

**2004 Recreational Fisheries Overview and Historic Information for the North Kenai Peninsula:
Fisheries under Consideration by the Alaska Board of Fisheries, January 2005**

by

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and

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[link to Errata](#)

December 2004

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

FISHERY MANAGEMENT REPORT NO. 04-17

**2004 RECREATIONAL FISHERIES OVERVIEW AND HISTORIC
INFORMATION FOR THE NORTH KENAI PENINSULA:
FISHERIES UNDER CONSIDERATION BY THE ALASKA BOARD OF
FISHERIES, JANUARY 2005**

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December 2004

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ERRATA FOR FMR NO. 04-17

January 13, 2005

page 4: Mean harvest for personal use dip net fisheries corrected.

page 5: Clarification concerning spawning of early- and late-run Chinook salmon.

page 11: Management actions in 2002 and 2003 corrected.

page 18-19: Clarification of Kenai River Late-run Sockeye Salmon Management Plan.

page 21-22: Clarification of 3-day closure.

page 52: Correction of Kenai Peninsula dip net effort in 2001, and corresponding percents, total, and mean.

page 59: Correction of 2003 harvests, and corresponding means.

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ABSTRACT

This report provides information on fisheries in the North Kenai Peninsula Management Area under consideration by the Alaska Board of Fisheries in January 2005. An overview of the area, sport and personal use fisheries, as well as a season summary of the 2004 North Kenai Peninsula Management Area recreational fisheries are included. The following recreational fisheries are included: Kenai River Chinook salmon early and late runs, Kasilof River Chinook salmon early and late runs, Russian River sockeye salmon early and late runs, Kenai River sockeye salmon late run, Kenai River coho salmon, Kenai River resident species (rainbow trout and Dolly Varden), and northern pike. The Kenai River sockeye salmon personal use dip net fishery is also discussed.

Key words: North Kenai Peninsula Management Area, 2004 season overview, Kenai River, Chinook salmon, Russian River, coho salmon, rainbow trout, Dolly Varden, northern pike, personal use, dip net, Board of Fisheries.

MANAGEMENT OVERVIEW

This report provides information on fisheries under consideration by the Alaska Board of Fisheries in January 2005:

- (1) Kenai River Chinook salmon early-run recreational fisheries
- (2) Kenai River Chinook salmon late-run recreational fisheries
- (3) Kasilof River Chinook salmon early-run recreational fisheries
- (4) Kasilof River Chinook salmon late-run recreational fisheries
- (5) Russian River sockeye salmon early-run recreational fisheries
- (6) Russian River sockeye salmon late-run recreational fisheries
- (7) Kenai River sockeye salmon late run recreational fisheries
- (8) Kenai River coho salmon recreational fisheries
- (9) Kenai River resident species recreational fisheries
- (10) Kenai River sockeye salmon personal use dip net fishery
- (11) North Kenai Peninsula Management Area Northern Pike fishery

An overview of the area, sport and personal use fisheries, as well as a season summary of the 2004 North Kenai Peninsula Management Area recreational fisheries are incorporated into this document.

MANAGEMENT AREA DESCRIPTION

The Northern Kenai Peninsula Management Area (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). On the west side of Cook Inlet the Management Area comprises freshwater drainages from the West Forelands south to Spring Point which is just north of Chinitna Bay. Marine waters of the NKPMA are all waters from the latitude of the East Forelands south to the latitude of Kasilof River; all marine waters in close proximity (several miles) to the west side of Cook Inlet from the West Forelands south to Spring Point. This area is administered from the Soldotna Office of the Department of Fish and Game.

Larger communities located within the KPMA include Kenai and Soldotna. Smaller communities are Hope, Cooper Landing, Moose Pass and Sterling. This management area is linked to the state's 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 KPMA (west side of Cook Inlet) can be accessed via wheel or float equipped aircraft, or boat.

MANAGEMENT PLANS AFFECTING FISHERIES

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 Alaska Board of Fisheries (BOF) to establish management plans and regulatory policies that allocate the area's fisheries resources among the various user groups. These plans provide for the sustained yield of fishery resources and establish management actions (in specific situations), and guidelines for department fisheries managers.

Management plans germane to NKPMA fisheries are:

1. Upper Cook Inlet Salmon Management Plan (5 AAC 21.363)
2. Kenai River and Kasilof River Early-run King Salmon Management Plan (5 AAC 56.070)
3. Kenai River Late-run King Salmon Management Plan (5 AAC 21.359)
4. Kenai River Late-run Sockeye Salmon Management Plan (5 AAC 21.360)
5. Russian River Sockeye Salmon Management Plan (5 AAC 21.361)
6. Kasilof River Salmon Management Plan (5 AAC 21.365)
7. Big River Sockeye Salmon Management Plan (5 AAC 21.368)
8. Upper Cook Inlet Personal Use Salmon Fishery Management Plan (5 AAC 77.540)
9. Riparian Habitat Fishery Management Plan (5 AAC 56.065)
10. Kenai River Coho Salmon Conservation Management Plan (5 AAC 21.357)

Management and research functions for the NKPM recreational and personal use fisheries are the responsibility of the Soldotna area office of the Alaska Department of Fish and Game (ADF&G), Division of Sport Fish. The Division of Sport Fish management staff stationed at Soldotna is composed of one Area Management Biologist and assistant who manage all freshwater finfish. One Fisheries Biologist, and two seasonal Fishery Technicians whose employment ranges from 3 to 6 months assist these staff. A Program Technician and one seasonal Clerk support the Soldotna management staff.

FISHERIES RESOURCES

The NKPMA offers diverse fishing opportunities for recreational and personal use anglers. Anglers can target four species of North Pacific salmon (pink *Oncorhynchus gorbuscha*, coho *O. kisutch*, sockeye *O. nerka*, and Chinook *O. tshawytscha*). Fisheries for these species occur primarily in freshwater and, to a much lesser degree, in the salt waters of Cook Inlet. Anglers can also target salmon and trout stocked by the department into various landlocked lakes. Popular fisheries also occur on the area's anadromous stocks of Dolly Varden *Salvelinus malma*, steelhead trout *O. mykiss*, and eulachon *Thaleichthys pacificus*. Resident stocks of rainbow trout *O. mykiss* and lake trout *Salvelinus namaycush* also support popular sport fisheries. Fisheries occur on resident stocks of Arctic grayling *Thymallus arcticus* and introduced stocks of northern pike *Esox lucius* as well.

Marine sport fisheries offer more limited opportunities. Adjacent to the mouths of the Kenai and Kasilof rivers and the waters of Cook Inlet within the management area, small numbers of anglers target halibut *Hippoglossus stenolepis*, razor clams *Siliqua patula* and several species of hardshell clams.

Two runs of wild Kenai River Chinook salmon combine to support the largest recreational fishery for this species in Alaska. Stocked and wild Chinook salmon returns support fisheries in Kasilof River.

Wild coho salmon returns to the Kenai River support the largest recreational freshwater coho salmon fishery in Alaska. The Kasilof River and numerous smaller streams support smaller coho salmon sport fisheries as well. Additional fishing opportunity for coho salmon is provided through a program of stocking landlocked lakes on the Kenai Peninsula.

The Russian River supports an early and late sockeye salmon return. These wild stocks support the second largest recreational sockeye salmon fishery in the state. As a result of changes to the management of Kenai River sockeye salmon and increased escapement goals, the Kenai River recreational sport fishery for sockeye salmon has grown into the largest recreational fishery for this species 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 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 significant harvest opportunities for statewide participants.

Pink salmon return in large numbers to NKPMA drainages during even-numbered years. A significant recreational 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* returns to NKPMA streams on the east side of Cook Inlet are quite small and do not support a significant sport fishery.

Rainbow trout occur in numerous lakes and streams throughout the NKPMA. Flowing waters that support major rainbow trout fisheries include the Kenai River (supporting both a harvest-oriented and catch-and-release fishery), Russian River (primarily a catch-and-release fishery by regulation), and the streams and lakes of the Swanson River and Moose River drainages. To provide alternative fishing opportunities, several landlocked lakes are also stocked with this species.

Steelhead trout currently provide limited recreational fishing opportunity in the Kasilof River. A stocked return of this species was developed in the 1980s using wild stocks indigenous to Crooked Creek. The stocking program was discontinued in 1995 due to excessive straying of hatchery trout into the Kenai River system. Since 1995, steelhead trout production in Crooked Creek has resulted from natural production.

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, thus providing additional recreational angling opportunity at roadside as well as more remote locations.

RECENT RECREATIONAL ANGLER EFFORT

This section provides generalized participation trends in the NKPMA. Summarized data depicting angler effort and harvest for the sport fisheries in the NPKMA are available through 2003 (Tables 1 through 5). Statewide Harvest Survey (SWHS) data for the 2004 season will be available in mid-2005.

Since 1977, recreational angler effort has been estimated using the SWHS, a mail survey (Mills 1979-1980, 1981a-b, 1982-1994; Howe et al. 1995, 1996, 2001 a-d; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b).

Additionally, creel surveys have been selectively implemented for fisheries that require inseason information for management purposes or to validate the mail survey for fisheries of interest. The following historic summaries of recreational angler effort in the NKPMA are based on estimates produced from the mail survey (Mills 1979-1980, 1981a-b, 1982-1994; Howe et al. 1995, 1996, 2001 a-d; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b).

From 2001 through 2003, the NKPMA accounted for 20-21% of the total statewide recreational effort (Table 1). In 2003, participation approximated 460,600 angler days in NKPMA waters. Angler participation between 2001 and 2003 remained fairly stable in the range of 448,900 to 481,000 angler days (Table 1; Figure 2).

The Kenai River accounts for the largest recreational fishery in the NKPMA. From 2000-2003, this river accounted for 67% of the area's total recreational angling effort, or about 320,700 angler-days annually (Table 1). Historically, most of this effort occurs downstream from the Soldotna Bridge to Cook Inlet with salmon, rainbow trout and Dolly Varden being the most abundant species harvested (Tables 2 and 3).

Other fresh waters of the Kenai Peninsula support major recreational fisheries (Tables 4 and 5) as well. Of these, the Russian River supports the largest fishery, with the most participation directed towards early- and late-run sockeye salmon. The Kasilof River supports a major fishery directed at stocked early-run Chinook salmon. Also of significance is the sport fishery in the Swanson River that is primarily directed at coho salmon and rainbow trout.

Personal use salmon dip net fisheries at the mouths of the Kenai and Kasilof rivers have become extremely popular with the public. During the past 3 years, an average of 14,942 and 3,759 angler-days of effort were expended in the Kenai and Kasilof rivers personal use fisheries, respectively (Table 6). The mean harvest from personal use dip net fisheries in the NKPMA from 2001 to 2003 was 234,862 salmon with sockeye salmon being the most abundant species harvested (Table 7).

2004 KENAI RIVER CHINOOK SALMON RECREATIONAL FISHERIES

2005 PROPOSALS TO THE BOF CONCERNING KENAI RIVER CHINOOK SALMON SPORT FISHERY ISSUES

The following proposals will likely have some impact on the sport fisheries targeting Chinook salmon in the Kenai River:

250, 276, 277, 278, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 295, 296, 298, 299, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, and 311,

as published in "The Alaska Board of Fisheries 2004/2005 Proposed Changes in the Kodiak/Chignik areas (All Finfish), Cook Inlet Area (All Finfish), King and Tanner Crab (All Regions), and Supplemental Issues" booklet.

BACKGROUND AND HISTORICAL PERSPECTIVE

Information about harvest, catch, and fishing effort is available from the SWHS and creel surveys conducted in the lower portion of the Kenai River (Hammarstrom 1974-1981; Hammarstrom and Larson 1986-1984, 1986; Hammarstrom et al. 1985; Hammarstrom 1988-

1994; King 1995-1997; Marsh 1999, 2000; Reimer et al. 2002; Reimer 2003, 2004, *in prep.*). The SWHS survey results for 2004 will not be available until the fall of 2005. Chinook salmon catch and harvest data provided for the 2004 season contained in this document were estimated inseason and are **considered preliminary** until the SWHS results are available.

Chinook salmon return to the Kenai River in two distinct runs, early and late. The first run usually begins arriving in “fishable” numbers by mid-May with the return peaking in mid-June. The majority of the stocks have passed through the fishery by late June. Late-run fish are present in July and early August. Early-run fish spawn in tributary systems to the Kenai River with most of the fish in two primary tributaries, the Killey and Funny rivers. Late-run fish are mainstem Kenai River spawners.

The recreational fishery for Chinook salmon in the Kenai River is widely popular. Large numbers of anglers participate every year. The magnitude of the Chinook salmon return is quite small relative to the historical dimensions of Chinook salmon returns in the Pacific Northwest. Given the relative size of the total Chinook return, the fishery is strictly regulated. Chinook salmon fishing is limited to a 50-mile area downstream from Skilak Lake (Figure 3). The season is January 1 through July 31. By regulation, the early-run ends June 30. The daily bag and possession limit is one Chinook salmon 20 inches or greater in length. The seasonal (April 1-September 30) limit is two fish. The majority of the harvest is taken using boats. After retaining a Chinook salmon, 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 a commercial guiding industry. Since 1982, guides have been required to register with the State of Alaska. Guided anglers are more intensively regulated than nonguided anglers are. This is due, in part, to the guided fishermen’s greater harvest efficiency and the general concern regarding harvest parity between guided and nonguided anglers.

Most of the river area available to Chinook salmon fishing is managed as a state park by the Department of Natural Resources, 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. The public has generally favored the restriction to smaller outboards. There is no evidence to indicate that the use of smaller motors has reduced angler efficiency.

Under current Board of Fisheries policy, the early-run has been allocated almost exclusively to the inriver recreational angler. An unknown number of early-run fish are intercepted in the Cook Inlet marine sport fishery prior to their entry into the Kenai River fishery. In addition, there are small numbers of early-run Chinook salmon harvested in the Kenaitze Indian Tribal Association’s educational fishery.

In 1984, the department implemented an experimental sonar program to determine the number of Chinook salmon which return to the Kenai River. From 1984-1994, the sonar counter used dual-beam transducer technology. Beginning in 1995 to the present, the sonar program adopted split-beam technology as a means to further improve the estimation of Chinook salmon returning to the Kenai River. Estimation uncertainty, due in large part, to the problem of differentiating between the various salmon species migrating together into the Kenai River has necessitated that the sonar program employ several different methods as a means to better separate Chinook salmon and the more numerous sockeye salmon in the final estimates (Bosch and Burwen 2000).

In 1988, the Board of Fisheries adopted the management plan for early-run Kenai River Chinook salmon. This plan established minimum (5,300 fish) and optimum (9,000 fish) escapement goals and identified the possible management actions that could be implemented at given escapement levels. The original plan directed that the fishery be prosecuted without bait to reduce angler efficiency. Bait was permitted, by emergency order, when the optimum escapement goal could be projected. The escapement goals were changed to an optimum escapement range (7,200-14,400) in 1999. The strategy of restricting bait in the fishery until a given escapement level could be projected has remained an integral component to the management of this fishery. However, since adoption of this management practice, anglers have honed their skills at catching and harvesting Chinook salmon without the aid of bait or artificial scent.

Chinook salmon sport fish harvest declined steadily from 1993 through 1998 but has rebounded somewhat since (Table 3). The most recent 10-year (1994-2003) average Kenai River Chinook salmon sport fish harvest was 16,645 fish. The 2001-2003 average Kenai River Chinook salmon sport fish harvest was 14,482 fish.

KENAI RIVER CHINOOK SALMON EARLY RUN

Fishery Management Objectives

This fishery is managed according to provisions of the Kenai River Early-run King Salmon Management Plan (5 AAC 56.070). Early-run Kenai River Chinook salmon stocks are not exploited by any directed commercial fisheries in Cook Inlet. During the spring of 1999, the Alaska Board of Fisheries amended the management plan. The most significant change was a revision of the biological escapement goals (BEG) and the available management actions provided to meet the BEG objective. The current management objective, as outlined in the plan, is to achieve a biological escapement goal within the range of 7,200 to 14,400 Chinook salmon. The plan outlines management options and allowable alternatives to assure achievement of the escapement objective.

The fishery begins without the use of bait and is limited to the use of only one, single hook artificial lure. Fishing from guide vessels is not allowed on Sundays, and fishing from all vessels is not allowed on Mondays, with the exception of Memorial Day. If the final escapement is projected to be greater than 14,400 fish, the department shall establish a period, by emergency order, during which bait and multiple hooks may be used in the Kenai River downstream from Skilak Lake. In addition, there is an optional provision that permits the opening of some portion of the Kenai River downstream from Skilak Lake to fishing from boats on Mondays. If the spawning escapement is projected to be less than 7,200 early-run Chinook salmon, the department can implement trophy fishing provisions that prohibit the retention of Chinook salmon less than 55 inches in length, or close the Kenai River to retention of all Chinook salmon. Additionally, there are options within the management plan that serve to protect spawning early-run Chinook salmon in the mainstem of the Kenai River.

2004 Inseason Management Approach

The primary objective of inseason management is to achieve a spawning escapement goal within the range of 7,200 to 14,400 early-run Chinook salmon. Achievement of this escapement objective requires information on the number of early-run Chinook salmon entering the river; an estimate of the harvest; and the ability to project the total inriver return, and the resulting final spawning escapement.

The number of fish entering the river is estimated by the Chinook salmon sonar in the lower, mainstem Kenai River near river mile (rm) 8.0 (Figure 3). The sonar is usually operational on May 16 and the early-run Chinook salmon passage is estimated daily through June 30. The early run ends by regulation June 30. The estimated Chinook passage into the Kenai River for a given day is typically available to management staff by noon the following day.

Harvest is estimated inseason by an onsite creel survey. The survey also begins on or about mid-May, or as soon as water levels rise sufficiently to permit anglers and department staff to safely use boats on the river downstream from Soldotna. The early-run survey concludes June 30, the regulatory end of the fishery. Harvest estimates are typically generated on a weekly basis, but daily estimates can be made available if management action in the fishery appears imminent.

A preliminary estimate of spawning escapement is projected inseason using a mean run timing model. This estimate is based upon the projected inriver return minus the projected harvest (including Chinook salmon mortality associated with catch-and-release fishing). During the 2004 season, department staff projected that the early-run strength would be just below the 18-year average and fishery restrictions or liberalizations would not be justifiable unless daily escapement rates drastically changed.

In order to expedite the dissemination of information regarding the fishery to the public, the Soldotna office has two recorded message phone lines. One line provides a general weekly fishing forecast and the other phone line offers a brief summary of the weir and sonar counts for major Kenai Peninsula fisheries. A brief summary of the early-run fishery status is provided daily on this message phone as well. This message phone may receive over 800 calls daily during the peak of the fishery. The message phone gives the public reliable access to fishery information, and serves to improve the efficiency of the Soldotna staff. Due to increased demands by the public, the capacity of the daily update message phone was expanded during 2004 from handling three phone calls simultaneously to twenty calls simultaneously.

Public interaction is also achieved through formal news releases and information provided to the print, radio, and TV news media. News releases and requests from the broadcast media are given a priority because they provide a public forum to distribute relevant information regarding the status of the fishery as well as review the management plan regulating the fishery and possible management actions.

Restrictive management actions in this fishery are socially and economically disruptive. Informing the public in a timely and efficient manner can help to mitigate the potential for disruption. Continuous updates regarding the status of the fishery are provided in all available forums for several days prior to the likely date of any specific management action. Staff strives to issue formal announcements (news releases) regarding emergency orders that change the management of the fishery generally 24 hours before a given action becomes effective.

2004 Fishery Performance

The 2004 Kenai River Chinook salmon early run was slightly below the long-term average but produced good sport fishing with excellent catches reported periodically. The 2004 preseason forecast of 14,000 Kenai River early-run Chinook salmon indicated a run slightly below the recent average of 16,000 fish. The final cumulative sonar passage estimate for the early run was 15,498 fish through June 30 (Table 8). Of 16 years on record, eight years were higher and eight years were lower than the 2004 run. After subtracting a preliminary harvest of approximately

3,800 fish for the entire river, the department estimates an escapement of about 11,700 Kenai River early-run Chinook salmon for the 2004 season, slightly above the mid-point in the escapement goal range of 7,200-14,400 fish.

A below average run with extended record high water conditions and fair water clarity in late May through June resulted in slow catch rates for most of the run. The 44"-55" slot limit performed as expected in its second year on the Kenai River. Approximately 20% of the early-run catch was between 44" and 55" in length and released back into the river. Fishing success was well below average for guided anglers at 23 hours per fish (average – 12 hours per fish) and as well as for un-guided anglers at 39 hours per fish (average 24). The 2004 season was the second year regulations exist requiring all retained trophy Chinook salmon (greater than 55" length) be sealed by ADF&G within three days of harvest. No trophy Chinook salmon were sealed during May or June during the 2003 or 2004 season.

KENAI RIVER CHINOOK SALMON LATE RUN

Fishery Management Objectives

This 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 exploited 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. 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 these stocks have been the subject of intense allocational conflict among recreational and commercial user groups since the early 1980s. As a result, the Kenai River Late-run Sockeye Salmon Management Plan contains provisions that are intended to reduce incidental harvests of Kenai River-bound Chinook salmon.

During the spring of 1999, the Alaska Board of Fisheries amended both of these plans. The most significant change was the revision of the biological escapement goal (BEG) and the management actions associated with these objectives. Under the previous Late-run Kenai River King Salmon Management Plan, the BEG was established as an optimum goal of 22,300 Chinook salmon with management directives centered around projected escapement levels of less than 15,500, 15,500 to 19,000 and greater than 22,300. Under the revised management plan the BEG was established as a range of 17,800 to 35,700 Chinook salmon. Management directives were also established that more closely linked inseason regulatory actions with the abundance of sockeye salmon. The current management objective, as outlined in the plan, is to achieve a biological escapement goal from 17,800 to 35,700 Chinook salmon.

2004 Inseason Management Approach

The primary objective of inseason management is to attain the goal of being within the biological escapement goal range of 17,800 to 35,700 late-run Chinook salmon. Achieving this objective requires an estimate of the number of late-run Chinook salmon entering the river; an estimate of the harvest; and the ability to project the total inriver return, total harvest and the final spawning escapement.

The inriver return of late-run Chinook salmon is estimated by sonar at rm 8.5. Late-run sonar estimates begin when the late-run fishery opens by regulation (July 1) and concludes on approximately August 10. Estimates of inriver return are generated daily and the estimate for

any given day is typically available to management staff by the afternoon of the following day. If estimates are required earlier, this request is conveyed to the sonar staff who can, by adjusting schedules, provide counts by the morning of the following day.

Harvest is estimated by onsite creel survey. The late-run survey begins July 1 and is continuous 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 emergency order predicated on the magnitude of the inriver return. Harvest estimates are usually generated weekly. Daily estimates are available should imminent management action be likely.

The final spawning escapement is projected inseason using a historical, run-timing model. Final spawning escapement is the inriver return (from sonar) less the projected sport harvest (from creel survey). The projected sport harvest includes estimated mortality associated with catch-and-release fishing practices. During most years, the spawning escapement can be projected with reasonable accuracy by July 20.

The large numbers of sockeye salmon migrating during the late run complicate estimation of Chinook salmon passage with the sonar. Consequently, alternative techniques for estimating escapement are also used. Such techniques include estimates based on historical exploitation rates in the recreational fishery and historical exploitation rates in the commercial setnet fishery.

The recreational fishery for late-run Chinook salmon in the Kenai River is one of the largest and quite possibly the most controversial fishery in Alaska. Interaction with the user groups affected by management decisions is critical to the successful implementation of any inseason management action.

The Soldotna Sport Fish Division office has two recorded message phones. One phone provides a general weekly fishing forecast, the other a brief summary of spawning escapements, weir counts and sonar estimates for major Kenai Peninsula fisheries. It is on the latter message phone that a brief summary of this sport fishery's status is provided daily. This message phone may receive over 800 calls daily during the peak of the fishery. This not only affords the public reliable access to information, but also increases the efficiency of the Soldotna staff.

Public interaction is also achieved through formal news releases and requests for information from the news media. News releases and requests from the news media are given a priority because they provide a public forum to disseminate information regarding the fishery's status, the management plan which regulates the fishery and pending management actions.

Restrictive management actions in this fishery are socially disruptive. Informing the public of potential restrictions to the fishery through the aforementioned use of the recorded message phone and news media contacts can mitigate disruption. Staff make efforts to issue formal announcements pertaining to emergency regulation of the fishery at least 24 hours prior to any management action.

2004 Fishery Performance

The pre-season forecast of 52,000 late run Kenai River Chinook salmon was about the same as the final in-river return estimate of 52,375 through August 3 when the sonar site was closed for the season. An estimated 3,380 Chinook salmon passed the sonar site between August 4 and 10 after the sonar site was closed for the season bringing the total cumulative inriver return for the Kenai River Chinook salmon late run to 56,205 fish (Table 9).

The preliminary inseason estimated late-run Chinook salmon sport fish harvest of 19,000 fish provided for a spawner escapement estimate of approximately 37,000 fish, which is slightly above the upper escapement goal (range 17,800-35,700 late run Chinook). The 2004 fishery experienced the second highest total sport fish harvest on record. Angler success was considered excellent overall. Guided anglers enjoyed a harvest rate of 11.6 hours per fish (average 16 hours) and the rate for non-guided anglers was 25.5 hours per fish (average 33.9 hours; Table 10). Overall, sport anglers enjoyed the excellent opportunity to target Chinook in one of the best late-run Chinook salmon returns to the Kenai River on record.

A total of eleven late-run Chinook salmon were brought to department personnel to be sealed as required for sport caught Chinook over 55 inches in length during 2004. Of these eleven fish, only four were actually over 55 inches in length and the remainder of the fish were just under 55 inches in length.

The commercial fisheries in the Central District of the Upper Cook Inlet Management Area harvested approximately 25,390 Chinook salmon. Of this commercial harvest, approximately 21,656 were harvested in the eastside setnet fishery (Table 9). This harvest was the largest in the eastside setnet commercial salmon fishery since 1966.

2004 KASILOF RIVER CHINOOK SALMON RECREATIONAL FISHERY

2005 PROPOSALS TO THE BOF CONCERNING KASILOF RIVER CHINOOK SALMON SPORT FISHERY ISSUES

The following proposals will likely have some impact on the sport fisheries targeting Chinook Salmon in the Kasilof River:

312, 313,314,315,316,317,318,319, and 320,

as published in “The Alaska Board of Fisheries 2004/2005 Proposed Changes in the Kodiak/Chignik Areas (All Finfish), Cook Inlet Area (All Finfish), King and Tanner Crab (All Regions), and Supplemental Issues” booklet.

BACKGROUND AND HISTORICAL PERSPECTIVE

The hatchery stocks of early-run Chinook salmon that return to the Kasilof River were originally developed from the wild fish present in Crooked Creek, a tributary to the Kasilof River, approximately 6 miles upstream from Cook Inlet (Figure 4). A population estimate of late-run Kasilof River Chinook salmon has never been attempted. Fortunately, ADF&G has received approval for allocating research funding and efforts to study the late-run Kasilof River Chinook salmon population in the near future.

The recreational fishery for early-run Chinook salmon in the Kasilof River occurs from late May through early July. The growth of drift boat fishing has increased to such an extent that the angler effort in this fishery occurring from drift boats exceeds the shore based angler effort at times.

The timing of the early-run precedes the commercial set gillnet fishery on the eastside beaches of Cook Inlet. There is, however, a personal use gillnet fishery that occurs in late June at the mouth of the Kasilof River. This fishery harvests primarily sockeye salmon returning to Tustumena

Lake. Each year small numbers of Chinook salmon of Crooked Creek origin are also caught there (Table 11).

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, the area upstream from the Sterling Highway Bridge is closed to Chinook salmon fishing to protect spawning fish. The early-run is harvested by both shore and boat anglers.

Harvest estimates for the combination of early and late-run Kasilof River Chinook salmon fisheries is estimated by the Statewide Harvest Survey. During 1999-2003, annual angler harvests have declined from the combined early and late-run Kasilof River Chinook salmon sport fisheries (Table 12). The most recent 5 year average (1999-2003) Kasilof River Chinook salmon angler harvest for the combined early and late-run sport fisheries is 7,297 fish (Table 12).

KASILOF RIVER CHINOOK SALMON EARLY RUN

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 first fishery objective for the Kasilof River early-run Chinook salmon run is to produce a return of approximately 8,000 early-run Chinook salmon to Kasilof River, while ensuring that a minimum of 700 Chinook salmon spawn naturally in Crooked Creek upstream from the hatchery. The second objective for this fishery is to generate approximately 35,000 angler-days of annual sport fishing opportunity directed at Chinook salmon in the Kasilof River. The third objective for this fishery is to annually stock 105,000 Chinook salmon smolt in Crooked Creek.

Measuring whether the first two management objectives have been met for the 2004 return will be delayed until the SWHS results are made available in mid-2005. The third objective of stocking 105,000 Chinook salmon smolt was not met in 2004. A total of 81,000 Chinook salmon smolt were stocked into Crooked Creek during 2004.

Observation and data indicate that the first two objectives should be achieved for the 2004 early-run. Although total return information is unavailable for 2004, the 2003 total return was estimated at 9,532 early-run Chinook salmon (Table 12). During the 2002 season, an emergency order was released which prohibited the retention of naturally produced fish. The 2002 return of naturally produced early-run Chinook salmon could not support the sport fishery exploitation rate thus only hatchery fish were retainable. In addition, an inseason emergency order prohibiting the use of multiple hooks was issued to reduce hook-and-release mortality as part of the attempt to reduce the overall exploitation rate on naturally produced Chinook salmon. During 2003, regulations were adopted which prohibited the retention of naturally produced early-run Chinook salmon, and anglers were prohibited from using multiple hooks.

Total participation in Kasilof River sport fisheries was 30,840 angler-days of effort for 2003 (Table 4; Jennings et al. *in prep.* b). This total includes guided and unguided shore and boat anglers. The majority of the participation in Kasilof River sport fisheries is assumed to occur during the early-run Chinook salmon fishery. Angler participation in this fishery has steadily declined since 2000 and has averaged 38,515 angler-days of effort from 1994-2003 (Table 4).

2004 Inseason Management Approach

Harvest in this fishery is primarily stocked fish and therefore no inseason regulation of the fishery has historically been required. Inseason management activity has been limited to a relative determination of angler success through observation, contact with anglers, and limited creel surveys in 2002 and 2004. This information is used to convey the general status of the fishery to the news media and public.

2004 Fishery Performance

The 2004 Kasilof River Chinook salmon early run sport fishery creel survey of 2,700 anglers indicated that 51.8% of the total Chinook salmon caught were hatchery raised fish. Anglers can easily discern the difference between a hatchery produced fish and a naturally produced fish based upon the presence of an adipose fin. Hatchery raised fish have the adipose fin clipped off prior to release for identification. Current regulation prohibits the retention of naturally produced early-run Chinook salmon from the Kasilof River sport fishery.

The early-run Kasilof River Chinook salmon escapement was considered strong. The 2004 sport fishery harvests fluctuated but overall were considered good. Preliminary 2004 sample numbers collected from the department creel survey of 2,700 angler interviews indicates approximately 745 naturally produced and approximately 800 hatchery raised Chinook salmon were reported caught of which 625 hatchery raised Chinook salmon were harvested (176 hatchery raised Chinook released). These figures are just a small sample of the total anglers participating in this fishery but the figures are used for a basic snapshot of the fishery's performance inseason. Preliminary data expanded from this creel survey indicates that a total of 3,134 hatchery raised early-run Chinook salmon were caught by anglers and of those, 2,241 fish were retained as harvest (Table 12). This same data set indicates that a total of 3,245 natural Chinook salmon were caught and released by anglers during 2004. An estimated 211 of these caught and released natural Chinook salmon died due to resulting injuries.

Comparing these data to the 2003 creel survey, 1,652 naturally produced and 971 hatchery raised Chinook salmon were reported caught in which 785 hatchery raised Chinook salmon were harvested (186 hatchery raised Chinook released) from 2,975 angler interviews. These figures are also just a small sample of the total anglers participating in this fishery but the figures are used for a basic snapshot of the fishery's performance inseason.

The 2004 escapement into Crooked Creek was 2,196 naturally produced and 2,160 hatchery raised Chinook salmon. An additional 318 jack Chinook salmon also passed the weir in 2004 bringing the total escapement past the Crooked Creek weir to 4,674 Chinook salmon. This compares to the 2003 escapement into Crooked Creek of 2,554 naturally produced and 1,043 hatchery raised Chinook salmon. An additional 1,111 jack Chinook salmon also passed the weir in 2003 bringing the total escapement past the Crooked Creek weir to 4,708 fish (Table 12).

KASILOF RIVER CHINOOK SALMON LATE RUN

Fishery Management Objectives

This sport fishery is not specifically addressed in a Board-adopted management plan. Department 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

ensuring through appropriate management and research programs, that the Chinook salmon population does not decline below the levels necessary to ensure sustained yield.

2004 Inseason Management Approach

There has been no inseason management in the history 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.

2004 Fishery Performance

There has been no inseason data collected for the management of the Kasilof River Chinook salmon late run. The only inseason information that indicates run strength or sport fishery performance is anecdotal. Anecdotal information received from anglers suggests that the 2004 Kasilof River Chinook salmon late run performed poorly. Liberalizations in the commercial fisheries targeting Kasilof bound sockeye salmon were the results of a record escapement past the ADF&G sonar station, which was significantly in excess of Kasilof River late-run sockeye salmon escapement goals. These commercial fishery liberalizations included the implementation of aggressive fisheries management practices. One of the most effective tools available to fisheries managers, executing terminal commercial fishing periods at the mouth of a river, was utilized in 2004. The terminal fishery periods that concentrated commercial fishing activities at the mouth of the Kasilof River drastically reduced the potential for salmon escapement into the river. The total number of commercially harvested Kasilof River bound Chinook salmon during these terminal fishery periods was not estimated at the time of this publication.

On occasion, a few anglers bring in harvested Kasilof River late-run Chinook salmon, over 50 pounds in total weight, to ADF&G to participate in the trophy fish program. The trophy fish program is voluntary in nature and participating anglers receive special recognition for taking fish that meet minimum weight or length standards. Anglers receive a “Trophy Fish” certificate. During 2004, two “Trophy Fish” certificates were issued to anglers who voluntarily brought in late-run Chinook salmon harvested in the Kasilof River.

2004 RUSSIAN RIVER SOCKEYE SALMON RECREATIONAL FISHERIES

2005 PROPOSALS TO THE BOF CONCERNING RUSSIAN RIVER SOCKEYE SALMON SPORT FISHERY ISSUES

The following proposals will likely have some impact on the sport fisheries targeting sockeye salmon in the Russian River and Russian River sanctuary:

273, 274, and 275,

as published in “The Alaska Board of Fisheries 2004/2005 Proposed Changes in the Kodiak/Chignik Areas (All Finfish), Cook Inlet Area (All Finfish), King and Tanner Crab (All Regions), and Supplemental Issues” booklet.

BACKGROUND AND HISTORICAL PERSPECTIVE

The Russian River is a clearwater tributary to the Kenai River near the community of Cooper Landing on the Kenai Peninsula approximately 100 miles south of Anchorage (Figure 5). Lands bordering this river are federally managed. Public access is via a ferry-boat crossing on the Kenai River 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 drainage supports one of the largest returns of sockeye salmon to upper Cook Inlet and provides one of the largest freshwater recreational fisheries for sockeye salmon in Alaska. In addition, coho, Chinook and pink salmon spawn in the Russian River drainage as do resident populations of Dolly Varden and rainbow trout. The drainage is closed to fishing for Chinook salmon but supports recreational fisheries for the other species.

Sockeye salmon return to the Russian River during two distinct time 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 upper Cook Inlet commercial salmon fisheries. The primary harvest of these fish occurs in the inriver recreational fishery. Early-run fish typically congregate at the confluence of the Russian and Kenai rivers for about 2 weeks prior to moving into the clear waters of the Russian River. A late-run, part of the larger late-run of upper Cook Inlet sockeye salmon, arrives at the confluence area in mid-July and typically migrates directly into the Russian River. This run has two discrete components, one that spawns in the upper reaches of the drainage (upstream of the weir) and one that spawns in the lower river reaches (downstream of the weir). The population component that spawns in the lower reaches of the river is more closely related (genetically) to the mainstem Kenai River sockeye salmon stocks than to the population component spawning upstream of the weir (Seeb 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, recreational, and personal use user groups.

The recreational fishery for both early- and late-run sockeye salmon occurs primarily in the lower 3 miles of the Russian River and in the Kenai River from its confluence with the Russian River downstream about 1 mile. Both runs support intense fisheries. The most recent 10-year (1994-2003) average harvest of early and late-run sockeye salmon is approximately 37,660 and 23,653 fish (Tables 13 and 14; Figure 7)

The most recent 10 year average (1994-2003) combined early and late-run angler effort has averaged 57,815 angler-days per year (Tables 4; Figure 7). At times, more than 1,000 anglers simultaneously fish this 4-mile area. The two public campgrounds managed by federal agencies are routinely filled to capacity and unable to meet public demand for camping and parking.

In 1993, the Sport Fish Division of the Alaska Department of Fish and Game purchased property that adjoins Fish and Wildlife Service 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, formerly the site of the privately owned Sportsman's Lodge, was purchased for \$375,000. This purchase was made possible primarily from Federal Dingell-Johnson (D-J) funds. The primary reason for the purchase was to provide a launch and take-out area for boat anglers fishing the Kenai River. A secondary benefit was to provide 50 to 75 additional parking places for anglers fishing sockeye salmon at the confluence of the Kenai and Russian Rivers. Purchase of this property and subsequent improvements in 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 recreational fishery have become more restrictive to ensure sustainability of the stock. In 1965, the use of treble hooks was prohibited in an effort to reduce snagging. In 1966, terminal gear was limited to flies and the area was designated as a fly-fishing-only area. In 1967, the Board of Fisheries 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 and required that fish hooked elsewhere than in the mouth 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 3/8 in. This measure was implemented to reduce angler efficiency and lessen the angler's ability to illegally snag fish. This affords fish an increased measure of protection as they near their spawning destinations. In order to protect "schooled" fish that hold in the confluence area of the Kenai and Russian rivers (termed the "sanctuary"), the sanctuary is closed to recreational fishing until the lower end of the early-run escapement range is projected. Only the lower 3 miles of the Russian River drainage are open to salmon fishing. The upstream portion is closed to allow fish to migrate unimpeded to spawning destinations.

RUSSIAN RIVER SOCKEYE SALMON MANAGEMENT OBJECTIVES

Management of this fishery is governed by the Russian River Sockeye Salmon Management Plan (5 AAC 21.361). The primary management objective, as directed in the plan, is to achieve an escapement goal of 14,000 to 37,000 early-run sockeye salmon and 33,000 to 121,000 late-run sockeye salmon into the Russian River system. The escapement goals for both runs have been achieved in all years since 1977, based upon the management plan effective at that time (Tables 13 and 14; Figure 7).

The Russian River Sockeye Salmon Management Plan recognizes that commercial users as well as mainstem Kenai and Russian River recreational 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 recreational users. In the event that conservation measures are required to achieve the minimum escapement goal, the department shall restrict Kenai River drainage recreational fisheries. 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).

2004 INSEASON MANAGEMENT APPROACH

The early- and late-run fisheries are managed by escapement 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 recreational fishery. In years of high abundance, the fishery is liberalized inseason to provide additional fishing opportunity.

Run strength is determined by examining three indicators: weir counts, instream fish counts, and observed fishery performance. Weir counts are the primary indicator of run strength. Historical data provide the percentage of the run that is expected to have passed the weir by a given date (Tables 15 and 16). An estimation of run strength can generally be made a few days prior to the historic mid-point of the run (June 29 or 30 for the early run and August 5 for the late run). In some years, fish have been late or have held in the Kenai River. Weir counts are supplemented

by onsite enumeration 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). In addition, observed fishery performance in the Kenai River downstream from the sanctuary area for the early-run and throughout the entire fishery in the late-run is considered an indicator of run strength. If inseason restrictions become necessary in order to achieve the escapement goal, the department generally considers the following options: bag limit reductions and closures by area and time in the Russian River as well as the mainstem of the Kenai River. Typically, such inseason restrictions remain in place until the lower end of the escapement range is projected.

Early-run sockeye salmon returns have been at high levels in recent years and the recreational fishery has often been liberalized inseason. The liberalization of the fishery is generally implemented by opening the 700-yard sanctuary area at the confluence of the Kenai and Russian rivers to fishing. This area is opened when information indicates the lower end of the escapement range (14,000) will be achieved. The sanctuary area is opened by emergency order for the remainder of the salmon fishing season. Experience has proven that a daytime opening facilitates an orderly expansion of fishing opportunity in the fishery. Late evening and midnight openings are avoided.

During the 2004 season, the Russian River Area sockeye salmon sport fishery was liberalized with the issuance three Emergency Orders (EOs; Appendix A1). The first liberalization took place on June 18 through the issuance of EO number 2-RS-1-09-04. This EO opened the Russian River Sanctuary Area to fishing for sockeye salmon because ADF&G had determined that the minimum early-run sockeye salmon spawning escapement goal of 14,000 fish would be achieved. The second liberalization of the sport fishery targeting the early-run was the issuance of EO number 2-RS-1-11-04 which increased the daily bag and possession limits for salmon, other than Chinook salmon, from three fish per day and in possession up to four fish per day with a possession limit of eight fish on June 25. This second liberalization was issued in response to the strength of the Russian River early run sockeye salmon. Liberalizing the daily bag and possession limits to four per day and eight in possession, instead of the historic six fish per day and twelve fish in possession was implemented to provide additional angler opportunity by increasing the cyclic rate of angler rotation through the fishery that is limited by access. The third sport fishery liberalization did not take place within the Russian River, rather the liberalization affected only the lowest 100 yards of the Russian River. This third liberalization was through the issuance of EO number 2-RS-1-21-04, which extended the season for the sockeye salmon sport fishery in the Russian River Sanctuary Area for an addition 11 days through August 31. This fishery season extension was in response to the strength of the Kenai River sockeye salmon late-run escapement which had exceeded escapement goals. At the time of this liberalization, the Russian River weir cumulative escapement had surpassed the midpoint of the late-run Russian River escapement goal range of 77,000 fish.

2004 RUSSIAN RIVER SOCKEYE SALMON EARLY RUN FISHERY PERFORMANCE

The weir was operational on June 9. Sockeye salmon classified as early-run fish are enumerated through the Russian River weir through July 14. The 2004 early-run sockeye salmon escapement through the Russian River weir was 56,582 fish (Table 15). This was about 20% above the most recent 10-year (1994-2003) average of 45,399 fish (Table 13).

In 2004, the Russian River early-run sockeye salmon recreational fishery opened by regulation on June 11 and closed by regulation on August 20. The fishery was prosecuted without

restriction. Sport fishing catch rates were good to excellent from the beginning of the season through the first week of July. The sport fishery liberalizations were in response to the strength of the early run. Angler success rates remained high through early July. The 2004 harvest estimates will be available when the SWHS is published in mid-2005.

2004 RUSSIAN RIVER SOCKEYE SALMON LATE RUN FISHERY PERFORMANCE

Sockeye salmon classified as late-run fish are enumerated through the Russian River weir from July 15 through September 3. The 2004 late-run sockeye salmon escapement through the Russian River weir was 110,244 fish (Table 16). This was about 19% above the most recent 10-year (1994-2003) average of 88,933 fish (Table 17).

The 2004 Russian River late-run sockeye salmon recreational fishery was a continuation of the early-run fishery beginning on July 15. The fishery was prosecuted without restriction. Sport fishing catch rates were good to excellent from the beginning of the season through the mid-August. The sport fishery liberalization that extended the sport fishing season in the Kenai River and Russian River sanctuary through August 31 was in response to the strength of the Kenai River sockeye salmon late run in combination with the satisfactory strength of the Russian River late-run sockeye salmon run. Angler success rates remained high through the end of July and into the beginning of August. The 2004 harvest estimates will be available when the SWHS is published in mid-2005.

2004 KENAI RIVER LATE-RUN SOCKEYE SALMON RECREATIONAL FISHERIES

2005 PROPOSALS TO THE BOF CONCERNING KENAI RIVER LATE-RUN SOCKEYE SALMON SPORT FISHERY ISSUES

The following proposals will likely have some impact on the sport fisheries targeting late-run sockeye salmon in the Kenai River:

289, 292, 294, 295,

as published in "The Alaska Board of Fisheries 2004/2005 Proposed Changes in the Kodiak/Chignik Areas (All Finfish), Cook Inlet Area (All Finfish), King and Tanner Crab (All Regions), and Supplemental Issues" booklet.

BACKGROUND AND HISTORICAL PERSPECTIVE

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 8).

Historically, snagging was the traditional harvest method for taking sockeye (red) salmon in the Kenai River. It was generally believed that this species would not strike a lure or accept bait and that conventional (non-snagging) 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. Anti-snagging measures, first adopted at the Russian River, culminated in 1975 with the Board promulgating Alaska's present freshwater anti-snagging regulation. 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 water 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 23,584 sockeye salmon from 1977 through 1981 (Mills 1979-1980, 1981a-b, 1982).

Between 1982 and 1985, the average harvest increased to 48,570. This dramatic increase is attributed to the use of coho flies as terminal gear. The coho flies are drifted along the bank similar to the technique used for a number of 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 returns, which exceeded 600,000 sockeye in both 1982 and 1983 (Table 18). A return of only 344,571 fish resulted in a reduced 1984 sport harvest (15,702). Sockeye salmon sport fish harvests from 1985-2003 ranged from 57,210-305,797 fish but averaged 171,570 fish (1985-2003 average; Table 19; Figure 9).

The recreational fishery for sockeye salmon in the Kenai River is characterized by:

1. Large numbers of sockeye salmon must be present to provide acceptable harvest rates.
2. The fishery is of short duration, usually from July 16 to August 5, or approximately 20 days.
3. The fishery is affected by water clarity, i.e. turbid water generally decreases angler efficiency and clear water serves to increase catch rates.
4. Only a percentage of the total angler effort is directed toward sockeye salmon, irrespective of run strength or fishing conditions. This is a result of the Kenai River being a multi-species fishery in July and August, with only a percentage of the total angler effort directed toward sockeye salmon. The department expects a steady increase in angler effort as the population of Alaska increases. Angler participation in the Chinook salmon sport fishery, coho salmon sport fishery and during even years, the sport fishery for pink salmon, as well as fishing effort for resident rainbow trout and Dolly Varden, account for the remainder of total angler participation.

KENAI RIVER SOCKEYE SALMON LATE-RUN 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). The Division of Sport Fish manages the inriver sport fishery. Late-run Kenai River sockeye salmon are a component of the harvest of the upper Cook Inlet commercial fishery managed by the Commercial Fisheries Division. During the February 1999 meeting of the Alaska Board of Fisheries, the Kenai River Late-run Sockeye Salmon Management Plan was significantly amended. Under the previous plan, the inriver goal was established as a range of 550,000 to 850,000 sockeye salmon, measured by sonar at rm 19 of the Kenai River, with a biological escapement goal (BEG) range of 330,000 to 600,000 fish.

The 1999 revised plan established an optimum escapement goal (OEG) of 500,000 to 1,000,000 sockeye salmon. The OEG represents the actual spawning escapement, defined as the inriver

sonar estimate less inriver sport harvest above the Soldotna Bridge. The plan also directs the department:

1. to manage Kenai River late-run sockeye salmon primarily for commercial uses;
2. to minimize commercial harvests of Northern District coho salmon, late-run Kenai River Chinook salmon, and Kenai River coho salmon; and provide reasonable opportunity to harvest salmon in those sport and guided sport fisheries; and
3. to manage all fisheries to meet the OEG, achieve inriver goals, and distribute escapements evenly within the OEG range and in proportion to run size.

Inriver goals set in the plan are ranges of sockeye salmon passing the sonar at rm 19 (Figure 8) of the Kenai River, and are derived from three levels of projected run strength. Ranges of projected run strength and corresponding inriver (sonar) goals outlined in the plan are:

<u>Projected Run Strength</u>	<u>Inriver (Sonar) Goal</u>
1. less than 2 million	600,000-850,000
2. 2-4 million	750,000-950,000
3. greater than 4 million	850,000-1,100,000.

Commercial Fisheries Division operates the rm 19 sonar and is responsible for managing UCI commercial fisheries to achieve the inriver (sonar) goals. It is the responsibility of the Division of Sport Fish to assess inriver harvests and take steps to ensure that the OEG range is achieved by issuing Emergency Orders to restrict or liberalize the sport harvest if necessary.

2004 INSEASON MANAGEMENT APPROACH

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 recreational 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. Because of this expansion of the sport fishery, allocative limits were placed on recreational harvests of sockeye salmon by the Board of Fisheries.

In 1993, changes were adopted into the management plan by the Board of Fisheries that restricted the total sport harvest to less than 10% of the sonar estimate when the inriver sonar estimate was within the range of 400,000 to 700,000 sockeye salmon. Based upon the pre-season forecast in 1993, the bag and possession limits were reduced to 2 sockeye salmon per day and sport fishing was prohibited each day during the hours of 11:00 p.m. to 6:00 a.m.

In 1994, Commissioner Rosier determined that the provision limiting sport harvests to less than 10% of the sonar estimate, within the range of 400,000 to 700,000 fish, was a guideline harvest level rather than a harvest cap. Based upon this decision, the 1994 season commenced with bag and possession limits of 3 sockeye salmon per day and was prosecuted in a normal manner. On August 3, it was projected the sonar count would exceed 700,000. In accordance with the management plan, the bag and possession limits were increased to 6 sockeye salmon. The 1995 recreational fishery was prosecuted without management intervention. The bag and possession limits were not increased, as the sonar count did not exceed 700,000 fish.

In 1996, the Board again amended the management plan to incrementally increase the inriver escapement goals. The inriver goal during the 1996 season was established at 550,000-800,000

fish, increasing to 550,000-825,000 in 1997 and 550,000-850,000 sockeye salmon in 1998. The 1996 and 1997 recreational fisheries were prosecuted in a normal manner with no inseason management actions implemented.

Throughout this time period, management of the inriver recreational fishery relied on sonar estimates of inriver escapement and postseason assessment of the sport harvest from the SWHS. There was not a pressing need to assess the recreational harvest of sockeye salmon inseason, provided that the inriver escapement goal could be met. This situation continued because of the buffer or escapement gap between the inriver escapement goal (sonar estimate) and the lower limit of the BEG range. This gap between the lower limit of the BEG and the inriver sonar goal was intended to provide for inriver recreational harvests. If the inriver escapement goal (sonar estimate) is achieved, the recreational fishery could be prosecuted without restriction. This management strategy for the Kenai River recreational sockeye salmon fishery depended heavily upon the successful management of the commercial salmon fishery in UCI to achieve the inriver sonar goal.

In 1998, inseason assessment of the sport harvest in the Kenai River and the Russian River was necessitated by a poorer than expected return and later run-timing of sockeye salmon stocks into the Kenai River. Inseason assessment of sockeye salmon harvest consisted of estimating the contribution of Russian River and Hidden Lake stocks to the total inriver return and applying historical exploitation rates from the mainstem of the Kenai River and at the Russian River to estimate harvest. Emergency regulation of the sport, personal use and commercial fisheries during 1998 was based, in part, upon this analysis. Reliance upon postseason assessment of recreational harvests using the available version of the SWHS was recognized as insufficient by management staff from both fishery divisions. Consequently, during the winter and spring of 1998-1999, a model was developed by the Division of Sport Fish to provide inseason estimates of personal use and sport harvests of late-run sockeye salmon. This model is based upon the average historic exploitation rates derived from the SWHS. Management staff employed this model (mean exploitation rate) during the 1999-2003 seasons.

During the 2004 season, Kenai River late-run escapements were consistently above established goals as the result of the timing and patterns of sockeye salmon entering into the Kenai River. The 2004 late-run sockeye salmon run strength was of a magnitude that did not require inriver sport fisheries restrictions.

On July 21, in response to the magnitude of the Kenai River sockeye salmon late run escapement rates, EO number 2-RS-19-04 (Appendix A1) was issued liberalizing the daily and in possession bag limits for sockeye salmon. The daily bag limit for salmon 16" or greater in length, other than Chinook salmon, was raised from three fish per day to six fish per day of which only two could be coho salmon. The possession limit was raised from three fish to six fish in possession. This liberalization was for all waters of the Kenai River except for the fly-fishing-only waters of the Russian and Kenai rivers.

2004 KENAI RIVER SOCKEYE SALMON LATE RUN FISHERY PERFORMANCE

The 2004 preseason forecast for the Kenai River late-run sockeye salmon was for a run of 3.2 million, which reflects the long-term average run size (over 3.0 million). Due to the strength of the 2004 Kenai River sockeye salmon run, the Kenai River sockeye sport fishery bag and possession limits were liberalized.

The actual run began behind the historic average but rapidly exceeded historic averages during the week of July 12 – 18. Over 471,000 sockeye had passed the sonar counter by July 18. By July 23, the run was projected to exceed 2.0 million fish. Emergency Orders were issued increasing the sport bag and possession limits to six per day and allowing the PU fishery to operate 24 hours per day. Sport fishery success rates were good to excellent throughout July into mid-August. Harvest rates in the PU fishery were also excellent at times.

Although final estimates for the 2004 sockeye run are not available, preliminary results indicate a total run of about 4.8 million, with almost 1.4 million fish past the sonar counter. Once sport harvest estimates become available mid-2005, the 2004 Kenai River sockeye salmon spawning escapement is expected to be above the OEG range (500,000-1,000,000). The department expects that the 2004 sockeye salmon sport fish harvest is likely to be the largest on record.

2004 KENAI RIVER COHO SALMON RECREATIONAL FISHERIES

2005 PROPOSALS TO THE BOF CONCERNING KENAI RIVER COHO SALMON SPORT FISHERY ISSUES

The following proposals will likely have some impact on the sport fisheries targeting coho salmon in the Kenai River:

149, 160, 161, 163, 165, 166, 168, 270, 288, 295, 296,

as published in “The Alaska Board of Fisheries 2004/2005 Proposed Changes in the Kodiak/Chignik Areas (All Finfish), Cook Inlet Area (All Finfish), King and Tanner Crab (All Regions), and Supplemental Issues” booklet.

BACKGROUND AND HISTORICAL PERSPECTIVE

Run timing of coho salmon bound for the Kenai River and other Kenai Peninsula systems is slightly later than many Northern District systems. There is anecdotal evidence to suggest that there are two runs of coho salmon that migrate into the Kenai River. Creel surveys conducted during 1991-1993 and 1998 indicate that two distinct runs are not readily discernable from harvest rate data (Clark et al. *unpublished*). Recoveries during the adult return of coho salmon marked as smolt in the Kenai River indicate that time of entry and time of spawning are independent of time of marking as smolt (Clark et al. *unpublished*). As a result, coho salmon in the Kenai River are managed with harvest information and smolt abundance that represent a single stock.

Coho salmon typically begin entering the Kenai River in late July and continue through early September, and at reduced levels into December. It is assumed that the Kenai River has the only significant late-season coho salmon run in Cook Inlet. Recreational effort is targeted at 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 10). Unlike the highly mobile Chinook salmon fishery, the coho salmon fishery takes place from anchored boats as well as from shore. Current regulations permit the use of bait. Beginning in the year 2000, bag and possession limits were reduced to 2 fish per day and in possession. 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.

Kenai River coho salmon stocks are subject to commercial exploitation in Upper Cook Inlet (Table 20, Figure 11). Data from a comprehensive CWT program indicates that Kenai River coho salmon stocks are principally harvested in the Central District Eastside Setnet (ESSN) fishery. While Kenai River coho salmon stocks are harvested 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). The majority of the total harvest of Kenai River stocks occurs in the recreational fisheries of the Kenai River (Table 20, Figure 11).

Kenai River coho salmon are also harvested in personal use and subsistence fisheries. In 1981, 1983 through 1993 there was a fall personal use or subsistence set gillnet fishery for coho salmon on the eastside beaches that are open to commercial setnetting (Table 21). This fishery was open in September, and therefore harvested late-running coho salmon. In 1985 and 1991-1994 there was also a subsistence set gillnet fishery on Central and Northern District beaches that are open to commercial setnetting. This fishery was generally open on scheduled days from May through September, with the 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 21). This fishery has existed in various forms in most years since 1981 and targets sockeye salmon running into the Kenai River 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 Board changed the closing date of this fishery from August 5 to July 31 to reduce the harvest of coho salmon.

A creel survey was conducted in the Kenai River downstream from Soldotna from 1976-1993. The survey provided inseason harvest, harvest per unit effort and angler participation estimates for this area of the river. These data were used postseason to track the relative status of the fishery and were not intended for inseason management of the fishery. Assuming that harvest is positively related to coho salmon abundance, numbers of late-run Kenai River coho salmon (with allowances for annual variation) appeared relatively stable through 1992. The creel survey was determined to not be cost effective and was terminated at the conclusion of the 1993 season. There was no onsite creel survey from 1994-1996. The survey was reinstated in 1997 and 1998. Creel survey estimates for both years were similar to estimates from the SWHS. Therefore, the SWHS estimates were reported as the final estimates.

Despite relatively stable harvests in the recreational fishery through the early 1990s, fisheries managers became increasingly concerned that the current levels of harvest in the early and late-run fisheries could not be sustained.

The Division of Sport Fish began a stock assessment program in 1992 which focused upon 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 in 1992-1993 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 Board addressed this fishery in March 1997.

In 1998, the Division of Sport Fish began an adult coho salmon tagging program to yield estimates of the number of adult coho salmon returning to the Kenai River and the spawning

escapement. During the first 2 years, coho salmon adults were captured with fish wheels and tagged with radio tags and spaghetti tags at rm 19, below the Soldotna Bridge. Of the fish radio-tagged in 1999, 40% did not migrate upstream, indicating an unacceptable level of handling stress and mortality. In 2000, the fish were instead marked at fish wheels near rm 27. The dropout rate (% of marked fish that did not migrate upstream) was reduced. In 1998, recaptures were made in the tributaries, but very few fish were recaptured. Recaptures are now made in the mainstem, using fish wheels and drift nets from the Funny River upstream to the Moose River. With these years of refinement, this program is now able to estimate the number of adult coho salmon returning at the Soldotna Bridge with acceptable levels of accuracy and precision. From this inriver estimate, the sport harvest above the bridge can be subtracted to yield an estimate of the spawning escapement. These estimates, coupled with the smolt abundance estimates, can provide estimates of smolt to adult survival.

Annual sport harvests of coho salmon in the Kenai River have increased from 9,537 fish in 1977 to a record high of 86,711 fish in 1994 (Table 22). The most recent 10 year average sport harvest (1994-2003) is 45,453 fish (Table 22).

KENAI RIVER COHO SALMON MANAGEMENT OBJECTIVES

Prior to the February-March meeting of the Alaska Board of Fisheries in 1999, early-run Kenai River coho salmon were addressed in the Upper Cook Inlet Salmon Management Plan (5 AAC 21.363). This Board-adopted management plan directed the department to minimize the harvest of this species in the Cook Inlet commercial salmon fishery. In 1999, the Board amended this plan. All instructions pertaining to the allocation of Upper Cook Inlet salmon stocks were removed from this plan and placed into the respective, individual management plans covering specific stocks or species. Provisions that the board must consider when adopting management plans for the Upper Cook Inlet area were incorporated into this plan as well. Provisions included are; the need for sustainable fisheries, habitat protection, and recognition of the needs and demands of various user groups.

In March 1997, the Board 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 Board amended this plan again and adopted it as the Kenai River Coho Salmon Conservation Management Plan. It contains management directives and outlines the burden of conservation between various user groups in the NKPMA. It directs the department to minimize the incidental take of Kenai River coho salmon stocks in the commercial fishery. It also directs the department to manage Kenai River coho salmon stocks primarily for sport and guided sport uses in order to provide fishermen with reasonable opportunity to harvest these stocks over the entire run, as measured by the frequency of restrictions.

In addition to the objectives of the aforementioned management plan, department objectives are:

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

2004 INSEASON MANAGEMENT APPROACH

Currently, there are no cost effective methods available to accurately estimate the inriver coho salmon return inseason. Because of the lack of quantitative data to assess coho stock status, an escapement goal has not been established. With the exception of 1997, there has been no inseason management of this fishery.

Inseason fishery performance is gauged by information provided by anglers and through direct observation by research and management staff. Daily escapement is not estimated from the department's fish wheels or mark-recapture project inseason. In 2004, the capture rates from these projects indicated that the coho salmon escapement into the Kenai River drainage was strong. The number of coho salmon passing through the fish wheel component of the population assessment research project was the highest since the project's inception in 1999.

The Statewide Harvest Survey is currently used to assess fishery performance postseason (Mills 1979-1980, 1981a-b, 1982-1994; Howe et al. 1995, 1996, 2001 a-d; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b). Results from this survey are typically available during the year following the season. A comprehensive CWT project in Cook Inlet estimates the annual smolt outmigration from the Moose River drainage. These estimates are used under the assumption that there is a correlation between the magnitude of smolt outmigration and the magnitude of total return. This information is used as an indicator of potential returns of coho salmon stocks to the Kenai River.

The Kenai River Coho Salmon Conservation Management Plan remained in effect during the 2004 season. Regulations prohibiting sport fishing for coho salmon in the Kenai River from August 1-3 and the closure of the sport fishery on September 30 were the two regulations most focused upon by anglers. Requests were placed by the Kenai/Soldotna Local Advisory Committee and other sport fishing organizations for the creation of emergency regulations to extend the coho salmon sport fishing season in the Kenai River. The requests were submitted to the BOF for the extension of the sport fishing season for the month of October in response to the obvious strength of the 2004 coho salmon run. The BOF convened for an emergency meeting via teleconference in late September and passed an emergency regulation on September 28 to extend the sport fishing season.

2004 KENAI RIVER COHO SALMON FISHERY PERFORMANCE

The coho creel census program on the Kenai River was discontinued prior to the 1999 season. Therefore, no inseason information regarding catch, harvest, effort and escapement was available during 2000-2004. Inseason run strength and fishing success were gauged by reports volunteered by guides and individual anglers. Final harvest estimates are provided by the SWHS. This information typically becomes available during the spring of the following year in question.

Due to the data collected by the department's coho salmon research project in 2004 (which was supported by anecdotal angler reports), the BOF passed emergency regulations that extended the sport fishing season through the month of October. Though the department's coho salmon research project is not designed to determine daily escapement of salmon into the Kenai River, the data collected from the project can be compared to other years the projects have been deployed. This comparison enables the department to determine whether the coho salmon return is weak, average, or strong inseason. The magnitude of catches in the fish wheel component of

the research project indicated that the 2004 coho salmon return to the Kenai River watershed could provide a harvestable surplus for the month of October without generating conservation concerns. Additionally, the BOF took into consideration that angler effort during the month of October would likely be small and the potential of over exploiting the stocks during this extension would be remote. The Kenai River Coho Salmon Conservation Management Plan was established to prevent the over exploitation of the stocks in times of average or above average returns. Though the population estimate for the total return of coho salmon to the Kenai River will not be available until the data analysis is complete (mid-2005), inseason information suggests the 2004 coho salmon escapement into the Kenai River was above average and should fall between 100,000 and 160,000 salmon.

Based on reports from anglers, the 2004 Kenai River coho salmon fishery started out very slow but improved throughout the season. Poor to fair coho salmon catches were reported in early to mid-August, though catch rates steadily improved and were considered excellent by the end of September. Run timing appeared to be normal with bright fish present throughout the run.

2004 KENAI RIVER RESIDENT SPECIES RECREATIONAL FISHERIES

KENAI RIVER RAINBOW TROUT FISHERY

2005 Proposals to the BOF Concerning Kenai River Rainbow Trout Sport Fishery Issues

The following proposals will likely have some impact on the sport fisheries targeting rainbow trout in the Kenai River:

258, 259, 260, 261, 262, 263, 267, 268, 269, 270, 217, 272, 296,

as published in “The Alaska Board of Fisheries 2004/2005 Proposed Changes in the Kodiak/Chignik Areas (All Finfish), Cook Inlet Area (All Finfish), King and Tanner Crab (All Regions), and Supplemental Issues” booklet.

Background and Historical Perspective

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 most of the anglers participate in the river's salmon fisheries, the Kenai River drainage also supports a major rainbow trout fishery with catches ranging from 8,720 to more than 123,731 fish, annually (Table 23, Figure 12).

Increasing public concern for the rainbow trout resource and a scarcity of biological and fishery data from the early years of the fishery prompted the Alaska Board of Fisheries to adopt increasingly restrictive regulations, implemented in the years outlined below:

1959-1964 Season: Area-wide spring closure from April 1 to about May 26.

Daily bag limit: Combined trout/char/grayling/salmon under 16 inches: 10/day, only 2 over 20 inches.

1965-1977 Season: Kenai River changes to no closed season.

1978 Daily bag limit: (Area wide) Combined trout/char/grayling/salmon under 16 inches: 10/day, only 1 over 20 inches.

- 1979 Yearly bag limit: (Area wide) Harvest record required for rainbow/steelhead trout over 20 inches - 2/year.
- 1980-1981 Yearly bag limit: (Area wide) Increased to 5 rainbow/steelhead trout over 20 inches.
 Gear restriction: (Kenai River) In flowing waters upstream from the Moose River to Kenai Lake only single-hook, artificial lures allowed from January 1 to May 31.
- 1982-1983 Season: (Kenai River) Spring closure from January 1 to June 14 (excludes Skilak Lake).
 Daily bag limit: (Areawide) Changed to 5 rainbow trout with only 1 over 20 inches.
- 1984-1986 Season: (Kenai River) Spring and fall closure from November 1 to June 14 (includes Skilak Lake).
 Daily bag limit: (Kenai River) Changed to 3/day, only 1 over 20 inches.
 Yearly bag limit: (Areawide) Rainbow/steelhead trout over 20 inches - changed to 2/year.
 Gear restriction: (Kenai River) In addition to spring single-hook, artificial lure restriction, only artificial lures may be used between Skilak and Kenai lakes from January 1 to December 31.
- 1987-1988 Season: (Kenai River) Spring and fall closure from November 1 through June 14 (includes Skilak Lake).
 Daily bag limit: (Kenai River) Reduced to 2/day; 1 daily over 20 inches.
 Yearly bag limit: (Areawide) Rainbow/steelhead trout over 20 inches - remained at 2/year.
 Gear restriction: (Kenai River) Artificial lures only upstream from Skilak to Kenai Lake. Single hook restriction repealed. No bait permitted in Skilak Lake and in the Kenai River downstream to Moose River from November 1 through May 31.
- 1989-1990 Area between Skilak and Kenai lakes designated a Trophy Trout Area. Only trout 20 inches or larger could be retained. Susitna-West Cook Inlet seasonal limit remained at two trout over 20 inches. Terminal tackle in upper Kenai River limited to single-hook artificial lures.
- 1991 Trophy Trout Area extended to include half-mile radius of Skilak Lake inlet. Minimum length of trophy trout increased to 24 inches.
- 1993 Length at which a trout in the Trophy Trout Area could be retained increased to 30 inches. The bag and possession limits for trout in Skilak Lake and the Kenai River downstream from Skilak Lake were reduced to one fish. The Trophy Trout Area was closed to all fishing from April 15 through June 10.
- 1997 Former Trophy Trout Area becomes Catch-and-Release Area. Area extended 1/4 mile into Kenai Lake. No retention of trout permitted in this area and no retention

permitted in the flowing waters upstream of Kenai Lake. Trout season in all waters of the Kenai River drainage is now June 15 through April 15. All flowing waters upstream of the Upper Killey River closed to all fishing from April 15 through June 14. From June 15 through October 31 in all lakes tributary to Kenai Lake supporting wild trout the daily bag and possession limits are 2 trout only 1 of which may be 20 inches or greater. From November 1 through April 14 the bag and possession limits in lakes supporting wild trout are five; only one may be 20 inches or greater. The bag and possession limits were not changed in stocked lakes.

- 1998 The use and placement of beads was regulated in all flowing waters of the Kenai River drainage. Beads must be either fixed to the line, or hook or be free moving on the line or leader. A bead not attached to the hook has been defined as an attractor, not a fly.
- 2002 The closure of the Kenai River from the confluence of the Moose River upstream to Skilak Lake from January 1 through June 14 was established to protect spawning fish. Additionally, the Skilak Lake area closure from April 15 through June 14 was adopted also to protect spawning fish. The third change to regulation established the maximum size of 18 inches a rainbow trout must be smaller than to retain.

In 1986, the Alaska Department of Fish and Game, in conjunction with the School of Fisheries and Ocean Sciences of the University of Alaska, Juneau, initiated a study of Kenai River rainbow trout. The long-term goal of the study was to compile population and fishery databases for use in formulation of a drainage-wide management strategy for Kenai River rainbow trout.

The 1986 pilot study (Lafferty 1989) had two major components: (1) a creel survey, and (2) a tag-and-recapture program designed to estimate the trout population in study area 004 from Jim's Landing upstream to the powerline near the Russian River (Figure 13). The population estimates for section 004 were 3,663 in 1986 and 4,947 in 1987. In 1987, the study was expanded to include two sections of the river below Skilak Lake, 002 and 003 (Lafferty 1989; Figure 13).

This study concluded that the best estimates of rainbow trout 150 mm (6 inches) or greater in length for the two river sections was 610 and 1,750, respectively. It was also concluded that these estimates were likely biased low.

In 1995, the population estimate was repeated in section 004 (Hayes and Hasbrouck 1996). Data analysis in 1995 included a re-evaluation of the 1986 and 1987 data to provide comparable estimates. Estimates of abundance of rainbow trout 300 mm (12 inches) or greater in length in section 004 in 1986, 1987, and 1995 were 2,520, 3,472, and 5,598, respectively. This study concluded that the trout population in the upper Kenai River had increased and that there was an increased number of trout in each segment of the population from 12-22 inches in length divided into 2-inch intervals. The proportion of trout at least 20 inches in length remained constant at 11%-13% for all 3 years but the proportion of fish from 18-20 inches in length was much greater in 1995. It was further concluded the upper Kenai River trout population was maintaining itself at a high level and that section 004 could serve as an index of abundance of the upper Kenai River trout population.

In 1998, additional research was instituted to reassess the population of rainbow trout in the Kenai River drainage. This study was a multi-year study that addressed multiple sections of the river. Analysis of these data illustrated that the stock age class and size structure was representative of historic findings. The department concluded the health of the stocks were non in concern.

Kenai River Rainbow Trout Management Objectives

Management objectives for this fishery were developed from and are contained in the Cook Inlet and Copper River Basin Rainbow/Steelhead Trout Management Policy (CIRTMP; ADF&G 1986). This policy was adopted by the Board of Fisheries in 1986 for Cook Inlet waters, and was amended in 1988 to include the Copper River Basin.

The CIRTMP provides two policies to achieve different objectives. Policy I is Conservative Yield Management which addresses the department's responsibility to manage the resource for sustained yield. The majority of trout populations in Cook Inlet are managed under this policy, including Skilak Lake and the Kenai River downstream from Skilak Lake.

Policy II provides a diversity of sport fishing opportunities for wild and hatchery rainbow/steelhead trout through establishment of special management areas by regulation. These management areas may be designated as catch-and-release, trophy or high yield. In 1988, the upper Kenai River was selected by the Board for trophy management status.

In conformance with the trophy management designation, only trout 20 inches or larger could be retained, and terminal tackle was restricted to single-hook artificial lures throughout the year. The bag and possession limits were one trout per day.

In the fall of 1990, the board again reviewed this fishery. A public proposal was adopted increasing the minimum retention length in this special management area to 24 inches. At the department's request, the Trophy Trout Management Area in the Kenai River drainage was extended to include the waters of Skilak Lake within a one-half mile radius of the Kenai River inlet. In 1992, the Board again increased the minimum retention length, raising it to 30 inches.

In November 1996, the Board removed the trophy trout designation, replacing it with a catch-and-release fishery in all waters of the upper Kenai River drainage. The upper Kenai River special management area was extended into Kenai Lake 1/4 mile upstream of the bridge at the outlet of Kenai Lake. The special management area now encompasses Skilak Lake within a 1/2-mile radius of the Kenai River inlet, the Kenai River between Skilak Lake and Kenai Lake and that area 1/4 mile upstream of the bridge at the outlet of Kenai Lake.

Fishery objectives for the upper Kenai River catch-and-release area are:

- 1) To provide the opportunity for angler participation at a level that can be supported by the fisheries resource and associated habitat.
- 2) To manage this area of the river as a catch-and-release area, affording anglers the opportunity to fish for trout that approximate the historic age and size structure for this area of the Kenai River.

Fishery objectives for the remainder of the river are:

- 1) To provide the opportunity for angler participation at a level that can be supported by the fisheries resource and associated habitat.

- 2) To ensure, through appropriate management and research programs, that the trout population does not decline below levels necessary to ensure sustained yield.

2004 Inseason Management Approach

This fishery is restrictively regulated; no conservation issue has been identified in the Catch-and-Release Area or that area downstream from Skilak Lake. Management of the fishery inseason is accomplished through regulation. Currently, the rainbow trout populations in the Kenai River watershed are deemed robust and inseason management was not necessary during 2004. The department received anecdotal information that suggests segments of the sport fishery efforts targeting rainbow trout in the Kenai River are growing. Data from the SWHS may illustrate this trend of increased catches and harvests once released in mid-2005. Once this data is made available, the department will be able to determine if further restrictions should be placed on the sport fishery in the unlikely event that the data suggests a conservation concern has developed as the result of an increase in angler effort.

2004 Fishery Performance

Sport harvest and catch for the Kenai River rainbow trout fishery is determined by the Statewide Harvest Survey (Mills 1979-1980, 1981a-b, 1982-1994; Howe et al. 1995, 1996, 2001 a-d; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b). Total catches of rainbow trout from the Kenai River have, with minor exception, been steadily increasing since the mid-1980s. The most recent 10-year (1994-2003) average catch and harvest as determined from the SWHS and creel surveys is 88,315 and 2,378 fish respectively (Table 23). The most recent 10-year (1994-2003) average percent of rainbow trout retained of fish caught in the flowing waters of the Kenai River is a surprisingly small 2.8%. The department estimates that the 2004 total catch and harvest of rainbow trout will be above the most recent average.

Retention of rainbow trout by anglers has evidenced a general trend of decline since the mid to late 1980s (Table 23; Figure 14). Retention of fish in the catch-and-release fishery between Kenai and Skilak lakes has been prohibited since the 1997 season. During the 2003 season, the percent of the total catch retained by anglers was significantly lower for each of the remaining river sections than the long-term average between 1984 and 2002. These low rates of retention indicate that anglers have readily adapted to a more resource sensitive catch-and-release philosophy throughout the drainage. The percentage of rainbow trout retained of the total number of rainbow trout caught in the Kenai River has dropped to 1.8% during the 2003 season (Table 23). This is the lowest percentage of fish retained from the catch on record. The department predicts that this trend will continue and the 2004 catch and harvest data should be close to the 2003 data. This data will be available when the 2004 SWHS is released in mid-2005.

Anglers reported fair to good rainbow trout fishing in the Upper Kenai River in June and July. Fish size was reported to be average when compared with previous years. Late summer and fall fishing was reported to be good. Anecdotal information suggests that the rainbow trout and Dolly Varden fishing was considered slightly below average throughout the early summer, but picked up with the start of sockeye salmon spawning during August. In both the middle river (between Skilak Lake and Moose River) and the lower river, incidental catches of rainbow trout and Dolly Varden were reported to be similar compared to recent years. The department did not receive anecdotal reports during the season that indicated that the rainbow trout stocks in the Kenai River were declining, failing, or weak.

2004 KENAI RIVER DOLLY VARDEN RECREATIONAL FISHERIES

2005 Proposals to the BOF Concerning Kenai River Dolly Varden Sport Fishery Issues

The following proposals will likely have some impact on the sport fisheries targeting Dolly Varden in the Kenai River:

258, 261, 262, 263, 264, 265, 266, 267, 296,

as published in The Alaska Board of Fisheries 2004/2005 Proposed Changes in the Kodiak/Chignik Areas (All Finfish), Cook Inlet Area (All Finfish), King and Tanner Crab (All Regions), and Supplemental Issues” booklet.

Background and Historical Perspective

Dolly Varden are harvested in all areas of the Kenai River. The season is January 1 through December 31, except in those areas of the river upstream of the Upper Killey River, where more restrictive seasons apply. Prior to 1984, the bag and possession limit was 10 Dolly Varden of any size. Beginning in 1984, this limit was reduced to five Dolly Varden of any size. This applied to all Kenai Peninsula waters. In 1996, the limit for all Kenai Peninsula flowing waters was reduced to 2. Harvest and catch of this species is determined by the Statewide Harvest Survey (Table 24).

The Kenai River is assumed to support both a resident and an anadromous Dolly Varden population. 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 that a percentage of the stream-residing fish overwinter in Skilak and Kenai lakes. The anadromous population is believed to enter the Kenai River in July and it is assumed that a percentage of this population also overwinters in Skilak Lake and probably Kenai Lake. The outmigration occurs in April and May. Harvest estimates presented in Table 24 do not differentiate between resident and anadromous populations.

A Kenai River Dolly Varden study was initiated on July 1, 1997. The primary objective of this study is to locate major staging areas of Dolly Varden within the Kenai River watershed upstream of Skilak Lake. Future Dolly Varden investigations will be based on the age, maturity and availability of Dolly Varden within these locations.

Methods used to locate staging areas include deploying various trapping devices and conducting visual observations. The United States Fish and Wildlife Service conducted a concurrent Dolly Varden radio-telemetry study. During 1998-1999, 200 radio transmitters were placed in Dolly Varden within the Kenai River, selected tributaries, and Skilak and Kenai lakes. The radio-telemetry study is providing fish movement information and assisting in locating staging and overwintering areas.

Preliminary findings indicate Dolly Varden occupy most tributary streams to Kenai Lake and the Kenai River. Several staging areas containing spawning fish have been identified in Quartz, Summit, and Cooper creeks and the Snow River; Quartz Creek and its associated tributaries is suspected of being 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 the summer and fall period. Radio-telemetry data indicate Dolly Varden prefer traveling throughout the pelagic

zone of Kenai Lake during the summer and fall rather than the shoreline and, during winter, may frequent the area around Porcupine Island. Porcupine Island is one of the few areas within Kenai Lake having a shallow gravel bottom, and may be preferred overwintering habitat for Dolly Varden.

Kenai River Dolly Varden Management Objectives

This fishery is not specifically addressed in any management plan adopted by the Board of Fisheries. Department objectives for this fishery are:

- 1) To provide the opportunity for angler participation at a level that can be supported by the fisheries resource and associated habitat.
- 2) To 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.

2004 Inseason Management Approach

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.

2004 Fishery Performance

This fishery is not creel surveyed or monitored inseason. Harvest estimates are derived from the Statewide Harvest Survey. Catch for this species was first estimated by the Statewide Harvest Survey in 1990. Estimates in Table 24 (Figure 15) reflect a fishery with a peak harvest in 1984 (31,407). The significant decline in 1986-1987 harvests is attributed to the more restrictive bag limit (5 fish) and adoption of a voluntary catch-and-release philosophy. Harvests from 1988 through 1993 stabilized at 10,000-15,000 fish. The most recent average (1994-2003) Dolly Varden harvest from the Kenai River is 7,170 fish.

The 2003 SWHS estimates total catch of Dolly Varden in the Kenai River is third highest on record, but the total harvest is third lowest indicating further adoption of catch-and-release practices by anglers (Table 24). The 2003 percentage of Dolly Varden retained per fish caught of 5.6% is the lowest percentage of retained fish on record and this percentage is slightly above half of the total percentage of the most recent 10 year average (1994-2003) of 9.9%. The trend of anglers retaining low percentages of Dolly Varden caught in the Kenai River sport fisheries is expected to continue. The department projects that the 2004 season's sport fishing effort and harvest should reflect the 2003 season. The SWHS will provide data to illustrate this trend for the 2004 season when it is released in mid-2005.

2004 NORTH KENAI PENINSULA MANAGEMENT AREA PERSONAL USE FISHERIES

2005 PROPOSALS TO THE BOF CONCERNING NORTH KENAI PENINSULA PERSONAL USE DIP NET FISHERIES ISSUES

The following proposals will likely have some impact on the personal use dip net fisheries targeting sockeye salmon in the Kenai and Kasilof rivers:

321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334,

as published in “The Alaska Board of Fisheries 2004/2005 Proposed Changes in the Kodiak/Chignik Areas (All Finfish), Cook Inlet Area (All Finfish), King and Tanner Crab (All Regions), and Supplemental Issues” booklet.

KENAI RIVER SOCKEYE SALMON DIP NET FISHERY

Background and Historical Perspective

The Cook Inlet Personal Use Salmon Dip Net Fishery Management Plan (5 AAC 77.545) was adopted at the 1981 Board of Fisheries meeting. This plan provided for a personal use dip net fishery in the Kenai and Kasilof rivers that targeted sockeye salmon and a personal use gillnet fishery in the marine waters at the mouth of the Kasilof River. The fishery could occur on the Kenai River after an escapement of 500,000 sockeye salmon was projected. As with other personal use dip net fisheries, only Alaska residents could participate. A sport fishing license was required; no other permits were required. The daily bag and possession limits were 6 sockeye salmon that were not in addition to other marine and freshwater sport fishing limits. Legal gear was confined to a dip net. Regulations restricted the fishery in the Kenai River to the lower section of the river downstream from the Warren Ames Bridge near the City of Kenai (Figure 16).

Prior to 1987, the Kenai River personal use dip net fishery occurred only in 1982 and 1983. Harvest is unknown in 1982, and only 7,562 sockeye were taken in 1983 (Table 25). The reasons for the harvest were a combination of unperfected angler technique, relatively clear water, and relatively small numbers of fish present.

In 1987 the dip net fishery opened at 12 noon, July 23. The fishery was continuous for 13.5 days, closing August 5. Total sockeye salmon escapement to the Kenai River was a record 1.6 million fish. During the peak of the fishery, dipnetting was successfully conducted 24 hours a day. A harvest of 24,086 sockeye salmon was estimated by Statewide Harvest Survey (Mills 1988).

At the 1988 Board of Fisheries meeting, the trigger point for the personal use dip net fishery in the Kenai River was raised to 700,000, the upper end of the new escapement goal. Projected escapement exceeded 700,000 in 1989, so the personal use fishery occurred. In 1990, projected escapement was below 700,000 so there was no personal use fishery.

In 1989, the Alaska Supreme Court’s McDowell Decision ruled that all Alaska residents are subsistence users. In December of 1990, the Alaska Board of Fisheries adopted the Upper Cook Inlet Subsistence Salmon Management Plan. Under this plan subsistence fishing was allowed in most marine waters of Upper Cook Inlet 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 for these fisheries, but as a subsistence fishery, a valid Alaska resident sport fishing license was not required. The annual bag and possession limit was 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.

The Cook Inlet Personal Use Dip Net Fishery Management Plan was still in place, however, fisheries under this management plan in the Kasilof and Kenai rivers could not occur on the same day as the subsistence dip net fishery. The escapement level that triggered the personal use dip

net fishery in the Kenai River was set to 700,000 in years when a subsistence dip net fishery occurred, and 400,000 if there was no subsistence fishery.

Escapement in 1991 was less than 700,000 sockeye salmon so the personal use dip net fishery in the Kenai River did not occur. Subsistence dip net fishing was open on the Kenai River on May 25 and August 3 only; all other openings in the Kenai River were canceled due to legal challenges and court action. Reported sockeye salmon harvest in the Kenai River subsistence dip net fishery was 10,468, with 75% of permits returned (Brannian and Fox 1996).

Legal challenges did not occur during the 1992 season, so the subsistence dip net fishery was open for a total of 34 days, including 3 days in May, 4 days in June, and every Wednesday and Saturday in July, August, and September (Brannian and Fox 1996). Reported harvest, with 43% of the permits returned, was 16,240 sockeye salmon. The Kenai River personal use dip net fishery allowed under the Cook Inlet Personal Use Salmon Dip Net Fishery Management Plan also took place in 1992 (Table 25). It was restricted to days when the subsistence fishery was not open. It continued to have a possession limit of 6 sockeye salmon and did not require a permit.

The Alaska State Legislature during the 1992 session passed legislation that required the Boards 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 Boards of Fisheries and Game established the Anchorage/Mat-Su/Kenai nonsubsistence area. The Board of Fisheries also rescinded the Upper Cook Inlet Subsistence Salmon Management Plan. This ended all subsistence fisheries in Upper Cook Inlet except the Tyonek subsistence fishery. The personal use dip net fishery remained in place. The escapement trigger for the personal use dip net fishery on the Kenai River was now 400,000, and once the fishery opened, fishing could be continuous. The 1993 personal use fishery opened on July 17 and closed on July 31, with an estimated harvest of 33,467 sockeye salmon (Table 25).

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 Boards of Fisheries and Game 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 Boards of Fisheries and Game 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.

Since there was not enough time for a formal board meeting prior to the 1994 season, the Board directed that the Commissioner of Fish and Game should exercise his emergency regulatory authority to adopt regulations for the 1994 fishery. The Board 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. Reported subsistence dip net harvest, with 48% of the permits returned, was 13,897 sockeye salmon (Brannian and Fox 1996). The personal use dip net fishery remained in place. The escapement trigger for years when a subsistence fishery occurs remained at 700,000 sockeye salmon. The trigger for years without a subsistence fishery

was changed to 450,000 to reflect a new minimum escapement goal. In 1994 the sonar count of 700,000 could not be projected prior to July 31 and the personal use dip net fishery did not occur despite a final sonar count in excess of 1 million.

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/Mat-Su/Kenai nonsubsistence area. The Board of Fisheries convened an emergency meeting by teleconference on May 24, 1995 to close subsistence fisheries in the now nonsubsistence area. The Board delegated authority to the 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. It still had a possession limit of 6 sockeye salmon and did not require a permit. The nonpermitted personal use fishery triggered by a projected escapement count of 450,000 opened at 6:00 a.m. July 25. The fishery occurred daily except Wednesdays and Saturdays, when the permitted fishery occurred. The nonpermitted fishery closed July 31, with a total fishing time of 4.75 days.

The estimate of permitted Kenai River sockeye salmon personal use dip net harvest was 18,502 (Brannian and Fox 1996). This includes a known harvest of 11,771 from returned permits (Ruesch and Fox 1996) and an estimate of the harvest from those that had permits but did not return them. The Statewide Harvest Survey estimated total 1995 Kenai River sockeye salmon personal use harvest (both permitted and nonpermitted) to be 14,352 fish (Howe et al. 1996).

Kenai River Personal Use Dip Net Fishery Management Objectives

This fishery is managed under provisions of the Kenai River Late-run Sockeye Salmon Management Plan and the Upper Cook Inlet Personal Use Salmon Fishery Management Plan (5 AAC 77.545). The fishery objective is to implement provisions contained in the respective management plans. The fishery primarily targets sockeye salmon.

2004 Inseason Management Approach

Management of this fishery is the joint responsibility of the Commercial Fisheries Division (CFD) and the Division of Sport Fish. The CFD is responsible for operation of the Kenai River sonar counter that estimates sockeye salmon entering the river. The personal use dip net fishery opens and closes by regulation. Inseason management by the Division of Sport Fish would be required only in the event the minimum inriver escapement goal for sockeye salmon could not be projected.

The Kenai River Personal Use (PU) fishery, by regulation, takes place annually from July 10 through July 31. This fishery is liberalized by increasing the daily hours open for fishing from 6:00 a.m. through 11:00 p.m. to twenty-four hours per day when the strength of the Kenai River sockeye salmon run which was projected inseason to be greater than 2.0 million fish.

During 2004, the Kenai River PU fishery was opened by regulation on July 10 for the daily hours of 6:00 a.m. through 11:00 p.m. Due to the run strength of the 2004 Kenai River sockeye salmon return as indicated by the daily escapements past the department's sonar station, the PU fishery was liberalized to a 24-hours per day fishery on the evening of July 20.

2004 Fishery Performance

Participants in this personal use fishery are required to get a permit, and are required to return the permit to Fish and Game, regardless of whether 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 Kenai River personal use dip net fishery has 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.

Total harvest of sockeye salmon during 2003 was approximately 223,580 fish (Reimer and Sigurdsson 2004; Table 26). Sockeye salmon harvest during 2003 was significantly above the average harvest of 140,000 fish since the beginning of the program in 1996. A total of 1,016 Chinook, 1,332 coho, 1,647 pink, and 249 chum salmon were harvested in the Kenai River PU dip net fishery during 2003 (Table 26).

The department expects that the 2004 harvest from the Kenai River PU dip net fishery will exceed the 2003 harvest. Large daily escapements of sockeye salmon into the Kenai River provided excellent opportunities. Final 2004 harvest estimates will be available mid-2005 following the collection and processing of issued PU permits.

Participation during 2003 was approximately 15,263 household-days fished (Reimer and Sigurdsson 2004). Participation in the 2003 Kenai River dip net PU fishery is the highest on record. The 2003 harvest of sockeye and Chinook salmon in this PU fishery also was the highest on record. Due to the magnitude of the sockeye salmon escapement and the record escapement of late-run Chinook salmon into the Kenai River during 2004, the department expects that sockeye and Chinook salmon harvests in this fishery will exceed the existing harvest record. Participation in the 2004 Kenai River PU dip net fishery is also expected to exceed previous records. The majority of vendors and ADF&G offices that issue PU permits ran out of permits to issue during the 2004 season thus supporting the department expectations of a record-setting year for this fishery.

Department observations and reports from dipnetters indicated that success varied drastically from poor to excellent depending upon the daily escapement of sockeye salmon into the Kenai River as heavily influenced by actions of the commercial fishing fleet and the natural timing of the salmon entering into the mouth of the Kenai River. During 2004, the total Kenai River sockeye salmon estimated escapement past the department’s sonar station was 1,385,981 fish (Table 25). This cumulative escapement was significantly above established escapement goals. Daily sockeye salmon escapements into the Kenai River ranged from a few thousand up to 138,000 fish per day. During the 22 days the 2004 Kenai River PU dip net fishery was open, daily sockeye salmon escapements above 30,000 fish per day occurred on 13 days.

2004 KASILOF RIVER PERSONAL USE DIP NET FISHERY

Background and Historical Perspective

In the spring of 1981, the Alaska Board of Fisheries adopted a Cook Inlet Personal Use Salmon Dip Net Fishery Management Plan. It was the intent of the Board to provide for salmon dip net fisheries in the waters of Cook Inlet, allowing Alaska residents an opportunity to harvest sockeye salmon for their personal consumptive needs. The Board intent was not to disrupt existing fisheries. Personal use dip net fisheries did not initially open until the department determined that specific escapement goals were met and/or subsistence, commercial, and other sport users have had, or will have, reasonable opportunity to harvest fish in excess of spawning requirements. In recent years this criteria has been relaxed.

Participants in the fishery include local residents as well as residents from other areas in Southcentral Alaska. While sockeye salmon are the target species in the fishery, small numbers of coho and pink salmon are also caught and retained. Fishing takes place from both banks of the Kasilof River as well as from small boats. The majority of the effort occurs along the north bank of the river where there is good road access and parking spaces. Typically, catch rates are highest during the period approximately 2.5 hours before and after high tide; however, during the peak of large runs, sockeye salmon are harvested at virtually all tide levels.

In 1981 and 1982, harvest and angler participation in the dip net fishery were determined by creel census. Because the fishery is managed by monitoring sonar counts above the fishery, the creel survey was deemed unnecessary and was discontinued. Harvest and estimates of angler participation were determined by the Statewide Harvest Survey through 1995 (Mills 1982-1994; Howe et al. 1995, 1996) and by returned permits in 1996 through 2004.

From 1981 through 1988 the Kasilof River dip net fishery (Figure 17) was open approximately 2-3 weeks each year from mid-July through early August. The popularity of this fishery increased annually, with record levels of both harvest and effort occurring in 1986 (Table 27). Average harvest and angler participation from 1981 through 1988 was 14,120 sockeye salmon and 7,170 days fished, respectively. Dipnetters harvested an average of 13.5% of the sockeye salmon entering the Kasilof River during the open time period. Of the total number of sockeye salmon to enter the river during the years 1981 to 1988, this personal use fishery harvested 1% to 14%, averaging 5.3% annually. Approximately 44% of the sockeye salmon to enter the river were available to personal use dip net fishermen (Table 27).

In 1989 and 1990, the minimum sonar count established by the Board to open this fishery was not achieved or was achieved too late to provide reasonable dipnetting opportunity. The personal use dip net fishery did not occur during these years.

In 1990, the Board established a subsistence set and dip net fishery for upper Cook Inlet. The dip net fishery occurred in the mouths of the Kenai and Kasilof rivers. The allowable days and times subsistence dipnetting occurred was provided for by regulation. The area open to subsistence dipnetting in these rivers was identical to the area where personal use dipnetting occurs when the latter fishery is open. Permits were required for these fisheries, but as a subsistence fishery 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. The Board determined that

subsistence and personal use dipnetting would not occur concurrently. The Board therefore amended the Cook Inlet Personal Use Salmon Dip Net Fishery Management Plan. The revised plan stated that when the personal use fishery occurs in either the Kenai or Kasilof rivers, it (personal use) will be closed at 12:01 a.m. on those days that the subsistence fishery occurs, reopening again at 12:01 a.m. the following day.

The Cook Inlet Personal Use Salmon Dip Net Fishery Management Plan was further amended as it pertained to the Kasilof River. The escapement goal, which triggers the opening of the personal use dip net fishery, was raised from the minimum goal of 150,000 to the maximum escapement goal of 250,000. However, during years when the subsistence dip net fishery did not occur, the personal use fishery would open when the minimum sockeye salmon escapement goal of 150,000 could be projected.

A subsistence fishery occurred in 1991. The maximum sonar count goal of 250,000 was not realized and a personal use dip net fishery did not occur. Reported 1991 subsistence harvest, with 75% of the permits returned, was 907 sockeye salmon (Brannian and Fox 1996). Regulation of the subsistence fishery was identical in 1992. The maximum sonar count goal was not achieved in 1992, and a personal use dip net fishery in the Kasilof River again did not occur. Reported 1992 subsistence harvest, with 43% of the permits returned, was 1,230 sockeye salmon (Brannian and Fox 1996).

The Alaska State Legislature, during the 1992 session, passed legislation that required the Boards 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 Boards of Fisheries and Game established the Anchorage/Mat-Su/Kenai non-subsistence area. The Board of Fisheries also rescinded the Upper Cook Inlet Subsistence Salmon Management Plan. This ended all subsistence fisheries in Upper Cook Inlet except the Tyonek subsistence fishery. The personal use dip net fishery remained in place. The trigger point for the opening of the personal use fishery reverted to the minimum projected sonar count of 150,000. The final sonar count was 152,230. The minimum sonar count (150,000) could not be projected with assurance until August 1. By this late date there were insufficient sockeye salmon entering the river to prosecute a successful dip net fishery, and as a result, the personal use fishery did not occur for the fifth consecutive year.

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 Boards of Fisheries and Game 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 Boards of Fisheries and Game 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.

Since there was not enough time for a formal board meeting prior to the 1994 season, the Board directed that the Commissioner of Fish and Game should exercise his emergency regulatory authority to adopt regulations for the 1994 fishery. The Board 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 five could be Chinook salmon. In addition, a household was allowed another 10 salmon for each household

member, of which no more than one could be a Chinook salmon. A permit was required to participate, but not a sport fishing license. Reported 1994 subsistence dip net harvest, with 48% of the permits returned, was 2,735 sockeye salmon (Brannian and Fox 1996).

The personal use dip net fishery remained in place. The department adopted a trigger sonar count of 150,000 for the 1994 fishery. This was apparently an administrative error; the intent was to use the same 250,000 trigger as in 1992. This notwithstanding, a sonar count of 150,000 was the trigger which opened the Kasilof River personal use dip net fishery in 1994. A sonar count of 150,000 was assured the morning of July 22; the personal use dip net fishery was opened at 12:00 noon and continued through August 5. As this fishery could not occur on days subsistence dip netting occurred, the fishery was restricted to July 22, 24, 25, 26, 28, 29 and 31 and August 1, 2, 4 and 5. Total fishing time was 10.5 days (Table 27).

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/Mat-Su/Kenai nonsubsistence area. The Board of Fisheries convened an emergency meeting by teleconference on May 24, 1995 to close subsistence fisheries in the now nonsubsistence area. The Board delegated authority to the 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. It still had a possession limit of 6 sockeye salmon and did not require a permit. The nonpermitted personal use fishery triggered by a projected escapement count of 150,000 opened at 6:00 p.m. July 17. The fishery occurred daily except Wednesdays and Saturdays, when the permitted fishery occurred. The nonpermitted fishery closed July 31, with a total fishing time of 10.25 days (Table 27).

The estimate of 1995 permitted Kasilof River sockeye salmon personal use dip net harvest was 6,371 (Brannian and Fox 1996). This includes a known harvest of 4,572 from returned permits (Brannian and Fox 1996) and an estimate of the harvest from those who had permits but did not return them. The Statewide Harvest Survey (Howe et al. 1996) estimated total Kasilof River sockeye salmon personal use harvest (both permitted and nonpermitted) to be 4,160 (Table 27).

The permitting system currently in use to date was developed and initiated in 1996. Since 1996, one permit is issued for all four Upper Cook Inlet personal use salmon fisheries (Kenai River dip net, Kasilof River dip net, Kasilof River gillnet, and Fish Creek dip net). At the 1996 BOF meetings, a 27 day fishing season was established which opened by regulation on July 10 through August 5 for 24-hours per day. The regulations adopted by the BOF established a PU dipnet fishery that was independent of the abundance of returning salmon and was not tied to the fisheries management plans for other user groups. The estimate of 1996 Kasilof River sockeye salmon personal use dip net harvest was 11,197 (Table 27; Reimer and Sigurdsson 2004). This includes a known harvest from 13,452 returned permits and an estimate of the harvest from those who had permits but did not return them.

Regulations governing the Kasilof River PU dip net fishery from 1996-2001 remained the same. This 1996-2001 dipnetter participation in the fishery fluctuated somewhat but averaged 2,571 household days fished. The 1999-2001 average sockeye salmon harvest from this fishery was

27,460 fish. The dipnetter average total harvest for other salmon species during this period was 103 Chinook, 535 coho, 357 pink, and 36 chum salmon.

New regulations were adopted by the BOF for the 2002 Kasilof River PU dip net fishery which 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 estimate of 2002 Kasilof River sockeye salmon personal use dip net harvest was 46,769 (Reimer and Sigurdsson 2004). 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. During 2002, dipnetter participation in the fishery was 4,020 household days fished. The 2002 salmon harvest from this fishery was 46,769 sockeye, 106 Chinook, 1,197 coho, 1,862 pink, and 139 chum salmon.

During 2003, an estimated 43,870 sockeye, 57 Chinook, 592 coho, 286 pink, and 30 chum salmon were harvested in the Kasilof River PU dip net fishery (Reimer and Sigurdsson 2004; Table 28). This includes a known harvest from 15,726 returned permits and an estimate of the harvest from those who had permits but did not return them.

A personal use gillnet fishery also occurs at the mouth of the Kasilof River, targeting sockeye salmon in June. The Kasilof River PU gillnet fishery is monitored inseason by Commercial Fisheries Division and is discussed in the Commercial Fisheries Division annual management report (Fox and Shields 2001). Final estimates of harvest and effort since 1996 have been made by expanding known returned permits to include permits not returned (Reimer and Sigurdsson 2004).

Kasilof River Personal Use Dip Net Fishery Management Objectives

Regulation and management of this fishery are governed by the Upper Cook Inlet Personal Use Salmon Fishery Management Plan (5 AAC 77.545). The fishery objective is to implement the provisions of the Board-adopted management plan.

2004 Inseason Management Approach

Management of this fishery is the joint responsibility of the Commercial Fisheries Division (CFD) and the Division of Sport Fish. The CFD is responsible for operation of the Kasilof River sonar counter which enumerates sockeye salmon entering the river. The personal use dip net fishery opens and closes by regulation. Inseason management by the Division of Sport Fish would be required only in the unlikely event the minimum sonar count and biological escapement goal could not be projected and achievement of these goals required restrictions to the dip net fishery.

Participants in this personal use fishery are required to get a permit, and are required to return the permit to Fish and Game, regardless of whether 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 Kenai 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.

The 2004 sockeye salmon return to the Kasilof River exceeded all expectation and resulted in an escapement of 577,581 salmon past the department's sonar station. On the rare occasion that escapement goals are exceeded to the extent as experienced in 2004, department staff has the tools to liberalize the PU fishery. On July 16, the Kasilof River PU dip net fishery area was expanded for shoreline and boat based dipnetting. The shoreline based dipnetting area was expanded up to the Sterling Highway Bridge. This is the second time in the history of Kasilof dip net fishery that the area was expanded this far upriver. The first time was done as an experiment during the initial development of this fishery. The area opened to dipnetting from boats was expanded upriver to Trujillo's landing. Both liberalizations were enacted in attempts to reduce sockeye salmon escapement into the Kasilof River. The large 2004 sockeye salmon run to the Kasilof River was unprecedented and unexpected. Liberalization of the sport fishery for sockeye salmon in the Kasilof River was also enacted in an attempt to reduce the escapement as well.

2004 and Recent Fishery Performance

Harvest and effort during 2003 were estimated from returned permits (Tables 28). Final estimates for 2004 will not be available until mid-2005. The total Kasilof River dip net harvest of sockeye salmon during 2003 was approximately 43,870 fish (Reimer and Sigurdsson 2004). Sockeye salmon harvest during 2003 was the third highest in the last eight years (1996-2003). Participation during 2003 was approximately 3,874 household-days fished which was the second highest amount since 1996 (Table 28). The department expects harvest and effort levels in the 2004 Kasilof River dip net PU fishery should resemble the levels as seen during 2003. Due to the unprecedented escapements of sockeye salmon into the Kasilof River during 2004, the department projects that the total PU dip net harvest could likely exceed all years on record.

The 2004 Kasilof River personal use fisheries produced some outstanding as well as poor opportunities to harvest sockeye salmon periodically throughout the season depending upon daily escapement rates of sockeye salmon into the river. During commercial fishery closures, PU dip net harvests significantly increased and the inverse results were also experienced. In response to the excessive sockeye salmon escapement into the Kasilof River during 2004, aggressive commercial fishing management practices were initiated to reduce sockeye salmon escapement. One of these practices was to conduct terminal harvest fishery that allowed commercial fishing nets up to the mouth of the river. During these terminal fishery periods, PU dip net harvests were drastically reduced. Final 2004 harvest numbers will be available mid-2005 following the collection and processing of issued PU permits.

NORTH KENAI PENINSULA MANAGMENT AREA NORTHERN PIKE RECREATIONAL FISHERY

2005 PROPOSALS TO THE BOF CONCERNING NORTHERN PIKE IN THE NORTH KENAI PENINSULA MANAGEMENT AREA SPORT FISHERY ISSUES

The following proposal will likely have some impact on the sport fisheries targeting northern pike in the North Kenai Peninsula Management Area:

252,

as published in "The Alaska Board of Fisheries 2004/2005 Proposed Changes in the Kodiak/Chignik Areas (All Finfish), Cook Inlet Area (All Finfish), King and Tanner Crab (All Regions), and Supplemental Issues" booklet.

BACKGROUND AND HISTORICAL PERSPECTIVE

Northern pike are not indigenous to the Kenai Peninsula. This species was illegally introduced into Derk's Lake, tributary to Soldotna Creek, in the mid-1970s. From this initial introduction they rapidly spread through the remainder of the Soldotna Creek drainage, including East and West Mackey Lakes, Soldotna Creek and Soldotna (Sevena) Lake.

Pike are a predator species, and reports from anglers indicated that as the number of pike in the drainage increased, numbers of rainbow trout and Dolly Varden declined. Soldotna Lake, prior to the introduction of pike, was reputed to support one of the most viable rainbow trout populations on the Peninsula. This lake's reputation as a trout producer declined steadily in the 1980s as pike became the dominant species.

There was considerable public and department concern that pike would become established in the mainstem Kenai River, negatively impacting this river's salmon and trout populations. Although small numbers of pike have been caught here (Table 29), there is no evidence to date that pike are reproducing in the mainstem Kenai River, and negative impacts to the river's salmon and trout cannot be documented. Pike have, however, used the Kenai River as a migratory corridor.

In spring 1986 a weir was established on the east fork of the Moose River in conjunction with a rainbow trout study. One pike was known to have passed through the structure. Information from the Statewide Harvest Survey also indicates that anglers have harvested small numbers of pike in the lakes (Afonasi, Imeri, Watson, Equmen, Peterson, Kelly and Hikers lakes) of this drainage. Harvests of pike are too small to be estimated for specific lakes (Table 29).

Northern pike were also illegally introduced into three unnamed lakes about 6 miles south of Soldotna in the early to mid-1980s. These lakes are accessed via Tote Road and it is assumed local residents introduced the pike. These lakes are fortunately landlocked.

Although there is some local interest in pike fishing, this species supports a minor if not insignificant sport fishery. The best pike fishing is in Mackeys and Soldotna Lakes. These lakes are almost entirely bordered by private land and access is limited. Some fishing by local residents, including spear fishing during the winter months, occurs throughout the year. Pike harvested in the east fork of the Moose River are probably caught incidentally to rainbow trout and Dolly Varden. Total pike harvest on the Peninsula averages about 100 fish annually.

NORTH KENAI PENINSULA MANAGEMENT AREA NORTHERN PIKE FISHERY OBJECTIVES

This fishery is not specifically addressed in any management plan adopted by the Board of Fisheries. Northern pike were illegally introduced on the Kenai Peninsula. The department-adopted objective for this fishery is to provide the opportunity for angler participation to continue at present or increased levels.

2004 INSEASON MANAGEMENT APPROACH

There has been no inseason management in the history of this fishery. The fishery is managed through existing regulations. Regulations are liberal because northern pike were illegally introduced into Kenai Peninsula waters and compete with resident trout and salmon species.

Beginning in 2003, ADF&G began to aggressively target and remove northern pike from lakes within the NKPM. The invasive species removal project (basically netting northern pike) took

place from May 11 to June 16. During the first half of this project, 1,500 northern pike were captured with variable mesh gillnets and removed from four lakes of the Soldotna Creek drainage. Gillnets were fished for about 10,000 hours among Derks and Sevena lakes, and East and West Mackey lakes. Mean fork lengths of captured northern pike ranged from 10.4 inches at East Mackey up to 16.6 inches at Sevena Lake. No other species of fish in the adult stage were captured in the sampled lakes.

Reduction of northern pike by gillnetting in these lakes resumed on September 21, 2004 and continued until October 22 when the lakes become ice-covered. During this second half of the project, a total of 1,176 northern pike were removed from the Derks, Sevena and East and West Mackey lakes.

2004 RECENT FISHERY PERFORMANCE

The NKPMA 2003 harvest of an estimated 699 northern pike was second highest on record. The recent increase in northern pike harvests is likely due to the increased awareness of the presence of northern pike in area lakes. According to the Statewide Harvest Survey, 58 pike were harvested in the Kenai River during 2003 (Table 29). The large number of pike harvested from lakes during 2003 likely occurred in the Mackey's Lake system. Local groups have promoted a growing privately organized ice-fishing derby for pike in these lakes.

During 2004, the department did receive two reports of anglers encountering northern pike in the Kenai River. The department could not verify either of the reports. The department projects that the total 2004 harvest of northern pike within the NKPMA will be equal to or less than the 2003 season. This reduction in harvest is expected as the direct result of the thousands of northern pike that have been removed from the NKPMA by the department's invasive species removal project. Future efforts to remove invasive species from the NKPMA will likely continue.

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TABLES AND FIGURES

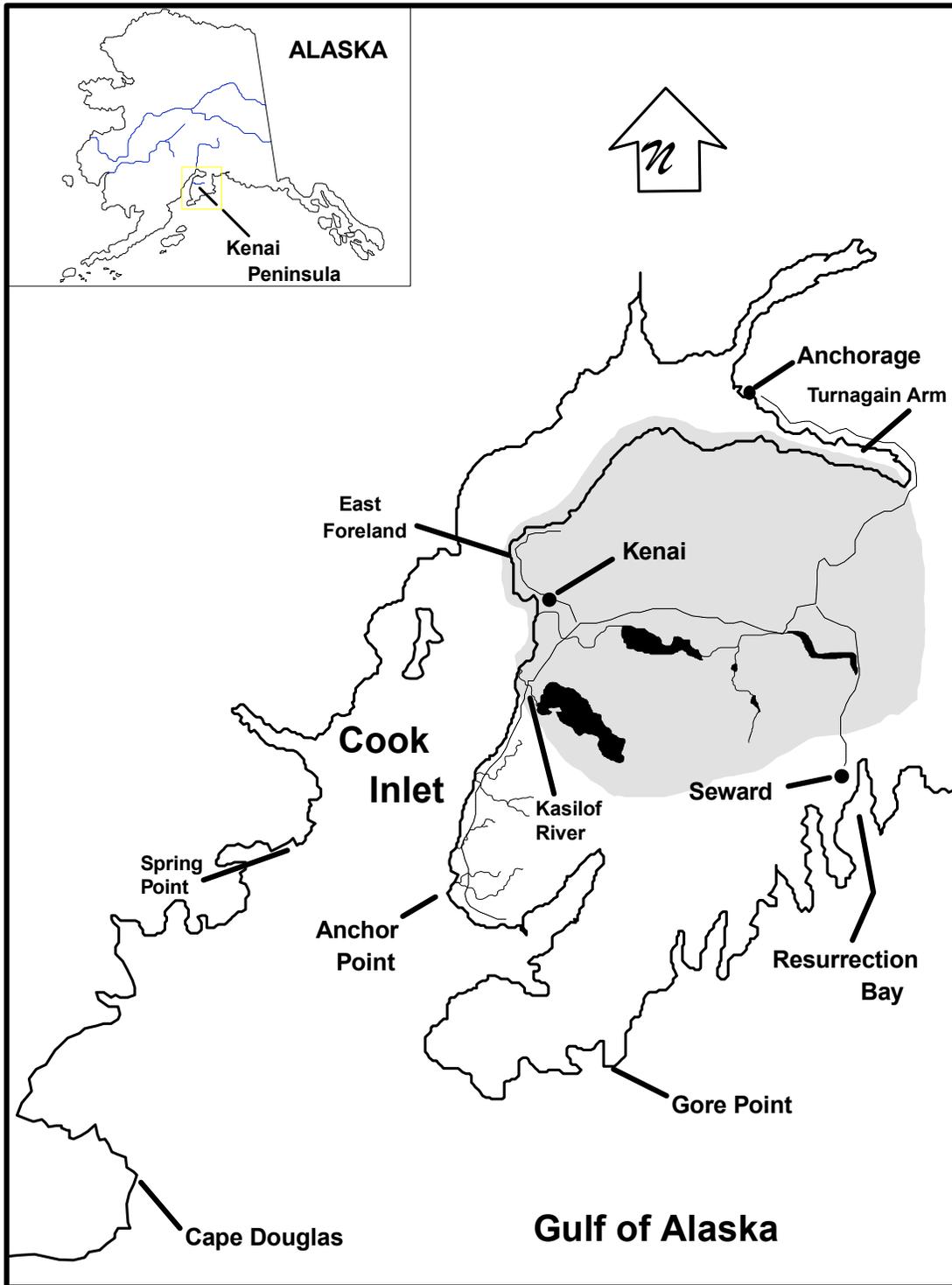


Figure 1.-The Northern Kenai Peninsula Management Area (shaded) includes all freshwater drainages and saltwater fisheries from the Kasilof River north to Turnagain Arm on the Kenai Peninsula.

Table 1.-Angler days of effort expended by recreational anglers fishing Kenai Peninsula Management Area waters, 1977-2003.

Year	Kenai River		Other Kenai Peninsula		Kenai Peninsula Dipnet ^b		Kenai Area Total	Percent of State	Alaska Total
	Effort	%NKPMA	Effort	%NKPMA	Effort	%NKPMA			
1977	122,138	34	233,626	66			355,764	30	1,198,486
1978	164,264	37	274,129	63			438,393	34	1,286,063
1979	178,485	39	282,943	61			461,428	34	1,364,739
1980	171,803	38	277,573	62			449,376	30	1,488,962
1981	178,716	41	253,238	58	5,370	1	437,324	31	1,420,772
1982	231,948	47	263,516	53	2,580	1	498,044	31	1,623,090
1983	229,228	43	282,428	53	9,576	2	521,232	30	1,732,528
1984	270,422	46	296,641	51	7,227	1	574,290	31	1,866,837
1985	322,230	49	319,601	48	10,647	2	652,478	34	1,943,069
1986	335,051	46	364,681	50	15,856	2	715,588	35	2,071,412
1987	289,165	37	450,768	58	32,473	4	772,406	36	2,152,886
1988	374,259	45	408,226	49	37,304	4	819,789	35	2,311,291
1989	376,902	49	341,981	45	33,054	4	751,937	33	2,264,079
1990	342,662	43	443,175	56	2,184	0	788,021	32	2,463,284
1991	323,368	41	434,795	55	12,040	2	770,203	31	2,456,328
1992	332,573	40	467,185	57	12,131	1	811,889	32	2,540,374
1993	324,120	39	479,614	58	16,525	2	820,259	32	2,559,408
1994	340,904	35	595,784	62	14,785	2	951,473	35	2,719,911
1995	^a 377,710	41	505,047	55	17,124	2	899,881	32	2,787,670
1996	^a 265,986	65	123,015	30	11,803	3	400,804	20	2,006,528
1997	^a 247,898	63	125,333	32	12,114	3	385,345	19	2,079,514
1998	^a 216,650	62	114,792	33	14,223	4	345,665	19	1,856,976
1999	^a 307,446	64	150,640	31	17,349	4	475,435	19	2,499,152
2000	^a 358,569	64	187,464	33	14,976	3	561,009	21	2,627,805
2001	^a 298,817	53	131,932	30	18,154	4	448,903	20	2,261,941
2002	^a 312,785	65	149,832	31	18,860	4	481,477	21	2,259,091
2003	^a 320,747	67	120,715	25	19,137	4	460,599	21	2,219,398
Mean	282,031	48	299,210	48	15,456	3	596,698	27	2,076,355

^a Does not include Lower Cook Inlet.

^b 1981-2003 from Statewide Harvest Survey (Mills 1982-1994; Howe et al. 1995, 1996; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b) 1996-1997 total reported harvest from returned permits. 1998, 1999 to 2003 expanded harvest from returned permits (Reimer and Sigurdsson 2004).

Table 2.-Angler-days of sport fishing effort for the Kenai River by section, 1977-2003.

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	Kenai River Total
1977						122,138
1978						164,264
1979						178,485
1980						171,803
1981	91,763	35,877	33,701	17,375		178,716
1982	119,164	49,372	39,170	24,242		231,948
1983	109,067	52,266	41,442	26,453		229,228
1984	150,824	42,644	40,976	35,978		270,422
1985	163,690	66,100	55,904	36,536		322,230
1986	181,035	63,876	51,171	38,969		335,051
1987	141,203	66,807	41,128	40,027		289,165
1988	203,728	79,727	55,334	35,470		374,259
1989	198,697	93,508	53,135	31,562		376,902
1990	169,818	82,331	43,401	47,112		342,662
1991	151,592	82,552	45,067	44,157		323,368
1992	150,249	81,378	49,774	51,172		332,573
1993	162,171	70,353	38,583	53,013		324,120
1994	170,944	71,440	39,222	59,298		340,904
1995	206,127	81,280	43,432	46,871		377,710
1996	131,751	61,059	32,465	40,711		265,986
1997	120,873	58,618	32,645	35,762		247,898
1998	95,378	56,342	36,218	28,712		216,650
1999	157,493	69,331	41,573	39,049		307,446
2000	178,460	92,056	41,911	46,142		358,569
2001	153,356	75,249	34,918	35,294		298,817
2002	142,492	78,165	33,228	52,937	5,963 ^a	312,785
2003	143,144	90,072	35,804	40,815	10,912 ^a	320,747
Mean	151,870	69,583	41,748	39,463	16,875	282,031

^a Adopted by SWHS beginning in 2002.

Table 3.-Kenai River sport fish harvest by species, 1977-2003.

Year	Chinook Salmon	Coho Salmon	Sockeye Salmon	Pink Salmon	Chum Salmon	Rainbow Trout	Arctic Grayling	Dolly Varden	Smelt	Total
1977	7,585	9,537	23,196	163	0	4,438	187	7,423	56,550	109,079
1978	7,130	10,823	33,619	26,579	0	9,272	90	17,140	15,832	120,485
1979	8,843	15,276	16,887	127	0	14,644	127	34,687	10,690	101,281
1980	4,942	26,838	25,468	18,580	0	9,807	17	26,794	150,554	263,000
1981	9,634	22,324	19,721	86	0	18,685	65	34,862	41,126	146,503
1982	10,418	39,415	50,103	25,572	0	12,673	188	16,484	49,355	204,208
1983	15,316	22,678	71,267	1,825	0	13,658	126	9,556	85,126	219,552
1984	12,321	59,644	15,702	28,560	0	15,687	51	31,407	47,455	210,827
1985	13,965	44,535	57,213	1,306	186	14,981	104	26,235	26,460	184,985
1986	18,119	60,110	72,398	19,924	563	2,425	120	5,775	33,124	212,558
1987	24,978	33,210	240,819	941	144	2,185	156	7,630	53,773	363,836
1988	32,415	48,694	152,751	15,777	849	2,133	692	10,977	18,223	282,511
1989	17,160	55,259	277,225	1,421	520	1,917	151	10,064	31,398	395,115
1990	7,684	60,325	120,788	27,185	312	3,535	51	11,982	36,563	268,425
1991	9,174	76,156	161,602	2,416	0	3,319	0	14,504	6,334	273,505
1992	9,753	52,310	242,492	10,029	0	1,977	0	14,462	14,971	345,994
1993	30,312	50,538	137,180	1,003	0	2,574	0	12,698	6,619	240,924
1994	27,708	86,711	93,616	8,701	0	1,576	0	8,486	3,391	230,189
1995	23,168	46,183	125,425	991	0	2,150	0	9,523	987	208,427
1996	15,740	42,293	186,291	15,406	464	1,560	123	7,484	7,366	276,727
1997	15,177	16,164	177,133	1,371	154	1,910	131	6,957	8,874	227,871
1998	7,450	26,967	164,536	8,926	79	2,015	25	6,079	8,175	224,252
1999	17,145	31,637	200,574	1,895	333	3,784	64	7,568	4,942	267,942
2000	16,613	48,519	230,983	19,081	350	3,459	93	7,427	29,286	355,811
2001	15,189	49,782	200,762	2,069	498	2,422	76	6,528	23,012	300,338
2002	10,353	59,650	225,917	22,995	959	6,019	146	5,781	20,036	351,856
2003	17,904	46,622	285,925	2,847	94	2,278	42	6,113	11,841	373,666
Mean	15,044	42,304	133,689	9,844	204	5,966	105	13,505	29,706	250,365

Table 4.-Angler-days of sport fishing effort for other Northern Kenai Peninsula Area drainages by fishery, 1977-2003.

Year	Salt Water	Russian River	Swanson River	Quartz Creek	Kasilof River	Skilak Lake	Hidden Lake	Tustemena Lake	Other	Total
1979	100,010	58,133					5,974		118,826	282,943
1980	89,065	78,983					5,783		103,742	277,573
1981	93,432	54,642			8,311		4,761		92,092	253,238
1982	91,033	70,372			13,238		6,278		82,595	263,516
1983	136,566	35,018	2,124	691	16,675	422	6,761	253	83,918	282,428
1984	127,635	55,861	5,671 ^b	3,413	25,697	67	4,835	351	73,111	296,641
1985	122,243	80,054	4,058 ^b	451	24,103	121	3,676	1,734	83,161	319,601
1986	143,160	70,729	7,599 ^b	4,146	36,115	413	6,254	291	95,974	364,681
1987	186,525	91,600	7,353 ^b	5,361	42,703	4,129	12,532	1,576	98,989	450,768
1988	183,254	76,180	10,368	3,965	43,965	3,838	4,820	1,419	80,417	408,226
1989	163,717	53,598	5,484	4,893	39,318	2,810	1,152	923	70,086	341,981
1990	218,622	68,861	6,091	5,655	40,437	2,817	4,188	2,200	94,304	443,175
1991	204,216	76,433	5,830	5,354	46,208	4,120	4,426	1,596	86,612	434,795
1992	225,442	67,443	4,897	7,906	49,774	3,820	4,172	1,600	102,131	467,185
1993	232,298	61,018	5,690	9,152	57,127	3,289	5,030	1,055	104,955	479,614
1994	344,512	65,996	5,039	7,241	50,821	1,805	3,014	1,587	115,769	595,784
1995	278,461	58,090	4,637	5,179	50,012	2,957	4,443	1,332	99,936	505,047
1996	^a 2,247	50,122	3,907	3,018	33,585	1,780	2,305	910	25,141	123,015
1997	^a 1,188	46,914	3,495	3,401	32,287	2,346	2,575	1,699	31,428	125,333
1998	^a 890	47,942	3,422	3,166	26,487	1,645	1,576	985	28,679	114,792
1999	^a 2,074	64,536	3,606	4,708	40,263	1,182	2,017	599	31,655	150,640
2000	^a 1,807	69,864	5,839	2,423	46,654	2,072	1,804	1,368	55,633	187,464
2001	^a 220	55,972	4,060	3,105	39,034	1,701	1,604	731	25,505	131,932
2002	^a 0	68,263	4,249	4,245	35,198	1,668	1,412	871	33,926	149,832
2003	^a 0	50,448	3,807	4,357	30,840	2,068	1,761	802	26,632	120,715
Mean	117,945	63,083	5,106	4,373	36,037	2,146	4,126	1,137	73,809	302,837
Avg. 1994-2003	63,140	57,815	4,206	4,084	38,518	1,922	2,251	1,088	47,430	220,455

^a Does not include Lower Kenai Peninsula Management Area.

^b Includes the Swanson River canoe route.

Table 5.-Sport fish harvest from other systems in the Northern Kenai Peninsula Management Area, 1977-2003.

Year	Chinook Salmon	Coho Salmon	Sockeye Salmon	Pink Salmon	Chum Salmon	Rainbow Trout	Arctic Grayling	Dolly Varden	Smelt	Total
1977	8,110	9,509	51,174	10,637	162	18,663	1,400	26,960	29,561	156,176
1978	10,225	9,856	68,689	12,273	390	16,373	2,197	38,192	39,418	197,613
1979	9,496	10,484	40,321	8,654	127	19,717	1,391	51,041	12,135	153,366
1980	3,887	8,925	59,375	9,729	215	22,655	2,109	36,892	23,958	167,745
1981	7,819	10,206	36,082	9,947	173	23,456	1,826	40,325	85,968	215,802
1982	10,406	10,028	49,964	6,302	180	18,459	2,015	26,657	5,851	129,862
1983	11,108	9,004	32,726	6,063	923	18,729	1,455	45,513	101,439	226,960
1984	12,468	11,696	65,027	7,244	211	13,240	998	23,357	1,348	135,589
1985	11,197	10,723	74,781	7,223	260	14,322	1,248	19,279	1,400	140,433
1986	13,958	11,735	72,195	4,466	118	14,498	1,758	19,863	3,446	142,037
1987	13,747	18,676	186,222	4,272	216	8,310	850	14,395	93	246,781
1988	21,167	20,918	89,388	11,203	671	8,180	581	12,530	62	164,700
1989	14,527	29,583	77,132	9,100	709	5,876	982	12,013	48	149,970
1990	17,048	17,433	64,505	7,679	372	11,346	862	15,874	2,359	137,478
1991	19,962	25,645	107,839	5,150	308	9,222	1,472	12,990	565	183,153
1992	26,163	20,634	68,675	10,074	284	14,379	775	15,293	5,344	161,621
1993	42,974	32,097	62,865	6,426	736	12,078	1,268	16,658	1,541	176,643
1994	35,306	33,442	81,431	5,928	273	12,485	1,636	13,542	4,012	188,055
1995	32,265	27,692	45,128	5,955	291	12,203	1,863	10,550	2,514	138,461
1996	^a 6,428	12,813	62,418	4,053	188	8,331	778	4,385	0	99,394
1997	^a 6,959	8,550	56,049	2,409	244	14,247	1,178	7,581	1,621	98,838
1998	^a 4,921	10,505	73,301	8,180	321	11,060	838	4,020	2,552	115,698
1999	^a 8,710	10,587	74,101	1,104	246	14,494	1,040	3,615	352	114,249
2000	^a 10,173	12,373	81,548	6,787	1,376	21,168	1,780	6,764	9	141,978
2001	^a 8,926	11,783	60,863	2,675	158	7,802	854	3,025	11	96,097
2002	^a 5,302	15,040	92,858	6,488	150	14,093	982	3,174	0	138,087
2003	^a 4,294	14,946	60,795	2,459	145	8,225	1,141	2,890	304	95,199
Mean	13,983	15,736	70,202	6,759	350	13,837	1,307	18,051	12,071	152,296

^a Does not include Lower Kenai Peninsula Management Area.

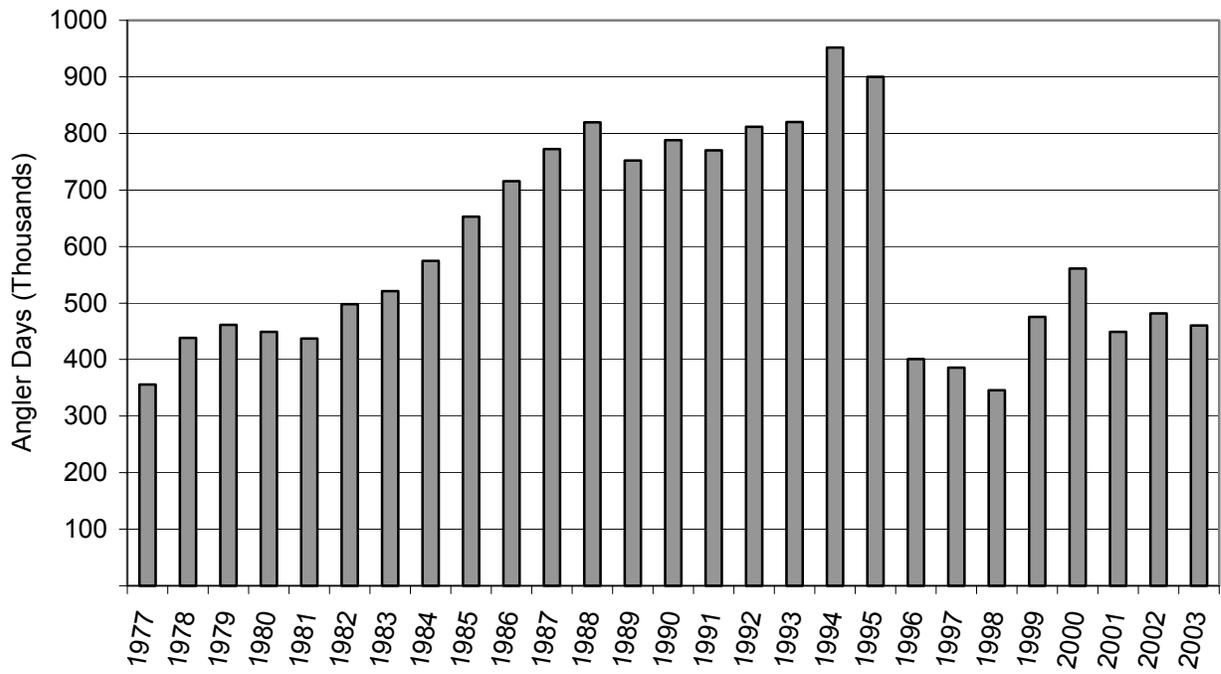


Figure 2.-Recreational angler participation in the Kenai Peninsula Management Area, 1977-2003.

Table 6.-Anglers-days of effort for Kenai River and Kasilof River personal use fisheries, 1981-2003.

Year	Kenai River Dip Net	Kasilof River Dip Net	Total
1982	Unknown	2,580	2,580
1983	3,203	4,417	7,620
1984	No Fishery	5,956	5,956
1985	No Fishery	9,260	9,260
1986	No Fishery	13,929	13,929
1987	22,547	8,910	31,457
1988	29,013	6,930	35,943
1989	31,312	No Fishery	31,312
1990	No Fishery	No Fishery	0
1991	No Fishery ^a	No Fishery ^a	0
1992	10,371	No Fishery ^a	10,371
1993	14,896	No Fishery	14,896
1994	10,360 ^a	2,361	12,721
1995	11,122	2,845	13,967
1996	10,503	1,300	11,803
1997	11,023	1,091	12,114
1998	10,802	3,421	14,223
1999	13,738	3,611	17,349
2000	12,354	2,622	14,976
2001	14,722	3,382	18,104
2002	14,840	4,020	18,860
2003	15,263	3,874	19,137
Mean	10,730	3,660	13,764

^a Subsistence Fishery only.

Sources: 1983-2003 from Statewide Harvest Survey (Mills 1984-1994; Howe et al. 1995, 1996 Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b). 1996-1997 total reported harvest from returned permits. 1998-2002 from expanding the known return to include permits not returned.

Table 7.-Kenai Peninsula personal use dip net harvest, by species, 1983-2003.

Year	Chinook Salmon	Coho Salmon	Sockeye Salmon	Pink Salmon	Chum Salmon	Rainbow Trout	Arctic Grayling	Dolly Varden	Smelt	Total
1983	0	0	24,152	0	0	0	0	0	0	24,152
1984	0	0	14,565	0	0	0	0	0	0	14,565
1985	0	248	19,282	62	0	0	0	0	0	19,592
1986	0	1,422	40,489	1,315	0	0	0	109	0	43,335
1987	362	2,862	43,771	471	181	36	0	127	0	47,810
1988	0	5,275	22,337	2,019	345	36	0	564	0	30,576
1989	0	3,804	54,392	1,212	240	70	0	26	0	59,744
1990	0	0	5,835	68	178	0	0	0	0	6,081
1991	0	450	65,082	33	0	0	0	0	0	65,565
1992	0	1,409	15,657	1,126	106	0	0	0	0	18,298
1993	0	1,474	37,727	538	0	0	0	0	0	39,739
1994	0	3,120	31,133	1,882	78	0	0	0	0	36,213
1995	0	1,839	33,269	526	27	0	0	99	0	35,760
1996	345	2,266	114,018	2,507	192	0	0	0	0	119,328
1997	399	649	124,356	638	77	0	0	0	0	126,119
1998	388	1,742	149,008	1,642	159	0	0	0	0	152,939
1999	615	1,295	186,680	1,930	154	0	0	0	0	190,674
2000	544	2,453	122,139	2,298	227	0	0	0	0	127,661
2001	776	2,321	188,378	1,633	178	0	0	0	0	193,286
2002	712	2,918	226,797	7,524	690	0	0	0	0	238,641
2003	1,073	1,924	267,450	1,933	279	0	0	0	0	272,659
Mean	248	1,784	85,072	1,398	148	7	0	44	0	88,702

Sources: 1983-2003 from Statewide Harvest Survey (Mills 1984-1994; Howe et al. 1995; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b). 1996-1997 total reported harvest from returned permits. 1998-2003 from expanding the known return to include permits not returned (Reimer and Sigurdsson 2004).

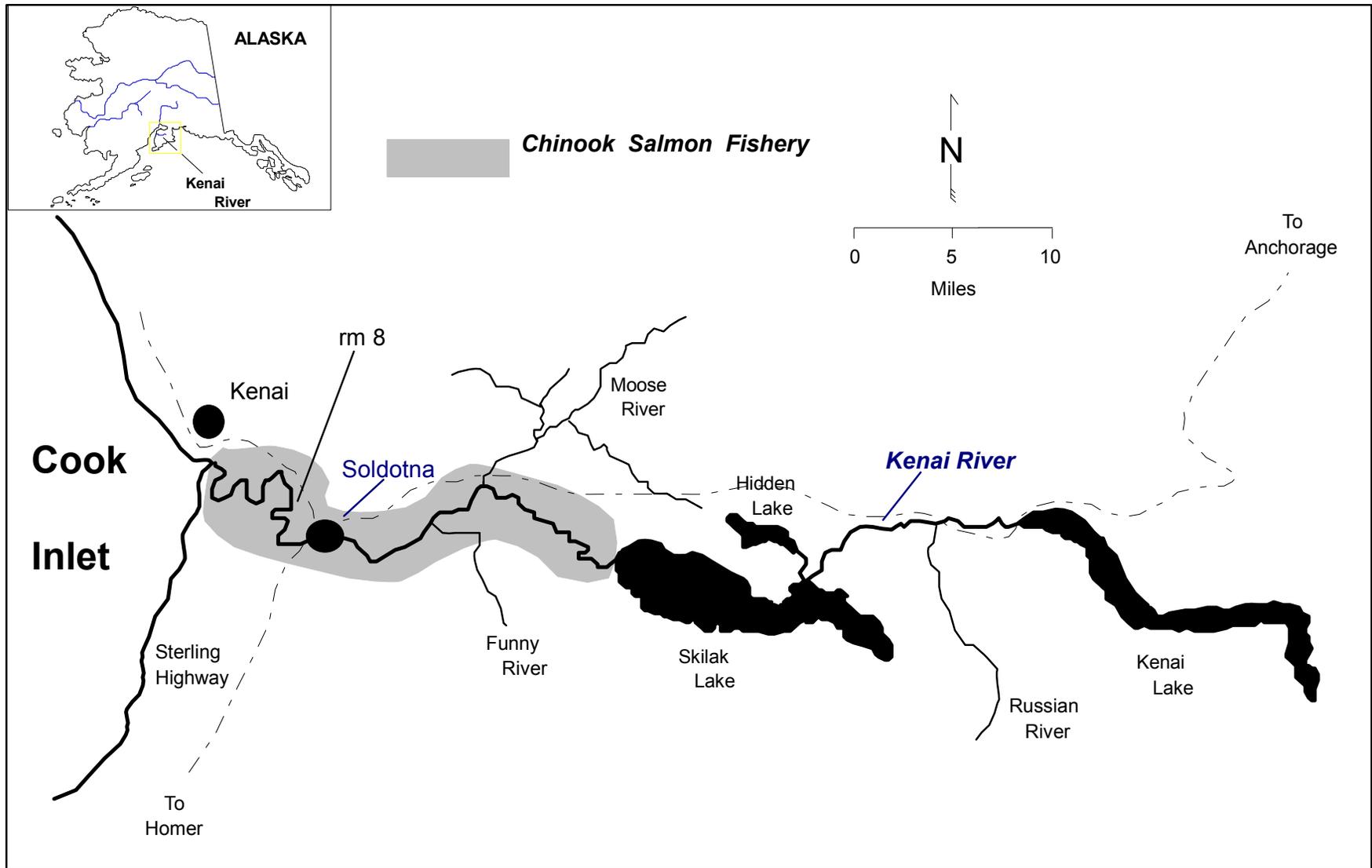


Figure 3.-Map of the boundaries of the Chinook salmon fishery in the Kenai River drainage.

Table 8.-Early-run Kenai River Chinook salmon population data, 1986-2004.

Year	Deep Creek Marine Harvest	Eastside Set Net Harvest	Drift Gill Net Harvest	Commercial Personal Use	Kenaitze Educational Fishery	Inriver Return	Kenai River Sport Harvest ^a	Hook-and-Release Mortality	Spawning Escapement	Total Return
1986	Unknown	Closed	Closed			27,080	8,156	242	18,682	27,080
1987	Unknown	Closed	Closed			25,643	13,557	306	11,780	25,643
1988	Unknown	Closed	Closed			20,880	15,209	340	5,331	20,880
1989	Unknown	Closed	Closed		73	17,992	8,394	149	9,449	18,065
1990	Unknown	Closed	Closed		40	10,679	1,807	378	8,494	10,719
1991	Unknown	Closed	Closed		2	10,931	1,945	152	8,834	10,933
1992	Unknown	Closed	Closed		73	10,087	2,241	236	7,610	10,160
1993	Unknown	Closed	Closed		118	19,921	9,342	286	10,293	20,039
1994	Unknown	Closed	Closed		56	18,403	8,171	285	9,947	18,459
1995	Unknown	Closed	Closed		37	21,884	10,217	357	11,310	21,921
1996	Unknown	Closed	Closed		104	23,505	6,623	287	16,595	23,609
1997	Unknown	Closed	Closed		122	14,963	6,437	350	8,176	15,085
1998	Unknown	Closed	Closed		131	9,184	1,170	254	7,760	9,315
1999	Unknown	Closed	Closed		114	24,657	8,129	261	16,267	24,771
2000	Unknown	Closed	Closed		124	25,666	1,818	185	23,663	25,790
2001	Unknown	Closed	Closed		198	12,479	2,397	205	14,074	12,677
2002	Unknown	Closed	Closed		64	16,676	899	78	6,185	16,740
2003	Unknown	Closed	Closed		46	13,325	2,839	389	10,097	13,371
2004	Unknown	Closed	Closed		72	15,498	^b	^b	^b	15,570

^a Sources: 1986-1998 Hammarstrom and Timmons 2001a. 1999 Reimer et al. 2002 and Howe et al. 2001d; Jennings et al. 2004, *in prep.* a, b. Includes creel survey estimates for the area from Cook Inlet to the Soldotna Bridge and estimates from the Statewide Harvest Survey for Soldotna Bridge to the outlet of Kenai Lake.

^b Information from the 2004 SWHS is needed to complete estimates. SWHS information will be available mid-2005.

Table 9.-Late-run Kenai River Chinook salmon population data, 1986-2004.

Year	Deep Creek ^a	Eastside ^b	Drift ^d	Commercial ^c			Personal ^f	Inriver	Kenai River ^d	Hook-and- ^d		Total
	Marine Harvest	Setnet Harvest	Gillnet Harvest	Personal Use	Kenatize Educational	Subsistence ^e			Sport Harvest	Release Mortality	Spawning Escapement	
1986	630	19,824	1,834					57,563	9,872	316	47,375	79,837
1987	1,218	21,150	4,552				235	48,123	13,100	123	34,900	74,480
1988	1,487	12,859	2,237				0	52,008	19,695	176	32,137	68,582
1989	1,368	10,926	0 ^d	4			0	29,035	9,691	88	19,256	41,344
1990	1,605	4,139	621	91				33,474	6,897	69	26,508	39,943
1991	1,705	4,893	246	130		413		34,614	7,903	16	26,695	41,869
1992	2,115	10,718	615	50		621	0	30,314	7,556	234	22,524	44,142
1993	2,834	13,977	765	129			0	51,991	17,775	478	33,738	69,709
1994	1,869	15,563	464	13	1	797		53,474	17,837	572	35,065	72,093
1995	2,069	12,032	594	36	3	753	772	44,336	12,609	472	31,255	59,642
1996	2,038	11,521	389	43	1		295	39,356 ^g	8,112	337	30,907	53,619
1997	2,931	11,281	627	44	20		364	39,622 ^g	12,755	570	26,297	54,688
1998	1,784	5,039	335	51	2		254	34,878	7,515	595	26,768	42,306
1999	997	9,389	575	73	4		488	48,069	13,595	682	33,792	60,689
2000	1,026	3,651	270	124	6		410	44,517	15,222	499	28,796	50,705
2001	860	5,904	619	13	8		638	33,916	16,480	825	16,611	43,378
2002	427	9,468	415	9	6		606	41,807	12,607	665	28,535	54,666
2003	200	14,772	1,236	34	105		1,016	41,659	16,943	1,803	22,913	58,867
2004	n/a	21,656	1,526	n/a	10		n/a	56,205	n/a	n/a	n/a	n/a

^a Source Hammarstrom and Timmons 2001b. Sport harvest includes creel survey estimates for the area from Cook Inlet to the Soldotna Bridge and estimates from the statewide harvest survey for Soldotna Bridge to the outlet of Kenai Lake.

^b Some harvest is below sonar and not counted against escapement.

^c Eastside set net personal use.

^d Total number of Chinook salmon harvested in fishery. No commercial drift net fishery conducted in 1989 due to *Exxon Valdez* oil spill.

^e Source Brannian and Fox 1996.

^f Source 1986-1993 Brannian and Fox 1996; 1995 Ruesch and Fox 1996; 1996-2000 are estimates from returned permits.

^g Sonar counts for 1996 and 1997 were 49,755 and 49,933, respectively (Burwen and Bosch 1998; Bosch and Burwen 1999). Escapement and total return estimates are calculated using radio-telemetry tagging estimates shown here (Hammarstrom and Timmons 2001b).

Table 10.—Guided vs. nonguided angler harvest, effort, and success rate, estimated by onsite creel survey downstream of the Soldotna Bridge, late-run Kenai River Chinook salmon fishery, 1981-2004.

Year	Harvest								Effort				
	Guided			Non-Guided			Total		Guided (Hours)		Non-Guided (Hours)		Total (Hours)
	Number	%	HPUE ^a	Number	%	HPUE ^a	Number	HPUE ^a	Number	%	Number	%	Number
1981	2,162	52.1	0.071	1,988	47.9	0.030	4,150	0.043	30,351	31.4	66,309	68.6	96,660
1982	2,257	52.0	0.065	2,083	48.0	0.022	4,340	0.034	34,897	27.3	92,931	72.7	127,828
1983	4,919	59.1	0.090	3,405	40.9	0.031	8,324	0.050	54,756	33.2	110,172	66.8	164,928
1984	2,614	40.2	0.062	3,888	59.8	0.019	6,502	0.026	42,062	16.8	208,309	83.2	250,371
1985	2,705	38.1	0.067	4,395	61.9	0.026	7,100	0.034	40,398	19.1	171,109	80.9	211,507
1986	3,198	39.7	0.067	4,855	60.3	0.030	8,053	0.039	47,379	22.9	159,943	77.1	207,322
1987	5,194	48.2	0.075	5,573	51.8	0.029	10,767	0.041	69,622	26.4	193,630	73.6	263,252
1988	8,393	51.1	0.095	8,042	48.9	0.034	16,435	0.051	88,331	27.3	235,043	72.7	323,374
1989	4,727	59.0	0.055	3,281	41.0	0.018	8,008	0.029	86,507	31.7	186,382	68.3	272,889
1990	3,544	61.0	0.042 ^b	2,269	39.0	0.014 ^b	5,813	0.024 ^b	85,477	34.7	161,071	65.3	246,548
1991	3,864	56.4	0.047	2,985	43.6	0.020	6,849	0.030	82,706	36.0	147,293	64.0	229,999
1992	4,176	62.5	0.064 ^b	2,504	37.5	0.024 ^b	6,680	0.040 ^b	75,324	40.2	112,091	59.8	187,415
1993	7,866	51.5	0.085	7,413	48.5	0.037	15,279	0.052	92,213	31.4	201,695	68.6	293,908
1994	6,628	46.1	0.060	7,760	53.9	0.032	14,388	0.041	110,049	31.0	244,729	69.0	354,778
1995	5,211	51.5	0.042	4,914	48.5	0.025	10,125	0.031	123,585	38.1	200,397	61.9	323,982
1996	3,853	64.4	0.035	2,131	35.6	0.017	5,984	0.025	110,057	46.1	128,438	53.9	238,495
1997	5,856	56.7	0.046	4,480	43.3	0.033	10,336	0.039	126,416	47.9	137,226	52.1	263,642
1998	3,575	59.8	0.041 ^b	2,406	40.2	0.028 ^b	5,981	0.034 ^b	98,872	52.4	89,854	47.6	188,726
1999	7,605	63.2	0.064	4,422	36.8	0.033	12,027	0.048	118,196	46.8	134,264	53.2	252,460
2000	6,585	54.6	0.058	5,480	45.4	0.041	12,065	0.049	114,362	46.0	134,020	54.0	248,382
2001	8,240	60.0	0.075	5,496	40.0	0.043	13,736	0.058	109,238	46.2	127,395	53.8	236,633
2002	6,537	56.9	0.071	4,945	43.1	0.049	11,482	0.060	91,972	47.7	100,808	52.3	192,780
2003	7,637	55.2	0.083	6,200	44.8	0.054	13,837	0.067	91,768	44.2	115,688	55.8	207,456
2004	9,491	65.5	0.086	5,003	34.5	0.039	14,494	0.061	110,690	46.4	127,725	53.6	238,415
Mean	5,285	54.4	0.064	4,413	45.6	0.030	9,698	0.042	84,801	36.3	149,438	63.7	234,240

^a Harvest per angler per hour.

^b Harvest per angler per hour does not include periods open only to retention of trophy (greater than 52 inches) Chinook salmon.

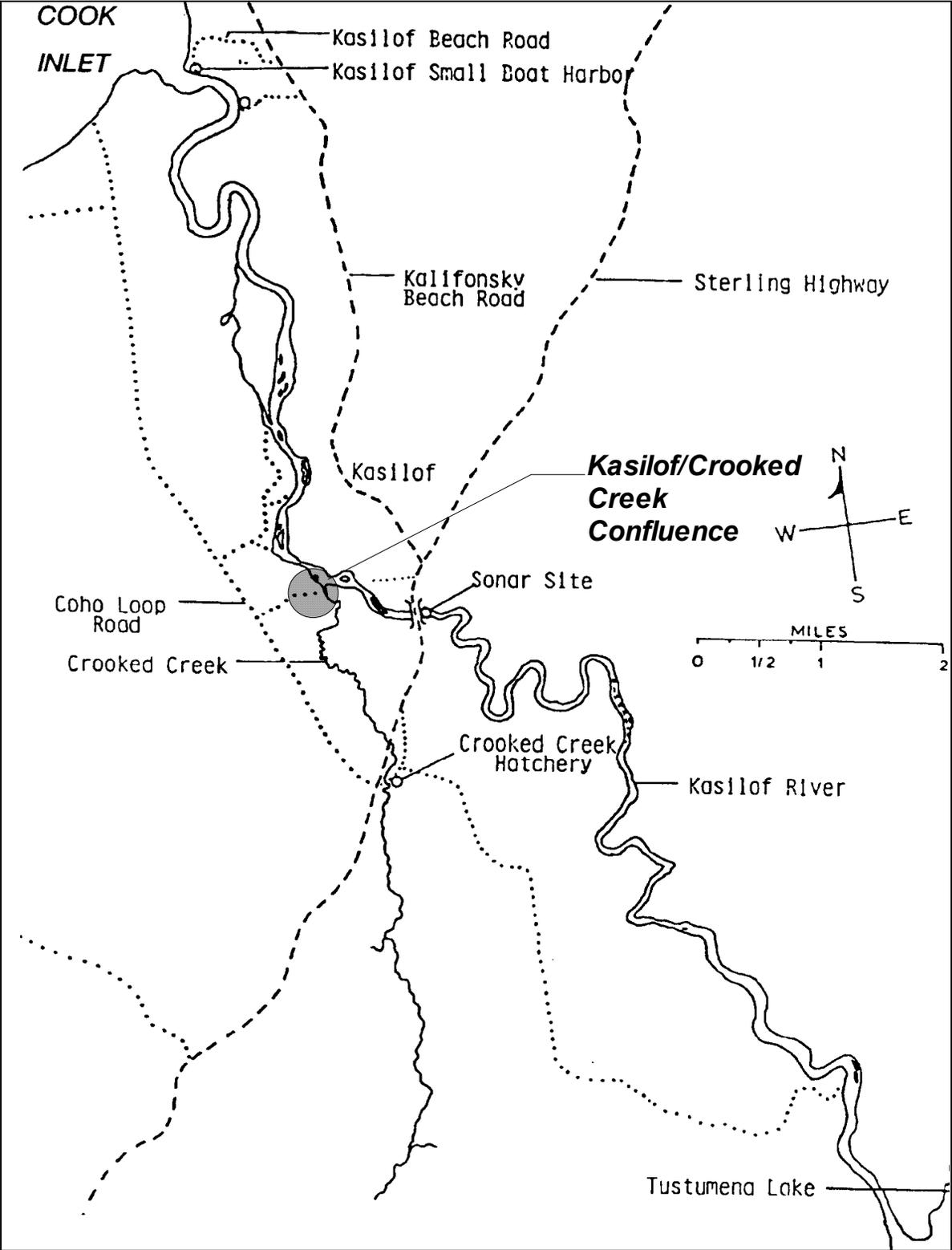


Figure 4.-Kasilof River Chinook salmon fishery.

Table 11.-Kasilof River personal use and subsistence gillnet harvest of Chinook salmon, 1984-2003.

Year	Chinook Harvest
1984	165
1985	203
1986	168
1987	184
1988	118
1989	186
1990	133
1991	34
1992	no fishery
1993	47
1994	Subsistence only
1995	695 ^a
1996	46
1997	65
1998	126
1999	442
2000	514
2001	174
2002	192
2003	400

^a Fishery occurred on Ninilchik, Cohoe, Kalifornsky, and Salamatof beaches throughout the season, so includes Chinook from many parent streams and from both early and late runs.

Sources: 1984-1998 from Ruesch and Fox 1999, Appendix A15; 1995 from Ruesch and Fox 1996, Table 15; 1994 from Brannian and Fox 1996, Table 7; 1996-2003 summaries of returned permits, expanded to include harvest of permits not returned (Reimer and Sigurdsson 2004).

Table 12.-Historical summary of Kasilof River tributary; Crooked Creek Chinook salmon stocks, 1974-2004.

Year	Sport Fishery ^{abc}			Percent of Return	Catch per Hour ^d	Total Return to the weir ^{ef}			Age-1 Fish ^h		Mortalities or Sold by Hatchery ⁱ	Brood Stock	Spawning Escapement ^j	Number of Wild Spawners	Total Return ^k
	Harvest					Dwnstrm of Weir ^g	Weir	Total	% of						
	Early Run	Late Run	Total						Number	Escape					
1976			1		1	96	1,682	1,778			5	236	1,537	1,537	
1977			1		1	125	3,069	3,194			349	455	2,390	2,390	
1978			251 ^b	0.0	0.038	117	4,715	5,276			242	202	4,832	4,220	5,527
1979			283 ^b	0.0	0.040	55	3,544	4,021			241	181	3,599	2,487	4,304
1980			310 ^b	0.0	0.019	73	2,282	2,595			73	167	2,355	1,635	2,905
1981			1,242 ^b	0.0	0.061	76	2,904	3,041			12	49	2,980	1,881	4,283
1982			2,316 ^b	0.0	0.088	853	3,503	4,605			5	244	4,356	1,699	6,921
1983			2,853 ^b	0.0	0.044	210	4,305	5,188			177	496	4,515	1,377	8,041
1984			3,964 ^b	0.0	0.062	407	3,650	4,705			211	437	4,057	1,281	8,669
1985			2,986 ^b	0.0	0.044		2,812	3,133			30	291	2,812	1,041	6,119
1986			7,071 ^b	0.0	0.073	598	3,874	4,889			100	317	4,472	1,611	11,960
1987			4,461 ^b	0.0	0.071		3,724	4,104			56	324	3,724	1,297	8,565
1988			4,953 ^b	0.0	0.086		3,796	6,892			2,775	321	3,796	216	11,845
1989			3,767 ^b	0.0	0.099		3,011	5,272			1,998	263	3,011	269	9,039
1990			2,852 ^b	0.0	0.098	750	2,647	5,131			1,425	309	3,397	670	7,983
1991			5,055 ^b	0.0	1		2,281	3,669			1,130	258	2,281		8,724
1992			6,049 ^b	0.0	1		3,533	6,223			2,423	267	3,533		12,272
1993			9,734 ^b	0.0	1		2,291	3,925			1,344	290	2,291		13,649
1994			7,217 ^b	0.0	1		1,790	2,940			1,016	134	1,790		10,157
1995			6,681 ^b	0.0	1		2,206	3,662			1,456	0	2,206		10,343
1996	5,295	833	6,128	62.5	1		2,224	3,684 ^m			1,460	0	2,224		9,812
1997 ^m	5,627	1,101	6,728		1										
1998 ^m	4,201	638	4,839		1										
1999	7,597	658	8,255	74.3	1	107	2,753	2,860	962	33.6	167	228	1,503	505	11,115
2000	8,815	1,086	9,901	72.8	1	45	3,650	3,695	2,253	61.0	124	218	1,100	515	13,596
2001	7,488	1,378	8,866	72.9	1	16	3,275	3,291	687	20.9	130	138	2,336	1,381	12,157
2002	4,791	451	5,242	57.5	1	78	3,798	3,876	495	12.8	391	231	2,759	958	9,118
2003	3,078	1,144	4,222	44.3	1	36	5,274	5,310	1,111	20.9	325	205	3,669	2,554	9,532
Mean	5,862	911	2,084	16.0	0.063	228	3,177	3,820	1,102	29.8	227	241	2,982	1,476	9,027
2004	2,421		ⁿ		1	0	5,191	5,191	318	6.1	360	157	4,356	2,196	5,191

^a Sport fishery occurs in the Kasilof River near its confluence with Crooked Creek.

Continued

Table 12.-Page 2 of 2.

- ^b The SWHS harvest estimates prior to 1996 include an unknown number of late-run fish.
- ^c Data sources: Mills 1979-1980, 1981a-b, 1982-1994; Howe et al. 1995, 1996, 2001 a-d; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b.
- ^d Data obtained from Fisheries Rehabilitation and Enhancement Division creel survey.
- ^e 1976-1989 escapement and number of fish used for egg take from G. L. Todd, ADF&G, Commercial Fisheries, Soldotna, personal communication. Crooked Creek Chinook Enhancement Project Summary Report, 1990. Includes age-.1 fish 1999-2004. In 1990, 750 fish previously noted as spawning below the weir were included in the weir total based on hatchery logs.
- ^f 1990-1995 escapements from original hatchery logbooks. These raw data are currently in the Soldotna office.
- ^g Downstream escapements were obtained from ground surveys, G. Todd, ADF&G, Commercial Fisheries, Soldotna, personal communication 1990. (Except 1990- see footnote e). 1999-2004 Jeff Breakfield and Mary King, ADF&G Sport Fish, Soldotna, personal communication.
- ^h Up until 1999 age-.1 fish were destroyed and were not included in the spawning escapement.
- ⁱ Numbers of fish sold, destroyed or mortalities: 1974-1987 G. Todd, ADF&G, Sport Fish, personal communication, 1988-1989 Nelson et al. 1999; 1990-1996 L. Marsh, ADF&G Sport Fish, Soldotna, personal communication; 1999-2004 J. Breakfield, ADF&G, Sport Fish, Soldotna.
- ^j Escapements from 1990-1994 were increased for release of fish held after last egg take. Includes fish that escaped upstream to spawn or spawned downstream 1999-2004. Age 0.1 fish not included.
- ^k Total Return is total sport fishery harvest + total return to the weir. This includes 1-ocean jacks in the harvest which Nelson excluded (Nelson 1995).
- ^l No creel survey conducted.
- ^m Hatchery closed; weir not in place.
- ⁿ Statewide Harvest Survey (SWHS) estimates not available until a year post-fishery.

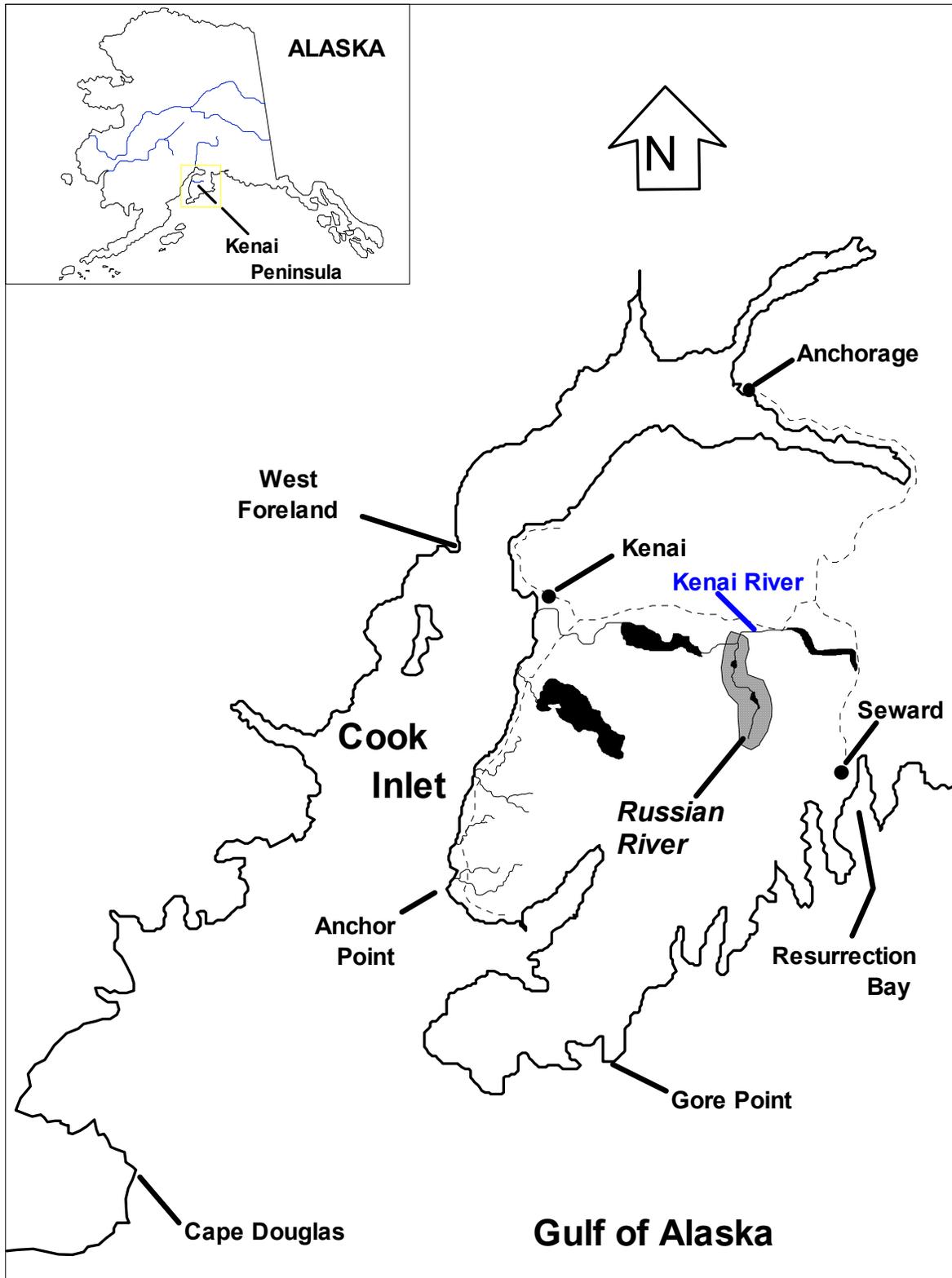


Figure 5.-Location of the Russian River on the Kenai Peninsula, Alaska.

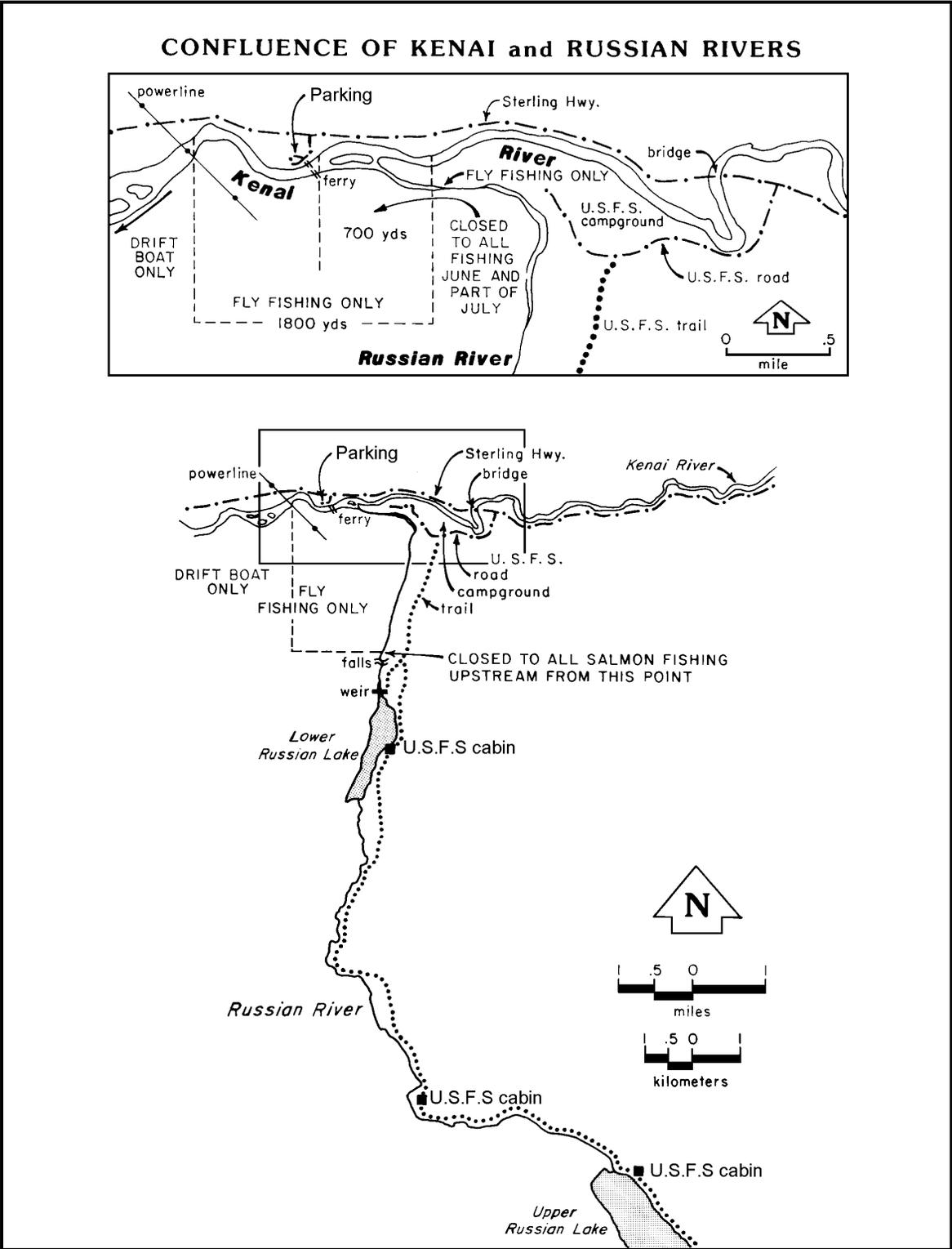


Figure 6.-Map of the Russian River drainage.

Table 13.-Angler effort, harvest rate, harvest and escapement, Russian River early-run sockeye salmon, Russian River, 1965-2004.

Year	Days Effort	Hours Effort	Harvest/ Hour	Harvest	Spawning Escapement	Local Return ^a
1965	7,750	37,710	0.266	10,030	21,514	31,544
1966	11,970	63,080	0.237	14,950	16,658	31,608
1967	11,460	62,960	0.115	7,240	13,710	20,950
1968	11,780	66,540	0.104	6,920	9,192	16,112
1969	12,290	61,790	0.095	5,870	5,000	10,870
1970	9,700	48,730	0.118	5,750	5,451	11,201
1971	6,250	33,060	0.085	2,810	2,654	5,464
1972	12,340	52,500	0.096	5,040	9,273	14,313
1973	15,220	70,950	0.095	6,740	13,120	19,860
1974	11,090	61,330	0.105	6,440	13,164	19,604
1975	5,210	20,590	0.068	1,400	5,645	7,045
1976	8,930	28,910	0.117	3,380	14,736	18,116
1977	38,200	138,580	0.147	20,400	16,061	36,461
1978	51,910	196,590	0.192	37,720	34,240	71,960
1979	25,670	96,300	0.087	8,400	19,749	28,149
1980	31,430	130,820	0.208	27,220	28,624	55,844
1981	24,780	103,130	0.104	10,720	21,142	31,862
1982	39,000	163,140	0.211	34,500	56,106	90,606
1983	18,560	78,550	0.106	8,360	21,272	29,632
1984	29,230	144,680	0.248	35,880	28,908	64,788
1985	16,140	75,000	0.164	12,300	30,605	42,905
1986	29,850	126,720	0.277	35,100	36,338	71,438
1987	80,360	319,820	0.482	154,200	61,513	215,713
1988	46,600	186,390	0.294	54,780	50,406 ^b	105,186
1989	20,800	79,660	0.142	11,290	15,338 ^b	26,628
1990	44,740	178,970	0.169	30,215	26,716 ^c	56,931
1991	64,651	255,854	0.256	65,390	32,389 ^d	97,779
1992	37,484	143,937	0.212	30,512	37,117	67,629
1993	34,602	134,949	0.276	37,261	39,857	77,118
1994	42,422	178,173	0.275	48,923	44,872	93,795
1995	31,019	124,076	0.190	23,572	28,603	52,175
1996	51,710	225,457	0.173	39,075	52,905	91,980
1997 ^e				36,788	36,280	73,068
1998 ^e				42,711	34,143	76,854
1999 ^e				34,283	36,607	70,890
2000 ^e				40,732	32,736	73,468
2001 ^e				35,400	78,255	113,655
2002 ^e				52,139	85,943	138,082
2003 ^e				22,986	23,650	46,636
2004 ^e					56,582	
Mean	27,600	115,280	0.179	27,370	29,930	56,610

^a Escapement below and above the weir plus harvest.

^b Includes 60 fish used to test brood source for disease.

^c Includes 1,572 fish used as brood source for stocking in Resurrection Bay.

^d Includes 729 fish used as brood source for stocking in Resurrection Bay.

^e Creel survey not conducted; estimates from SWHS.

^f Harvest available fall 2005.

Table 14.-Angler effort, harvest rate, harvest and escapement, Russian River late-run sockeye salmon, 1963-2004.

Year	Days Effort	Hours Effort	Harvest/ Hour	Harvest	Spawning Escapement			Local ^b Return
					Above Weir	Below Weir	Total	
1963	2,170	Unknown		1,390	51,120	Unknown		52,510
1964	1,350	5,070	0.483	2,450	46,930	Unknown		49,380
1965	1,970	8,280	0.261	2,160	21,820	Unknown		23,980
1966	6,310	28,700	0.254	7,290	34,430	Unknown		41,720
1967	5,500	29,490	0.194	5,720	49,480	Unknown		55,200
1968	5,500	28,250	0.206	5,820	48,880	4,200	53,080	58,900
1969	2,640	12,230	0.094	1,150	28,872	1,100	29,972	31,122
1970	1,000	2,240	0.268	600	26,200	220	26,420	27,020
1971	8,870	37,390	0.287	10,730	54,421	10,000	64,421	75,151
1972	13,360	55,920	0.287	16,050	79,115	6,000	85,115	101,165
1973	15,470	81,930	0.109	8,930	25,068	6,680	31,748	40,678
1974	10,030	45,210	0.188	8,500	24,904	2,210	27,114	35,614
1975	11,300	52,770	0.159	8,390	31,961	690	32,651	41,041
1976	17,380	74,000	0.185	13,700	31,939	3,470	35,409	49,109
1977	31,310	140,780	0.195	27,440	21,362	17,090	38,452	65,892
1978	17,950	98,830	0.248	24,530	34,334	18,330	52,664	77,194
1979	29,330	124,010	0.216	26,840	87,852	3,920	91,772	118,612
1980	24,900	117,100	0.286	33,500	83,984	3,220	87,204	120,704
1981	26,250	109,250	0.217	23,720	44,523	4,160	48,683	72,403
1982	12,480	59,130	0.175	10,320	30,800	45,000	75,800	86,120
1983	13,300	66,650	0.240	16,000	33,734	44,000	77,734	93,734
1984	20,320	94,850	0.232	21,970	92,659	3,000	95,659	117,629
1985	34,630	159,160	0.367	58,410	136,969	8,650	145,619	204,029
1986	22,400	89,780	0.343	30,810	40,281	15,230	55,511	86,321
1987	32,650	132,570	0.306	40,580	53,932	76,530	130,462	171,042
1988	25,430	94,840	0.206	19,540	42,476	30,360	72,836	92,376
1989	39,770	154,510	0.357	55,210	138,377	28,480	166,857	222,067
1990	39,970	159,890	0.351	56,180	83,434	11,760	95,194	151,374
1991	21,090	78,849	0.399	31,450	78,175	22,270	100,445	131,895
1992	23,015	87,918	0.297	26,101	62,584	4,980	67,564	93,665
1993	23,491	96,312	0.278	26,772	99,259	12,258	111,517	138,289
1994	21,712	91,192	0.289	26,375	122,277	15,211	137,488	163,863
1995	17,166	72,099	0.164	11,805	61,982	12,479	74,461	86,266
1996	17,322	77,951	0.245	19,136	34,691	31,601	66,292	85,428
1997				12,910 ^a	65,905	11,337	77,242	90,152
1998				25,110 ^a	113,480	19,593	133,073	158,183
1999				32,335 ^a	139,863	19,514	159,377	191,712
2000				30,229 ^a	56,580	13,930	70,510	100,739
2001				18,550 ^a	74,964	17,044	92,008	110,558
2002				31,999 ^a	62,115	6,858	68,973	100,972
2003				28,085 ^a	157,469	27,474	184,943	213,028
2004				^c	110,244	30,458	140,702	140,702
Mean	17,570	75,500	0.254	20,950	64,750	14,030	78,780	99,230

^a Estimate of late-run harvest from Statewide Harvest Survey, unpublished data.

^b Escapement below and above weir plus harvest.

^c Harvest data not available until fall 2005.

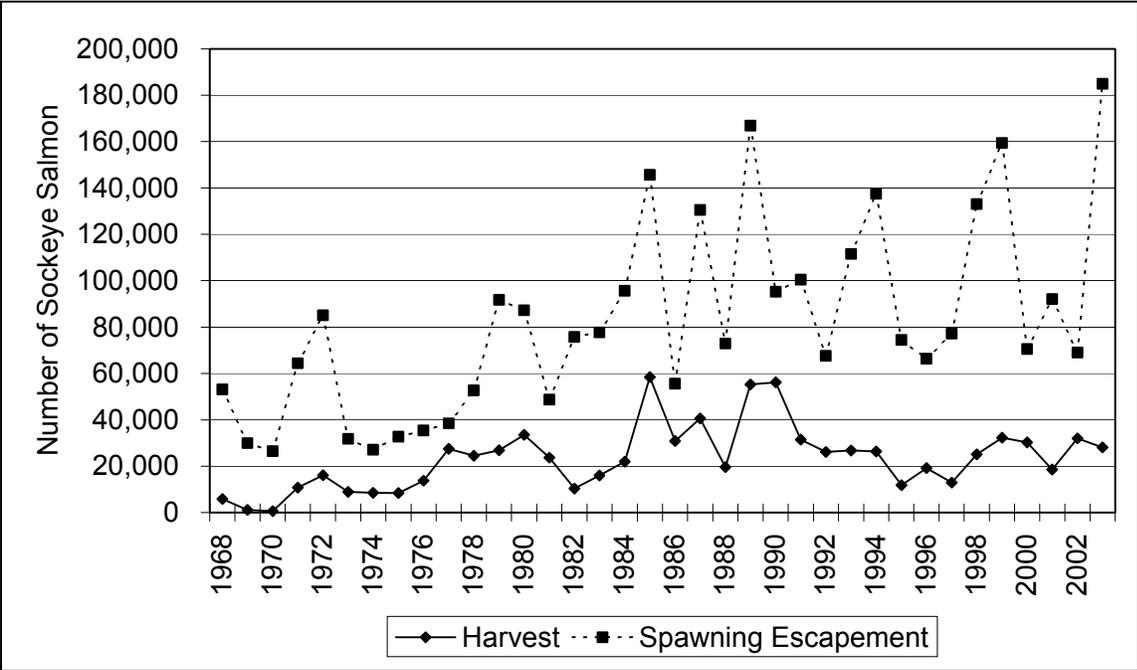


Figure 7.-Late run Russian River sockeye salmon harvest and total spawning escapement, including lower river spawners, 1968-2003.

Table 15.-Daily escapement of early-run sockeye salmon at Russian River weir in 2004 and historic mean daily escapement proportion, 1978-2003.

Date	Daily Count	Total Count	Historic Proportion By Day	Date	Daily Count	Total Count	Historic Proportion By Day
08-Jun	0	0	0.000	05-Jul	1,159	52,517	0.773
09-Jun	389	389	0.001	06-Jul	466	52,983	0.809
10-Jun	370	759	0.004	07-Jul	526	53,509	0.841
11-Jun	694	1,453	0.008	08-Jul	672	54,181	0.869
12-Jun	1,111	2,564	0.015	09-Jul	451	54,632	0.897
13-Jun	1,647	4,211	0.023	10-Jul	103	54,735	0.917
14-Jun	2,188	6,399	0.035	11-Jul	60	54,795	0.939
15-Jun	2,364	8,763	0.048	12-Jul	648	55,443	0.950
16-Jun	1,274	10,037	0.064	13-Jul	525	55,968	0.962
17-Jun	733	10,770	0.090	14-Jul	614	56,582	0.969
18-Jun	610	11,380	0.123	15-Jul	0	56,582	0.973
19-Jun	581	11,961	0.147	16-Jul	0	56,582	0.980
20-Jun	2,211	14,172	0.181	17-Jul	0	56,582	0.985
21-Jun	4,720	18,892	0.212	18-Jul	0	56,582	0.989
22-Jun	4,171	23,063	0.244	19-Jul	0	56,582	0.992
23-Jun	4,319	27,382	0.272	20-Jul	0	56,582	0.994
24-Jun	4,194	31,576	0.313	21-Jul	0	56,582	0.995
25-Jun	4,727	36,303	0.352	22-Jul	0	56,582	0.996
26-Jun	4,414	40,717	0.392	23-Jul	0	56,582	0.997
27-Jun	2,779	43,496	0.433	24-Jul	0	56,582	0.998
28-Jun	1,759	45,255	0.472	25-Jul	0	56,582	0.998
29-Jun ^a	1,572	46,827	0.513	26-Jul	0	56,582	0.999
30-Jun	1,498	48,325	0.552	27-Jul	0	56,582	1.000
01-Jul	996	49,321	0.595	28-Jul	0	56,582	1.000
02-Jul	579	49,900	0.653	29-Jul	0	56,582	1.000
03-Jul	367	50,267	0.700	30-Jul	0	56,582	1.000
04-Jul	1,091	51,358	0.737	31-Jul	0	56,582	1.000

^a Historical peak for early-run sockeye salmon return to the Russian River.

Table 16.-Daily escapement of late-run sockeye salmon at Russian River weir in 2004 and historic mean daily escapement proportion, 1978-2003.

Date	Daily Count	Total Count	Historic Proportion By Day	Date	Daily Count	Total Count	Historic Proportion By Day
15-Jul	834	834	0.003	18-Aug	1,693	98,846	0.866
16-Jul	356	1,190	0.005	19-Aug	1,146	99,992	0.880
17-Jul	425	1,615	0.007	20-Aug	1,038	101,030	0.895
18-Jul	647	2,262	0.011	21-Aug	915	101,945	0.908
19-Jul	1,256	3,518	0.017	22-Aug	1,013	102,958	0.918
20-Jul	11,435	14,953	0.026	23-Aug	883	103,841	0.928
21-Jul	10,088	25,041	0.039	24-Aug	719	104,560	0.942
22-Jul	9,077	34,118	0.055	25-Aug	698	105,258	0.950
23-Jul	4,019	38,137	0.069	26-Aug	560	105,818	0.961
24-Jul	1,624	39,761	0.090	27-Aug	716	106,534	0.969
25-Jul	1,101	40,862	0.110	28-Aug	876	107,410	0.977
26-Jul	1,537	42,399	0.141	29-Aug	790	108,200	0.985
27-Jul	4,659	47,058	0.179	30-Aug	635	108,835	0.991
28-Jul	2,505	49,563	0.211	31-Aug	626	109,461	0.997
29-Jul	2,242	51,805	0.238	1-Sep	482	109,943	1.000
30-Jul	2,834	54,639	0.272	2-Sep	284	110,227	1.000
31-Jul	2,290	56,929	0.297	3-Sep	17	110,244	1.000
1-Aug	1,282	58,211	0.340				
2-Aug	1,035	59,246	0.373				
3-Aug	1,630	60,876	0.411				
4-Aug	4,082	64,958	0.455				
5-Aug ^a	3,762	68,720	0.505				
6-Aug	3,944	72,664	0.546				
7-Aug	3,178	75,842	0.576				
8-Aug	2,280	78,122	0.616				
9-Aug	2,668	80,790	0.653				
10-Aug	2,493	83,283	0.682				
11-Aug	3,302	86,585	0.707				
12-Aug	1,939	88,524	0.734				
13-Aug	1,789	90,313	0.760				
14-Aug	1,930	92,243	0.785				
15-Aug	1,460	93,703	0.809				
16-Aug	1,614	95,317	0.830				
17-Aug	1,836	97,153	0.848				

^a Historical peak for late-run sockeye salmon return to the Russian River.

Table 17.-Late-run Russian River sockeye salmon harvest, escapement, and returning jacks, 1969-2004.

Year	Sport Harvest	Above Weir Escapement	Jacks Observed ^a	Percent of Escapement
1969	1,150	28,872	357	1.2
1970	600	26,200	2,542	9.7
1971	10,730	54,421	1,458	2.7
1972	16,050	79,115	163	0.2
1973	8,930	25,068	397	1.6
1974	8,500	24,904	994	4.0
1975	8,390	31,961	1,791	5.6
1976	13,700	31,939	1,204	3.8
1977	27,440	21,362	444	2.1
1978	24,530	34,334	3,012	8.8
1979	26,840	87,852	1,473	1.7
1980	33,500	83,984	1,533	1.8
1981	23,720	44,523	2,632	5.9
1982	10,320	30,800	1,777	5.8
1983	16,000	33,734	4,351	12.9
1984	21,970	92,659	3,444	3.7
1985	58,410	136,969	1,905	1.4
1986	30,810	40,281	1,812	4.5
1987	40,580	53,932	332	0.6
1988	19,540	42,476	11,842	27.9
1989	55,210	138,377	13,721	9.9
1990	56,180	83,434	6,713	8.0
1991	31,450	78,175	5,196	6.6
1992	26,101	62,584	4,213	6.7
1993	26,772	99,259	34,536	34.8
1994	26,375	122,277	6,730	5.5
1995	11,805	61,982	9,606	15.5
1996	19,136	34,691	7,388	21.3
1997	12,910	65,905	4,549	6.9
1998	25,110	113,480	31,245	27.5
1999	32,335	139,863	6,527	4.7
2000	30,229	56,580	2,831	5.0
2001	18,550	74,964	19,309	25.8
2002	31,999	62,115	3,744	6.0
2003	28,085	157,469	6,476	4.1
2004	^b	110,244	3,415	3.1
Mean	23,830	68,520	5,820	8.3
1994-2003 avg.	23,653	88,933	9,841	12.2

^a Fish that are 16 inches or less. These are visual counts of small fish at the weir, not based on scale pattern analysis.

^b Data not available until fall 2005.

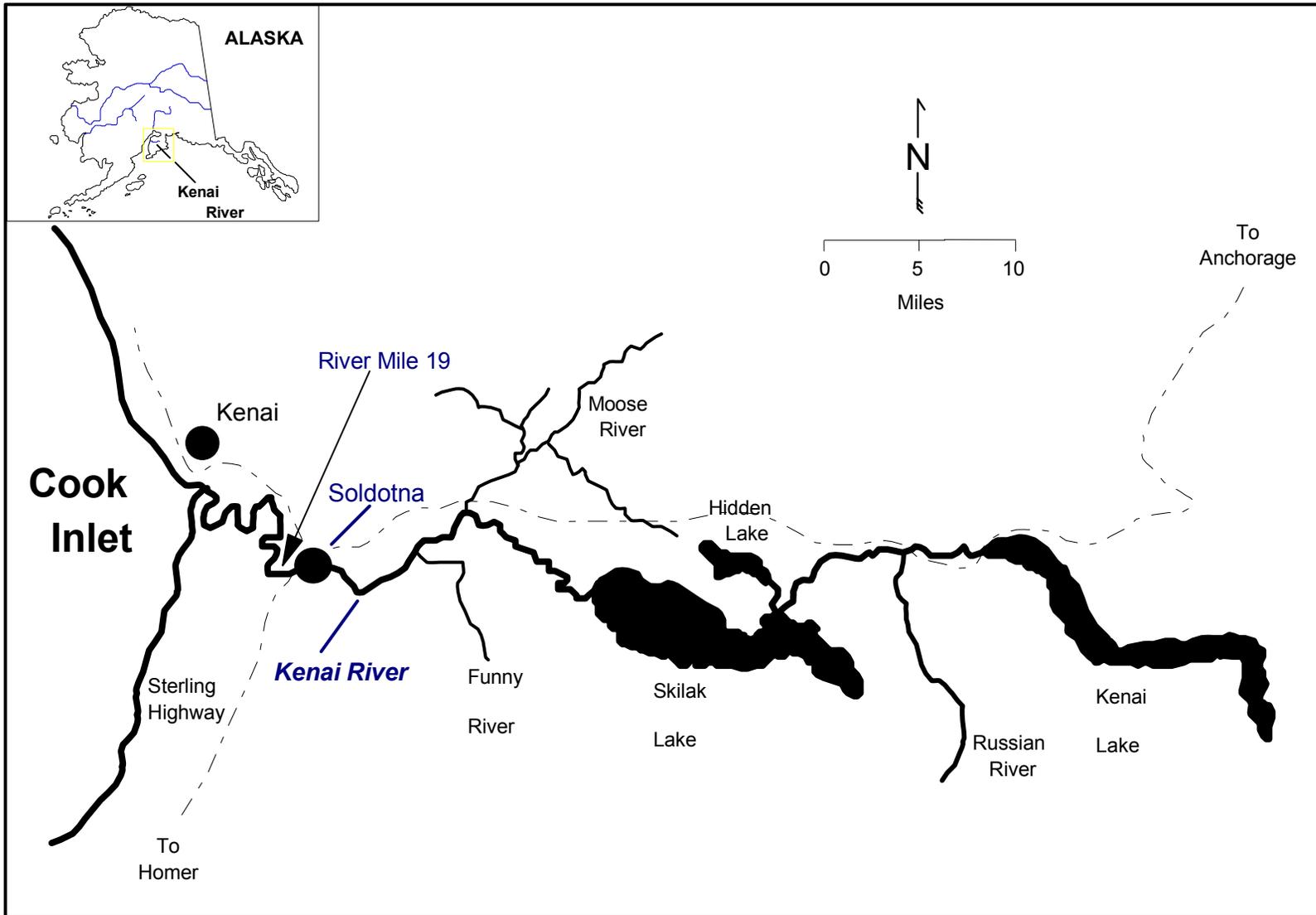


Figure 8.-Map of the Kenai River drainage. Late-run sockeye salmon fishery occurs from Cook Inlet to Kenai Lake.

Table 18.-Kenai River drainage sockeye salmon escapements and inriver harvest, 1977-2003.

Year	Inriver Personal Use and Subsistence Dip Net, and Educational Harvest ^a	Sport Harvest Below Sonar ^{b,c}	Kenai River Sonar Count ^d	Total Inriver Return	Harvests above Sonar ^a								Total Harvest Above Sonar	Spawning Escape-ment
					Kenai R Sonar to Soldotna Bridge	Kenai R Below Soldotna Bridge	Kenai R Above Soldotna Bridge	Kenai R Reach Not Specified ^e	Skilak Lake	Late Run Russian River	Hidden Lake Personal Use & Sport			
1981	0	3,116	407,639	410,755	2,154	5,270	14,451				23,720	0	40,325	367,314
1982	0	6,922	619,831	626,753	4,784	11,706	38,397				10,320		53,501	566,330
1983	7,562	13,577	630,340	651,479	9,384	22,961	48,306		0	16,000	0	73,690	556,650	
1984	0	2,613	344,571	347,184	1,806	4,419	11,283		0	21,970	17	35,076	309,495	
1985	0	8,835	502,820	511,655	6,106	14,941	42,272		0	58,410	149	106,937	395,883	
1986	0	12,522	501,157	513,679	8,655	21,177	51,221		13	30,810	0	90,699	410,458	
1987	24,086	50,274	1,596,871	1,671,231	34,746	85,020	155,799		2,029	40,580	689	233,843	1,363,028	
1988	16,880	29,345	1,021,469	1,067,694	20,282	49,627	103,124		382	19,540	583	143,911	877,558	
1989	51,188	66,162	1,599,959	1,717,309	45,727	111,889	165,336		1,654	55,210	331	268,258	1,331,701	
1990	3,477	19,640	659,520	682,637	13,573	33,213	82,175		670	56,180	107	152,705	506,815	
1991	13,433	31,536	647,597	692,566	21,795	53,331	108,271		2,411	31,450	77,060	240,987	406,610	
1992	30,394	47,622	994,798	1,072,814	32,913	80,535	161,956		1,044	26,101	468	222,482	772,316	
1993	35,000	27,717	813,617	876,334	19,156	46,873	90,306		825	26,772	133	137,192	676,425	
1994	15,755	15,085	1,003,446	1,034,286	15,278	30,363	63,253		213	26,375	102	105,221	898,225	
1995	15,850	34,158	630,447	680,455	15,648	49,806	75,622		177	11,805	83	103,335	527,112	
1996	105,063	39,810	797,847	942,720	27,514	67,324	118,967		307	19,136	225	166,149	631,698	
1997	117,029	43,642	1,064,818	1,225,489	30,163	73,805	103,328		312	12,910	274	146,987	917,831	
1998	106,468	33,980	767,558	908,006	23,484	57,464	107,072		158	25,110	81	155,905	611,653	
1999	151,448	46,043	803,379	1,000,870	31,822	77,865	122,709		0	32,335	859	187,725	615,654	
2000	100,350	57,978	624,578	782,906	40,070	98,048	132,935		377	30,229	190	203,801	420,777	
2001	154,207	51,374	650,036	855,617	35,506	86,880	113,882		24	18,550	142	168,104	481,932	
2002	182,917	42,996	957,924	1,183,837	35,968	78,964	143,211	3,742	1,509	31,999	308	216,737	741,187	
2003	227,207	60,722	1,181,309	1,469,238	102,689	39,931	173,068	10,168	96	28,085	302	251,650	929,659	
Mean	59,060	32,420	818,330	909,800	25,180	52,240	96,820	6,960	580	28,420	3,730	152,400	665,930	

Continued

Table 18.-Page 2 of 2.

- ^a Personal use harvest not known in 1982; 1983-1995 from Statewide Harvest Survey Mills 1984-1994; Howe et al. 1995, 1996). 1996-2000 total reported harvest from returned permits, expanded to include permits not returned (Reimer and Sigurdsson 2004). Subsistence dip net harvest 1991, 1992, and 1994 from Brannian and Fox 1996. Educational is total annual Kenaitze educational permit harvest.
- ^b Sport harvest and 1991 Hidden Lake personal use from Statewide Harvest Survey (Mills 1979-1980, 1981a-b, 1982-1994;; Howe et al. 1995, 1996, 2001 a-d; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b).
- ^c 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 two percentages is applied to all other year's below Bridge harvest to estimate the harvest below the sonar.
- ^d Estimated escapement at sonar site (Davis 2002).
- ^e Adopted by SWHS beginning in 2002.

Table 19.-Kenai River recreational harvest of sockeye salmon by river section as determined by Statewide Harvest Survey, 1981-2003.

Year	Cook Inlet to Soldotna Bridge		Soldotna Bridge to Moose River		Moose River to Skilak Lake		Skilak Lake to Kenai Lake		Kenai River Reach Not Specified		Total	Total Effort for all Species (Angler- days)
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent		
1981	5,270	26.7	5,336	27.1	4,266	21.6	4,849	24.6			19,721	178,716
1982	11,706	23.4	14,829	29.6	12,136	24.2	11,432	22.8			50,103	231,948
1983	22,961	32.2	22,454	31.5	15,180	21.3	10,672	15.0			71,267	229,228
1984	4,419	28.1	2,183	13.9	2,300	14.6	6,800	43.3			15,702	270,422
1985	14,941	26.1	13,025	22.8	13,299	23.2	15,948	27.9			57,213	322,230
1986	21,177	29.3	13,846	19.1	13,533	18.7	23,842	32.9			72,398	335,051
1987	85,020	35.3	65,841	27.3	39,926	16.6	50,032	20.8			240,819	289,165
1988	49,627	32.5	43,494	28.5	29,178	19.1	30,452	19.9			152,751	374,259
1989	111,889	40.4	90,550	32.7	45,844	16.5	28,942	10.4			277,225	376,902
1990	33,213	28.8	37,201	32.2	22,083	19.1	22,891	19.8			115,388	342,662
1991	53,331	33.0	56,059	34.7	24,768	15.3	27,444	17.0			161,602	323,368
1992	80,535	33.2	85,942	35.4	40,616	16.7	35,398	14.6			242,491	332,573
1993	46,873	34.2	41,466	30.2	18,724	13.6	30,116	22.0			137,179	324,120
1994	30,363	32.4	24,307	26.0	12,374	13.2	26,572	28.4			93,616	340,904
1995	49,806	39.7	38,602	30.8	17,606	14.0	19,414	15.5			125,428	377,710
1996	67,324	36.1	51,866	27.8	29,391	15.8	37,710	20.2			186,291	265,986
1997	73,805	41.7	56,784	32.1	23,626	13.3	22,918	12.9			177,133	247,898
1998	57,464	34.9	61,763	37.5	24,315	14.8	20,994	12.8			164,536	216,650
1999	77,865	38.8	61,344	30.6	27,569	13.7	33,746	16.8			200,524	307,446
2000	98,048	42.4	74,132	32.1	30,825	13.3	27,978	12.1			230,983	358,569
2001	86,880	43.3	73,841	36.8	19,616	9.8	20,425	10.2			200,762	298,817
2002	78,964	31.3	79,608	31.6	23,488	9.3	40,115	15.9	29,761 ^a	11.8	251,936	312,785
2003	102,968	36.8	116,383	41.6	30,914	11.0	25,771	9.2	3,742 ^a	1.3	279,778	320,747
Mean	54,980	30	49,170	30	22,680	20	24,980	20	16,750	10	153,250	303,400

^a Adopted by SWHS beginning in 2002.

Sources: Mills 1982-1994; Howe et al. 1995, 1996; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b.

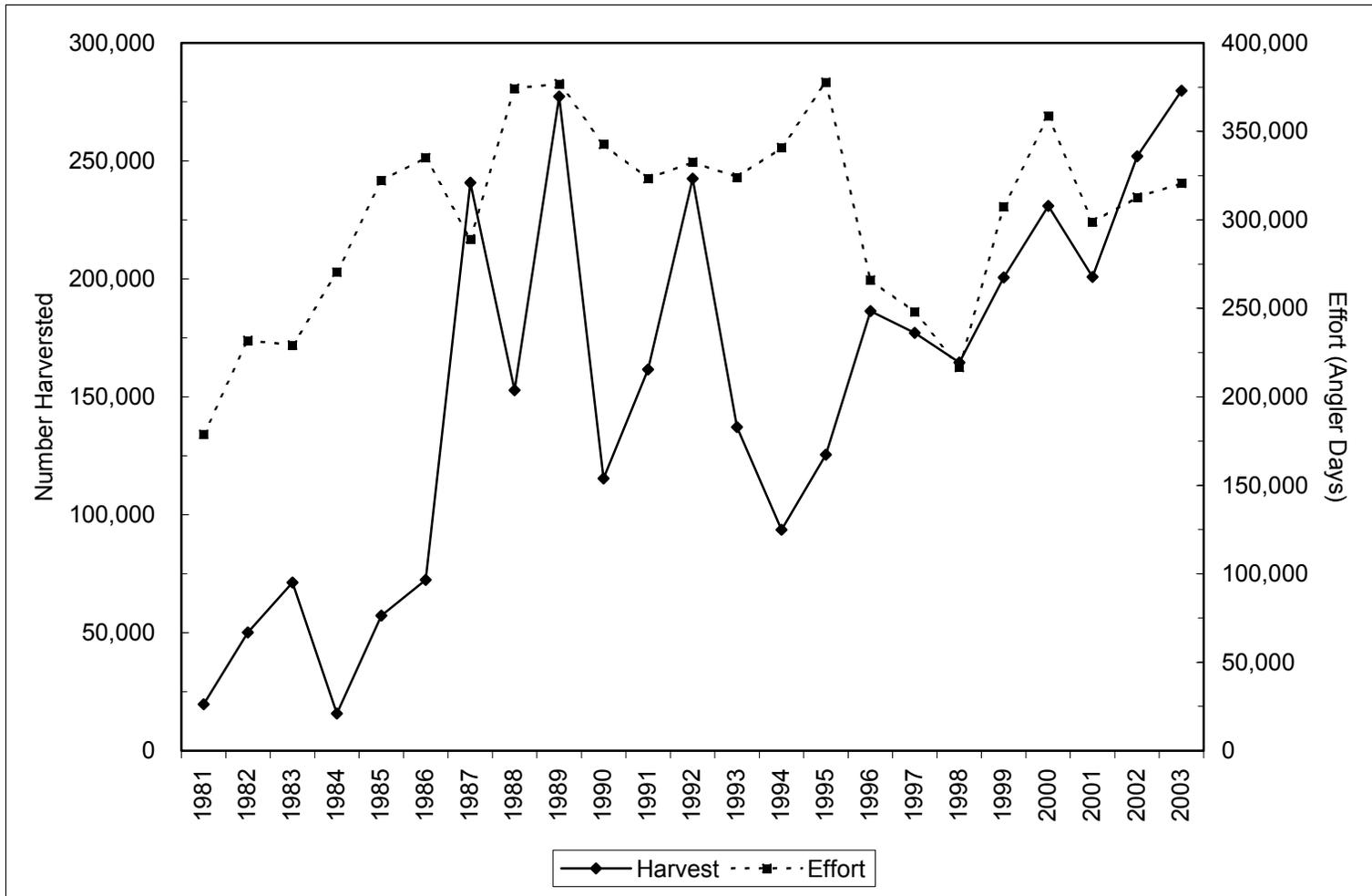


Figure 9.-Total harvest of sockeye salmon and angler effort directed towards all species, Kenai River 1981-2003.

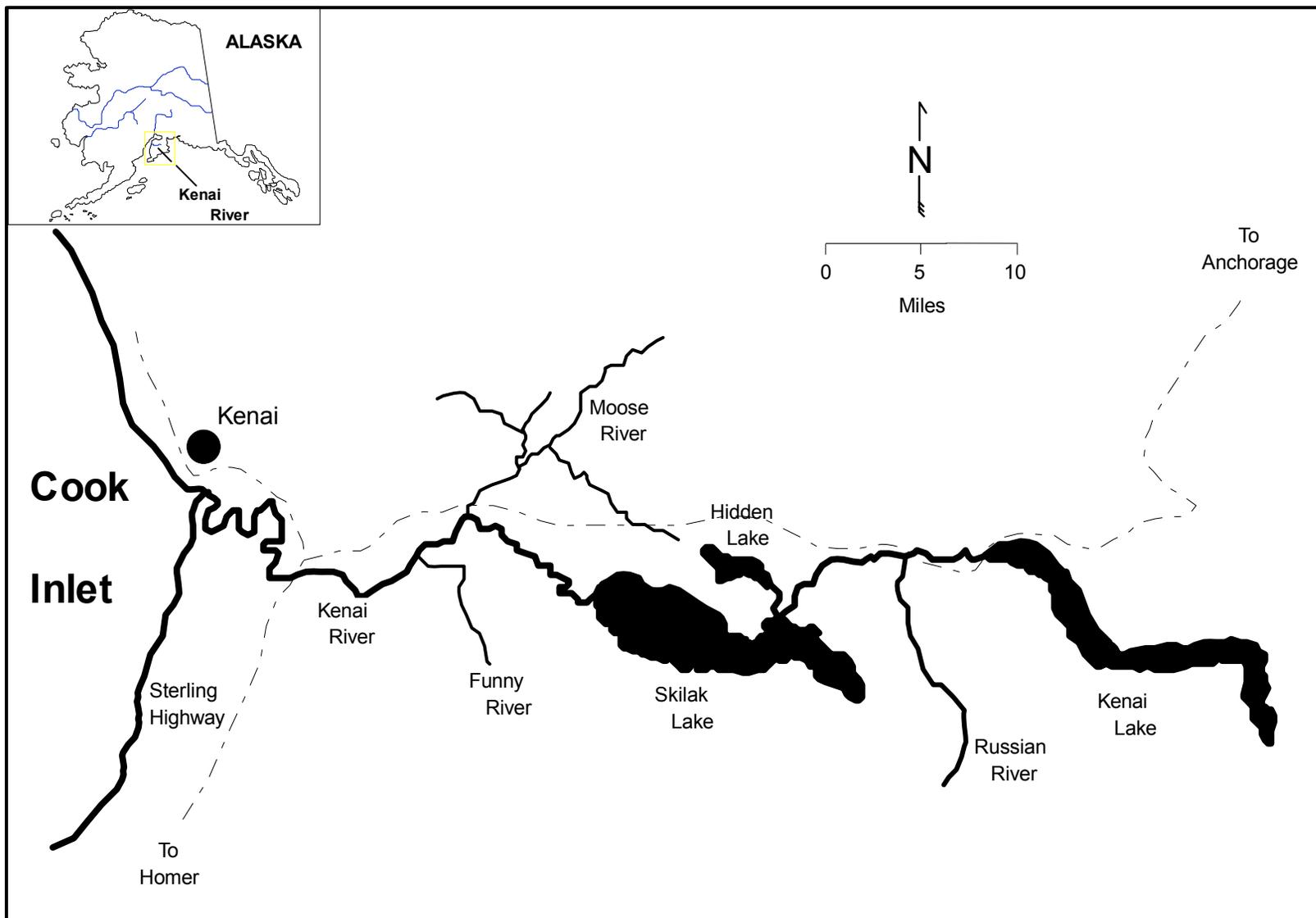


Figure 10.-Map of the Kenai River drainage.

Table 20.-Cook Inlet commercial coho salmon harvest, and harvest of Kenai River coho salmon, 1993-2004.

Year	Commercial Drift Fishery Total Harvest	Commercial ESSN ^a Fishery Total Harvest	Drift Fishery Harvest of Kenai River Coho	ESSN Harvest of Kenai River Coho	Kenai River Sport Harvest	Harvest of Russian River Coho	Personal Use and Subsistence	Educational	Total Harvest of Kenai River Coho	Percentage of Commercial Catch of Kenai Fish in the Total Harvest ^g
1993	121,785	43,075	930	6,806	50,548	2,290	1,597 ^b	427	62,746	12.3
1994	303,935	69,281	11,732	14,673	86,711	4,607	2,535 ^c	829	121,087	21.8
1995	234,126	44,750	6,956	13,152	46,183	4,077	1,556 ^b	868	72,792	27.6
1996	171,361	40,548	2,671	11,856	42,293	4,599	1,932 ^b	592	63,943	22.7
1997	79,094	19,668	1,236	2,093	16,164	4,586	559 ^b	191	24,829	13.4
1998	83,337	18,662	1,974	8,096	26,967	4,612	1,011 ^b	638	43,298	23.3
1999	64,529	11,679	818	2,905	31,637	3,910	1,009 ^b	530	40,980	9.1
2000	131,200	10,840	531	2,351	48,519	3,938	1,449 ^b	656	57,444	5.0
2001	39,418	4,246	282	374	49,782	5,222	1,555 ^b	572	57,787	1.1
2002	125,831	35,153	1,370 ^f	4,688 ^f	56,650	6,093	1,721 ^b	921	71,443	8.5
2003	52,421	10,171	330 ^f	2,180 ^f	46,622	5,197	1,332	439	56,100	4.5
2004	198,161	30,994	^h	^h	^h	^h	^h	765		
Mean	133,767	28,256	2,403	5,765	41,840	4,094	1,355	619	61,132	14

Sources: Carlon and Hasbrouck 1996; Carlon and Hasbrouck 1997; Carlon and Hasbrouck 1998; Massengill and Carlon *in prep.* a-d; Mills 1994; Howe et al. 1995, 1996, 2001 a-d; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b; Brannian and Fox 1996.

^a Eastside setnet commercial fishery.

^b Personal use.

^c Subsistence.

^d Includes Skilak Lake harvest.

^e Includes Northern District setnet harvest of Kenai River coho.

^f Preliminary data.

^g Contribution of Kenai River origin coho salmon caught in UCI drift gillnet and eastside set gillnet commercial harvests to the entire harvest of Kenai River origin salmon.

^h Harvest estimates available fall 2005

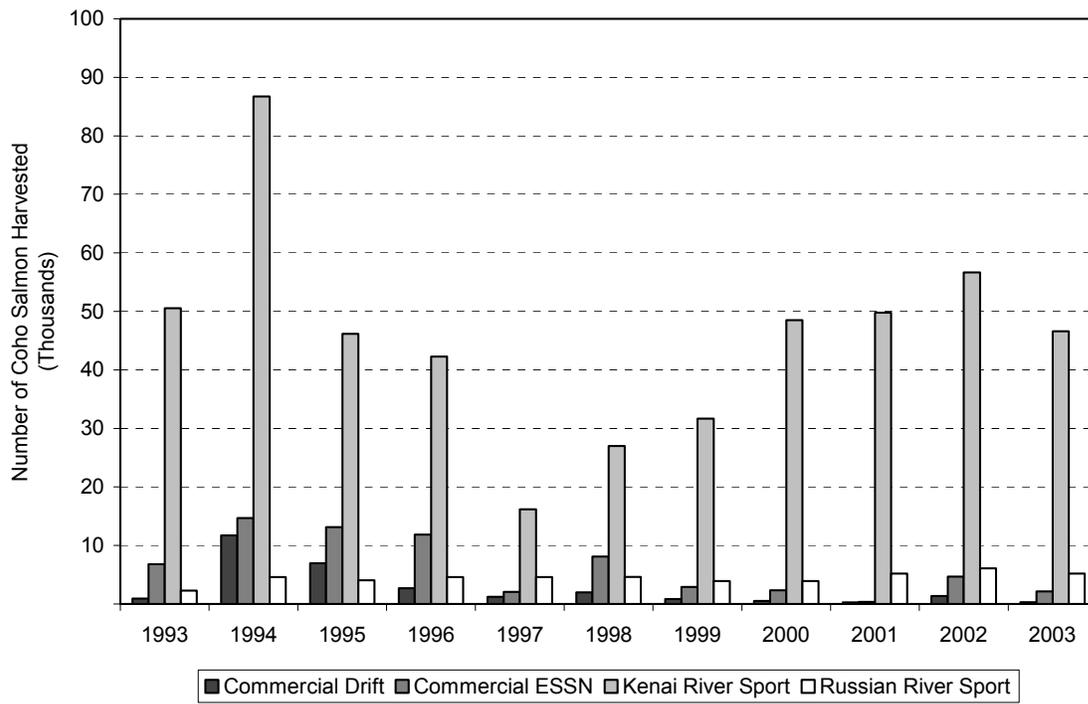


Figure 11.-Harvest of Kenai River coho salmon stocks, 1993-2003.

Table 21.-Personal use and subsistence coho salmon harvest from Northern and Central districts setnet and Kenai River dip net fisheries, 1981-2003.

Year	Non-Commercial Setnet	Fall Coho Personal Use Setnet	Upper Subdistrict Subsistence Setnet	Northern/Central Districts Subsistence Setnet	Kenai River Personal Use Dip Net	Kenai River Subsistence Dip Net
1981	12,713					
1982					Unknown	
1983		712			0	
1984		2,261				
1985			11,265	1,427		
1986		2,422				
1987		2,213			2,228	
1988		2,662			3,929	
1989		2,376			3,804	
1990		2,290				
1991		2,703		3,520		146
1992				10,320	972	1,475
1993		1,168		12,181	1,597	
1994				11,186		2,535
1995					1,261	
1996					1,932	
1997					559	
1998					1,011	
1999					1,009	
2000					1,449	
2001					1,555	
2002					1,721	
2003					1,332	

Source: All setnet harvests from Fox and Shields 2001; personal use dip net harvests 1983-1994 from the Statewide Harvest Survey (Mills 1984-1994; Howe et al. 1995), 1995 from Brannian and Fox 1996, 1996-2003 are known harvests from returned permits expanded to include an estimate of harvest from permits not returned (Reimer and Sigurdsson 2004); subsistence dip net harvests from Brannian and Fox 1996.

Table 22.-Estimated sport harvest of Kenai River coho salmon by river section, 1977-2003.

Year	Lower Section ^a		Total	Mid Section ^b		Total	Upper Section ^c		Total	Inter-Lake ^d		Total	Kenai River ^e			All Sections		Total
	Early	Late		Early	Late		Early	Late		Early	Late		Reach not Specified			Early	Late	
	Run	Run		Run	Run		Run	Run		Run	Run		Run	Run	Total	Run	Run	
1977																	9,537	
1978																	10,823	
1979																	15,276	
1980																	26,838	
1981			12,280			3,326			6,178			540					22,324	
1982			26,582			3,904			7,200			1,729					39,415	
1983			12,231			4,007			4,867			1,573					22,678	
1984			40,173			7,596			8,065			3,810					59,644	
1985			22,579			6,781			12,774			2,401					44,535	
1986			38,338			10,336			8,348			3,088					60,110	
1987			19,612			6,222			4,077			3,299					33,210	
1988			34,690			4,863			5,714			3,427					48,694	
1989			36,668			7,921			8,236			2,434					55,259	
1990			40,567			8,446			7,281			4,031					60,325	
1991			49,499			13,438			9,520			3,699					76,156	
1992			33,175			7,579			7,547			4,009					52,310	
1993			29,135			9,677			6,771			4,955					50,538	
1994			46,345			15,249			12,286			12,831					86,711	
1995	20,031	11,808	31,839	4,842	1,131	5,973	2,785	2,794	5,579	2,065	727	2,792				29,723	16,460	46,183
1996	17,551	5,010	22,561	8,347	2,076	10,423	4,371	1,682	6,053	2,457	799	3,256				32,726	9,567	42,293
1997	5,570	1,293	6,863	2,858	1,319	4,177	1,752	1,330	3,082	1,587	455	2,042				11,767	4,397	16,164
1998	9,955	5,506	15,461	3,667	1,430	5,097	2,373	1,833	4,206	1,764	439	2,203				17,759	9,208	26,967
1999	14,413	6,029	20,442	4,732	654	5,386	1,268	1,812	3,080	1,951	778	2,729				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				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				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	1,719	36,271	10,351	46,622
Mean	17,841	6,963	28,918	6,355	1,677	7,897	2,870	1,835	6,575	2,200	693	3,386	1,460	489	1,948	29,590	11,278	42,304

Notes: All data from Statewide Harvest Survey (Mills 1979-1980, 1981a-b, 1982-1994; Howe et al. 1995, 1996, 2001 a-d; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b).

^a Cook Inlet to Soldotna Bridge.

^d Skilak Lake to Kenai Lake.

^b Soldotna Bridge to Moose River.

^e Kenai River reach not specified. Adopted by the SWHS beginning in 2002.

^c Moose River to Skilak Lake.

Table 23.-Kenai River rainbow trout, number caught and number retained by river section, 1984-2003.

Year	Cook Inlet to Soldotna Bridge			Soldotna Bridge to Moose River			Moose River to Skilak Outlet			Skilak Inlet to Kenai Lake (Trophy Trout Area)		
	Number Caught ^a	Number Retained	Percent Retained	Number Caught ^a	Number Retained	Percent Retained	Number Caught ^a	Number Retained	Percent Retained	Number Caught ^a	Number Retained	Percent Retained
	1984	3,464	710	20.5	2,911	1,250	42.9	5,112	580	11.3	4,200	930
1985	3,398	880	25.9	2,653	850	32.0	5,410	1,500	27.7	3,520	710	20.2
1986	2,570	623	24.2	2,380	168	7.1	1,750	901	51.5	2,020	733	36.3
1987	2,220	522	23.5	3,450	670	19.4	6,430	629	9.8	3,870	364	9.4
1988	2,780	295	10.6	1,560	216	13.8	5,880	1,063	18.1	7,580	559	7.4
1989	2,020	481	23.8	2,230	354	15.9	6,470	829	12.8	6,870	253	3.7
1990	2,624	510	19.4	3,571	943	26.4	5,366	937	17.5	11,995	1,145	9.5
1991	3,672	516	14.1	3,844	1,123	29.2	7,930	940	11.9	18,108	740	4.1
1992	4,448	427	9.6	3,879	411	10.6	15,127	736	4.9	28,702	403	1.4
1993	6,190	1,149	18.6	5,556	580	10.4	12,651	653	5.2	37,755	192	0.5
1994	3,796	506	13.3	3,980	364	9.1	10,968	543	5.0	35,089	163	0.5
1995	4,516	620	13.7	4,087	440	10.8	13,072	780	6.0	33,475	310	0.9
1996	5,513	304	5.5	4,777	646	13.5	8,650	373	4.3	45,471	237	0.5
1997	7,411	739	10.0	6,641	539	8.1	20,047	632	3.2	61,053	0	0.0
1998	5,502	608	11.1	5,380	670	12.5	12,158	737	6.1	42,224	0	0.0
1999	11,415	1,516	13.3	8,325	695	8.3	32,050	1,573	4.9	50,189	0	0.0
2000	16,477	1,292	7.8	9,428	1,083	11.5	18,990	1,084	5.7	78,836	0	0.0
2001	11,216	987	8.8	7,473	868	11.6	22,392	567	2.5	51,130	0	0.0
2002	12,641	995	7.9	8,157	944	11.6	19,355	864	4.5	71,753	0	0.0
Mean	5,890	720	14.8	4,750	670	16.0	12,100	840	11.2	31,250	350	6.1
2003	12,844	1,026	13.3	10,913	700	6.4	41,204	372	0.9	54,552	0	0.0

Continued

Table 23.-Page 2 of 2.

Year	Kenai River Reach Not Specified			Kenai River Total		
	Number Caught ^a	Number Retained	Percent Retained	Number Caught ^a	Number Retained	Percent Retained
	1984				15,687	3,470
1985				14,981	3,940	26.3
1986				8,720	2,425	27.8
1987				15,970	2,185	13.7
1988				17,800	2,133	12.0
1989				17,590	1,917	10.9
1990				23,556	3,535	15.0
1991				33,554	3,319	9.9
1992				52,160	1,980	3.8
1993				62,150	2,570	4.1
1994				53,833	1,576	2.9
1995				55,150	2,150	3.9
1996				64,411	1,560	2.4
1997				95,152	1,910	2.0
1998				65,264	2,015	3.1
1999				101,979	3,784	3.7
2000				123,731	3,459	2.8
2001				92,211	2,422	2.6
2002	2,269	216	9.5	111,906	2,803	2.5
Mean	2,270	220	9.5	53,990	2,590	9.0
2003	3,536	180	5.1	119,513	2,098	1.8

Source: Statewide Harvest Survey (Mills 1985-1994; Howe et al. 1995, 1996, 2001 a-d; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b).

^a Catch estimates for 1984-1989 are unpublished estimates from the Statewide Harvest Survey (Alaska Department of Fish and Game, Division of Sport Fish, Research and Technical Services, Anchorage).

^b In 1984 and 1985, catch estimates were mistakenly reported as harvest in Mills 1985, 1986. Harvest estimates presented here are correct.

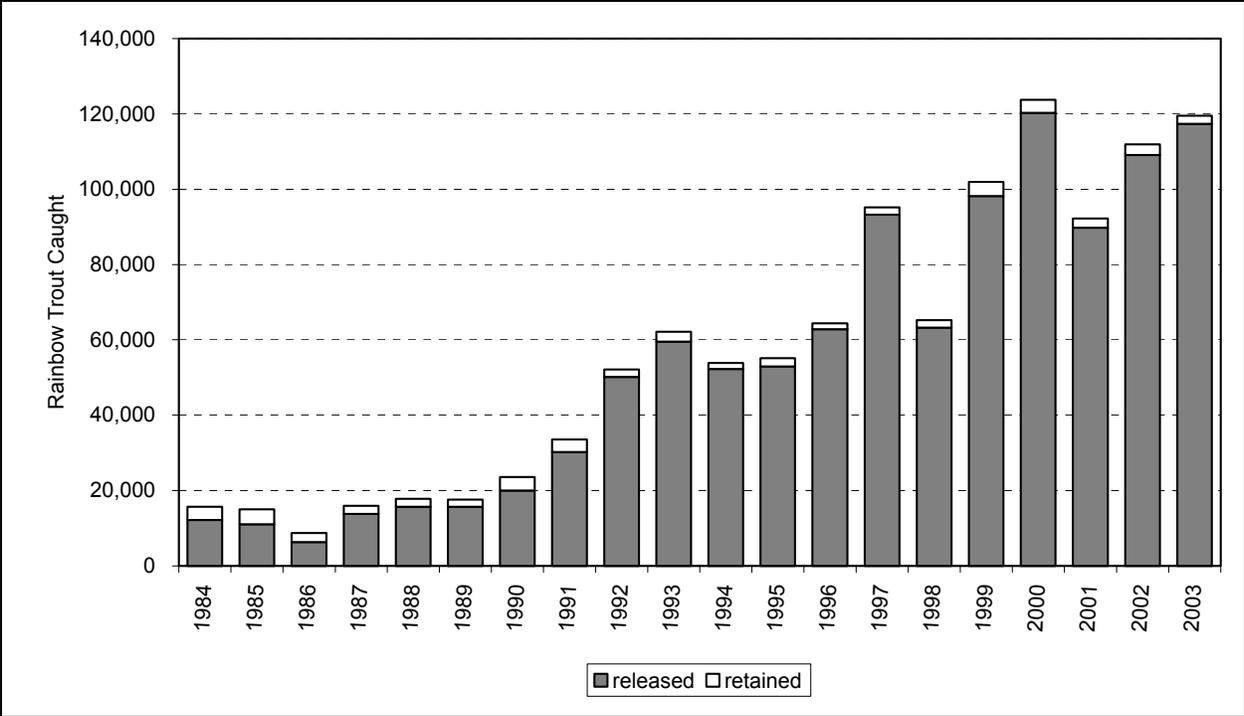


Figure 12.-Total number of rainbow trout caught, showing number released and number retained, Kenai River sport fishery, 1984-2003.

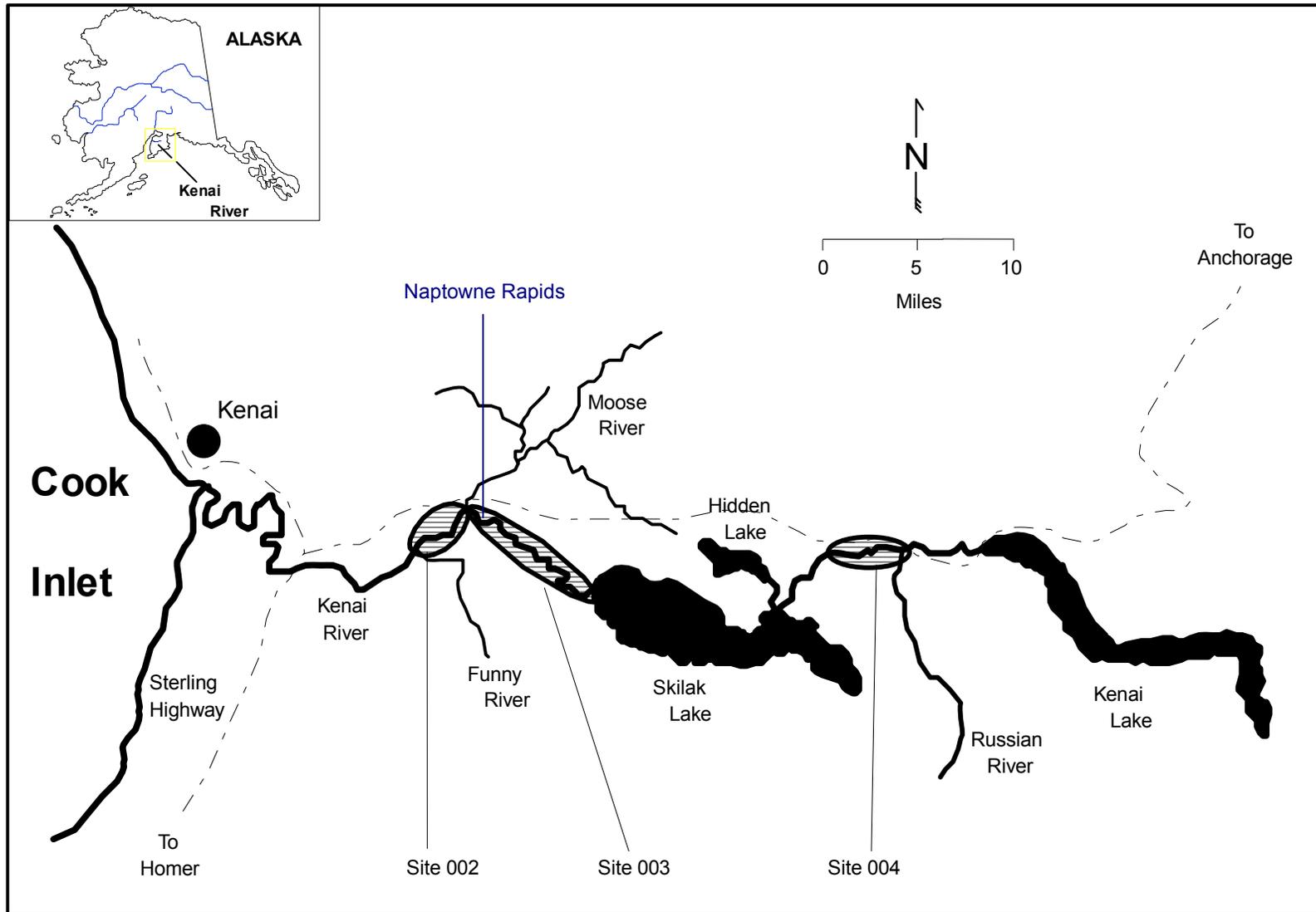


Figure 13.-Map of the Kenai River drainage and rainbow trout study sites.

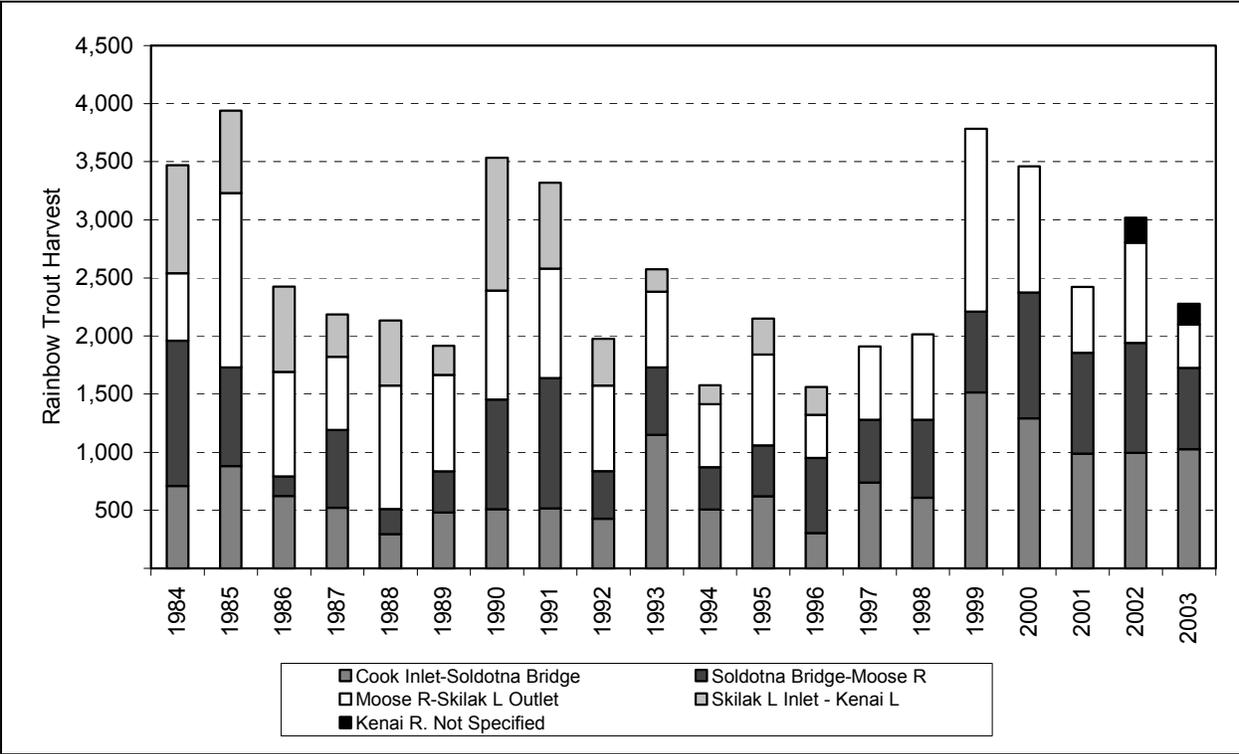


Figure 14.-Number of rainbow trout retained by river section, Kenai River sport fishery, 1984-2003.

Table 24.-Kenai River Dolly Varden harvest and catch by river section as determined by Statewide Harvest Survey, 1984-2003.

Year	Harvest										
	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		Total
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
1984	7,506	23.9	1,966	6.3	11,211	35.7	10,724	34.1			31,407
1985	7,560	28.8	3,277	12.5	8,930	34.0	6,468	24.7			26,235
1986	1,249	21.6	771	13.4	1,928	33.4	1,827	31.6			5,775
1987	2,429	31.8	1,671	21.9	2,139	28.0	1,391	18.2			7,630
1988	3,531	32.2	1,266	11.5	3,527	32.1	2,653	24.2			10,977
1989	3,414	33.9	1,371	13.6	3,649	36.3	1,630	16.2			10,064
1990	2,738	22.9	2,424	20.2	2,741	22.9	4,079	34.0			11,982
1991	4,211	29.0	3,285	22.6	4,268	29.4	2,740	18.9			14,504
1992	3,777	26.1	2,516	17.4	4,900	33.9	3,269	22.6			14,462
1993	4,599	36.2	1,539	12.1	3,503	27.6	3,057	24.1			12,698
1994	3,276	38.6	1,107	13.0	2,051	24.2	2,052	24.2			8,486
1995	4,069	42.7	1,732	18.2	2,113	22.2	1,609	16.9			9,523
1996	2,411	32.2	1,797	24.0	1,995	26.7	1,281	17.1			7,484
1997	2,518	36.2	1,042	15.0	2,824	40.6	573	8.2			6,957
1998	1,977	32.5	1,787	29.4	1,847	30.4	468	7.7			6,079
1999	3,867	51.1	1,086	14.3	1,932	25.5	683	9.0			7,568
2000	3,916	52.7	1,759	23.7	1,403	18.9	349	4.7			7,427
2001	3,763	57.6	1,613	24.7	789	12.1	363	5.6			6,528
2002	2,191	37.9	1,431	24.8	1,105	19.1	766	13.3	288 ^a	5.0	5,781
Mean	3,630	35.2	1,760	17.8	3,310	28.0	2,420	18.7	290	5.0	11,140
2003	2,996	51.1	1,318	22.5	1,066	18.2	487	8.3	246 ^a	4.2	5,867

Continued

Table 24.-Page 2 of 2.

Year	Catch										
	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		Total
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
1984											
1985											
1986											
1987											
1988											
1989											
1990	7,795	22.5	5,094	14.7	7,537	21.8	14,151	40.9			34,577
1991	10,665	15.5	8,116	11.8	19,363	28.2	30,601	44.5			68,745
1992	11,822	15.0	5,899	7.5	26,348	33.4	34,754	44.1			78,823
1993	13,019	17.1	6,079	8.0	20,778	27.2	36,451	47.8			76,327
1994	8,752	14.2	5,185	8.4	14,584	23.6	33,168	53.8			61,689
1995	10,146	18.4	5,399	9.8	12,447	22.6	27,103	49.2			55,095
1996	9,787	17.3	5,973	10.6	14,506	25.7	26,245	46.4			56,511
1997	9,955	11.0	5,268	5.8	22,266	24.5	53,317	58.7			90,806
1998	7,560	12.4	5,961	9.8	11,732	19.3	35,659	58.5			60,912
1999	14,752	20.2	6,316	8.7	20,053	27.5	31,826	43.6			72,947
2000	18,261	17.4	9,122	8.7	21,291	20.3	56,375	53.7			105,049
2001	16,304	15.1	8,367	7.8	28,312	26.3	54,802	50.8			107,785
2002	16,414	21.2	7,751	10.0	13,384	17.3	38,481	49.7	1,437 ^a	1.9	77,467
Mean	11,940	16.7	6,500	9.3	17,890	24.4	36,380	49.4	1,440	1.9	72,830
2003	15,520	14.9	9,765	9.4	25,972	25.0	50,969	49.1	1,684 ^a	1.6	103,910

^a Adopted by SWHS beginning in 2002.

Sources: Mills 1985-1994; Howe et al. 1995, 1996, 2001 a-d; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b).

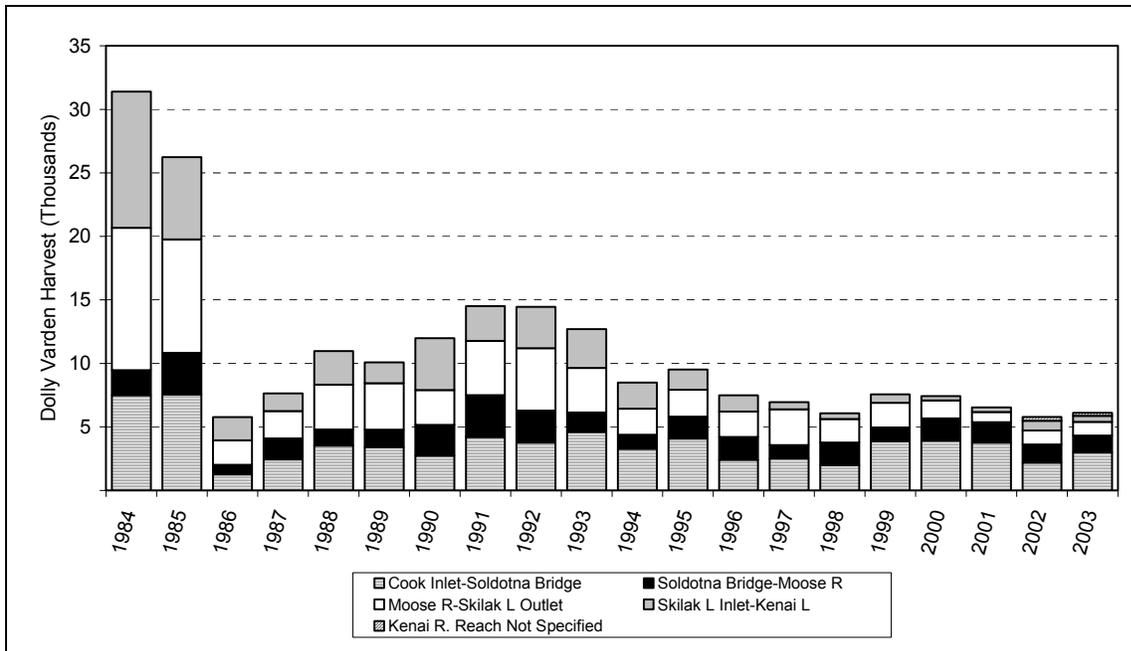


Figure 15.-Dolly Varden harvest by river section, Kenai River sport fishery 1984-2003.

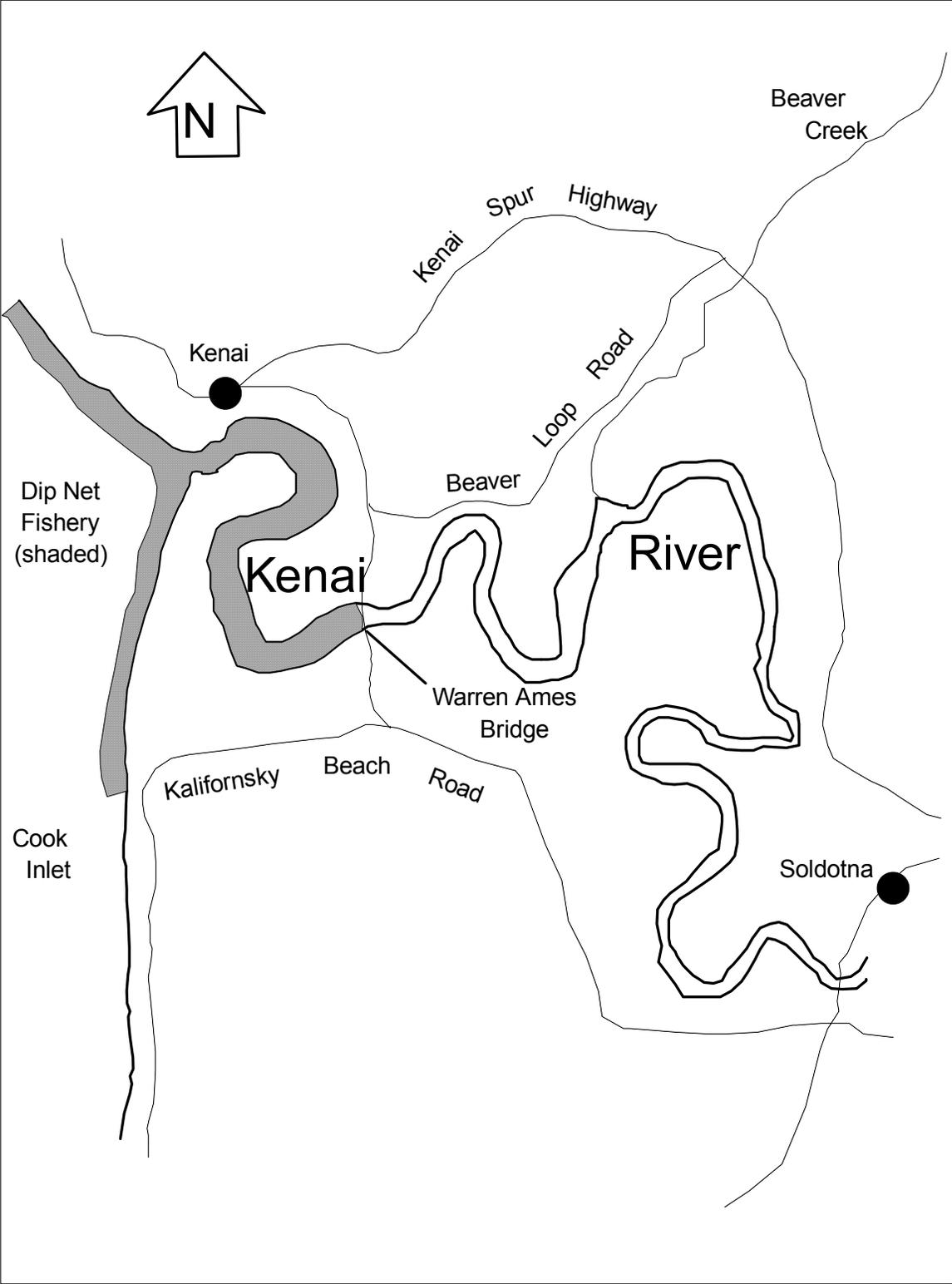


Figure 16.-The Kenai River sockeye salmon dip net fishery.

Table 25.-Kenai River personal use sockeye salmon dip net fishery summary, 1981-2003.

Year	Date and Time Opened	Date and Time Closed	Total Days	Sockeye Available During Dip Net Fishery ^a	Sockeye Harvest ^b	% of Available Fish Harvested	Total Sockeye Salmon Escapement	Percent of Escapement Harvested	% of Escapement Available to Fishery	Participation (Days Fished) ^e
1981	No Fishery			No fishery			407,639			
1982	7/26 18:00	8/ 5 24:00	9.25	153,943	Unknown		619,831		27.8	
1983	7/20 18:00	8/ 5 24:00	15.25	177,377	7,562	3.0	630,340	1.2	39.9	3,203
1984	No Fishery						344,571			
1985	No Fishery						502,820			
1986	No Fishery						501,157			
1987	7/23 12:00	8/ 5 24:00	13.50	1,020,481	24,086	2.4	1,596,871	1.5	63.9	22,547
1988	7/22 18:00	8/ 5 24:00	14.25	348,671	16,880	4.8	1,021,469	1.7	34.1	29,013
1989	7/21 00:01	8/ 5 24:00	15.0	841,532	48,976	5.8	1,599,959	3.1	52.6	31,312
1990	No Fishery						659,520			
1991	Subsistence Fishery only						647,597			
1992 ^c	7/27 12:00	8/5 24:00	6.5 ^d	286,829	12,189	4.2	994,798	1.2	28.8	10,371
1993	7/17 14:00	7/31 24:00	14.4	300,598	33,467	11.1	813,617	4.1	36.9	14,896
1994	Subsistence Fishery only						1,003,446			
1995	7/25 06:00	7/31 24:00	4.75 ^d	133,190	14,352	10.8	630,447	2.3	21.1	11,122
1996	7/10 00:01	8/5 24:00	27.0	818,579	102,821	12.6	797,847	12.9	102.6	10,503
1997	7/10 00:01	7/31 24:00	22.0	803,368	114,619	14.3	1,064,818	10.8	75.4	11,023
1998	7/10 00:01	7/28 00:01	18.0	481,145	103,847	21.6	767,558	13.5	62.7	10,802
1999	7/10 00:01	7/31 24:00	22.0	719,445	149,504	20.8	803,379	18.6	89.6	13,738
2000	7/10 00:01	7/31 24:00	22.0	627,024	98,262	15.7	624,578	15.7	100.4	12,354
2001	7/10 00:01	7/31 24:00	22.0	655,756	150,766	23.0	650,036	23.2	100.9	14,722
2002	7/10 06:00	7/31 23:00	22.0	750,956	180,028	24.0	957,924	18.8	78.4	14,840
2003	7/10 06:00	7/31 23:00	22.0	1,214,092	223,580	18.4	1,181,309	18.9	102.8	
2004	7/10 06:00	7/31 23:00	22.0		^f		1,385,981			^f

Continued

Table 25.-Page 2 of 2.

- ^a Total number of fish passing sonar counters during fishery, plus harvest.
- ^b Harvest not known in 1982; 1983-1995 from Statewide Harvest Survey (Mills 1984-1994; Howe et al. 1995, 1996). 1996-2003 reported harvest from returned permits, expanded to include permits not returned (Reimer and Sigurdsson 2004).
- ^c A subsistence dip net fishery also occurred in 1992.
- ^d Fishery closed on Wednesday and Saturday to avoid conflict with concurrent subsistence permit fishery. Total days reflects this closure.
- ^e 1981-1995 is individual days fished. 1996-2004 is household days fished. Each household day fished may include fishing effort by more than one household member named on the household's permit.
- ^f Effort and harvest estimates available fall 2005.

Table 26.-Effort and harvest in the Kenai River personal use dip net fishery, 1996-2003.

	All Upper Cook Inlet Personal Use Salmon Fisheries ^a			Kenai River					
	Permits Issued	Permits Returned	Did Not Fish	Household Days Fished	Sockeye	Chinook	Coho	Pink	Chum
1996	14,576	13,452	4,408	10,503	102,821	295	1,932	2,404	175
1997	14,919	13,756	6,248	11,023	114,619	364	559	619	58
1998	15,535	13,190	5,539	10,802	103,847	254	1,011	1,032	85
1999	17,197	14,216	5,643	13,738	149,504	488	1,009	1,666	102
2000	16,107	13,582	5,745	12,354	98,262	410	1,449	1,457	193
2001	16,915	14,398	3,520	14,722	150,766	638	1,555	1,326	155
2002	17,568	14,284	4,858	14,840	180,028	606	1,721	5,662	551
2003	19,110	15,726	3,577	15,263	223,580	1,016	1,332	1,647	249

^a One permit is issued for all four Upper Cook Inlet personal use salmon fisheries (Kenai River dip net, Kasilof River dip net, Kasilof River gillnet, and Fish Creek dip net).

Source: Reimer and Sigurdsson 2004.

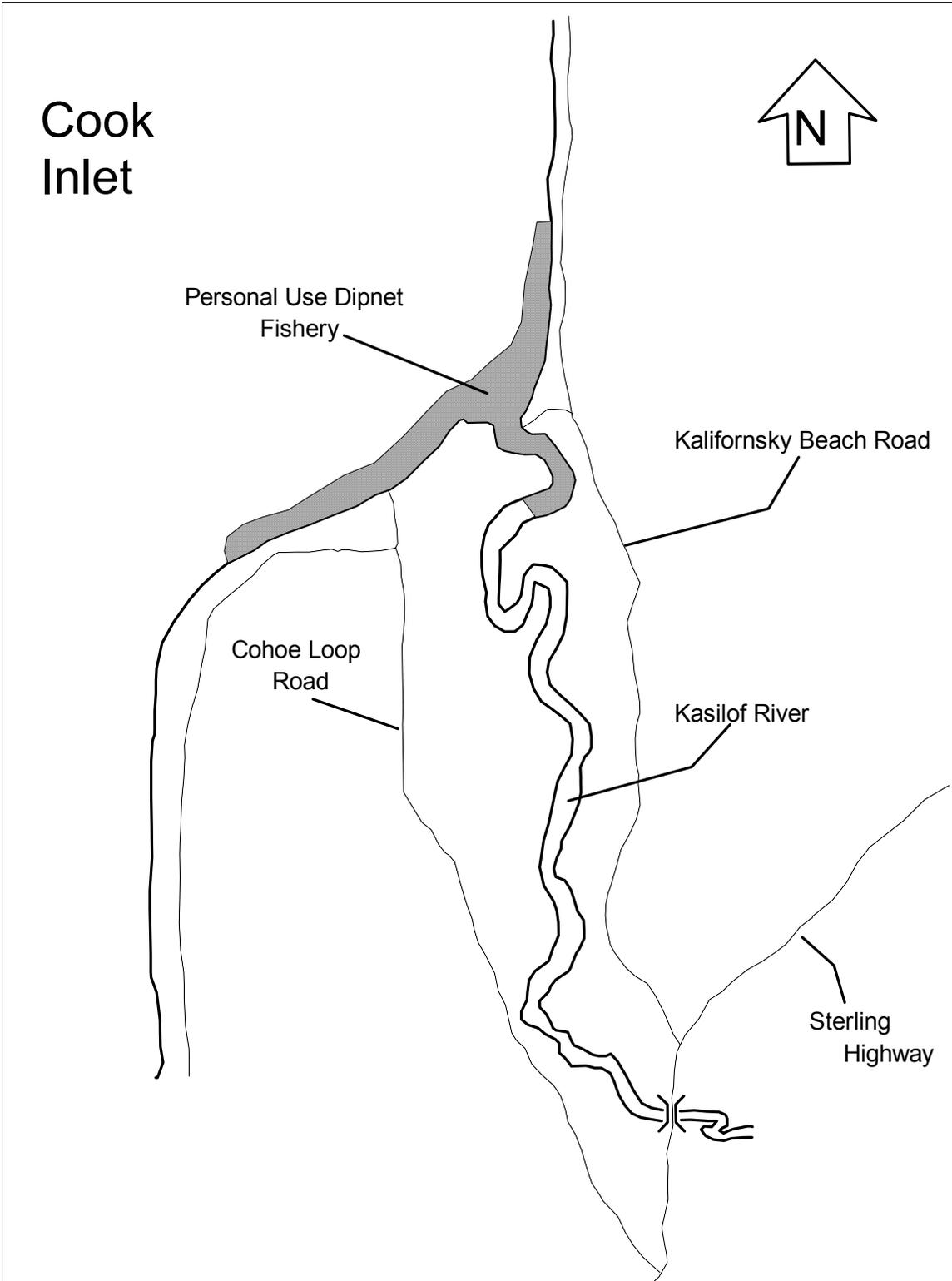


Figure 17.-The Kasilof River personal use sockeye salmon dip net fishery.

Table 27.-Kasilof River personal use dip net fishery summary, 1981-2004.

Year	Date and Time Opened	Date and Time Closed	Total Days	Sockeye Available During Dip Net Fishery ^a	Sockeye ^b Harvest	% of Available Fish Harvested	Total Sockeye Salmon Escapement	Percent of Escapement Harvested	% of Escapement Available to Fishery	Participation (Days Fished) ^f
1981	7/4 12:00	7/31 24:00	27.50	124,410	10,300	8.3	256,625	4.0	48.5	5,370
1982	7/21 12:00	8/5 24:00	15.50	66,272	1,800	2.7	180,239	1.0	36.8	2,580
1983	7/15 24:00	8/5 24:00	21.00	113,387	11,124	9.8	210,271	5.3	53.9	4,417
1984	7/16 12:00	8/5 24:00	20.50	132,264	12,771	9.7	231,685	5.5	57.1	5,956
1985	7/15 18:00	8/5 24:00	21.25	337,691	16,284	4.8	505,049	3.2	66.9	9,260
1986	7/15 06:00	8/5 24:00	21.75	176,331	38,674	21.9	275,963	14.0	63.9	13,929
1987 ^c	7/10 12:00	8/5 24:00	25.50	137,147	18,454	13.5	249,250	7.4	55.0	8,910
1988	7/22 18:00	8/5 24:00	14.25	13,966	3,547	25.4	204,000	1.7	6.8	6,930
1989	No Fishery						158,206			
1990	No Fishery						144,136			
1991	Subsistence Fishery						238,269			
1992	Subsistence Fishery						184,178			
1993	No Fishery						149,939			
1994	7/22 12:00	8/5 23:59	10.50 ^e	35,857	3,679	10.3	205,117	1.8	17.5	2,361
1995	7/17 18:00	7/31 24:00	10.25 ^e	51,292	4,160	8.1	204,935	2.0	25.0	2,845
1996	7/10 00:01	8/5 24:00	27.0	131,033	11,197	8.5	249,944	4.5	52.4	1,300
1997	7/10 00:01	8/5 24:00	27.0	87,974	9,737	11.1	266,025	3.7	33.1	1,091
1998	7/10 00:01	8/5 24:00	27.0	202,587	45,161	22.3	273,213	16.5	74.1	3,421
1999	7/10 00:01	8/5 24:00	27.0	212,124	37,176	17.5	312,587	11.9	67.9	3,611
2000	7/10 00:01	8/5 24:00	27.0	165,575	23,877	14.4	256,053	9.3	64.7	2,622
2001	7/10 00:01	8/5 24:00	27.0	196,845	37,612	19.1	307,570	12.2	64.0	3,382
2002	6/25 00:01	8/7 24:00	44.0	224,530	46,769	20.8	226,682	20.6	99.1	4,020
2003	6/25 00:01	8/7 24:00	44.0	357,315 ^g	43,870 ^g	12.3	359,633	12.2	99.4	3,874 ^g
2004	6/25 00:01	8/7 24:00	44.0				577,581		0.0	
Mean			25.37	153,700	20,900	13.4	259,460	7.6	51.9	4,771

^a Total number of fish passing sonar counters during fishery, plus harvest.

^b Harvest and participation during first 2 years of fishery are field creel survey estimates. 1983-1995 data are from Statewide Harvest Survey (Mills 1984-1994; Howe et al. 1995, 1996). 1996-2004 total reported harvest from returned permits, expanded to include permits not returned (Reimer and Sigurdsson 2004).

^c The fishery was closed from 6:00 a.m. 7/14 - 6:00 p.m. 7/15 as a precautionary measure due to possible oil contamination.

^d Includes counts from weirs on Bear and Glacier creeks and surveys on spawning streams after sonar was pulled.

^e Fishery closed on Wednesday and Saturday due to subsistence/personal use permit fishery. Total days reflect this closure.

^f 1981-1995 is individual days fished. 1996-2004 is household days fished. Each household day fished may include fishing effort by more than one household member named on the household's permit.

^g Effort and harvest estimates available fall 2005.

Table 28.-Effort and harvest in Kasilof River personal use dip net fishery, 1996-2003.

	All Upper Cook Inlet Personal Use Salmon Fisheries ^a			Kasilof River Dip Net Fishery					
	Permits Issued	Permits Returned	Did Not Fish	Household Days Fished	Sockeye	Chinook	Coho	Pink	Chum
1996	14,576	13,452	4,408	1,300	11,197	50	334	103	17
1997	14,919	13,756	6,248	1,091	9,737	35	90	19	19
1998	15,535	13,190	5,539	3,421	45,161	134	731	610	74
1999	17,197	14,216	5,643	3,611	37,176	127	286	264	52
2000	16,107	13,582	5,745	2,622	23,877	134	1,004	841	34
2001	16,915	14,398	3,520	3,382	37,612	138	766	307	23
2002	17,568	14,284	4,858	4,020	46,769	106	1,197	1,862	139
2003	19,110	15,726	3,577	3,874	43,870	57	592	286	30

^a One permit is issued for all four Upper Cook Inlet personal use salmon fisheries (Kenai River dip net, Kasilof River dip net, Kasilof River gillnet, and Fish Creek dip net).

Source: Reimer and Sigurdsson 2004.

Table 29.-Kenai Peninsula northern pike harvest, 1981-2003.

Year	Lakes	Kenai River	Total
1981	32		32
1982	105		105
1983	294		294
1984	187		187
1985	52	69	121
1986	0	0	0
1987	0	12	12
1988	36	0	36
1989	49	18	67
1990	30	10	40
1991	86	0	86
1992	239	0	239
1993	216	26	242
1994	36	0	36
1995	219	29	248
1996	32	92	124
1997	21	7	28
1998	114	0	114
1999	329	0	329
2000	153	6	159
2001	1288	0	1288
2002	368	12	380
Mean	177	16	189
2003	641	58	699

Sources: Mills 1982-1994; Howe et al. 1995, 1996, 2001 a-d; Walker et al. 2003; Jennings et al. 2004, *in prep.* a, b.

APPENDIX A: EMERGENCY ORDERS

Appendix A1.-Emergency orders issued for NKPMA waters during 2004.

Emergency Orders issued in 2004:

1. E.O. No. 2-KS-1-02-04 prohibits the filleting, heading, mutilation or disfigurement of king salmon in such a manner that would prevent the determination of the overall length of king salmon until the fish is brought to shore and offloaded from a vessel or removed from a shoreline fishing location in the fresh waters of the Kenai River open to king salmon fishing. The emergency order was effective 12:01 a.m., Saturday, May 15, 2004 until 11:59 p.m. July 14, 2004.
2. E.O. No. 2-RS-1-09-04 opens the Russian River Sanctuary Area to fishing for sockeye salmon at 6:00 a.m., Friday, June 18 2004.
3. E.O. No. 2-RS-1-11-04 increases the daily bag and possession limit for salmon, other than king salmon from three (3) per day, three (3) in possession to four (4) per day, eight (8) in possession in the Russian/Kenai River “fly-fishing-only area”. This increased daily bag and possession limits apply to that area of the Kenai River upstream from the powerline crossing to ADF&G marker location approximately 600 yards downstream from Russian River Falls. This emergency order was effective from 12:01 p.m., Friday, June 25, 2004 through 11:59 p.m., Wednesday July 14, 2004.
4. E.O. No. 2-RS-1-14-04 closes approximately 3.4 miles of riverbank to fishing at seven (7) different locations on the Kenai River. The areas closed are along the Kenai River between approximately river miles 13.2 to 13.5, 17.5 to 18.0, 18.8 to 19.0, 19.0 to 19.6, 22.7 to 23.5, 29.0 to 29.5, and 45.8 to 46.3. These areas are posted with regulatory markers delineating the closed areas. These areas are closed to all fishing, except from a boat that is located more than 10 feet from shore and not connected to the shore or any riparian habitat. In addition, this emergency order supercedes the riverbank closure for river miles 9.7 to 9.9. This property is now privately owned and shore angling is permitted. This emergency order went into effect at 12:01 a.m., Friday, July 9, 2004.
5. E.O. No. 2-RS-1-16-04 increases the bag limit for salmon, other than king salmon, from three per day and in possession to six per day and twelve in possession in all portions of the Kasilof River open to salmon fishing. Included in the six salmon daily bag and possession limit, no more than two salmon per day may be coho salmon. This emergency order is effective at 12:01 a.m., Friday, July 16, 2004.
6. E.O. No. 2-RS-1-17-04 extends the area that salmon may be harvested in the personal use dip-net salmon fishery on the Kasilof River. Sockeye salmon may be harvested by dip-netting from the shoreline, 24 hours per day from ADF&G markers located on the Cook Inlet beaches outside the terminus of the river extending upstream to the Sterling Highway bridge. Additionally, sockeye salmon may be harvested by dip-netting, 24 hours per day from a boat from ADF&G markers located on the Cook Inlet beaches outside the terminus of the river extending upstream to Trujillo’s Landing. This emergency order was effective at 12:01 a.m., Friday July 25,
7. E.O. No. 2-RS-1-19-04 increases the bag limit for salmon, other than king salmon, from three (3) per day and in possession to six (6) per day and in possession in all portions of the Kenai River open to salmon fishing except in the Russian River and the Russian

River “fly-fishing-only waters” which includes that portion of the Kenai River from ADF&G regulatory markers located approximately 300 yards upstream of the public boat launch at Sportsmen’s landing extending downstream to where the power lines cross the Kenai River. No more than two salmon per day may be coho salmon. This emergency order is effective at 12:01 a.m., Tuesday, July 20, 2004.

8. E. O. No. 2-RS-1-20-04 This emergency order extends the time that salmon may be harvested in the personal use fishery at the mouth of the Kenai River. Effective at 11:01 p.m., Tuesday, July 20, sockeye salmon may be harvested by dip-netting, 24 hours per day.
9. E. O. No. 2-RS-1-21-04 extends the season for sport fishing for sockeye salmon in the Russian River Sanctuary Area, and in the upper Kenai River “fly-fishing-only” area. This emergency order applies to the waters of the Kenai River near the confluence of the Russian River from the powerline crossing on the Kenai River upstream to ADF&G regulatory markers located approximately 300 yards upstream of the public boat launch at Sportsman’s Landing (including the waters around the upstream end of the island near the Russian River mouth) and the Russian River from its mouth upstream 100 yards to an ADF&G marker. This emergency order is effective from 12:01 a.m., Saturday August 21, 2004, through 11:59 p.m., Tuesday, August 31, 2004.