hippoglossus 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 was used for the regulation, development, and management of fisheries, but has since been discontinued following the 2018 fishing season as a result of ADF&G's budget reduction process.

KENAI RIVER CHINOOK SALMON SPORT FISHERIES

FISHERY DESCRIPTION

Chinook salmon return to Kenai River in 2 distinct runs: early and late. The early run usually has “fishable” numbers by mid-May and inriver abundance peaks in mid-June. Most of the early-run stock has passed through the fishery by late June. Late-run fish are present in July and early August. Early-run Chinook salmon primarily spawn in tributaries to the Kenai River, and most of the spawning occurs in 2 primary tributaries: Killey and Funny Rivers. Late-run Chinook salmon primarily spawn in the mainstem Kenai River.

The sport fishery for Chinook salmon in the Kenai River is internationally recognized due to its proximity to major population centers, relative ease of access, and large Chinook salmon. Consequently, large numbers of anglers participate in this sport fishery every year. Because of the high level of participation in relation to the total number of Chinook salmon in the runs, the fishery is strictly regulated. Chinook salmon fishing is limited to a 50-mile area downstream from Skilak Lake (Figure 3) from January 1 through July 31. By regulation, the early-run Kenai River Chinook salmon fishery ends on June 30. The daily bag and possession limits are 1 Chinook salmon 20 inches or greater in length, with a protective maximum size of retention limit (no retention, must be released) for Chinook salmon greater than 34 inches. From July 1 through July 31 from the mouth of the Kenai River to a marker downstream of Slikok Creek, the bag and possession limit remains the same, but Chinook salmon of any size may be retained. The annual (January 1–December 31) limit is 2 fish. However, Chinook salmon harvested prior to July 1 that are 20 inches or more in length but less than 28 inches in length do not count toward the annual limit of 2 fish.

The majority of Chinook salmon harvest is taken by anglers in boats. After retaining a Chinook salmon that counts toward the annual limit, an angler is prohibited from fishing from a boat in the Kenai River downstream from Skilak Lake for the remainder of that day.

The Kenai River Chinook salmon fishery supports an industry that provides sport fishing guide services. Since 1982, guides have been required to register with the Alaska Department of Natural Resources (DNR). Guided anglers are more intensively regulated than unguided anglers. This is due, in part, to the guided angler’s greater harvest efficiency and the general concern regarding harvest parity between guided and unguided anglers.

Nearly all of the Kenai River area available to Chinook salmon fishing is managed as a state park by the DNR Division of Parks and Outdoor Recreation (DPOR). In 1986, DPOR reduced the maximum size of outboard motors that could be legally used on the river to 50 horsepower. In 1987, the maximum legal horsepower was further reduced to 35 horsepower. In 2008, a DPOR regulation became effective that raised the maximum size of outboard motors that can be legally used on the river to 50 horsepower, provided those greater than 35 horsepower be 4-stroke or 2-stroke direct fuel injection (DFI) outboard motors. In addition, during the month of July, all outboard motors operating on the Kenai River must be 4-stroke or 2-stroke DFI. This regulation expired after the 2012 season, and beginning in 2013, all outboard motors operating on the Kenai River must be 4-stroke or 2-stroke DFI year-round. There is no evidence to indicate that the change in horsepower changed angler efficiency.

Under current BOF policy, the early run is managed for the inriver sport and guided sport fishery. Although harvest is known to be relatively minor, early-run fish are intercepted in the mixed-stock Cook Inlet marine sport fishery prior to their entry into the Kenai River (Begich 2007, 2010a;

Table 7). Commercial harvests and recent Kenaitze Indian Tribe educational fishery harvests of early-run Chinook salmon are small (Table 7). By regulation, drift gillnetting in the Central District does not commence until the third Monday in June or June 19, whichever is later, and the Eastside setnet fishery does not commence until June 25 or if 50,000 sockeye have been estimated to have passed the Kasilof River sonar by June 20 in the Kasilof Section.

In 1984, ADF&G initiated a sonar program to determine the number of Chinook salmon that return to Kenai River. From 1984 to 1994, the sonar counter used dual-beam transducer technology, then from 1995 to 2010, the sonar program adopted split-beam technology to improve the estimation of Chinook salmon returning to the Kenai River using a target strength sonar (TS-based) estimate. During this latter period, uncertainty in sonar estimates due to problems differentiating between the various salmon species migrating together in the Kenai River resulted in improvements in both methods and technology to better separate Chinook salmon from the more numerous sockeye salmon in the final estimates (Bosch and Burwen 2000). Dual-frequency identification sonar (DIDSON) trials were initiated in 2002, which improved the distinction between large and small fish; however, results from these trials led to declining confidence in TS-based estimates of run strength. During 2002, ADF&G began generating a split-beam sonar-based echo length standard deviation (ELSD) estimator of Chinook salmon passage, which was thought to be superior at differentiating between salmon species. In addition, ADF&G standardized the Chinook salmon test-netting program conducted at the sonar station, which allowed a net-apportioned split-beam sonar estimate of the rate of daily Chinook salmon passage to be calculated. This suite of Chinook salmon sonar passage estimates, in combination with the Chinook salmon abundance indices of catch per unit effort (CPUE) in the lower river creel survey and in the test netting program, helped to evaluate the accuracy of the TS-based sonar estimates of Chinook salmon passage.

At the February 2011 BOF meeting, ADF&G revised the escapement goal from a biological escapement goal (BEG) to a sustainable escapement goal (SEG) because of the uncertainty in the evaluation of escapement and the lack of stock-specific information in the commercial harvest. At this same meeting, ADF&G reported that it had decided to discontinue the use of TS-based estimates of inriver run in favor of abundance indices and to continue development of a new assessment utilizing DIDSON. Starting in 2011, DIDSON was operated simultaneously with split-beam sonar, and because the TS-based estimates were known to overestimate abundance and the source of the bias was identified as the imprecision in the estimates of fish length that the split-beam technology provided, use of TS-based estimates for inseason management was discontinued and ELSD-based estimates, the net apportioned estimates, as well as creel and netting CPUE estimates, were used to assess inseason run strength instead (Miller et al. 2014). Following the 2011 season, it was determined the ELSD-based estimates, based on split-beam technology, also provided Chinook salmon passage estimates that were imprecise and the bias could not be corrected during the season. In 2012, the development of a new assessment utilizing DIDSON continued. The 2012 inseason run assessment utilized minimum management objectives for each index set at average values for the index when the inriver sport fishery was restricted historically to achieve adequate Chinook salmon escapements. Minimum inseason management objective values were set for DIDSON net-apportioned estimates, and creel, netting, and commercial Eastside set gillnet CPUE estimates. In addition, DIDSON estimates served as an index for comparison to the 2010 and 2011 runs when DIDSON was also operated (Miller et al. 2015). Furthermore, during the 2012 season, several alternative sonar sites that were above tidal influence were evaluated in the lower Kenai River. A site was selected near river mile (RM) 13.7 and DIDSON was operated during the Chinook salmon runs in 2013 and 2014 as part of the sonar

research program to move upstream above tidal influence to achieve a more accurate inseason assessment of both the early and late runs (Key et al. 2016a, 2016b).

Following the 2012 season, several agenda change requests (ACR) were submitted by the public to the BOF at the October 2012 work session to address inseason Kenai River Chinook salmon management by changing the *Kenai River Late-run King Salmon Management Plan*. ADF&G also submitted an ACR to replace the late-run Chinook salmon SEG (17,800–35,700 fish) present in the management plan with a DIDSON-based escapement goal described as “transitional.” The purpose of the transitional goal was to provide the primary management objective for the fishery during the period when existing sonar, independent mark–recapture, and alternative sonar site research was ongoing. In March of 2013, the BOF replaced the SEG contained in the management plan with the transitional DIDSON-based SEG of 15,000 to 30,000 fish recommended by ADF&G (Fleischman and McKinley 2013).

Beginning in 2015, the sonar site at RM 13.7 became the primary enumeration site for Chinook salmon using a later generation sonar called adaptive resolution imaging sonar (ARIS). ARIS directly counts large Chinook salmon defined as salmon greater than 75 cm (about 34 in) in length (Key et al. 2017). This method allows ADF&G to directly estimate the number of large Chinook salmon migrating upstream without the need for an apportionment program for species identification. The large-fish-based assessment was fully adopted for the 2017 season and continues to the present.

Total Kenai River Chinook salmon sport fish harvest declined steadily from 1993 through 1998, then rebounded from 1999 through 2006, averaging an annual harvest of 19,277 fish (Begich et al. 2017; Table 3). The most recent 5-year (2017–2021) average Kenai River Chinook salmon sport fish harvest from both runs combined was 3,439 fish, reflecting a decline in harvest since 2007. The most recent 5-year (2017–2021) averages of total run for early- and late-run Chinook salmon (4,250 and 17,496, respectively) were both well below their respective averages for prior years (1999–2016) of 8,747 and 43,325 large fish, respectively (Tables 7 and 8).

The BOF adopted several regulations affecting both the early- and late-run Kenai River Chinook salmon fisheries at the 2020 UCI BOF meeting. Both the early- and late-run Chinook salmon management plans had revisions to the maximum size limit for retention, bringing it down from 36 inches to 34 inches or less. The late-run optimal escapement goal (OEG) was established at 15,000–30,000 large fish, and there were changes relating to registered sport fish guides and angler transport.

KENAI RIVER EARLY-RUN CHINOOK SALMON

Fishery Management Objectives

In 1988, the BOF adopted the first management plan for early-run Kenai River Chinook salmon. Since 2017, this plan has mandated an optimum escapement goal (OEG) of 3,900 to 6,600 large fish and a sustainable escapement goal (SEG) of 2,800 to 5,600 large fish. Currently, the *Kenai River and Kasilof River Early-Run King Salmon Management Plan* (5 AAC 57.160) also identifies the possible management actions that can be implemented at given escapement levels. The original and current plan both enforce fishing without bait to reduce angler efficiency.

The *Kenai River and Kasilof River Early-run King Salmon Management Plan* implements restrictions to the sport fishery in a step-down fashion beginning with preseason restrictions based upon ADF&G forecast. When the forecasted inriver run is below the SEG range, the sport fishery

will be closed. If the forecasted inriver run is above the lower end of the SEG and below the lower end of the OEG, the fishery may be closed or restricted to nonretention. When the forecasted inriver run is within or exceeds the OEG, the fishery may start as described in the regulation summary booklet. Inseason management guidelines are also described as follows: when the inseason inriver projection is below the OEG, the fishery will close; when the inseason inriver projection is within the OEG, the fishery may proceed as described in the regulation summary booklet or be restricted to nonretention; if the inseason inriver projection exceeds the OEG, then the fishery may be liberalized from the mouth of the Kenai River to the ADF&G marker below Slikok Creek by allowing the use of bait or modifying the maximum size limit; from an ADF&G marker 300 yards downstream of Slikok Creek to the outlet of Skilak Lake, the fishery may proceed under general regulation (5 AAC 57.120).

By regulation, the fishery begins without the use of bait and is limited to the use of only 1 single hook or artificial lure. Fishing from guided vessels is not allowed on Sundays and Mondays, and fishing from motorized vessels is not allowed on Mondays, except Memorial Day.

Research and Management Activities

The primary objective of inseason management is to achieve a spawning escapement within the OEG range of 3,900 to 6,600 large early-run Chinook salmon utilizing management steps as prescribed by the *Kenai River and Kasilof River Early-run King Salmon Management Plan* (5 AAC 57.160). Achievement of this objective requires information on the daily number of early-run Chinook salmon entering the river (inriver run), and daily sport harvest information. Spawning escapement is calculated as the inriver run minus sport harvest, including release mortality. The inriver run estimate is obtained with sonar, harvest information is obtained with ADF&G creel surveys, and release mortality is assumed at 7.6% (Bendock and Alexandersdottir 1992). Management steps are instigated in conjunction with these assessments of spawning escapement to achieve the OEG.

Prior to 2015, the DIDSON Chinook salmon passage estimate at RM 8.6, supplemented with indices of abundance, was used to assess the inriver run. Beginning with the 2015 season, the assessment of inriver run was transitioned to ARIS sonar at RM 13.7. Sonar is usually operational on May 16 and the early-run Chinook salmon run is assessed daily through June 30. The early-run Kenai River Chinook salmon fishery ends by regulation on June 30. Estimates from the ADF&G inriver net sampling program (Wood 2022) and sport harvests are available daily. The sonar estimates for large Chinook salmon (750 mm or 34 inches total length or greater) are available daily; however, total Chinook salmon passage estimates are not, due to a variety of factors affecting sonar data processing.

Harvest is estimated in season by an onsite creel survey. This survey begins around mid-May as soon as water levels rise sufficiently to permit anglers and ADF&G staff to safely use boats on the lower Kenai River downstream of the Sterling Highway Bridge. Harvest estimates are typically generated as needed by managers, but daily estimates can be calculated if required for management actions.

A preliminary estimate of spawning escapement is projected in season using a mean run-timing model. This estimate is based on the projected inriver run minus the projected harvest (including Chinook salmon mortality associated with catch-and-release fishing).

To publicize fishery information, the Soldotna ADF&G office has 2 recorded message phone lines. One phone line provides a general weekly fishing forecast and the other offers a short summary of the daily weir counts and sonar passage estimates for major Kenai Peninsula fisheries. A short summary of the early-run fishery status is provided on the message phone as well. The message phone lines may receive several hundred calls daily during the peak of the fishery and they give the public reliable access to fishery information while increasing the efficiency of the Soldotna ADF&G staff. The sonar passage estimates and status of inseason management are relayed to the public on the phone system daily. A complete run assessment summary is also posted on the sport fish “fish count” web page² and can be accessed by a data query for Kenai River Chinook salmon. The summary is posted at least twice weekly throughout the season. This complete summary provides information on the status of the run including passage estimates and ADF&G’s assessment of run strength, inseason management action status, fishery update, water conditions, as well as comparative data supporting the assessment project over the most recent 10 years. The summary can also be accessed from the SF “Information by Area” web page for the Northern Kenai Peninsula.³ The public is also kept informed about the fishery via news releases to newspaper, radio, and TV news media. News releases and the resulting requests for interviews from print, radio, and television broadcast media are commonly conducted because they distribute relevant information quickly regarding the status of the fishery and pending management actions.

Restrictive management actions in this fishery are socially and economically disruptive. These disruptions may be minimized by informing the public in a timely and efficient manner. Prior to any likely change in management action, continuous updates regarding the status of the fishery are provided in all available forums. Whenever possible, the staff of ADF&G strive to issue formal announcements (news releases) regarding emergency orders (EO) that change the management of the fishery at least 24 hours before a given action becomes effective.

2022 Fishery Performance

The 2022 preseason forecast of the Chinook salmon early run was approximately 4,300 large fish, and the fishery opened under restricted regulations of catch-and-release only (EO 2-KS-1-21-22). The early-run fishery was then closed to Chinook salmon sport fishing (EO 2-KS-1-22-22). The fishery remained closed in response to low abundance estimates and the need to conserve Chinook salmon to meet the escapement goal. The resulting spawning escapement estimate was 2,047 large fish through June 30 and a total run estimate of 2,052 large fish (Table 7). Based on the sonar data, the midpoint of the run at the RM 13.7 sonar site was June 15, approximately 1 week later than the mean midpoint of sonar data collected at RM 13.7. In combination, all data indicated the 2022 inriver run of large Chinook salmon was well below average and warranted restrictive management actions; however, the lower bound of the OEG (and SEG) was not achieved (Table 7). Preliminary estimates of the age composition showed a notable absence of larger older Chinook salmon during the inriver ASL sampling, with ocean-age-3 and -4 fish accounting for nearly 47.8% of the run, whereas ocean-age-2 Chinook salmon increased to 40.9% of the run. The remaining composition was made up of ocean-age-1 fish (E. Wood, Sport Fish Biologist, ADF&G, Soldotna, personal communication).

² <http://www.adfg.alaska.gov/sf/FishCounts/>

³ <http://www.adfg.alaska.gov/index.cfm?adfg=byAreaSouthcentralUpperKenai.fishingInfo#/fishcounts>

KENAI RIVER LATE-RUN CHINOOK SALMON

Fishery Management Objectives

The Kenai River late-run Chinook salmon fishery is managed according to provisions of the *Kenai River Late-Run King Salmon Management Plan* (5 AAC 21.359). Late-run stocks of Kenai River Chinook salmon are caught by the commercial drift gillnet fishery and the commercial set gillnet fishery along the east side of Cook Inlet, both of which target sockeye salmon. Harvest also occurs in the Kenai River personal use dip net fishery, which also targets sockeye salmon. The commercial fisheries that intercept late-run Kenai River Chinook salmon are managed under provisions of the *Kenai River Late-Run Sockeye Salmon Management Plan* (5 AAC 21.360). Incidental commercial harvests of Chinook salmon stocks have been the subject of intense allocation debates among sport and commercial user groups since the early 1980s. As a result, the *Kenai River Late-run Sockeye Salmon Management Plan* contains provisions to reduce incidental harvests of Kenai River-bound Chinook salmon.

The current management objective, as outlined in the *Kenai River Late-Run King Salmon Management Plan*, is to achieve adequate escapement defined as an OEG from 15,000 to 30,000 large Chinook salmon (≥ 75 centimeters or 34 inches in total length).

Research and Management Activities

Inseason management to achieve adequate escapement of late-run Chinook salmon requires a daily estimate of the number of late-run Chinook salmon entering the river, an estimate of the inseason harvest, the ability to project (predict) the total inriver run and to estimate what the total inriver harvest and the spawning escapement will be.

Late-run sonar estimates begin when the late-run fishery opens by regulation (July 1) and conclude by mid-August. The passage of late-run Chinook salmon into the river is estimated by sonar at RM 13.7. The number of Chinook salmon entering the river is estimated by ARIS and may be supplemented with 4 indices of run strength. Estimates of run strength available to management staff daily include the ARIS-based estimates of fish greater than 34 inches in total length, estimates of CPUE from creel surveys, and test netting and eastside set gillnet CPUE. The large numbers of sockeye salmon migrating during the late run complicate estimation of Chinook salmon passage with sonar. Consequently, alternative techniques for estimating run strength are also used. Such techniques include estimates based on historical exploitation rates in the sport fishery and historical exploitation rates in the commercial set gillnet fishery. Since 2010, Chinook salmon from the Upper Cook Inlet Eastside set gillnet (ESSN) commercial fishery have been sampled for genetic tissue to determine stock of origin of these harvests. Findings by Eskelin and Barclay (2023) indicate the contribution of Kenai River mainstem Chinook salmon stocks to the ESSN fishery averaged across all years (2010–2022) is approximately 70% of the total ESSN harvest (Table 9). Therefore, inseason estimates of run strength based on Chinook salmon harvests by the ESSN fishery have been refined by these data.

The sport fishery that occurs in about 13 miles of the lower Kenai River between RM 5 at Warren Ames Bridge upstream to Slikok Creek located at RM 18 is the predominant source of inriver sport harvest. Upstream of RM 18, regulations are restrictive and previous EO closures above RM 18 have prohibited sport fishing for Chinook salmon. The harvest in this lower river area is estimated by an onsite creel survey. Harvest above this lower river area, when Chinook salmon fishing is allowed, is estimated with the SWHS. The late-run creel survey begins July 1 and continues until

the end of the fishery. The fishery is closed by regulation on July 31. However, the duration of the fishery may be adjusted by EO depending on the magnitude of the inriver run. Harvest estimates are typically available to the public via the Soldotna ADF&G informational outlets twice weekly; however, daily estimates may be calculated when needed to aid fishery managers.

The spawning escapement is projected inseason by applying sonar count data to a historical run-timing model. Spawning escapement is the inriver run (from sonar) less the projected sport harvest below the sonar (from creel survey). The projected sport harvest includes estimated mortality associated with catch-and-release fishing estimates (Bendock and Alexandersdottir 1992). For the late-run stock assessment, the escapement estimate includes an additional 4% of the cumulative sonar passage to account for spawning downstream of the sonar, which was estimated from tagging studies of late-run Chinook salmon by Reimer (2013).

Historically, when a stock assessment was made using RM 8.6 run strength, a spawning escapement estimate could be projected with reasonable accuracy by approximately the third week in July. However, inseason management based on the RM 13.7 sonar is delayed by the 5 additional miles upstream that fish must transit before abundance is estimated. This is especially true during the late run in July, when Chinook salmon exhibit less consistent upstream migration, which seems to slow or pause as Chinook salmon transit through the lower river section. Radiotelemetry results from Reimer (2013) were consistent with these findings. For fishery management, the main difference between the 2 sonar sites is that the mean run-timing midpoint for the RM 8.6 sonar is July 21 whereas the mean midpoint for the RM 13.7 site does not occur until July 26; only about 34% of the run has passed the RM 13.7 site by July 21. Late-run management decisions cannot be delayed, so inseason projections based on RM 13.7 passage are made on a smaller fraction of the run than they were historically and therefore the error associated with inseason projections of run strength and escapement are now greater than the error associated with historical management actions. Inseason assessment was based on RM 8.6 through the year 2014; beginning in 2015 and thereafter, the assessment fully transitioned to RM 13.7.

The sport fishery for late-run Chinook salmon in the Kenai River is one of the largest in the state and is quite possibly the most controversial fishery in Alaska. The inriver sport fishery as well as Cook Inlet marine sport and commercial fisheries, educational fisheries, and personal use fisheries all harvest late-run stocks. ADF&G's interaction with the user groups affected by management decisions is critical to the successful implementation of any inseason management action. The Soldotna SF office distributes information about the late-run Kenai River Chinook salmon fishery in a similar manner as described above for Kenai River early-run Chinook salmon.

2022 Fishery Performance

The 2022 preseason forecast was for an inriver run of approximately 16,004 large late-run Kenai River Chinook salmon (R. Begich, Sport Fish Biologist, ADF&G, Soldotna, personal communication). This forecasted run strength was within the OEG (15,000–30,000) but due to the poor performance of the early run, the fishery was restricted to catch-and-release only, effective July 1 (EO 2-KS-1-22-22; Appendix A1). Additionally, retention of Chinook salmon was prohibited in the personal use dip net fishery, effective July 10 (EO 2-KS-1-46-22). By July 14, the RM 13.7 passage estimate of late-run Chinook salmon was 2,147 large fish. Inseason projections indicated that continued harvest could result in not achieving the lower end of the escapement goal. Consequently, an EO was issued to close the Kenai River Chinook salmon sport

fishery (EO 2-KS-1-53-22) effective July 17, 2022. The fishery remained closed until the end of the season on July 31.

The postseason estimate of the spawning escapement was 13,911 large Chinook salmon (Table 8). The estimate of inriver sport fishing mortality was 92 Chinook salmon, and the reported harvest in the ESSN fishery was 41 Chinook salmon (Table 8). The sum of the sonar passage estimates and harvests below the sonar resulted in a total run estimate of 14,078 late-run Chinook salmon, which was less than forecast (Table 8). The age composition estimates from inriver gillnet sampling of the run indicated 76.4% of the run was composed of ocean-age-3 and -4 fish, whereas ocean-age-1 and -2 fish accounted for 23.5% of the run (E. Wood, Sport Fish Biologist, ADF&G, Soldotna, personal communication).

KASILOF RIVER CHINOOK SALMON SPORT FISHERY

FISHERY DESCRIPTION

The hatchery stocks of early-run Chinook salmon that return to the Kasilof River were originally developed from wild fish in Crooked Creek, a tributary to the Kasilof River, approximately 6 miles upstream from Cook Inlet (Figure 4). The Kasilof River also supports a wild stock of late-run Chinook salmon. The early run usually supports the larger inriver fishery as measured by harvests (Tables 10–12). In 1973, ADF&G constructed a hatchery to enhance fisheries on the Kenai Peninsula. The hatchery is no longer used for salmon production. Cook Inlet Aquaculture Association assumed operations at the hatchery in 1995. The facility was then returned to ADF&G in 1997 and Chinook salmon escapement monitoring began in 1999 and continues today (Table 10). From 1979 through 1999, an average of about 216,000 smolt was stocked annually into Crooked Creek (D. Loopstra, Sport Fish Biologist, ADF&G, Anchorage, personal communication). Because of concerns about hatchery stock introgression and straying of stocked fish, ADF&G reduced the stocking levels to a target of about 105,000 smolt in 2001. Doing so resulted in stocking between 80,000 and 115,000 smolt annually over the next 10-year period until 2010. Since 2014, stocking has mostly increased to about 140,000 smolt (Table 13). Annual operations at the facility include monitoring natural production of Crooked Creek Chinook salmon by evaluating early-run escapement numbers and estimating naturally produced stock (a population consisting of both wild fish and naturalized hatchery fish) and hatchery stock runs to a weir at the facility in 2002. Naturally produced Chinook salmon broodstock collected at the weir support an early-run sport fishery enhancement program. In addition, a creel survey was conducted from 2004 through 2010 to estimate the catch and harvest of naturally and hatchery-produced early-run Chinook salmon (Cope 2011, 2012). A research project was conducted from 2005 through 2008 to estimate abundance, spawning distribution, and run timing for late-run Kasilof River Chinook salmon (Reimer and Fleischman 2012).

The sport fishery for early-run Chinook salmon in the Kasilof River occurs from late May through June. The run-timing of the majority of the early run precedes the commercial set gillnet fishery on the eastside beaches of Cook Inlet. There is a personal use set gillnet fishery that occurs from June 15 through June 24 at the mouth of the Kasilof River. The personal use set gillnet fishery harvests primarily sockeye salmon returning to Tustumena Lake and small numbers of Chinook salmon that originate from Crooked Creek (Table 6).

The Kasilof River Chinook salmon sport fishery is limited by regulation to January 1 through July 31. During the early run (late May through June 30), the river is open in its entirety to Chinook

salmon fishing. During the July late-run fishery (July 1–July 31), the area upstream from the Sterling Highway Bridge is closed to Chinook salmon fishing to protect spawning fish. Historically, the early run was harvested by relatively large numbers of shore anglers and to a lesser extent boat anglers (Nelson 1995), whereas the late run has been harvested primarily by boat anglers because discharge of the Kasilof River during July makes it difficult for anglers to effectively fish for Chinook salmon from shore. Participation and harvest during both runs are greater for the early run, although research projects indicate abundance is higher for the late-run stock (B. Key, Sport Fish Biologist, ADF&G, Soldotna, personal communication).

Harvest estimates for early-run and late-run Kasilof River Chinook salmon have been estimated by the SWHS since 1996. Additionally, early-run estimates of harvest for naturally and hatchery-produced stock composition were obtained through a creel survey between 2004 and 2010 (Cope 2011, 2012). Between 2004 and 2021, the average annual angler harvest for early-run Kasilof River Chinook salmon was 1,743 fish (Table 10). The creel survey also estimated harvest and effort by boat and shore anglers and found that the estimated angler effort and harvest from boats greatly exceeded the shore-based angler effort and harvest (Table 12). From 1999 to 2021, the average annual inriver sport harvest for late-run Kasilof River Chinook salmon was 899 fish (Table 11).

KASILOF RIVER EARLY-RUN CHINOOK SALMON

Fishery Management Objectives

The Kasilof River early-run Chinook salmon fishery is supported primarily by stocked Chinook salmon of Crooked Creek origin and supplemented by natural production in Crooked Creek. The Kasilof River Chinook salmon early-run sustainable escapement goal (SEG) for 2002 through 2019 was 650–1,700 naturally produced fish. In 2020, the new SEG of 700–1,400 naturally produced fish was adopted to ensure naturally produced Chinook salmon ocean-age-2 or greater reach the spawning grounds above Crooked Creek weir and to harvest hatchery-produced Chinook salmon. Objectives for this fishery achieved through the enhancement program include generating a return of approximately 3,000 hatchery-produced Chinook salmon and generating approximately 17,500 angler-days of annual sport fishing opportunities directed at Chinook salmon in the Kasilof River. To improve the fishery, the broodstock goal objective has changed in recent years because of low annual runs; an egg-take goal of 150,000 eggs resulting in 105,000 released Chinook salmon smolt was increased to approximately 175,000 eggs resulting in a release of about 140,000 smolt annually into Crooked Creek.

Research and Management Activities

Currently by regulation, the bag and possession limits for Chinook salmon are 2 fish per day, of which only 1 may be a naturally produced fish. Hatchery-produced fish may be harvested 7 days each week, and naturally produced fish may be harvested 3 days per week (i.e., Tuesday, Thursday, and Saturday). The *Kenai River and Kasilof River Early-run King Salmon Management Plan* directs ADF&G to achieve the SEG, to provide reasonable harvest opportunities over the entire run while ensuring adequate escapement of naturally produced Chinook salmon, and to minimize the effects of conservation actions for the Kenai River on the Kasilof River. Because Chinook salmon do not reach the weir at Crooked Creek until the latter part of June and July, run strength is not evaluated in season. Past creel survey data indicate the highest catch rates are typically observed prior to June 10. Currently, the Chinook salmon harvest is estimated after the end of the season.

Furthermore, run strength estimates, harvest estimates, and data on inseason performance of the fishery (catch, harvest, and effort) have not been available in season since the creel survey was discontinued.

Since 2009, low escapements of naturally produced Chinook salmon have occurred at Crooked Creek despite restrictions to the early-run Kasilof River Chinook salmon sport fishery prohibiting retention of naturally produced fish and prohibiting the use of bait. The SEG for Crooked Creek (650–1,700 naturally produced fish) was not achieved in 3 years between 2009 and 2019 (2009 and 2012 were below and 2016 was above the goal), and the new SEG for Crooked Creek (700–1,400 naturally produced fish) was not achieved in 1 year (2021) between 2020 and 2022 (Table 10). Because relatively low Chinook salmon productivity has affected several Cook Inlet stocks, including naturally produced fish of Crooked Creek origin and hatchery-produced fish stocked into Crooked Creek, ADF&G began restricting the Kasilof River inriver sport fishery prior to the season in 2010. These preseason restrictions were designed so that both escapement and broodstock goals could be achieved while still providing reasonable harvest opportunities for Chinook salmon.

2022 Fishery Performance

ADF&G issued a preseason EO 2-KS-1-07-22 on January 26, 2022, to restrict the Kasilof River early-run Chinook salmon fishery by prohibiting the retention of naturally produced Chinook salmon. Additionally, fishing gear was restricted to the use of single hook, artificial lures, with bait allowed. ADF&G then issued an inseason restriction, EO 2-KS-1-23-22, on June 6, 2022, to prohibit bait. Lastly, another inseason restriction, EO 2-KS-1-30-22, was issued on June 13, 2022, that superseded previous EOs by closing the Chinook salmon sport fishery on the Kasilof River (Appendix A1). The escapement of ocean-age-2 or older naturally produced Chinook salmon in 2022 was 735 fish, which achieved the SEG (Table 10). An additional 453 hatchery-produced Chinook salmon were also counted in the escapement at Crooked Creek (Table 10). The objective for stocking approximately 140,000 Chinook salmon smolt into Crooked Creek annually was not met in 2022 with approximately 97,500 smolt released (Table 13).

KASILOF RIVER LATE-RUN CHINOOK SALMON

Fishery Management Objectives

The Kasilof River late-run Chinook salmon sport fishery is not specifically addressed in a BOF-adopted management plan. ADF&G objectives adopted for this fishery include providing an opportunity for angler participation at a level that can be supported by the fisheries resource and associated habitat and to ensure through appropriate management and research programs that the Chinook salmon population does not decline below the levels necessary to ensure sustained yield. Sport harvest has been monitored via the SWHS since 1996 and has averaged 899 Chinook salmon annually from 1999 to 2021 (Begich et al. 2017; Table 11). Using genetic analysis from the Eastside set net (ESSN) commercial fishery during 2010 through 2022 (except 2012), the 1999–2021 average ESSN harvest of late-run Kasilof River Chinook salmon has been estimated at 2,075 fish (Table 11; Fleischman and McKinley 2013; Eskelin et al. 2013b; Eskelin and Barclay 2016–2022).

Research and Management Activities

Historically, there has been limited inseason management of this fishery. The fishery is managed through existing regulations. These regulations are conservative, permitting a harvest of late-run Kasilof River Chinook salmon downstream from the Sterling Highway Bridge only through July 31. For Chinook salmon 20 inches or more in total length, the daily bag and possession limits are 1 fish, and the annual limit for Chinook salmon in Cook Inlet is 5 fish. During years of low Chinook salmon abundance, ADF&G administered inseason restrictions by EO to minimize the effects of conservation actions for the Kenai River on the Kasilof River at times when the Kenai River was restricted or closed inseason; this occurred the first time during 2012. Thereafter, ADF&G continued to use this inseason approach because low Chinook salmon production was known to be widespread throughout many Cook Inlet Chinook salmon producing locations (R. Begich, Sport Fish Biologist, ADF&G, Soldotna, personal communication).

From 2018 to 2020, ADF&G operated an ARIS sonar just upstream of the Sterling Highway Bridge to monitor sockeye salmon and estimate the abundance of late-run large Chinook salmon (≥ 75 cm mid eye to tail fork length). This project gave ADF&G a relative estimate of Kasilof River late-run Chinook salmon that spawn predominantly in the upper portions of the mainstem Kasilof River. Data from this project indicated the 2019 abundance estimate of late-run large Chinook salmon was greater than the 2018 and 2020 Chinook abundance estimates (Miller et al. 2022). Several years of data and additional funding will be necessary to make the project applicable for inseason management actions and escapement goal development.

There have been no inseason data collected for the management of the Kasilof River Chinook salmon late run. During 2005–2008, ADF&G research projects collected information on run timing, spawning distribution, and gave postseason estimates of inriver abundance of late-run Kasilof River Chinook salmon (Reimer and Fleischman 2012). Netting catches of Chinook salmon for the research program were relatively stable from 2005 to 2008. Information on run strength and sport fishery performance is collected via angler reports during the season as well as from the Charter Logbook reports and the SWHS. Results from these programs indicate that sport harvests are relatively stable. Similar to Chinook salmon runs elsewhere in Cook Inlet, Kasilof River stocks also experienced lower runs over recent years, including low production of hatchery-stocked early-run Chinook salmon used to supplement the Kasilof River early-run fishery.

There have been changes in the commercial fisheries targeting sockeye salmon bound for the Kasilof River in the past decade due to excess escapement of sockeye salmon past the ADF&G Kasilof River sonar station. These commercial fishery changes included the implementation of terminal commercial fishing periods at the mouth of the Kasilof River during several years, which were designed to reduce the numbers of sockeye salmon entering the Kasilof River when sockeye salmon escapement is projected to exceed the goal. Chinook salmon are also harvested, and all the commercially harvested Chinook salmon harvested during these terminal fishery periods were presumed to be of Kasilof River origin. However, genetic sampling results by Eskelin et al. (2013b) and Eskelin and Barclay (2015, 2016) show harvests in the terminal harvest area are not exclusively Kasilof River origin Chinook salmon.

2022 Fishery Performance

ADF&G issued EO 2-KS-1-30-22 on June 13, 2022, restricting the late-run Chinook salmon sport fishery on the Kasilof River to catch-and-release only downstream of the Sterling Highway Bridge. This EO also restricted sport fishing gear to 1 unbaited, single hook, artificial lure (Appendix A1).

These restrictions remained in place until the fishery closed on July 31. The estimated inriver sport harvest was 45 Chinook salmon (Table 11).

RUSSIAN RIVER SOCKEYE SALMON SPORT FISHERIES

FISHERY DESCRIPTION

The Russian River is a clearwater tributary to the Kenai River located near the community of Cooper Landing approximately 100 miles south of Anchorage (Figure 5). Lands bordering this river are federally managed. The public can access the Russian River via the Kenai–Russian River ferry operated by a private concessionaire. The ferry is located at the Kenai National Wildlife Refuge parking area on the north shore of the Kenai River just downstream from the confluence with the Russian River. Additional access is provided at the Chugach National Forest campground on the Russian River (Figure 6).

The Russian River drainage supports one of the largest runs of sockeye salmon to upper Cook Inlet (UCI) and provides one of the largest freshwater sport fisheries for sockeye salmon in Alaska. In addition, Chinook, coho, and pink salmon also spawn in the Russian River drainage as well as resident populations of rainbow trout and Dolly Varden. The drainage is closed to fishing for Chinook salmon but supports sport fisheries for the other species.

Sockeye salmon return to the Russian River during 2 distinct periods. An early run arrives at the confluence of the Kenai and Russian Rivers in early June. Because of this early run timing, these fish are not harvested in the (UCI) commercial salmon fisheries. The primary harvest of these fish occurs in the inriver sport fishery at the Russian River. Early-run fish typically congregate at the confluence of the Russian and Kenai Rivers for several days prior to moving into the clear waters of Russian River. A late run to the Russian River, part of the larger late run of UCI sockeye salmon, arrives at the confluence in mid-July and typically migrates directly into the Russian River. This run has 2 discrete components: one that spawns in the upper reaches of the drainage (upstream of the falls and the weir) and one that spawns in the lower river reaches (downstream of the falls). The population component that spawns in the lower river reaches is more closely related (genetically) to the mainstem Kenai River sockeye salmon stocks than to the population component spawning upstream of the weir (Seeb et al. 1996). Typically, the spawning escapement of the late run exceeds that of the early run. For the most part, spawning locations used by the late run are distinct from locations used by the early run. Because of their run timing, late-run sockeye salmon are harvested by a combination of commercial, sport, and personal use user groups. In addition, a Federal Subsistence Fishery has been prosecuted at the Russian River since 2007 for qualifying rural residents from the communities of Cooper Landing, Ninilchik, and Hope.

The sport fishery for both early- and late-run sockeye salmon occurs primarily in the lower 3 miles of Russian River and in a 1-mile stretch of the Kenai River below its confluence with Russian River. Both runs support popular fisheries. The most recent 10-year (2012–2021) average harvest of early and late-run sockeye salmon is approximately 29,073 and 14,867 fish, respectively (Table 14). The Federal Subsistence Fishery prosecuted on both runs supports a total annual harvest of approximately 1,680 fish, with the majority of this harvest taken from the early run (Table 14).

Angler effort estimates from the SWHS over the most recent 10-year period (2012–2021) have averaged 49,357 angler-days per year (Table 14). Although these estimates include effort directed toward other species, including resident species and coho salmon, it is believed the majority of

sport fishing effort occurs during the sockeye salmon season (June 11–August 20). Overall, annual effort expended since 2011 has remained relatively stable. Because this area is popular for various forms of outdoor recreation, the 2 public campgrounds and day use parking areas managed by federal agencies are routinely at capacity. Consequently, during the peak of the sockeye salmon fishing season, public demand for access to the fishery exceeds capacity and waiting periods of several hours may be required for parking, and reservations made months in advance may be necessary for camping areas.

In 1993, ADF&G SF purchased property that adjoins U.S. Fish and Wildlife Service (USFWS) lands along the north shore of the Kenai River directly across from the confluence of the Kenai and Russian Rivers. The 4.4-acre property was formerly the site of the privately-owned Sportsman’s Lodge. This purchase was made using primarily Federal Aid in Wildlife and Sport Fish Restoration funds (D–J Amendment) to provide a launch and take-out area for boat anglers fishing the Kenai River and to provide an additional 50 to 75 parking places for anglers. Purchase of this property and improvements since 2000 have partially alleviated parking issues in this area during peak days of the fishery.

Historically, as angler effort has increased in this fishery, the regulations governing the sport fishery have become more restrictive. In 1964, the use of treble hooks was prohibited to reduce snagging. This was followed by adoption of a flies-only regulation in 1965 for the 1966 season. Under this regulation, terminal gear was limited to flies and a fly-fishing-only area was designated. The BOF required that only fish hooked in the head, mouth, or gills could be retained, and in 1969, this regulation was amended to include all fresh waters of the Kenai Peninsula. In 1973, the regulation was further amended to require that fish hooked elsewhere than in the mouth must be released immediately.

Currently, the sport fishery is restricted to terminal tackle consisting of a single-hook, unweighted fly, with a maximum hook gap of $\frac{3}{8}$ inch or less. This measure was implemented to reduce angler efficiency and lessen the angler’s ability to snag fish illegally. This affords an increased measure of protection to fish as they near their spawning destinations. To protect “schooled” fish that hold in the confluence area of the Kenai and Russian Rivers (termed the “sanctuary”), the sanctuary is closed to sport fishing until the lower end of the early-run escapement range is projected to be met in season. Only the lower 3 miles of the Russian River drainage, from 100 yards upstream of its mouth to an ADF&G marker 600 yards downstream of the falls, are open to salmon fishing. The upstream portion of the Russian River (i.e., above the ADF&G marker below the falls) is closed to all salmon fishing to allow fish to migrate and spawn in the remainder of the drainage.

Fishery Management Objectives

Management of this fishery is governed by the *Russian River Sockeye Salmon Management Plan* (5 AAC 57.150). The primary management objective, as directed in the plan, is to achieve a biological escapement goal (BEG) of 22,000 to 42,000 early-run sockeye salmon and a sustainable escapement goal (SEG) of 44,000 to 85,000 late-run sockeye salmon in the Russian River system. The escapement goals have changed over time for both runs and have been achieved or exceeded in all years since 1977, based upon the management plan in effect at that time.

The *Russian River Sockeye Salmon Management Plan* recognizes that commercial users as well as mainstem Kenai and Russian River sport anglers harvest late-run sockeye salmon stocks bound for the Russian River drainage. It stipulates how the burden of conservation shall be distributed between commercial and sport users. In the event conservation measures are required to achieve

the minimum escapement goal, ADF&G may restrict Kenai River drainage sport fisheries downstream to and including Skilak Lake. Restrictions to the commercial fishery shall be limited to meeting the inriver escapement goal for Kenai River late-run sockeye salmon as outlined in the *Kenai River Late-Run Sockeye Salmon Management Plan* (5 AAC 21.360).

The goal ranges for both runs are based on data collected at the weir. Precise biological data collected annually at the weir is enough to develop a BEG for the early-run stock only. The late-run stock SEG is based on weir counts that have sustained the fishery. ADF&G recommended a new early-run BEG in 2011 (Fair et al. 2010) and a new late-run SEG in 2020 (McKinley et al. 2020). Since the Russian River late run is a component of the larger late run returning to the Kenai River drainage, the total returns for late-run Russian River sockeye salmon are not known. However, although they have similar run timing, there is a significant genetic difference between late-run Russian River sockeye salmon and late-run Kenai River sockeye salmon. Genetic stock identification (GSI) was undertaken to identify the degree to which late-run Russian River sockeye salmon are harvested by the various mixed-stock saltwater commercial and freshwater personal use and sport fisheries in order to reconstruct the total return of late-run Russian River sockeye from 2006 to 2008 (Eskelin et al. 2013a). In the future, this type of analysis might enable ADF&G to better assess late-run sockeye salmon production in the Russian River drainage.

Research and Management Activities

The early- and late-run fisheries are managed based on escapements counted at a weir at the outlet of Lower Russian Lake. In years of low abundance, the escapement is achieved through inseason restrictions to the sport fishery. In years of high abundance, the fisheries are liberalized to provide additional harvest opportunities. The weir is installed in early June each year and is removed from the river in early September in most years. Early-run sockeye salmon are classified as those fish that pass through the weir from the weir installation date through July 14, whereas fish passing through the weir from July 15 until the weir is removed are classified as late-run sockeye salmon.

Sockeye salmon run strength is determined by examining 3 indicators: weir counts, instream fish abundance estimates, and observed fishery performance. Weir counts are the primary indicator of run strength. Historical weir counts provide the mean migratory run timing statistics used to project inseason abundance and escapement. An estimation of run strength can generally be made several days prior to the historical midpoint of the run (June 28 for the early run and August 7 for the late run). In some years, fish have been late or have “held” in the Kenai River. Weir counts are supplemented by onsite foot surveys of the fish present downstream from the weir, including the area between the weir and the falls, the falls area, lower Russian River, and the sanctuary area (Figure 6).

Fish may “hold” for long periods of time in the falls area during periods of extreme high water or low water. In the case of high water, ADF&G staff observe fish behavior in the falls and monitor water levels at the weir site with a staff gauge. In extreme cases when the staff gauge readings exceed approximately 19 inches and flow input of Rendezvous Creek (located downstream of the weir but above the falls) may prevent fish from migrating upstream through the falls, a fish passage around the falls is opened. No methods are employed to facilitate fish passage to spawning areas during low water conditions. Historically, the fish pass is used infrequently for early-run sockeye salmon during high water caused by the combination of spring snow-melt runoff and rain in early June. It has not been used during the late-run period that begins July 15. The fish pass was last used during high water events in June 2012, 2013, and 2018. Utilization of the fish pass has no

direct effect on sport fishing opportunities because the upstream boundary of the fishing area is approximately 550 meters ($\frac{1}{3}$ of a mile) downstream of the falls; however, it does facilitate the sockeye salmon passage rate into the escapement, which is of primary importance to determine run strength so that appropriate inseason management actions can be taken to achieve escapement goals. In addition, observed fishery performance in the Kenai River downstream from the sanctuary area for the early run and throughout the entire fishery downstream to Skilak Lake in the late run are used as indicators of run strength. If inseason restrictions become necessary to achieve the escapement goal, the *Russian River Sockeye Salmon Management Plan* specifies several options to ensure adequate escapement, including bag limit reductions and closures by area and time in the Russian River as well as the mainstem Kenai River downstream to and including Skilak Lake. When inseason restrictions are implemented, they remain in place until the lower end of the escapement range is projected to be met.

The sockeye salmon sport fishery opens June 11 and closes August 20 by regulation. Sockeye salmon run strength at the Russian River improved during the recent 2012–2021 period, with the highest early-run escapement (125,942) in the historical data occurring in 2019 (Table 14). As a result, the early-run sport fishery was liberalized in all years from 2017 to 2021. The late-run escapements improved from 45,012 fish in 2017 to well above the 10-year average of 60,625 fish from 2018 to 2022. (Table 14). The liberalization of the early-run fishery is generally implemented by opening to fishing the 700-yard sanctuary area at the confluence of the Kenai and Russian Rivers. The sanctuary area opens by regulation after the early-run period on July 15. However, it may be opened by EO earlier if information indicates sockeye salmon abundance is high and the lower end of the early-run BEG (22,000–44,000 fish) will be achieved. Experience has proven that a daytime opening facilitates an orderly expansion of fishing opportunity in the fishery. Late evening and midnight openings are avoided. If weir counts, instream fish estimates, and observed performance of the fishery remain high, and the projected escapement is greater than the upper bound of the BEG, the bag limit is increased to contain the escapement into Lower Russian Lake within the BEG. Typically, the bag limit increase is applied in all waters of the Kenai and Russian Rivers fly-fishing-only waters, which include the Russian River, the Russian River sanctuary, and that portion of the Kenai River from ADF&G regulatory marker located below the Ferry Crossing on the Kenai River downstream to the powerline crossing. Since 2009, the bag limit increase was applied downstream to Jim’s Landing to increase exploitation on a large run (Begich and Pawluk 2010). Historically, the bag limits have been increased from 3 fish to 4 or 6 fish. Over more recent years, the fishery has been liberalized from the Russian River downstream to the markers located at the outlet of Skilak Lake, and the bag limit liberalization has been standardized to increase from 3 fish to 6 fish, while the commensurate increase in the possession limit is from 6 fish to 12 fish when the bag limit is increased.

2022 Early-Run Fishery Performance

The weir was installed on June 4 at Lower Russian Lake. Fish passage was strong and well above average through the end of the early-run counts on July 14. Sockeye salmon were observed to be abundant prior to the season opening on June 11. These observations combined with indications from the Kenai River Chinook salmon sonar resulted in liberalization of the fishery early in the season by opening the sanctuary area on June 22 by EO 2-RS-1-35-22 (Appendix A1). The fishery was further liberalized on June 25 under EO-2-RS-1-37-22 by increasing the bag and possession limits from 3 and 6, respectively, to 6 and 12, respectively, in the Russian River and in the Kenai River from the Russian–Kenai Rivers confluence downstream to Skilak Lake. The escapement

(ending July 14) of early-run sockeye salmon was 61,098 fish and was well above the BEG (22,000–44,000; Tables 14 and 15). Based on the annual SWHS, the early run had an estimated sport harvest of 20,366 sockeye salmon, resulting in an estimated total early run of 82,510 fish (Table 14).

2022 Late-Run Fishery Performance

Sockeye salmon were enumerated at the Russian River weir from July 15 through September 8. Inseason projections of escapement from weir counts indicated the SEG range of 44,000 to 85,000 fish was likely to be exceeded. As a result, the fishery was liberalized on August 2 by increasing the bag and possession limits from 3 and 6, respectively, to 6 and 12, respectively, by EO 2-RS-1-63-22. The 2022 late-run sockeye salmon escapement observed through the Russian River weir was 124,561 fish and was above the SEG range of 44,000 to 85,000 fish (Table 14). This number was also well above the previous 10-year (2012–2021) average escapement of 60,625 fish. The lower bound of the SEG was reached on August 1 (Table 16). Daily passage rates of sockeye salmon at the weir were consistent, with days of above average passage (2,000 fish) building to passage rates of approximately 3,000 fish during the peak days (Table 16). Many sockeye salmon arrived at the Russian River area in a heightened state of maturity in mid-to-late August near the standard regulatory closure of the fishery on August 20. The 2022 sport harvest was 19,994 fish and was the highest sport harvest of late-run Russian River sockeye salmon since 2013 (Table 14).

KENAI RIVER LATE-RUN SOCKEYE SALMON SPORT FISHERIES

FISHERY DESCRIPTION

The Kenai River originates at Kenai Lake near the community of Cooper Landing and terminates in Cook Inlet adjacent to the city of Kenai. The river is glacial and approximately 82 miles in length. It is paralleled for much of its length by the highway road system, making it the most accessible of Alaska’s major salmon producing rivers (Figure 7).

Historically, snagging was the traditional harvest method for taking sockeye salmon in the Kenai River. It was generally believed that this species would not strike a lure or accept bait and that conventional (nonsnagging) techniques could not be used to harvest these fish. When the number of sport anglers was relatively small, snagging posed neither a biological nor a social problem. However, as the population of Southcentral Alaska expanded and the Kenai River sport fishery increased in popularity, anglers began to oppose the practice as an unethical harvest method. Antisnagging measures, first adopted at the Russian River, culminated in 1975 with the BOF promulgating a regulation that prohibited snagging in all fresh waters of the state. In 1979, snagging was prohibited in salt water within a 1-mile radius of the Kenai River mouth and in 1984, all snagging in salt waters north of Anchor Point was similarly prohibited.

Because snagging was no longer a legal harvest method in either fresh or salt water, anglers began to experiment with alternative terminal tackle in an attempt to legally harvest sockeye salmon in the Kenai River. Initial efforts were moderately successful, with annual harvests averaging 23,778 sockeye salmon from 1977 through 1981 (Begich et al. 2017).

Between 1981 and 1989, the average harvest increased. This dramatic increase (277,906 sockeye salmon were harvested in 1989; Begich et al. 2017) is attributed to the use of coho flies as terminal gear. Coho flies are drifted along the bank like the technique used for many years at the Russian

River. The belief that sockeye salmon could not be harvested with conventional tackle was gradually dispelled and this innovative technique prompted additional anglers to seek these fish. The change in fishing technique, coupled with relatively clear water in 1982 and 1983, played a large role in the increased harvests. The larger harvests were further influenced by the magnitude of the inriver runs, which exceeded 1,300,000 sockeye salmon from 1987 to 1989 (Begich et al. 2017). Kenai River late-run sockeye salmon sport fish harvests from 1999 to 2021 have ranged from 172,672 to 558,649 and averaged 309,176 fish, whereas the estimated sockeye salmon runs to the sonar have exceeded a million fish on many occasions (Tables 17 and 18).

The sport fishery for sockeye salmon in the Kenai River is characterized as follows:

- 1) Large numbers of sockeye salmon must be present to provide acceptable harvest rates.
- 2) The fishery is short in duration, usually within July 14 to August 5 depending on run timing, and is approximately 15–20 days.
- 3) The fishery is affected by water conditions; high water levels with high discharge inundate shore fishing locations with turbid water and generally decrease angler efficiency whereas average discharge increases catch rates.
- 4) Only a percentage of the total angler effort on the Kenai River is directed toward sockeye salmon, irrespective of run strength or fishing conditions. This is because the Kenai River is a multispecies fishery in July and August when the late-run sockeye salmon sport fishery occurs. ADF&G expects angler effort to increase if the population of Alaska increases. Angler effort in the Chinook salmon sport fishery, coho salmon sport fishery, and during even years for the pink salmon sport fishery, as well as fishing effort for resident rainbow trout and Dolly Varden, account for the remainder of total angler participation.

Fishery Management Objectives

Kenai River late-run sockeye salmon are managed under provisions of the *Kenai River Late-Run Sockeye Salmon Management Plan* (5 AAC 21.360). SF manages the inriver sport fishery. Late-run Kenai River sockeye salmon are a component of the harvest of the UCI commercial fishery managed by ADF&G Division of Commercial Fisheries (CF). Since 2020, the Kenai River has been managed to achieve an SEG of 750,000 to 1,300,000 sockeye salmon.

The plan directs ADF&G to do 3 things:

- 1) Meet the sustainable escapement goal.
- 2) Achieve inriver goals as established by the BOF and measured at the Kenai River sonar counter located at RM 19.
- 3) Distribute the escapement of sockeye salmon evenly within the SEG range, in proportion to the size of the run.

Inriver goals set in the plan are ranges of sockeye salmon passing the sonar at RM 19 (Figure 7) of the Kenai River and are derived from 3 levels of projected run strength. Ranges of projected run strength and corresponding inriver (sonar) goals are outlined in the plan as follows:

- 1) If the projected run strength is less than 2.3 million fish, the inriver (sonar) goal is 100,000–1,200,000 sockeye salmon.
- 2) If the projected run strength is 2.3–4.6 million fish, the inriver goal is 1,100,000–1,400,000 sockeye salmon.

- 3) If the projected run strength is greater than 4.6 million fish, the inriver goal is 1,200,000–1,600,000 sockeye salmon.

ADF&G CF operates the RM 19 sonar and is responsible for managing UCI commercial fisheries to achieve the inriver (sonar) goals. It is the responsibility of ADF&G SF to assess inriver harvests and to take steps to ensure that the SEG range is achieved by issuing EOs to restrict or liberalize the sport harvest, if necessary.

Research and Management Activities

Historically, management of this fishery has changed in concert with changes in the *Kenai River Late-Run Sockeye Salmon Management Plan*. Prior to the late 1980s, management of the sockeye salmon sport fishery was accomplished through changes to bag and possession limits. Sport harvests were not large enough to significantly impact spawning escapements. Growth in this fishery during the late 1980s and early 1990s witnessed significantly greater inriver harvests.

In 1996, the BOF amended the management plan to incrementally increase the inriver escapement goals for late-run Kenai River sockeye salmon. The inriver goal during the 1996 season was established at 550,000–800,000 fish. The inriver goal was subsequently increased to 550,000–825,000 fish in 1997 and 550,000–850,000 fish in 1998. The inriver goal changed under the tiered management system adopted by the BOF in 1999 and was managed for an OEG of 500,000–1,000,000 fish. In 2011, the BOF amended the management plan after ADF&G completed the transition from Bendix sonar technology to dual-frequency identification sonar (DIDSON) technology as the method to assess late-run Kenai River sockeye salmon. The goals adopted by the BOF reflected the adjustment in the estimated number of sockeye salmon passing the RM 19 sonar station as estimated by DIDSON technology that were historically provided by Bendix sonar technology.

Changes to the goals within the management plan did not alter the process for inseason management of the inriver sport fishery because management of this fishery relies on sonar estimates of inriver run strength, escapement, and postseason assessment of the sport harvest from the SWHS. There is no need to assess the sport harvest of sockeye salmon in season, provided the inriver goal can be met. The current management plan provides a buffer or “escapement gap” between the inriver goal and the lower limit of the SEG range. This gap between the lower limit of the SEG and the inriver goal estimated at the sonar is intended to provide for inriver sport harvests. If the inriver goal (sonar estimate) is achieved, the sport fishery can be prosecuted without restriction. This management strategy for the Kenai River sockeye salmon sport fishery depends heavily upon the successful management of the commercial salmon fishery in UCI to meet the inriver goal. Achieving the inriver goal provides sockeye salmon for inriver harvests and achieves the SEG.

2022 Fishery Performance

The 2022 preseason forecast for Kenai River late-run sockeye salmon was for a run of approximately 2.9 million fish, which was about 1 million fish less than the 20-year average of 3.7 million sockeye salmon (Lipka and Stumpf *In prep*). ADF&G used inseason assessment data to project that the 2022 Kenai River sockeye salmon run was returning strong and would achieve the SEG. Based on this projection, ADF&G issued EO 2-RS-1-60-22 and EO 2-RS-59-22 to increase the sockeye salmon bag and possession limits to 6 per day and 12 in possession, and to open the personal use dipnet fishery at the mouth for 24 hours per day, effective July 22

downstream of Skilak Lake (Appendix A1). At the time the EO was issued, approximately 774,345 sockeye salmon had passed the sonar. When sport harvest estimates above the sonar were subtracted from the sonar estimate, the estimated escapement of late-run Kenai River sockeye salmon was 1,206,003 fish and achieved the SEG (750,000–1,300,000 fish; Table 18).

NORTHERN KENAI PENINSULA AREA COHO SALMON SPORT FISHERIES

FISHERY DESCRIPTION

Run timing of coho salmon bound for the Kenai River and other Kenai Peninsula systems is slightly later than many Northern District systems. Anecdotal evidence suggests that 2 runs of coho salmon migrate into the Kenai River. However, creel surveys conducted from 1991 to 1993 and in 1998 indicate that 2 distinct runs are not readily discernable from harvest rate data (Clark et al. *Unpublished*⁴). Furthermore, recoveries of coho salmon marked as smolt and returning to the Kenai River as adults indicate that time of entry and time of spawning are independent of date of marking as smolt (Clark et al. *Unpublished*⁴). As a result, coho salmon in the Kenai River are managed as a single stock based on harvest information and smolt abundance.

Coho salmon typically begin entering the Kenai River in late July, continue entering through mid-September, and continue at much reduced levels into late November. Elsewhere in the NKPMA, the Kasilof and Swanson Rivers support major coho salmon fisheries with smaller fisheries also occurring at Crooked, Resurrection, and Sixmile Creeks. Unlike the Chinook salmon fisheries, area coho salmon fisheries are generally more accommodating to angler participation, i.e., easy to access by shore or boat fishing with a wide variety of terminal tackle and less specialized equipment. All NKPMA coho salmon stocks are assumed to be subject to an unknown degree of commercial exploitation in UCI.

It is assumed that the Kenai River has the only significant late-season coho salmon run in Cook Inlet. Sport effort shifts to coho salmon almost immediately after the termination of the Chinook salmon season at the end of July or during the first week in August. The inriver sport fishery occurs downstream from Kenai Lake to the river's terminus at Cook Inlet (Figure 7). Like the highly mobile Chinook salmon fishery, the coho salmon fishery is conducted from boats; however, unlike the fishery for Chinook salmon, fishing from anchored boats as well as from shore is very common. Beginning in the year 2000, bag and possession limits were reduced to 2 fish. Additionally, a 3-day closure was adopted to provide a temporal break between the intensely targeted Chinook salmon fishery at the end of July and the traditional start of coho salmon fishing during the first week in August. In 2002, the BOF adopted the closure as an allocative means to reduce overall harvest of coho salmon by sport anglers as part of the *Kenai River Coho Salmon Conservation Management Plan* (5AAC 57.170). The plan established a coho salmon fishing season end date of September 30 and included various restrictions on the use of bait, as well as restrictions to guided anglers. Coho salmon fishing regulations were liberalized for the Kenai River by the BOF in 2005. Changes resulted in a net gain in fishing time and area and incorporated less restrictive fishing methods. Several liberalizations implemented for the Kenai River coho salmon sport fishery included the following:

⁴ Clark, B., R. Lafferty, G. Sandone, J. Fox, P. Cyr, J. Carlon, and J. Hasbrouck. *Unpublished*. Stock status of coho salmon in Upper Cook Inlet: A report to the Alaska Board of Fisheries, February 2000, Anchorage.

- 1) The end date of the season was extended for coho salmon fishing within the Kenai River drainage from September 30 to October 31.
- 2) Bait was allowed throughout the entire season downstream of the upper Killey River.
- 3) The August 1–3 coho salmon fishing closure downstream of Skilak Lake was repealed, allowing a continuous season from July 1 through October 31.
- 4) The regulation prohibiting fishing after a person takes a bag limit of 2 coho salmon below the upper Killey River was reduced to below the Soldotna Bridge, allowing a person to continue to fish upstream of the Soldotna Bridge.
- 5) Fishing from a guided vessel was allowed on Monday for species other than coho salmon upstream of the confluence of the Moose and Kenai Rivers.

Coho salmon fishing regulations were also liberalized for the Kenai River by the BOF in 2008. Changes resulted in an increase in the bag and possession limits as well as a net gain in fishing time. The most recent liberalizations implemented for the Kenai River coho salmon sport fishery included the following:

- 1) A bag and possession limit increase from 2 coho salmon to 3 coho salmon within the Kenai River beginning September 1, except within the Russian River and the Kenai–Russian Rivers fly-fishing only waters.
- 2) A 30-day season extension for coho salmon fishing within the Kenai River drainage downstream of Skilak Lake from October 31 to November 30.

In 2011, coho salmon fishing regulations for the Kenai River were reviewed by the BOF. The regulatory changes related to the Kenai River were as follows:

- 1) A coho salmon 16 inches or greater that is removed from fresh water must be retained and becomes part of the bag limit of the person who originally hooked the fish.
- 2) A person may not remove a coho salmon 16 inches or greater from the water before releasing it.
- 3) The bag limit in the Kenai–Russian Rivers confluence area downstream of the ferry crossing to the powerline was reduced from 2 coho salmon per day and in possession to 1 per day and in possession.

Kenai River coho salmon stocks are subject to commercial exploitation in UCI. Data from a comprehensive coded-wire-tagging (CWT) program (Carlson and Hasbrouck 1996–1998; Massengill and Carlson 2004a, 2004b, 2007a, 2007b; Massengill 2007a, 2007b, 2008, 2013; Massengill and Evans 2007; Begich and Pawluk 2010; R. Massengill, Sport Fish Biologist, ADF&G, Soldotna, personal communication) indicate that Kenai River coho salmon stocks in UCI commercial salmon fisheries are principally harvested in the Central District Eastside setnet (ESSN) fishery along the entire coastline of the Kenai Peninsula. Most of this harvest is taken from the setnet fisheries on Coho and Ninilchik Beaches (south of the Kasilof River). However, the majority of the total harvest of Kenai River stocks occurs in the sport fisheries of the Kenai River (Table 19).

Kenai River coho salmon are also harvested in personal use and subsistence fisheries. In 1981 and during 1983–1993, there was a fall personal use and subsistence set gillnet fishery for coho salmon on the Eastside beaches open to commercial setnetting. This fishery was opened in September and therefore harvested late running coho salmon. In 1985 and during 1991–1994, there was also a subsistence set gillnet fishery on Central and Northern District beaches that was open to

commercial setnetting. This fishery was generally open on scheduled days from May through September, with open periods concentrated in July (Brannian and Fox 1996).

Kenai River coho salmon are also harvested in the Kenai inriver personal use dip net fishery (Table 6). This fishery has existed in various forms most years since 1981 and targets Kenai River sockeye salmon in late July and early August. It is described in more detail in the *Kenai River Sockeye Salmon Dip Net Fishery* section of this report. In March 1997, the BOF changed the closing date of this fishery from August 5 to July 31 to reduce the harvest of coho salmon. The personal use fishery was extended by EO from August 3 through 10 during 2006 due to a late return of sockeye salmon to Kenai River.

Despite relatively stable harvests in the sport fishery through the early 1990s, fisheries managers became increasingly concerned that the current harvest levels could not be sustained. SF began a stock assessment program in 1992 that focused on the estimation of annual smolt production as an indicator of future abundance (Carlson 2000, 2003; Carlson and Hasbrouck 1997; Carlson and Hasbrouck 1998). Data from this program indicated a decline in smolt abundance from approximately 1,000,000 from 1992 to 1993 to less than 500,000 in 1995. Because this decline in smolt abundance was likely to result in reduced adult returns to the Kenai River, the BOF addressed this fishery in March 1997.

In 1998, SF began an adult coho salmon tagging program to estimate the number of adult coho salmon returning to the Kenai River. This program provided data to estimate the number of adult coho salmon returning to the Sterling Highway Bridge at RM 20 in Soldotna, with acceptable levels of accuracy and precision from 1999 to 2004. In addition, this inriver estimate in combination with the sport harvest data from the SWHS enabled ADF&G to estimate total runs, spawning escapement, and exploitation of Kenai River coho salmon. These estimates, combined with the smolt abundance estimates, also provided estimates of smolt to adult survival.

From 1999 through 2004, the coho salmon runs averaged about 140,000 fish, with harvests averaging just over 62,000 fish. From 2000 to 2004, exploitation rates ranged from about 35% to 47%. Smolt abundance ranged from nearly 580,000 to 1,200,000, with marine survival ranging from 6% to 32% (Carlson and Evans 2007; Massengill and Evans 2007).

From 2005 through 2007, the coho salmon stock assessment program focused on estimating smolt abundance through a mark–recapture project. In this project, smolt were tagged in the spring and early summer at Moose River. Fish wheels, operated upstream of the Soldotna Bridge at RM 28, captured returning adults to estimate the number of smolt leaving the system the prior year. Smolt tagging was discontinued in 2007, and returning adults were sampled for tags during 2008 (R. Massengill, Sport Fish Biologist, ADF&G, Soldotna, personal communication).

Annual Kenai River coho salmon sport harvests increased from a low of 9,537 fish in 1977 to a record high 86,711 fish in 1994 (Begich et al. 2017). Sport harvests then decreased from 1994 to 1999. Kenai River coho salmon sport harvests averaged 40,776 fish during 1977–1999, prior to the 2-fish per day bag limit that started in 2000, whereas the annual average during 1999–2021 has increased to 47,670 fish (Begich et al. 2017; Table 19).

Like the Kenai River stock, other NKPMA coho salmon stocks are assumed to be subject to some unknown degree of commercial exploitation in UCI. Kasilof River coho salmon are also harvested in a personal use fishery (Table 6) that is open through August 7.

Sport harvests of coho salmon in the Kasilof and Swanson Rivers drainages as well as in Resurrection Creek have remained fairly stable, although with some variation (Table 20). In 2022, the Kasilof River reported the highest harvest on record. Harvests for the most recent 10-year average (2012–2021) are slightly greater in Kenai River tributaries, the Kasilof River drainage, and other drainages (excluding Swanson River drainage) than harvests prior to the bag limit reduction in 2000 (Tables 19 and 20).

Fishery Management Objectives

In March 1997, the BOF adopted the *Kenai River Coho Salmon Management Plan* (5 AAC 21.357). This plan contained regulations that reduced the total (combined sport and commercial) harvest by approximately 20%. In the spring of 2000, the BOF amended this plan again and adopted it as the *Kenai River Coho Salmon Conservation Management Plan* (5AAC 57.170). It contains management directives and outlines the burden of conservation between various user groups in the NKPMA. It directs ADF&G to minimize the incidental take of Kenai River coho salmon stocks in the commercial fishery. It also directs ADF&G to manage Kenai River coho salmon stocks primarily for providing sport and guided sport anglers with reasonable opportunity to harvest these stocks over the entire run, as measured by the frequency of restrictions.

During the February–March meeting of the BOF in 1999, early-run Kenai River coho salmon were addressed in the *Upper Cook Inlet Salmon Management Plan* (5 AAC 21.363). This BOF-adopted management plan directed ADF&G to minimize the harvest of this species in the Cook Inlet commercial salmon fishery. In 1999, the BOF amended this plan.

In 2005, the *Kenai River Coho Salmon Conservation Management Plan* was repealed. The resulting plan, *Kenai River Coho Salmon Management Plan* (5AAC 57.170), provides the current regulatory framework and guidelines for management to ensure an adequate escapement of coho salmon into Kenai River.

In addition to objectives and guidelines given in the *Kenai River Coho Salmon Management Plan*, ADF&G management objectives for NKPMA coho salmon are as follows:

- 1) Provide opportunity for angler participation at a level that can be supported by the fisheries resource and associated habitat.
- 2) Ensure, through appropriate management and research programs, that the spawning escapement does not decline below levels necessary to ensure sustained yield.

Research and Management Activities

Currently, there are no active research programs associated with NKPMA coho salmon fisheries. For the Kenai River stock, there are no quantitative data to assess coho salmon stock status, and an escapement goal has not been established. Except 1997, when use of bait was prohibited and the coho salmon bag and possession limits were reduced to 1 fish, and 2004, when the coho salmon season was extended 31 days from September 30 to October 31, there has been no inseason management of NKPMA coho salmon stocks. Rather, all the NKPMA coho salmon sport fisheries are presently managed in season by regulation.

Inseason fishery performance in the Kenai River from 1999 through 2007 was gauged by fish wheel catches from a coho salmon stock assessment program, through direct observation by research and management staff, and by information provided by anglers (Massengill 2013).

Escapement was not estimated from ADF&G fish wheels in season, but fish wheel capture rates can indicate an index of low, medium, or high magnitudes for the Kenai River coho salmon run size. After 2007 and currently, inseason fishery performance is assessed only through information provided by anglers.

The SWHS is currently used as a postseason assessment of coho salmon fishery performance. A comprehensive CWT project in Cook Inlet has estimated the annual coho salmon smolt outmigration from the Moose River drainage from 1999 to 2007 (Massengill and Carlon 2004a, 2004b, 2007a, 2007b; Massengill 2008, 2013). These estimates were previously thought to be a useful management tool under the assumption that there is a correlation between the magnitude of smolt outmigration and the magnitude of total return. However, research results indicated that the correlation is weak due to variation in smolt-to-adult survival (R. Massengill, Sport Fish Biologist, ADF&G, Soldotna, personal communication).

2022 Fishery Performance

Inseason run strength and fishing success were gauged by reports volunteered by guides and individual anglers. Final harvest estimates are provided by the SWHS.

The *Kenai River Coho Salmon Management Plan* was established to prevent the over exploitation of the stock in times of weak or very low runs. Although no estimate for the total number of coho salmon in the run to Kenai River is available, areawide reports from anglers as well as SWHS harvest estimates indicated the 2022 coho salmon sport fish harvest from the Kenai River was above the most recent 10-year average (2012–2021) of 46,952 coho salmon (Table 19). The estimated harvest in the Kenai River declined each year from 50,575 in 2018 to 27,446 in 2020 but increased again in 2021 and was 57,202 in 2022 (Table 19).

Estimated harvest of Kasilof River coho salmon in 2022 set a 20-year record of 6,854 fish, whereas the Swanson River drainage harvest estimates for 2022 were the lowest they have been since 2012 at 561 fish (Table 20). Coho salmon harvest estimates in other NKPMAs drainages were below the long-term average harvests estimated for those systems.

NORTHERN KENAI PENINSULA MANAGEMENT AREA RESIDENT SPECIES SPORT FISHERIES

KENAI RIVER RAINBOW TROUT SPORT FISHERY

Fishery Description

The Kenai River is the most heavily utilized river for freshwater sport fishing in Alaska and one of the largest rainbow trout fisheries in the United States. Although many of the anglers fishing the Kenai River participate in the river's salmon fisheries, the Kenai River drainage also supports a major rainbow trout fishery with annual catches that have trended upwards for 2 to 3 decades. Catches have ranged from 8,720 to 241,651 fish since 1984 but have been more stable in recent years (Table 21, Figure 8).

In 1986, ADF&G began to compile population and fishery databases for use in formulation of a drainagewide management strategy for Kenai River rainbow trout. During 1986, a mark–recapture program was designed to estimate the rainbow trout population in section 004 from Jim's Landing upstream to the power line near the Russian River (Lafferty 1989; Figure 9). The rainbow trout population estimates for section 004 (upper Kenai River index area) for fish over 200 mm were

3,640 fish in 1986 and 4,950 fish in 1987 (Lafferty 1989). In 1987, the study was expanded to include 2 more sections (002 and 003) of the river below Skilak Lake in the middle river (Lafferty 1989; Figure 9). Lafferty (1989) concluded that the best estimates of rainbow trout abundance, 200 mm or greater in length, for section 003 of the middle river was 1,750 fish (Table 22). This study also concluded that these estimates were probably negatively biased.

In 1995, the population estimate was repeated in the upper Kenai River section 004 (Hayes and Hasbrouck 1996). Data analysis in 1995 included a reevaluation of the 1986 and 1987 data to provide comparable estimates for the abundance of rainbow trout 300 mm (12 inches) or greater in length in section 004 for 1986, 1987, and 1995. These were 2,520, 3,472, and 5,598 fish, respectively (Table 22). This study concluded that the rainbow trout population in the upper Kenai River had increased and that there was an increased number of rainbow trout in each 50 mm (2 inch) size class of the population from 300 to 550 mm (12–22 inches) in length. It was further concluded that the upper Kenai River rainbow trout population numbers had been maintained at a high level and that section 004 could serve as an index of abundance of the upper Kenai River rainbow trout population.

In 1998, additional research was instituted to reassess the population of rainbow trout in the Kenai River drainage. This study was a multiyear study that addressed multiple sections of the river. Primary aspects of this work were to repeat the mark–recapture programs in the area below Skilak Lake and in the upper river section to compare population estimates among years (Larson and Hansen 2000; King and Breakfield 2007). The middle river estimate of abundance in 1999 was 7,883 fish, compared to 1,750 fish during 1987 (Larson and Hansen 2000). The estimated number of rainbow trout had increased by 400% in the 12 years between studies. This study concluded the population was increasing and that the numbers of fish in each size class were increasing, with the exception of large fish (those over 24 inches in length). Over this same period, rainbow trout catches in the middle river (Moose River to Skilak Outlet) increased from 6,430 fish in 1987 to 32,050 fish in 1999 (Begich et al. 2017). Harvest remained relatively stable and averaged about 802 fish from 1987 to 1999 (Begich et al. 2017).

In 2001 and 2009, the fourth and fifth rainbow trout population estimates in 23 years were derived for the upper river index area (King and Breakfield 2007; Eskelin and Evans 2013). The number of rainbow trout 300 mm (12 inches) or more in length in 2001 was estimated to have increased since 1995. These data were reevaluated in the 2009 study using different assumptions, resulting in an estimated population size of 6,365 fish in 2001, which was nearly 300% higher than the population size estimated in the mid-1980s (King and Breakfield 2007; Table 22). The reported catch of rainbow trout in the upper river (Skilak Inlet to Kenai Lake) from 1986 to 1987 averaged 2,945 fish and the catch increased to 33,475 fish in 1995 and was between 50,189 and 78,836 fish in from 1999 to 2001 (Begich et al. 2017; Table 21). The estimated number of rainbow trout 300 mm (12 inches) or more in length, was 5,106 fish in 2009 (Table 22). The 2009 estimate is lower than the 2001 estimate but within the range of abundance estimates from this area since 1995. The decline was attributed to a slight reduction in the estimated numbers of smaller rainbow trout. The numbers of large rainbow trout increased slightly over abundance estimates conducted previously. Based on these positive findings about the status of the upper and middle Kenai River rainbow trout stocks, ADF&G did not have a concern for the health of the stocks.

In 2010, a rainbow trout radiotelemetry project was initiated to define the seasonal movements and spring spawning distribution of rainbow trout in the middle and lower sections of the Kenai River. Findings from this project showed that rainbow trout summering in the area of the river between

Moose River at RM 36 and Slikok Creek at RM 18 undertake seasonal migrations between overwintering, spawning, and oversummering areas that are relatively well defined. Specifically, radiotagged rainbow trout present in the middle Kenai River downstream of Moose River (RM 36) in summer generally overwinter upstream of RM 42 to Skilak Lake (Figure 9). In addition, a majority of tagged fish that were successfully tracked over 1 year spawn mostly from Skilak Lake outlet downstream to RM 44 (Figure 9; A. Eskelin, Sport Fish Biologist, ADF&G, Soldotna, personal communication).

In 2018, a rainbow trout length composition and abundance assessment study was conducted on the Upper Kenai River. Findings from this project showed that the rainbow trout population numbers are healthy and robust. Results from the length composition estimates point towards a decline in abundance of the larger, trophy sized fish and the majority of fish sampled displayed some form of hooking injury (Eskelin and Reimer 2023). This study took place in the spring while sport fishing is closed in the study area and in locations where fish congregate for spawning.

Fishery Management Objectives

Management objectives for this fishery were first developed from and were contained in the *Cook Inlet and Copper River Basin Rainbow/Steelhead Trout Management Policy* (CIRTMP; ADF&G 1987). This policy was adopted by the BOF in 1986 for Cook Inlet waters and was amended in 1988 to include the Copper River Basin. This plan was replaced in 1998 by the *Criteria for Establishing Management Areas for Trout* (5 AAC 75.013), which was replaced by the *Special Management Areas and Liberal Harvest Opportunities for Trout* (5 AAC 75.210) in 2003. This most recent version of the plan establishes the criteria for considering proposed regulatory changes to bodies of water that would diversify sport fishing opportunity through the liberalization of harvest opportunities for rainbow trout.

As specified in the plan, the Kenai River rainbow trout fishery is managed for sustained yield. The fishery provides a diversity of sport fishing opportunities for wild rainbow trout through establishment of special management areas by regulation. These management areas provide for diverse fishing practices as well as modest harvest opportunities.

Fishery objectives for the Kenai River rainbow trout fishery are as follows:

- 1) Provide the opportunity for angler participation at a level that can be supported by the fisheries resource and associated habitat.
- 2) Ensure, through appropriate management and research programs, that the trout population does not decline below levels necessary to ensure sustained yield.

Research and Management Activities

The Kenai River rainbow trout fishery is highly restricted and inseason management is directed by regulation. The adoption of the rainbow trout spring spawning season fishing closure in 2005 resulted in a net gain in fishing time and fishing area for rainbow trout anglers in the Kenai River drainage. Currently, the rainbow trout population numbers in the Kenai River watershed are considered relatively robust. Information from the SWHS indicates sport fishing for rainbow trout in the Kenai River remains very popular. ADF&G staff have observed the presence of both guided and unguided anglers fishing for rainbow trout throughout several months of the year. Fishing in winter months, provided sections of the river remain free of ice, is popular near Cooper Landing and downstream of Skilak Lake. Reports from the public and staff observations indicate rainbow

trout fishing during the fall, winter, and early spring prior to the spawning closure on May 2 is still gaining popularity.

2022 Fishery Performance

Sport harvest and catch for the Kenai River rainbow trout fishery is determined by the SWHS. Total catches of Kenai River rainbow trout increased steadily since the mid-1980s and remain high with some variation (Figure 8). The most recent 10-year (2012–2021) average catch and harvest, as determined from the SWHS, is 156,770 and 1,927 fish, respectively (Table 21). The most recent 10-year (2012–2021) average percent of rainbow trout caught in the flowing waters of the Kenai River that were retained (harvested) is less than 2% (Table 21).

Retention of rainbow trout by anglers has not changed much since 2003 (Begich et al. 2017; Table 21). Retention of fish in the former catch-and-release fishery between Kenai and Skilak Lakes has been allowed since the 2005 season for trout that are 16 inches or less. For the entire river, the overall percentage of retention has declined due to greater catches (especially after 2003), probably precipitated by more anglers participating in the fishery. The percentage of the total number of rainbow trout caught (119,290 fish) in the Kenai River in 2022 that were retained (1,559 fish) was about 1.3% (Table 21).

KENAI RIVER DOLLY VARDEN SPORT FISHERY

Fishery Description

Dolly Varden are harvested in all areas of the Kenai River. Annual harvest and catch of this species is estimated by the SWHS. The open season for Dolly Varden fishing is January 1 through December 31, except in those areas of the river upstream of a marker approximately 1 mile upstream from the mouth of the Lower Killey River and upstream of Skilak Lake, where more restrictive seasons apply. Prior to 1984, the bag and possession limits were 10 Dolly Varden of any size. Beginning in 1984, these limits were reduced to 5 Dolly Varden of any size. In 1990, the BOF chose a more conservative management approach and reduced the daily bag and possession limit for the upper Kenai River to 2 fish, only 1 of which could be 24 inches or larger. The bag and possession limits for the remainder of the drainage were unchanged until 1992, when the BOF reduced the limit from 5 to 2 fish of any size. In 1996, the limit for all Kenai Peninsula flowing waters was reduced to 2 fish, including a protected slot limit prohibiting retention of fish between 12 and 24 inches, and an open season from June 15 through April 14 was also established. In 1998, spawning season closures were established in 3 upper Kenai River tributaries that were identified as important for Dolly Varden production. Fishing was prohibited from September 15 through October 31 in Cooper Creek, Quartz Creek, and Snow River.

The Kenai River is assumed to support both resident and anadromous Dolly Varden populations. Only limited biological information is available regarding both populations. Resident fish are believed to inhabit the entire river, including both Skilak and Kenai Lakes. Seasonal movements of these resident fish are not known, but it is assumed a portion of the stream-residing fish overwinter in Skilak and Kenai Lakes. The anadromous population is believed to enter Kenai River in July and it is assumed that some of these fish also overwinter in Skilak Lake and probably Kenai Lake. Dolly Varden emigrate from both of these lakes in April and May. Harvest estimates presented in Table 23 do not differentiate between resident and anadromous populations.

A study of Kenai River Dolly Varden was initiated in 1996. The primary objective of this study was to locate major staging areas of Dolly Varden within the Kenai River watershed upstream of

Skilak Lake (Palmer and King 2005). Future Dolly Varden studies are needed to investigate the age, maturity, and availability of Dolly Varden in these locations.

A number of staging areas where Dolly Varden congregate have been located by deploying various trapping devices and conducting visual observations. The USFWS conducted a Dolly Varden radiotelemetry study during 1998 and 1999 when radio transmitters were placed in Dolly Varden in the Kenai River, selected tributaries, and Skilak and Kenai Lakes. The radiotelemetry study provided information on major staging areas, seasonal fish movements, and overwintering areas (Palmer and King 2005).

Research findings indicate Dolly Varden occupy most tributary streams to Kenai Lake and the Kenai River. Staging areas containing spawning fish were identified in Quartz, Summit, and Cooper Creeks, and Snow River; Quartz Creek and its associated tributaries were also suspected of supporting one of the major spawning populations upstream of Skilak Lake. To date, no major Dolly Varden staging areas have been located within Kenai Lake during summer or fall. Radiotelemetry data indicate Dolly Varden prefer traveling throughout the pelagic zone of Kenai Lake during the summer and fall rather than along the shoreline. During winter, fish may frequent the area around Porcupine Island. Porcupine Island is one of the few areas within Kenai Lake having a shallow gravel bottom, which may be preferred overwintering habitat for Dolly Varden.

During the 2002 BOF meeting, changes were made pertaining to size retention and bag and possession limits of Dolly Varden. In the Kenai River drainage upstream of the upper Killey River, the protected slot limit was removed, and the bag limits were changed to 1 per day and 1 in possession less than 18 inches in length. In 2005, the BOF modified the Dolly Varden regulations in the Kenai River to be more in line with rainbow trout. The bag and possession limits remained at 1 fish; however, the maximum retention length of a Dolly Varden was restricted to less than 16 inches in waters above Skilak Lake with a season of June 11 through May 1. In the Kenai River below Skilak Lake, the bag and possession limits were reduced to 1 fish less than 18 inches, and the season was open the entire year. During the 2017 BOF meeting, regulations were adopted reducing the size of legal bag and possession of Dolly Varden to 1 less than 16 inches in total length in the Lower Kenai River.

There is no creel survey or monitoring program to assess this population in season. After the season, harvest estimates are derived from the SWHS and catch for this species was first estimated by the SWHS in 1990. Harvest estimates reflect a fishery with a peak harvest in 1984 of 31,407 (Figure 10; Begich et al. 2017). The significant decline for 1986 and 1987 harvests is attributed to more restrictive bag limits (from 5 fish per day to 2 fish per day in 1993; from 2 fish per day to 1 fish per day in 2005), and the adoption of a voluntary catch-and-release philosophy. Dolly Varden catch is thought to be greatest when increasing angler effort is directed toward rainbow trout beginning in August. Because the regulatory structure is similar to that for rainbow trout, this fishery is not harvest oriented and nearly all fish caught are released. Dolly Varden undertake seasonal migrations in the fall when anglers welcome the additional fishing opportunity they provide.

Fishery Management Objectives

This Dolly Varden fishery is not directly addressed in a management plan adopted by the BOF. ADF&G objectives for this fishery are as follows:

- 1) Provide opportunity for angler participation at a level that can be supported by the fisheries resource and associated habitat.
- 2) Ensure, through appropriate management and research programs, that the Kenai River Dolly Varden population does not decline below the level necessary to ensure sustained yield.

Research and Management Activities

Inseason management has not been required in this fishery. The fishery is managed by existing regulations. Populations of Dolly Varden currently appear to be robust.

2022 Fishery Performance

The most recent 10-year average (2012–2021) Dolly Varden harvest from the Kenai River was 2,392 fish (Table 23). The 2022 SWHS estimate of total catch of Dolly Varden in the Kenai River was 66,110 (Figure 10, Table 23). The percentage of Dolly Varden retained in 2022 (2.1%) was on par with the most recent 10-year average (2012–2021; Table 23). Anglers are expected to continue to retain low percentages of Dolly Varden caught in the Kenai River sport fisheries.

OTHER NKPMA RESIDENT SPECIES SPORT FISHERIES

Fishery Description

Lake survey data collected by ADF&G from 362 lakes within the NKPMA suggest that 212 lakes support natural populations of game fish. An additional 25 lakes are stocked by ADF&G. Game fish present in area lakes include rainbow trout, Dolly Varden, Arctic char, Arctic grayling, lake trout, landlocked salmon, and burbot (*Lota lota*). Numerous flowing waters also support fisheries for rainbow trout as well as Dolly Varden. Steelhead (*O. mykiss*) occur in both the Kasilof and Kenai Rivers.

Except for a few studies, investigations by ADF&G for these fisheries is limited to research on stocked lakes, summarized by Pawluk and Berkahn (2012), and on unstocked lakes by Tobin III and Palmer (1997). Overall, research information on area lakes is confined to basic lake survey information conducted by ADF&G during the 1960s and 1970s. These resident species fisheries are not monitored in season. The SWHS has been used to determine the catch, harvest, and participation from area lakes, provided the number of respondents is sufficient to estimate these sport fishing parameters. Similarly, SWHS estimates are available for numerous flowing waters that support popular fisheries for resident species.

Tributaries within the Kenai River drainage, including the Russian River, Quartz and Ptarmigan Creeks support popular fisheries for both rainbow trout and Dolly Varden (Tables 24–27). Estimates of participation and catch of both species at these locations increased through the early 1990s with some variation (Begich et al. 2017).

Steelhead occur naturally in the Kasilof River. In the early 1980s, steelhead spawning in Crooked Creek, a tributary to the Kasilof River, were used to enhance the stock for sport fishing. According to the SWHS, enhancement generated relatively large catches exceeding 6,000 fish and harvest in excess of 2,000 fish during 1993 (Begich et al. 2017). This program was terminated in 1996. In the Kasilof River drainage from 2004 to 2009, steelhead were assessed using weirs at Crooked and Nikolai Creeks; Nikolai Creek is a tributary of Tustumena Lake. In combination, counts averaged over 1,000 steelhead. During this same period, the USFWS conducted a steelhead telemetry study

at the Kasilof River and documented seasonal distributions and run-timing patterns of steelhead from Nikolai Creek, part of the Kasilof River watershed, as well as a Kasilof River mainstem spawning component previously not known to be present (Gates and Palmer 2008; Gates 2009; Gates et al. 2010). These findings are significant because it was originally thought that all Kasilof River steelhead originated from Crooked Creek.

The Kasilof River supports a minor steelhead fishery with sporadic harvests. Presently, catch and harvest supported by natural production are small in comparison to what occurred when the enhancement program was ongoing. Steelhead have also been documented in the Kenai River drainage. The main source for this information is from the adult coho salmon assessment projects conducted from 1998 to 2007 (R. Massengill, Sport Fish Biologist, ADF&G, Soldotna, personal communication). During these years, fish wheels were operated at approximately RM 28 and inriver netting was conducted as part of a capture–recapture experiment upstream of RM 28 to approximately RM 36 in the middle river during October; these wheels and nets occasionally captured steelhead. Since that time, anglers fishing during late fall and winter report catches of large rainbow trout with physical characteristics commonly observed in the anadromous form. Steelhead and rainbow trout present in the Kenai River are not separated for management purposes. In addition, the SWHS information is not categorized between the life history forms of rainbow trout. The anadromous form is larger in size (greater than 20 inches in total length) at first maturity when they are recruited into the sport fishery. In the Kenai River, steelhead are conservatively managed because harvest of rainbow trout 16 inches or greater in total length is prohibited year-round where they have been observed downstream of Skilak Lake.

In addition to the Kenai River drainage, the Swanson River and Swanson River drainage Canoe Route Lakes provide rainbow trout and Dolly Varden sport fishing opportunities in 40 lakes that are linked to the 46-mile-long Swanson River that flows into Cook Inlet. The river and Canoe Route Lakes are accessible by the road system. Historically, this fishery gained popularity during the 1980s, displaying moderate annual increases in participation and catch until the mid-1990s (Begich et al. 2017). The fishery remained relatively stable until about 2001. Over the past decade, the estimated effort has declined as have catches, but these catches are similar to other years of low effort (Tables 24 and 26).

Natural populations of rainbow trout are not supplemented with hatchery rainbow trout in open water systems of the NKPMA. The first lake stocking in the NKPMA took place in 1952 when Longmere Lake was stocked with rainbow trout. Since that time, the stocking of “barren lakes” that did not naturally support game fish and that were on the road system has been expanded to present-day stocking levels that include 25 lakes in the NKPMA. Select lakes are also stocked with Arctic grayling, Arctic char, as well as landlocked coho and Chinook salmon. The objective of the NKPMA lakes stocking program is to provide sport fishing diversity through annual or alternate year stocking of these species in area lakes. The lake stocking program on the Northern Kenai Peninsula is designed to provide additional public fishing as well as harvest opportunities that cannot be supported by natural populations of resident fish. The most recent 10-year average (2012–2021) of all species stocked is 260,357 fish (Table 28). Catches and harvests have trended upwards since 2018 (Table 28).

Lake trout are indigenous to several NKPMA lakes and have been introduced to 1 lake. Lake trout occur in glacial Tustumena, Skilak, Kenai, and the Trail Lakes. Clearwater lakes that naturally support lake trout include Hidden, Juneau, Swan, and Trout Lakes. The lake trout present in Upper Summit Lake were transplanted from Skilak Lake during 1970. ADF&G’s lake survey data, as

well as angler reports of lake trout catch, document a successful transplant. Recent SWHS information, observations by ADF&G staff, as well as reports from anglers, indicate that relatively little fishing effort is directed toward lake trout in the glacial lakes (Begich et al. 2017; Table 29). Lake trout are caught in the Kenai, Kasilof, and Trail Rivers near river inlets and outlets incidental to fisheries directed at other resident species (rainbow trout, Dolly Varden) and are often reported by the SWHS as harvest from these rivers (Begich et al. 2017; Table 29).

Hidden Lake supports the primary lake trout fishery in the NKPMA. Staff observations and angler reports indicate the fishery is popular near the time of ice-out in spring and through the winter months. Lake trout harvest at Hidden Lake is estimated by the SWHS. Harvest in this fishery has been variable but has declined over the past decade (Table 29). Historically, lake trout harvest regulations were liberal. The bag limit was 10 between 1948 and 1968. In 1969, the bag limit remained at 10 of which only 2 were allowed to be over 20 inches. In 1983, the fishery was liberalized to allow a bag limit of 12 lake trout: 2 over 20 inches and 10 under 20 inches. The fishery was prosecuted under these regulations through 1996. In 1997, the regulations changed to a bag and possession limit of 2 fish regardless of size. Concurrent to the 1997 bag limit reduction from 12 fish to 2 fish was the closure of Hidden Lake to burbot fishing. The closure reduced the number of lines that could be used by anglers fishing through the ice from 15 lines to just 2 lines. These changes greatly reduced the catch and harvest of lake trout estimated by the SWHS (Begich et al. 2017; Table 29). Over the next 10 years, the popularity of the fishery during winter remained relatively stable. Public concern regarding lake trout abundance and angler reports about small fish led ADF&G to investigate the sustained yield for lake trout at Hidden Lake. A lake-area model was used to ascertain a yield potential of 316 to 612 lake trout for Hidden Lake (R. Begich, Sport Fish Biologist, ADF&G, Soldotna, unpublished data). In comparison to yields estimated by the SWHS, the estimated yield potential in numbers of fish for Hidden Lake was exceeded in each year for the 20-year period between 1977 and 1996. Consequently in 2008, the BOF adopted an ADF&G proposal to reduce the bag and possession limits to 1 fish, regardless of size, to prevent annual harvests from increasing to those that were estimated prior to 1996 (greater than 600 fish) (Begich et al. 2017). In 2017, the BOF adopted size restrictions limiting the harvest of lake trout to less than 16 inches in length. In 2011, the USFWS did a study of lake trout to determine seasonal distribution and size structure of lake trout in Hidden Lake (Gates 2012). Overall, total catch of lake trout on Hidden Lake has been in decline since 2016 (Table 29).

Prior to statehood in 1952, Arctic grayling were introduced into Crescent Lake by the USFWS. Arctic grayling were also stocked by ADF&G during the 1960s. The introductions resulted in self-sustaining populations of Arctic grayling in Crescent, Upper Paradise, Lower Paradise, Lower Fuller, Grayling, Twin, and Bench Lakes. Arctic grayling are the only game fish species present in these remote lakes that are accessible by road system trails or by float plane. Crescent Lake is an alpine lake located within the Chugach National Forest and supports the largest fishery for this species in the NKPMA (Table 30). Primary access is via 2 hiking trails—the 6.4-mile Crescent Creek trail and the 3.3-mile Carter Lake trail—or access may be gained via float plane. During 2009–2010, a radiotelemetry study documented seasonal distributions and time of spawning (A. Reimer, Biometrician, ADF&G, Soldotna, unpublished data). In addition, basic life history information (size, age, maturity compositions) was collected during the telemetry project. Foot surveys were continued by ADF&G after the telemetry project during 2011–2013 to document time of spawning (A. Reimer, Biometrician, ADF&G, Soldotna, unpublished data). Preliminary results indicate the following: (1) spawning areas were more widely dispersed than previously known; (2) time of spawning was more variable than documented historically; (3) fish displayed

distinct seasonal spring spawning movements, and summer and overwintering distributions; and (4) no relevant comparisons could be made between historical and recent basic life history information due limited historical data. Catch and harvest of Arctic grayling in other lakes is small. Historical size composition information from Bench Lake indicates the presence of Arctic grayling that are larger in size than those at Crescent Lake. In 2011–2012, efforts by ADF&G to collect size composition information about Bench Lake Arctic grayling were not successful.

Fishery Management Objectives

Resident species fisheries are not directly addressed in a management plan adopted by the BOF. ADF&G objectives for these fisheries are as follows:

- 1) Provide opportunity for angler participation at a level that can be supported by the fisheries resource and associated habitat.
- 2) Ensure, through appropriate management and research programs, that the resident species populations do not decline below the level necessary to ensure sustained yield.

Research and Management Activities

Inseason management has not been required in the resident species fisheries. The fisheries are managed by existing regulations.

A bag and possession limit of 1 Dolly Varden less than 16 inches in length, was established on Stormy Lake for 2022. Stormy Lake was successfully treated with rotenone to eradicate nonnative northern pike in September 2012. Prior to the treatment, eggs were taken from native Arctic char and reared in the William Jack Hernandez Sport Fish Hatchery. During the summer of 2013, ADF&G staff released the resulting Arctic char fingerlings into Stormy Lake. Sampling events through the fall of 2019 and 2020 have shown the fish have reached maturity and spawning activity has been identified through ADF&G surveys. Arctic char is a species with slow growth rates and low population densities; therefore, prohibiting retention of fish 16 inches or greater in length will preserve about 89% of mature fish as the population continues to reestablish within the lake.

2022 Fishery Performance

Harvest estimates derived from the SWHS indicate that the 2022 populations of resident species appear stable (Tables 24–30).

NORTHERN KENAI PENINSULA MANAGEMENT AREA GUIDED SPORT FISHERY

FISHERY DESCRIPTION

The guided sport fishery, particularly on the Kenai River, has generally been recognized as an important component of the local recreational economy for several decades. Growth in guided (charter) sport fishing effort and harvests on both the Kenai and Kasilof Rivers began mostly in the 1980s and continued over the next 2 decades. Significant growth in the number of fishing guide businesses that offer sport fishing services on the Kenai River is well documented (Begich et al. 2017). This increased participation in guided sport fishing prompted the BOF to adopt fishing regulations to ensure opportunity for private (unguided) anglers at times when and places where no guided anglers are present; these were as follows: (1) restrict the area for guided sport fishing, (2) limited the hours when guided sport fishing can occur, and (3) prohibit the days of the week

when anglers may fish from a registered guide vessel. Information from ADF&G Chinook salmon creel surveys conducted on both the Kenai and Kasilof Rivers indicate that catch and harvest rates are greater for guided than for unguided anglers. At specific areas, times of the day, or days of the week, the number of guided anglers may also exceed the number of unguided anglers. Effects of these BOF regulations resulted in changes to total fishing effort by angler type as well as changes to catch and harvest rates.

In 1998, the BOF adopted *Sport Fishing Services and Sport Fishing Guide Services; License Requirement; Regulations of Activities* (5 AAC 75.075). No licensing program, fees, or daily fishing activity reporting were required from guides until 2 years after the Alaska State Legislature established licensing requirements for sport fishing guide business owners and sport fishing guides in 2004. By 2006, ADF&G implemented the freshwater Charter Logbook program requiring guides to report guided anglers' license numbers as well as harvest and release of the number of fish by species, and date and location(s) fished. Other regulations implemented for the freshwater Charter Logbook program included an approximate 14-day reporting requirement of daily fishing activity on a schedule determined by ADF&G each year until 2018, when the freshwater Charter Logbook requirements were discontinued. Results of the logbook program were published annually by ADF&G (Sigurdsson and Powers 2009–2014, 2016) until 2016 (unpublished data collected through 2018).

Relatively extensive administrative permitting and registrations are required to operate as a fishing guide on the Kenai River because of State of Alaska and Federal land ownership. All fishing guides are required to register and be permitted by the Department of Natural Resources, Division of Parks and Outdoor Recreation (DNR-DPOR), to operate within the Kenai River Special Management Area State Park (KRSMA). A requirement established in 2006 for all guides operating in the KRSMA includes the successful completion of the Kenai River Guide Academy (KRGa). The KRGa is a week-long course that satisfies the DNR-DPOR KRSMA regulation that has been in place since 2006 and is required to obtain a commercial use permit to operate as a fishing guide in the KRSMA. In addition, permits are also required for guides to operate in specific areas of the KRSMA from the United States Forest Service (USFS) on waters within the Chugach National Forest and from the USFWS on waters within the Kenai National Wildlife Refuge (KNWR). In waters bounded by the KNWR from the Russian–Kenai Rivers confluence near Sportsman's Landing downstream to the waters of Skilak Lake, the number of guide operators is managed under a USFWS limited vendor program. This program has been in place since 1987 and limits the number of commercial businesses that may offer fishing guide services daily to approximately 18 businesses per year, of which each business may have 2 starts per day or 10 starts per week. Although the number of guides that may operate daily through the year is controlled by the limited vendor program, management of fishing guides in this area provides for additional guided fishing opportunity by allowing all other Kenai River fishing guides registered through DNR–DPOR 3 starts per year to guide fishing trips on this section of the Kenai River. Both the USFS and USFWS require operators to complete annual reports of commercial use activities on Kenai River waters bounded by federal lands.

Numerous proposals to change guided sport fishing regulations are submitted during each regularly scheduled Upper Cook Inlet Finfish BOF meeting. Proposed regulatory changes seek to both expand and to relax restrictions to guided sport fishing. All proposed changes are allocative because guided anglers are generally more successful than unguided anglers.

Fishery Management Objectives

This fishery is not specifically addressed in any management plan adopted by the BOF. The fishery objective is to implement the provisions of the BOF-adopted management plans and sport fishing regulations for the NKPMA as well as guide licensing provisions contained in 5 AAC 75.075.

Research and Management Activities

There has been no inseason management in the history of this fishery. The fishery is managed through existing regulations.

Recent Fishery Performance

The SWHS generates Kenai River catch and harvest data for late-run Chinook salmon and sockeye salmon separately for guided and unguided anglers (Tables 31 and 32), and these catch and harvest data indicate guided anglers account for 63% and 11% of the Chinook salmon and sockeye salmon harvests from the Kenai River, respectively. The total number of fishing guide businesses operating on the Kenai River has declined since the early 2000s and has remained below the 1999–2021 average of 317 since 2012, with a total of 289 fishing guides in 2022 (Table 33).

Charter Logbook information from 2006 to 2016 for resident and nonresident guided anglers indicates these proportions remain relatively stable. Nonresident guided anglers composed most of the guided anglers fishing the Kenai River each year (Tables 34 and 35). Although the freshwater Charter Logbook program was discontinued and these data are no longer recorded, similar trends in effort, fishing patterns and guided angler demographics were assumed for the 2022 seasons.

Charter Logbook information collected from 2006 through 2016 for the Kenai River indicated that guided fishing activity changes by month. Generally, as the open water fishing season progresses (May through September), guided fishing effort increases then decreases (Tables 34 and 35). Guided fishing effort also differs among years. For example, from 2006 to 2016, total guided effort each year declined significantly in May, June, and July, and increased slightly during August, whereas guided fishing effort in September and October remained stable (Tables 34 and 35). Annual trends in guided fishing effort are most evident in July and August when the majority of guided sport fishing effort occurs. The annual decline in effort in June and July (Table 34) is probably indicative of Chinook salmon run strength from 2009 through 2016. For instance, logbook data show that guided anglers harvested 8,757 Chinook salmon from the Kenai River during 2006, when the estimated total run of large (≥ 75 cm) Chinook salmon was 9,785, whereas logbook data from 2014 indicates a harvest of 299 Chinook salmon by guided anglers when the estimated total run of large Chinook salmon was 2,552 (Tables 7 and 36).

NORTHERN KENAI PENINSULA MANAGEMENT AREA HABITAT

FISHERY HABITAT DESCRIPTION

Presently, 25 parcels representing approximately 13.83 miles of State of Alaska owned riverfront shoreline are closed to all fishing within 10 feet of the shoreline from July 1 through August 15. Therefore, about 43% of the approximately 31.5 shoreline miles owned by the State of Alaska downstream of Skilak Lake is managed by restricting sport fishing access (Table 37). Riparian habitat on these lands that is beneficial to fisheries resources remains intact and has not been lost.

Additional riverbank closures may be proposed by ADF&G and more may occur as parcels are acquired as conservation easements into the KRSMA for which ADF&G holds a management jurisdiction. Jurisdiction over land-use activities on all other public and private lands above mean ordinary high water within the KRSMA resides with the DNR, Kenai Peninsula Borough Department of Environmental Conservation, and the United States Army Corps of Engineers. In addition to BOF-adopted fishing regulations to protect lands, other agencies have jurisdiction to restrict or to close activities on riverfront shoreline uplands. For example, DNR-DPOR has several internal administrative orders in place prohibiting all public use of several shoreline areas along the Kenai River.

Kenai River habitat research was first conducted by the ADF&G Habitat Division in 1993 (Liepitz 1994). Later projects conducted by SF from 1996 through 2001 included angler distribution surveys, assessment of bank position change, assessment of vegetation changes, and a pilot study using aerial photogrammetry techniques (Larson and McCracken 1998; King and Clark *Unpublished*⁶; King 2007; King and Hansen 1999, 2001, 2002, 2015a, 2015b). Findings from these projects identified sensitive riverfront uplands on conservation easement lands as well as other lands that could be damaged but not lost by public use. This information was used to close areas to sport fishing under a previous BOF-adopted plan.

Research and Management Activities

Habitat management is accomplished by several governmental as well as nongovernmental agencies, including ADF&G, that are involved in maintaining and increasing the suitability of Kenai River habitat for fisheries resources. Habitat maintenance occurs through several methods: (1) protective habitat regulations pursuant to the multiagency permitting process that reviews instream and riverfront upland projects; (2) BOF-adopted habitat closures, clean outboard motor regulations, and passenger limits to reduce boat wakes; and (3) land-use restrictions or closures by land managing agencies. Recent habitat projects within the Kenai River drainage are mainly multiagency habitat restoration and improvement projects.

From the mid-1990s through 2009, a total of 385 Kenai River cost-share habitat projects beneficial to fisheries resources were completed (Johnston and Pyper 2010). These projects focused on restoration and protection of shoreline habitats as well as recovering damaged fish habitat. Completion of this work resulted in the improvement, through restoration, of about 9 miles of Kenai River shoreline habitat or 9% of the 100 miles of riverfront shoreline downstream of Skilak Lake. Projects have continued from 2010 through 2019, including projects identified by Johnston and Pyper (2010).

NORTHERN KENAI PENINSULA MANAGEMENT AREA PERSONAL USE FISHERIES

FISHERY DESCRIPTION

The *Cook Inlet Personal Use Salmon Dip Net Fishery Management Plan* was adopted at the 1981 BOF meeting. This plan provided for personal use dip net fisheries in the Kenai and Kasilof Rivers that targeted sockeye salmon and a personal use gillnet fishery in the salt waters at the mouth of

⁶ King, M. A., and R. Clark. *Unpublished*. 2004 Kenai River Riparian Assessment. Alaska Department of Fish and Game, Report to the Alaska Board of Fisheries, 2005, Anchorage.

Kasilof River. The fisheries are open only to Alaska residents. The BOF's intent was to provide for salmon dip net fisheries in Cook Inlet by allowing Alaska residents an opportunity to harvest sockeye salmon for their personal consumptive needs without disrupting existing fisheries. Personal use dip net fisheries did not initially open until ADF&G determined that specific escapement goals were met and subsistence, commercial, and other sport users have had, or will have, reasonable opportunity to harvest fish in excess of spawning requirements. Participants in these fisheries include mainly local and regional residents from Southcentral Alaska as well as minor numbers of participants from other areas of the state. Sockeye salmon are the primary species harvested in each fishery; however, coho, pink, and Chinook salmon are also caught and retained.

Prior to adoption of the *Upper Cook Inlet Personal Use Salmon Fishery Management Plan* (5 AAC 77.540) in 1996, several changes to the management of personal use fisheries occurred. During the late 1980s through 1995, legal, legislative, and BOF actions affected the implementation of the personal use fisheries in the NKPM. Management changes specific to the Kenai River or Kasilof River were dependent upon abundance of returning salmon and were tied into fisheries management plans for other user groups.

In 1989, an Alaska Supreme Court's decision had the effect of making all Alaska residents subsistence users. In December 1990, the BOF adopted the *Upper Cook Inlet Subsistence Salmon Management Plan*. Under this plan, subsistence fishing was allowed in most marine waters of Upper Cook Inlet (UCI) normally open to commercial gillnet fishing. Set gillnet fishing was also allowed in Knik Arm, as well as dip net fishing in the mouths of the Kenai and Kasilof Rivers. Permits were required to participate in these subsistence fisheries, and a valid Alaska resident sport fishing license was not required. The annual bag and possession limits were 25 salmon per head of household of which no more than 5 could be Chinook salmon. In addition, a household was allowed another 10 salmon for each household member, of which no more than 1 could be a Chinook salmon.

After the 1989 Alaska Supreme Court decision, the *Cook Inlet Personal Use Dip Net Fishery Management Plan* was still in place; however, this management plan specified that personal use fisheries in the Kasilof and Kenai Rivers could not occur on the same day as the subsistence dip net fishery.

During the 1992 session, the Alaska State Legislature passed legislation (AS 16.05.258 (c)) that required the Alaska Joint Board of Fisheries and Game to identify nonsubsistence areas where dependence on subsistence was not a principle characteristic of the economy, culture, and way of life. During their November 1992 meeting, the Joint Board established the Anchorage–Matanuska–Susitna–Kenai nonsubsistence area. The BOF also rescinded the *Upper Cook Inlet Subsistence Salmon Management Plan*. This ended all subsistence fisheries in UCI except the Tyonek subsistence fishery. The personal use dip net fishery remained in place. The escapement trigger for opening the personal use dip net fishery on the Kenai River at this time was 400,000 sockeye salmon, and once the fishery opened, fishing could be continuous.

In October 1993, Superior Court Judge Dana Fabe (in *Kenaitze v. Alaska*) found unconstitutional the provision in the 1992 state subsistence law that directed the Joint Board to designate nonsubsistence areas. This ruling was appealed by the State of Alaska to the Alaska Supreme Court where a stay was granted on March 10, 1994. The full court vacated this stay on April 11, 1994. A special meeting of the Joint Board was convened on April 28, 1994, by teleconference. As a

result of these meetings, the *Upper Cook Inlet Subsistence Salmon Management Plan* was readopted on April 28, 1994.

Because there was not enough time for a formal board meeting prior to the 1994 season, the BOF directed that the Commissioner of ADF&G should exercise his emergency regulatory authority to adopt subsistence fishing regulations for the 1994 fishery. The BOF directed that this fishery should mirror the 1992 subsistence fishery. Subsistence fishing periods were again on select Wednesdays and Saturdays from late May to the end of September. The annual bag and possession limits were again 25 salmon per head of household of which no more than 5 could be Chinook salmon. In addition, a household was allowed another 10 salmon for each household member, of which no more than 1 could be a Chinook salmon. A permit was required to participate, but not a sport fishing license.

In 1995, subsistence fisheries were scheduled to begin on May 20; however, in early May, the Alaska Supreme Court overturned the October 1993 Superior Court decision. This ruling reestablished the Anchorage–Matanuska–Susitna–Kenai nonsubsistence area. The BOF convened an emergency meeting by teleconference on May 24, 1995, to close subsistence fisheries in the now nonsubsistence area. The BOF delegated authority to the ADF&G Commissioner to readopt the *Upper Cook Inlet Subsistence Salmon Management Plan* as a personal use fishery. The 1995 dip net fishery was therefore prosecuted as a personal use fishery, having the same regulations as the 1994 subsistence fishery, and still requiring a permit. This permitted fishery was open on select Wednesdays and Saturdays from late May to the end of September. To further complicate the situation, the old personal use fishery, allowed under the *Cook Inlet Personal Use Salmon Dip Net Management Plan*, was still in place.

The management issues created by these legal challenges resulted in the *Upper Cook Inlet Personal Use Salmon Fishery Management Plan* adopted by the BOF in 1996. The plan contained personal use fishing regulations that were not tied to the fisheries management plans for other user groups and were independent of the abundance of returning salmon. This plan established a July 10–August 5 season that allowed fishing 24 hours per day. The permitting system for the personal use dip net fisheries was developed and initiated in 1996. Since then, 1 permit is issued for all UCI personal use salmon fisheries (currently there are 5: Kenai River dip net, Kasilof River dip net, Kasilof River gillnet, Fish Creek dip net, and Susitna River dip net), and a sport fishing license is required along with the permit.

Several regulations have changed since 1996. In the Kenai River, the area open to those dipnetting from a boat was restricted to that area from a marker immediately upstream from the Kenai City dock to the downstream edge of the Warren Ames Bridge (Figure 11). In 1997, the season ending date was amended to July 31 due to expected low abundance of Kenai River coho salmon stocks, and daily hours were reduced to 17 hours daily (6:00 AM to 11:00 PM).

The Kenai River fishery was modified again in 1999 by closure of a section of the lower Kenai River to dipnetting from shore along the bluff on the north side of the river in response to increased erosion of lands owned by the City of Kenai (Figure 12). In addition, harvested salmon from the personal use fishery must be recorded “immediately” (defined as “before concealing the salmon from plain view or transporting it from the fishing site”).

During 2008, the BOF adopted an outboard motor regulation for the Kenai River personal use fishery. The current regulation, which was also effective for the 2008 season, is that fish may not be taken from a boat powered by a 2-stroke motor, other than direct fuel injection. This regulation

was adopted in response to high hydrocarbon levels in the lower Kenai River during peak-use days in late July.

The Kasilof River personal use dip net fishery extends from regulatory markers at the mouth of the Kasilof River to a regulatory marker about 1 mile upstream (Figure 12). New regulations governing the Kasilof River personal use dip net fishery were adopted by the BOF for the 2002 Kasilof River personal use dip net fishery that extended the fishing season up to 44 days per year. Beginning in 2002, the new season dates for this fishery were from June 25 through August 7. The 2002 salmon harvest for the Kasilof River personal use dip net fishery was 46,769 sockeye, 106 Chinook, 1,197 coho, 1,862 pink, and 139 chum salmon (Table 6). This includes a known harvest from 14,284 returned permits and an estimate of the harvest from those who had permits but did not return them (see Brannian and Fox 1996). During 2002, participation in the dip net fishery was 4,020 household-days fished (Tables 6).

A personal use gillnet fishery also occurs in June at the mouth of Kasilof River that targets sockeye salmon (Figure 13). This fishery began in 1982. The personal use gillnet harvest of salmon in Cook Inlet was prohibited except at the mouth of the Kasilof River. From 1996 through 2001, it opened on June 16 and closed by EO issued by CF when approximately 10,000–20,000 fish had been taken. The fishery typically lasted for about 9 days.

The gillnet fishery is included in the *Upper Cook Inlet personal use fishery management plan*. Harvest in the gillnet fishery counts toward the permit holder's total allowable harvest in all UCI personal use fisheries. In the gillnet fishery, participants are allowed to keep all the Chinook salmon that they catch. From 1996 through 2001, the Kasilof River personal use gillnet fishery was monitored in season by CF and opened and closed by EO based on a target harvest range. In 2002, BOF adopted regulations for the Kasilof River gillnet fishery that allow the fishery to be opened and closed by regulation, making inseason management required only if the BEG is not expected to be met based on the inseason sonar count (St. Saviour 2023). The BOF also established a June 15 through June 24 season for the Kasilof River Personal use gillnet fishery in 2002. Although the personal use permit system is administered by SF, inseason management authority of the gillnet fishery is the responsibility of CF. The basic regulations governing the Kasilof River personal use gillnet and dip net fisheries remained unchanged from 2002 to 2010. During the 2011 BOF meeting, the definition of personal use salmon in regulation was aligned with the definition in Alaska Statute.

KENAI RIVER PERSONAL USE DIP NET FISHERY

Fishery Management Objectives

This fishery is managed under provisions of the *Kenai River Late-Run Sockeye Salmon Management Plan* (5 AAC 21.360) and the *Upper Cook Inlet Personal Use Salmon Fishery Management Plan* (5 AAC 77.540). The fishery objective is to implement provisions contained in the respective management plans. The fishery primarily targets sockeye salmon.

Research and Management Activities

The personal use dip net fishery opens and closes by regulation with inseason management by SF. If the minimum inriver escapement goal for sockeye salmon is not projected to be achieved, restrictions are taken to the dip net fishery. If the projected run strength is greater than 2.3 million sockeye salmon and the SEG is projected to be met, additional time is allowed by EO.

All participants in this personal use fishery are required to be Alaska residents with a valid Alaska sport fishing license to get a free permit or be a member of a household with a permit and be named on that permit. Permits are household permits that allow all members of the household to fish under the same permit. Completed permits must be returned to ADF&G following the fishing season. Persons who do not comply with the reporting requirement are sent reminder letters to prompt their response. Since 1996, harvest and effort in the Kenai River personal use dip net fishery has been estimated from reported harvest on returned permits. All permit holders who returned their permits before the second reminder letter was mailed are considered compliant households. Information obtained by permit holders who returned their permits after the second reminder letter was mailed is considered to be from noncompliant households. Participation and harvest by noncompliant households was estimated by calculating the mean participation (household-days fished) and harvest by species for noncompliant permits that were returned. These were then expanded to include all nonrespondents. Total estimates of participation and harvest by species for the fishery were obtained by summing the estimates for the noncompliant households with the information obtained from compliant households (St. Saviour 2020).

The Kenai River personal use fishery opens by regulation on July 10 for the daily hours of 6:00 AM through 11:00 PM and closes at 11:00 PM on July 31. Given sufficient run strength of greater than 2.3 million Kenai River late-run sockeye salmon, the personal use fishery may be liberalized to a 24-hour per day fishery. If the fishery is liberalized, it is typically done during the last week in July.

2022 Fishery Performance

The 2022 estimated harvest of sockeye salmon from the Kenai River personal use dip net fishery was 282,085 fish (Tables 6 and 38). This is below the 2012–2021 average of 326,847 sockeye salmon (Tables 6 and 38). Due to the anticipated low abundance of Chinook salmon, a preseason EO (2-KS-1-46-22) was issued that prohibited retention of Chinook salmon in the personal use dip net fishery for the season (Appendix A1). The fishery was open for the harvest of other salmon for the season and was liberalized by EO (2-RS-1-59-22) to increase harvest hours from 6:00 AM to 11:00 PM to 24 hours per day on July 22 in response to a high abundance of sockeye salmon (Appendix A1). The 2022 inseason projections indicated a strong return that would likely achieve the SEG leading into the last week of July. Postseason analysis of inriver harvest above the RM 19 sonar site determined the SEG was achieved. The total run of late-run sockeye salmon was estimated to have been 2.7 million fish, which was 7% below the forecasted run of 2.9 million fish (K. Gatt, Commercial Fisheries Biologist, ADF&G, Soldotna, personal communication).

KASILOF RIVER PERSONAL USE DIP NET AND GILLNET FISHERIES

Fishery Management Objectives

Regulation and management of this fishery are governed by the *Upper Cook Inlet Personal Use Salmon Fishery Management Plan* (5 AAC 77.540). The fishery objective is to implement the provisions of the BOF-adopted management plan.

Research and Management Activities

The personal use gillnet and dip net fisheries open and close by regulation. Inseason management by SF would be required if the minimum sonar count and BEG could not be projected and achievement of these goals required restrictions to the dip net fishery, or if the projected run

strength exceeded the upper goal range. Prior to 2011, in the event that the upper bound of the BEG range of 150,000–250,000 sockeye salmon was projected to be exceeded, ADF&G staff had the tools to liberalize the personal use fishery. In this event, the Kasilof River personal use dip net fishery area could be expanded for shoreline and boat-based dipnetting. The shoreline-based dipnetting area could be expanded to the Sterling Highway Bridge and the area opened to dipnetting from boats could also be expanded upriver to RM 3 below Trujillo’s Landing. Both liberalizations were enacted concurrently when sockeye salmon escapement was proceeding at a rate greater than that needed to ensure the BEG was met. In 2011, the BOF amended the *Kasilof River Salmon Management Plan* after ADF&G completed the transition from Bendix sonar technology to DIDSON technology as the method to assess the Kasilof River sockeye salmon run. The BEG of 150,000–250,000 was replaced with a BEG of 160,000–390,000 sockeye salmon. The new goal reflected the adjustment in the estimated number of sockeye salmon passing the Kasilof River sonar station in terms of the DIDSON technology that replaced the Bendix sonar technology. Change to the new goal within the management plan did not alter the process for inseason management of the personal use fishery, just the trigger points of when to restrict and when to liberalize. The BEG was again changed in 2020 to 140,000–320,000 sockeye salmon. Like the years prior to 2011, inseason management relies on estimates of inriver sonar counts and estimated escapement.

Participants in this personal use fishery are required to obtain a permit and are required to return the permit to ADF&G, regardless of whether or not they fished. Persons who do not comply with the reporting requirement are sent reminder letters to prompt their response. Since 1996, harvest and effort in the Kasilof River personal use dip net and gillnet fishery have been estimated from reported harvest on returned permits. All responses prior to the second reminder letter are treated as a census of “compliant” permits. Responses from the second (and up to fourth in some years) reminder letters are considered to be a sample of the “noncompliant” permits. Estimates of mean harvest and effort from the noncompliant permits are expanded by the known total number of noncompliant permits and used to generate the total estimate of “noncompliant” harvest and effort. This estimate is then added to the sum of the harvest and effort from the compliant permits to generate the estimate of total harvest for the fishery.

2022 Fishery Performance

The 2022 sockeye salmon run to the Kasilof River resulted in an estimated escapement of 968,148 sockeye salmon (Table 39). On July 7, the Kasilof River dipnetting area was expanded (EO 2-RS-1-45-22). The gillnet fishery was restricted by EO 2-KS-1-31-22 by limiting fishing time to 11:00 AM to 5:00 PM in an effort to reduce harvest of Chinook salmon (Appendix A1). The personal use harvest of sockeye salmon was 6,329 fish in the gillnet fishery and 158,734 fish in the dip net fishery (Table 6). The dip net harvest estimate was the highest ever recorded for the fishery.

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TABLES

Table 1.—Angler-days of effort expended by sport anglers fishing the Northern Kenai Peninsula Management Area waters, 1999–2022.

Year	Kenai River ^a		Russian River ^b		Kasilof River ^c		NKPMA total	Percent (%) of state	Alaska total
	Effort	% NKPMA	Effort ^e	% NKPMA	Effort	% NKPMA			
1999	307,446	68	64,536	14	40,263	9	450,716	18	2,499,152
2000	358,569	69	69,864	13	46,654	9	519,559	20	2,627,805
2001	298,817	70	55,972	13	39,034	9	429,593	19	2,261,941
2002	312,815	68	68,263	15	35,198	8	457,279	20	2,259,091
2003	321,044	74	50,448	12	30,840	7	435,896	20	2,219,398
2004	376,313	75	60,784	12	29,889	6	500,735	20	2,473,961
2005	389,379	76	55,801	11	30,436	6	509,002	21	2,463,929
2006	330,085	72	70,804	15	26,323	6	460,466	20	2,297,961
2007	410,381	77	57,755	11	28,246	5	534,936	21	2,543,674
2008	360,344	75	55,444	12	29,939	6	481,357	21	2,315,601
2009	337,217	73	64,518	14	24,545	5	461,229	21	2,216,445
2010	347,938	80	39,873	9	19,481	4	437,422	22	2,000,167
2011	365,863	79	47,264	10	23,422	5	461,065	24	1,919,313
2012	374,732	82	41,152	9	22,099	5	457,856	24	1,885,692
2013	411,592	78	59,682	11	27,430	5	530,646	24	2,202,957
2014	455,578	79	57,544	10	30,369	5	577,890	25	2,309,851
2015	422,792	78	55,420	10	29,766	6	539,480	24	2,212,331
2016	380,638	80	39,957	8	22,111	5	475,602	24	1,982,300
2017	376,612	78	49,455	10	24,733	5	481,807	24	2,006,244
2018	324,532	75	47,186	11	32,729	8	432,231	23	1,878,009
2019	397,414	78	53,637	11	29,034	6	509,942	25	2,075,431
2020	305,376	76	44,391	11	26,250	7	402,809	26	1,566,516
2021	418,142	81	45,119	9	30,518	6	516,985	26	1,978,718
2022	393,873	81	44,689	9	28,079	6	487,581	27	1,827,809
Average									
1999–2021	364,505	76	54,560	11	29,535	6	481,065	22	2,182,456
2012–2021	386,741	78	49,354	10	27,504	6	492,525	25	2,009,805

Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database (Intranet) 1977–present. Anchorage, AK. Alaska Department of Fish and Game, Division of Sport Fish (cited October 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Mainstem only; does not include Skilak and Kenai Lakes.

^b Does not include Lower and Upper Russian Lakes.

^c Does not include Tustumena Lake.

Table 2.—Angler-days of sport fishing effort for the Kenai River by section, 1999–2022.

Year	Cook Inlet to Soldotna Bridge	Soldotna Bridge to Moose River	Moose River to Skilak Outlet	Skilak Inlet to Kenai Lake	Kenai River reach not specified ^a	Kenai River total
1999	157,493	69,331	41,573	39,049	ND	307,446
2000	178,460	92,056	41,911	46,142	ND	358,569
2001	153,356	75,249	34,918	35,294	ND	298,817
2002	142,492	78,165	33,228	52,937	5,993	312,815
2003	143,144	90,072	35,804	40,815	11,209	321,044
2004	166,202	100,180	51,188	49,814	8,929	376,313
2005	168,570	111,806	40,903	51,892	15,506	388,677
2006	151,623	91,912	35,667	40,624	9,296	329,122
2007	164,411	110,099	60,820	67,164	7,887	410,381
2008	161,607	90,811	47,204	50,655	10,067	360,344
2009	132,059	87,360	48,661	60,319	8,818	337,217
2010	133,856	105,095	53,375	43,344	12,268	347,938
2011	159,254	107,121	53,315	43,750	2,423	365,863
2012	147,721	127,598	54,024	43,222	2,167	374,732
2013	137,963	144,901	63,948	62,213	2,567	411,592
2014	175,187	157,066	70,741	49,038	3,546	455,578
2015	168,628	135,996	65,826	50,607	1,735	422,792
2016	163,873	124,314	49,368	41,627	1,456	380,638
2017	157,514	125,162	45,653	47,182	1,101	376,612
2018	137,332	100,513	46,920	38,840	927	324,532
2019	157,092	143,673	52,899	42,426	1,324	397,414
2020	122,692	93,295	49,269	38,394	1,726	305,376
2021	173,562	144,473	54,387	43,957	1,763	418,142
2022	152,476	142,280	53,855	44,396	866	393,873
Average						
1999–2021	154,526	108,967	49,200	46,926	5,535	364,433

Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database (Intranet) 1977–present. Anchorage, AK. Alaska Department of Fish and Game, Division of Sport Fish (cited October 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Note: ND means no data collected.

^a Prior to 2002, these data were listed under the “other streams” category.

Table 3.–Kenai River sport fish harvest by species, 1999–2022.

Year	Chinook salmon	Sockeye salmon	Coho salmon	Pink salmon	Chum salmon	Rainbow trout	Dolly Varden	Lake trout	Arctic grayling	Northern pike	Other ^a	Total
1999	21,724	200,574	31,637	1,895	333	3,784	7,568	293	64	0	64	267,936
2000	17,040	230,983	48,519	19,081	350	3,459	7,427	115	93	6	751	327,824
2001	18,879	200,762	49,782	2,069	498	2,422	6,528	156	76	0	1,141	282,313
2002	13,506	225,917	59,650	22,995	959	6,019	5,781	173	146	12	806	335,964
2003	19,782	286,089	46,657	2,847	94	2,278	6,113	243	42	58	274	364,477
2004	20,757	294,793	65,952	20,638	123	3,311	5,845	80	277	58	136	411,970
2005	22,024	294,287	50,411	5,112	52	2,517	4,316	0	62	12	759	379,552
2006	20,504	173,425	37,639	12,448	52	2,499	3,218	41	10	0	158	249,994
2007	14,934	308,850	38,017	3,308	30	2,666	3,276	0	12	10	144	371,247
2008	14,638	230,030	51,624	15,108	227	3,214	3,766	153	31	25	359	319,175
2009	11,968	252,319	49,960	4,038	89	2,454	2,718	22	13	0	149	323,730
2010	8,538	304,635	52,912	12,959	71	2,403	2,996	129	87	0	246	384,976
2011	8,689	395,840	44,132	3,586	77	1,727	1,789	0	0	0	355	456,195
2012	794	455,454	36,407	17,637	357	2,540	2,144	7	0	11	1,695	517,046
2013	1,405	436,988	48,954	3,130	149	1,771	3,609	0	0	23	495	496,524
2014	1,301	360,831	60,566	24,919	31	1,619	3,927	62	0	29	352	453,637
2015	4,009	376,422	57,067	4,914	190	2,265	3,834	0	0	0	1,196	449,897
2016	8,524	329,702	39,931	23,679	579	2,462	2,327	439	16	0	514	408,173
2017	9,802	291,405	48,427	5,899	12	3,577	2,149	20	198	0	2,055	363,544
2018	1,951	172,672	50,575	20,427	0	1,152	2,109	0	0	0	1,035	249,921
2019	2,021	473,927	41,171	6,287	0	1,529	1,566	0	0	0	6,270	532,771
2020	1,351	255,882	27,446	15,888	0	861	910	0	0	0	118	302,456
2021	2,070	558,649	59,055	8,838	67	1,498	1,346	0	0	0	4,556	636,079
2022	394	444,361	57,202	18,781	164	1,559	1,365	0	0	0	3,136	526,962
Average												
1999–2021	10,705	309,149	47,674	11,204	189	2,523	3,707	84	49	11	1,027	386,322

Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database (Intranet) 1977–present. Anchorage, AK. Alaska Department of Fish and Game, Division of Sport Fish (cited October 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Includes whitefish (*Coregonus clupeaformis*), steelhead, burbot (*Lota lota*), and those listed under “other fish” in the SWHS.

Table 4.–Angler-days of sport fishing effort for other NKPMA streams and drainages by fishery 1999–2022.

Year	Stocked lakes ^a	Quartz Creek	Swanson River	Hidden Lake	Resurrection Creek	Swanson R. Canoe Route	Swan Lakes Canoe Route	Skilak Lake	Kenai Lake	Sixmile Creek	Crescent Lake	Tustemena Lake	Other NKPMA fisheries	Total
1999	5,151	4,708	3,606	2,017	2,167	3,279	2,022	1,182	1,462	445	1,266	599	10,567	38,471
2000	7,880	2,423	5,839	1,804	5,751	2,929	1,742	2,072	1,033	1,207	1,504	1,368	8,920	44,472
2001	6,543	3,105	4,060	1,604	2,377	3,345	816	1,701	2,509	1,024	1,099	731	6,856	35,770
2002	7,641	4,245	4,249	1,412	3,456	1,396	2,296	1,668	2,502	2,001	1,457	871	7,809	41,003
2003	4,802	4,357	3,807	1,761	2,534	1,150	1,148	2,068	1,097	1,089	1,412	802	7,537	33,564
2004	4,978	6,589	2,878	1,902	3,116	762	580	2,460	497	1,297	1,104	972	6,614	33,749
2005	8,205	6,106	3,552	1,548	1,708	1,334	932	594	2,072	511	1,028	684	5,112	33,386
2006	6,488	5,582	3,533	1,975	4,550	1,136	794	1,152	619	1,127	790	455	5,053	33,254
2007	3,079	8,694	4,481	2,449	5,030	2,231	2,097	1,462	648	988	1,389	525	5,481	38,554
2008	2,802	7,105	5,006	1,543	5,584	2,221	1,341	1,692	728	641	959	750	5,258	35,630
2009	3,707	6,217	2,698	3,559	6,805	1,923	400	1,126	687	1,535	1,609	764	3,919	34,949
2010	5,510	4,859	2,303	2,393	3,287	900	1,385	1,085	955	1,361	758	348	4,986	30,130
2011	7,192	2,184	3,922	1,314	1,801	247	505	918	869	348	996	134	4,086	24,516
2012	5,867	1,238	700	835	2,511	397	930	538	1,179	655	896	ND	4,127	19,873
2013	10,161	3,262	1,916	1,745	2,157	660	1,041	2,060	2,964	742	1,213	539	3,482	31,942
2014	8,485	3,507	2,022	743	5,262	875	660	1,616	3,030	1,108	1,186	ND	5,905	34,399
2015	10,362	3,137	1,470	645	2,844	731	771	1,188	2,048	1,940	1,041	858	4,467	31,502
2016	11,557	2,989	1,778	302	3,865	217	536	503	1,247	1,020	1,499	141	7,332	32,986
2017	12,548	1,669	2,411	672	4,011	335	250	713	2,134	671	999	294	4,300	31,007
2018	6,616	2,459	2,021	565	6,196	1,442	685	488	674	1,485	899	100	4,154	27,784
2019	9,001	2,336	3,538	684	4,921	1,746	793	448	1,365	890	594	164	3,457	29,937
2020	6,077	1,842	1,744	78	5,282	541	695	304	1,196	101	656	137	6,107	24,760
2021	5,989	2,221	2,022	1,036	3,085	265	329	318	648	498	1,194	34	5,499	23,138
2022	7,242	2,482	1,081	234	2,941	935	668	502	563	246	935	30	5,797	23,656
Average														
1999–2021	6,984	3,949	3,024	1,417	3,839	1,307	989	1,189	1,398	986	1,111	537	5,697	32,382
2012–2021	8,666	2,466	1,962	731	4,013	721	669	818	1,649	911	1,018	283	4,883	28,733

Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database (Intranet) 1977–present. Anchorage, AK. Alaska Department of Fish and Game, Division of Sport Fish (cited October 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a From 1999 to 2004, a yearly combined total of 2 Rainbow Lakes (1 stocked, 1 not) are included because there was no breakdown available.

Table 5.—Sport fish harvest by species for systems other than the Kenai River mainstem in the Northern Kenai Peninsula Management Area, 1999–2022.

Year	Chinook salmon	Sockeye salmon ^a	Coho salmon ^b	Pink salmon	Chum salmon	Rainbow trout ^c	Dolly Varden ^c	Lake trout	Arctic grayling ^c	Northern pike	Other	Total
1999	8,255	72,722	10,281	1,022	230	9,763	3,233	2,353	984	47	44	108,934
2000	9,912	79,370	13,043	3,380	0	13,784	4,289	1,559	1,111	48	250	126,746
2001	8,866	60,630	15,377	2,036	116	7,646	2,334	1,577	888	522	647	100,639
2002	5,261	91,209	21,447	4,183	140	13,070	2,915	1,628	982	356	202	141,393
2003	4,234	58,496	14,420	2,459	145	7,674	2,553	624	1,139	459	185	92,388
2004	4,346	64,076	16,279	3,624	125	5,245	3,842	1,703	647	256	102	100,245
2005	4,566	61,778	12,008	1,190	108	4,868	1,690	1,229	739	212	230	88,618
2006	3,304	89,238	13,502	5,110	388	4,597	1,263	821	387	55	87	118,752
2007	3,731	58,169	8,791	3,485	61	6,373	2,197	669	523	548	37	84,584
2008	3,789	74,264	12,292	6,254	52	4,677	1,815	429	635	229	0	104,436
2009	3,801	100,938	11,239	5,926	184	3,648	1,293	893	883	0	152	128,957
2010	3,549	39,550	8,076	2,256	77	5,145	1,195	609	285	59	269	61,070
2011	3,714	45,625	8,726	1,766	34	5,527	1,138	404	732	0	228	67,894
2012	927	37,118	10,067	2,501	18	4,439	631	359	635	0	267	56,962
2013	1,835	60,721	10,748	1,175	234	6,377	1,266	1,415	1,177	428	282	85,658
2014	637	74,653	9,219	4,026	20	5,560	1,531	613	597	0	142	96,998
2015	1,379	60,757	10,825	3,602	332	6,485	809	655	603	0	55	85,502
2016	3,059	33,651	6,969	4,253	143	10,482	1,126	640	547	0	422	61,292
2017	4,288	46,550	9,184	4,424	116	6,309	858	659	173	8	215	72,784
2018	2,264	59,126	12,108	5,609	286	2,814	738	55	181	0	864	84,045
2019	994	96,993	10,885	3,901	121	5,185	494	427	226	0	1,894	121,120
2020	1,948	57,091	8,221	6,212	87	4,646	675	111	24	0	33	79,048
2021	2,300	70,274	10,584	4,506	67	4,215	587	100	122	0	887	93,642
2022	521	75,451	10,666	3,719	403	5,182	594	42	182	0	476	97,236
Average												
1999–2021	3,781	64,913	11,491	3,604	134	6,458	1,673	849	618	140	326	93,987

Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database (Intranet) 1977–present. Anchorage, AK. Alaska Department of Fish and Game, Division of Sport Fish (cited October 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Includes kokanee (landlocked *O. nerka*) as reported in the SWHS.

^b Includes natural and stocked landlocked coho salmon as reported in the SWHS.

^c Includes natural and stocked populations as reported in the SWHS.

Table 6.—Angler-days of effort and harvest for Kenai River and Kasilof River personal use fisheries, 1999–2022.

Fishery	Year	Days open	Days fished	Sockeye salmon	Chinook salmon	Coho salmon	Pink salmon	Chum salmon	Total
Kasilof River gillnet									
	1999	10	1,287	12,832	442	25	10	10	13,319
	2000	13	1,252	14,774	514	9	17	10	15,324
	2001	8	1,001	17,201	174	6	11	7	17,399
	2002	10	1,025	17,980	192	12	30	13	18,227
	2003	10	1,206	15,706	400	107	9	4	16,226
	2004	10	1,272	25,417	163	58	6	0	25,644
	2005	11	1,506	26,609	87	326	16	1	27,039
	2006	10	1,724	28,867	287	420	11	6	29,591
	2007	10	1,570	14,943	343	68	2	0	15,356
	2008	10	1,534	23,432	151	65	35	23	23,706
	2009	10	1,761	26,646	127	165	14	11	26,963
	2010	10	1,855	21,924	136	23	23	1	22,107
	2011	10	1,846	26,780	167	47	23	3	27,020
	2012	10	1,696	15,638	103	161	53	15	15,970
	2013	5	1,082	14,439	46	129	3	5	14,622
	2014	10	1,389	22,567	50	30	105	18	22,770
	2015	10	1,741	27,567	61	191	20	2	27,841
	2016	10	1,962	26,539	141	23	5	23	26,731
	2017	10	1,874	21,927	118	5	48	43	22,141
	2018	10	1,616	14,390	120	2	22	5	14,539
	2019	10	1,534	15,864	131	19	84	16	16,114
	2020	10	1,410	14,745	70	1	62	23	14,901
	2021	10	1,173	18,212	94	17	157	17	18,497
	2022	10	756	6,329	19	6	16	2	6,372
	Average								
	1999–2021	10	1,492	20,217	179	83	33	11	20,524
Kasilof River dip net									
	1999	27	3,611	37,176	127	286	264	52	37,905
	2000	27	2,622	23,877	134	1,004	841	34	25,890
	2001	27	3,382	37,612	138	766	307	23	38,846
	2002	44	4,020	46,769	106	1,197	1862	139	50,073
	2003	44	3,874	43,870	57	592	286	30	44,835
	2004	44	4,432	48,315	44	668	396	90	49,513
	2005	44	4,500	43,151	16	538	658	102	44,465
	2006	44	5,763	56,144	55	1,057	992	105	58,353
	2007	44	4,627	43,293	35	487	383	136	44,334
	2008	44	5,552	54,051	46	509	787	143	55,536
	2009	44	7,650	73,035	34	1,441	1,274	173	75,957
	2010	44	7,588	70,774	31	1,768	974	279	73,826
	2011	44	6,571	49,766	24	977	652	144	51,562
	2012	44	6,536	73,419	16	1,170	896	147	75,649
	2013	44	8,556	85,528	18	1,666	683	339	88,233
	2014	44	10,236	88,513	0	2,606	2,769	342	94,230

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Table 6.–Page 2 of 2.

Fishery	Year	Days open	Days fished	Sockeye salmon	Chinook salmon	Coho salmon	Pink salmon	Chum salmon	Total
Kasilof R. dip net (continued)	2015	44	10,346	89,000	0	2,723	1,607	597	93,927
	2016	44	9,334	58,273	26	1,255	1,733	329	61,616
	2017	44	9,458	78,260	14	605	2,850	969	82,698
	2018	44	9,377	92,034	6	326	3,272	326	95,964
	2019	44	9,030	80,730	3	553	2,840	326	84,452
	2020	44	10,249	94,064	12	1,318	4,752	807	100,953
	2021	44	9,286	96,454	9	1,117	2,823	756	101,159
	2022	44	10,669	158,734	21	1,258	1,912	602	162,527
Average									
	1999–2021	42	6,954	63,657	41	1,071	1,474	278	66,521
Kenai R. dip net	1999	22	13,738	149,504	488	1,009	1,666	102	152,769
	2000	22	12,354	98,262	410	1,449	1,457	193	101,771
	2001	22	14,772	150,766	638	1,555	1,326	155	154,440
	2002	22	14,840	180,028	606	1,721	5,662	551	188,568
	2003	22	15,263	223,580	1,016	1,332	1,647	249	227,824
	2004	22	18,513	262,831	792	2,661	2,103	387	268,774
	2005	22	20,977	295,496	997	2,512	1,806	321	301,132
	2006	20	12,685	127,630	1,034	2,235	11,127	551	142,577
	2007	22	21,908	291,270	1,509	2,111	1,939	472	297,301
	2008	22	20,772	234,109	1,362	2,609	10,631	504	249,215
	2009	22	26,171	339,993	1,189	2,401	5,482	285	349,350
	2010	22	28,342	389,552	865	2,870	3,655	508	397,450
	2011	22	32,818	537,765	1,243	4,745	3,914	915	548,582
	2012	22	34,374	526,992	40	4,008	3,770	425	535,235
	2013	22	33,193	347,222	11	3,169	3,625	701	354,728
	2014	22	36,380	379,823	0	4,710	19,140	1,194	404,867
	2015	22	31,487	377,532	66	4,150	4,147	957	386,852
	2016	22	30,745	259,057	638	3,277	7,834	717	271,523
	2017	22	27,775	297,049	1,194	732	7,962	886	307,823
	2018	20	20,170	165,028	7	529	10,435	441	176,440
	2019	22	22,419	331,408	30	977	4,631	689	337,735
	2020	22	23,574	257,864	23	1,023	13,622	1,540	274,072
2021	22	20,782	326,491	50	1,080	4,285	752	332,658	
2022	22	19,454	282,085	13	941	2,643	531	286,213	
Average									
	1999–2021	22	23,220	284,750	618	2,298	5,733	587	293,986

Source: Reimer and Sigurdsson (2004); Dunker and Lafferty (2007); Dunker (2010, 2013, 2018); St. Saviour (2020); St. Saviour (2023).

Note: Summaries of returned permits are expanded to include harvest of permits not returned.

Table 7.–Kenai River early-run large (≥ 75 cm) Chinook salmon population data, 1999–2022.

Year	Cook Inlet marine harvest ^a	Eastside setnet harvest ^b	Kenaitze educational harvest ^c	Inriver sport harvest ^d	Inriver sport catch and release mortality ^d	Spawning escapement ^e	Total run ^e	Harvest rate
1999	67	0	87	7,084	227	4,617	12,048	0.62
2000	73	0	94	1,699	173	9,917	11,974	0.17
2001	61	0	150	2,061	176	12,306	14,738	0.17
2002	30	0	36	725	63	7,776	8,649	0.10
2003	13	0	96	2,300	315	12,168	14,976	0.19
2004	109	0	55	2,702	205	18,323	21,328	0.14
2005	76	0	58	3,246	215	12,545	16,153	0.22
2006	63	0	49	3,699	162	5,780	9,785	0.41
2007	53	0	12	2,540	160	4,493	7,305	0.38
2008	36	0	30	3,040	107	3,539	6,799	0.48
2009	16	0	37	1,133	75	3,835	5,098	0.25
2010	35	44	24	1,027	69	3,082	4,278	0.28
2011	56	3	32	1,027	71	5,212	6,385	0.18
2012	0	0	14	253	8	2,948	3,232	0.09
2013	25	1	8	1	0	1,541	1,556	0.01
2014	41	2	1	1	0	2,541	2,552	0.00
2015	92	8	8	1	0	4,172	4,197	0.01
2016	80	14	3	5	29	6,328	6,399	0.01
2017	61	29	10	533	75	6,678	7,333	0.09
2018	11	16	2	88	35	2,934	3,088	0.05
2019	34	12	0	0	101	4,055	4,162	0.03
2020	0	6	2	12	14	2,443	2,495	0.02
2021	28	1	0	53	90	4,024	4,171	0.04
2022	119	0	0	1	5	2,047	2,052	0.00
Average								
1999–2016	51	4	44	1,808	114	6,729	8,747	0.21
2017–2021	27	13	3	137	63	4,027	4,250	0.04

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Source: Statewide Harvest Surveys from Mills (1987–1994), Howe et al. (1995, 1996), and Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>. Other data sources are Alexandersdottir and Marsh (1990); Nelson et al. (1999); Hammarstrom and Timmons (2001a); Reimer et al. (2002); Reimer (2003, 2004a-b, 2007); Eskelin (2007, 2009, 2010); Perschbacher (2012a–d, 2014, 2015); McKinley and Fleischman (2013); Perschbacher and Eskelin (2016); and A. Eskelin, Sport Fish Biologist, ADF&G Soldotna, personal communication; R. Begich, Sport Fish Biologist, ADF&G Soldotna, personal communication; 1994–2020 Educational data Kenaitze Indian Tribe.

- ^a Estimates derived from SWHS; mean values of Kenai River tributaries proportion (0.01; Schuster et al. 2021) and percent large in lower Kenai River early run creel survey by year.
- ^b 1999–2009 estimates assumed zero based on Table 10 in Eskelin and Barclay (2022); 2010–2022 estimates from Eskelin and Barclay (2016–2023). Harvest estimate from 2018 does not include Kasilof River terminal harvest.
- ^c Prior to 1994, there was no educational fishery, this was considered a subsistence fishery. Estimates derived from reported educational fishery harvest and the 1986–2021 average large fish proportion in inriver gillnets (0.759).
- ^d Lower Kenai River creel survey estimates used for RM 5–21 estimates; SWHS and or guide logbook estimates and fraction large fish from RM 5–21 creel survey used for RM 21–50 estimates. Catch and release mortality assumes 0.76 (Bendock and Alexandersdottir 1992).
- ^e 1986–2021 posterior medians of state-space model; estimates for 2022 are point estimates.

Table 8.–Kenai River late-run large (≥ 75 cm) Chinook salmon population data, 1999–2022.

Year	Cook Inlet marine harvest ^a	Eastside setnet harvest ^b	Drift gillnet harvest ^c	Subsis./Educ. ^d	Personal use dipnet ^e	Inriver sport harvest ^f	Inriver sport catch and release mortality ^f	Inriver run ^g	Spawning escapement ^g	Total run ^g	Harvest rate
1999	67	4,446	270	3	328	11,556	580	40,912	28,769	46,006	0.37
2000	73	1,856	136	4	295	13,611	446	40,441	26,331	42,826	0.39
2001	61	1,952	201	4	296	13,974	700	42,675	27,895	45,147	0.38
2002	30	3,522	154	3	322	11,278	595	54,878	42,940	58,965	0.27
2003	13	4,546	381	5	446	13,713	1,459	66,994	51,862	72,422	0.28
2004	109	10,021	510	7	523	14,622	858	86,094	70,617	97,329	0.27
2005	76	9,909	884	7	643	17,153	1,193	74,315	55,764	85,879	0.35
2006	63	3,173	887	5	471	13,602	714	55,247	40,911	59,872	0.32
2007	53	4,196	310	3	733	9,759	572	41,629	31,276	46,981	0.33
2008	36	3,535	301	10	896	10,015	333	40,468	30,001	45,202	0.34
2009	16	1,336	205	1	405	7,460	517	28,807	20,807	30,785	0.32
2010	35	2,384	193	11	444	5,774	212	19,403	13,425	22,502	0.40
2011	56	2,499	243	3	728	5,964	388	22,880	16,541	26,411	0.37
2012	0	334	103	0	27	86	79	23,571	23,427	24,038	0.03
2013	25	679	104	2	3	821	41	13,727	12,719	14,542	0.13
2014	41	706	112	0	0	287	38	11,903	11,584	12,776	0.09
2015	92	2,808	184	5	31	2,997	154	20,010	16,857	23,139	0.27
2016	80	2,906	242	3	364	5,576	228	21,422	15,652	25,023	0.37
2017	61	2,998	144	7	928	5,857	196	26,595	20,583	30,734	0.33
2018	11	555	106	0	2	97	198	17,691	17,405	18,364	0.05
2019	34	613	58	0	14	857	92	12,637	11,709	13,360	0.12
2020	0	166	35	1	6	0	163	12,014	11,854	12,226	0.03
2021	28	217	40	0	13	141	117	12,489	12,238	12,794	0.04
2022	0	41	53	0	2	0	92	13,981	13,911	14,078	0.01
Average											
1999–2016	51	3,378	301	4	386	8,791	506	39,188	29,854	43,325	0.29
2017–2021	27	910	76	2	193	1,390	153	16,285	14,758	17,496	0.12

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Source: Statewide Harvest Surveys from Mills (1987–1994), Howe et al. (1995, 1996), and Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>. Other data sources are Hammarstrom and Timmons (2001); Reimer and Sigurdsson (2004); Dunker and Lafferty (2007); Dunker 2010, 2013, 2018; Fleischman and McKinley 2013; Marston and Frothingham 2019, 2021, 2022a, 2022b; St. Saviour 2020; St. Saviour (2023); R. Begich, Sport Fish Biologist, ADF&G, Soldotna, personal communication. 1994–2020 Educational data Kenaitze Indian Tribe.

- ^a Estimates derived from SWHS; mean values of Kenai River tributaries proportion (0.078; Schuster et al. 2021) and percent large in lower Kenai River early run creel survey by year.
- ^b 1999–2009 estimates derived from mean 2010–2021 Kenai River mainstem proportions in ESSN fishery (0.70; Eskelin and Barclay 2022) and fraction of large fish in ESSN samples by year; 2010–2022 are point estimates from Eskelin and Barclay (2016–2023).
- ^c Estimates derived from mean Kenai River mainstem proportion in ESSN (0.70; Eskelin and Barclay 2022); Fraction of large fish in ESSN samples by year and reported commercial drift gillnet harvest by year.
- ^d Kenaitze education and federal subsistence fisheries; estimates derived from total reported harvest and fraction large in ESSN samples by year.
- ^e Estimates derived from fraction of large fish in ESSN samples by year and reported Kenai River personal use harvest.
- ^f Creel survey estimates used for RM 5–21, SWHS and or guide logbook estimates used for RM 21–50 and fraction of large fish from RM 5–21 creel survey by year. Assumes 0.076 catch and release mortality rate (Bendock and Alexandersdottir 1992). (Bendock and Alexandersdottir 1992).
- ^g 1999–2021 posterior medians of state-space model; estimates for 2022 are point estimates.

Table 9.—Proportions of Eastside set net (ESSN) Chinook salmon harvested by reporting group, 2010–2022.

Year	Kenai River		Kasilof River	Cook Inlet
	Mainstem	Tributaries	Mainstem	Other
2010	0.64	0.01	0.33	0.02
2011	0.68	0.00	0.32	0.00
2013	0.77	0.00	0.21	0.02
2014	0.61	0.00	0.39	0.00
2015	0.77	0.00	0.20	0.03
2016	0.74	0.00	0.25	0.01
2017	0.79	0.01	0.19	0.01
2018	0.75	0.03	0.19	0.03
2019	0.65	0.02	0.32	0.01
2020	0.66	0.03	0.19	0.13
2021	0.70	0.00	0.13	0.17
2022	0.64	0.01	0.20	0.15
Average	0.70	0.01	0.24	0.05

Source: Eskelin and Barclay 2023.

Table 10.—Historical summary of early-run Kasilof River-Crooked Creek Chinook salmon stocks, 2004–2022.

Year	Harvest ^a			Run to weir ^b			Total run ^b			Spawning escapement ^b		
	Total	Naturally produced	Hatchery-produced	Total	Naturally produced	Hatchery-produced	Total	Naturally produced	Hatchery-produced	Total	Naturally produced	Hatchery-produced
2004	2,407	0	2,407	4,873	2,641	2,232	7,280	2,641	4,639	4,356	2,196	2,160
2005	2,665	572	2,093	3,168	2,108	1,060	5,833	2,680	3,153	2,936	1,909	1,027
2006	2,489	1,057	1,432	2,646	1,589	1,057	5,135	2,646	2,489	2,569	1,516	1,053
2007	2,654	1,107	1,547	1,527	1,038	489	4,181	2,145	2,036	1,452	965	487
2008 ^c	1,984	832	1,129	1,414	1,018	396	3,398	1,850	1,525	1,181	879	302
2009 ^c	1,532	576	956	929	674	255	2,461	1,250	1,211	734	617	117
2010 ^{c,d}	1,333	273	1,060	1,352	1,090	262	2,685	1,363	1,322	1,348	1,088	260
2011 ^{c,e}	2,054	ND	ND	933	677	256	2,987	ND	ND	782	654	128
2012 ^d	872	ND	ND	796	633	163	1,668	ND	ND	731	631	100
2013 ^d	1,073	ND	ND	1,409	1,211	198	2,482	ND	ND	1,213	1,102	111
2014 ^d	323	ND	ND	2,433	1,522	911	2,756	ND	ND	2,148	1,411	737
2015 ^d	589	ND	ND	2,240	1,639	601	2,829	ND	ND	1,903	1,456	447
2016 ^{d,f}	1,810	ND	ND	4,017	1,833	2,184	5,827	ND	ND	3,847	1,747	2,100
2017	2,965	ND	ND	1,676	994	682	4,641	ND	ND	1,135	911	224
2018 ^d	1,468	ND	ND	1,741	777	964	3,209	ND	ND	1,187	714	473
2019 ^d	815	ND	ND	3,636	1,641	1,995	4,451	ND	ND	1,876	1,444	432
2020 ^d	2,178	ND	ND	2,700	918	1,782	4,878	ND	ND	1,088	830	258
2021 ^d	2,166	ND	ND	1,676	635	1,041	3,842	ND	ND	809	594	215
2022 ^d	336	ND	ND	2,994	780	2,214	3,330	ND	ND	1,188	735	453
Average												
2004–2021	1,743	245	590	2,176	1,258	918	3,919	810	910	1,739	1,148	591

Source: Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited October 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>. Other data sources are Cope (2012); Begich et al. (2017); J. Gates, Sport Fish Biologist, ADF&G, Soldotna, personal communication.

Note: ND means no data collected. Prior to 2004, hatchery returns were not marked at a rate of 100%.

- ^a Excludes ocean-age-1 fish for 2004–2022. Data for 2004–2010 are from inseason creel surveys. Data for 2011–present are from SWHS. These data do not include harvest from the Kasilof River personal use fishery.
- ^b Excludes ocean-age-1 fish. Beginning in 2017, hatchery-produced fish were opportunistically culled.
- ^c In 2008, regulations were changed to allow retention of naturally produced Chinook salmon on Tuesdays, Thursdays, and Saturdays only, with a limit of 2 Chinook salmon per day of which only 1 may be naturally produced; annual limits applied.
- ^d Restrictions were placed on harvest of Chinook salmon during these years. See Appendices for more details on 2022 restrictions.
- ^e The Kasilof River early-run Chinook salmon creel survey was discontinued in 2011.
- ^f Incomplete weir count; weir pulled July 25.

Table 11.–Late-run all-sized Kasilof River Chinook salmon harvest and abundance, 1999–2022.

Year	Eastside set net harvest ^a	Inriver sport harvest	Inriver abundance ^b
1999	2,754	658	ND
2000	1,072	1,086	ND
2001	1,749	1,378	ND
2002	2,758	451	ND
2003	4,310	1,144	ND
2004	6,310	1,038	ND
2005	6,285	1,052	12,097
2006	2,897	883	8,611
2007	3,577	1,062	8,522
2008	2,204	793	8,276
2009	1,626	2,164	ND
2010	2,305	1,310	ND
2011	2,538	1,660	ND
2012	205	55	ND
2013	637	762	ND
2014	891	314	ND
2015	1,564	790	ND
2016	1,667	1,249	ND
2017	905	1,323	ND
2018	428	796	ND
2019	714	179	ND
2020	163	404	ND
2021	166	134	ND
2022	67	45	ND
<hr/>			
1999–2021			
Minimum	163	55	8,276
Average	2,075	899	9,377
Maximum	6,310	2,164	12,097

Source: Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited October 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>. Other data sources are Fleischman and McKinley (2013); Eskelin et al. (2013); Eskelin and Barclay (2016–2023); Marston and Frothingham (2022); R. Begich, Sport Fish Biologist, ADF&G, Soldotna, personal communication.

Note: ND means no data collected.

^a Uses 2010, 2011 and 2013–2015 Eastside setnet genetic stock allocation estimates to calculate Kasilof River Chinook salmon harvest component.

^b Mark–recapture tagging abundance estimates from Reimer and Fleischman (2012).

Table 12.—Fishing effort, catch, and harvest of early-run Chinook salmon by angler type from the Kasilof River creel survey, 16 May–30 June, 2004–2010.

Angler type	Year	2004	2005	2006	2007	2008	2009	2010	Average	Percent of grand total average
Shore										
Guided										
	Anglers	0	0	0	0	57	50	4	16	–
	Angler-hours	0	0	0	0	248	204	10	66	–
	Catch	0	0	0	0	14	0	0	2	–
	Harvest	0	0	0	0	14	0	0	2	–
Unguided										
	Anglers	5,138	5,142	7,910	6,181	6,511	6,242	4,743	5,981	–
	Angler-hours	15,096	16,452	23,199	17,953	19,712	17,091	14,371	17,696	–
	Catch	1,643	1,366	887	747	564	354	660	889	–
	Harvest	503	497	296	329	274	169	170	320	–
Total										
	Anglers	5,138	5,142	7,910	6,181	6,568	6,292	4,747	5,997	57
	Angler-hours	15,096	16,452	23,199	17,953	19,960	17,295	14,381	17,762	34
	Catch	1,643	1,366	887	747	578	354	660	891	28
	Harvest	503	497	296	329	288	169	170	322	24
Boat										
Guided										
	Year	2,004	2,005	2,006	2,007	2,008	2,009	2,010	2,007	–
	Anglers	4,328	4,615	5,410	4,625	4,420	3,526	4,790	4,531	–
	Angler-hours	24,670	32,840	38,065	32,363	31,113	24,255	33,792	31,014	–
	Catch	3,463	3,446	3,330	3,162	2,303	1,711	2,334	2,821	–
	Harvest	1,479	1,768	1,818	1,940	1,490	1,196	1,089	1,540	–
Unguided										
	Anglers	2,550	2,297	2,928	2,109	2,325	1,575	963	2,107	–
	Angler-hours	12,089	11,300	13,994	10,926	10,740	7,361	4,800	10,173	–
	Catch	983	743	553	516	304	211	135	492	–
	Harvest	426	401	375	384	207	166	74	290	–

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Table 12.–Page 2 of 2.

Angler type	Year	2004	2005	2006	2007	2008	2009	2010	Average	Percent of grand total average
Boat										
	Total									
	Anglers	6,878	6,911	8,338	6,734	6,744	5,101	5,753	6,637	53
	Angler-hours	36,759	44,140	52,059	43,290	41,853	31,616	38,592	41,187	70
	Catch	4,446	4,189	3,884	3,678	2,607	1,922	2,468	3,313	79
	Harvest	1,904	2,169	2,193	2,325	1,697	1,362	1,163	1,830	85
Guided total										
	Anglers	4,328	4,615	5,410	4,625	4,477	3,576	4,794	4,546	36
	Angler-hours	24,670	32,840	38,065	32,363	31,361	24,459	33,802	31,080	53
	Catch	3,463	3,446	3,330	3,162	2,316	1,711	2,334	2,823	67
	Harvest	1,479	1,768	1,818	1,940	1,503	1,196	1,089	1,542	72
Unguided total										
	Anglers	7,688	7,438	10,838	8,290	8,836	7,817	5,706	8,088	64
	Angler-hours	27,185	27,752	37,193	28,879	30,452	24,452	19,172	27,869	47
	Catch	2,626	2,109	1,440	1,263	868	565	795	1,381	33
	Harvest	929	898	672	713	481	336	244	610	28
Grand total										
	Anglers	12,015	12,053	16,248	12,915	13,313	11,393	10,500	12,634	–
	Angler-hours	51,854	60,592	75,258	61,243	61,813	48,911	52,974	58,949	–
	Catch	6,089	5,555	4,771	4,426	3,184	2,276	3,128	4,204	–
	Harvest	2,407	2,665	2,490	2,654	1,984	1,532	1,333	2,152	–

Source: Cope (2011, 2012).

Note: Some totals may vary slightly from calculated totals due to rounding differences. The creel survey was discontinued in 2011.

Table 13.–Historical releases of adipose finclipped Crooked Creek Chinook salmon, 1998–2022.

Release year	Broodstock origin	Hatchery	Number of smolt released	Number of AFC smolt released	% AFC
1999	Homer (Crooked Creek) ^a	Elmendorf	192,304	43,431	22.6
2000	Crooked Creek	Elmendorf	108,507	108,507	100.0
2001	Crooked Creek	Elmendorf	109,201	109,201	100.0
2002	Crooked Creek	Elmendorf	99,547	99,547	100.0
2003	Crooked Creek	Ft. Richardson	98,800	98,800	100.0
2004	Crooked Creek	Ft. Richardson	80,601	80,601	100.0
2005	Crooked Creek	Ft. Richardson	113,613	113,071	99.5
2006	Crooked Creek	Ft. Richardson	111,705	111,705	100.0
2007	Crooked Creek	Ft. Richardson	111,382	111,271	99.9
2008	Crooked Creek	Ft. Richardson	114,588	114,588	100.0
2009	Crooked Creek	Ft. Richardson	115,035	114,734	99.7
2010	Crooked Creek	Ft. Richardson	106,145	106,145	100.0
2011	Crooked Creek	Ft. Richardson	64,578	64,578	100.0
2012	Crooked Creek	WJHSFH	52,759	52,759	100.0
2013	Crooked Creek	WJHSFH	0	0	ND
2014	Crooked Creek	WJHSFH	143,751	143,191	99.6
2015	Crooked Creek	WJHSFH	145,855	141,334	96.9
2016	Crooked Creek	WJHSFH	143,280	139,054	97.1
2017	Crooked Creek	WJHSFH	105,396	104,342	99.0
2018	Crooked Creek	WJHSFH	149,622	142,897	95.5
2019	Crooked Creek	WJHSFH	126,600	125,587	99.2
2020	Crooked Creek	WJHSFH	141,331	140,481	99.4
2021	Crooked Creek	WJHSFH	140,256	139,891	99.7
2022	Crooked Creek	WJHSFH	97,562	96,879	99.3
Average					
1999–2021			111,950	104,596	95.8

Source: D. Loopstra and D. Starzynski, Sport Fish Biologists, ADF&G, Anchorage, personal communication.

Note: ND means no data collected. AFC means adipose finclipped.

^a Broodstock collection occurred at the Nick Dudiak Fishing Lagoon. Broodstock at this collection site were Crooked Creek progeny.

Table 14.—Angler effort, harvest, and escapement, Russian River early-run (ER) and late-run (LR) sockeye salmon, 1999–2022.

Year	Effort ^a	Sport harvest ^b		Subsistence harvest ^c		Spawning escapement ^d		Total run ^e	
		ER	LR	ER	LR	ER	LR	ER	LR
1999	64,536	34,283	32,335	ND	ND	36,607	139,863	70,890	172,198
2000	69,864	40,732	30,229	ND	ND	32,736	56,580	73,468	86,809
2001	55,972	35,400	18,550	ND	ND	78,255	74,964	113,655	93,514
2002	68,263	52,139	31,999	ND	ND	85,943	62,115	138,082	94,114
2003	50,448	22,986	28,085	ND	ND	23,650	157,469	46,636	185,554
2004	60,784	32,727	22,417	ND	ND	56,582	110,244	89,309	132,661
2005	55,801	37,139	18,503	ND	ND	52,903	59,473	90,042	77,976
2006	70,804	51,167	29,694	ND	ND	80,524	89,160	131,691	118,854
2007	57,755	36,805	16,863	380	316	27,298	53,068	64,483	70,247
2008	55,444	42,492	23,680	928	478	30,989	46,638	74,409	70,796
2009	64,518	59,097	33,935	605	369	52,178	80,088	111,880	114,392
2010	39,873	23,412	9,333	615	246	27,074	38,848	51,101	48,427
2011	47,264	22,697	14,412	670	315	29,129	41,529	52,496	56,256
2012	41,152	15,231	15,074	873	442	24,115	54,911	40,219	70,427
2013	59,682	27,162	20,146	769	555	35,776	31,573	63,707	52,274
2014	57,544	35,870	17,864	1,233	377	44,920	52,277	82,023	70,518
2015	55,420	29,997	13,744	906	624	50,226	46,223	81,129	60,591
2016	39,957	13,086	11,543	1,091	510	38,739	37,837	52,916	49,890
2017	49,455	27,109	10,592	1,496	182	37,123	45,012	65,728	55,786
2018	47,186	26,999	15,344	1,641	401	44,110	71,052	72,750	86,797
2019	53,637	60,339	17,717	1,427	442	125,942	64,585 ^f	187,708	82,744 ^f
2020	44,391	25,731	11,363	1,234	956	27,103	78,832	54,068	91,151
2021	45,146	29,201	15,282	1,122	482	46,976	123,950	77,299	139,714
2022	44,689	20,366	19,994	1,046	586	61,098	124,561	82,510	145,141
Average									
1999–2021	54,561	33,991	19,944	999	446	47,343	70,274	81,986	88,135
2012–2021	49,357	29,073	14,867	1,179	497	47,503	60,625	77,755	75,989

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

Note: ND means no data collected. NA means data not available.

^a Estimates for 1999–2021 are from the SWHS and include effort for the whole year and for other species.

^b Harvest from 1999–present was estimated from the annual SWHS.

^c The subsistence fishery started in 2007 and includes Russian River Falls and Upper Kenai River dipnet and rod-and-reel; it does not include Moose Range Meadows data.

^d Escapements for the early run are the number of fish past the weir from its installation in June through July 14.

^e Total run is determined from escapement above the weir plus harvest.

^f Incomplete count, weir evacuated August 18, 2019 due to nearby wildfire danger.

Table 15.—Daily escapement of early-run sockeye salmon at the Russian River weir, 2020–2022.

Date	2020			2021			2022		
	Daily count	Total count	Cumulative proportion by day	Daily count	Total count	Cumulative proportion by day	Daily count	Total count	Cumulative proportion by day
5 Jun	0	0	0.000	0	0	0.000	0	0	0.000
6 Jun	0	0	0.000	2	2	0.000	0	0	0.000
7 Jun	0	0	0.000	3	5	0.000	0	0	0.000
8 Jun	0	0	0.000	6	11	0.000	0	0	0.000
9 Jun	55	55	0.002	0	11	0.000	0	0	0.000
10 Jun	124	179	0.007	0	11	0.000	0	0	0.000
11 Jun	300	479	0.018	0	11	0.000	0	0	0.000
12 Jun	375	854	0.032	80	91	0.002	9	9	0.000
13 Jun	423	1,277	0.047	98	189	0.004	57	66	0.001
14 Jun	414	1,691	0.062	658	847	0.018	389	455	0.007
15 Jun	218	1,909	0.070	891	1,738	0.037	619	1,074	0.018
16 Jun	470	2,379	0.088	1,130	2,868	0.061	740	1,814	0.030
17 Jun	472	2,851	0.105	1,200	4,068	0.087	2,263	4,077	0.067
18 Jun	763	3,614	0.133	1,359	5,427	0.116	2,477	6,554	0.107
19 Jun	1,116	4,730	0.175	1,910	7,337	0.156	2,603	9,157	0.150
20 Jun	1,358	6,088	0.225	1,817	9,154	0.195	1,915	11,072	0.181
21 Jun	1,871	7,959	0.294	1,893	11,047	0.235	2,008	13,080	0.214
22 Jun	817	8,776	0.324	2,492	13,539	0.288	4,254	17,334	0.284
23 Jun	1,358	10,134	0.374	2,055	15,594	0.332	4,599	21,933	0.359
24 Jun	802	10,936	0.403	2,119	17,713	0.377	5,497	27,430	0.449
25 Jun ^a	607	11,543	0.426	2,106	19,819	0.422	4,598	32,028	0.524
26 Jun	710	12,253	0.452	2,305	22,124	0.471	4,853	36,881	0.604
27 Jun ^a	702	12,955	0.478	2,085	24,209	0.515	3,475	40,356	0.661
28 Jun	348	13,303	0.491	1,807	26,016	0.554	3,241	43,597	0.714
29 Jun ^a	352	13,655	0.504	2,322	28,338	0.603	2,659	46,256	0.757
30 Jun	682	14,337	0.529	2,453	30,791	0.655	778	47,034	0.770
1 Jul	569	14,906	0.550	1,938	32,729	0.697	1,052	48,086	0.787
2 Jul	545	15,451	0.570	1,482	34,211	0.728	1,730	49,816	0.815
3 Jul	508	15,959	0.589	1,015	35,226	0.750	1,443	51,259	0.839
4 Jul	827	16,786	0.619	821	36,047	0.767	986	52,245	0.855
5 Jul	1,796	18,582	0.686	782	36,829	0.784	1,121	53,366	0.873
6 Jul	1,930	20,512	0.757	1,186	38,015	0.809	1,271	54,637	0.894
7 Jul	1,575	22,087	0.815	1,503	39,518	0.841	716	55,353	0.906
8 Jul	1,690	23,777	0.877	1,017	40,535	0.863	518	55,871	0.914
9 Jul	671	24,448	0.902	1,376	41,911	0.892	765	56,636	0.927
10 Jul	574	25,022	0.923	1,143	43,054	0.917	685	57,321	0.938
11 Jul	704	25,726	0.949	717	43,771	0.932	855	58,176	0.952
12 Jul	431	26,157	0.965	622	44,393	0.945	816	58,992	0.966
13 Jul	333	26,490	0.977	1,160	45,553	0.970	1,023	60,015	0.982
14 Jul	613	27,103	1.000	1,423	46,976	1.000	1,083	61,098	1.000

Source: Data provided by L. Hynes, Fish and Wildlife Technician III, ADF&G, Soldotna, under operational plan by Gates (2021).

^a Boxed numbers indicate the midpoint of the run.

Table 16.—Daily escapement of late-run sockeye salmon at the Russian River weir, 2020–2022.

Date	2020			2021			2022		
	Daily count	Total count	Cumulative proportion by day	Daily count	Total count	Cumulative proportion by day	Daily count	Total count	Cumulative proportion by day
15 Jul	610	610	0.008	969	969	0.008	1,550	1,550	0.012
16 Jul	794	1,404	0.018	788	1,757	0.014	898	2,448	0.020
17 Jul	801	2,205	0.028	826	2,583	0.021	906	3,354	0.027
18 Jul	632	2,837	0.036	1,020	3,603	0.029	1,019	4,373	0.035
19 Jul	1,115	3,952	0.050	1,122	4,725	0.038	1,747	6,120	0.049
20 Jul	1,323	5,275	0.067	1,241	5,966	0.048	662	6,782	0.054
21 Jul	1,210	6,485	0.083	959	6,925	0.056	688	7,470	0.060
22 Jul	1,349	7,834	0.100	691	7,616	0.061	652	8,122	0.065
23 Jul	896	8,730	0.111	1,213	8,829	0.071	1,028	9,150	0.073
24 Jul	1,744	10,474	0.133	510	9,339	0.075	835	9,985	0.080
25 Jul	621	11,095	0.141	778	10,117	0.082	893	10,878	0.087
26 Jul	768	11,863	0.151	958	11,075	0.089	1,974	12,852	0.103
27 Jul	1,112	12,975	0.165	1,208	12,283	0.099	3,945	16,797	0.135
28 Jul	2,326	15,301	0.195	2,481	14,764	0.119	4,071	20,868	0.168
29 Jul	2,730	18,031	0.230	1,596	16,360	0.132	8,199	29,067	0.233
30 Jul	1,360	19,391	0.247	1,002	17,362	0.140	7,968	37,035	0.297
31 Jul	1,866	21,257	0.271	1,503	18,865	0.152	5,744	42,779	0.344
1 Aug	1,155	22,412	0.286	1,703	20,568	0.166	4,865	47,644	0.383
2 Aug	984	23,396	0.298	3,160	23,728	0.191	3,404	51,048	0.410
3 Aug	1,915	25,311	0.322	4,899	28,627	0.231	2,853	53,901	0.433
4 Aug	1,541	26,852	0.342	4,026	32,653	0.263	1,977	55,878	0.449
5 Aug	2,934	29,786	0.379	3,876	36,529	0.295	2,405	58,283	0.468
6 Aug	2,179	31,965	0.407	5,268	41,797	0.337	2,335	60,618	0.487
7 Aug ^a	1,658	33,623	0.428	5,263	47,060	0.380	2,084	62,702	0.503
8 Aug	2,160	35,783	0.456	4,921	51,981	0.419	2,832	65,534	0.526
9 Aug ^a	3,157	38,940	0.496	5,084	57,065	0.460	1,836	67,370	0.541
10 Aug ^a	2,780	41,720	0.531	4,824	61,889	0.499	2,510	69,880	0.561
11 Aug	2,240	43,960	0.560	4,522	66,411	0.536	2,324	72,204	0.580
12 Aug	1,565	45,525	0.580	4,010	70,421	0.568	3,965	76,169	0.612
13 Aug	1,319	46,844	0.597	4,618	75,039	0.605	3,229	79,398	0.638
14 Aug	1,222	48,066	0.612	4,019	79,058	0.638	4,026	83,424	0.670
15 Aug	1,250	49,316	0.628	3,481	82,539	0.666	3,897	87,321	0.701
16 Aug	2,148	51,464	0.656	3,584	86,123	0.695	2,392	89,713	0.720
17 Aug	1,855	53,319	0.679	4,032	90,155	0.727	2,867	92,580	0.743
18 Aug	2,158	55,477	0.707	2,935	93,090	0.751	2,528	95,108	0.764
19 Aug	1,897	57,374	0.731	2,830	95,920	0.774	1,924	97,032	0.779
20 Aug	2,111	59,485	0.758	3,627	99,547	0.803	2,116	99,148	0.796
21 Aug	2,263	61,748	0.787	2,422	101,969	0.823	2,056	101,204	0.813
22 Aug	1,818	63,566	0.810	1,552	103,521	0.835	1,752	102,956	0.827
23 Aug	1,992	65,558	0.835	2,166	105,687	0.853	2,036	104,992	0.843
24 Aug	1,232	66,790	0.851	2,481	108,168	0.873	1,299	106,291	0.853
25 Aug	1,262	68,052	0.867	2,132	110,300	0.890	1,543	107,834	0.866
26 Aug	1,438	69,490	0.885	1,621	111,921	0.903	1,639	109,473	0.879

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Date	2020			2021			2022		
	Daily count	Total count	Cumulative proportion by day	Daily count	Total count	Cumulative proportion by day	Daily count	Total count	Cumulative proportion by day
27 Aug	1,073	70,563	0.899	1,656	113,577	0.916	1,534	111,007	0.891
28 Aug	1,037	71,600	0.912	1,375	114,952	0.927	1,665	112,672	0.905
29 Aug	1,088	72,688	0.926	1,265	116,217	0.938	1,914	114,586	0.920
30 Aug	962	73,650	0.938	1,188	117,405	0.947	1,569	116,155	0.933
31 Aug	990	74,640	0.951	1,619	119,024	0.960	1,292	117,447	0.943
1 Sep	931	75,571	0.963	1,323	120,347	0.971	1,265	118,712	0.953
2 Sep	895	76,466	0.974	1,014	121,361	0.979	1,251	119,963	0.963
3 Sep	643	77,109	0.982	760	122,121	0.985	1,048	121,011	0.972
4 Sep	515	77,624	0.989	482	122,603	0.989	1,101	122,112	0.981
5 Sep	545	78,169	0.996	597	123,200	0.994	1,017	123,129	0.989
6 Sep	330	78,499	1.000	600	123,800	0.999	687	123,816	0.994
7 Sep	317	78,816	1.000	150	123,950	1.000	720	124,536	1.000
8 Sep	16	78,832	1.000	–	–	–	25	124,561	1.000

Source: Data provided by L. Hynes, Fish and Wildlife Technician III, ADF&G, Soldotna, unpublished data, 2020–2022 under operational plan by Gates (2021).

Note: An en dash indicates no counts were conducted.

^a Boxed numbers indicate midpoint of run.

Table 17.—SWHS estimates of Kenai River sport harvest of sockeye salmon by river section, 1999–2022.

Year	Cook Inlet to Soldotna Bridge		Soldotna Bridge to Moose River		Moose River to Skilak Lake		Skilak Lake to Kenai Lake		Kenai River not specified ^a		Total harvest	Total effort all species (angler-days)
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
1999	77,865	38.8	61,344	30.6	27,569	13.7	33,796	16.8	ND	ND	200,574	307,446
2000	98,048	42.4	74,132	32.1	30,825	13.3	27,978	12.1	ND	ND	230,983	358,569
2001	86,880	43.3	73,841	36.8	19,616	9.8	20,425	10.2	ND	ND	200,762	298,817
2002	78,964	35.0	79,608	35.2	23,488	10.4	40,115	17.8	3,742	1.7	225,917	312,815
2003	102,689	35.9	116,383	40.7	30,914	10.8	25,771	9.0	10,332	3.6	286,089	321,044
2004	105,521	35.8	111,048	37.7	42,489	14.4	29,185	9.9	6,550	2.2	294,793	376,313
2005	98,114	33.3	115,270	39.2	32,655	11.1	34,779	11.8	13,469	4.6	294,287	389,379
2006	52,364	30.2	71,854	41.4	22,177	12.8	19,941	11.5	7,089	4.1	173,425	330,085
2007	102,521	33.2	116,719	37.8	47,448	15.4	35,248	11.4	6,914	2.2	308,850	410,381
2008	77,882	33.9	82,061	35.7	33,461	14.5	28,803	12.5	7,823	3.4	230,030	360,344
2009	77,568	30.7	88,668	35.1	36,831	14.6	42,247	16.7	7,005	2.8	252,319	337,217
2010	100,878	33.1	125,606	41.2	45,969	15.1	23,359	7.7	8,823	2.9	304,635	347,938
2011	155,964	39.4	158,797	40.1	52,040	13.1	23,322	5.9	5,717	1.4	395,840	365,863
2012	173,143	38.0	202,429	44.4	55,414	12.2	20,856	4.6	3,612	0.8	455,454	374,732
2013	133,323	30.5	199,849	45.7	63,212	14.5	36,065	8.3	4,539	1.0	436,988	411,592
2014	132,004	36.6	154,057	42.7	45,861	12.7	27,082	7.5	1,827	0.5	360,831	455,578
2015	140,554	37.3	157,267	41.8	53,438	14.2	24,205	6.4	958	0.3	376,422	422,792
2016	134,385	40.8	135,689	41.2	39,810	12.1	17,256	5.2	2,562	0.8	329,702	380,638
2017	113,700	39.0	123,184	42.3	30,820	10.6	23,684	8.1	17	0.0	291,405	376,612
2018	69,542	40.3	61,809	35.8	21,062	12.2	20,060	11.6	199	0.1	172,672	324,532
2019	175,371	37.0	196,460	41.4	62,240	13.1	38,618	8.1	1,840	0.4	474,529	397,414
2020	105,975	41.4	96,232	37.6	34,921	13.6	17,452	6.8	1,302	0.5	255,882	305,376
2021	234,627	42.0	226,002	40.5	70,434	12.6	25,930	4.6	1,656	0.3	558,649	418,142
2022	170,470	38.4	186,635	42.0	59,383	13.4	26,465	6.0	1,005	0.2	443,958	393,873
1999–2021												
Min	52,364	30	61,344	31	19,616	10	17,256	5	17	0	172,672	298,817
Average	114,256	37	122,970	39	40,117	13	27,660	10	4,799	2	309,176	364,505
Max	234,627	43	226,002	46	70,434	15	42,247	18	13,469	5	558,649	455,578

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

Note: ND means no data collected. NA means data not available.

^a SWHS began consistently reporting in 2002.

Table 18.—Kenai River drainage sockeye salmon escapement and inriver harvest, 2002–2022.

Year	PU dip net and edu ^a . harvest	Sport harvest below sonar ^b	Kenai River sonar count ^c	Total inriver run	Kenai R. below Soldotna bridge	Kenai R. sonar to Soldotna bridge	Harvest above sonar						Total harvest above sonar	Spawning escap.
							Kenai R. above Soldotna bridge	Kenai River not specified ^{dc}	Skilak Lake / Kenai River tribs ^e	Russian River late run	Hidden Lake Cr. PU and sport	Inriver Fed. subst ^f		
2002	182,229	46,693	1,339,681	1,568,603	78,964	32,271	143,211	3,742	1,535	31,999	308	ND	213,066	1,126,615
2003	227,207	60,722	1,656,026	1,943,955	102,689	41,967	173,068	10,168	144	28,085	302	ND	253,734	1,402,292
2004	266,937	62,397	1,945,383	2,274,717	105,521	43,124	182,722	5,795	276	22,417	502	ND	254,836	1,690,547
2005	300,105	58,017	1,908,823	2,266,945	98,114	40,097	182,704	13,469	45	18,503	0	ND	254,818	1,654,005
2006	130,486	30,964	2,064,726	2,226,176	52,364	21,400	113,972	7,089	98	29,694	385	ND	172,638	1,892,088
2007	293,941	60,623	1,229,944	1,584,508	102,521	41,898	199,415	6,876	94	16,863	240	332	265,718	964,226
2008	236,355	46,053	917,138	1,199,546	77,882	31,829	144,325	7,823	199	23,680	0	670	208,526	708,612
2009	343,302	45,868	1,090,057	1,479,227	77,568	31,700	167,746	7,005	102	33,935	1,019	492	241,999	848,058
2010	393,317	59,651	1,294,884	1,747,852	100,878	41,227	194,934	8,823	275	9,333	1,744	288	256,624	1,038,260
2011	543,043	92,225	1,599,217	2,234,485	155,964	63,739	234,159	5,717	13	14,412	97	405	318,542	1,280,675
2012	530,128	102,376	1,581,555	2,214,059	173,132	70,756	278,675	3,611	20	15,074	37	547	368,720	1,212,835
2013	350,302	78,837	1,359,893	1,789,032	133,323	54,486	299,126	4,539	735	20,146	86	567	379,685	980,208
2014	384,018	78,057	1,520,340	1,982,415	132,004	53,947	227,000	1,827	740	17,864	0	620	301,998	1,218,342
2015	384,095	83,112	1,709,051	2,176,258	140,554	57,442	234,910	958	1,171	13,744	0	779	309,004	1,400,047
2016	264,901	79,465	1,383,692	1,728,058	134,385	54,920	192,755	2,562	609	11,543	0	1,315	263,704	1,119,988
2017	304,632	67,233	1,308,498	1,680,363	113,700	46,467	177,688	17	129	10,592	79	2,462	237,434	1,071,064
2018	169,553	41,122	1,035,761	1,246,436	69,542	28,420	102,931	199	222	15,344	0	1,884	149,000	886,761
2019	338,952	103,700	1,849,054	2,291,706	175,371	71,671	297,318	1,238	660	17,717	538	2,881	392,023	1,457,031
2020	263,133	62,665	1,814,252	2,140,050	105,975	43,310	148,605	1,302	882	11,363	0	3,163	208,625	1,605,627
2021	335,396	138,740	2,441,825	2,915,961	234,627	95,887	322,366	1,656	338	15,288	0	NA	435,535	2,006,290
2022	288,455	100,802	1,570,395	1,959,652	170,470	69,668	272,483	1,408	839	19,994	0	NA	364,392	1,206,003
Average														
2002–2021	312,100	69,930	1,552,490	1,934,520	118,250	48,330	200,880	4,720	410	18,880	270	1,170	274,310	1,278,180
2012–2021	332,510	83,530	1,600,390	2,016,430	141,260	57,730	228,140	1,790	550	14,870	70	1,580	304,570	1,295,820

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Table 18.–Page 2 of 2.

Source: Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>. Other data sources are Reimer and Sigurdsson (2004), Dunker and Lafferty (2007), and Dunker (2010, 2013, 2018); St. Saviour (2020); St. Saviour (2023); A. St. Saviour, Sport Fish biologist, ADF&G, Palmer, personal communication; Pappas and Marsh (2004); Shields and Dupuis (2015, 2016, 2017); Marston and Frothingham (2022), A. Frothingham, Commercial Fish Biologist, ADF&G, Soldotna, personal communication; educational harvest data from Kenaitze Indian Tribe; 2007–2020 subsistence data from USFWS.

Note: PU means personal use. ND means no data collected. NA means data not available.

- ^a Educational harvest consists of Kenaitze total late-run sockeye salmon harvest.
- ^b In 1994 and 1995, a creel survey was conducted to estimate harvest below the sonar. In 1994, 49.7% of the below Soldotna Bridge harvest was taken below the sonar. In 1995, 68.6% was taken below the sonar. The average of these 2 percentages is applied to all other year's below-bridge harvest to estimate the harvest below the sonar.
- ^c Bendix sonar counts were converted to DIDSON estimates (equivalents) for 1998–2010. Estimates after these dates are actual DIDSON generated estimates.
- ^d SWHS began reporting this data consistently in 2002.
- ^e Tributaries include Cooper Creek, Funny River, Kelly Lake, Moose River, Ptarmigan Creek, Quartz Creek, Soldotna Creek, Swan Lake (Kenai River), Swan Canoe Route lakes.
- ^f Federal subsistence started in 2007 and occurs in the Russian River, the Upper Kenai River, and the Lower Kenai River with both dip nets and rod-and-reel. This includes harvest from late-run sockeye salmon only.

Table 19.—Estimated sport harvest of Kenai River coho salmon by river section, 1999–2022.

Year	Cook Inlet to Soldotna Bridge			Soldotna Bridge to Moose River			Moose River to Skilak Lake			Skilak Lake to Kenai Lake			Kenai River not specified ^a			All sections ^b		
	Prior 1 Sep	After 1 Sep	Total	Prior 1 Sep	After 1 Sep	Total	Prior 1 Sep	After 1 Sep	Total	Prior 1 Sep	After 1 Sep	Total	Prior 1 Sep	After 1 Sep	Total	Prior 1 Sep	After 1 Sep	Total
1999	14,413	6,029	20,442	4,732	654	5,386	1,268	1,812	3,080	1,951	778	2,729	ND	ND	ND	22,364	9,273	31,637
2000	22,392	8,444	30,836	8,185	1,880	10,065	3,894	1,159	5,053	1,652	913	2,565	ND	ND	ND	36,123	12,396	48,519
2001	23,501	8,977	32,478	7,381	1,947	9,328	3,565	1,986	5,551	1,672	753	2,425	ND	ND	ND	36,119	13,663	49,782
2002	27,062	9,641	36,703	8,220	2,630	10,850	2,663	2,406	5,069	3,965	886	4,851	1,552	625	2,177	43,462	16,188	59,650
2003	20,093	5,963	26,056	8,961	2,029	10,990	3,160	1,517	4,677	2,690	490	3,180	1,367	352	1,754	36,271	10,351	46,657
2004	29,606	12,010	41,616	9,145	4,055	13,200	3,492	2,234	5,726	2,733	868	3,601	1,135	637	1,809	46,111	19,804	65,952
2005	17,331	7,810	25,141	10,793	3,563	14,356	1,697	2,739	4,436	2,310	2,103	4,413	1,671	339	2,065	33,802	16,554	50,411
2006	13,817	7,132	20,949	4,800	2,331	7,131	1,890	2,939	4,829	2,638	890	3,528	797	405	1,202	23,942	13,697	37,639
2007	12,891	7,443	20,334	6,322	1,133	7,455	3,230	2,361	5,591	2,390	1,400	3,790	621	226	847	25,454	12,563	38,017
2008	20,602	10,562	31,164	6,122	3,161	9,283	2,262	3,012	5,274	3,110	1,426	4,536	796	571	1,367	32,892	18,732	51,624
2009	19,022	9,044	28,066	5,509	2,907	8,416	4,016	3,879	7,895	2,391	1,966	4,357	1,146	80	1,226	32,084	17,876	49,960
2010	20,001	8,134	28,135	7,140	3,889	11,029	5,671	3,213	8,884	2,115	618	2,733	2,005	126	2,131	36,932	15,980	52,912
2011	16,784	10,562	27,346	6,509	2,430	8,939	2,185	3,346	5,531	1,038	1,175	2,213	61	42	103	26,577	17,555	44,132
2012	14,842	8,123	22,965	4,819	2,668	7,487	2,202	1,862	4,064	768	494	1,262	375	254	629	23,006	13,401	36,407
2013	17,414	6,417	23,831	12,090	2,860	14,950	3,669	3,232	6,901	1,649	1,329	2,978	212	82	294	35,034	13,920	48,954
2014	18,930	11,829	30,759	9,224	3,654	12,878	3,940	5,644	9,584	4,928	2,288	7,216	89	40	129	37,111	23,455	60,566
2015	20,317	13,685	34,002	7,673	4,467	12,140	2,881	5,210	8,091	2,356	404	2,760	45	29	74	33,272	23,795	57,067
2016	15,759	9,019	24,778	6,593	2,867	9,460	2,597	1,275	3,872	883	730	1,613	131	77	208	25,963	13,968	39,931
2017	17,810	11,815	29,625	6,859	3,662	10,521	2,926	3,225	6,151	826	1,159	1,985	83	62	145	28,504	19,923	48,427
2018	20,168	9,531	29,699	7,735	3,297	11,032	3,585	3,540	7,125	1,499	1,108	2,607	29	17	112	33,016	17,493	50,575
2019	13,517	7,038	20,555	9,262	2,258	11,520	1,975	3,940	5,915	2,028	866	2,894	93	60	287	26,875	14,162	41,171
2020	10,223	5,861	16,084	4,251	2,251	6,502	1,668	1,639	3,307	1,186	300	1,486	28	17	67	17,356	10,068	27,446
2021	21,930	10,844	32,774	11,496	3,472	14,986	3,320	2,751	6,071	1,950	3,190	5,140	0	0	0	38,696	20,257	58,971
2022	22,161	12,725	34,886	9,571	3,418	12,989	2,905	2,800	5,705	2,899	676	3,575	31	16	47	37,567	19,635	57,202
Average																		
1998–2018	18,627	8,953	27,580	7,557	2,785	10,344	2,946	2,823	5,769	2,119	1,136	3,255	612	202	831	31,781	15,873	47,670
2009–2018	17,091	9,416	26,507	8,000	3,146	11,148	2,876	3,232	6,108	1,807	1,187	2,994	109	64	195	29,883	17,044	46,952

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

Note: ND means no data collected.

^a SWHS began reporting consistently in 2002. Total includes harvest with no early or late run breakdown.

^b Total does not sum to early- or late-run.

Table 20.–Northern Kenai Peninsula Management Area (except Kenai River drainage) coho salmon sport harvest, 1999–2022.

Year	Kasilof River drainage				Swanson River drainage			Other NKPMA drainages				
	Tustumena Lake ^a	Kasilof River	Crooked Creek	Total	Swanson River	Swanson Canoe Route Lakes	Total	Sixmile Creek	Resurrection Creek	Chickaloon River	Other ^b	Total
1999	48	3,269	0	3,317	2,054	0	2,054	92	233	0	0	325
2000	229	2,965	0	3,194	2,506	0	2,506	429	52	136	0	617
2001	90	3,173	110	3,373	1,959	117	2,076	459	125	19	86	689
2002	93	6,046	35	6,174	2,467	0	2,467	1,025	114	22	163	1,324
2003	46	4,082	0	4,128	3,087	80	3,167	262	125	23	0	410
2004	338	4,217	270	4,825	1,466	45	1,511	582	138	0	0	720
2005	117	3,124	117	3,358	2,367	0	2,367	146	39	120	72	377
2006	85	3,782	54	3,921	2,028	32	2,060	545	121	0	0	666
2007	15	1,740	0	1,755	1,660	10	1,670	252	289	0	0	541
2008	252	3,613	0	3,865	2,814	0	2,814	354	195	0	0	549
2009	61	2,725	63	2,849	1,790	0	1,790	664	103	0	0	767
2010	45	2,327	0	2,372	1,074	19	1,093	691	422	60	0	1,173
2011	0	2,359	0	2,359	1,348	0	1,348	150	0	0	0	150
2012	0	3,610	0	3,610	264	19	283	294	36	0	0	330
2013	77	4,037	32	4,146	815	0	815	547	63	0	0	610
2014	0	3,693	0	3,693	702	80	782	50	233	0	0	283
2015	229	3,735	0	3,964	766	203	969	789	200	499	0	1,488
2016	0	1,907	0	1,907	1,158	0	1,158	66	237	43	0	346
2017	53	2,975	29	3,057	1,688	0	1,688	148	161	0	0	309
2018	118	5,330	0	5,448	1,203	0	1,203	920	208	0	0	1,128
2019	0	3,679	0	3,679	2,166	704	2,870	555	338	38	0	931
2020	22	3,481	0	3,503	893	70	963	560	179	11	66	816
2021	0	4,515	27	4,542	1,436	54	1,490	297	611	0	0	908
2022	22	6,854	0	6,876	561	0	561	94	197	186	96	573
Average												
1999–2021	83	3,495	32	3,610	1,640	62	1,702	429	184	42	17	672
2012–2021	50	3,696	9	3,755	1,109	113	1,222	423	227	59	7	715

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

^a Tustumena Lake data includes harvests from creeks draining into Tustumena Lake (Nikolai Creek: 1998, 2000; Glacier Creek 2004).

^b Harvest data from Ingram Creek (2001, 2002), Sunrise Creek (2005, 2020).

Table 21.—Estimated Kenai River rainbow trout catch (C), harvest (H), and retention rate (%R) by river section, 1999–2022.

Year	Cook Inlet to Soldotna Bridge			Soldotna Bridge to Moose River			Moose River to Skilak Outlet			Skilak Inlet to Kenai Lake			Kenai River not specified ^a			Kenai River total		
	C	H	%R	C	H	%R	C	H	%R	C	H	%R	C	H	%R	C	H	%R
1999	11,415	1,516	13.3	8,325	695	8.3	32,050	1,573	4.9	50,189	0	0.0	ND	ND	ND	101,979	3,784	3.7
2000	16,477	1,292	7.8	9,428	1,083	11.5	18,990	1,084	5.7	78,836	0	0.0	ND	ND	ND	123,731	3,459	2.8
2001	11,216	987	8.8	7,473	868	11.6	22,392	567	2.5	51,130	0	0.0	ND	ND	ND	92,211	2,422	2.6
2002	12,641	995	7.9	8,157	944	11.6	19,355	864	4.5	71,753	0	0.0	2,269	216	9.5	114,175	3,019	2.6
2003	12,844	1,026	8.0	10,913	700	6.4	41,204	372	0.9	54,552	0	0.0	3,536	180	5.1	123,049	2,278	1.9
2004	15,080	1,452	9.6	13,310	978	7.3	34,026	831	2.4	91,443	0	0.0	5,651	50	0.9	159,510	3,311	2.1
2005	14,119	953	6.7	11,585	647	5.6	34,675	607	1.8	57,936	267	0.5	7,949	43	0.5	126,264	2,517	2.0
2006	13,168	588	4.5	13,683	1,109	8.1	33,222	472	1.4	67,741	289	0.4	4,005	41	1.0	131,819	2,499	1.9
2007	11,829	542	4.6	18,832	769	4.1	52,701	684	1.3	90,757	661	0.7	4,851	10	0.2	178,970	2,666	1.5
2008	26,385	696	2.6	20,943	794	3.8	47,956	772	1.6	103,095	941	0.9	4,496	11	0.2	202,875	3,214	1.6
2009	11,502	625	5.4	16,165	543	3.4	67,940	828	1.2	102,745	399	0.4	3,280	59	1.8	201,632	2,454	1.2
2010	9,397	553	5.9	16,944	786	4.6	63,655	696	1.1	79,663	237	0.3	3,642	131	3.6	173,301	2,403	1.4
2011	19,849	571	2.9	27,305	464	1.7	80,908	318	0.4	71,088	374	0.5	615	0	0.0	199,765	1,727	0.9
2012	16,119	843	5.2	23,866	878	3.7	47,253	396	0.8	81,349	386	0.5	856	37	4.3	169,443	2,540	1.5
2013	11,140	464	4.2	13,174	461	3.5	52,992	400	0.8	90,301	446	0.5	435	0	0.0	168,042	1,771	1.1
2014	12,123	616	5.1	14,216	502	3.5	43,059	273	0.6	69,629	135	0.2	166	93	56.0	139,193	1,619	1.2
2015	29,097	797	2.7	22,093	534	2.4	67,020	648	1.0	123,441	286	0.2	0	0	0.0	241,651	2,265	0.9
2016	23,241	834	3.6	25,492	860	3.4	43,042	599	1.4	78,149	169	0.2	1,011	0	0.0	170,935	2,462	1.4
2017	18,206	1,526	8.4	17,967	918	5.1	53,884	303	0.6	103,437	830	0.8	0	0	0.0	193,494	3,577	1.8
2018	10,132	323	3.2	15,302	259	1.7	27,538	219	0.8	48,373	351	0.7	79	0	0.0	101,424	1,152	1.1
2019	12,731	392	3.1	17,550	684	3.9	33,459	196	0.6	52,166	257	0.5	176	0	0.0	116,082	1,529	1.3
2020	9,230	311	3.4	11,380	229	2.0	38,189	99	0.3	64,951	174	0.3	175	48	27.4	123,925	861	0.7
2021	21,010	456	2.2	22,729	260	1.1	37,059	55	0.1	62,509	727	1.2	199	0	0.0	143,506	1,498	1.0
2022	14,332	501	3.5	14,147	614	4.3	22,095	264	1.2	68,189	180	0.3	527	0	0.0	119,290	1,559	1.3
Average																		
2012–2021	16,303	656	4.1	18,377	559	3.0	44,350	319	0.7	77,431	376	0.5	310	18	8.8	156,770	1,927	1.2
2017–2021	14,262	602	4.0	16,986	470	2.8	38,026	174	0.5	66,287	468	0.7	126	10	5.5	135,686	1,723	1.2

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

Note: ND means no data collected.

^a SWHS began consistently reporting in 2002.

Table 22.—Historical abundance estimates of rainbow trout in the upper Kenai River index area, 1986–2009.

Year ^a	Number of rainbow trout in the upper Kenai River index area				Number of rainbow trout in the middle Kenai River index area	
	≥200 mm	SE	≥300 mm	SE	≥200 mm	SE
1986	3,640	456	2,520	363	ND	ND
1987	4,950	376	3,472	482	1,750	453
1995	ND	ND	5,598	735	ND	ND
1999	ND	ND	ND	ND	7,883	1,276
2001	8,553	806	6,365	625	ND	ND
2009	5,916	481	5,106	431	ND	ND

Source: Lafferty (1989); Larson and Hansen (2000); Hayes and Hasbrouck (1996); King and Breakfield (2007); Eskelin and Evans (2013); A. Eskelin, Sport Fish Biologist, ADF&G, Soldotna, personal communication.

^a Abundance estimates for 2001 were reevaluated using techniques implemented in 2009.

Table 23.—Estimated Kenai River Dolly Varden, catch (C), harvest (H), and retention rate (%R) by river section, 1999–2022.

Year	Cook Inlet to Soldotna Bridge			Soldotna Bridge to Moose River			Moose River to Skilak Outlet			Skilak Inlet to Kenai Lake			Kenai River not specified ^a			Kenai River total		
	C	H	%R	C	H	%R	C	H	%R	C	H	%R	C	H	%R	C	H	%R
1999	14,752	3,867	26.2	6,316	1,086	17.2	20,053	1,932	9.6	31,826	683	2.1	ND	ND	ND	72,947	7,568	10.4
2000	18,261	3,916	21.4	9,122	1,759	19.3	21,291	1,403	6.6	56,375	349	0.6	ND	ND	ND	105,049	7,427	7.1
2001	16,304	3,763	23.1	8,367	1,613	19.3	28,312	789	2.8	54,802	363	0.7	ND	ND	ND	107,785	6,528	6.1
2002	16,414	2,191	13.3	7,751	1,431	18.5	13,384	1,105	8.3	38,481	766	2.0	1,324	288	21.8	77,354	5,781	7.5
2003	15,520	2,996	19.3	9,765	1,318	13.5	25,972	1,066	4.1	50,969	487	1.0	1,459	246	16.9	103,685	6,113	5.9
2004	14,386	1,759	12.2	13,591	2,129	15.7	23,833	1,220	5.1	89,318	452	0.5	5,072	285	5.6	146,200	5,845	4.0
2005	13,501	1,548	11.5	9,629	934	9.7	27,398	1,243	4.5	62,798	565	0.9	5,615	26	0.5	118,941	4,316	3.6
2006	11,405	971	8.5	8,135	1,061	13.0	24,499	515	2.1	52,048	414	0.8	2,211	257	11.6	98,298	3,218	3.3
2007	8,048	1,201	14.9	10,261	764	7.4	52,701	687	1.3	90,757	584	0.6	4,851	40	0.8	166,618	3,276	2.0
2008	19,177	1,154	6.0	17,063	961	5.6	30,579	604	2.0	78,489	1,003	1.3	2,293	44	1.9	147,601	3,766	2.6
2009	8,278	1,003	12.1	7,825	842	10.8	34,973	384	1.1	91,815	412	0.4	1,053	77	7.3	143,944	2,718	1.9
2010	7,732	956	12.4	9,298	825	8.9	30,930	777	2.5	63,254	402	0.6	851	36	4.2	112,065	2,996	2.7
2011	11,377	928	8.2	13,356	539	4.0	34,250	172	0.5	50,768	150	0.3	507	0	0.0	110,258	1,789	1.6
2012	11,398	843	7.4	15,330	614	4.0	28,715	372	1.3	66,323	304	0.5	748	11	1.5	122,514	2,144	1.8
2013	11,229	1,134	10.1	12,687	1,557	12.3	33,199	413	1.2	70,350	492	0.7	228	13	5.7	127,693	3,609	2.8
2014	15,689	1,902	12.1	17,101	1,161	6.8	32,974	488	1.5	66,551	287	0.4	103	89	86.4	132,418	3,927	3.0
2015	22,163	1,530	6.9	12,681	1,247	9.8	30,375	422	1.4	86,330	621	0.7	14	14	100.0	151,563	3,834	2.5
2016	22,088	797	3.6	13,418	767	5.7	33,998	342	1.0	69,309	398	0.6	187	23	12.3	139,000	2,327	1.7
2017	9,727	904	9.3	10,633	790	7.4	24,433	319	1.3	60,211	136	0.2	29	0	0.0	105,033	2,149	2.0
2018	9,218	918	10.0	7,521	588	7.8	17,288	229	1.3	33,281	374	1.1	144	0	0.0	67,452	2,109	3.1
2019	8,946	757	8.5	8,604	532	6.2	12,852	123	1.0	26,270	154	0.6	18	0	0.0	56,690	1,566	2.8
2020	4,979	398	8.0	7,183	252	3.5	20,446	40	0.2	43,030	197	0.5	74	23	31.1	75,712	910	1.2
2021	12,668	447	3.5	9,632	356	3.7	15,239	135	0.9	39,390	408	1.0	115	0	0.0	77,044	1,346	1.7
2022	9,580	370	3.9	10,187	430	4.2	10,772	253	2.3	35,525	312	0.9	46	0	0.0	66,110	1,365	2.1
Average																		
2012–2021	12,811	963	7.9	11,479	786	6.7	24,952	288	1.1	56,105	337	0.6	166	17	23.7	105,512	2,392	2.3
2017–2021	9,108	685	7.8	8,715	504	5.7	18,052	169	0.9	40,436	254	0.7	76	5	6.2	76,386	1,616	2.2

Source: Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2023).

Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Note: ND means no data collected.

^a SWHS began consistently reporting in 2002.

Table 24.—Rainbow trout catch and harvest, and effort for all species for the Russian River, Swanson River drainage, and Quartz Creek, 1999–2022.

Year	Swanson River drainage										
	Russian River			Swanson River drainage						Quartz Creek	
	Effort ^a	Catch	Harvest	Effort ^{a,b}	Canoe route		Swanson River		Effort ^a	Catch	Harvest
1999	64,536	37,764	83	6,885	6,853	1,759	1,840	267	4,708	2,132	0
2000	69,864	34,948	44	5,250	7,952	1,701	4,630	1,142	2,423	1,212	0
2001	55,972	16,007	215	4,161	5,299	2,262	2,899	528	3,105	1,814	0
2002	68,263	29,484	16	3,692	2,714	992	4,347	679	4,245	2,617	0
2003	50,448	21,204	182	2,298	1,691	476	5,146	362	4,357	3,359	0
2004	60,784	42,875	49	3,640	1,523	482	1,504	373	6,589	7,939	0
2005	55,801	20,026	232	4,886	1,695	609	1,674	144	6,106	2,897	0
2006	70,804	28,059	256	4,669	2,610	348	1,435	425	5,582	5,698	0
2007	57,755	25,718	261	6,712	7,195	1,559	2,753	904	8,694	6,193	0
2008	55,444	20,333	219	7,227	4,918	691	2,540	360	7,105	5,900	0
2009	64,518	21,047	214	4,621	4,942	1,005	1,635	167	6,217	8,770	0
2010	39,873	14,710	97	3,203	2,165	477	972	189	4,859	2,859	0
2011	47,264	17,817	108	4,296	158	283	1,684	650	2,184	1,457	0
2012	41,152	21,275	216	1,097	439	0	528	168	1,238	644	0
2013	59,682	27,869	275	2,576	485	41	592	116	3,262	1,540	31
2014	57,544	32,711	514	2,897	675	277	437	84	3,507	2,605	46
2015	55,420	31,208	277	2,201	1,054	255	702	102	3,137	8,431	41
2016	39,957	24,258	101	1,995	437	156	868	43	2,989	4,243	12
2017	49,455	24,675	516	2,746	256	41	326	0	1,669	1,322	20
2018	47,186	13,015	161	3,463	1,468	464	2,515	28	2,459	1,205	0
2019	53,637	11,402	146	5,284	346	159	669	31	2,336	2,215	0
2020	44,391	25,797	443	2,285	195	46	682	16	1,842	6,062	0
2021	45,119	15,052	455	2,241	267	186	1,067	139	2,221	1,572	79
2022	44,689	10,482	223	2,016	1,404	0	3,180	159	2,482	1,425	0
Average											
2012–2018	49,354	22,726	310	2,679	562	163	839	73	2,466	2,984	23
2017–2021	47,958	17,988	344	3,204	506	179	1,052	43	2,105	2,475	20

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

^a Effort (angler-days) directed toward all species.

^b Total effort for both Swanson River and Swanson River Canoe Route (and Canoe Route lakes).

Table 25.—Rainbow trout catch and harvest, and effort for all species for Ptarmigan Creek, Skilak Lake, and Kenai Lake, 1999–2022.

Year	Ptarmigan Creek			Skilak Lake			Kenai Lake		
	Effort ^a	Catch	Harvest	Effort ^a	Catch	Harvest	Effort ^a	Catch	Harvest
1999	883	3,382	0	1,182	1,904	119	1,462	1,753	93
2000	732	1,026	0	2,072	2,578	181	1,033	327	117
2001	430	625	0	1,701	568	65	2,509	762	153
2002	888	3,268	0	1,668	939	63	2,502	1,312	58
2003	899	424	0	2,068	1,009	0	1,097	386	0
2004	687	3,027	0	2,460	911	436	497	140	93
2005	599	1,253	0	594	851	32	2,072	252	55
2006	1,061	3,612	0	1,152	1,045	0	619	52	52
2007	896	1,291	0	1,462	484	0	648	494	49
2008	389	1,087	0	1,692	962	18	728	313	88
2009	441	1,750	0	1,126	998	0	687	28	18
2010	317	1,366	0	1,085	372	15	955	263	63
2011	389	744	0	918	345	0	869	116	0
2012	227	518	11	538	11	0	1,179	147	0
2013	263	1,485	0	2,060	1,500	345	2,964	761	231
2014	756	1,805	0	1,616	524	36	3,030	1,002	86
2015	1,150	4,385	0	1,188	464	87	2,048	1,313	89
2016	445	806	0	503	36	0	1,247	665	37
2017	387	724	0	713	1,025	18	2,134	340	143
2018	563	392	0	488	366	28	674	80	24
2019	699	1,229	42	448	161	0	1,365	634	0
2020	1,086	5,160	22	304	9	0	1,196	8	0
2021	181	578	50	318	189	0	648	78	28
2022	131	819	53	502	421	91	563	356	132
Average									
2012–2021	576	1,708	13	818	429	51	1,649	503	64
2017–2021	583	1,617	23	454	350	9	1,203	228	39

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

^a Effort (angler-days) directed toward all species.

^b Total effort for both Swanson River and Swanson River Canoe Route (and Canoe Route lakes).

Table 26.–Dolly Varden catch and harvest, and effort for all species for Russian River, Swanson River drainage, and Quartz Creek, 1999–2022.

Year	Swanson River drainage											
	Russian River											
	Effort ^a	Catch	Harvest	Canoe Route			Swanson River		Quartz Creek			
	Effort ^{a,b}	Catch	Harvest	Effort ^{a,b}	Catch	Harvest	Catch	Harvest	Effort ^a	Catch	Harvest	
1999	64,536	11,791	196	6,885	1,534	348	23	0	4,708	8,051	223	
2000	69,864	11,596	168	5,250	2,275	963	334	59	2,423	6,318	80	
2001	55,972	11,087	253	4,161	1,313	457	613	145	3,105	10,280	65	
2002	68,263	8,566	175	3,692	643	221	313	79	4,245	11,510	114	
2003	50,448	10,504	263	2,298	221	37	0	0	4,357	19,627	123	
2004	60,784	25,713	324	3,640	25	13	388	99	6,589	31,267	342	
2005	55,801	9,218	232	4,886	125	99	134	38	6,106	23,953	216	
2006	70,804	11,390	261	4,669	245	99	51	13	5,582	31,731	219	
2007	57,755	7,857	196	6,712	208	89	1,868	317	8,694	44,588	442	
2008	55,444	9,481	354	7,227	250	98	167	70	7,105	34,401	152	
2009	64,518	10,741	146	4,621	447	252	0	0	6,217	40,456	135	
2010	39,873	7,645	45	3,203	747	48	56	12	4,859	14,416	182	
2011	47,264	7,375	165	4,296	52	64	20	10	2,184	5,399	345	
2012	41,152	7,659	47	1,097	269	10	0	0	1,238	6,157	37	
2013	59,682	14,505	198	2,576	515	0	35	0	3,262	5,977	177	
2014	57,544	13,647	332	2,897	101	20	0	0	3,507	18,540	90	
2015	55,420	11,897	189	2,201	35	16	39	0	3,137	21,539	143	
2016	39,957	12,259	281	1,995	33	33	0	0	2,989	18,816	114	
2017	49,455	12,306	213	2,746	54	0	0	0	1,669	5,574	15	
2018	47,186	8,264	147	3,463	149	11	0	0	2,459	7,030	166	
2019	53,637	5,686	121	5,284	30	30	17	17	2,336	3,527	20	
2020	44,391	6,606	57	2,285	57	35	249	21	1,842	11,032	15	
2021	45,119	6,457	179	2,287	0	0	21	0	2,221	8,209	91	
2022	44,689	4,426	56	2,016	220	26	0	0	2,482	5,807	0	
Average												
2012–2021	49,354	9,929	176	2,683	124	16	36	4	2,466	10,640	87	
2017–2021	47,958	7,864	143	3,213	58	15	57	8	2,105	7,074	61	

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

^a Effort (angler-days) directed toward all species.

^b Total effort for both Swanson River and Swanson River Canoe Route (and Canoe Route lakes).

Table 27.—Dolly Varden catch and harvest, and effort for all species for Ptarmigan Creek, Skilak Lake, and Kenai Lake, 1999–2022.

Year	Ptarmigan Creek			Skilak Lake			Kenai Lake		
	Effort ^a	Catch	Harvest	Effort ^a	Catch ^e	Harvest	Effort ^a	Catch	Harvest
1999	883	3,191	77	1,182	782	110	1,462	611	88
2000	732	821	44	2,072	1,487	175	1,033	333	95
2001	430	3,096	11	1,701	243	48	2,509	456	176
2002	888	1,242	0	1,668	1,414	134	2,502	935	309
2003	899	1,028	50	2,068	825	64	1,097	107	54
2004	687	3,609	68	2,460	653	152	497	40	13
2005	599	3,018	0	594	464	0	2,072	262	165
2006	1,061	4,291	0	1,152	321	39	619	143	24
2007	896	2,126	143	1,462	607	22	648	376	77
2008	389	954	29	1,692	405	0	728	0	0
2009	441	1,185	0	1,126	754	0	687	11	11
2010	317	2,058	0	1,085	552	0	955	161	29
2011	389	704	21	918	26	16	869	145	25
2012	227	1,106	10	538	10	10	1,179	108	0
2013	263	1,302	17	2,060	751	35	2,964	63	16
2014	756	4,970	0	1,616	40	0	3,030	446	106
2015	1,150	4,083	0	1,188	216	20	2,048	312	0
2016	445	100	0	503	92	0	1,247	541	69
2017	387	379	0	713	1,885	27	2,134	206	92
2018	563	732	0	488	212	0	674	93	40
2019	699	2,227	17	448	60	0	1,365	568	84
2020	1,086	2,541	23	304	0	0	1,196	6	0
2021	181	999	0	318	0	0	648	25	25
2022	131	530	0	502	302	0	563	26	0
Average									
2012–2021	576	1,844	7	818	327	9	1,649	237	43
2017–2021	583	1,376	8	454	431	5	1,203	180	48

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

^a Effort (angler-days) directed toward all species.

Table 28.—Kenai Peninsula stocked lakes total effort, catch, catch per unit effort (CPUE), harvest, and harvest per unit effort (HPUE) of stocked species 1999–2022.

Year	Number of fish stocked	Effort ^a	Catch ^b	CPUE	Harvest ^b	HPUE
1999	357,724	5,151	11,076	2.15	4,723	0.92
2000	255,373	7,880	28,050	3.56	7,851	1.00
2001	314,220	6,543	16,423	2.51	4,985	0.76
2002	210,420	7,641	19,809	2.59	10,977	1.44
2003	236,893	4,802	10,578	2.20	3,927	0.82
2004	266,668	4,978	16,375	3.29	4,612	0.93
2005	202,077	8,205	10,276	1.25	4,850	0.59
2006	187,388	6,488	12,571	1.94	3,440	0.53
2007	296,816	3,079	5,687	1.85	3,158	1.03
2008	277,219	2,802	6,137	2.19	2,135	0.76
2009	378,652	3,707	8,030	2.17	1,564	0.42
2010	300,399	5,510	8,072	1.46	3,135	0.57
2011	251,151	7,192	9,113	1.27	3,627	0.50
2012	295,738	5,867	16,029	2.73	4,099	0.70
2013	279,279	10,161	9,857	0.97	4,479	0.44
2014	279,321	8,485	11,960	1.41	5,439	0.64
2015	278,152	10,362	18,003	1.74	5,105	0.49
2016	232,173	11,557	23,902	2.07	9,141	0.79
2017	247,884	12,548	15,542	1.24	6,030	0.48
2018	253,169	6,616	9,833	1.49	1,681	0.25
2019 ^c	237,151	7,036	10,368	1.47	1,909	0.27
2020	269,082	6,077	10,712	1.76	2,661	0.44
2021	231,618	5,989	10,366	1.73	2,140	0.36
2022	290,406	7,242	21,863	3.02	4,556	0.63
Average						
2012–2021	260,357	8,470	13,657	1.66	4,268	0.49
2017–2021	247,781	7,653	11,364	1.54	2,884	0.36

Source: Alaska Sport Fishing Stocking and Survey databases [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2023). Available from:

<https://www.adfg.alaska.gov/index.cfm?adfg=SportStockingHatcheriesSearch.main>

<http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Effort (angler-days) directed toward all species.

^b Estimates may include catch and harvest of native (nonstocked) fish.

^c In 2019, Troop Lake was removed from the list of Kenai Peninsula stocked lakes and instead grouped with Resurrection Bay stocked lakes.

Table 29.—Kenai Peninsula lake trout catch (C) and harvest (H) as determined by Statewide Harvest Survey, 1999–2022.

Year	Hidden Lake		Kenai Lake		Kenai River		Skilak Lake		Tustumena Lake		Kasilof River		Other lakes ^a		Other rivers ^a		Total	
	C	H	C	H	C	H	C	H	C	H	C	H	C	H	C	H	C	H
1999	1,452	545	1,950	623	2,155	293	1,408	621	89	81	690	284	473	446	36	27	8,253	2,920
2000	437	318	221	202	988	115	1,561	543	184	175	182	155	631	350	27	0	4,231	1,858
2001	734	160	1,490	980	658	156	249	72	118	44	332	81	384	270	0	0	3,965	1,763
2002	653	200	3,220	886	1,228	173	824	147	248	20	466	293	424	180	0	0	7,063	1,899
2003	443	285	405	226	1,423	243	713	230	87	45	15	0	90	68	224	0	3,400	1,097
2004	1,188	482	199	199	400	80	696	529	287	151	275	211	130	115	16	32	3,191	1,799
2005	728	216	890	631	0	0	145	54	468	130	160	128	156	70	0	0	2,547	1,229
2006	580	386	306	190	224	41	94	23	110	10	239	161	42	20	31	31	1,626	862
2007	1,084	420	540	226	352	0	42	14	230	9	0	0	35	0	0	0	2,283	669
2008	891	210	0	0	392	153	153	122	36	21	8	0	75	61	23	23	1,578	590
2009	2,351	616	1,011	185	541	22	47	0	129	58	11	0	78	34	0	0	4,168	915
2010	1,396	235	1,099	117	447	129	51	51	274	206	0	0	41	0	0	0	3,308	738
2011	1,124	61	12	12	17	0	33	16	320	104	0	0	348	211	0	0	1,854	404
2012	369	123	171	114	15	7	27	27	0	0	95	79	64	16	0	0	741	366
2013	612	197	820	639	43	0	856	343	172	172	0	0	0	0	85	64	2,588	1,415
2014	330	61	1,458	466	203	62	160	37	0	0	0	0	283	49	0	0	2,434	675
2015	741	82	1,304	375	218	0	59	20	0	0	40	0	178	178	0	0	2,540	655
2016	0	0	531	231	457	439	0	0	172	172	0	0	310	237	0	0	1,470	1,079
2017	293	52	721	594	102	20	0	0	0	0	0	0	343	13	0	0	1,459	679
2018	74	19	95	0	8	0	57	19	0	0	0	0	76	0	17	17	327	55
2019	152	0	1,862	390	0	0	0	0	0	0	0	0	37	37	0	0	2,051	427
2020	132	0	314	0	0	0	0	0	0	0	0	0	121	111	0	0	567	111
2021	57	0	50	40	10	0	0	0	0	0	0	0	70	60	0	0	187	100
2022	0	0	62	21	0	0	0	0	0	0	0	0	105	21	0	0	167	42
Average																		
2012–2021	276	53	733	285	106	53	116	45	34	34	14	8	148	70	10	8	1,436	556
2017–2021	142	14	608	205	24	4	11	4	0	0	0	0	129	44	3	3	918	274

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

^a Includes other NKPMA not listed here individually; does not include "Unspecified" category in the SWHS.

Table 30.—Arctic Grayling catch (C) and harvest (H), and effort (E) for all species for Crescent Lake, Paradise Lakes, Fuller Lakes, Grayling Lake, Twin Lakes, and Bench Lake, 1999–2022.

Year	Crescent Lake			Paradise Lakes ^a			Fuller Lakes ^a			Grayling Lake			Twin Lakes			Bench Lake		
	E ^b	C	H	E ^b	C	H	E ^b	C	H	E ^b	C	H	E ^b	C	H	E ^b	C	H
1999	1,266	3,187	550	1,006	6,944	322	104	338	22	68	135	0	91	339	90	15	11	0
2000	1,504	6,782	462	493	5,793	660	336	1,174	200	91	188	38	27	100	0	0	0	0
2001	1,099	6,493	245	528	1,863	261	197	730	223	90	184	126	0	0	0	44	16	7
2002	1,457	6,656	427	808	2,993	636	242	1,324	0	28	120	0	0	0	0	91	977	15
2003	1,412	6,785	1,008	134	1,126	14	208	1,437	47	80	117	12	50	140	0	0	0	0
2004	1,104	5,510	101	218	2,260	488	182	1,029	32	33	79	0	0	0	0	33	57	57
2005	1,028	5,231	438	404	2,893	236	289	1,091	64	37	0	0	35	321	0	0	0	0
2006	790	3,161	166	104	3,421	0	296	329	0	52	386	55	49	207	0	0	0	0
2007	1,389	6,202	365	124	303	70	74	234	46	37	117	35	0	0	0	0	0	0
2008	959	2,542	306	163	234	101	294	5,348	0	197	1,979	228	0	0	0	35	0	0
2009	1,609	7,456	814	0	0	0	261	1,550	54	14	50	0	21	67	33	0	0	0
2010	758	1,916	170	17	1,114	0	334	741	60	17	35	0	84	683	55	34	92	23
2011	996	3,150	606	133	347	13	234	697	99	30	53	0	0	0	0	36	196	0
2012	896	2,857	446	143	1,292	189	71	112	0	69	50	0	0	0	0	0	0	0
2013	1,213	6,786	653	105	265	43	165	571	0	261	374	231	0	0	0	114	1,079	34
2014	1,186	2,554	263	133	1,248	101	38	206	0	33	33	0	0	0	0	57	186	0
2015	1,041	2,196	251	0	0	0	166	196	196	43	283	0	0	0	0	44	808	0
2016	1,499	3,437	476	0	0	0	22	0	0	84	0	0	0	0	0	65	184	0
2017	999	2,178	68	294	2,811	41	0	0	0	0	0	0	0	0	0	0	0	0
2018	899	448	181	27	98	0	0	0	0	0	0	0	0	0	0	27	30	0
2019	594	380	122	202	39	0	0	0	0	169	680	0	0	0	0	130	685	104
2020	656	610	12	0	0	0	84	4	0	17	77	12	0	0	0	48	202	0
2021	1,194	1,437	30	318	183	92	0	0	0	0	0	0	28	220	0	56	317	0
2022	935	744	0	60	118	0	39	390	0	39	26	26	0	0	0	67	104	0
Average																		
2012–2021	1,018	2,288	250	122	594	47	55	109	20	68	150	24	3	22	0	54	349	14
2017–2021	868	1,011	83	168	626	27	17	1	0	37	151	2	6	44	0	52	247	21

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

^a Includes data for Upper, Lower, and “Unspecified.”

^b Effort (angler-days) directed toward all species.

Table 31.—Kenai River catch, and retention rate (%R) of late-run Chinook salmon by angler type as determined by the Statewide Harvest Survey 2003–2022.

Year	Guided			Nonguided			Total guided ^a	
	Catch	Harvest	% R	Catch	Harvest	% R	% Catch	% Harvest
2003	14,604	7,252	49.7	25,344	7,313	28.9	36.6	49.8
2004	12,298	7,296	59.3	20,687	7,033	34.0	37.3	50.9
2005	13,567	7,319	53.9	28,731	9,432	32.8	32.1	43.7
2006	11,888	6,419	54.0	23,845	8,287	34.8	33.3	43.6
2007	12,008	6,305	52.5	20,126	7,983	39.7	37.4	44.1
2008	8,622	5,354	62.1	19,263	7,093	36.8	30.9	43.0
2009	7,945	3,769	47.4	16,166	5,073	31.4	33.0	42.6
2010	6,148	4,001	65.1	10,163	4,059	39.9	37.7	49.6
2011	7,757	4,272	55.1	9,899	3,581	36.2	43.9	54.4
2012	2,397	296	12.3	1,807	127	7.0	57.0	70.0
2013	2,981	744	25.0	4,625	661	14.3	39.2	53.0
2014	1,935	581	30.0	2,272	720	31.7	46.0	44.7
2015	5,057	2,154	42.6	7,323	1,855	25.3	40.8	53.7
2016	5,985	3,667	61.3	10,649	3,602	33.8	36.0	50.4
2017	6,113	4,179	68.4	9,835	4,160	42.3	38.3	50.1
2018	2,592	510	19.7	4,697	426	9.1	35.6	54.5
2019	2,044	1,303	63.7	3,518	718	20.4	36.7	64.5
2020	1,385	380	27.4	1,726	223	12.9	44.5	63.0
2021	1,814	1,118	61.6	2,809	242	8.6	39.2	82.2
2022	1,614	0	0.0	577	0	0.0	73.7	0.0
Average								
2012–2021	3,230	1,493	41.2	4,926	1,273	20.5	41.3	58.6
2017–2021	2,790	1,498	48.2	4,517	1,154	18.7	38.9	62.9

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

^a Percentage of guided catch and harvest in relation to total (guided + nonguided) catch and harvest.

Table 32.—Kenai River catch, harvest, and retention rate (%R) of sockeye salmon by angler type as determined by the Statewide Harvest Survey 2003–2022.

Year	Guided			Nonguided			Total guided ^a	
	Catch	Harvest	% R	Catch	Harvest	% R	% Catch	% Harvest
2003	35,553	20,518	57.7	424,620	265,407	62.5	7.7	7.2
2004	33,194	19,871	59.9	411,312	274,167	66.7	7.5	6.8
2005	40,684	22,643	55.7	421,086	269,539	64.0	8.8	7.7
2006	37,846	15,753	41.6	259,325	157,024	60.6	12.7	9.1
2007	36,420	21,309	58.5	427,388	287,503	67.3	7.9	6.9
2008	24,508	13,572	55.4	320,983	216,458	67.4	7.1	5.9
2009	29,867	19,130	64.1	339,695	233,189	68.6	8.1	7.6
2010	29,818	18,735	62.8	407,691	285,900	70.1	6.8	6.1
2011	48,476	28,045	57.9	531,007	367,795	69.3	8.4	7.1
2012	83,836	55,281	65.9	572,024	400,173	70.0	12.8	12.1
2013	59,893	40,896	68.3	564,116	396,092	70.2	9.6	9.4
2014	63,458	45,231	71.3	410,579	315,600	76.9	13.4	12.5
2015	74,298	52,560	70.7	439,154	323,862	73.7	14.5	14.0
2016	48,278	34,882	72.3	383,173	294,820	76.9	11.2	10.6
2017	36,625	28,232	77.1	362,457	263,173	72.6	9.2	9.7
2018	25,704	18,035	70.2	197,871	154,637	78.2	11.5	10.4
2019	75,471	56,414	74.7	549,189	417,025	75.9	12.1	11.9
2020	37,075	27,102	73.1	300,284	228,690	76.2	11.0	10.6
2021	103,255	78,865	76.4	669,855	478,128	71.4	13.4	14.2
2022	69,732	54,084	77.6	523,942	389,272	74.3	11.7	12.2
Average								
2012–2021	60,789	43,750	72.0	444,870	327,220	74.2	11.9	11.5
2017–2021	55,626	41,730	74.3	415,931	308,331	74.8	11.4	11.4

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

^a Percentage of guided catch and harvest in relation to total (guided + nonguided) catch and harvest.

Table 33.—Number of Kenai River fishing guides and vessels registered with Alaska State Parks, 1999–2022.

Year	Guide business type		Vessels registered		
	Fishing	Nonfishing	Motorized	Drift	Total ^a
1999	329	39	288	80	368
2000	341	39	300	80	380
2001	335	39	296	78	374
2002	348	35	304	79	383
2003	339	36	301	74	375
2004	352	32	303	81	384
2005	365	42	324	83	407
2006	396	41	369	68	437
2007	396	29	372	53	425
2008	380	32	361	51	412
2009	338	46	322	62	384
2010	316	46	300	62	362
2011	319	60	297	82	379
2012	301	52	279	74	353
2013	284	66	259	91	350
2014	267	69	239	97	336
2015	258	74	226	106	332
2016	267	73	241	99	340
2017	296	51	252	95	347
2018	296	40	254	42	296
2019	288	49	246	42	288
2020	224	19	273	108	381
2021	256	13	221	35	256
2022	289	8	444	47	491
Average					
1999–2021	317	44	288	75	363

Source: Guide and vessel data, Alaska Department of Natural Resources.

^a This column includes nonfishing guide business vessels.

Table 34.–Freshwater Charter Logbook data of fishing effort from 2006–2016 for the Kenai River from May to July.

Year	May				June				July			
	Number of trips	Number of anglers			Number of trips	Number of anglers			Number of trips	Number of anglers		
		Resident	Nonresident	Total		Resident	Nonresident	Total		Resident	Nonresident	Total
2006	165	132	419	551	2,777	1,337	8,090	9,427	6,415	2,624	21,045	23,669
2007	192	123	435	558	2,719	1,220	7,643	8,863	6,361	2,914	19,769	22,683
2008	160	70	382	452	2,526	1,256	7,010	8,266	6,088	2,725	18,613	21,338
2009	149	154	264	418	1,892	1,172	4,784	5,956	4,736	2,570	13,591	16,161
2010	129	125	278	403	1,510	675	4,114	4,789	4,560	2,388	13,205	15,593
2011	130	94	271	365	1,664	843	4,443	5,286	4,415	1,984	13,261	15,245
2012	128	84	299	383	1,238	576	3,250	3,826	3,414	1,030	10,216	11,246
2013	21	11	48	59	939	370	2,389	2,759	3,625	1,039	11,063	12,102
2014	14	2	32	34	813	332	2,145	2,477	3,591	951	11,036	11,987
2015	3	4	4	8	895	234	2,429	2,663	3,615	1,040	11,024	12,064
2016	24	19	43	62	1,046	303	2,851	3,154	4,116	1,247	12,718	13,965
Average	101	74	225	299	1,638	756	4,468	5,224	4,631	1,865	14,140	16,005

Source: Sigurdsson and Powers (2009–2014); Powers and Sigurdsson (2016); R. Powers, Charter Logbook Program Coordinator, ADF&G, Anchorage, personal communication.

Note: Freshwater Charter Logbook program ended after 2016.

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Table 35.–Freshwater Charter Logbook data of fishing effort from 2006–2016 for the Kenai River from August to October.

Year	August				September				October			
	Number of trips	Number of anglers			Number of trips	Number of anglers			Number of trips	Number of anglers		
		Resident	Nonresident	Total		Resident	Nonresident	Total		Resident	Nonresident	Total
2006	2,549	589	7,872	8,461	1,031	462	2,598	3,060	64	96	70	166
2007	2,752	968	7,920	8,888	1,009	544	2,532	3,076	92	114	149	263
2008	3,042	1,026	8,975	10,001	1,125	654	2,801	3,455	83	130	115	245
2009	2,354	973	6,367	7,340	1,179	900	2,576	3,476	64	102	66	168
2010	2,916	1,118	8,458	9,576	1,146	883	2,434	3,317	94	114	142	256
2011	3,046	1,277	8,741	10,018	1,238	929	2,822	3,751	82	110	122	232
2012	3,124	1,105	9,032	10,137	1,094	671	2,520	3,191	92	139	132	271
2013	3,243	1,327	9,437	10,764	1,261	910	2,897	3,807	38	42	58	100
2014	3,319	1,282	9,658	10,940	1,201	872	2,714	3,586	77	144	90	234
2015	3,400	1,421	9,942	11,363	1,237	801	2,908	3,709	84	145	106	251
2016	3,393	1,258	9,696	10,954	1,186	758	2,706	3,464	128	202	172	374
Average	3,013	1,122	8,736	9,858	1,155	762	2,683	3,445	82	122	111	233

Source: Sigurdsson and Powers (2009–2014); Powers and Sigurdsson (2016); R. Powers, Charter Logbook Program Coordinator, ADF&G, Anchorage, personal communication.

Note: Freshwater Charter Logbook program ended after 2016.

Table 36.–Freshwater Charter Logbook catch (C) and harvest (H) data for the Northern Kenai Peninsula Management Area from 2006 to 2016.

River	Year	Chinook salmon		Sockeye salmon		Coho salmon		Rainbow trout		Dolly Varden		Arctic grayling		Lake trout		Other ^a	
		C	H	C	H	C	H	C	H	C	H	C	H	C	H	C	H
Kenai	2006	15,117	8,757	12,884	6,719	9,122	7,839	46,610	622	34,031	356	1,140	18	0	0	16,548	2,687
	2007	12,634	7,410	11,818	7,442	9,545	8,573	60,774	643	44,346	293	52	5	35	2	65	11
	2008	9,770	7,183	8,620	5,372	12,069	11,249	50,799	238	42,303	178	39	0	51	6	8,474	1,577
	2009	6,451	4,039	11,722	8,001	10,722	9,878	47,533	165	44,291	149	72	0	0	0	149	13
	2010	4,951	3,557	11,886	7,921	10,620	9,839	46,541	136	36,234	187	41	0	59	1	5,042	1,021
	2011	5,567	3,642	18,021	12,331	11,342	10,777	48,004	144	38,325	215	88	0	22	1	152	0
	2012	1,242	309	37,884	28,976	7,696	7,312	42,596	139	35,882	131	25	3	73	0	13,033	1,664
	2013	1,408	766	19,867	15,498	13,874	13,153	42,716	198	34,966	200	154	0	12	0	145	17
	2014	765	299	25,606	21,524	11,865	11,041	40,172	123	36,951	239	176	1	21	0	15,881	3,563
	2015	2,401	1,760	32,140	26,777	13,216	12,570	48,859	418	39,231	394	76	0	57	5	146	22
	2016	4,604	3,153	20,079	16,845	8,306	7,918	49,532	146	42,639	145	39	1	32	3	6,452	2,106
Average	5,901	3,716	19,139	14,310	10,762	10,014	47,649	270	39,018	226	173	3	33	2	6,008	1,153	
Kasilof	2006	3,569	1,982	291	252	1,785	1,709	226	3	1,221	135	30	3	0	0	276	54
	2007	4,203	2,635	338	304	963	932	633	6	1,489	146	0	0	1	0	23	4
	2008	3,325	2,272	197	168	1,443	1,413	153	1	1,036	94	0	0	7	0	211	41
	2009	3,132	2,350	173	165	939	896	39	3	682	62	5	1	4	0	175	2
	2010	3,138	1,977	147	139	878	833	94	36	861	69	0	0	1	0	374	34
	2011	3,670	2,701	308	282	1,024	1,003	168	5	490	32	0	0	0	0	118	10
	2012	1,321	700	1,190	1,084	909	891	82	6	457	28	0	0	4	0	994	65
	2013	2,143	1,128	2,314	2,205	1,123	1,101	272	0	695	86	2	0	0	0	142	16
	2014	607	272	3,934	3,750	724	722	39	0	223	11	0	0	0	0	305	71
	2015	848	528	5,817	5,615	968	948	79	17	345	11	0	0	2	0	52	20
	2016	2,170	1,682	1,065	1,016	515	504	38	1	191	20	0	0	5	2	293	69
Average	2,557	1,657	1,434	1,362	1,025	996	166	7	699	63	3	0	2	0	269	35	

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Table 36.–Page 2 of 2.

River	Year	Chinook salmon		Sockeye salmon		Coho salmon		Rainbow trout		Dolly Varden		Arctic grayling		Lake trout		Other ^a	
		C	H	C	H	C	H	C	H	C	H	C	H	C	H		
Other NKPMA ^b																	
	2006	24	4	390	134	134	64	2,552	83	1,460	4	527	19	0	0	858	91
	2007	5	4	346	222	109	42	1,868	22	1,275	43	198	5	7	4	829	53
	2008	2	0	628	384	78	25	1,443	17	963	17	795	126	9	1	400	19
	2009	1	0	293	110	120	49	943	17	1,192	1	911	34	1	0	31	27
	2010	0	0	248	133	23	19	937	2	1,145	1	126	9	3	3	60	3
	2011	0	0	314	68	47	38	716	8	1,104	0	367	2	0	0	209	14
	2012	0	0	475	215	150	30	899	8	867	5	352	0	48	0	169	23
	2013	1	0	676	249	133	37	1,459	18	1,654	1	565	25	0	0	202	0
	2014	0	0	687	313	142	80	1,983	49	1,077	1	460	0	0	0	628	17
	2015	0	0	380	258	126	56	2,026	148	1,313	1	161	1	0	0	270	7
	2016	2	0	153	105	60	49	1,163	106	1,076	2	228	0	12	8	119	10
	Average	3	1	417	199	102	44	1,454	43	1,193	7	426	20	7	1	343	24

Source: Sigurdsson and Powers (2009–2014) and Powers and Sigurdsson (2016); R. Powers, Charter Logbook Program Coordinator, ADF&G, Anchorage, personal communication.

Note: Freshwater Charter Logbook program ended after 2016.

^a Other species include primarily pink salmon.

^b Other NKPMA fresh waters include primarily the Russian River drainage, the Swanson River drainage, and tributaries of the Kenai River.

Table 37.—Kenai River corridor shoreline land ownership summary of shoreline lands with closed or restricted sport fishing access.

Land owner	Upper section of the Kenai River ^a				Lower section of the Kenai River ^{b,c}				All Kenai River corridor		
	Miles	Percent of total miles owned	Miles closed by ADF&G	Percent of total miles closed	Miles	Percent of total miles owned	Miles closed by ADF&G	Percent of total miles closed	Miles	Miles closed by ADF&G	Percent of total miles closed
State	3.8	8.05%	0.38	10.00%	31.5	24.19%	13.45	42.70%	35.3	13.83	39.18%
Federal	40.6	86.02%	0.20	0.49%	17.9	13.75%	3.99	22.29%	58.5	4.19	7.16%
Private	0.2	0.42%	0.00	0.00%	52.6	40.40%	0.00	0.00%	52.8	0.00	0.00%
Other	2.6	5.51%	0.00	0.00%	28.2	21.66%	2.69	9.54%	30.8	2.69	8.73%
All	47.2	100.00%	0.58	1.23%	130	100.00%	20.13	15.46%	177	20.71	11.67%

Source: Kenai Peninsula Borough land ownership map data.

^a Kenai River shoreline from the Kenai Lake outlet downstream to the Skilak Lake inlet.

^b Kenai River shoreline from the Skilak Lake outlet downstream to Cook Inlet.

^c After a determination by Board of Fisheries in 2017, an additional 0.9 miles of state-owned shoreline (RM 13.0–13.2 and 13.3–14.0) is now closed to protect riparian habitat.

Table 38.—Kenai River personal use sockeye salmon dip net fishery summary, 1999–2022.

Year	Date opened	Date closed	Total days	Dip net harvest of sockeye salmon ^a	Sport harvest of sockeye salmon below sonar	Sockeye salmon run to sonar ^b	Percent of inriver run harvested by dip net fishery	Effort (days fished) ^c
1999	10 Jul	31 Jul	22	149,504	46,043	1,137,001	11.2	13,738
2000	10 Jul	31 Jul	22	98,262	57,978	900,700	9.3	12,354
2001	10 Jul	31 Jul	22	150,766	51,374	906,333	13.6	14,722
2002	10 Jul	31 Jul	22	180,028	46,693	1,339,682	11.5	14,840
2003	10 Jul	31 Jul	22	223,580	60,722	1,656,026	11.5	15,263
2004	10 Jul	31 Jul	22	262,831	62,397	1,945,383	11.6	18,513
2005	10 Jul	31 Jul	22	295,496	58,017	1,908,821	13.1	20,977
2006 ^d	10 Jul	10 Aug	13	127,630	30,964	2,064,728	5.7	12,685
2007	10 Jul	31 Jul	22	291,270	60,623	1,229,945	18.4	21,908
2008	10 Jul	31 Jul	22	234,109	46,053	917,139	19.6	20,772
2009	10 Jul	31 Jul	22	339,993	45,868	1,090,055	23.0	26,171
2010	10 Jul	31 Jul	22	389,552	59,651	1,294,884	22.3	28,342
2011	10 Jul	31 Jul	22	537,765	92,225	1,599,217	24.1	32,818
2012	10 Jul	31 Jul	22	526,992	102,376	1,581,555	23.8	34,374
2013	10 Jul	31 Jul	22	347,222	78,837	1,359,893	19.4	33,193
2014	10 Jul	31 Jul	22	379,823	78,057	1,520,340	19.2	36,380
2015	10 Jul	31 Jul	22	377,532	83,113	1,709,051	17.4	31,487
2016	10 Jul	31 Jul	22	259,057	79,465	1,383,692	15.0	30,745
2017	10 Jul	31 Jul	22	297,049	67,234	1,308,498	17.8	27,775
2018 ^d	10 Jul	29 Jul	20	165,028	41,122	1,035,761	13.3	20,170
2019 ^d	10 Jul	31 Jul	22	331,408	103,701	1,849,054	14.5	22,419
2020 ^d	10 Jul	31 Jul	22	257,864	62,665	1,714,565	12.7	23,574
2021 ^d	10 Jul	31 Jul	22	326,491	138,740	2,441,825	11.2	20,782
2022 ^d	10 Jul	31 Jul	22	282,085	100,802	1,570,395	14.4	19,454
Average								
2012–2021				326,847	83,531	1,590,423	16	28,090
2017–2021				275,568	82,692	1,669,941	14	22,944

-continued-

Table 38.–Page 2 of 2.

Source: Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>; Reimer and Sigurdsson (2004); Dunker and Lafferty (2007); Dunker (2010, 2013, 2018); St. Saviour (2020); St. Saviour (2023); A. St. Saviour, Sport Fish Biologist, ADF&G, Palmer, personal communication; Westerman and Willette (2013); Glick and Willette (2015, 2016, 2018); W. Glick, Commercial Fish Biologist, ADF&G, Soldotna, personal communication.

Note: NA means data not available.

- ^a Reported harvest from returned permits, expanded to include permits not returned.
- ^b Bendix sonar counts were converted to DIDSON estimates (equivalents) for 1999–2006. Estimates after these dates are actual DIDSON generated estimates.
- ^c “Effort” is household-days fished. Each household-day fished may include fishing effort by more than one household member named on the household's permit.
- ^d Personal use fishery was restricted.

Table 39.–Kasilof River personal use sockeye salmon dip net fishery summary, 1999–2022.

Year	Date opened	Date closed	Total days	Dip net harvest of sockeye salmon ^a	Sport harvest of sockeye salmon below sonar	Sockeye salmon run to sonar ^b	Percent of inriver run harvested by dip net fishery	Effort (days fished) ^c
1999	10 Jul	5 Aug	27	37,176	4,654	312,481	10.5	3,611
2000	10 Jul	5 Aug	27	23,877	5,599	263,631	8.1	2,622
2001	10 Jul	5 Aug	27	37,612	6,005	318,735	10.4	3,382
2002	25 Jun	7 Aug	44	46,769	4,424	235,731	16.3	4,020
2003	25 Jun	7 Aug	44	43,870	5,971	353,526	10.9	3,874
2004	25 Jun	7 Aug	44	48,315	7,407	523,653	8.3	4,432
2005	25 Jun	7 Aug	44	43,151	5,982	360,065	10.5	4,500
2006	25 Jun	7 Aug	44	56,144	7,723	389,645	12.4	5,763
2007	25 Jun	7 Aug	44	43,293	3,843	365,184	10.5	4,627
2008	25 Jun	7 Aug	44	54,051	7,470	327,018	13.9	5,552
2009	25 Jun	7 Aug	44	73,035	6,763	326,285	18.0	7,650
2010	25 Jun	7 Aug	44	70,774	4,470	295,265	19.1	7,588
2011	25 Jun	7 Aug	44	49,766	8,182	245,721	16.4	6,571
2012	25 Jun	7 Aug	44	73,419	6,740	374,523	16.1	6,536
2013	25 Jun	7 Aug	44	85,508	12,257	489,654	14.6	8,556
2014	25 Jun	7 Aug	44	88,513	19,819	440,192	16.1	10,236
2015	25 Jun	7 Aug	44	89,000	15,553	470,677	15.5	10,346
2016	25 Jun	7 Aug	44	58,273	8,159	239,981	19.0	9,334
2017	25 Jun	7 Aug	44	78,260	8,400	358,724	17.6	9,458
2018	25 Jun	7 Aug	44	92,034	15,978	394,309	18.3	9,377
2019	25 Jun	7 Aug	44	80,730	17,228	378,416	16.9	9,030
2020	25 Jun	7 Aug	44	94,064	23,305	545,654	14.2	10,249
2021	25 Jun	7 Aug	44	96,454	12,296	521,859	15.3	9,286
2022	25 Jun	7 Aug	44	158,734	22,873	968,148	13.8	10,669
Average								
2012–2021				83,626	13,974	421,399	16	9,241
2017–2021				88,308	15,441	439,792	16	9,480

-continued-

Table 39.–Page 2 of 2.

Source: Alaska Sport Fishing Survey database [Internet]. 1996–present. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>; Reimer and Sigurdsson (2004); Dunker and Lafferty (2007); Dunker (2010, 2013, 2018); St. Saviour (2020); St. Saviour (2023); A. St. Saviour, Sport Fish Biologist, ADF&G, Palmer, personal communication; Westerman and Willette (2013); Glick and Willette (2015, 2016, 2018); K. Gatt, Commercial Fish Biologist, ADF&G, Soldotna, personal communication.

Note: NA means data not available.

- ^a Reported harvest from returned permits, expanded to include permits not returned.
- ^b Bendix sonar counts were converted to DIDSON estimates (equivalents) for 1999–2007. Estimates after these dates are actual DIDSON generated estimates.
- ^c “Effort” is household-days fished. Each household-day fished may include fishing effort by more than one household member named on the household's permit.

FIGURES

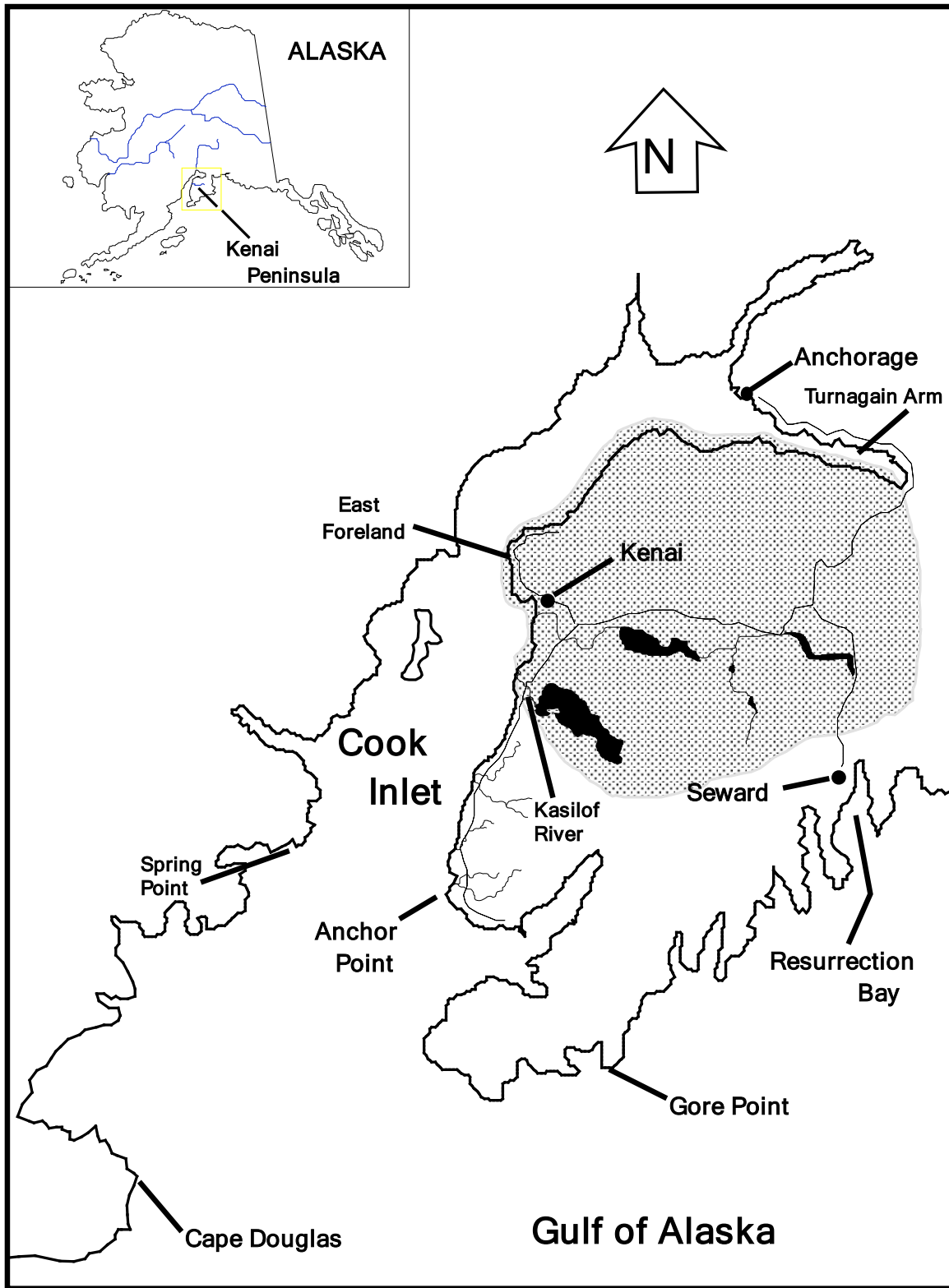


Figure 1.—The Northern Kenai Peninsula Management Area (shaded) includes all freshwater drainages and fisheries from the Kasilof River on the Kenai Peninsula north to Turnagain Arm.

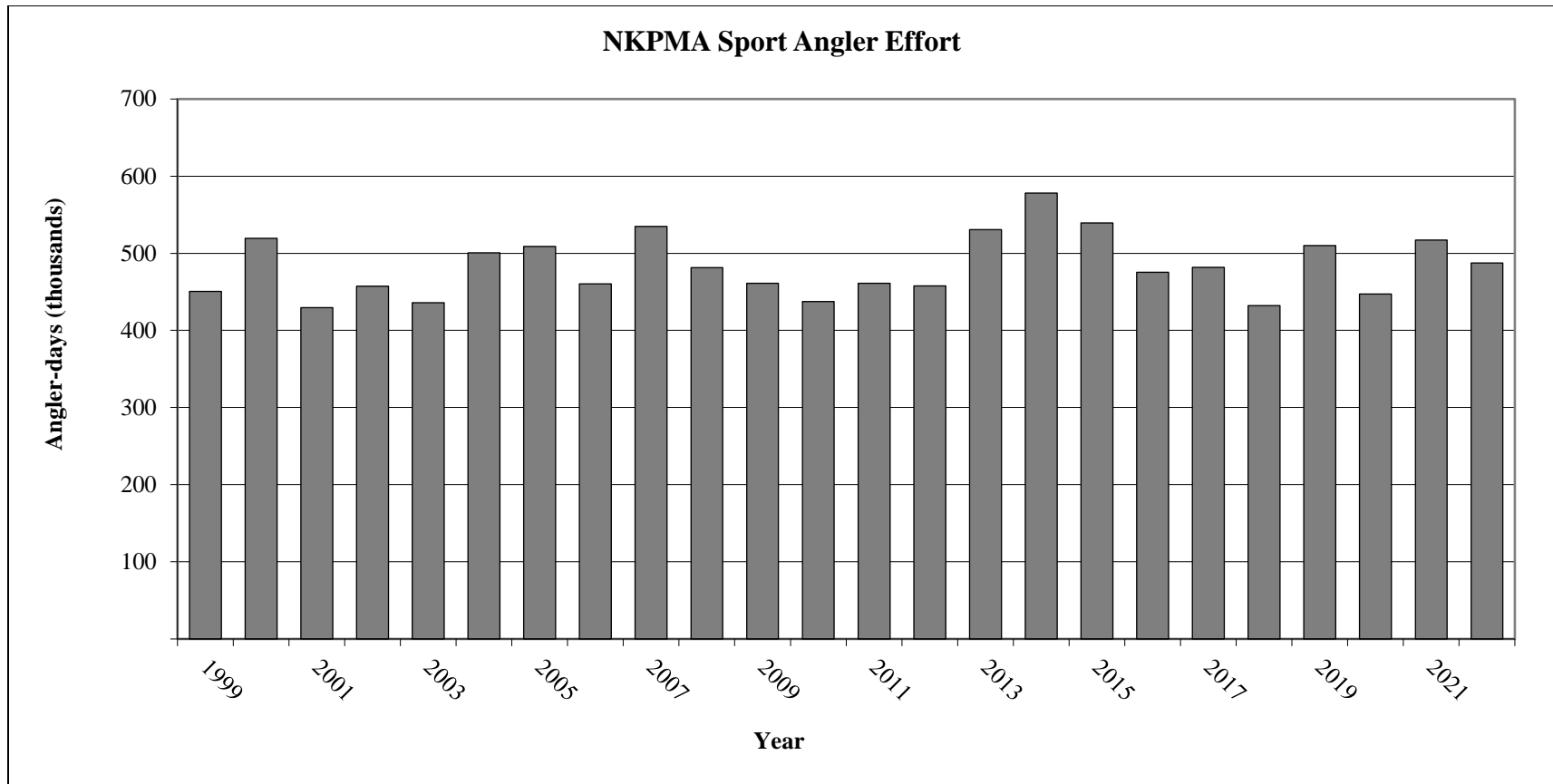


Figure 2.—Sport angler participation in the Northern Kenai Peninsula Management Area, 1999–2022.

Source: Statewide Harvest Survey (SWHS) estimates from the Alaska Sport Fishing Survey database (Intranet) 1977–present. Anchorage, AK. Alaska Department of Fish and Game, Division of Sport Fish (cited October 2023). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

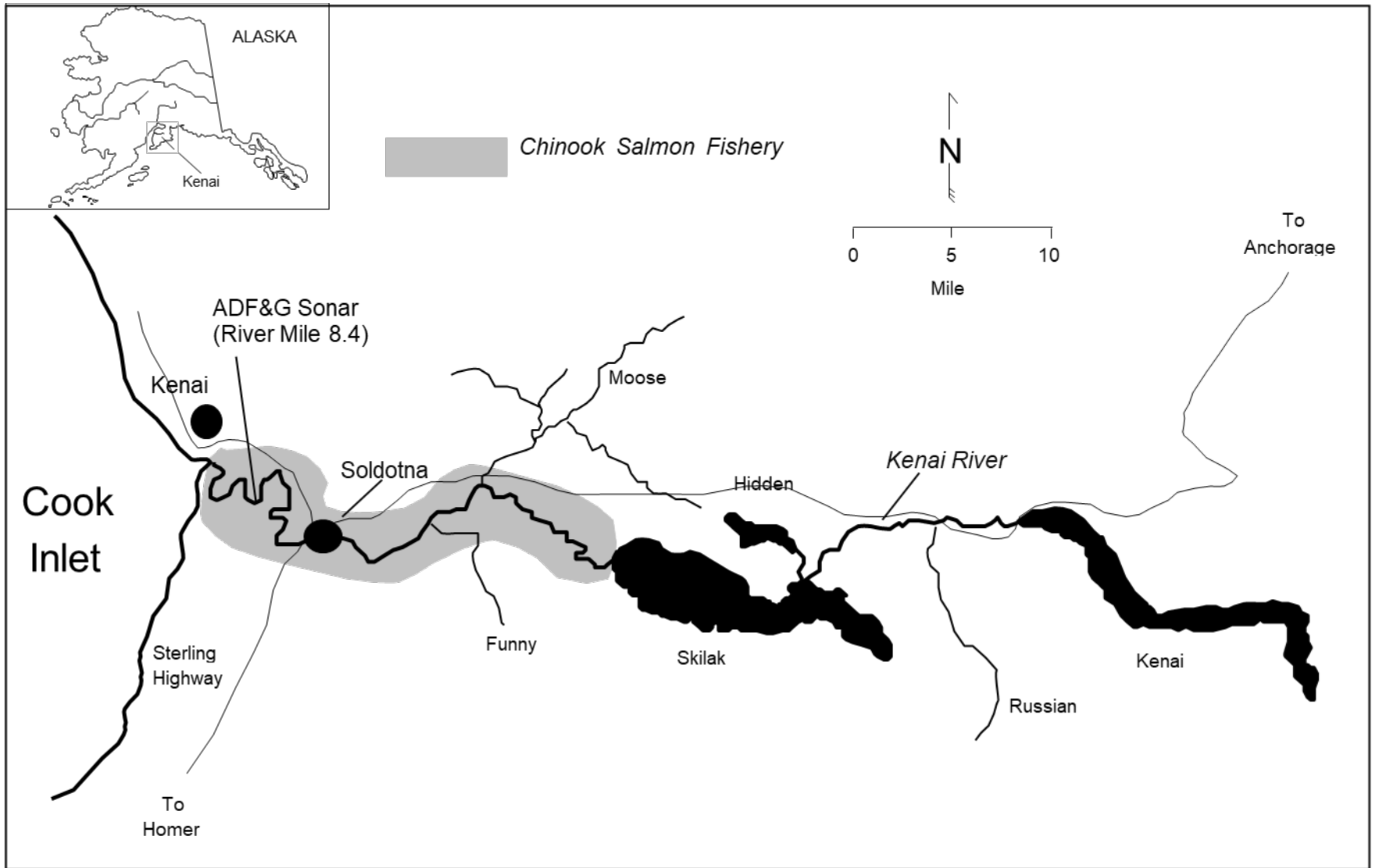


Figure 3.—Kenai River Chinook salmon fishery area (shaded).

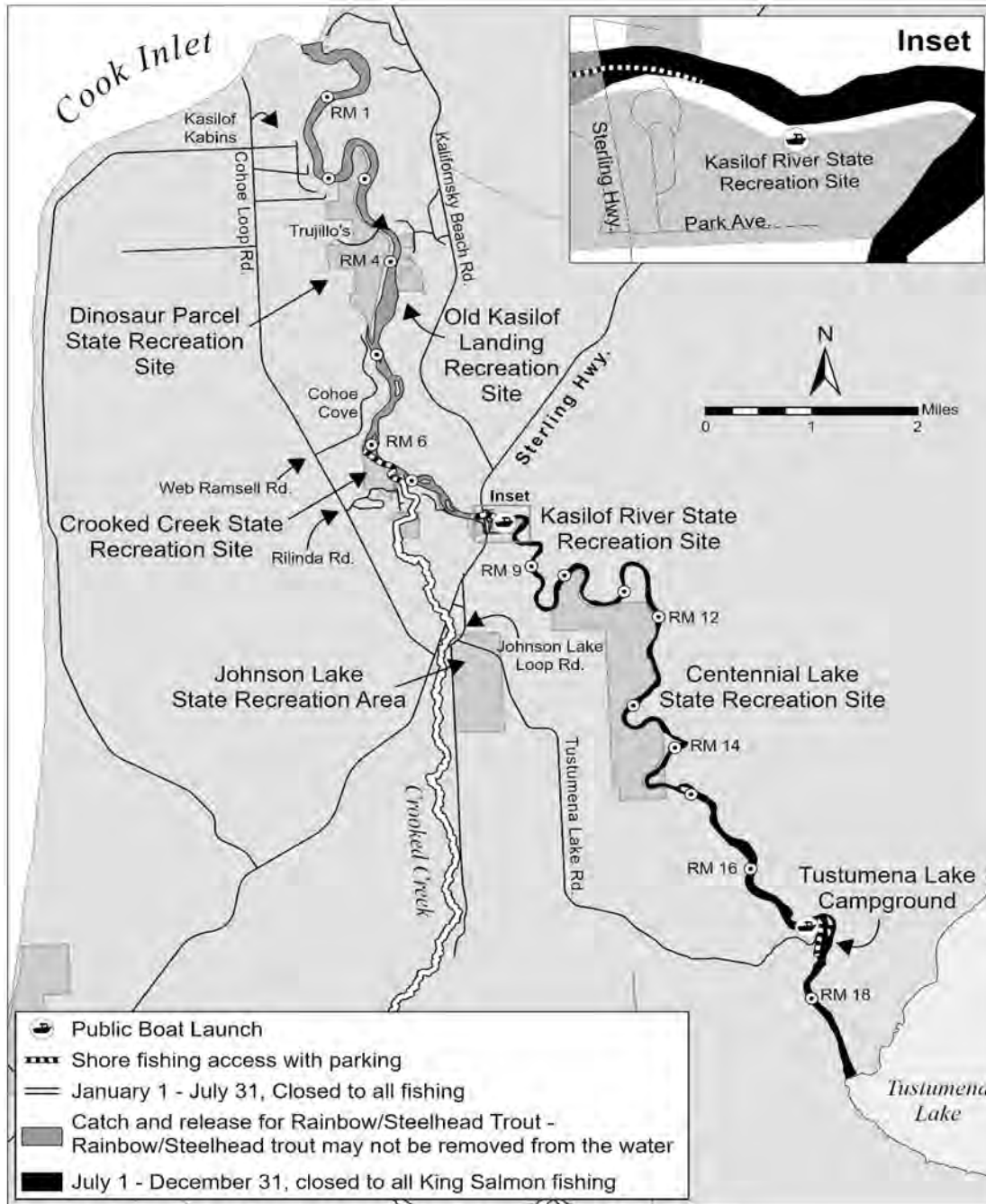


Figure 4.—Map of Kasilof River showing public access and regulatory areas.

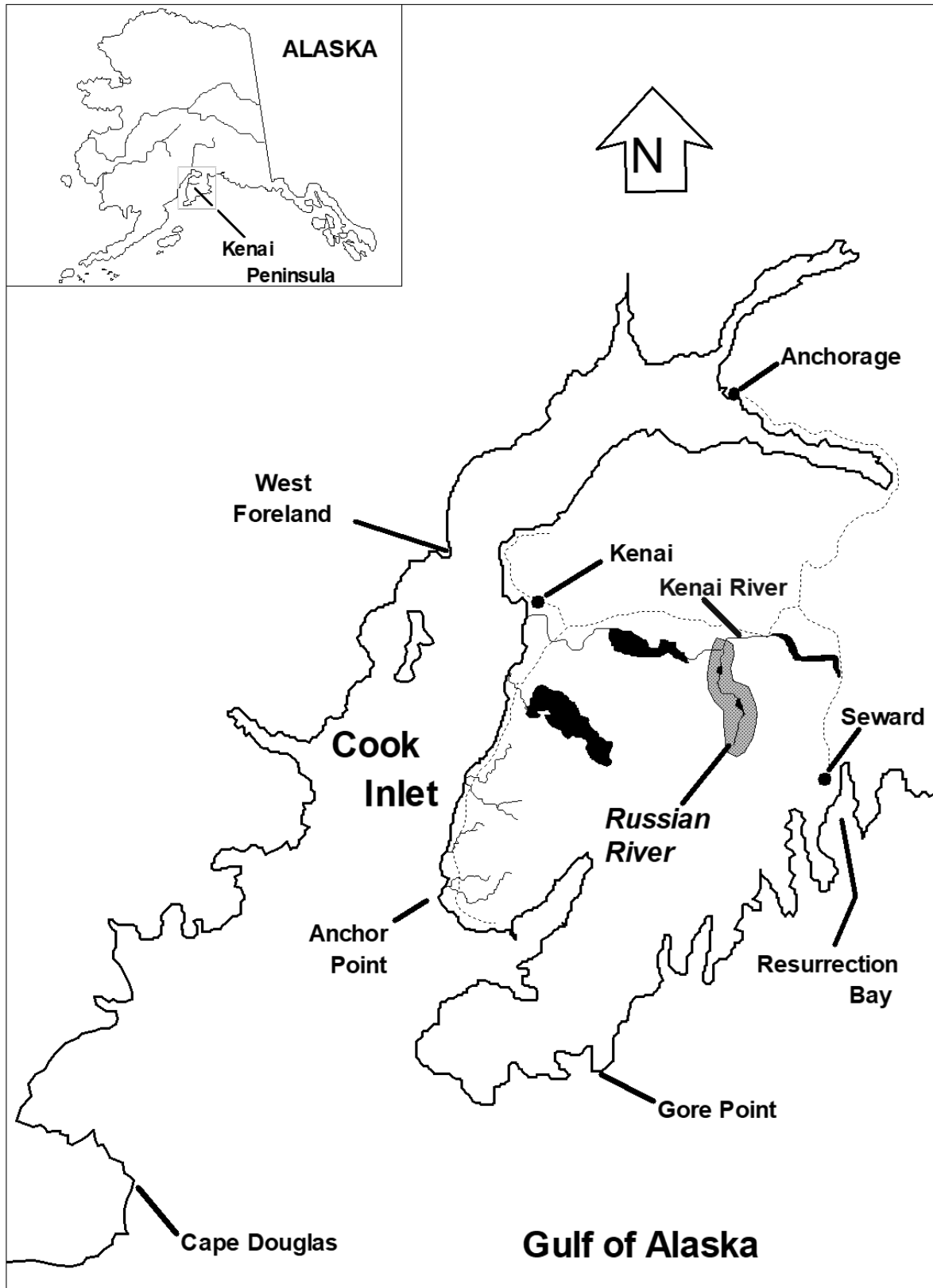


Figure 5.—Location of Russian River (gray shaded area) on the Kenai Peninsula, Alaska.

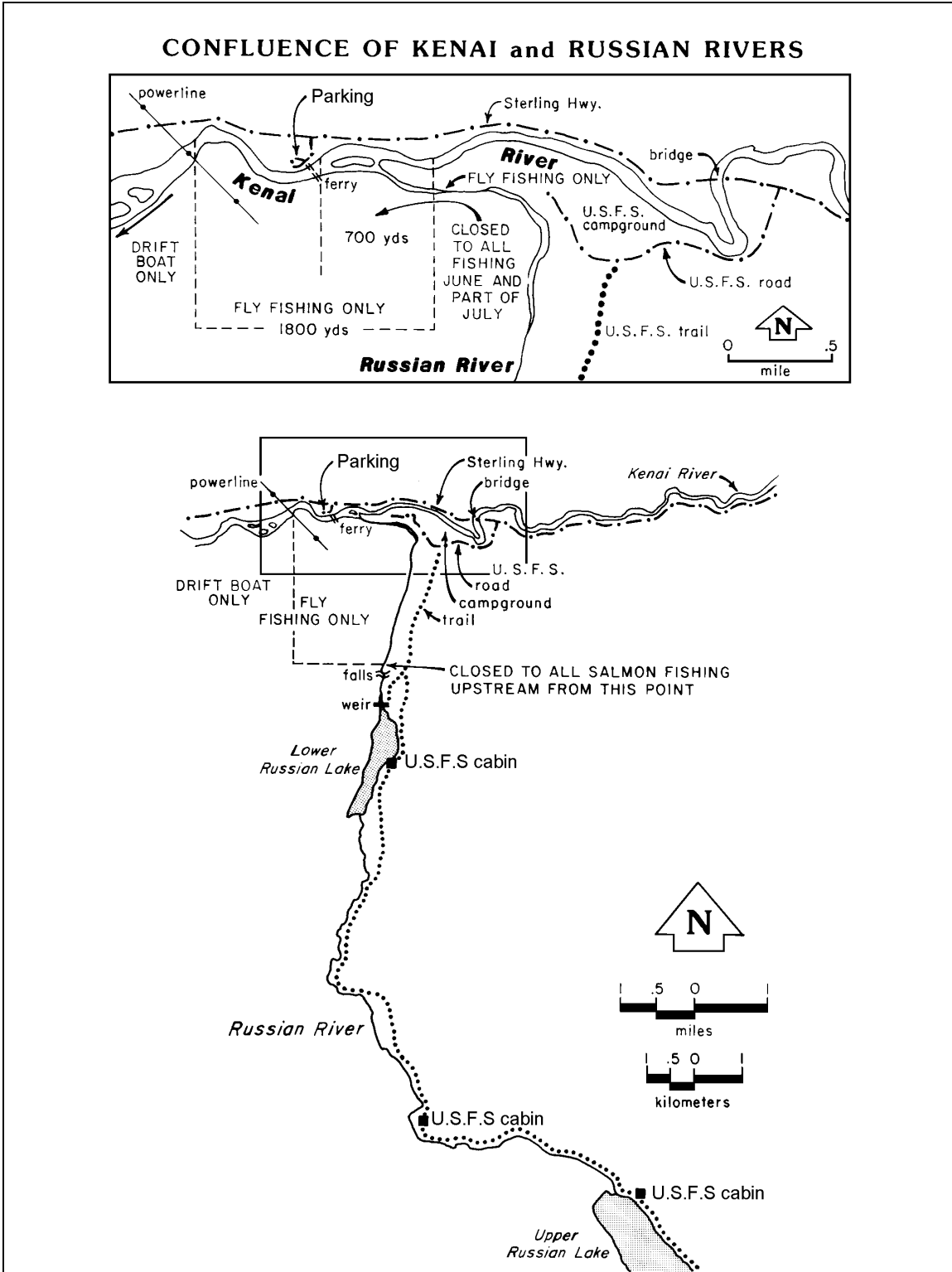


Figure 6.—Map of Russian River drainage.

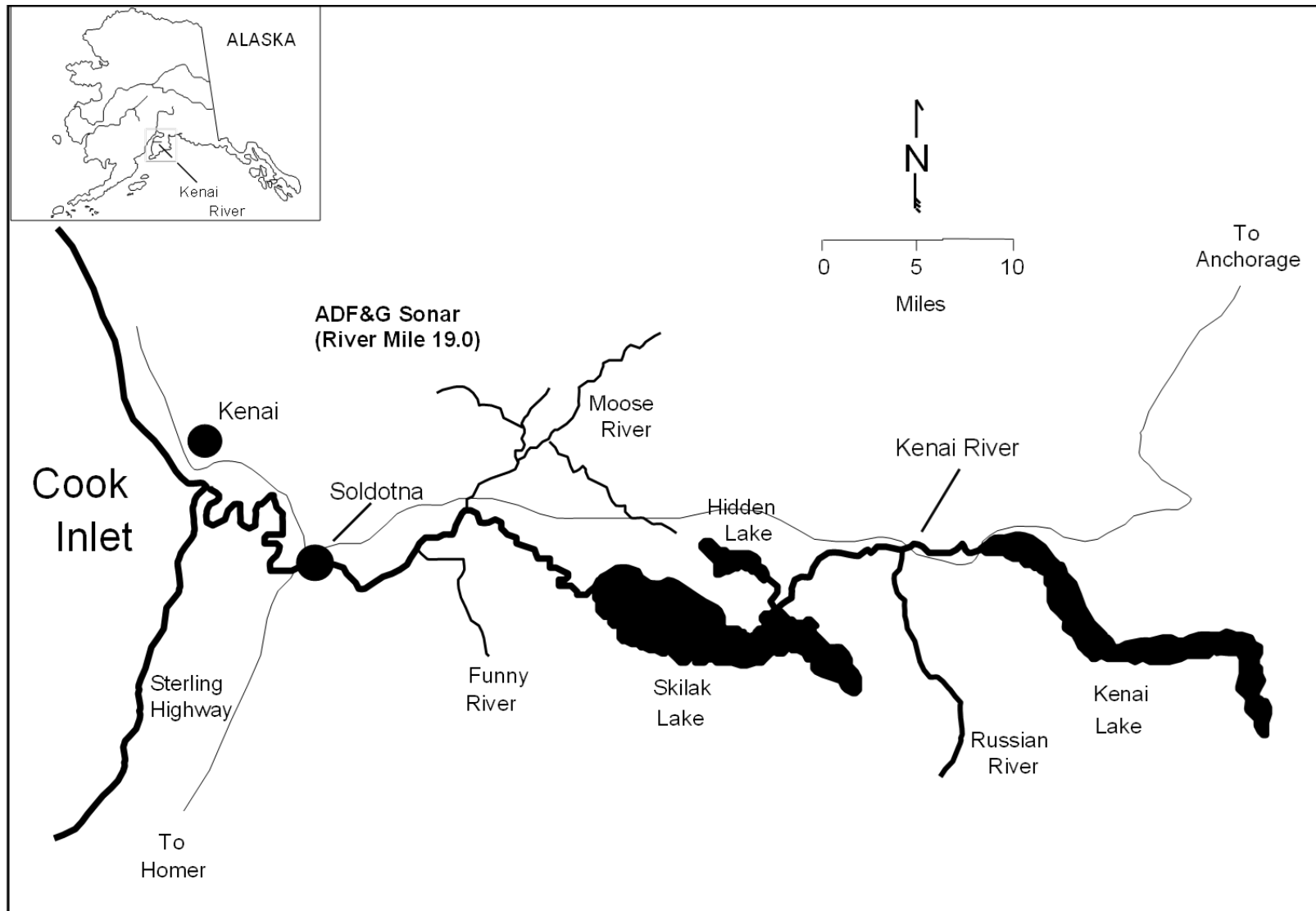


Figure 7.—Map of the Kenai River drainage; both the late-run sockeye salmon fishery and coho salmon fishery occur from Cook Inlet to Kenai Lake.

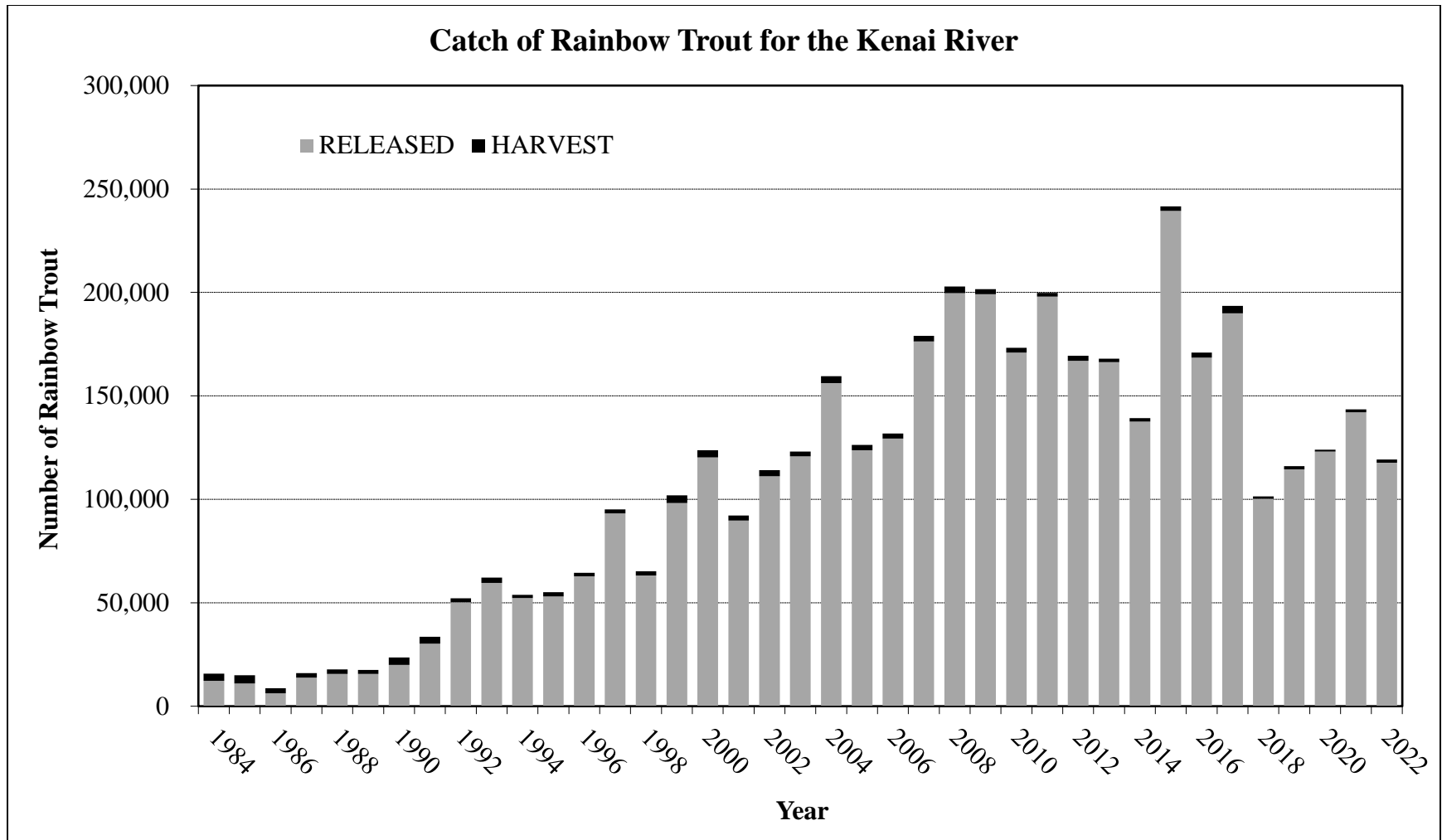


Figure 8.—Total number of rainbow trout caught, showing numbers released and harvested, for the Kenai River sport fishery, 1984–2022.

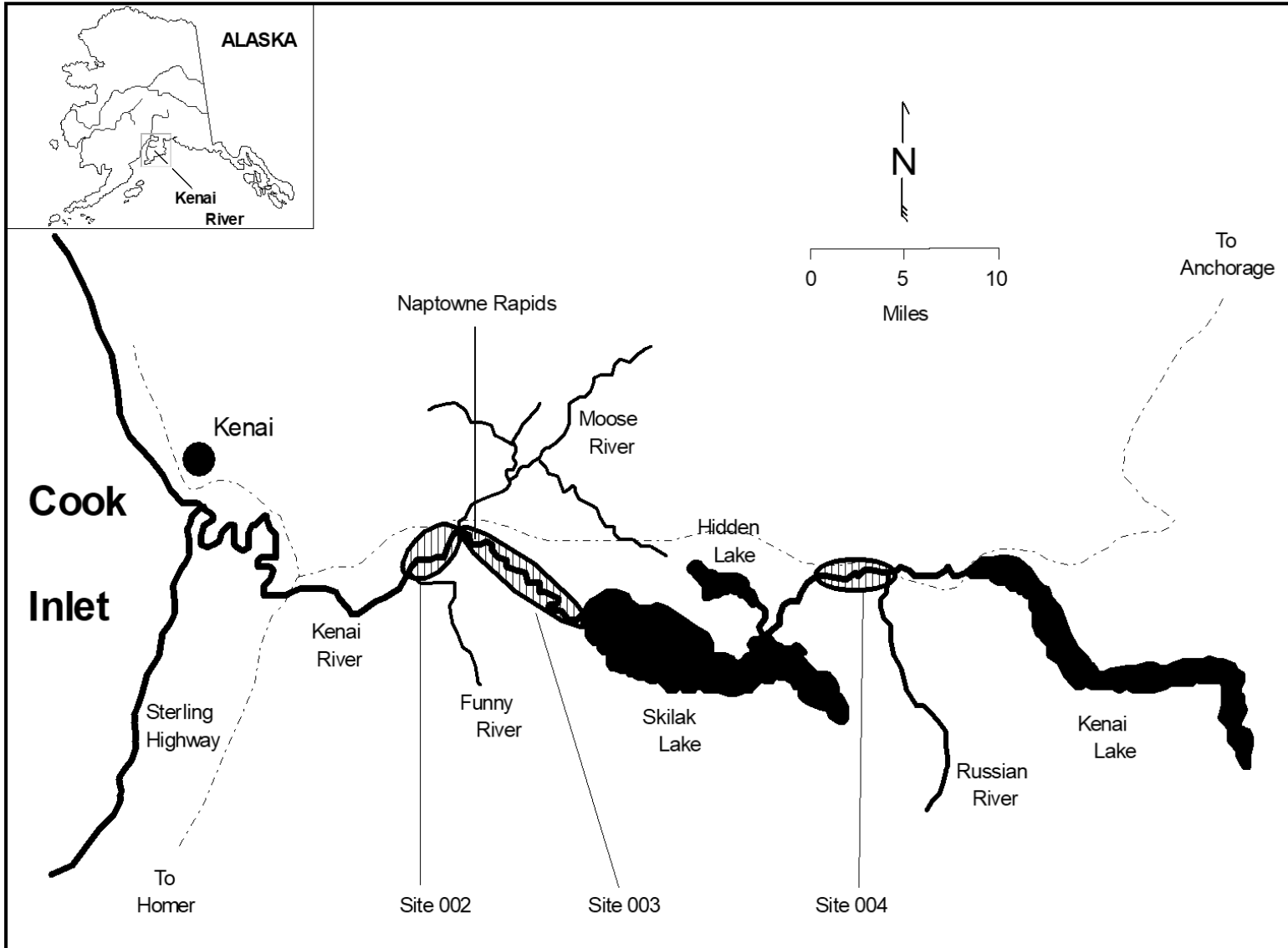


Figure 9.—Map of rainbow trout study areas (hatched) in the Kenai River drainage.

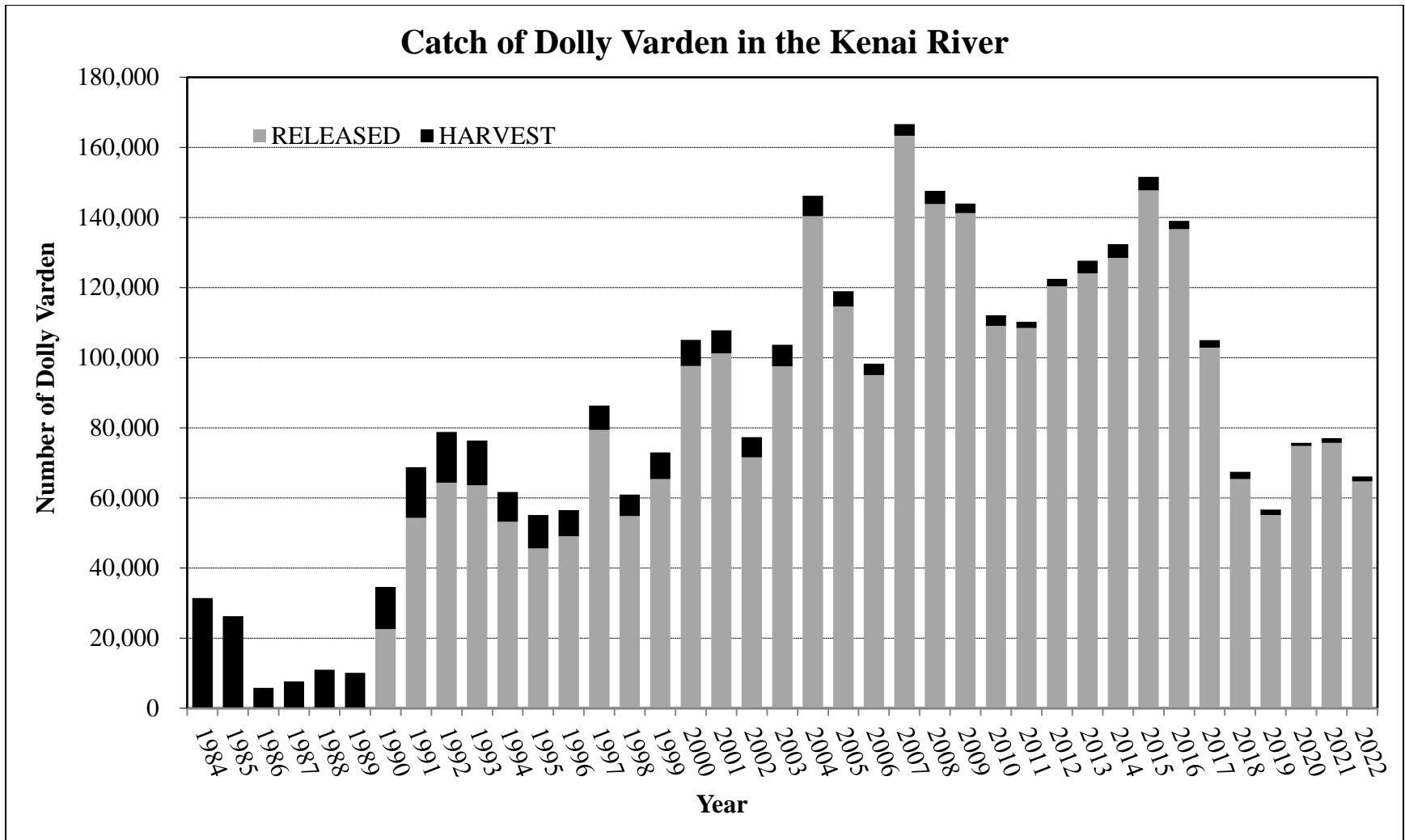


Figure 10.—Total number of Dolly Varden caught, showing number released and harvested, for the Kenai River sport fishery, 1984–2022.

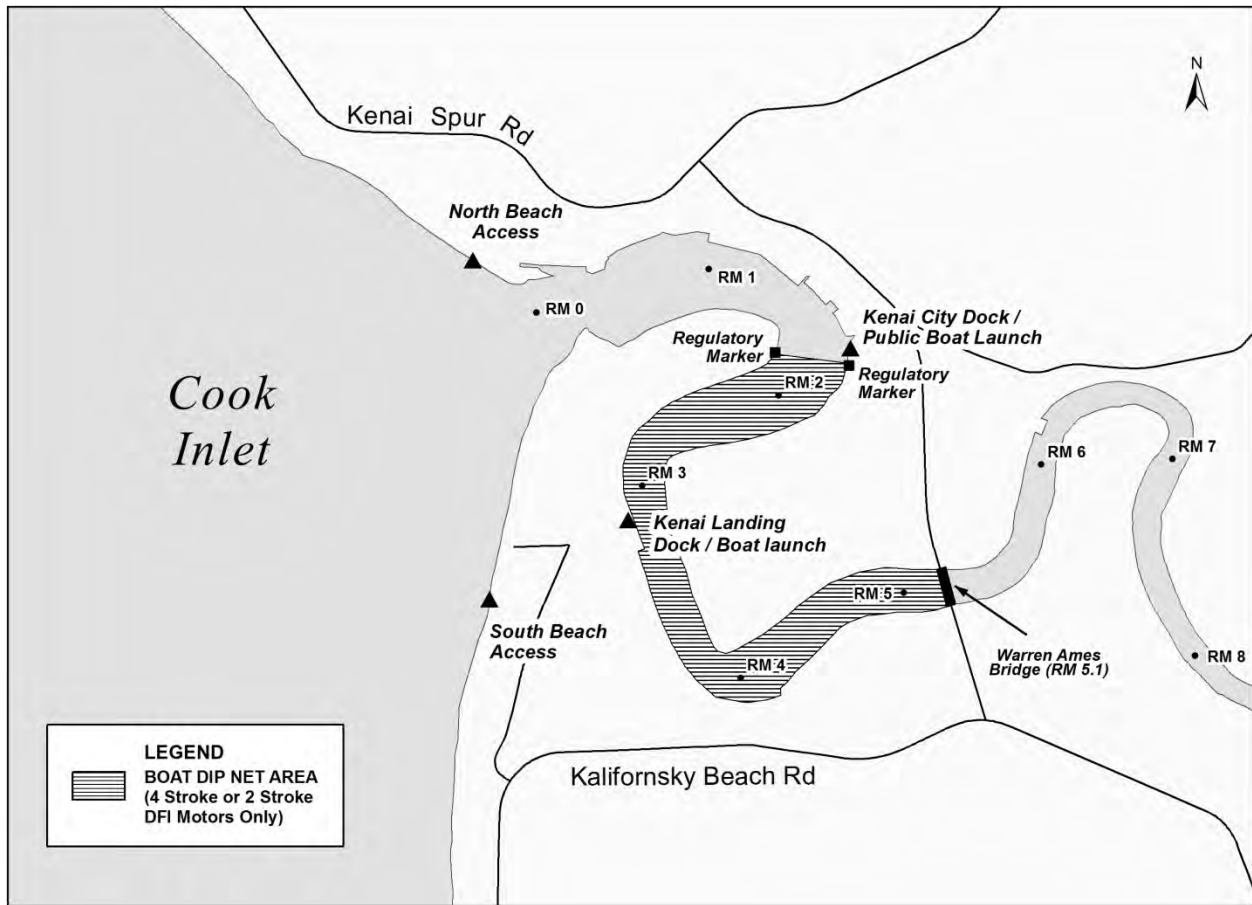


Figure 11.—Map of the Kenai River personal use fishery area open to dipnetting from a boat.

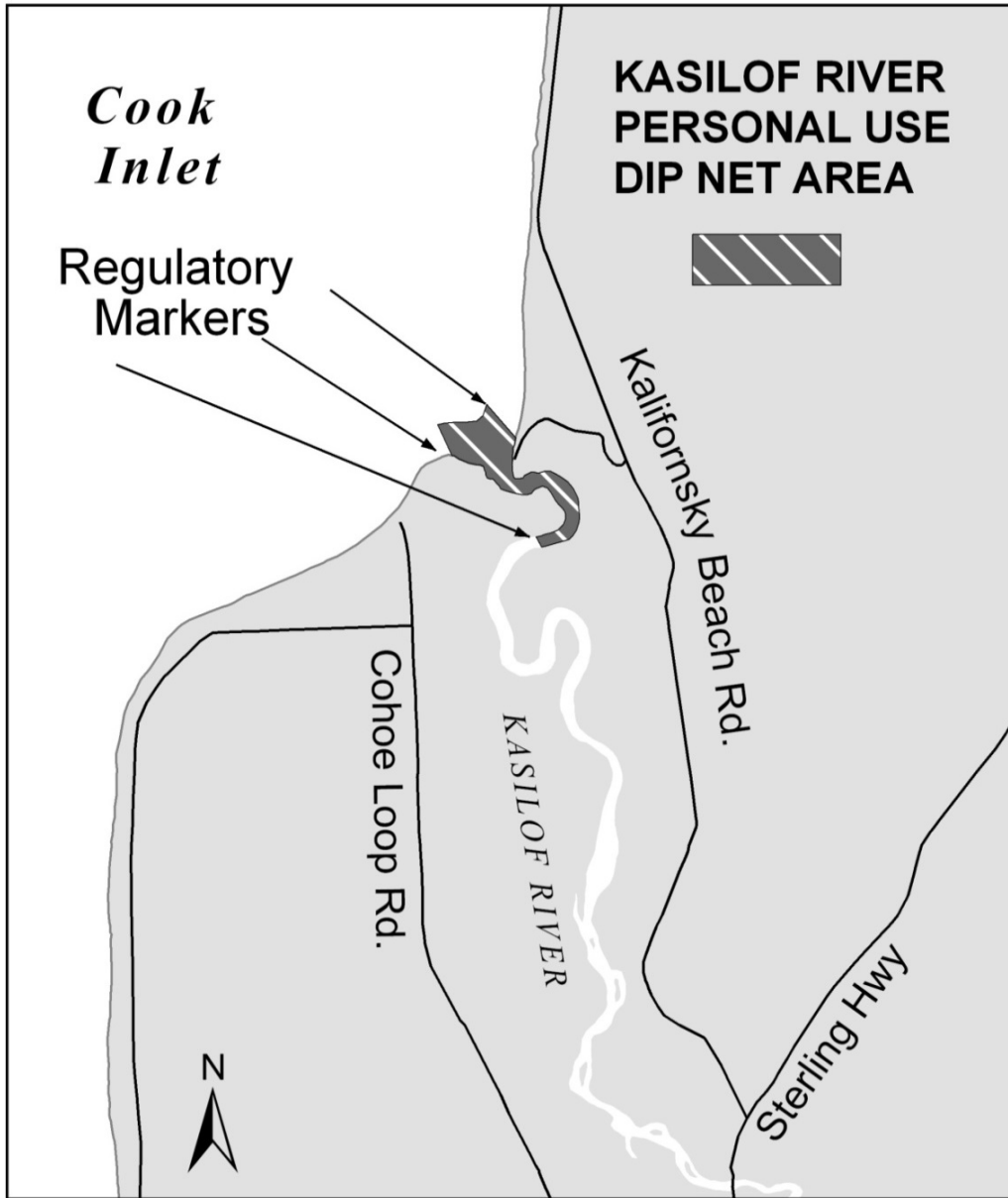


Figure 12.—Map of the Kasilof River personal use fishery area open to dip netting from shore.

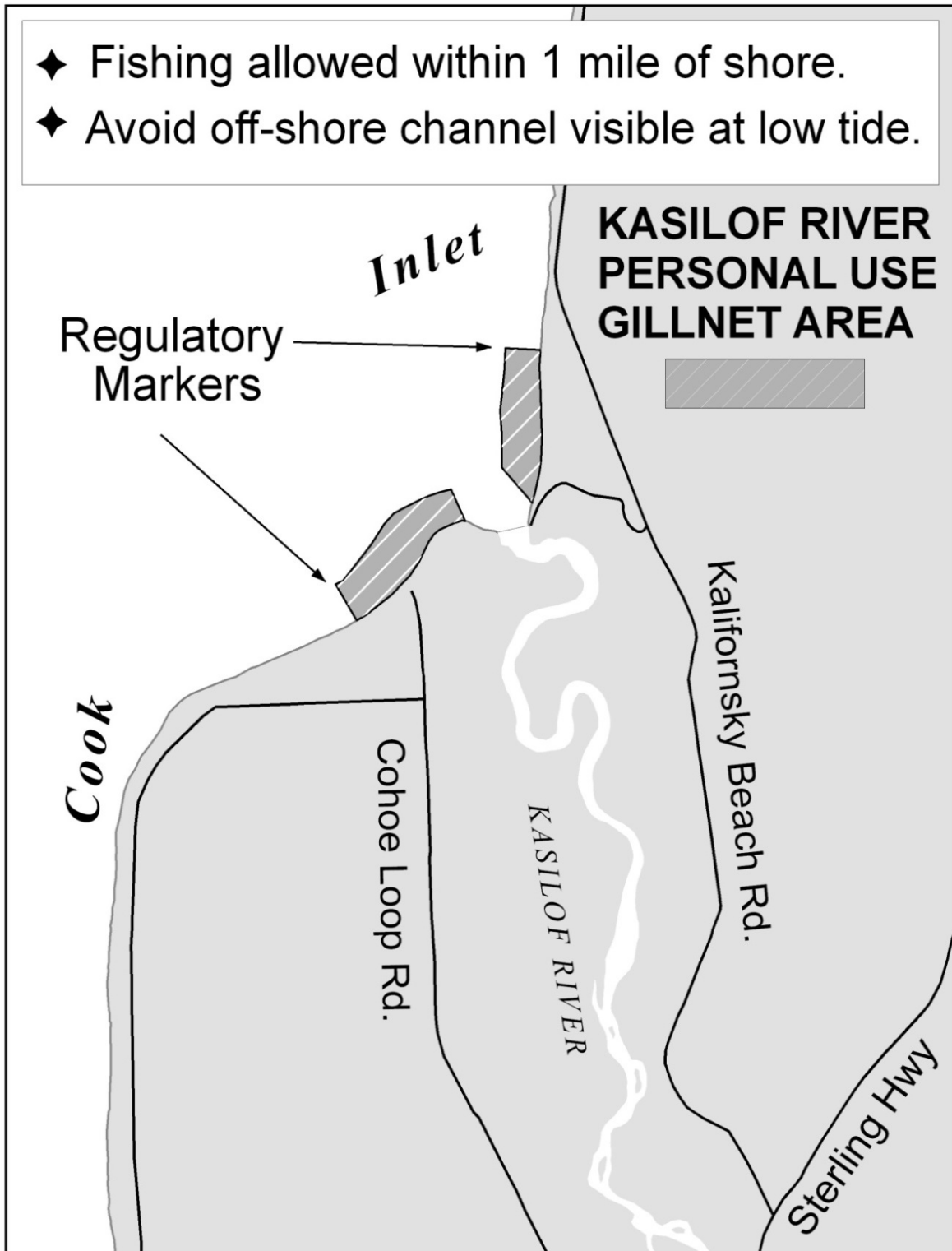


Figure 13.—Map of the Kasilof River personal use fishery area open to set gillnetting.

APPENDIX A: EMERGENCY ORDERS

Emergency Orders issued in 2022:

- 1) EO 2-NP-1-04-22 prohibited the retention of any species of fish in East Mackey Lake, West Mackey Lake, Derks Lake, Union Lake, and Sevena Lake, effective 12:01 AM, Saturday, January 1 through 11:59 PM, Saturday, December 31, 2022.
- 2) EO 2-DV-1-03-22 established a bag and possession limit for Arctic char and Dolly Varden in Stormy Lake of 1 fish, less than 16 inches in length, effective 12:01 AM, Saturday, January 1 through 11:59 PM, Saturday, December 31, 2022.
- 3) EO 2-KS-1-07-22 prohibited the retention of naturally produced Chinook salmon and the use of multiple hooks while sport fishing in the Kasilof River. Naturally produced Chinook salmon, identified by the presence of an adipose fin, could not be removed from the water and had to be released immediately, effective 12:01 AM Sunday, May 1 through 11:59 PM Thursday, June 30, 2022.
- 4) EO 2-KS-7-10-22 reduced the annual limit of Chinook salmon 20 inches or greater in length harvested between May 1 and July 31 in Cook Inlet salt waters north of the latitude of Bluff Point (lat 59° 40.00'N) from 5 to 2 fish and prohibited Chinook salmon fishing (including catch-and-release) while sport fishing between May 1 and July 31 within 1 mile of shore in the salt waters of Cook Inlet north of the latitude of Bluff Point (lat 59° 40.00'N). Chinook salmon incidentally caught while fishing for other fish could not be removed from the water and had to be released immediately. Any Chinook salmon recorded for the above waters on an Alaska sport fishing license or harvest record card also counted towards the Cook Inlet annual limit of 5 Chinook salmon, effective from 12:01 AM Sunday, May 1 through 11:59 PM Sunday, July 31, 2022.
- 5) EO 2-KS-1-20-22 superseded EO 2-KS-1-07-22 issued Wednesday, January 26, 2022, and removed the liberalization of season dates for when use of bait was allowed on the Kasilof River downstream of the Sterling Highway Bridge. On the Kasilof River downstream of the Sterling Highway Bridge, tackle restrictions remained under general regulation, allowing 1 unbaited, single hook artificial lure or fly through 11:59 PM Sunday, May 15. Effective 12:01 AM, Monday, May 16 through 11:59 PM Thursday, June 30, only 1 single hook, artificial lure or fly could be used, and bait was allowed. This emergency order prohibited the retention of naturally produced Chinook salmon effective 12:01 AM Sunday, May 1 through 11:59 PM Thursday, June 30. Naturally produced Chinook salmon, identified by the presence of an adipose fin, could not be removed from the water and had to be released immediately, effective 12:01 AM Sunday, May 1 through 11:59 PM, Thursday, June 30, 2022.
- 6) EO 2-KS-1-21-22 prohibited the retention of Chinook salmon of all sizes in the Kenai River from the mouth upstream to the outlet of Skilak Lake from June 1 through June 30, 2022. Retention of Chinook salmon remained prohibited July 1 through July 31 in waters of the Kenai River drainage from an ADF&G regulatory marker located approximately 300 yards downstream from the mouth of Slikok Creek, upstream to the outlet of Skilak Lake, effective 12:01 AM Wednesday, June 1 through 11:59 PM, Sunday, July 31, 2022.

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- 7) EO 2-KS-1-22-22 superseded EO 2-KS-1-21-22, issued May 30, 2022, and EO 2-KS-1-09-22, issued January 26, 2022. Sport fishing for Chinook salmon of all sizes in the Kenai River was closed from the mouth upstream to the outlet of Skilak Lake from 12:01 AM Wednesday, June 8 through 11:59 PM Thursday, June 30, 2022. Fishing for Chinook salmon remained closed from 12:01 AM Friday, July 1 through 11:59 PM Sunday, July 31, 2022, in waters of the Kenai River drainage from an ADF&G regulatory marker about 300 yards downstream from the mouth of Slikok Creek, upstream to the outlet of Skilak Lake. The closure prohibited all sport fishing for Chinook salmon, including catch-and-release fishing. Chinook salmon could not be retained or possessed; Chinook salmon accidentally caught while fishing for other species could not be removed from the water and had to be released immediately, effective 12:01 AM Wednesday, June 8 through 11:59 PM, Sunday, July 31, 2022.
- 8) EO 2-KS-1-23-22 superseded EO 2-KS-1-07-22, issued January 26, 2022. The retention of naturally produced Chinook salmon was prohibited, and sport fishing gear was limited to one unbaited, single hook, artificial lure while sport fishing in the Kasilof River. Naturally produced Chinook salmon, identified by the presence of an adipose fin, could not be removed from the water and had to be released immediately, effective 12:01 AM Wednesday, June 8 through 11:59 PM, Thursday, June 30, 2022.
- 9) EO 2-KS-1-26-22 restricted the duration of fishing periods in the personal use set gillnet fishery at the mouth of the Kasilof River. The hours open to fishing in the personal use set gillnet fishery were reduced from 6:00 AM until 11:00 PM to 11:00 AM until 11:00 PM Wednesday, June 15 through Friday, June 24, 2022, effective 6:00 AM, Wednesday, June 15 through 11:00 PM, Friday, July 24, 2022.
- 10) EO 2-KS-1-30-22 superseded EO 2-KS-1-23-22 issued June 6, 2022, EO 2-KS-1-20-22 issued April 25, 2022, and EO 2-KS-1-08-22 issued January 26, 2022. This emergency order closed Chinook salmon sport fishing in the Kasilof River from 12:01 AM Wednesday, June 15 through 11:59 PM Friday July 15, 2022, effective 12:01 AM Wednesday, June 15 through 11:59 PM Sunday, July 31, 2022.
- 11) EO 2-KS-1-31-22 superseded EO 2-KS-1-26-22, issued June 8, 2022. The duration of fishing periods in the personal use set gillnet fishery at the mouth of the Kasilof River were further restricted. The hours open to fishing in the personal use set gillnet fishery were reduced from 11:00 AM until 11:00 PM, to 11:00 AM until 5:00 PM Wednesday, June 15 through Friday, June 24, 2022, effective 6:00 AM Wednesday, June 15 through 11:00 PM Friday, June 24, 2022.
- 12) EO 2-KS-7-28-22 superseded EO 2-KS-7-10-22, issued January 26, 2022, and prohibited sport fishing for Chinook salmon (including catch-and-release) in the salt waters of Cook Inlet north of the latitude of Bluff Point (lat 59° 40.00'N). Chinook salmon incidentally caught while fishing for other fish could not be removed from the water and had to be released immediately, effective 12:01 AM Wednesday, June 15 through 11:59 PM Friday, July 15, 2022.

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- 13) EO 2-RS-1-35-22 opened the Russian River Sanctuary Area to sport fishing for sockeye salmon, effective 12:01 AM Wednesday, June 22 through 11:59 PM Thursday, July 14, 2022.
- 14) EO 2-RS-1-37-22 increased the bag and possession limits for salmon, other than Chinook salmon, to 6 fish per day and 12 fish in possession in that area of the Kenai River upstream from Skilak Lake to ADF&G regulatory markers located about 300 yards upstream of the public boat launch at Sportsman's Landing and the Russian River from its mouth upstream to an ADF&G marker located about 600 yards downstream from the Russian River Falls, effective 12:01 AM Saturday, June 25 through 11:59 PM Thursday, July 14, 2022.
- 15) EO 2-KS-1-08-22 prohibited the retention of naturally produced Chinook salmon while sport fishing in the Kasilof River downstream of the Sterling Highway Bridge. Only 1 unbaited, single-hook, artificial lure could be used when sport fishing in these waters. Naturally produced Chinook salmon could not be retained or possessed, could not be removed from the water, and had to be released immediately, effective 12:01 AM Friday, July 1 through 11:59 PM Wednesday, July 31, 2022.
- 16) EO 2-KS-1-09-22 restricted sport fishing in the Kenai River from its mouth upstream to an ADF&G regulatory marker located at the outlet of Skilak Lake to the use of only 1 unbaited, single-hook artificial lure, and anglers could not retain Chinook salmon of any size while sport fishing through July 31, 2022. Chinook salmon could not be removed from the water and had to be released immediately, effective 12:01 AM Friday, July 1 through 11:59 PM Sunday, July 31, 2022.
- 17) EO 2-RS-1-44-22 increased the bag and possession limit for sockeye salmon, 16 inches or longer, to 6 fish per day and 12 in possession in all portions of the Kasilof River open to salmon fishing. No more than 2 salmon per day and 2 in possession could be coho salmon, effective 12:01 AM Thursday, July 7 through 11:59 PM Saturday, December 31, 2022.
- 18) EO 2-RS-1-45-22 expanded the personal use salmon dipnet fishing area on the Kasilof River. Salmon could be harvested from the shore from ADF&G markers located on Cook Inlet beaches outside the terminus of the river upstream to the Sterling Highway Bridge. Salmon could be harvested from a boat from ADF&G markers located on Cook Inlet beaches outside the terminus of the river upstream to ADF&G markers placed at about river mile 3, effective 12:01 AM Thursday, July 7 through 11:59 PM Sunday, August 7, 2022.
- 19) EO 2-KS-1-46-22 prohibited the retention of Chinook salmon in the Kenai River personal use dip net fishery. Any Chinook salmon caught incidentally could not be removed from the water and had to be released immediately and returned to the water unharmed, effective 6:00 AM Sunday, July 10 through 11:00 PM Sunday, July 31, 2022.

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- 20) EO 2-KS-1-53-22 superseded EO 2-KS-1-22-22, issued June 6, 2022. This EO closed the Kenai River to fishing for Chinook salmon and prohibited the use of bait and multiple hooks in the Kenai River from its mouth upstream to ADF&G markers located at the outlet of Skilak Lake. This closure prohibited all sport fishing for Chinook salmon, including catch-and-release fishing. Chinook salmon could not be retained or possessed; Chinook salmon caught while fishing for other species could not be removed from the water and had to be released immediately, effective 12:01 AM Sunday, July 17 through 11:59 PM Sunday, July 31, 2022.
- 21) EO 2-KS-1-54-22 superseded EO 2-KS-1-30-22 issued June 13, 2022. This EO closed Chinook salmon sport fishing in the Kasilof River downstream of the Sterling Highway Bridge to the river mouth from 12:01 AM Sunday, July 17 through 11:59 PM Sunday, July 31, 2022. Only 1 unbaited, single-hook, artificial lure could be used when sport fishing from the river mouth upstream to the outlet of Tustumena Lake from 12:01 AM Sunday, July 17 through 11:59 PM Sunday, July 31, 2022. This closure prohibited all sport fishing for Chinook salmon, including catch-and release fishing. Chinook salmon could not be retained or possessed, could not be removed from the water, and had to be released immediately, effective 12:01 AM Sunday, July 17 to 11:59 PM Sunday, July 31, 2022.
- 22) EO 2-KS-7-55-22 prohibited Chinook salmon fishing (including catch-and-release) in the salt waters of Cook Inlet north of the latitude of Bluff Point (lat 59° 40.00'N). Chinook salmon incidentally caught while fishing for other fish could not be removed from the water and had to be released immediately, effective 12:01 AM Sunday, July 17 through 11:59 PM Sunday, July 31, 2022.
- 23) EO 2-RS-1-60-22 increased the bag and possession limit for salmon, 16 inches or longer, other than Chinook, pink, or coho salmon, from 3 per day and 6 in possession, to 6 per day and 12 in possession, in the Kenai River from its mouth upstream to an ADF&G regulatory marker located at the outlet of Skilak Lake. No more than 2 salmon, 16 inches or longer, per day and in possession could be coho salmon, effective 12:01 AM Friday, July 22 through 11:59 PM Saturday, December 31, 2022.
- 24) EO 2-RS-1-59-22 increased the hours salmon may be taken by dip net in the personal use fishery at the mouth of the Kenai River. Effective 11:00 PM Friday, July 22, 2022, salmon could be harvested by dipnetting 24 hours per day, effective 11:00 PM Friday, July 22 through 11:59 PM Sunday, July 31, 2022.
- 25) EO 2-KS-1-61-22 prohibited the use of bait and limited sport fishing gear to 1 unbaited, single-hook, artificial lure while sport fishing in the Kenai River from its mouth upstream to the outlet of Skilak Lake, effective 12:01 AM Monday, August 1 through 11:59 PM Monday, August 15, 2022.
- 26) EO 2-RS-1-63-22 increased the bag and possession limits for salmon, other than Chinook salmon, to 6 fish per day and 12 fish in possession in the Kenai River upstream from Skilak Lake to ADF&G regulatory markers located about 300 yards upstream of the public boat launch at Sportsman's Landing, and in the Russian River from its mouth upstream to an ADF&G marker located about 600 yards downstream from the Russian River Falls, effective 12:01 PM Tuesday, August 2 through 11:59 PM Saturday, August 20, 2022.

**APPENDIX B: CROSS-REFERENCED BOARD OF
FISHERIES INFORMATION**

Appendix B1.–Cross reference of tables and figures specific to the 2023 Upper Cook Inlet Finfish Alaska Board of Fisheries meeting proposals.

Proposal number	Stock or species	Fishery	Background and recent performance pages	Tables	Figures
75–110	Chinook salmon	Kenai River Late-Run King Salmon	Pages 6–8, 11–13	3, 8, 13, 31	3
111–115	Sockeye salmon	Kenai River Late-Run Sockeye Management Plan	Pages 21–24	3, 17, 18	7
118–120	Sockeye and Chinook salmon	Kasilof River Salmon Management Plan	Pages 13–17	9–13	4
146–150	Chinook salmon	Kenai/Kasilof River King Salmon	Pages 6–17	3, 7, 8, 13, 36	3
151–152	Chinook salmon	Kenai River Vessels and Habitat Restrictions	Pages 38–39	37	None
153–164	Multiple	Guides-Kenai and Kasilof Rivers	Pages 36–38	1, 7, 8, 12, 18, 31–36	None
165, 167, 171–180	Coho salmon	Kenai, Kasilof, and Russian Rivers	Pages 24–28	6, 19, 20	8
170, 182, 185, 187	Chinook salmon	Kenai, Kasilof, and Russian Rivers	Pages 6–17	3, 8, 13	3
169, 183, 184	Sockeye salmon	Kenai, Kasilof, and Russian Rivers	Pages 17–24	14, 15, 16	5, 6
166, 168, 181, 186, 188	Rainbow and lake trout	Kenai, Kasilof, and Russian Rivers	Pages 28–36	21, 22, 24, 25, 28, 29	8, 9
189–203	Sockeye salmon	Kenai/Kasilof River Personal Use	Pages 39–44	6, 38, 39	11, 12, 13