

**Fishery Data Series No. 03-17**

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# **Karluk River Visitor Use Census, 2002**

by

**Len Schwarz,**

**Donn Tracy,**

and

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August 2003

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Alaska Department of Fish and Game

Division of Sport Fish



## Symbols and Abbreviations

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<b>Weights and measures (metric)</b>		<b>General</b>		<b>Mathematics, statistics, fisheries</b>	
centimeter	cm	All commonly accepted abbreviations.	e.g., Mr., Mrs., a.m., p.m., etc.	alternate hypothesis	$H_A$
deciliter	dL	All commonly accepted professional titles.	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	e
gram	g	and	&	catch per unit effort	CPUE
hectare	ha	at	@	coefficient of variation	CV
kilogram	kg	Compass directions:		common test statistics	F, t, $\chi^2$ , etc.
kilometer	km	east	E	confidence interval	C.I.
liter	L	north	N	correlation coefficient	R (multiple)
meter	m	south	S	correlation coefficient	r (simple)
metric ton	mt	west	W	covariance	cov
milliliter	ml	Copyright	©	degree (angular or temperature)	°
millimeter	mm	Corporate suffixes:		degrees of freedom	df
<b>Weights and measures (English)</b>		Company	Co.	divided by	÷ or / (in equations)
cubic feet per second	ft <sup>3</sup> /s	Corporation	Corp.	equals	=
foot	ft	Incorporated	Inc.	expected value	E
gallon	gal	Limited	Ltd.	fork length	FL
inch	in	et alii (and other people)	et al.	greater than	>
mile	mi	et cetera (and so forth)	etc.	greater than or equal to	≥
ounce	oz	exempli gratia (for example)	e.g.,	harvest per unit effort	HPUE
pound	lb	id est (that is)	i.e.,	less than	<
quart	qt	latitude or longitude	lat. or long.	less than or equal to	≤
yard	yd	monetary symbols (U.S.)	\$, ¢	logarithm (natural)	ln
Spell out acre and ton.		months (tables and figures): first three letters	Jan, ..., Dec	logarithm (base 10)	log
<b>Time and temperature</b>		number (before a number)	# (e.g., #10)	logarithm (specify base)	log <sub>2</sub> , etc.
day	d	pounds (after a number)	# (e.g., 10#)	mid-eye-to-fork	MEF
degrees Celsius	°C	registered trademark	®	minute (angular)	'
degrees Fahrenheit	°F	trademark	™	multiplied by	x
hour (spell out for 24-hour clock)	h	United States (adjective)	U.S.	not significant	NS
minute	min	United States of America (noun)	USA	null hypothesis	$H_0$
second	s	U.S. state and District of Columbia abbreviations	use two-letter abbreviations (e.g., AK, DC)	percent	%
Spell out year, month, and week.				probability	P
<b>Physics and chemistry</b>				probability of a type I error (rejection of the null hypothesis when true)	$\alpha$
all atomic symbols				probability of a type II error (acceptance of the null hypothesis when false)	$\beta$
alternating current	AC			second (angular)	"
ampere	A			standard deviation	SD
calorie	cal			standard error	SE
direct current	DC			standard length	SL
hertz	Hz			total length	TL
horsepower	hp			variance	Var
hydrogen ion activity	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

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August 2003

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## ABSTRACT

The Alaska Department of Fish and Game (ADF&G), Sport Fish Division, conducted a visitor use census along the Karluk River, located on Kodiak Island, Alaska, from June 10 through July 15, 2002. The census was administered between Karluk Lake and the ADF&G salmon counting weir located approximately one-half mile upstream from Karluk Lagoon. A total of 1,560 visitor days, not including guides, were documented in the study area during this period, 982 visitor days of which occurred on the river section encompassed by the Kodiak National Wildlife Refuge (KNWR) boundaries. Of the visitor use inside the KNWR boundaries, 701 visitor days (71%) were guided and 281 visitor days (29%) were unguided. In the total study area, 1,530 angler-days, including guides, were documented, which produced a chinook salmon *Oncorhynchus tshawytscha* catch of 2,156 fish and a harvest of 582 fish.

Key words: visitor use census, Karluk River, Kodiak Island, chinook salmon, *Oncorhynchus tshawytscha*, Kodiak National Wildlife Refuge, guided anglers, unguided anglers.

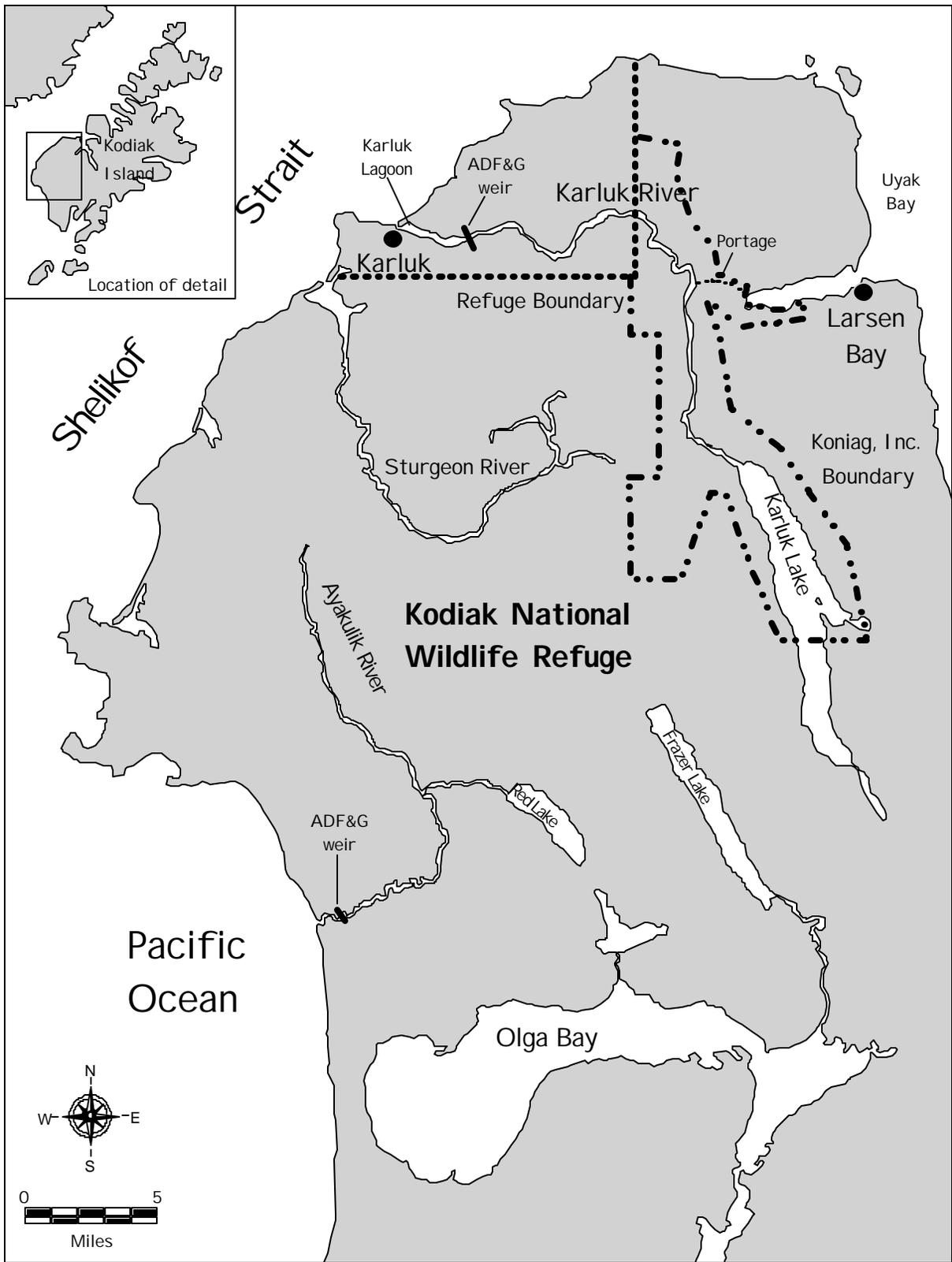
## INTRODUCTION

An agreement to protect certain lands and resources along the Karluk River by establishment of a conservation easement was signed in October 2002. Partners in the agreement were the landowner, Koniag Native Regional Corporation; the United States, acting through the U. S. Fish and Wildlife Service (USF&WS); and the State of Alaska, acting through the Alaska Department of Fish and Game (ADF&G). The conservation easement includes the uplands within a one-half mile band of land on either side of the Karluk River between Karluk Lake and the Refuge Boundary, located approximately 12 river miles downstream of Karluk Lake outlet, as well as other lands (Figure 1).

The USF&WS has been tasked with establishing and enforcing a permit system within the one-half mile upland zone, which will impose specific limits on the level and location of public use. Subsection 5(b) of the easement agreement stipulates that "Such limits shall be designed to reasonably minimize the impact on the fish, wildlife and habitat; ensure quality of the individual visitor experience; and provide for sustainable high quality fish, wildlife and wildlands recreation." Additionally, the agreement specifies that public use limits for private and revenue producing visitor services will be considered. Simultaneously and in the aggregate, when limits on public use are reached, USF&WS shall balance the allocation of public use by guided and unguided parties in such a manner that considers both the projected demand and the historical use patterns, recognizing that neither party will be allocated less than 40% of total public use.

The USF&WS was required to commence studies by January 1, 2002 that would enable them to determine the appropriate level of use in accordance with requirements established in the agreement. Until these studies are completed, the agreement prescribes an interim limit of 70 scheduled visitors per day during the period of June 10–July 15, the composition of which must meet the stipulated balance between unguided and guided users.

Because USF&WS must develop a permit system which will limit overall use and balance guided and nonguided use based on historic use patterns and demand, it is necessary to document preexisting use patterns. The 2002 fishing season on the Karluk River was potentially the last season during which use could be documented without interim restrictions prescribed by the easement. This report documents the results of an ADF&G visitor use study funded through the USF&WS that was conducted from June 10–July 15, 2002 along the Karluk River and which was designed to document existing use levels and demographics. Additional information and investigations will be necessary to fulfill the terms of the easement relating to habitat, quality of



**Figure 1.-The Karluk River drainage.**

experience, and fish and wildlife issues; however, completion of a study designed to document existing use is an important first step in the implementation process.

As stated, the agreement also requires the permit system provide for sustainable high quality fish, wildlife and wildlands recreation. The principal recreation conducted by users on the Karluk River during the limited use period identified in the agreement consists of participation in the chinook salmon *Oncorhynchus tshawytscha* sport fishery. Aspects of ensuring sustainable salmon sport fishing opportunity for users include documentation of adult fish return parameters such as escapement and harvest. ADF&G is currently mandated to accomplish these tasks and, in order to do so, operates a weir on the Karluk River to document the annual return abundance of adult fish, and also indexes the inseason chinook salmon sport harvest. Utilization of ADF&G weir personnel along with other department staff stationed on the river to complete the use study allowed for documentation of total sport catch and effort with minimal additional cost.

## **METHODS**

The objective of the 2002 Karluk River Visitor Use Census was to document daily visitor use on the Karluk River during June 10–July 15, by the following attributes:

1. Location: (a) Koniag lands upstream of the Refuge boundary; (b) Koniag lands downstream of the Refuge boundary; (c) Karluk Tribal Council lands;
2. Activity: (a) angling; (b) other use;
3. Residency: (a) local (Kodiak Island Borough); (b) non-local Alaskan; (c) non-Alaskan USA; (d) non-USA;
4. Guide status: (a) unguided; (b) guided by Koniag shareholder; (c) guided by non-shareholder;
5. Sport catch by species: (a) number harvested; (b) number released.

The study objectives were attained by interviewing virtually every visitor who exited the river. Visitors from June 10–July 15 typically access the river either at Karluk Lake (via floatplane), the area known as the "Portage" (via floatplane, ATV, or by foot), or at Karluk Lagoon (by foot; Figure 2). Visitors accessing the river at Karluk Lake typically float downstream and exit the river at the Portage or Karluk Lagoon. Visitors accessing the river at the Portage either remain at that location for the duration of their stay, or float downstream and exit at Karluk Lagoon. Other visitors access Karluk River from the lagoon, by walking upstream. In each of these scenarios, ADF&G personnel stationed at the Karluk weir or at the Portage interviewed the visitors individually as they exited the river.

### **PORTAGE**

Interviews conducted at the Portage did not record location of use because all visitors exiting from this area remained on lands owned by Koniag inside the Refuge boundary for the duration of their stay (Figure 2). Information requested during each interview included the following:

1. Date of arrival;
2. Duration of stay, including interview date;
3. Number of visitors per party, excluding guides;
4. Number of days spent fishing;

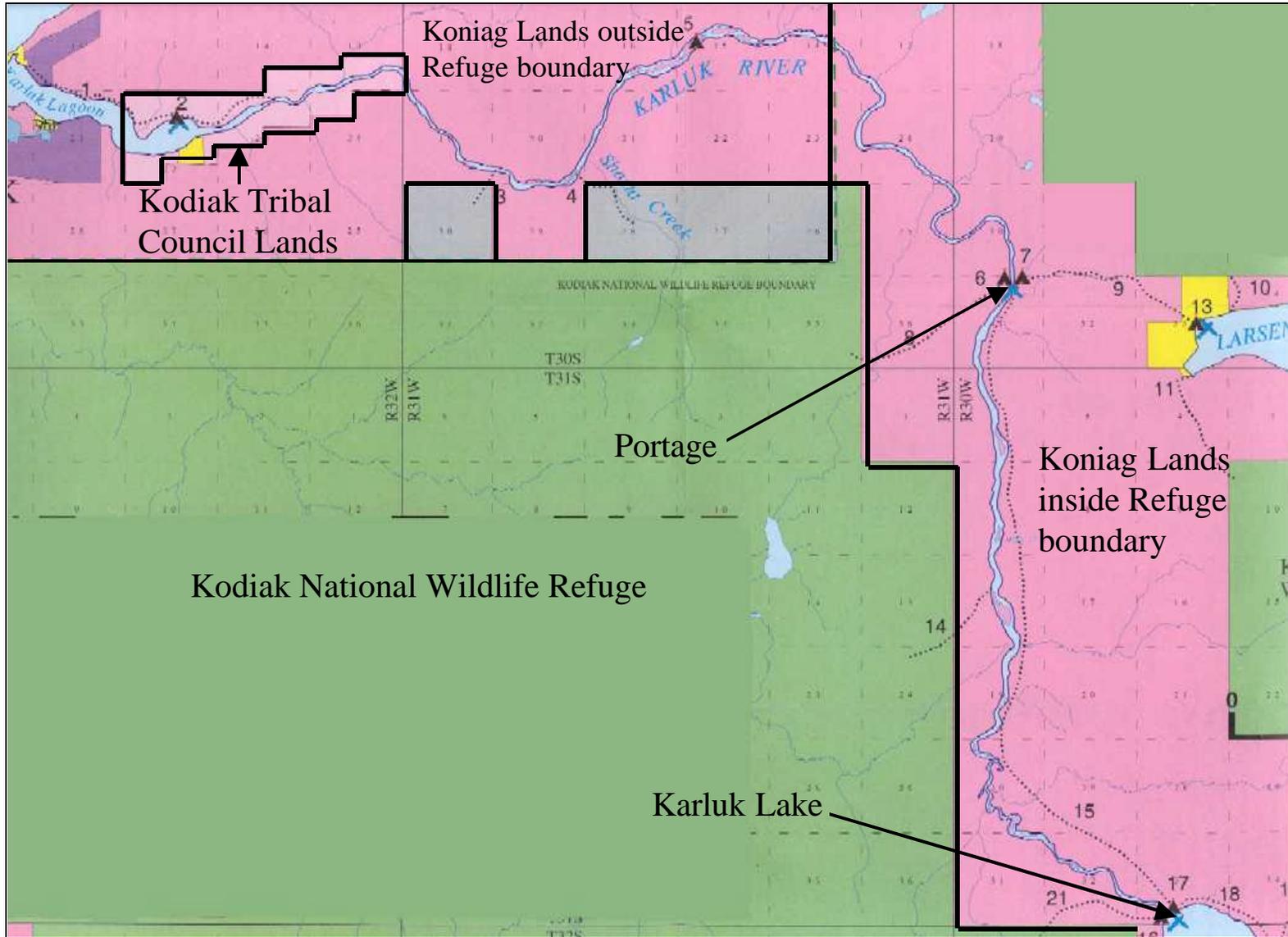


Figure 2.-Karluk River visitor use study area.

5. Residency;
6. Guide status, including whether guided by Koniag shareholder business;
7. Number of fish harvested and released by species.

Additionally, all guides were interviewed for the following information:

1. Transportation used to exit the river;
2. Number of clients per guide.

Any visitors who did not wish to be interviewed were also noted on a daily basis.

## **ADF&G WEIR**

Due to the importance of determining the land ownership being utilized between Portage and Karluk Lagoon, visitors interviewed at the ADF&G weir were asked to reconstruct their trip using a map of the river. This information was unnecessary for visitors accessing the river from the lagoon because all were day users who did not travel beyond the Karluk Tribal Council lands. Information requested during each interview was the same as at the Portage.

## **RESULTS**

A total of 1,560 visitor days occurred between Karluk Lake and the weir from June 10–July 15, 2002 (Table 1). Use in this area peaked on June 25 with 82 visitor days and dropped to as low as 10 visitor days on July 15. Use within the refuge boundaries (Figure 2) totaled 982 visitor days, peaking at 60 visitor days on June 25 and dropping to 8 visitor days on July 6. Day use at Portage produced a total of 149 visitor days while 82 visitor days were spent floating from Karluk Lake to Portage. Day float trips between Portage and the weir produced 371 visitor days, while 380 visitor days comprising portions of multi-day trips were spent within the refuge boundaries. Visitor use outside the refuge boundaries consisted of 558 visitor days comprising portions of multi-day trips spent on Koniag lands and 20 visitor days were spent visiting Karluk Tribal Council lands.

Most guided visitors tended to be day users, either floating the upper or lower river sections or visiting the Portage (Table 2). Sixty-one percent of the guided visitor days (563 visitor days) were day users. Conversely, 91% of unguided visitor days were for multi-day trips comprising a total of 587 visitor days (Table 3).

Guided visits accounted for 72% of the visits (705 visits) and non-guided visits accounted for 28% (281 visits) (Table 4). Shareholder business guiding accounted for 49% of the total guided visits and non-shareholder businesses the remaining 51% (Table 5).

Length of stay ranged between 1 and 9 days, and 78% of visits were for day use (Table 6). The next most frequently documented trip length was 8 days, comprising 6% of visits, followed by 9- and 7-day trips, each representing 3% of the total visits. For visitors camping within refuge boundaries, length of stay ranged from 1 to 9 nights, with 3-night stays comprising the most frequently documented length at 28% of the total visits (Table 7). For visitors camping on Koniag land outside the Refuge, length of stay ranged from 1 to 8 nights, with 3- and 4-night stays being the first (20%) and second (16%) most frequently documented (Table 8).

**Table 1.-Visitor days at the Karluk River by day and area, June 10-July 15, 2002.**

Date	Use Within Refuge Boundary				Total	Use Downstream of Refuge Boundary		Total River Use between Lake and Weir
	Day Use at Portage <sup>a</sup>	Floated Lake to Portage <sup>a</sup>	Floated Portage to Weir <sup>ab</sup>	Camped Within Refuge		Camped on Koniag Lands Outside Refuge <sup>c</sup>	Karluk Tribal Lands <sup>c</sup>	
10-Jun	3		14	11	28	25		53
11-Jun		5	6	12	23	25		48
12-Jun	6		16	8	30	31		61
13-Jun		3	11	16	30	30		60
14-Jun	2	4	9	16	31	16		47
15-Jun	2			21	23	5		28
16-Jun		2	20	7	29	35		64
17-Jun	3		4	8	15	38	4	57
18-Jun	4	10	14	14	42	24		66
19-Jun	2	7	14	33	56	24		80
20-Jun		4	9	22	35	25		60
21-Jun	12		13	10	35	29		64
22-Jun	4		8	6	18	23		41
23-Jun	6	3	19	12	40	23		63
24-Jun	15	2	11	28	56	9		65
25-Jun	19	4	9	28	60	22		82
26-Jun	16	3	11	20	50	22	8	80
27-Jun	12	3	15	20	50	22	8	80
28-Jun	7		8	14	29	8		37
29-Jun	3	7	15	4	29	16		45
30-Jun	3		19	4	26	16		42
1-Jul	2		11	4	17	16		33
2-Jul	2	3	17		22	4		26
3-Jul	2	5	7	9	23	4		27
4-Jul	2	9	6	9	26	4		30
5-Jul			9	9	18	4		22
6-Jul	5		3		8	13		21
7-Jul	3	4	14		21	9		30
8-Jul	2		11		13	9		22
9-Jul		4	4	5	13	9		22
10-Jul			12	5	17	9		26
11-Jul			6	5	11	9		20
12-Jul	5		11	5	21			21
13-Jul	4		5	5	14			14
14-Jul	3		5	5	13			13
15-Jul			5	5	10			10
Total Visitor Days <sup>d</sup>	149	82	371	380	982	558	20	1,560

<sup>a</sup> Did not camp within Refuge.

<sup>b</sup> These visitors transited three areas in one day (within Refuge boundaries, Koniag land outside Refuge, and Karluk tribal land), but are recorded only in "Floated Portage to Weir" column.

<sup>c</sup> Visitors who spent the night in this location. They might have started the day in another area, but are recorded only in the area they camped in.

<sup>d</sup> Visitor days do not equal a unique visitor as it is possible for a visitor to visit the river more than once.

**Table 2.-Guided visitor days at the Karluk River by day and area, June 10-July 15, 2002.**

Date	Use Within Refuge Boundary					Use Downstream of Refuge Boundary		Total River Use between Lake and Weir
	Day Use at Portage <sup>a</sup>	Floated Lake to Portage <sup>a</sup>	Floated Portage to Weir <sup>ab</sup>	Camped Within Refuge	Total	Camped on Koniag Lands Outside Refuge <sup>c</sup>	Karluk Tribal Lands <sup>c</sup>	
10-Jun	3		6		9	10		19
11-Jun		5	6		11	10		21
12-Jun	2		16		18	10		28
13-Jun		3	11	8	22	10		32
14-Jun	2	4	9	8	23			23
15-Jun	2			8	10			10
16-Jun		2	20		22	8		30
17-Jun			4	6	10	8	4	22
18-Jun	4	10	14	6	34	8		42
19-Jun		7	14	21	42	8		50
20-Jun		4	9	12	25	9		34
21-Jun	10		13	6	29	9		38
22-Jun			8	6	14	9		23
23-Jun	6	3	19	6	34	9		43
24-Jun	11	2	11	6	30	9		39
25-Jun	16	4	9	6	35	14		49
26-Jun	13	3	11	6	33	14		47
27-Jun	12	3	15	6	36	14		50
28-Jun	7		8		15			15
29-Jun	3	7	15		25			25
30-Jun	3		19		22			22
1-Jul	2		11		13			13
2-Jul	2	3	17		22			22
3-Jul	2	5	7	9	23			23
4-Jul	2	9	6	9	26			26
5-Jul			9	9	18			18
6-Jul	2		3		5	9		14
7-Jul	3	4	14		21	9		30
8-Jul	2		11		13	9		22
9-Jul		4	4		8	9		17
10-Jul			12		12	9		21
11-Jul			6		6	9		15
12-Jul	2		11		13			13
13-Jul	4		5		9			9
14-Jul	3		5		8			8
15-Jul			5		5			5
Total Visitor Days <sup>d</sup>	118	82	363	138	701	213	4	918

<sup>a</sup> Did not camp within Refuge.

<sup>b</sup> These visitors transited three areas in one day (within Refuge boundaries, Koniag land outside Refuge, and Karluk tribal lands), but are recorded only in "Floated Portage to Weir" column.

<sup>c</sup> Visitors who spent the night in this location. They might have started the day in another area, but are recorded only in the area they camped in.

<sup>d</sup> Visitor days do not equal a unique visitor as it is possible for a visitor to visit the river more than once.

**Table 3.-Unguided visitor days at the Karluk River by day and area, June 10-July 15, 2002.**

Date	Within Refuge Boundary				Total	Downstream of Refuge Boundary		Total River Use between Lake and Weir
	Day Use at Portage <sup>a</sup>	Floated Lake to Portage <sup>a</sup>	Floated Portage to Weir <sup>ab</sup>	Camped Within Refuge		Camped on Koniag Lands Outside Refuge <sup>c</sup>	Karluk Tribal Lands <sup>c</sup>	
10-Jun			8	11	19	15		34
11-Jun				12	12	15		27
12-Jun	4			8	12	21		33
13-Jun				8	8	20		28
14-Jun				8	8	16		24
15-Jun				13	13	5		18
16-Jun				7	7	27		34
17-Jun	3			2	5	30		35
18-Jun				8	8	16		24
19-Jun	2			12	14	16		30
20-Jun				10	10	16		26
21-Jun	2			4	6	20		26
22-Jun	4				4	14		18
23-Jun				6	6	14		20
24-Jun	4			22	26			26
25-Jun	3			22	25	8		33
26-Jun	3			14	17	8	8	33
27-Jun				14	14	8	8	30
28-Jun				14	14	8		22
29-Jun				4	4	16		20
30-Jun				4	4	16		20
1-Jul				4	4	16		20
2-Jul					0	4		4
3-Jul					0	4		4
4-Jul					0	4		4
5-Jul					0	4		4
6-Jul	3				3	4		7
7-Jul					0			0
8-Jul					0			0
9-Jul				5	5			5
10-Jul				5	5			5
11-Jul				5	5			5
12-Jul	3			5	8			8
13-Jul				5	5			5
14-Jul				5	5			5
15-Jul				5	5			5
Total Visitor Days <sup>d</sup>	31	0	8	242	281	345	16	642

<sup>a</sup> Did not camp within Refuge.

<sup>b</sup> These visitors transited three areas in one day (within Refuge boundaries, Koniag land outside Refuge, and Karluk tribal land), but are recorded only in "Floated Portage to Weir" column.

<sup>c</sup> Visitors who spent the night in this location. They might have started the day in another area, but are recorded only in the area they camped in.

<sup>d</sup> Visitor days do not equal a unique visitor as it is possible for a visitor to visit the river more than once.

**Table 4.-Number and percent of guided and unguided visits along the Karluk River within Kodiak National Wildlife Refuge boundary by day, June 10-July 15, 2002.**

Date	Guided		Unguided	
	Number	Percentage	Number	Percentage
10-Jun	9	32	19	68
11-Jun	11	48	12	52
12-Jun	18	60	12	40
13-Jun	22	73	8	27
14-Jun	23	74	8	26
15-Jun	10	43	13	57
16-Jun	22	76	7	24
17-Jun	14	74	5	26
18-Jun	34	81	8	19
19-Jun	42	75	14	25
20-Jun	25	71	10	29
21-Jun	29	83	6	17
22-Jun	14	78	4	22
23-Jun	34	85	6	15
24-Jun	30	54	26	46
25-Jun	35	58	25	42
26-Jun	33	66	17	34
27-Jun	36	72	14	28
28-Jun	15	52	14	48
29-Jun	25	86	4	14
30-Jun	22	85	4	15
1-Jul	13	76	4	24
2-Jul	22	100	0	0
3-Jul	23	100	0	0
4-Jul	26	100	0	0
5-Jul	18	100	0	0
6-Jul	5	63	3	38
7-Jul	21	100	0	0
8-Jul	13	100	0	0
9-Jul	8	62	5	38
10-Jul	12	71	5	29
11-Jul	6	55	5	45
12-Jul	13	62	8	38
13-Jul	9	64	5	36
14-Jul	8	62	5	38
15-Jul	5	50	5	50
Total <sup>a</sup>	705	72	281	28

<sup>a</sup> A visit consists of accessing and exiting the river once. It is possible for a person to visit the river more than once.

**Table 5.-Number of guided visits, by business status, between Karluk Lake and weir by day, June 10-July 15, 2002.**

Date	Guided by Shareholder Businesses <sup>a</sup>	Guided by Nonshareholder Businesses
10-Jun	3	16
11-Jun	11	10
12-Jun	16	12
13-Jun	12	20
14-Jun	13	10
15-Jun	0	10
16-Jun	12	18
17-Jun	4	18
18-Jun	19	23
19-Jun	14	36
20-Jun	10	24
21-Jun	20	18
22-Jun	8	15
23-Jun	21	22
24-Jun	17	22
25-Jun	18	31
26-Jun	18	29
27-Jun	25	25
28-Jun	12	3
29-Jun	22	3
30-Jun	11	11
1-Jul	13	0
2-Jul	12	10
3-Jul	14	9
4-Jul	13	13
5-Jul	9	9
6-Jul	5	9
7-Jul	21	9
8-Jul	13	9
9-Jul	8	9
10-Jul	12	9
11-Jul	6	9
12-Jul	13	0
13-Jul	9	0
14-Jul	8	0
15-Jul	5	0
Total <sup>b</sup>	447	471

<sup>a</sup> Shareholder businesses operating between Karluk Lake and weir included Larson Bay Lodge, Uyak Bay and Blacktail Lodge. All other guides were considered nonshareholder.

<sup>b</sup> A visit consists of accessing and exiting the river once. It is possible for a person to visit the river more than once.

**Table 6.-Number of days spent per visit by guided and unguided visitors between Karluk Lake and weir, June 10-July 15, 2002.**

Number of Days	Number of Visits <sup>a</sup>		Total	Percent
	Unguided	Guided		
1	39	567	606	78
2	16	0	16	2
3	7	5	12	2
4	10	6	16	2
5	13	0	13	2
6	14	0	14	2
7	16	8	24	3
8	37	9	46	6
9	0	25	25	3
Total	152	620	772	100

Note: Four groups started their trip before the study period began (June 10), but finished their trips during the study period. These individuals had the duration of their entire trip recorded.

<sup>a</sup> A visit consists of accessing and exiting the river once. For example, a visitor who floats the river, overnights in a lodge in Larsen Bay, and then floats the river again the following day would be counted as 2 visits.

Most visitors (64%) were non-Alaska U.S. residents who visited the river as day users (Table 9). Total chinook salmon harvest in the area between Karluk Lake and the weir from June 10-July 15, 2002 was 582 fish and release was 2,156 fish (Table 10).

Of the 772 visits that occurred between Karluk Lake and the weir between June 10-July 15, angling occurred on 757 (98%) visits. A total of 1,530 angler days of effort were expended producing a harvest of 582 chinook salmon, 335 sockeye salmon *O. nerka*, 49 Dolly Varden *Salvelinus malma* and 2 steelhead *O. mykiss* (Table 11). Total fish released included 2,156 chinook salmon, 613 sockeye salmon, 239 Dolly Varden and 79 steelhead. Most (86%) chinook salmon were harvested by guided anglers (Table 12). Non-Alaskan U.S. residents harvested 77% of the total harvest.

## DISCUSSION

In order to obtain a complete census of visitor use and angling effort, catch, and harvest, every individual visitor needed to be contacted and agree to be interviewed. This requirement was met, with only a few exceptions. Several guides unexpectedly accessed and exited the fishery at Karluk Lake; department personnel did not contact them onsite. However, these guides were contacted at their lodges afterwards and it was determined their clients fished only in Karluk Lake, targeting sockeye salmon and Arctic char *Salvelinus alpinus*. Since the study area only

**Table 7.-Length of stay per visit for campers within the Kodiak National Wildlife Refuge boundary, June 10-July 15, 2002.**

Number of Nights Camped	Number of Visits Camping <sup>a</sup>			Total	Percent
	Unguided	Guided by Shareholder Business	Guided by Non-shareholder Business		
1	8	0	9	17	15
2	23	0	0	23	21
3	14	0	17	31	28
4	10	0	6	16	15
5	1	0	0	1	1
6	11	0	0	11	10
7	5	0	0	5	5
8	0	0	0	0	0
9	0	0	6	6	5
Total	72	0	38	110	100

<sup>a</sup> Days spent camping outside the Refuge boundaries are not reflected in the table. For example, if a visitor camped 2 nights within the Refuge boundary then 4 nights on Koniag lands outside the Refuge boundary, they would be recorded on the 2 night row in this table.

**Table 8.-Length of stay per visit for campers on Koniag land outside the Kodiak National Wildlife Refuge boundary, June 10-July 15, 2002.**

Number of Nights Camped	Number of Visits Camping <sup>a</sup>			Total	Percent
	Unguided	Guided by Shareholder Business	Guided by Non-shareholder Business		
1	8	0	0	8	6
2	16	0	0	16	12
3	21	0	5	26	20
4	2	0	18	20	16
5	17	0	0	17	13
6	8	0	0	8	6
7	8	0	9	17	13
8	8	0	9	17	13
Total	88	0	41	129	100

<sup>a</sup> Days spent camping upstream within the Refuge boundaries are not reflected in the table. For example, if a visitor camped 2 nights within the Refuge boundary then 4 nights on Koniag lands outside the Refuge boundary, they would be recorded on the 4 night row in this table.

**Table 9.-Number of visits, by residency and length of visit, between Karluk Lake and weir, June 10-July 15, 2002.**

Length of Visit (Days)	Local	Alaska Resident	Non-Alaska U.S. Resident	Non-U.S. Citizen
1	15	39	493	59
2	2	3	10	0
3	1	0	11	0
4	0	1	9	6
5	2	1	4	6
6	2	0	12	0
7	3	0	13	8
8	0	0	9	37
9	0	0	0	25
Total <sup>a</sup>	25	44	561	141
Percent	3	6	73	18

Notes: Four groups started their trip before the study period began (June 10), but finished their trips during the study period. The individuals had the duration of their entire trip recorded.

<sup>a</sup> Does not include one visitor of unknown residency whose length of visit was 2 days.

included the Karluk River between the outlet of Karluk Lake and the weir, these trips were not included in the study results. In addition, three groups exited the fishery before onsite personnel had an opportunity to conduct interviews. As a result, the information in this report is close to, but not a complete, 100% documentation of the visitor use and angling catch and effort within the study area during the June 10–July 15 study period. It should also be noted that substantial fishing effort occurs downstream of the weir and in Karluk Lagoon. This effort was not documented during the study. Yearly estimates of total angling catch and effort for the entire Karluk drainage are provided in the ADF&G Statewide Sport Fish Harvest Survey (Mills 1983-1986, 1989-1994, Howe et al. 1995, 1996, 2001a-d, Walker et al. 2003).

Results of annual creel surveys conducted at the ADF&G weir indicate that inseason levels of visitor use on the Karluk River can be dynamic and that total use can vary from year to year. Factors that may have influenced the amount of visitor use during 2002 include reduced air travel resulting from the September 11, 2001 terrorist attacks and a recent downturn in the U.S. economy. In addition, weak Karluk River chinook salmon returns in 2001 and 2002 (Appendix A) resulted in reductions in daily bag limits during both years and a complete closure of the sport fishery by June 23 in 2001. It is probable that news of poor fishing opportunity on the Karluk River prompted some visitors to shift to the Ayakulik River or another location for chinook salmon fishing. However, during 2002, the chinook salmon fishery was restricted on the Kenai River, which resulted in some visitors flying directly from the town of Kenai to fish the Karluk

River for day-use trips. It is impossible to quantify the influence these factors had on the use that occurred on the Karluk in 2002; consequently, assessing use over several years may better reflect historic patterns and trends.

**Table 10.-Sport harvest, release and catch of chinook salmon between Karluk Lake and weir, by day, June 10-July 15, 2002.**

Exit Date	Portage			Weir			Total		
	Harvest	Release	Catch	Harvest	Release	Catch	Harvest	Release	Catch
10-Jun	3	0	3	4	2	6	7	2	9
11-Jun	3	0	3	6	13	19	9	13	22
12-Jun	1	0	1	14	11	25	15	11	26
13-Jun	2	0	2	26	75	101	28	75	103
14-Jun	4	0	4	15	61	76	19	61	80
15-Jun	2	11	13	0	0	0	2	11	13
16-Jun	2	0	2	15	46	61	17	46	63
17-Jun	2	11	13	11	115	126	13	126	139
18-Jun	11	6	17	11	21	32	22	27	49
19-Jun	10	19	29	22	17	39	32	36	68
20-Jun	4	7	11	5	40	45	9	47	56
21-Jun	10	3	13	14	55	69	24	58	82
22-Jun	0	1	1	8	35	43	8	36	44
23-Jun	8	5	13	33	118	151	41	123	164
24-Jun	4	1	5	11	30	41	15	31	46
25-Jun	15	9	24	7	20	27	22	29	51
26-Jun	15	10	25	5	30	35	20	40	60
27-Jun	15	17	32	39	197	236	54	214	268
28-Jun	7	37	44	8	27	35	15	64	79
29-Jun	2	12	14	13	53	66	15	65	80
30-Jun	4	8	12	7	61	68	11	69	80
1-Jul	2	4	6	16	119	135	18	123	141
2-Jul	5	26	31	15	33	48	20	59	79
3-Jul	7	23	30	7	43	50	14	66	80
4-Jul	11	28	39	2	17	19	13	45	58
5-Jul	0	0	0	7	32	39	7	32	39
6-Jul	3	16	19	7	67	74	10	83	93
7-Jul	7	13	20	14	23	37	21	36	57
8-Jul	2	12	14	10	19	29	12	31	43
9-Jul	4	20	24	4	10	14	8	30	38
10-Jul	0	0	0	11	25	36	11	25	36
11-Jul	0	0	0	14	218	232	14	218	232
12-Jul	2	12	14	10	27	37	12	39	51
13-Jul	4	19	23	5	13	18	9	32	41
14-Jul	3	6	9	5	15	20	8	21	29
15-Jul	2	113	115	5	19	24	7	132	139
Total	176	449	625	406	1,707	2,113	582	2,156	2,738

**Table 11.-Sport harvest and release, by species, between Karluk Lake and weir, June 10-July 15, 2002.**

Exit Location	Chinook Salmon		Sockeye Salmon		Dolly Varden		Steelhead/Rainbow	
	Harvest	Release	Harvest	Release	Harvest	Release	Harvest	Release
Portage	176	449	65	9	11	61	2	7
Weir	406	1,707	270	604	38	178	0	72
Total	582	2,156	335	613	49	239	2	79

**Table 12.-Chinook salmon harvest, release, and catch by residency and guide status between Karluk Lake and weir, June 10-July 15, 2002.**

Characteristic	Harvest		Release		Catch
	Number	Percent	Number	Percent	
<u>Guide Status</u>					
Guided	498	25	1,521	75	2,019
Unguided	<u>84</u>	<u>12</u>	<u>635</u>	<u>88</u>	<u>719</u>
Total	582	21	2,156	79	2,738
<u>Residency</u>					
Local	15	26	43	74	58
Alaska Resident	31	23	106	77	137
Non-AK Resident	446	25	1,330	75	1,776
Non-U.S. Citizen	<u>90</u>	<u>12</u>	<u>677</u>	<u>88</u>	<u>767</u>
Total	582	21	2,156	79	2,738

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**APPENDIX A. KARLUK RIVER CHINOOK SPORT FISH  
MANAGEMENT FOR THE 2002 SEASON**

### **Appendix A1.-Karluk River chinook salmon sport fish management for the 2002 season.**

The chinook salmon run to the Karluk River in 2001 was very weak. The weir count of 4,522 chinook was far below the average weir count of 12,350 fish. Department research indicates that the 2002 chinook run may also be below average. Consequently, the department is distributing this management plan in advance of the 2002 season, outlining the actions that may need to be taken if a poor run does occur. **The sport fishery will be managed so that the biological spawning escapement goal of 3,600 chinook will be achieved or exceeded.**

The current regulations in effect for the Kodiak Area are a daily bag and possession limit of 3 chinook salmon - only 2 of which may be greater than 28 in in length, an annual limit of no more than 5 king salmon per year and a July 26 spawning season closure. For the 2002 sport fishery to proceed without additional inseason emergency restrictions, a minimum weir count of approximately 5,900 fish must be achieved. This will allow the projected inriver sport harvest of 2,300 fish to occur, and still achieve a 3,600 fish spawning escapement.

Weir Count (5,900) - Projected Sport Harvest (2,300) = Spawning Escapement Goal (3,600)

Using the recent 10-year average time of entry at the weir, it is possible to project the final weir count. For example, to achieve an end of the season weir count of 5,900 fish, the counts should be as follows:

June 9 - 1,500 chinook salmon (25% of total run normally counted through the weir)

June 16 - 2,900 chinook salmon (50% of total run normally counted through the weir)

June 24 - 4,400 chinook salmon (75% of total run normally counted through the weir)

July 31 - 5,800 chinook salmon (99% of total run normally counted through the weir)

If the final weir count is projected to be less than 5,900 fish, the department will establish, by emergency order, restrictions to the sport fishery in order to ensure that the projected spawning escapement does not fall below 3,600 fish. These restrictions may be applied singly or in combination and may include the following:

- 1) Reduction of bag and possession limits to one (1) fish.
- 2) Reduction from one fish, to catch and release (if a catch and release fishery for chinook salmon is established, the use of bait will be prohibited for all species in the drainage).
- 3) Prohibition of the use of bait.
- 4) A closure to sport fishing for chinook salmon.

Run timing varies from year to year and environmental conditions sometimes affect the entry pattern of chinook salmon into the river. Because of these factors, weir counts may be allowed to fall slightly below the minimum interim goal without immediately restricting the fishery. However, if a trend of not meeting interim goals persists, restrictions will be implemented. A minimum of 2 days notice will be given prior to enacting emergency order restriction so that anglers can be notified.

## 2002 Karluk River chinook salmon weir counts needed for the sport fishery to proceed without emergency inseason restrictions

