

Fishery Data Series No. 04-31

Upper Cook Inlet Personal Use Salmon Fisheries, 1996-2003

by

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and

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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

FISHERY DATA SERIES NO. 04-31

UPPER COOK INLET PERSONAL USE SALMON FISHERIES, 1996-2003

by

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ABSTRACT

From 1996 to 2003 participants in the Upper Cook Inlet personal use salmon fisheries were required to record their harvest and effort on a free permit that was returned to the Alaska Department of Fish and Game after the fisheries closed. The number of personal use permits issued increased from 14,576 in 1996 to an estimated 19,110 (SE = 2) in 2003. The non-response rate increased during the same period. Returned permits were used to estimate harvest and effort for the Fish Creek dip net, Kasilof River dip net, Kasilof River gillnet and Kenai River dip net fisheries. Sockeye salmon harvest from 1996-2003 averaged 5,503 for Fish Creek dip net (1996-2001 only), 31,925 for Kasilof River dip net, 15,246 for Kasilof River gillnet and 140,428 for Kenai River dip net. Most permits were issued to residents of Anchorage followed by residents of the Kenai Peninsula and the Matanuska-Susitna Valley. Most permit holders did not fill their seasonal bag limit although differences in the percentage of the bag limit filled varied with respect to year, fishery, household size, number of days fished and the number of fisheries fished.

Key words: Kenai River, Kasilof River, Fish Creek, personal use, dip net, gillnet, subsistence, sockeye salmon, coho salmon, Chinook salmon, pink salmon, chum salmon, permit.

INTRODUCTION

Subsistence and personal use (PU) fishing in Cook Inlet has undergone numerous regulatory changes over the past two decades, reflecting the efforts by the state and federal governments and the court system to develop a legal definition of subsistence use (Brannian and Fox 1996). In 1996, most of Cook Inlet was closed to subsistence harvest of salmon. In lieu of subsistence fisheries four personal use fisheries were opened to all Alaska residents: Fish Creek dip net, Kasilof River dip net, Kasilof River gillnet, and Kenai River dip net (Figure 1). All of these fisheries target sockeye salmon *Oncorhynchus nerka*, although Chinook salmon *O. tshawytscha*, coho salmon *O. kisutch*, pink salmon *O. gorbuscha* and chum salmon *O. keta* are harvested incidentally. All participants in the Upper Cook Inlet salmon personal use fisheries are required to get a free permit or be a member of a household with a permit. Cook Inlet personal use permits are household permits that allow all members of the household to fish on the same permit. Completed permits must be returned to the department after the fishing season. This report presents harvest, effort and other summary information from Cook Inlet personal use permits issued during the 1996-2003 seasons.

MANAGEMENT PLANS

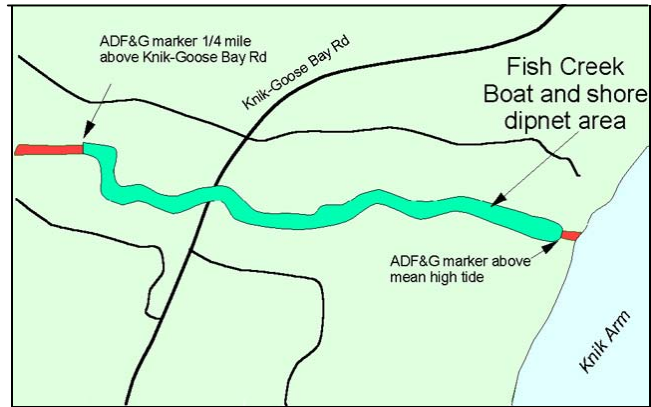
All Upper Cook Inlet personal use salmon fisheries are managed under the provisions of the Upper Cook Inlet Personal Use Salmon Fishery Management Plan (5 AAC 77.540).

Fish Creek

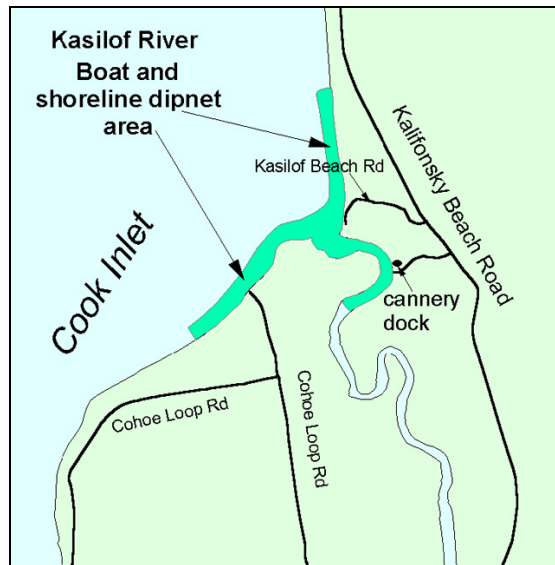
Inseason management of this fishery is the responsibility of the Division of Sport Fish (SFD). SFD is also responsible for operation of a weir in Fish Creek. Prior to 2002, the fishery opened and closed by regulation, however frequent inseason management actions were required due to poor inriver returns. In 2002, the Alaska Board of Fisheries (BOF) changed the management plan so that the fishery would be open by emergency order only if the department projected that the escapement of sockeye salmon into Fish Creek will exceed 70,000 fish.

Kasilof River

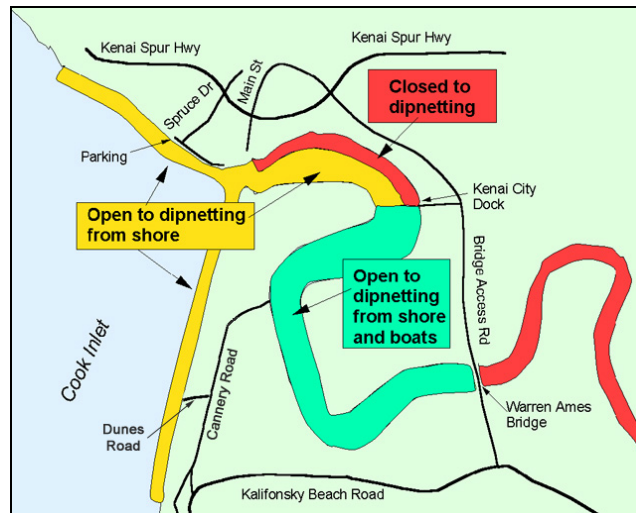
Inseason management of the gillnet fishery is the responsibility of the Commercial Fisheries Division (CFD). CFD also operates a sonar counter on the Kasilof River. From 1996-2001 the gillnet fishery was opened and closed by emergency order based on a target harvest range. In



Panel A



Panel B



Panel C

Figure 1.-Maps of the areas open to personal use fishing. Fish Creek (Panel A), Kasilof River (Panel B), and Kenai River (Panel C).

2002, the BOF changed the management plan so that the gillnet fishery opens and closes by regulation, therefore inseason management is required only if the sonar count and biological escapement goal cannot be projected. Inseason management of the dip net fishery is the responsibility of SFD. The dip net fishery also opens and closes by regulation, and inseason management is only required if the sonar count and biological escapement goal cannot be projected.

Kenai River

Inseason management of this fishery is the responsibility of SFD, while the responsibility for operation of the Kenai River sonar counter is with CFD. The fishery opens and closes by regulation, and inseason management by SFD is only required if it is projected that the inriver escapement goal for sockeye salmon will not be met.

FISHING REGULATIONS

Regulations for these fisheries are outlined in 5 AAC 77.015, 5 AAC 77.525 and 5 AAC 77.540. The fisheries are open to Alaska residents only. A legal dip net is a bag shaped net supported on all sides by a rigid frame. The net opening may not exceed 5 ft. across and the depth of the net must be at least one-half the net opening. The mesh used to construct the net may not exceed 4.5 inches stretched. Dip nets must be operated by hand. From 1996-2003 the total annual limit for all Upper Cook Inlet PU fisheries was 25 salmon for the head of the household and 10 salmon for each additional household member. From 1996-2001 there was an annual limit of one Chinook salmon combined from the Kenai River and Kasilof River dip net fisheries. No retention of Chinook salmon was allowed in the Fish Creek dip net fishery and there was no annual limit for Chinook salmon caught in the Kasilof River gillnet fishery. Beginning in 2002, no Chinook salmon could be retained in the Kasilof River dip net fishery, while the Kenai River annual limit remained at one Chinook salmon.

Fish Creek Dip Net

Dip netting was allowed in the area from Alaska Department of Fish and Game (ADF&G) regulatory markers located on both sides of the terminus of the creek upstream to ADF&G regulatory markers located approximately 1/4 mile upstream of the Knik-Goose Bay Road. Regulations for 1996-2001 allowed personal use dip netting from July 10 through July 31 from the hours of 1100-2300.

Beginning in 2002 regulations were modified so that the fishery would open only by emergency order. An emergency opening would be implemented if the department projected that the escapement of sockeye salmon into Fish Creek would exceed 70,000 fish. The fishery was not opened in 2002 or 2003.

Kasilof River Dip Net

Dip netting was allowed in the area from regulatory markers located on the Cook Inlet beaches outside of the terminus of the river upstream for one mile. The 1996-2001 regulations allowed dip netting from July 10 through August 5, 24 hours per day.

Beginning in 2002, the dip-netting season was expanded to begin on June 25 and end on August 7.

Kasilof River Gillnet

The legal fishing area was from ADF&G regulatory markers located at the river mouth to ADF&G commercial fishing regulatory markers located approximately one mile from the mouth

in either direction. Additionally, fishing was prohibited more than one mile from the mean high tide mark and within any flowing waters of the Kasilof River at any tide stage. Only one set gillnet could be operated per permit. The gillnet had to be attended, by the permit holder or a person named on the permit, at all times it was being used to take fish. No set gillnet could be operated within 100 feet of another set gillnet. The gillnet could not exceed 10 fathoms in length, have larger than a six-inch mesh size, or be more than 45 meshes deep. Regulations for 1996-1998 allowed set gillnet fishing beginning on June 21 and continuing until closed by emergency order. Fishing was allowed from 0600 to 1800 each day that the fishery was open.

Regulations for 1999-2001 were changed so that set gillnet fishing was allowed beginning on June 16 until closed by emergency order.

Beginning in 2002 the fishery was open from June 15 through June 24, from 0600 to 2300, by regulation.

Kenai River Dip Net

Dip nets could only be used from shore in the area from ADF&G regulatory markers located on the Cook Inlet beaches outside of the terminus of the river upstream to the Warren Ames Bridge. Dipnetting from a boat was only allowed from ADF&G markers located near the Kenai City Dock upstream to the Warren Ames Bridge. The 1996 regulations allowed dip netting from July 10 through August 5, 24 hours per day.

Regulations for 1997 and 1998 were identical to 1996 except that the season was shortened to July 10 through July 31 to minimize the harvest of coho salmon.

Regulations for 1999-2001 were similar to previous years as well, except that the north shoreline was closed to dip netting from shore between an ADF&G marker located below Main Street in Kenai upstream to the Kenai City Dock. This regulation was implemented to minimize erosion to the bluffs below the city of Kenai.

Regulations for 2002 were further modified to allow dip netting only from 0600 to 2300 during the open season.

OBJECTIVES

From 1996-2003 the objectives of the study were to:

1. Make permits available to all Alaskan residents that wished to participate in upper Cook Inlet personal use fisheries;
2. Estimate participation (household days fished) and harvest for the Kasilof River gillnet, Kasilof River dip net, Kenai River dip net, and Fish Creek dip net fisheries such that the estimates were within 10% of true values 95% of the time for Kasilof River gillnet, Kasilof River dip net, and Kenai River dip net and within 20% of true values 95% of the time for the Fish Creek dip net fishery.

METHODS

STUDY DESIGN

Cook Inlet personal use permits are household permits that allow all members of a household to fish on the same permit. All participants in the Upper Cook Inlet salmon personal use fisheries are required to get a permit or be a member of a household with a permit. In 1996 and 1997

permits were issued only from ADF&G offices. Beginning in 1998 permits were issued by more than 60 vendors and ADF&G offices located in Anchorage and the Kenai Peninsula and Matanuska-Susitna Valley areas. There was no cost for the permit.

Appendix A1 shows an example of the 2002 Upper Cook Inlet personal use salmon permit. Other years' permits were similar in design and content. Each permit was divided into numbered halves. Permits were sequentially numbered and vendors were given known sequences. The top half was a vendor copy, which was retained by the vendor and contained the permit holder's contact information, sport fishing license number and the angler's signature. Vendor copies were returned to the Anchorage ADF&G office periodically throughout the summer using courtesy reply envelopes provided by the Division of Sport Fish. Data from the returned vendor copies were entered into an electronic database periodically throughout the summer.

The bottom half of each permit was a harvest card that was given to the permit holder. The permit holder was required to have this permit in their possession when personal use fishing. Permit holders were also required to record harvest information, including fishery, dates fished and salmon harvest by species immediately upon harvesting a fish. A check box was provided for households that did not fish. All permits, even for households that did not fish, were required to be returned to ADF&G by August 15.

Permit holders who did not return their permits received up to four reminder letters. Reminder letters were mailed to allow approximately four weeks to respond to the previous mailing. Data from returned permits were entered into an electronic database as they were received. In some cases returned permits reported that the household had harvested in excess of their seasonal bag limit, fished out of season, were not Alaskan residents, or some other regulatory violation. This information was entered into the database as it was recorded on the permit.

All permit-holders who returned their permits before the second reminder letter were treated as a census of "compliant" households. Information obtained by permit-holders who returned their permits after the second reminder letter was mailed were treated as a sample of "non-compliant" households. Participation and harvest by non-compliant households was estimated by calculating the mean participation (household days fished) and harvest by species for non-compliant permits that were returned and expanding to include all non-respondents. Total estimates of participation and harvest by species for each fishery were obtained by summing the estimates for the non-compliant households with the census information obtained from compliant households.

In 1996 and 1997 the number of permits issued was known because permits were only issued from ADF&G offices. Beginning in 1998, permits were issued from area vendors as well as from ADF&G offices. Occasionally vendors failed to return vendor copies from some of the permits they issued. This resulted in some permit holders returning permits that lacked a vendor copy. The total number of permits issued was estimated by assuming that the response rate (prior to mailing the first reminder letter) among known permits from a vendor was the same as the response rate among the permits lacking a vendor copy (the "orphan permits"). This response rate was applied to the orphan permits to estimate the total number of permits issued by the vendor but missing vendor copies.

DATA ANALYSIS

Because some vendors did not return all of their permits, the total number of permits issued was estimated as:

$$\hat{N} = \left(o \hat{p}^{-1} \right) + M \quad (1)$$

where:

- \hat{N} = the total number of permits issued,
- o = the number of permits issued and returned by permit holders before the first reminder letter, but with no vendor card (the “orphan permits”),
- $\hat{p} = \frac{m}{M}$ = the response rate before the first reminder letter among permits with vendor cards,
- m = the number of permits returned before the first reminder letter mailing with vendor cards,
- M = the total number of permits with vendor cards.

With variance estimated as:

$$\hat{V}[\hat{N}] = \left[\frac{o^2 \hat{V}[\hat{p}]}{\hat{p}^4} \right], \quad (2)$$

where,

$$\hat{V}[\hat{p}] = \left(\frac{\hat{p}(1-\hat{p})}{M-1} \right).$$

The estimated number of permits issued was divided in four groups:

$$\hat{N} = N_{cf} + N_{cz} + \hat{N}_{df} + \hat{N}_{dz}, \quad (3)$$

where:

- N_{cf} = the number of compliant permits who reported fishing,
- N_{cz} = the number of compliant permits who reported they did not fish,
- $\hat{N}_{df} = \left(\hat{N} - (N_{cf} + N_{cz}) \right) \hat{w}$,
the estimated number of non-compliant permits who reported fishing, and,
where $\hat{w} = \frac{n_{df}}{n_d}$
 n_d = the number of non-compliant households responding to the last reminder, and,
 n_{df} = the number of non-compliant households who responded to the last reminder and reported fishing.
- \hat{N}_{dz} = the estimated number of non-compliant permits who reported they did not fish.

Harvest for each species or participation for each fishery was estimated by the following procedure (with subscripts denoting parameter of estimation deleted for simplicity):

$$\hat{H} = H_{cf} + \hat{H}_{df}; \quad (4)$$

where:

\hat{H} = estimated total harvest or participation;

H_{cf} = harvest or participation reported by compliant permits, and;

\hat{H}_{df} = estimated harvest by non-compliant households = $\hat{N}_{df} \bar{h}_{df}$

where \bar{h}_{df} = the mean harvest or participation per household for non-compliant households that fished.

$$= \frac{\left(\sum_{j=1}^{n_{df}} h_{dfj} \right)}{n_{df}};$$

h_{dfj} = reported harvest by responding non-compliant household j , and

n_{df} = the number of non-compliant households responding to the reminder mailings.

Variance was calculated as (Goodman 1960):

$$\hat{V}[\hat{H}] = \hat{V}[\hat{H}_{df}] = \hat{N}_{df}^2 \hat{V}[\bar{h}_{df}] + \bar{h}_{df}^2 \hat{V}[\hat{N}_{df}] - \hat{V}[\bar{h}_{df}] \hat{V}[\hat{N}_{df}], \quad (5)$$

where:

$$\hat{V}[\hat{N}_{df}] = \hat{V}[\hat{N}] \hat{V}[\hat{w}] = \hat{N}^2 \hat{V}[\hat{w}] + \hat{w}^2 \hat{V}[\hat{N}] - \hat{V}[\hat{w}] \hat{V}[\hat{N}], \quad (6)$$

$$\hat{V}[\hat{w}] = \left(\frac{\hat{w}(1 - \hat{w})}{n_d - 1} \right),$$

and

$$\hat{V}[\bar{h}_{df}] = \left(1 - \frac{n_{df}}{\hat{N}_{df}} \right) \frac{s_{df}^2}{n_{df}}, \quad (7)$$

$$s_{df}^2 = \frac{\sum_{j=1}^{n_{df}} (h_{dfj} - \bar{h}_{df})^2}{n_{df} - 1}. \quad (8)$$

Standard errors were the square root of the variance estimate. Permittees who failed to indicate which fishery were estimated as “unknown fishery” by the procedure outlined above.

In 1996–1997 permits were only issued from ADF&G offices and the number of permits issued was known. From 1998–2000 the number of permits issued was estimated for each vendor following formulas 1 and 2 and then summed across vendors to get an estimate of the total number of permits issued. The non-compliant permits were not divided into those that reported not fishing and those that fished. Formulas 3-8 were used to estimate harvest and participation ignoring the second subscript.

In 1996-1997 permits were only issued from ADF&G offices and the number of permits issued was known.

RESULTS

PERMITS ISSUED AND RETURNED

The number of permits issued for Upper Cook Inlet personal use fisheries has climbed from 14,576 in 1996 to an estimated 19,110 (SE = 2) in 2003 (Table 1). The percent of permits returned has decreased from 92% to 82% during the same period. An average of 32% of the households that were issued Upper Cook Inlet personal use permits did not fish (Table 2).

Since 1998, only two reminder mailings have been sent out annually. When four mailings were done in 1997, the harvest estimate stabilized after the second reminder letter (Figure 2). The increasing trend in the number of unreturned permits does not appear to be dependent on the reduced number of mailings in 1998-2002 (Table 1).

ESTIMATED HARVEST AND EFFORT

From 1996-2003 over 1.64 million salmon (SE=2,316) were harvested in the Upper Cook Inlet personal use salmon fisheries (Table 3). Harvest in all fisheries during that period ranged from 151,113 (SE=604) salmon in 1997 to 305,245 (SE=1079) salmon in 2003. Most of the harvest was sockeye salmon although the annual harvest of coho and Chinook salmon reached seasonal maximums of 4,811 (SE=56) coho in 1996 and 1,711 (SE=34) Chinook in 2003. Effort in all fisheries averaged 18,761 household days with a range of 14,923 (SE=114) household days in 1997 to 21,668 (SE=63) household days in 2003.

Fish Creek Dip Net

Between 1996 and 2001, participation in the Fish Creek dip net fishery averaged 1,250 household days with a range of 131 (SE = 7) household days in 2001 to 3,749 (SE = 41) household days in 1996 (Table 3). Sockeye salmon harvest during the same period averaged 5,503 fish with a range of 436 (SE = 40) fish in 2001 to 17,260 (SE = 161) fish in 1996 (Table 3). Large numbers of coho salmon were also harvested in some years. The relative precision goals ($\pm 20\%$ of the true value 95% of the time) for effort and sockeye harvest were met each year except for sockeye harvest in 1999. Chinook salmon harvested in 1996 and 1998 were either violations of law (no retention of Chinook salmon was allowed) or incorrect reporting.

Sockeye salmon harvest in the Fish Creek personal use dip net fishery resulted in exploitation rates ranging from 1.0% of the inriver return in 2001 to 26.2% of the inriver return in 1996 (Table 4). The exploitation rate for the Fish Creek dip net fishery was highly variable because the inriver return fluctuated and management actions significantly altered the fishing season.

Table 1.—Number of Upper Cook Inlet personal use salmon fishery permits issued by year and number of permits returned by mailing and year, 1996-2003.

Year	Permits Issued		Permits Returned												Permits not Returned	
	Number ^a	SE	Voluntary		Mailing 1		Mailing 2		Mailing 3		Mailing 4		Total		Number	%
1996	14,576		9,986	69	2,501	17	569	4	396	3			13,452	92	1,124	8
1997	14,919		7,031	47	4,792	32	1,148	8	506	3	279	2	13,756	92	1,163	8
1998	15,535	19	8,209	53	3,391	22	1,590	10					13,190	85	2,345	15
1999	17,197	25	8,960	52	3,771	22	1,485	9					14,216	83	2,981	17
2000	16,107	11	8,070	50	3,962	25	1,546	10					13,582	84	2,525	16
2001	16,915	1	8,515	50	3,896	23	1,987	12					14,398	85	2,517	15
2002	17,568	1	8,881	51	3,247	18	2,156	12					14,284	81	3,284	19
2003	19,110	2	9,602	50	3,587	19	2,537	13					15,726	82	3,384	18
Minimum	14,576		7,031	47	2,501	17	569	4	396	3	279	2	13,190	81	1,124	8
Mean	16,491		8,657	53	3,643	22	1,627	10	451	3	279	2	14,076	86	2,415	14
Maximum	19,110		9,986	69	4,792	32	2,537	13	506	3	279	2	15,726	92	3,384	19

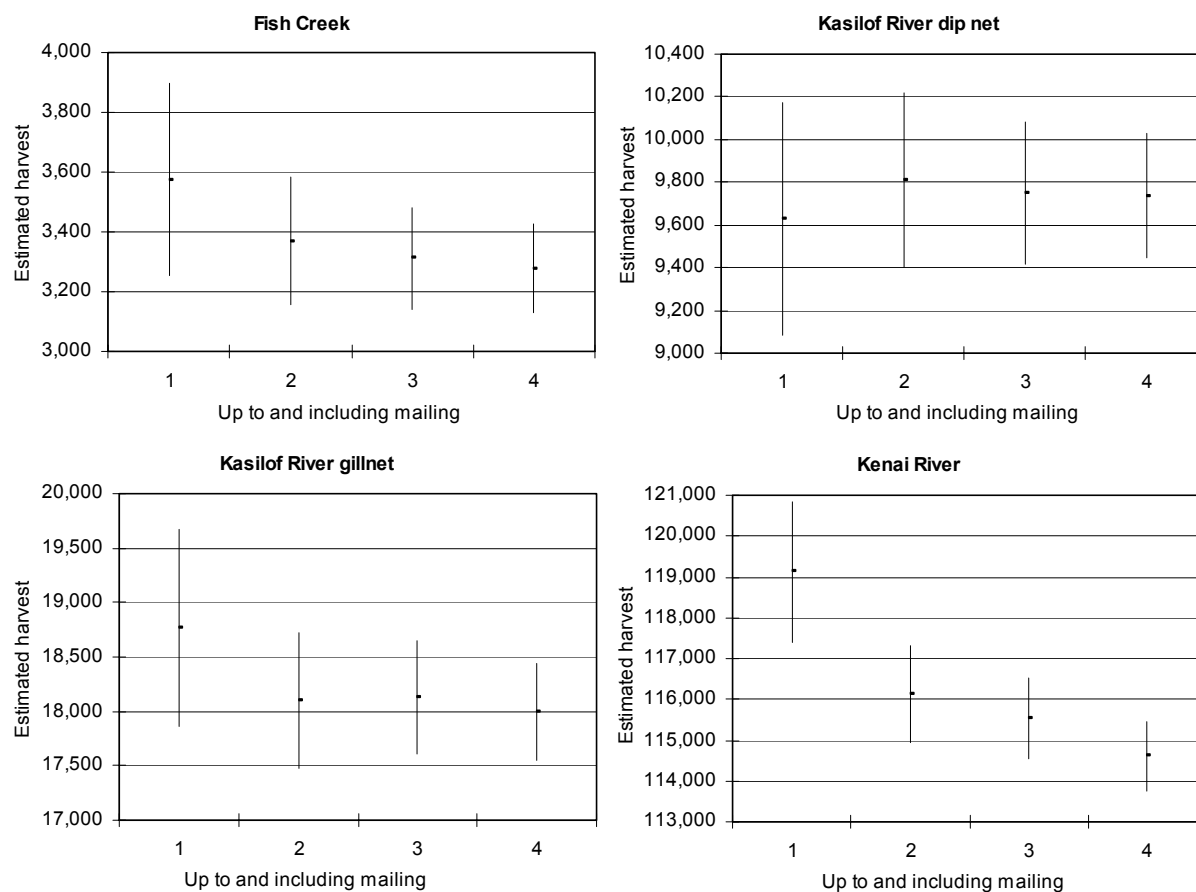
^a In 1996 and 1997 permits were only issued from ADF&G offices and the number of permits issued is known. The number of permits issued from 1998-2002 are estimates

Table 2.—Number of Upper Cook Inlet personal use salmon fishery permits that did not fish by year, 1996-2003.

Year	Permits issued		Did not fish		% Did not fish	
	Number ^a	SE	Number ^b	SE	Est.	SE
1996	14,576		4,408		30	
1997	14,919		6,248		42	
1998	15,535	19	5,539		36	
1999	17,197	25	5,643		33	
2000	16,107	11	5,745		36	
2001	16,915	1	3,528	169	21	1
2002	17,568	1	4,858	176	28	1
2003	19,110	2	5,355	33	28	1
Minimum	14,576		3,528		21	
Mean	16,491		5,166		32	
Maximum	19,110		6,248		42	

^a In 1996 and 1997 permits were only issued from ADF&G offices and the number of permits issued is known. The number of permits issued from 1998-2002 are estimates.

^b Values for 1996-2000 represent the number of permits who reported not fishing. Values from 2001 and 2002 are the estimated number of permits that did not fish after expanding the number of permits who reported not fishing for non-respondents.



Error bars show 95% confidence intervals.

Figure 2.—Estimated Upper Cook Inlet personal use salmon harvest and corresponding 95% confidence intervals by fishery and mailing, 1997.

Table 3.—Effort and harvest in Upper Cook Inlet personal use salmon fisheries, 1996-2003.

Year	Days	Days Fished			Sockeye			Chinook			Coho			Pink			Chum			Total		
	Open	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a
<i>Fish Creek Dip Net</i>																						
1996	22	3,749	41	2%	17,260	161	2%	37	8	42%	2,414	25	2%	331	9	5%	153	5	6%	20,195	168	2%
1997	13	991	34	7%	3,277	76	5%	0	0		63	5	16%	53	7	26%	4	1	49%	3,397	84	5%
1998	15	1,141	21	4%	4,036	113	5%	1	0	0%	649	19	6%	80	10	25%	29	2	14%	4,795	117	5%
1999	16	432	16	7%	1,083	138	25%	0	0		17	3	35%	12	7	114%	0	0		1,112	139	25%
2000	16	1,054	25	5%	6,925	211	6%	0	0		958	72	15%	83	12	28%	29	3	20%	7,995	225	6%
2001	3	131	7	10%	436	40	18%	0	0		18	7	76%	2	0	0%	1	0	0%	457	41	18%
2002	0																					
2003	0																					
Min.	0	131			436			0			17			2			0			457		
Mean	11	1,250			5,503			6			687			94			36			6,325		
Max.	22	3,749			17,260			37			2,414			331			153			20,195		
<i>Kasilof River Dip Net</i>																						
1996	27	1,300	23	3%	11,197	127	2%	50	1	4%	334	18	11%	103	2	4%	17	0	0%	11,701	130	2%
1997	27	1,091	32	6%	9,737	150	3%	35	2	11%	90	3	7%	19	2	21%	19	1	10%	9,900	153	3%
1998	27	3,421	33	2%	45,161	525	2%	134	3	4%	731	18	5%	610	25	8%	74	32	85%	46,710	528	2%
1999	27	3,611	43	2%	37,176	507	3%	127	5	8%	286	50	34%	264	12	9%	52	8	30%	37,905	511	3%
2000	27	2,622	36	3%	23,877	403	3%	134	7	10%	1,004	16	3%	841	39	9%	34	0	0%	25,890	407	3%
2001	27	3,382	37	2%	37,612	505	3%	138	6	9%	766	25	6%	307	14	9%	23	0	0%	38,846	511	3%
2002	44	4,020	38	2%	46,769	530	2%	106	6	11%	1,197	59	10%	1,862	73	8%	139	7	10%	50,073	553	2%
2003	44	3,874	28	1%	43,870	440	2%	57	4	14%	592	49	16%	286	21	14%	30	1	7%	44,835	447	2%
Min.	27	1,091			9,737			35			90			19			17			9,900		
Mean	31	2,915			31,925			98			625			537			49			33,233		
Max.	44	4,020			46,769			138			1,197			1,862			139			50,073		

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Table 3.–Page 2 of 3.

Year	Days		Days Fished			Sockeye			Chinook			Coho			Pink			Chum			Total		
	Open	Est.	SE	RP ^a		Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a
<i>Kasilof River Gillnet</i>																							
1996	5	582	16	5%		9,506	156	3%	46	3	13%	0	0		8	0	0%	1	0	0%	9,561	157	3%
1997	5	815	26	6%		17,997	231	3%	65	2	6%	1	0	0%	102	7	13%	3	1	65%	18,168	233	3%
1998	5	1,075	24	4%		15,975	425	5%	126	7	11%	0	0		15	4	52%	12	10	163%	16,128	426	5%
1999	10	1,287	39	6%		12,832	371	6%	442	27	12%	25	2	16%	10	0	0%	10	0	0%	13,319	374	6%
2000	13	1,252	23	4%		14,774	275	4%	514	15	6%	9	0	0%	17	2	23%	10	0	0%	15,324	276	4%
2001	8	1,001	20	4%		17,201	394	4%	174	6	7%	6	0	0%	11	0	0%	7	5	140%	17,399	397	4%
2002	10	1,025	16	3%		17,980	274	3%	192	5	5%	12	0	0%	30	2	13%	13	4	60%	18,227	277	3%
2003	10	1,206	17	3%		15,706	277	3%	400	13	6%	107	0	0%	9	0	0%	4	0	0%	16,226	284	3%
Min.	5	582				9,506			46			0			8			1			9,561		
Mean	8	1,030				15,246			245			20			25			8			15,544		
Max.	13	1,287				17,997			514			107			102			13			18,227		
<i>Kenai River Dip Net</i>																							
1996	27	10,503	60	1%		102,821	367	1%	295	5	3%	1,932	29	3%	2,404	33	3%	175	10	11%	107,627	375	1%
1997	22	11,023	87	2%		114,619	439	1%	364	13	7%	559	21	7%	619	14	4%	58	5	17%	116,219	448	1%
1998	18	10,802	59	1%		103,847	716	1%	254	10	8%	1,011	62	12%	1,032	62	12%	85	3	7%	106,229	724	1%
1999	22	13,738	79	1%		149,504	1,084	1%	488	13	5%	1,009	108	21%	1,666	64	8%	102	13	25%	152,769	1,094	1%
2000	22	12,354	69	1%		98,262	752	1%	410	18	9%	1,449	62	8%	1,457	75	10%	193	31	31%	101,771	762	1%
2001	22	14,772	66	1%		150,766	909	1%	638	15	5%	1,555	105	13%	1,326	37	5%	155	19	24%	154,440	926	1%
2002	22	14,840	56	1%		180,028	844	1%	606	11	4%	1,721	64	7%	5,662	102	4%	551	36	13%	188,568	874	1%
2003	22	15,263	50	1%		223,580	891	1%	1016	18	3%	1,332	68	10%	1,647	98	12%	249	22	17%	227,824	905	1%
Min.	18	10,503				98,262			254			559			619			58			101,771		
Mean	22	12,912				140,428			509			1,321			1,977			196			144,431		
Max.	27	15,263				223,580			1,016			1,932			5,665			551			227,824		

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Table 3.—Page 3 of 3.

Year	Days	Days Fished			Sockeye			Chinook			Coho			Pink			Chum			Total		
	Open	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a	Est.	SE	RP ^a
<u>Unknown Fishery</u>																						
1996		472	33		4,761	463		24	7		131	37		127	37		4	3		5,047	467	
1997		1,003	50		3,310	276		0	0		64	14		51	21		4	3		3,429	282	
1998		921	39		7,562	287		34	5		294	77		196	19		20	0		8,106	301	
1999		684	20		7,994	352		51	5		76	7		126	2		4	0		8,251	353	
2000		648	23		5,429	274		44	13		218	60		84	11		24	15		5,799	282	
2001		1,339	34		12,673	380		188	17		292	30		175	24		90	34		13,418	394	
2002		1,339	26		14,846	353		166	10		341	25		916	81		54	8		16,323	380	
2003		1,325	21		15,675	247		238	25		219	14		140	9		88	9		16,360	254	
Min.		472			3,310			0			64			51			4			3,429		
Mean		966			9,031			93			204			227			36			9,592		
Max.		1,339			15,675			238			341			916			90			16,360		
<u>Upper Cook Inlet Personal Use Fisheries Total</u>																						
1996		16,606	85		145,545	644		452	12		4,811	56		2,973	50		350	12		154,131	655	
1997		14,923	114		148,940	592		464	13		777	26		844	27		88	6		151,113	604	
1998		17,360	84		176,581	1,032		549	14		2,685	102		1,933	70		220	34		181,968	1,043	
1999		19,752	101		208,589	1,309		1,108	31		1,413	119		2,078	66		168	15		213,356	1,320	
2000		17,930	88		149,267	961		1,102	28		3,638	114		2,482	86		290	35		156,779	976	
2001		20,625	86		218,688	1,176		1,138	24		2,637	112		1,821	46		276	39		224,560	1,197	
2002		21,224	74		259,623	1,092		1,070	17		3,271	91		8,470	149		757	38		273,191	1,136	
2003		21,668	63		298,831	1,061		1,711	34		2,250	85		2,082	101		371	24		305,245	1,079	
Min.		14,923			145,545			452			777			844			88			151,113		
Mean		18,761			200,758			949			2,685			2,835			315			207,543		
Max.		21,668			298,831			1,711			4,811			8,470			757			305,245		

^a Relative precision

The median date for sockeye salmon harvest was approximately July 21 (Appendix B1). The fishery usually closed a few days later meaning daily harvest was much greater after the median date than it was prior. As expected coho salmon harvest occurred mostly in the last few days of the season. Harvest timing for the Fish Creek dip net fishery may be of limited value because the fishing season, effort and harvest have varied so markedly.

Kasilof River Dip Net

Between 1996 and 2003, participation in the Kasilof River dip net fishery averaged 2,915 household days with a range of 1,091 (SE = 32) household days in 1997 to 4,020 (SE = 38) household days in 2002 (Table 3). Sockeye salmon harvest during the same period averaged 31,925 fish with a range of 9,737 (SE = 150) fish in 1997 to 46,769 (SE = 530) fish in 2002 (Table 3). Harvests of other species were relatively small. The relative precision goals ($\pm 10\%$ of the true value 95% of the time) for effort and sockeye salmon harvest were met each year. Since the fishery was closed to Chinook salmon harvest in 2002 and 2003 and Chinook salmon harvests are similar in magnitude to prior years they are likely violations of law.

Sockeye salmon harvest in the Kasilof River personal use dip net fishery resulted in exploitation rates ranging from 3.3% of the inriver return in 1997 to 15.9% of the inriver return in 2002 (Table 4). The exploitation rate for the Kasilof River dip net fishery stabilized at about 10% of the inriver return from 1998-2001. Extending the fishing season from 27 days to 44 days led to the largest recorded exploitation rate (15.9%) in 2002, but the exploitation rate was again near 10% in 2003.

The median date for Kasilof River personal use sockeye salmon harvest was about July 22 (Appendix B2), or approximately half way through the open season. The lengthened fishing seasons in 2002 and 2003 shifted the median harvest dates about five days earlier. Harvest timing for Chinook salmon was similar to sockeye salmon. Most coho salmon harvest occurred toward the end of the season.

Kasilof River Gillnet

Between 1996 and 2003, participation in the Kasilof River gillnet fishery averaged 1,030 household days with a range of 582 (SE = 16) household days in 1996 to 1,287 (SE = 39) household days in 2002 (Table 3). Sockeye salmon harvest during the same period averaged 15,246 fish with a range of 9,506 (SE = 156) fish in 1996 to 17,997 (SE = 231) fish in 1997 (Table 3). Chinook salmon harvests during the same period averaged 245 fish with a range of 46 (SE = 3) fish in 1996 to 514 (SE = 15) fish in 2000 (Table 3). The relative precision goals ($\pm 10\%$ of the true value 95% of the time) for effort and sockeye harvest were met each year.

Sockeye salmon harvest in the Kasilof River personal use gillnet fishery resulted in exploitation rates ranging from 3.5% of the inriver return in 1996 to 6.1% of the inriver return in 1997 and 2002 (Table 4). When combined with the exploitation rate for the Kasilof River dip net fishery the total sockeye salmon exploitation rate from personal use fisheries for the Kasilof River averaged 14.1% from 1996-2003 and ranged from 7.6% in 1996 to 22.0% in 2002.

Harvest timing for the Kasilof River gillnet fishery was heavily dependent on season opening date because the fishery has a very short season. The median harvest date for sockeye salmon was June 19 in both 2002 and 2003, and the median harvest date for Chinook salmon was June 17 in both 2002 and 2003 (Appendix B3).

Table 4.–Sockeye salmon exploitation rate by Upper Cook Inlet personal use fisheries, 1996-2003.

	Harvest		Inriver Return ^{a,b,c}	Exploitation Rate		
Year	Dip net	Gillnet		Dip net	Gillnet	Combined
<i>Fish Creek</i>						
1996	17,260		80,488	21.4%		
1997	3,277		58,434	5.6%		
1998	4,036		27,055	14.9%		
1999	1,083		28,261	3.8%		
2000	6,925		26,479	26.2%		
2001	436		43,932	1.0%		
2002			-fishery closed-			
2003			-fishery closed-			
Minimum	436		26,479	1.0%		
Mean	5,503		44,108	12.2%		
Maximum	17,260		80,488	26.2%		
<i>Kasilof River</i>						
1996	11,197	9,506	272,524	4.1%	3.5%	7.6%
1997	9,737	17,997	296,855	3.3%	6.1%	9.3%
1998	45,161	15,975	336,936	13.4%	4.7%	18.1%
1999	37,176	12,832	366,086	10.2%	3.5%	13.7%
2000	23,877	14,774	298,903	8.0%	4.9%	12.9%
2001	37,612	17,201	366,887	10.3%	4.7%	14.9%
2002	46,769	17,980	294,749	15.9%	6.1%	22.0%
2003	43,870	15,706	424,609	10.3%	3.7%	14.0%
Minimum	9,737	9,506	272,524	3.3%	3.5%	7.6%
Mean	31,925	15,246	332,194	9.4%	4.7%	14.1%
Maximum	46,769	17,997	424,609	15.9%	6.1%	22.0%
<i>Kenai River</i>						
1996	102,821		941,678	10.9%		
1997	114,619		1,224,470	9.4%		
1998	103,847		906,959	11.5%		
1999	149,504		1,000,312	14.9%		
2000	98,262		781,997	12.6%		
2001	150,766		853,874	17.7%		
2002	180,028		1,186,742	15.2%		
2003	223,580		1,473,516	15.2%		
Minimum	98,262		781,997	9.4%		
Mean	140,428		1,046,194	13.4%		
Maximum	223,580		1,473,516	17.7%		

^a 1996-1991 estimates from Tobias and Willette (2003).^b 2002-2003 estimates from Terri Tobias (personal communication).^c Inriver return calculated as sonar or weir passage plus subsistence and/or personal use harvest plus sport harvest below sonar or weir.

Kenai River Dip Net

Between 1996 and 2003, participation in the Kenai River dip net fishery averaged 12,912 household days with a range of 10,503 (SE = 60) household days in 1996 to 15,263 (SE = 50) household days in 2003 (Table 3). Sockeye salmon harvest during the same period averaged 140,428 fish with a range of 98,262 (SE = 752) fish in 2000 to 223,580 (SE = 891) fish in 2003 (Table 3). Harvests of other species were comparatively small. The relative precision goals ($\pm 10\%$ of the true value 95% of the time) for effort and sockeye harvest were met each year.

Sockeye salmon harvest in the Kenai River personal use dip net fishery resulted in exploitation rates ranging from 9.4% to 17.7% of the inriver return (Table 4). The reduction in fishing time in 2002 and 2003, from 24 hours to 17 hours per day, had little effect on the exploitation rate or total harvest.

The median date for Kenai River personal use sockeye salmon harvest was about July 21 (Appendix B4), or approximately half way through the open season. Harvest timing for Chinook salmon was similar to sockeye salmon. Most coho salmon harvest occurred toward the end of the season.

CHARACTERISTICS OF PERMIT HOLDERS

Residency of Permit Holders

Over 97% of all Upper Cook Inlet personal use permit holders resided in Southcentral Alaska (Region II) each year from 1996-2003 (Table 5). Of those who resided in Southcentral Alaska, the majority resided in Anchorage, followed by the Kenai Peninsula, and the Matanuska-Susitna Valley. The percentage of permit holders from Anchorage has increased from 52.0% in 1996 to 59.4% in 2003.

Residents of Anchorage were a substantial majority of the participants in the Kenai River and Kasilof River personal use dip net fisheries whereas residents of the Matanuska-Susitna Valley were the predominant participants in the Fish Creek personal use fishery, and residents of the Kenai Peninsula were the predominate participants in the Kasilof River personal use gillnet fishery (Figure 3). From 1996 to 2002 Anchorage residents became an increasing percentage of the participants in the Kenai River personal use fishery and a decreasing percentage of the participants in the Fish Creek personal use fishery. During the same period residents of the Matanuska-Susitna Valley became an increasing percentage of the participants in all of the Kenai Peninsula personal use fisheries.

Seasonal Variation

Participants in the Upper Cook Inlet personal use fisheries became more efficient during the period from 1996-2003. The average percentage of the bag limit harvested by Upper Cook Inlet permit holders increased from 35.3% (SE=0.3%) in 1996 to 50.6% (SE=0.3%) in 2003 (Table 6). Consideration of returned permits from households that only participated in only one fishery allow the degree of similarity between fisheries to be examined. Permit holders who participated in either Kasilof River fishery filled a larger percent of their bag limit than participants in the Fish Creek or Kenai River fisheries (Figure 4).

Household Size

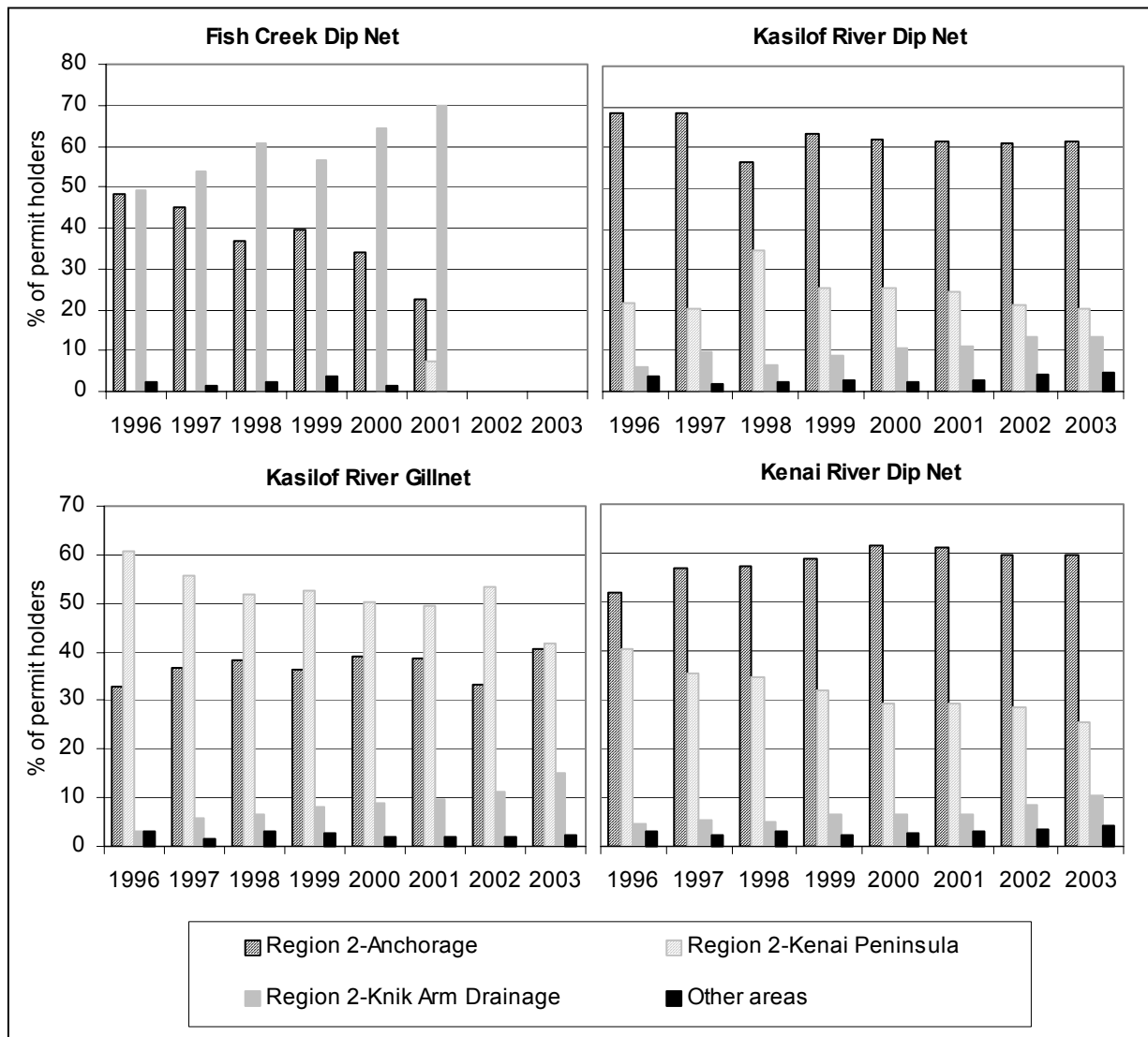
Permits were most commonly issued to two and four-person households from 1996-2003 (Table 6). While some very large households did obtain permits, households of five people or less

Table 5.—Residence areas for Upper Cook Inlet personal use salmon fishery permit holders by year, 1996-2003.

	SWHS	Year							
Area of Residence	Area ^a	1996	1997	1998	1999	2000	2001	2002	2003
<i>Regional breakdown^b</i>									
Region 1	A-H	0.2%	0.2%	0.3%	0.1%	0.2%	0.2%	0.1%	0.2%
Region 2	J-N,P-T	98.5%	98.6%	98.1%	98.3%	98.5%	98.1%	97.7%	97.4%
Region 3	I,U-Z	1.3%	1.3%	1.3%	1.5%	1.3%	1.6%	2.0%	2.3%
Out of State/Unknown residence		0.0%	0.0%	0.3%	0.1%	0.1%	0.1%	0.1%	0.1%
SUM		100%	100%	100%	100%	100%	100%	100%	100%
<i>Region 2 breakdown</i>									
Anchorage area	L	52.0%	53.9%	54.2%	55.4%	57.0%	58.6%	58.2%	59.4%
Kenai Peninsula area	P	30.4%	31.3%	32.3%	32.1%	29.2%	29.7%	29.1%	26.4%
Matanuska-Susitna Valley area	K	14.8%	12.4%	10.5%	9.5%	11.3%	8.6%	9.2%	10.1%
Other region 2 areas	J,M,N,Q-T	1.3%	1.0%	1.1%	1.3%	1.0%	1.2%	1.2%	1.6%
SUM		98.5%	98.6%	98.1%	98.3%	98.5%	98.1%	97.7%	97.4%

^a Statistical areas used in the Statewide Harvest Survey (Jennings et al. *In prep*).

^b Region 1 is Southeastern Alaska, Region 2 is Southcentral Alaska, and Region 3 is Interior Alaska.



^a Only permit holders who participated in only one fishery were considered (~93% of all permit holders).

Figure 3.—Percent of Upper Cook Inlet personal use salmon fishery permit holders from Anchorage, the Kenai Peninsula, the Matanuska-Susitna Valley and elsewhere by fishery and year^a.

Table 6.—Summary of Upper Cook Inlet personal use permit holders by year, household size, number of days fished, and number of fisheries fished, 1996-2003.

	% of permits	% of total harvest	Average % of bag limit filled	SE (% of bag limit filled)
Year				
1996	11.0%	11.1%	35.3%	0.3%
1997	11.3%	10.0%	39.2%	0.4%
1998	11.8%	11.6%	43.2%	0.4%
1999	13.0%	13.2%	44.2%	0.4%
2000	12.2%	12.0%	36.0%	0.4%
2001	12.8%	13.8%	43.7%	0.3%
2002	13.3%	13.7%	48.9%	0.3%
2003	14.5%	14.5%	50.6%	0.3%
Total	100.0%	100.0%		
Number of household members				
1	13.5%	8.7%	49.8%	0.4%
2	30.4%	26.4%	47.9%	0.2%
3	16.7%	16.1%	41.4%	0.3%
4	21.3%	23.2%	38.4%	0.2%
5	10.8%	13.6%	37.6%	0.3%
6	4.3%	6.4%	37.9%	0.5%
7+	3.0%	5.6%	37.6%	0.6%
Total	100.0%	100.0%		
Number of days				
1	55.5%	40.5%	33.1%	0.2%
2	26.5%	30.7%	49.9%	0.2%
3	11.0%	16.3%	61.2%	0.3%
4	4.4%	7.3%	67.1%	0.5%
5+	2.7%	5.2%	74.0%	0.6%
Total	100.0%	100.0%		
Number of fisheries fished ^a				
1	94.6%	92.4%	42.4%	0.1%
2	5.3%	7.4%	56.9%	0.5%
3	0.1%	0.2%	65.7%	3.1%
Total	100.0%	100.0%		

^a For all years combined

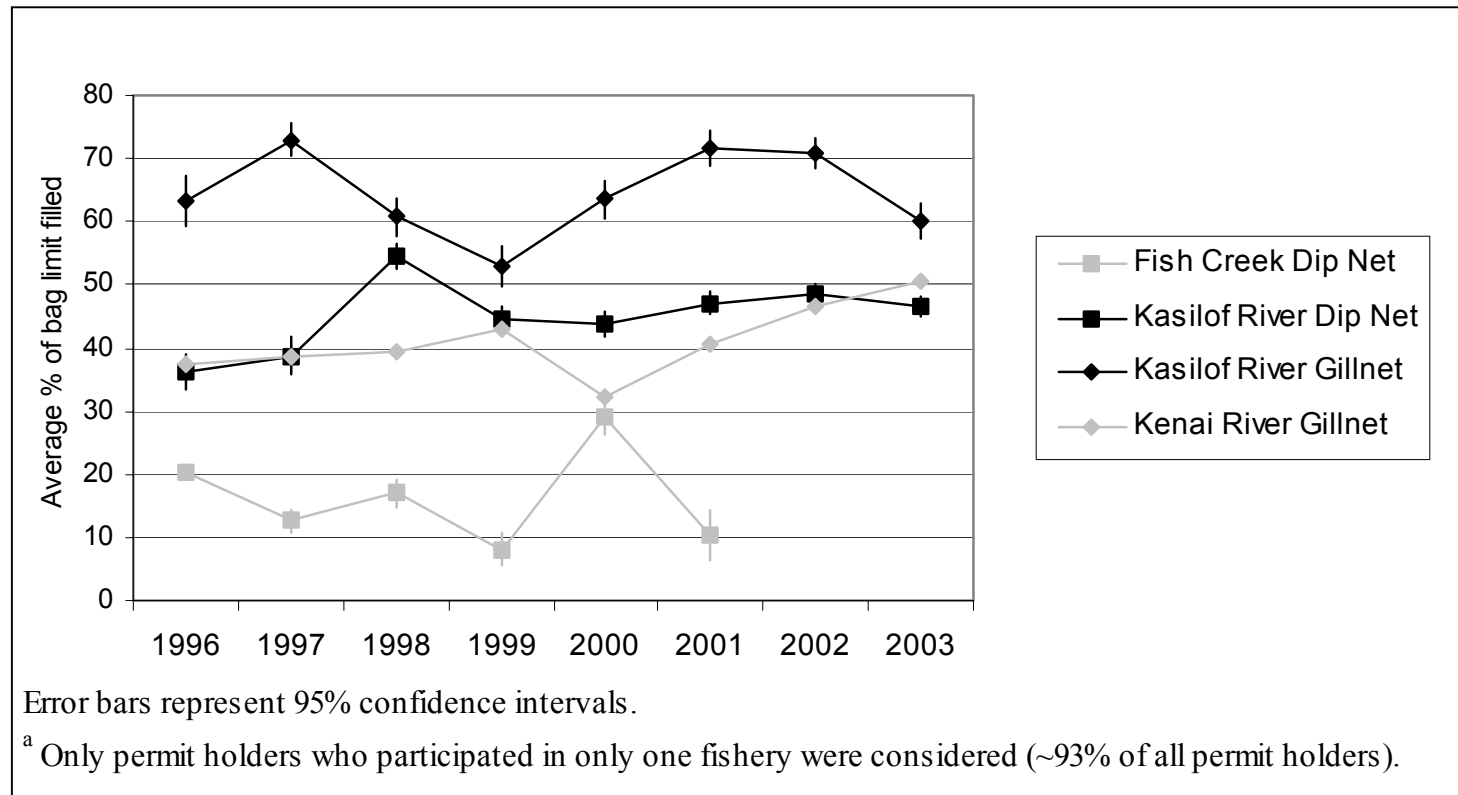


Figure 4.—Average percent of bag limit filled by fishery and year^a.

obtained 92.7% of the total permits issued from 1996-2003 (Table 6). Since the seasonal bag limit for Upper Cook Inlet personal use fisheries is based on household size, the average percent of the bag limit harvested by household size is presented in Table 6. The average percent of the bag limit harvested decreased from 49.8% (SE=0.4%) for one-person households to 37.6% (SE=0.6%) for households of seven or more from 1996-2003. These patterns persisted when each fishery (Figure 5) was analyzed separately although Fish Creek personal use households tended to consist of more large families. Households of all sizes were more successful in the Kasilof River fisheries (Figure 5). These patterns also persisted when each year was analyzed separately.

Number of Days Fished/Fisheries Visited

Many permit holders fished multiple days per season although 55.5% of permit holders fished only one day (Table 6). Those permit holders who did fish more than one day increased the average percentage of their bag limit harvested from 33.1% (SE=0.2%) for households that fished one day to 74.0% (SE=0.6%) for households that fished five or more days. These patterns persisted when each fishery was analyzed separately (Figure 6) although permit holders at Fish Creek experienced the largest benefit from fishing multiple days. These patterns also persisted when each year was analyzed separately.

Few Upper Cook Inlet personal use permit holders participated in more than one fishery from 1996 to 2003 (Table 6). Of those who participated in two fisheries over 90% fished the Kenai River along with another fishery (most often Kasilof River dip net). Of those who participated in three fisheries, combinations involving the Kenai River accounted for over 98%. Those permit holders who visited more than one fishery increased the average percentage of their bag limit filled from 42.1% (SE=0.1%) for households that visited one fishery to 65.7% (SE=3.1%) for households that visited three fisheries.

DISCUSSION

The 2003 season produced record levels of effort and harvest by Upper Cook Inlet personal use salmon fishery permit holders. These record levels were driven by record effort and harvest in the Kenai River personal use salmon fishery although both Kasilof River fisheries produced above average levels of effort and harvest in 2003. The 2002 season produced similar record or near record harvest and effort estimates.

There are several fishery related explanations for these increasing harvest and effort levels. First, Upper Cook Inlet personal use fishing increased in popularity from 1996-2003 as shown by the increased number of permits issued (Table 1). The percentage of permit holders who were issued permits but did not fish did not increase during the same period (Table 2). Second, personal use permit holders harvested an increasing percentage of their bag limit each year (Table 6).

Recent liberalizations to the Kasilof River dip net fishery did have the intended effect of increasing effort and harvest in that fishery. For example, regulatory changes extended the 2002 and 2003 Kasilof River dip net fishery season 15 days earlier and 2 days later than the 1996-2001 seasons. The lengthened season led to the largest sockeye, coho, and pink salmon harvests on record (Table 3) as well as the largest sockeye salmon exploitation rate on record (Table 4) in 2002. The 2003 season did not produce record levels in any of these areas but did produce harvest and effort estimates which were well above average.

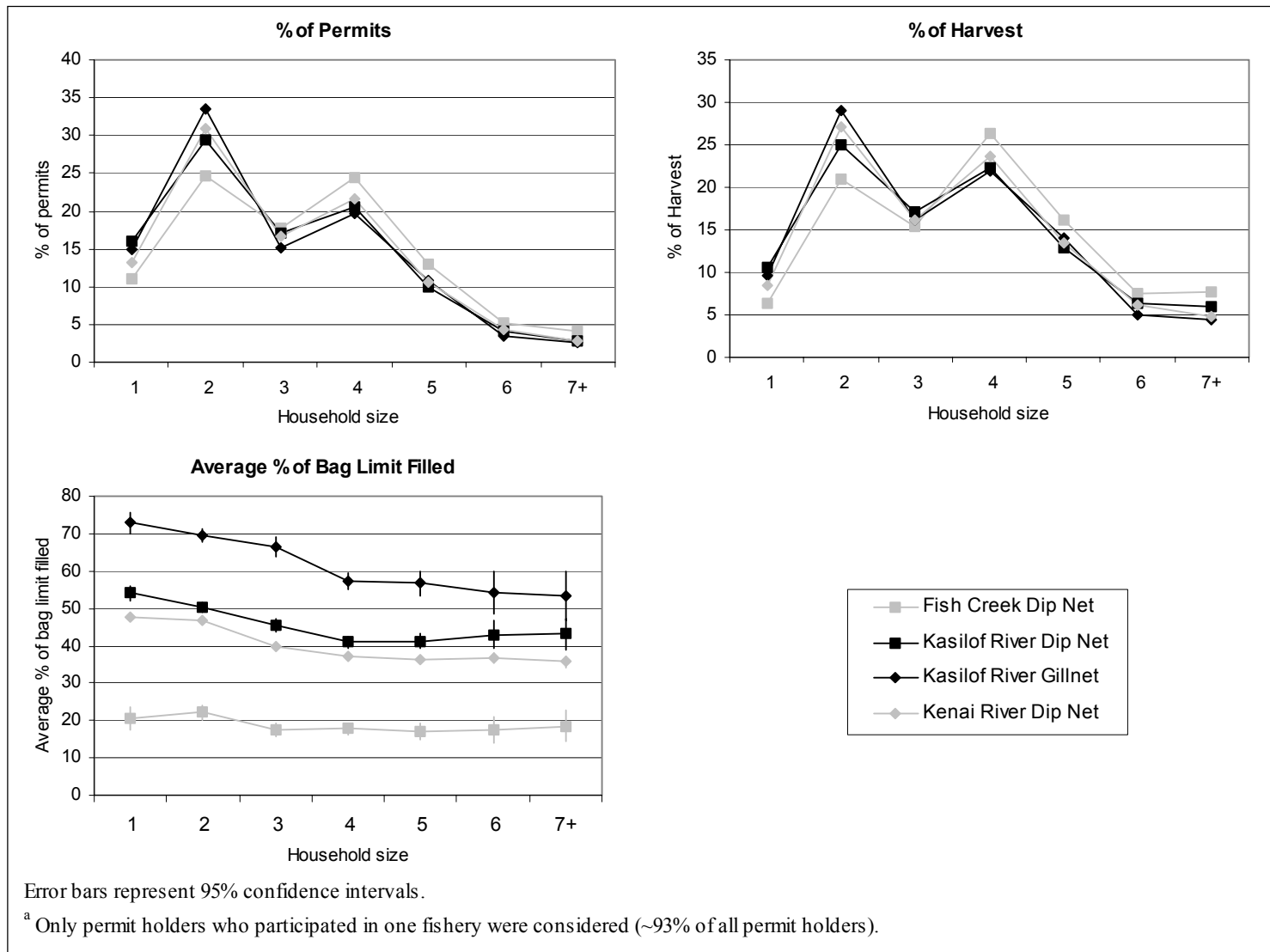


Figure 5.—Percent of permits, percent of total harvest and average percent of bag limit filled by fishery and household size^a from 1996-2003.

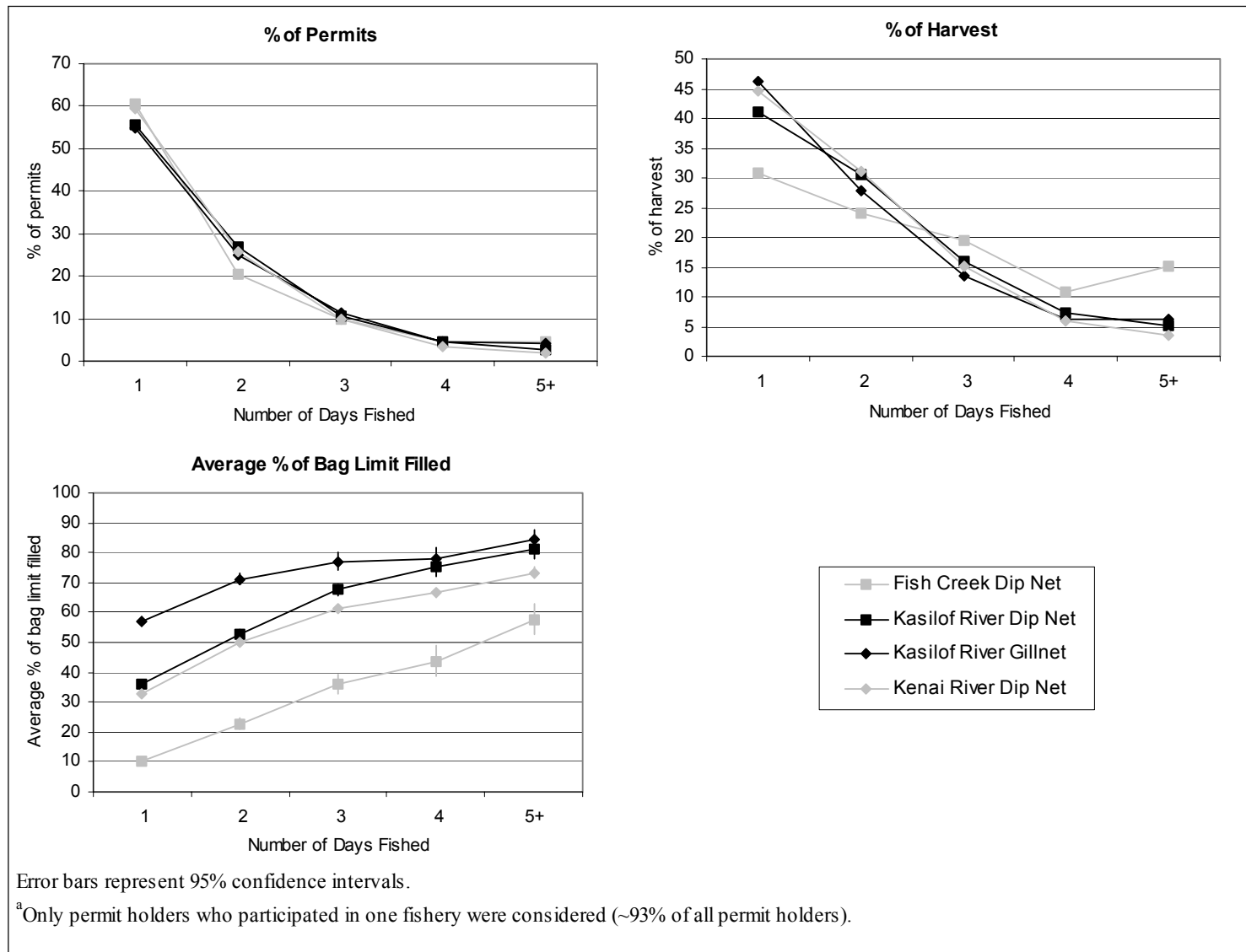


Figure 6.—Percent of permits, percent of total harvest and average percent of bag limit filled by fishery and number of days fished from 1996-2003^a.

Conversely, recent regulatory restrictions to the Kenai River personal use dip net fishery did not have the intended effect of reducing effort, harvest and exploitation rates in the fishery. Beginning in 2002, personal use dipnetting was restricted to 17 hours per day (0600 to 2300).

This regulatory change had no effect on harvest, participation, or exploitation rate. In fact, effort and sockeye salmon harvest were the highest recorded in 2002 (Table 3). In 2003, record effort and sockeye salmon harvest levels were achieved again although the fishery was liberalized to allow personal use fishing 24 hours per day starting July 19th.

Analysis of Upper Cook Inlet personal use fisheries indicates that the bag limit exceeds most permit holders' actual harvest. In addition, the current bag limit increases at a faster rate than larger households increase their harvest. Households with the time and/or inclination to make more than one trip or visit more than one fishery successfully filled a larger percentage of their seasonal bag limit, although the majority of households chose not to do so.

REGULATORY COMPLIANCE

Public perception with regard to the Upper Cook Inlet personal use fisheries is that regulatory violations are rampant (Barrett 2001a, 2001b). Careful analysis of the returned permits from 1996-2003 seems to support this perception; actual violations are reported on permits with disturbing frequency. For example, Chinook salmon harvest has been reported in fisheries where regulations allow no retention of Chinook. Also, a small number of permit holders who participated in every fishery during nearly every year reported harvesting over 100% of their seasonal bag limit. In addition, a few permit holders gave out-of-state addresses on the vendor copy of their permit.

While the aforementioned regulatory violations display a disturbing lack of understanding of personal use fishing regulations, accurate reporting is essential to the accuracy of the estimates contained herein, and regulatory violations of this nature are enforced during the fishery by Alaska Bureau of Wildlife Enforcement (ABWE) officers. A more malignant problem would be if large numbers of fishermen were not obtaining permits or failing to return obtained permits. Local ABWE officers indicate that they very rarely encounter personal use fishermen who do not have a permit. Unfortunately, the numbers of permit holders who failed to return their Upper Cook Inlet personal use fishing permit has steadily increased since the program's inception in 1996 (Table 1). Failure to return an Upper Cook Inlet personal use fishing permit is a regulatory violation that could interfere with our ability to meet project objectives. Currently, there is no enforcement effort made on unreturned permits.

ACKNOWLEDGEMENTS

Thanks are due to all individuals involved with the success of this project. ADF&G staff who have worked as principal investigators include Sandy Sonnichsen, Dora Sigurdsson and Kirk Brogdon. In addition, ADF&G staff were charged with the sizeable task of entering the data from approximately 15,000 permits per year. Margie Nussbaum, Diane Novinska, and Sherylene Agcaoili have helped in this regard. Joanne MacClellan was instrumental in making personal contact with vendors when training was necessary. Finally, Pat Hansen has served as the project biometrician. In addition to ADF&G staff there are over 60 vendors who are responsible for the distribution of Upper Cook Inlet Personal Use Permits. Their help is invaluable and they deserve many thanks.

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**APPENDIX A. EXAMPLE OF A 2002 UPPER COOK INLET
PERSONAL USE PERMIT**

Vendor Copy

Permit Number: 02-

2002 Upper Cook Inlet Personal Use Salmon Fishery

Last Name	First Name	Middle Initial
Mailing Address		
City	State	Zip Code
Phone Number: (907)		
Total Number of Household members:	Total Allowable Harvest:	You are allowed 25 fish for the head-of-household, and 10 fish for each additional household member. This is your limit for the entire 2002 season. Example: a family of 4 is allowed 25+10+10+10=55 fish.
2002 Alaska Resident Fishing License Number:		Drivers License Number:
Signature of permittee (permit holder)		Date
Vendor Signature		Vendor Number:

Permit Number: 02-

2002 Upper Cook Inlet Personal Use Salmon Fishery Permit

Last Name	First Name	Middle Initial
Names of Other Household Members		
Total Number of Household members:	Total Allowable Harvest:	You are allowed 25 fish for the head-of-household, and 10 fish for each additional household member. This is your limit for the entire 2002 season. Example: a family of 4 is allowed 25+10+10+10=55 fish.
<i>This permit is for dipnetting at the mouth of the Kaslof and Kenai rivers and Fish Creek (near Wasilla) and for gillnetting near the mouth of the Kaslof River in 2002. You must have this permit with you while you are fishing, and you must record your harvest before you leave the stream. Check the Sport Fishing Regulation Summary for Cook Inlet for legal times, gear, and harvests.</i>		
Check this box if no one in your household fished <input type="checkbox"/>		
<i>Report all days fished and all fish harvested. Record every day you fish, even those days when you didn't catch anything.</i>		
DATE	FISHERY* (see below)	RED CHUM KING COHO PINK

*FISHERIES ARE: KENAI RIVER DIP NET, KASLOF RIVER DIP NET, FISH CREEK DIP NET, KASLOF RIVER GILL NET

Return this permit to Fish and Game by August 15 2002. You must return your permit even if you did not fish.

Instructions for Vendors

These permits are free, but are for Alaska residents only. To get a permit the person must have a current Alaska resident sport fishing license. Persons who are exempt from licensing (over age 60, under age 16) must have other identification.

These are household permits. Only one permit is issued per household. Each person who fishes must have a current Alaska resident fishing license (unless exempt).

Be sure all the identifying information is complete on the top and bottom of the form. Don't let people walk out with blank permits!

To Issue a Permit

Ask to see the applicant's 2002 Alaska resident sport fishing license. Write the license number in the space provided on the top of the form.

Have the applicant fill out his/her name, address, and driver's license number on the top and bottom of the form, including names of other household members.

Figure out the household's total allowable harvest. They are allowed 25 fish for the head-of-household and 10 fish for each additional household member. Write it in the space provided on the bottom half of the form. Sign and date the top and write in your vendor number.

Tear the permit along the perforation. You keep the top, the applicant gets the bottom.

Return your top copies each month to Fish and Game in the envelopes provided. After the last fishery closes in early August, return all unissued copies and all the vendor copies to Fish and Game. These must be returned by Sept. 15, 2002.

Address for return of your vendor copies and unissued permits:

State of Alaska, Department of Fish & Game,
Personal Use Salmon Permits,
333 Raspberry Rd,
Anchorage, AK 99518-1599.

Questions? Call the Sport Fishing Information Center at 267-2218.



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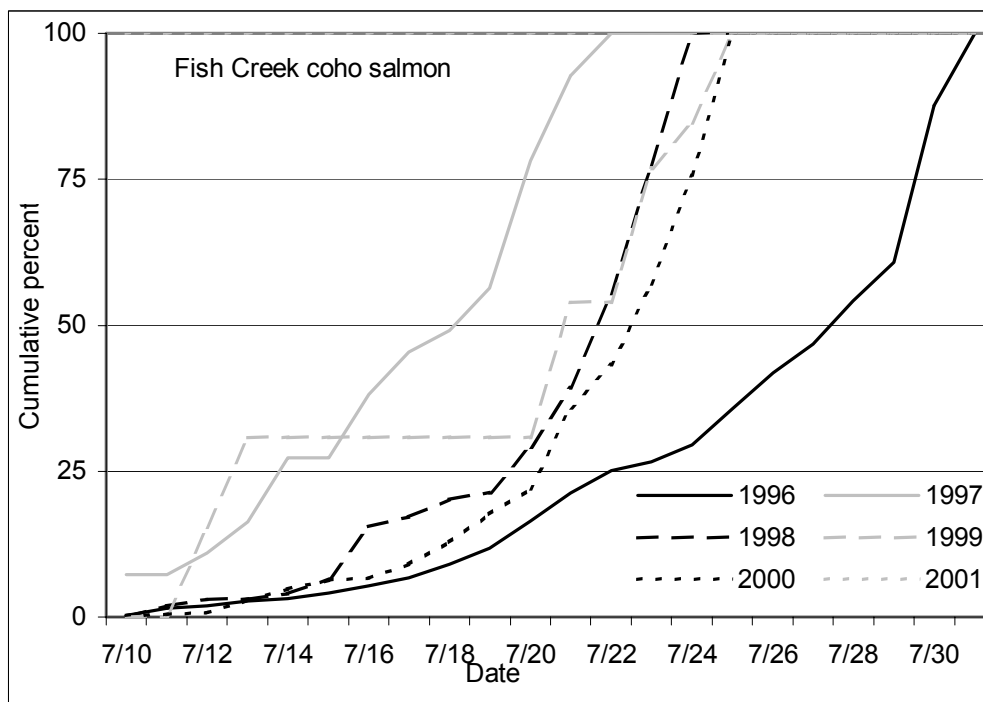
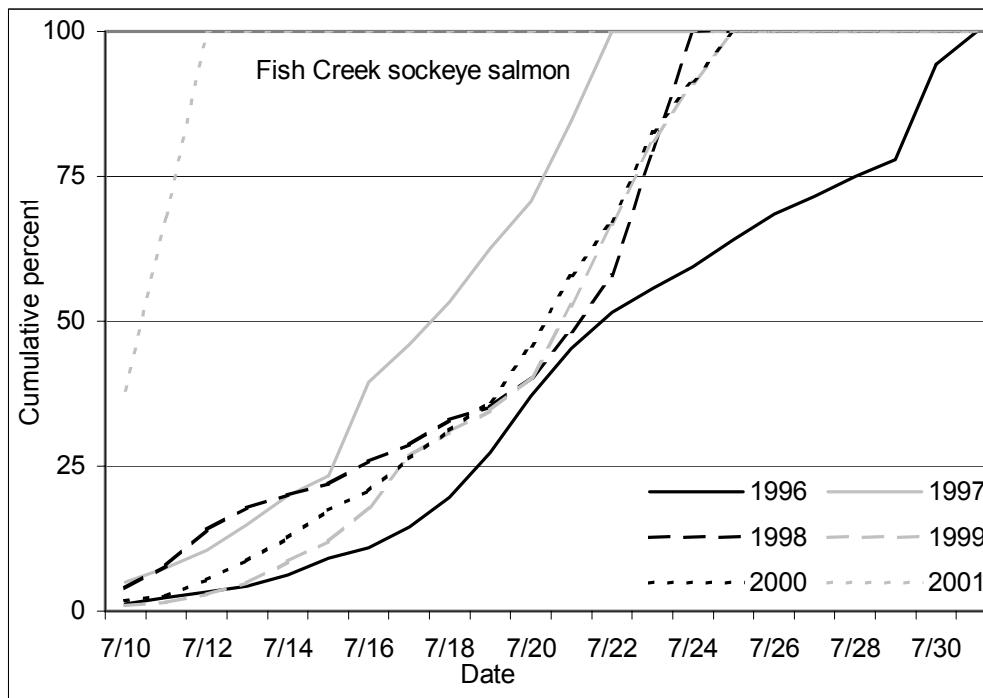


STATE OF ALASKA
DEPARTMENT OF FISH & GAME
PERSONAL USE SALMON PERMITS
333 RASPBERRY ROAD
ANCHORAGE AK 99518-1599



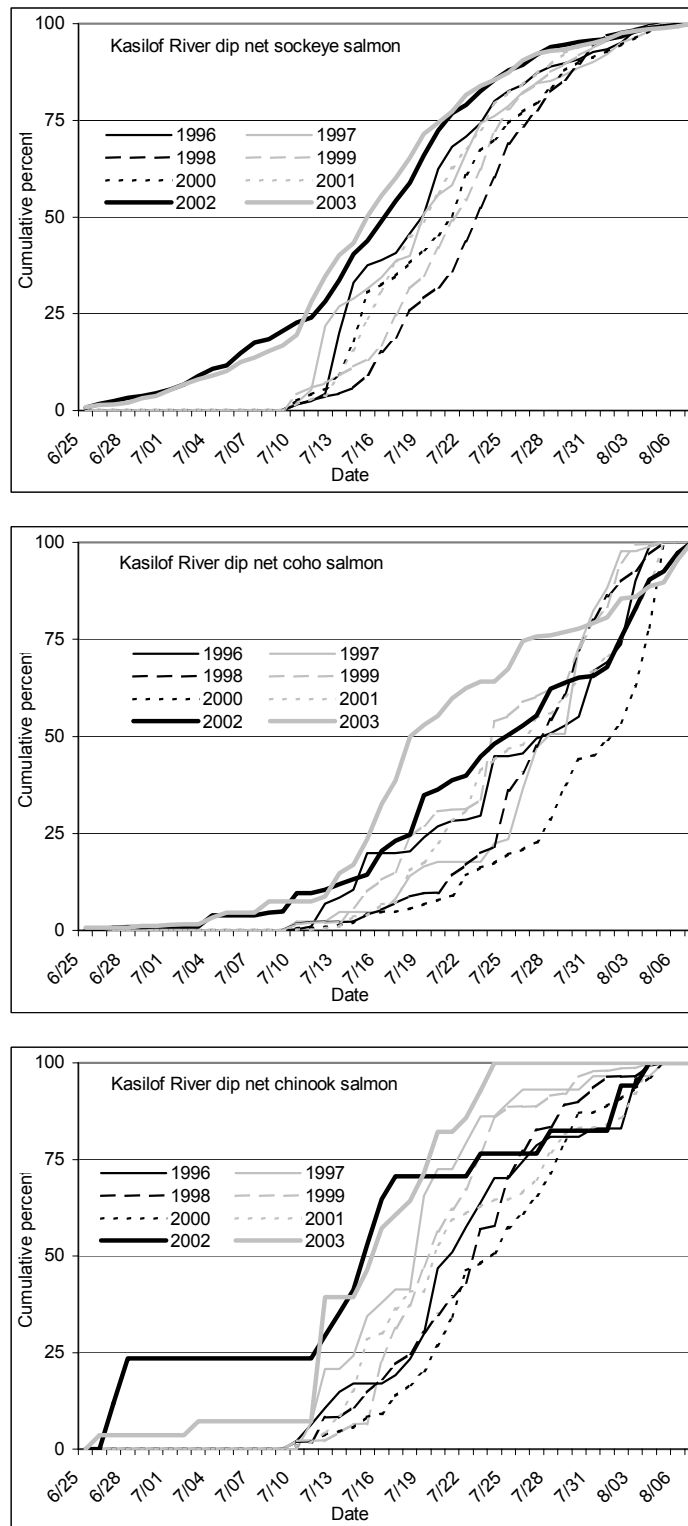
**APPENDIX B. CUMULATIVE HARVEST TIMING FOR UPPER
COOK INLET PERSONAL USE FISHERIES, 1996-2003**

Appendix B1.-Cumulative harvest timing for the Fish Creek personal use dip net fishery 1996-2001.



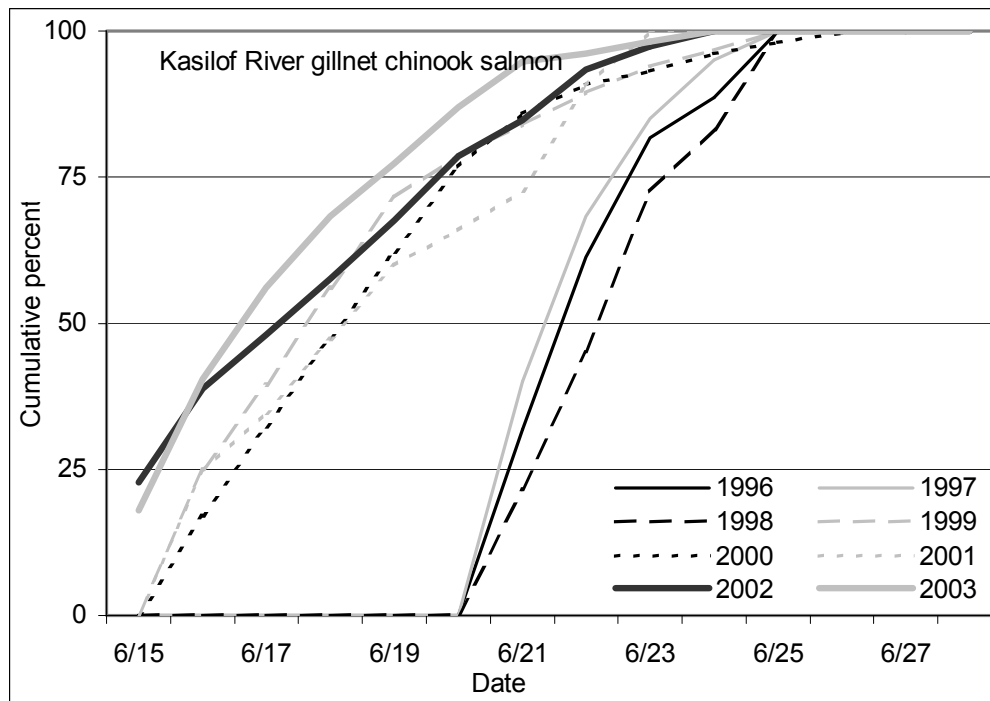
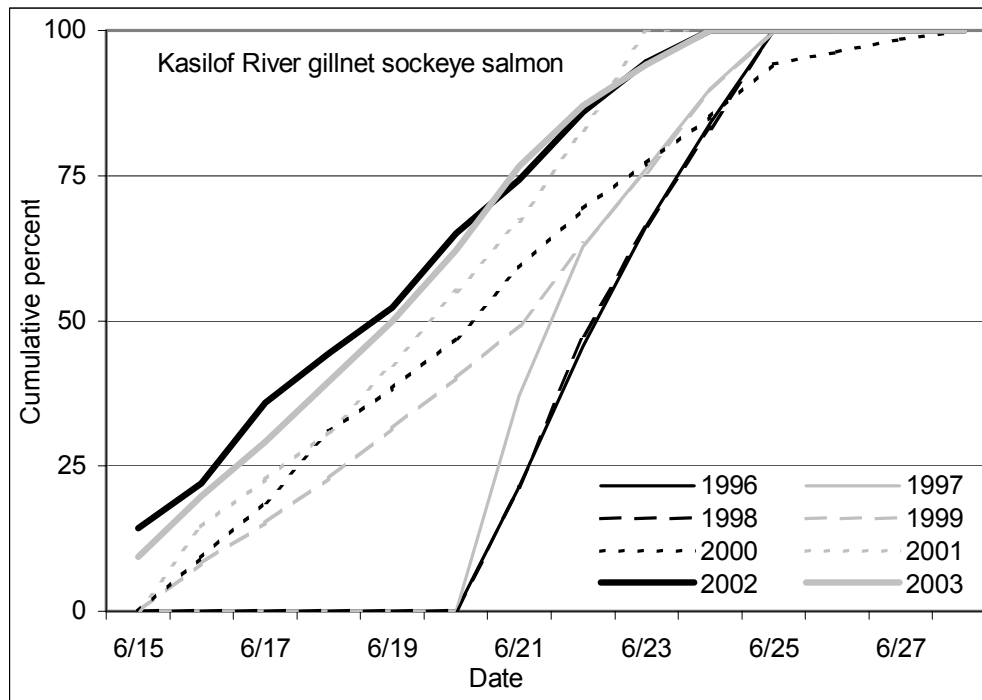
^a Total harvests by species and year are shown in Table 3.

Appendix B2.-Cumulative harvest timing for the Kasilof personal use dip net fishery 1996-2003.



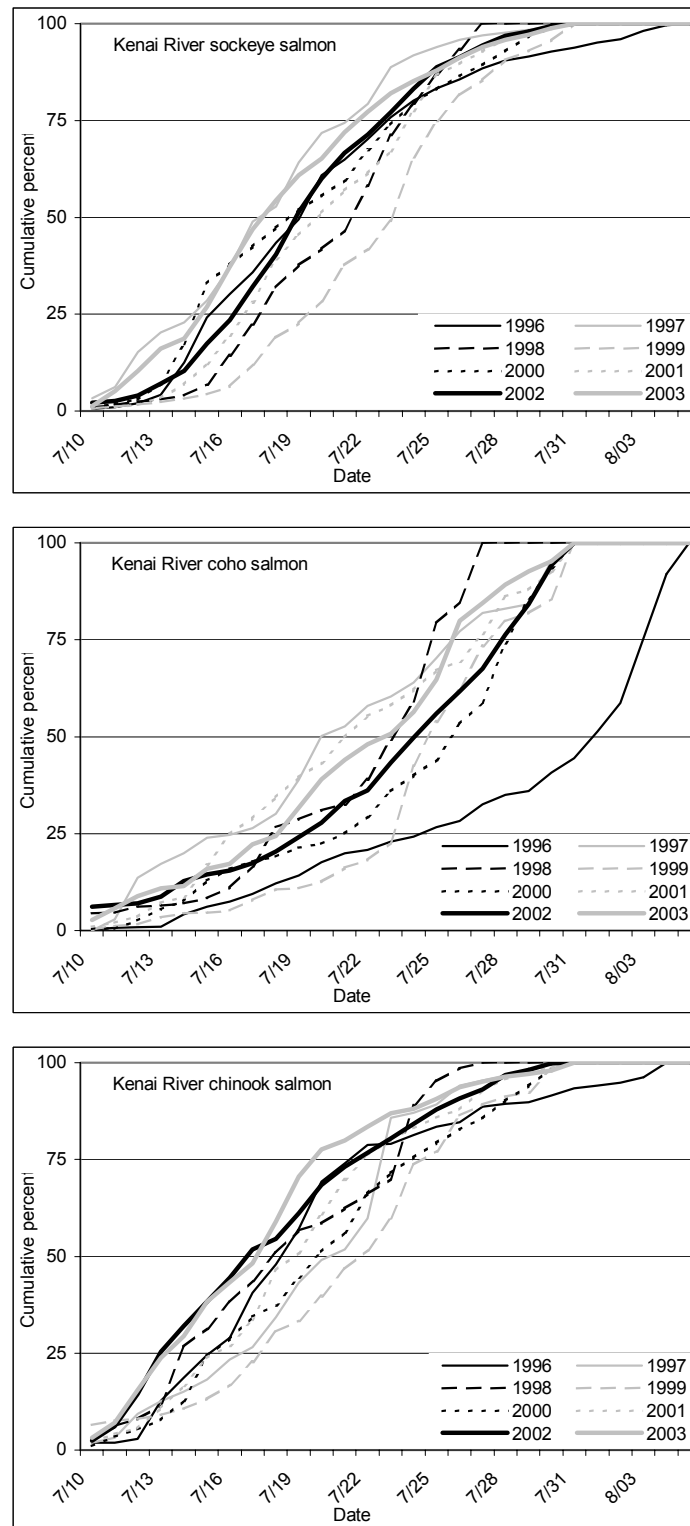
^a Total harvests by species and year are shown in Table 3.

Appendix B3.—Cumulative harvest timing for the Kasilof River personal use gillnet fishery 1996-2003.



^a Total harvests by species and year are shown in Table 3.

Appendix B4.—Cumulative harvest timing for the Kenai River personal use dip net fishery 1996-2003.



^a Total harvests by species and year are shown in Table 3.