Fishery Data Series No. 09-38

Chinook Salmon Creel Survey and Inriver Gillnetting Study, Lower Kenai River, Alaska, 2006

by

Anthony Eskelin

July 2009

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

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 (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mid eye to fork	MEF
mid eye to tail fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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CHINOOK SALMON CREEL SURVEY AND INRIVER GILLNETTING STUDY, LOWER KENAI RIVER, ALASKA, 2006

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ABSTRACT

A creel survey was conducted on the Kenai River to estimate angler effort, catch and harvest of Chinook salmon *Oncorhynchus tshawytscha* in the sport fishery between the Soldotna Bridge and the Warren Ames Bridge from 16 May 2006 through 31 July 2006. For the early run, (16 May through 30 June) effort was 72,771 (SE = 4,256) angler-hours and harvest was 3,397 (SE = 412) Chinook salmon. Unguided anglers accounted for 38% of the effort and 25% of the harvest versus guided anglers who accounted for 62% of the effort and 75% of the harvest. The early-run harvest was composed of 1.1% (SE = 0.8%) age-1.1 fish, 15.5% (SE = 2.8%) age-1.2 fish, 38.5% (SE = 3.7%) age-1.3 fish, and 44.8% (SE = 3.8%) age-1.4 fish. There were no age-1.5 fish sampled in the early-run creel survey. Early-run Chinook passage at the sonar site was composed of 1.2% (SE = 0.7%) age-1.1 fish, 31.6% (SE = 2.8%) age-1.2 fish, 21.2% (SE = 2.5%) age-1.3 fish, 42.6% (SE = 3.0%) age-1.4 fish and 3.5% (SE = 1.1%) age-1.5 fish. For the late run, (1-31 July) effort was 257,700 (SE = 11,896) angler-hours and harvest was 13,190 (SE = 905) Chinook salmon. Unguided anglers accounted for 55% of effort and 45% of harvest versus guided anglers who accounted for 45% of effort and 55% of harvest. The late-run sport harvest was composed of 0.3 (SE = 0.3%) age-1.1 fish, 11.5% (SE = 1.8%) age-1.2 fish, 21.4% (SE = 2.3%) age-1.3 fish, 60.2% (SE = 2.7%) age-1.4 fish and 6.5% (SE = 1.4%) age-1.5 fish, whereas the late-run (1 July through 10 August) Chinook passage at the sonar site was composed of 1.3% (SE = 0.5%) age-1.1 fish, 27.5% (SE = 1.7%) age-1.2 fish, 14.6% (SE = 1.4%) age-1.3 fish, 49.6% (SE = 1.8%) age-1.4 fish and 7.0% (SE = 0.9%) age-1.5 fish.

A standardized inriver gillnetting program was conducted near the Chinook salmon sonar site. The gillnetting program ran from 16 May 2006 through 13 August 2006. During the early run 308 Chinook salmon, 1,421 sockeye salmon *O. nerka* and 8 Dolly Varden *Salvelinus malma* were captured. During the late run 1,372 Chinook salmon, 586 sockeye salmon, 79 coho salmon *O. kisutch*, 326 pink salmon *O. gorbuscha* and 5 Dolly Varden were captured. The ratio of Chinook salmon CPUE to all species CPUE averaged 0.25 in the early run and 0.63 in the late run.

Key words: Kenai River, *Oncorhynchus tshawytscha,* Chinook salmon, creel survey, effort, harvest, gillnet, CPUE, age composition.

INTRODUCTION

The Kenai River (Figure 1) supports the largest freshwater sport fishery in Alaska. Anglers fish for Chinook salmon *Oncorhynchus tshawytscha,* coho salmon *O. kisutch*, sockeye salmon *O. nerka*, pink salmon *O. gorbuscha*, Dolly Varden *Salvelinus malma*, and rainbow trout *O. mykiss*. The Kenai River Chinook salmon fishery between the Soldotna Bridge and Warren Ames Bridge is the subject of this report.

Chinook salmon returning to the Kenai River exhibit two distinct run timing patterns: "early" from late April through late June, and "late" from late June through early August. For management purposes the early run is all Chinook salmon entering the river before 1 July and the late run is all fish entering on or after 1 July. Sport anglers value fish from both runs because of their large size; especially late-run fish which average approximately 18 kg (40 lb) and can exceed 36 kg (80 lb). The world record sport-caught Chinook salmon (44.1 kg) (97 lb, 4 oz) was harvested from the Kenai River in May 1985.

Before 1970, participation in the sport fishery in the Kenai River was primarily by shorebased anglers targeting sockeye salmon in July and coho salmon in August and September. The Alaska Department of Fish and Game (Department) implemented a creel survey in 1974 in response to an increase in boat anglers targeting Chinook salmon. Angler effort and harvest increased through 1988, then declined during the early 1990s because of low Chinook salmon returns and restrictions to the fishery (Figures 2 and 3). Angler effort and harvest during the early-run fishery has remained below 1988 levels. In the late-run fishery, effort has been relatively stable, whereas harvest has remained near historic highs the past 7 years (Figure 3). Since 1981, separate effort and harvest estimates have been calculated for guided and unguided anglers (Figures 2 and 3).

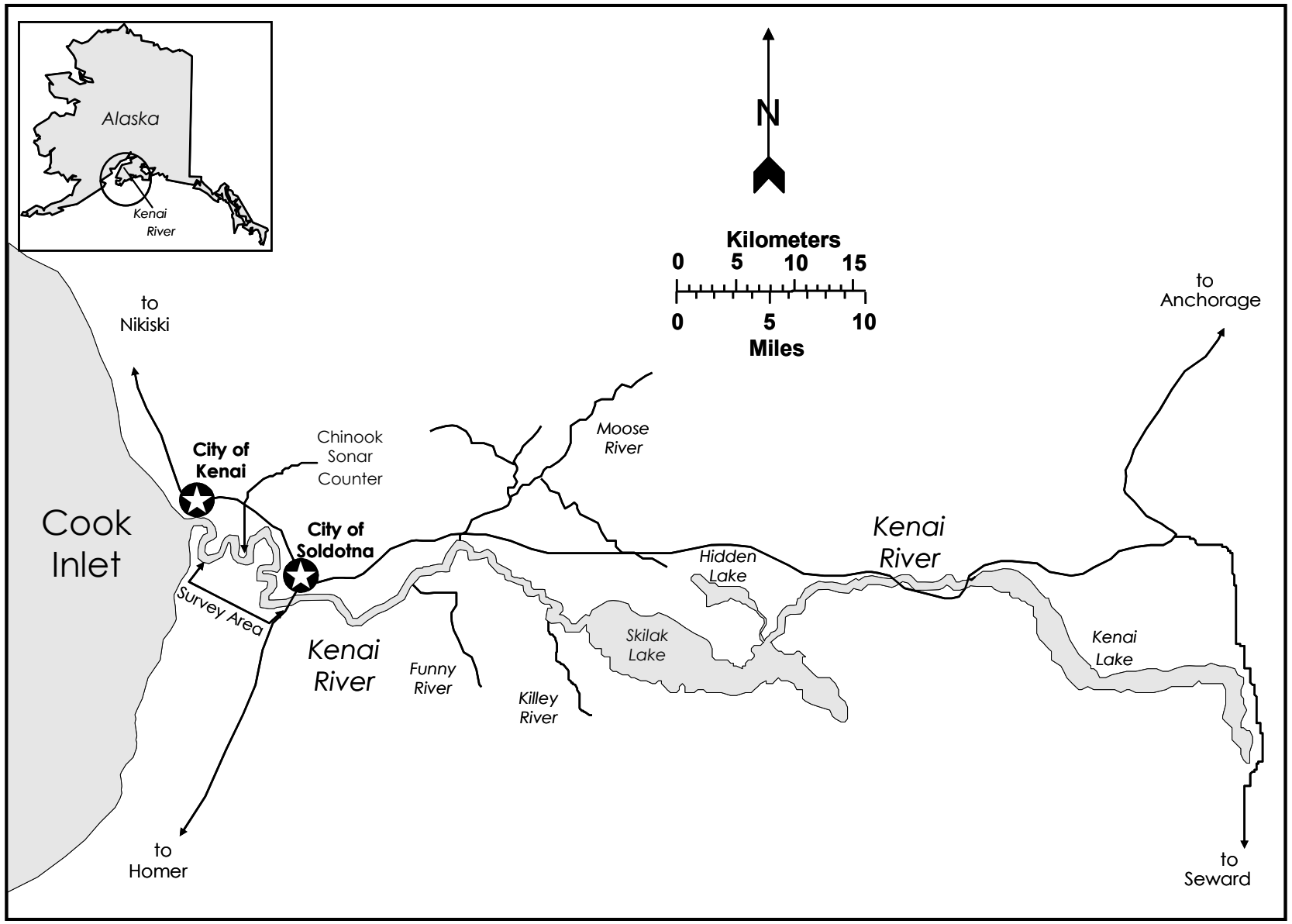
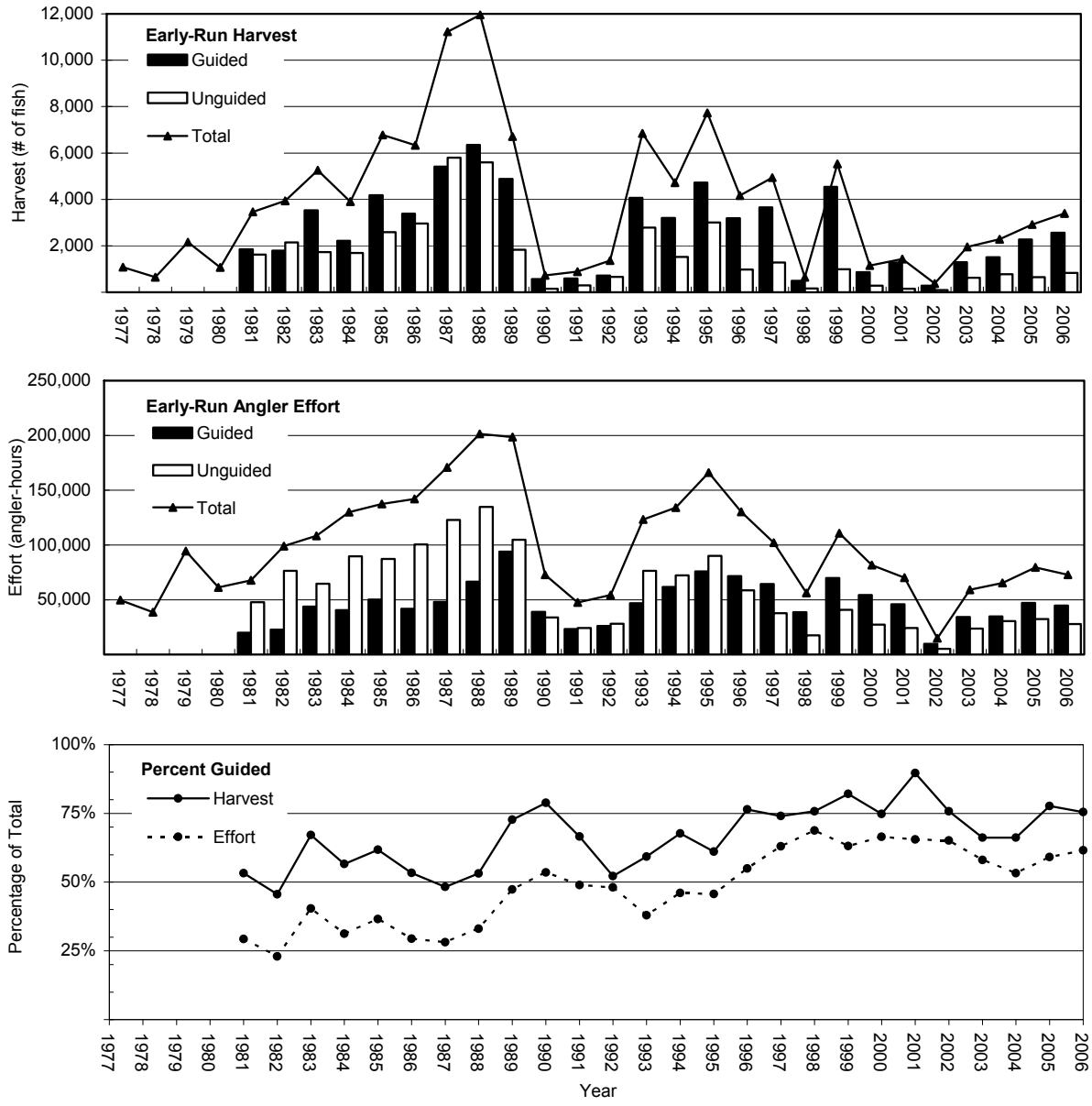
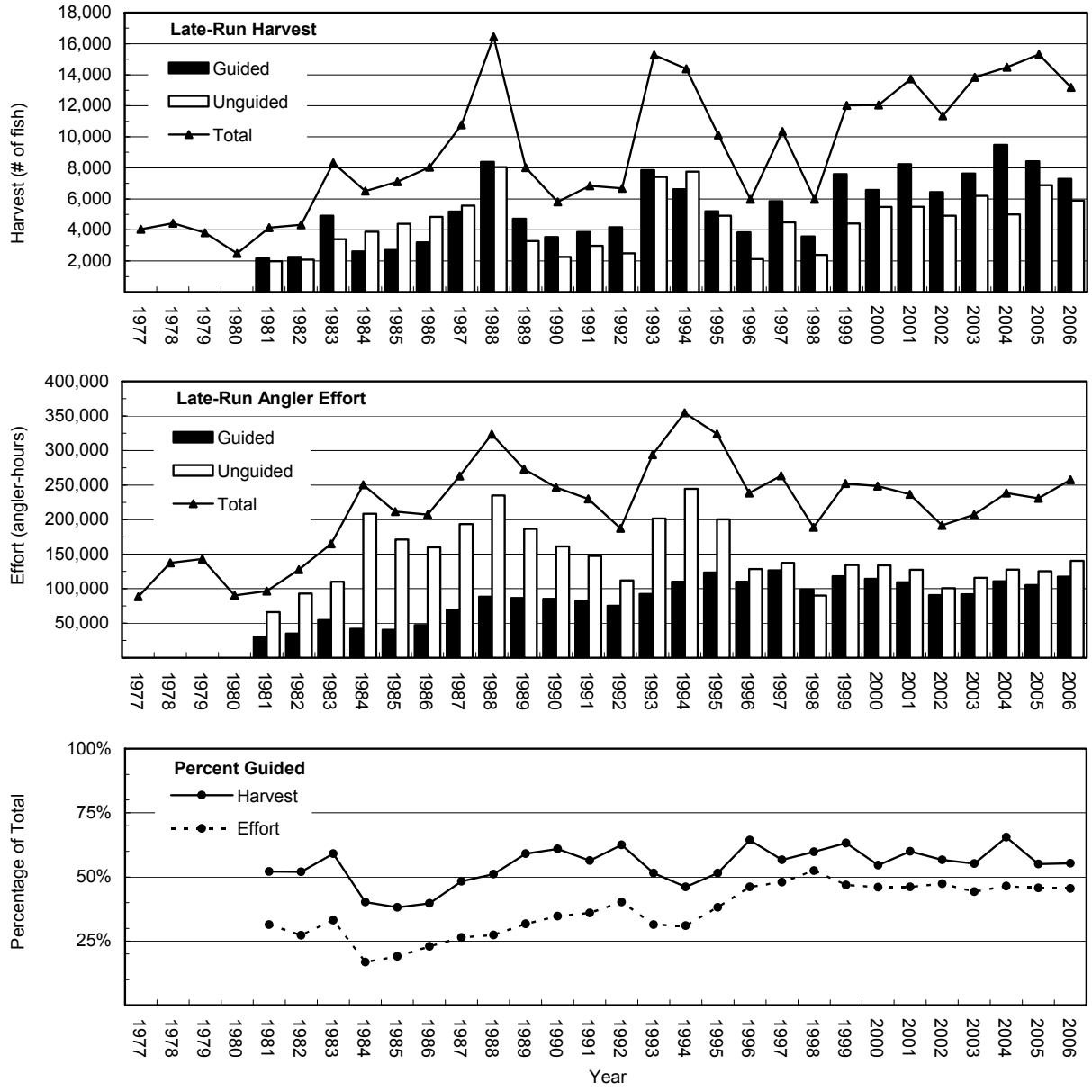


Figure 1.-The Kenai River drainage.



Note: Prior to 1981, there was no distinction between guided and unguided anglers.

Figure 2.-Harvest and angler effort for the early-run Kenai River Chinook salmon fishery between the Soldotna Bridge and the Warren Ames Bridge, 1977-2006.



Note: Prior to 1981, there was no distinction between guided and unguided anglers.

Figure 3.-Harvest and angler effort for the late-run Kenai River Chinook salmon fishery between the Soldotna Bridge and the Warren Ames Bridge, 1977-2006.

MANAGEMENT PLANS

The early and late Kenai River Chinook salmon runs have separate management plans adopted by the Alaska Board of Fisheries (BOF). Management within these plans utilizes estimates of inriver return and harvest. Estimates of inriver return are obtained with sonar (Miller et al. 2004) while estimates of harvest are obtained from creel surveys. Previous Kenai River Chinook salmon creel surveys are published in Conrad and Hammarstrom (1987); Eskelin (2007); Hammarstrom (1975-1981, 1988-1994); Hammarstrom et al. (1985); Hammarstrom and Larson (1982-1984, 1986); King (1995-1997); Marsh (1999, 2000); Reimer (2003, 2004a, b); and Reimer et al. (2002).

In March 2003, the BOF introduced a slot limit into the Kenai River and Kasilof River Early-Run King Salmon Conservation Management Plan that prohibits harvest of Chinook salmon between 44 and 54.99 inches TL until 1 July downstream of the Soldotna Bridge and until 15 July upstream of the Soldotna Bridge (Figure 4). This change was implemented to protect early-run Chinook salmon that spend 5 years in salt water. In January 2005, the BOF modified the Kenai River and Kasilof River Early-Run King Salmon Conservation Management Plan (5 AAC 56.070 updated through register 174, Figure 4) and adopted an optimum escapement goal (OEG) range of 5,300 to 9,000 early-run Chinook salmon. If the spawning escapement is projected to exceed 9,000 fish, the fishery will be liberalized to allow bait. If the spawning escapement is projected to be less than 5,300 fish, the Department will restrict the fishery by prohibiting the harvest of Chinook salmon less than 55 inches TL or by closing the fishery.

Management of the late-run Chinook salmon sport fishery is more complicated because Chinook salmon are harvested by the commercial sockeye salmon setnet fishery along the east shore of Cook Inlet before they enter the sport fishery. The inriver late-run Chinook salmon sport fishery is managed under the Kenai River Late-Run King Salmon Management Plan (5 AAC 21.359 updated through register 174, Figure 4), which mandates the sport fishery be managed to achieve a spawning escapement of 17,800 to 35,700 late-run Chinook salmon.

FISHING REGULATIONS

Regulations for the Chinook salmon sport fishery in the Kenai River are among the most restrictive of any water open to Chinook salmon fishing in Alaska. Although fish do not enter the river in appreciable numbers until mid-May, the Chinook salmon season is open 1 January through 31 July. The area open to Chinook salmon fishing extends from the outlet of Skilak Lake to Cook Inlet, with the exception of the confluence areas of Slikok Creek (river mile [rm] 18.9), Funny River (rm 30.4), Moose River (rm 36.4) and the Lower Killey River (rm 44.0) (Figures 1 and 5). The Slikok Creek and Funny River confluence areas are closed from 1 January to 14 July, the Lower Killey River confluence area is closed from 25 June to 14 July, and the Moose River closure is in effect for the entire Chinook salmon fishing season. In addition, the area between Centennial Campground (rm 20.3) and the Soldotna Bridge (rm 21.1) (Figure 5), and the area around Morgan's Hole (approximately rm 31) are closed to fishing from boats for the entire Chinook salmon fishing season.

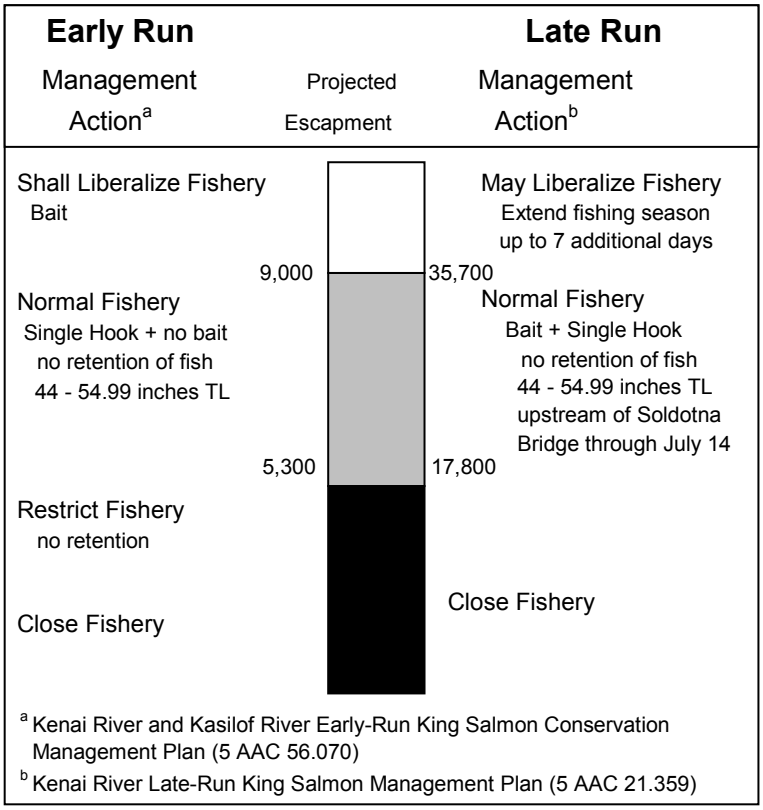


Figure 4.-Escapement levels and sport management actions for the Kenai River Chinook salmon fisheries.

The daily bag and possession limit is one Chinook salmon per day 20 inches TL or longer; the annual limit is two Chinook salmon 20 inches TL or longer. Fish that are between 44 and 54.99 inches TL may not be retained before 1 July downstream of the Soldotna Bridge or before 15 July upstream of the Soldotna Bridge. A person who retains a Chinook salmon 20 inches TL or longer is prohibited from fishing from a boat in the Kenai River downstream of Skilak Lake for the remainder of that day. The use of multiple hooks and treble hooks is prohibited in the early- and late-run fisheries. During the early-run fishery use of bait is not allowed, while bait is allowed during the late-run fishery. On Sundays and Mondays, only unguided fishing is allowed and on Mondays, unguided boat anglers may only fish from non-motorized vessels (those that do not have a motor onboard) downstream of the outlet of Skilak Lake. In addition, all Kenai River Chinook salmon greater than 55 inches TL must be sealed within 3 days of harvest at the Soldotna ADF&G office.

There are further restrictions for fishing guides and guided anglers. Guided anglers are only allowed to fish from 0600 to 1800 hours. Guides are also prohibited from personally fishing while conducting clients and are prohibited from conducting clients on Sundays and Mondays, with the exception of Memorial Day and the last two Sundays in May (for charitable purposes).

The early-run fishery in 2006 was liberalized by emergency order to allow the use of bait beginning 10 June from the mouth of the Kenai River upstream to 100 yards below the confluence of the Moose River. This management action was taken because the spawning escapement was projected to exceed 9,000 Chinook salmon. No inseason actions were taken during the late run in 2006.

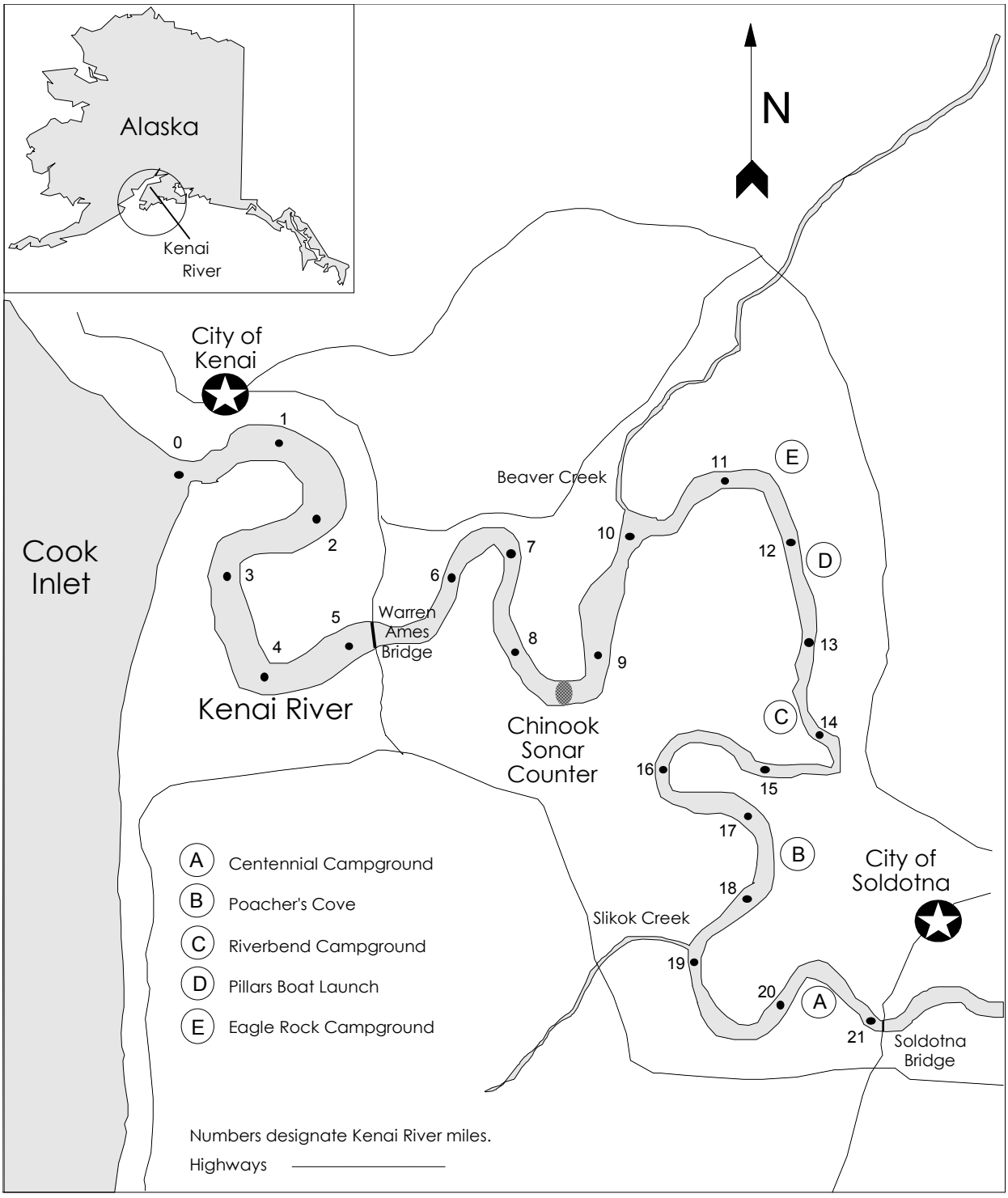


Figure 5.-The Kenai River creel survey study area.

OBJECTIVES

Objectives for the 2006 study were to estimate:

1. Catch and harvest of Chinook salmon[1] by the sport fishery in the Kenai River downstream of the Soldotna Bridge from 16 May through 30 June (early run) and from 1 July through 31 July (late run). Desired relative precision of the estimates for each run is within 20%, or 1,000 fish, of the true values 95% of the time.
2. The proportion by age of the Chinook salmon population passing the Chinook salmon sonar site (rm 8.5) from 16 May through 10 August such that all age-percentage estimates, for each run, are within 0.10 of the true values 95% of the time.
3. The proportion by age of Chinook salmon harvested by the sport fishery in the mainstem Kenai River downstream from the Soldotna Bridge such that all age-percentage estimates, for each run, are within 0.20 of the true values 80% of the time.

In addition to the objectives outlined above, the project was responsible for completing the following tasks:

1. Estimate total sport angler effort, by run, in angler-hours. Precision of the effort estimates are driven by that of the catch/harvest estimates (Objective 1).
2. Estimate daily CPUE of Chinook salmon captured in inriver gillnets at rm 8.5. Precision of the CPUE estimates are driven by that of the Chinook proportion estimates (Objective 2).
3. Examine Chinook salmon sampled from the sport harvest and the inriver gillnets for presence of the adipose fin.
4. Collect tissue samples from Kenai River Chinook salmon sampled from inriver gillnets and the sport harvest for future genetic analysis.

METHODS

CREEL SURVEY

A stratified, two-stage roving-access creel survey (Bernard et al. 1998a, b) was employed to estimate angler effort, catch, and harvest of Chinook salmon from the Warren Ames Bridge (rm 5.2) to the Soldotna Bridge (rm 21.1) (Figure 5). The creel survey was conducted from 16 May through 31 July 2006. First-stage sampling units were days. The unguided angler-day was assumed to be 20 hours long (0400 to 2400 hours) while the guided angler-day was 12 hours long (0600 to 1800 hours) by regulation. Daily catch and harvest were estimated as the product of effort (angler-hours) and CPUE or HPUE. Second-stage sampling units were periodic angler counts for estimating angler effort and angler trips for estimating CPUE and HPUE. Angler trips were sampled by conducting completed-trip angler interviews.

Stratified sampling accounted for the geographical, temporal and regulatory factors affecting the fishery. Since substantial harvest downstream of the sonar site would affect inriver return and escapement estimates, angler counts were geographically stratified into two areas: (1) between the Soldotna Bridge and the Chinook salmon sonar site, and (2) between the Chinook salmon

[1] Harvest is the number of fish caught and retained while catch is the total number of fish caught (including those intentionally released).

sonar site and the Warren Ames Bridge. Angler interviews did not include this level of stratification because past attempts to estimate catch and harvest downstream of the sonar site using geographically stratified angler interviews were ineffective (Marsh 2000). Thus, catch and harvest downstream of the sonar site are based on estimated effort downstream of the sonar site while assuming CPUE and HPUE are constant throughout the study area.

The creel survey was temporally stratified by week and day type (weekday and weekends/holidays) because harvest and catch rates can differ by time (King 1995-1997). Similarly, angler counts and angler interviews were post-stratified by angler type because catch rates between guided and unguided anglers can differ (Reimer 2004b).

Based upon these findings the following strata were used for conducting angler counts and estimating creel statistics:

Stratum	Number of Strata	Description
Geographic:	2 strata	Upstream and downstream of the Chinook salmon sonar site (angler counts only)
Temporal:	7 strata	Early Run: 16-21 May, 23-29 May, 30 May–4 June, 6-11 June, 13-18 June, 20-25 June, 27-30 June
	5 strata	Late Run: 1-2 July, 4-9 July, 11-16 July, 18-23 July, 25-30 July
Day Type:	2 strata	Weekdays and weekends/holidays
Angler Type:	2 strata	Guided and unguided

Two of the 4 available weekdays and both weekend days were sampled each week. An exception was the week of 30 May-4 June where 2 days were selected randomly from the 3 weekend/holiday days available. During the last (27-30 June) temporal strata in the early run, only one day-type strata occurred, thus the early run was composed of 26 strata. The late run was composed of 20 strata. Mondays were not sampled even though unguided drift boat anglers were allowed to fish.

Water clarity was measured to the nearest 0.05 m twice daily with a Secchi disk near mid-channel at rm 15.3.

Angler Counts

Four angler counts were conducted during each sampled day. The first count began at the start of a randomly chosen hour (0400, 0500, 0600, 0700, or 0800 hours) with the remaining counts done every 5 hours. The schedule ensured that at least two angler counts were conducted while guided anglers were fishing (between 0600 and 1800 hours) each day.

Counts were conducted from a boat between the Soldotna Bridge and the Warren Ames Bridge, a distance of 15.9 mi. To maximize interview time, the direction (upstream or downstream) traveled to conduct angler counts was pre-selected to minimize total distance traveled and time spent conducting the count. Anglers were counted while driving the boat through the survey area. The entire count required approximately 45 minutes to complete, and most counts were completed in less than 1 hour. Angler counts were treated as instantaneous counts hence reflected fishing effort at the time the count began. Anglers were counted if they were fishing or

rigging their line when observed during an angler count. Boats were counted as fishing if the boat contained at least one angler. Eleven thumb counters were used to sum the following categories for both geographic stratum: (1) unguided power boats, (2) unguided drift boats, (3) guided power boats, (4) guided drift boats, (5) unguided anglers in power boats, (6) unguided anglers in drift boats, (7) guided anglers in power boats (excluding the guide), (8) guided anglers in drift boats (excluding the guide), (9) active boats[2], (10) non-active boats[3], and (11) shore anglers. Only counts 5-8 were required for this project; counts 1-4, and 9-11 were supplementary information for management purposes.

One count was completed on Mondays between 0800 and 1400 hours as an index of effort[4].

Angler Interviews

Anglers who completed fishing were interviewed at the following boat launch sites (Figure 5):

A) Centennial Campground
B) Poacher's Cove
C) Riverbend Campground
D) Pillar's Boat Launch
E) Eagle Rock Boat Launch

Interviews were conducted only at Pillar's Boat Launch when the creel survey began on 17 May. Other boat launch sites were added to the sampling schedule immediately after sufficient boat traffic was observed there. Centennial Campground was added to the sampling schedule on 31 May, Poacher's Cove was added on 9 June, Riverbend Campground was added on 10 June and Eagle Rock Boat Launch was added on 29 June. For each day sampled, the first randomly scheduled boat count of the day was completed (between 0500 and 0900 hours) prior to conducting interviews; therefore, the entire angler-day was not sampled. The chance of introducing length-of-stay bias (Bernard et al. 1998a) is small. In 2001, only 2% of the interviews were conducted from 0400 to 0859 hours and the mean CPUE for that period was similar to the overall mean (Reimer 2003). This is typical across years.

There were three or four time intervals per day during which interviews could be conducted; three intervals between consecutive angler counts, and a possible additional interval after the last count. During the early run, when there were more interview periods than active boat launches, each launch was sampled once before any launch was repeated in the daily schedule. During the late run, when there were more accessible boat launches than interview periods, access location was chosen without replacement from the locations available. Time and boat launch were paired randomly.

The following information was recorded for each interviewed angler: (1) time of interview, (2) boat or shore angler, (3) guided or unguided angler, (4) number of hours spent fishing downstream of the Soldotna Bridge[5], (5) number of Chinook salmon harvested downstream of the Soldotna Bridge, (6) number of Chinook salmon released downstream of the Soldotna

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[2] Boats were counted as active boats if there were no anglers actively fishing from the boat, but the boat and motor were in operation.

[3] Boats were counted as non-active boats if there were no anglers actively fishing from the boat, the motor was not in operation, but it was obvious the motor had been run during the day.

[4] See Angler Effort, Catch and Harvest on Mondays on page 15 for an explanation of Monday angler counts.

[5] Hours spent fishing were rounded to the nearest 0.25 hour and included time when an angler's line was in the water or being rigged but not travel time or time after an angler had harvested a fish.

Bridge, and (7) whether released Chinook salmon were less than 44 inches, 44-54.99 inches, or 55 inches TL or greater[6].

Age, Sex, and Length of the Sport Harvest

Harvested Chinook salmon were sampled for age, sex, and length (ASL) during angler interviews. Sex was identified from external characteristics. Mid eye to fork (MEF) length was measured to the nearest half-centimeter. Three scales were removed from the preferred area of each fish and placed on an adhesive coated card (Clutter and Whitesel 1956; Welander 1940). Acetate impressions of the scales were aged using a microfiche reader. Sport-harvest ASL samples were stratified into two strata in the early run (16 May-9 June and 10-30 June) and two strata in the late run (1-17 July and 18-31 July) due to changes in the age composition of harvest through time.

Additionally, a tissue sample (tip of axillary process) was taken from harvested fish for genetic analysis, and each harvested fish was inspected for an adipose fin. A missing adipose fin indicates the fish is either missing the fin naturally or received a coded wire tag as a juvenile. Presence of a coded wire tag would identify a stocked Chinook salmon that strayed to the Kenai River. If a fish without an adipose fin was found, and permission was granted from the angler, the fish's head was removed and examined later for a coded wire tag.

INRIVER GILLNETTING

The inriver gillnetting program began in 1979 and has been modified several times to meet the changing needs of the Kenai River Chinook salmon fishery. Due to concerns of net selectivity bias with respect to CPUE, species composition estimates, abundance estimates, as well as gillnetting time and area considerations, the gillnetting program was standardized to estimate ASL of inriver returns, CPUE, and species composition (Reimer 2004b). Inriver gillnetting was conducted 6 hours each day from 16 May through 10 August in an area approximately 0.4 mi in length located immediately downstream of the Chinook salmon sonar site at rm 8.5 (Figure 5). Two gillnet mesh sizes were fished with equal frequency. Specifications of the nets used in 2006 are shown below:

1. 5.0 inch (stretched mesh) multifiber, 80 meshes deep, 10 fathoms long, Shade 1 (clear-steel blue), MS73 (14 strand) twine.
2. 7.5 inch (stretched mesh) multifiber, 55 meshes deep, 10 fathoms long, Shade 1, MS93 (18 strand) twine.

Because drifting the net is not feasible during parts of the rising and high tide stages, the daily gillnet sampling was structured around the low tide. Sampling took place 3 hours before to 3 hours after one low tide each day, excluding hours of darkness (2300-0400 hours).

Each drift was positioned to sample fish that would pass through the insonified river channel (approximately 15 m offshore from the right-bank transducer to 10 m offshore from the left-bank transducer). The drift area began immediately downstream from the sonar transducers (rm 8.6) and ended approximately 0.4 mi downstream (rm 8.2). Drifts were terminated when either: (1) the crew believed four fish were in the net, (2) the net was drifting within ~30 m of either bank, (3) the net became snagged on the bottom or was not fishing properly, or (4) the end of the drift area was

[6] Size of released fish was only taken with interviews conducted during the early run.

reached. Drifts always began at the upstream end of the study area. Two drifts (one starting on each bank) were completed with one mesh size before switching to the other mesh size. For each set the mesh size, starting bank, start and stop times, and number of fish caught by species were recorded.

Water clarity and level were recorded at rm 8.6 at the beginning, midpoint, and end of each netting shift. Water level was recorded from a staff gauge located at the sonar site. Water clarity was measured to the nearest 0.05 m with a Secchi disk mid-channel near the sonar site.

Age, Sex, and Length of the Inriver Return

Chinook salmon captured in gillnets were removed and placed in a tagging cradle (Larson 1995) for ASL sampling. ASL sample data were recorded on a Juniper Systems Allegro CE[7] field computer. To prevent resampling, a ¼ inch hole was punched in the dorsal lobe of the caudal fin on every Chinook salmon handled. Each captured Chinook salmon was examined for a hole punch prior to sampling. Chinook salmon were also checked for an adipose fin. If a Chinook salmon adipose fin was missing, the fish was sacrificed and the head was removed and examined later for a coded wire tag. Injuries sustained by Chinook salmon during the capture and handling process were also recorded. Samples were stratified into two approximately 3-week strata during each run with a sample-size goal of 149 fish for each stratum. Strata for the early run were 16 May-9 June and 10-30 June; strata for the late run were 1-20 July and 21 July-13 August.

The number and species of all fish captured were recorded. In addition, MEF lengths of captured sockeye salmon were measured every other day. Length distribution of captured sockeye salmon was used as one variable in a mixture model to evaluate species composition in the insonified area at rm 8.6 (Miller et al. 2005).

Tissue samples (tips of dorsal fins) were collected from returning Chinook salmon captured by the inriver gillnets on days when sockeye salmon lengths were not recorded. The fin clips were placed in 2 ml plastic tubes and immersed in an alcohol buffer. Each tube had a unique number and was stored at the ADF&G gene conservation laboratory for future analysis.

Captured Chinook salmon were subsampled in the late run to minimize angler conflicts. After 30 June, only every other Chinook salmon per drift was sampled for biological data. All other captured Chinook salmon were only given a hole punch on the dorsal lobe of the caudal fin to prevent resampling and then released.

Estimates of age, sex, and length composition of the inriver return were generated using the Chinook salmon catches from 5.0 and 7.5 inch mesh gillnets combined.

DATA ANALYSIS

Effort, catch, and harvest were estimated separately for guided and unguided anglers using the following procedures.

Angler Effort

The mean number of anglers on day i in stratum h was estimated by:

$$\bar{x}_{hi} = \frac{\sum_{g=1}^{r_{hi}} x_{hig}}{r_{hi}}, \qquad (1)$$

[7] Use of a company's name does not constitute endorsement.

where:

x_{hig} = the number of anglers observed in the gth count of day i in stratum h, and

r_{hi} = the number of counts on day i in stratum h.

Angler counts were conducted systematically within each sample day. The variance of the mean angler count was estimated by:

$$\hat{V}(\bar{x}_{hi}) = \frac{\sum_{g=2}^{r_{hi}} \left(x_{hig} - x_{hi(g-1)}\right)^2}{2r_{hi}(r_{hi}-1)}. \quad (2)$$

Effort (angler-hours) during day i in stratum h was estimated by:

$$\hat{E}_{hi} = L_{hi}\bar{x}_{hi}, \quad (3)$$

where:

L_{hi} = length of the sample day (20 hours for unguided anglers, 12 hours for guided anglers).

The within-day variance (effort) was estimated by:

$$\hat{V}(\hat{E}_{hi}) = L_{hi}^2 \hat{V}(\bar{x}_{hi}). \quad (4)$$

The mean effort of stratum h was estimated by:

$$\bar{E}_h = \frac{\sum_{i=1}^{d_h} \hat{E}_{hi}}{d_h}, \quad (5)$$

where:

d_h = number of days sampled in stratum h.

The sample variance of daily effort for stratum h was estimated by:

$$S_1^2(E)_h = \frac{\sum_{i=1}^{d_h} \left(\hat{E}_{hi} - \bar{E}_h\right)^2}{(d_h - 1)}. \quad (6)$$

Total effort of stratum h was estimated by:

$$\hat{E}_h = D_h \bar{E}_h, \quad (7)$$

where:

D_h = total number of days the fishery was open in stratum h.

The variance of total effort of each stratum in a two-stage design, omitting the finite population correction factor for the second stage, was estimated by (Bernard et al. 1998b):

$$\hat{V}\left(\hat{E}_h\right) = (1-f)D_h^2 \frac{S_1^2(E)_h}{d_h} + fD_h^2 \frac{\sum_{i=1}^{d_h} \hat{V}\left(\hat{E}_{hi}\right)}{d_h^2}, \tag{8}$$

where:

f = fraction of days sampled (= d_h / D_h).

Catch and Harvest

Catch and harvest per unit (hour) of effort for day i was estimated from angler interviews using the jackknife method to minimize the bias of these ratio estimators (Efron 1982). The jackknife estimate of CPUE (similarly HPUE) for angler j was:

$$CPUE^*_{hij} = \frac{\sum_{\substack{a=1 \\ a \neq j}}^{m_{hi}} c_{hia}}{\sum_{\substack{a=1 \\ a \neq j}}^{m_{hi}} e_{hia}}, \tag{9}$$

where:

c_{hia} = catch of angler a interviewed on day i in stratum h,

e_{hia} = effort (hours fished) by angler a interviewed on day i in stratum h, and

m_{hi} = number of anglers interviewed on day i in stratum h.

The jackknife estimate of mean CPUE for day i was the mean of the angler estimates:

$$\overline{CPUE}^*_{hi} = \frac{\sum_{j=1}^{m_{hi}} CPUE^*_{hij}}{m_{hi}}, \tag{10}$$

and the bias corrected mean was:

$$\overline{CPUE}^{**}_{hi} = m_{hi}\left(\overline{CPUE}_{hi} - \overline{CPUE}^*_{hi}\right) + \overline{CPUE}^*_{hi}, \tag{11}$$

where:

$$\overline{CPUE}_{hi} = \frac{\sum_{j=1}^{m_{hi}} c_{hij}}{\sum_{j=1}^{m_{hi}} e_{hij}}.$$

The variance of the jackknife estimate of CPUE was estimated by:

$$\hat{V}\left(\overline{CPUE}_{hi}^{**}\right) = \frac{m_{hi}-1}{m_{hi}} \sum_{j=1}^{m_{hi}} \left(CPUE_{hij}^{*} - \overline{CPUE}_{hi}^{*} \right)^2 . \quad (12)$$

Catch during each sample day was estimated as the product of effort and CPUE by:

$$\hat{C}_{hi} = \hat{E}_{hi} \overline{CPUE}_{hi}^{**}, \quad (13)$$

and the variance by (Goodman 1960):

$$\hat{V}\left(\hat{C}_{hi}\right) = \hat{V}\left(\hat{E}_{hi}\right)\left(\overline{CPUE}_{hi}^{**}\right)^2 + \hat{V}\left(\overline{CPUE}_{hi}^{**}\right)\hat{E}_{hi}^2 - \hat{V}\left(\hat{E}_{hi}\right)\hat{V}\left(\overline{CPUE}_{hi}^{**}\right). \quad (14)$$

HPUE was estimated by substituting angler harvest for angler catch in equations (9) through (12). Harvest during sample day *i* was estimated by substituting the appropriate $HPUE_{hi}$ statistics into equations (13) and (14). Total catch and harvest during stratum *h* was estimated using equations (5) through (8), substituting estimated catch ($\hat{C}_{hi}$) and harvest ($\hat{H}_{hi}$) during sample day *i* for the estimated effort ($\hat{E}_{hi}$) during day *i*.

When no interviews from a particular angler type were obtained for a particular day, there were no CPUE and HPUE estimates to pair with angler counts. For these days, pooled estimates of CPUE and HPUE calculated from interviews obtained during the remaining days within the stratum, or similar strata were imputed. A bootstrap procedure (Efron 1982) was used to estimate the variance introduced by use of imputed values.

Total effort, catch, and harvest estimates, and their respective variances, were summed across strata within each run. Technically, estimates of catch and harvest by geographic location and angler-type were not statistically independent, because HPUE and CPUE were estimated from the same interviews for both geographic strata, and estimates were poststratified by angler type. This lack of independence between strata could underestimate variances; however, the bias in variance estimates is small.

Angler Effort, Catch, and Harvest on Mondays

Regulations allow only unguided fishing from drift boats on Mondays. Since 2002, a creel survey has not been conducted on Mondays (due to budgetary constraints); rather one "index" angler count has been conducted each Monday during the middle of the day (0800-1400 hours). For 2006, the index count was used in the following ad hoc procedure to estimate effort, catch and harvest on drift boat Mondays:

1. Angler count data from 2001 were used to estimate the relationship between index counts and mean angler counts on Mondays. The mean number of anglers was approximately 78% of the number counted during the "index" period.
2. To estimate angler hours of effort *E*, the estimated mean count was multiplied by the length of the unguided angler-day (20 hours).
3. To estimate CPUE and HPUE on Mondays without angler interviews, we exploited the tendency for angler success to exhibit an autocorrelated time trend. CPUE and HPUE

were plotted versus time for days sampled with angler interviews, and then we subjectively imputed CPUE and HPUE values for each Monday.

4. Catch and harvest were estimated as the product of the imputed values of CPUE and HPUE and the estimate of E derived from the index count.

CPUE of Inriver Gillnetting

Two gillnet mesh sizes were deployed: 5.0 and 7.5 inches. Two drifts were conducted with one mesh size, originating from each side (k) of the river; then the sequence was repeated with the other mesh size. A repetition j consisted of a complete set of four drifts. Daily CPUE r of species s in mesh m for day i was estimated as follows:

$$\hat{r}_{smi} = \frac{\sum_{j=1}^{J_i} \sum_{k=1}^{2} c_{smijk}}{\sum_{j=1}^{J_i} \sum_{k=1}^{2} e_{mijk}}, \tag{15}$$

$$\hat{V}(\hat{r}_{smi}) = \frac{\sum_{j=1}^{J_i} \left(c_{smij} - \hat{r}_{smi} e_{mij}\right)^2}{\bar{e}_{mi}^{\,2} J_i (J_i - 1)}, \tag{16}$$

where c_{smijk} is the catch of species s in mesh m during a drift originating from bank k during repetition j on day i, e_{mijk} is the effort (soak time in minutes) for that drift, J_i is the number of repetitions completed on day i, c_{smij} is the catch of species i in mesh m summed across drifts on both banks conducted during repetition j of day i, e_{mij} is the effort for mesh m summed across drifts on both banks conducted during repetition j of day i, and $\bar{e}_{mi}$ is the mean of e_{mij} across all repetitions j for mesh m on day i. The variance follows Cochran (1977:66).

Proportion of Chinook Salmon Captured by Inriver Gillnetting

The proportion of species s passing through the insonified zone of the river channel during the test-netting period on day i was estimated as follows:

$$\hat{p}_{si} = \frac{\sum_{j}^{J_i} \hat{r}_{sij}}{\sum_{s} \sum_{j}^{J_i} \hat{r}_{sij}}, \tag{17}$$

$$\hat{V}\left(\hat{p}_{si}\right) = \frac{\sum_{j=1}^{J_i} \left(\hat{r}_{sij} - \hat{p}_{si} \hat{r}_{ij}\right)^2}{\bar{r}_i^{\,2} J_i (J_i - 1)}. \tag{18}$$

Where CPUE:

$$\hat{r}_{sij} = \frac{1}{2}\sum_{m=1}^{2}\frac{\sum_{k=1}^{2} c_{smijk}}{\sum_{k=1}^{2} e_{mijk}} \tag{19}$$

for species s during repetition j of day i is estimated as the mean of the CPUEs, pooled across banks, for each mesh size;

$\hat{r}_{ij} = \sum_{s} \hat{r}_{sij}$ is the CPUE summed across all species caught during repetition j of day i, and

$\bar{r}_i$ = the mean CPUE of salmon (all species) caught across all drifts k during day i.

Only data from repetitions with at least one drift with each mesh size were used to estimate species proportions.

Age and Sex Composition

Age and sex composition of the Chinook salmon harvest were estimated for each run, by time stratum t. The proportion of Chinook salmon in age/sex group b in time stratum t was estimated as:

$$\hat{p}_{bt} = \frac{n_{bt}}{n_t}, \tag{20}$$

where:

n_{bt} = the number of fish of age/sex group b sampled during stratum t, and

n_t = the number of successfully aged/sexed Chinook salmon from stratum t.

The variance of $\hat{p}_{bt}$ was estimated as (Cochran 1977):

$$\hat{V}(\hat{p}_{bt}) = \frac{\hat{p}_{bt}(1-\hat{p}_{bt})}{(n_t - 1)}. \tag{21}$$

The harvest of each age/sex group by time stratum t and geographic stratum g (above and below the sonar[8]), was estimated by:

$$\hat{H}_{gbt} = \hat{H}_{gt}\hat{p}_{bt}, \tag{22}$$

with variance (Goodman 1960):

$$\hat{V}(\hat{H}_{gbt}) = \hat{H}_{gt}^2\hat{V}(\hat{p}_{bt}) + \hat{p}_{bt}^2\hat{V}(\hat{H}_{gt}) - \hat{V}(\hat{p}_{bt})\hat{V}(\hat{H}_{gt}), \tag{23}$$

where:

[8] Estimates of age- and time-specific harvest by geographic stratum were calculated for the late run only. For the early run, the same equations apply with subscript g omitted.

$\hat{H}_{gt}$ and $\hat{V}\left(\hat{H}_{gt}\right)$ = estimated harvest and its variance in geographic stratum *g* during temporal stratum *t*.

The overall (time-stratified) age proportions were calculated as:

$$\hat{p}_{gb} = \frac{\sum_t \hat{H}_{gt}\hat{p}_{bt}}{\sum_t \hat{H}_{gt}}, \tag{24}$$

$$\hat{V}(\hat{p}_{gb}) = \frac{1}{\hat{H}_g^2}\left[\frac{\hat{v}(\hat{H}_{g1})\left[\hat{p}_{b1}\hat{H}_{g2} - \hat{H}_{gb2}\right]^2}{\hat{H}_g^2} + \frac{v(\hat{H}_{g2})\left[\hat{p}_{b2}\hat{H}_{g1} - \hat{H}_{gb1}\right]^2}{\hat{H}_g^2} + \hat{v}(\hat{p}_{b1})\hat{H}_{g1}^2 + \hat{v}(\hat{p}_{b2})\hat{H}_{g2}^2\right]. \tag{25}$$

The number of Chinook salmon passing the sonar *N* was apportioned by age and sex similarly, using equations 20-24, ignoring geographic stratum subscript *g*, substituting *N* for *H*, and using the net-captured Chinook salmon to estimate *p*. The inriver return *R* of age and sex group *b* was estimated as the sum of the age/sex specific sonar passage N_b and harvest below the sonar H_{2b},

$$\hat{R}_b = \hat{N}_b + \hat{H}_{2b}, \tag{26}$$

$$\hat{V}(\hat{R}_b) = \hat{V}(\hat{N}_b) + \hat{V}(\hat{H}_{2b)}. \tag{27}$$

RESULTS

CREEL SURVEY

Effort, Catch, and Harvest

The creel survey was conducted from 16 May to 31 July. During the early run, the creel survey sampled 20 of the 36 (56%) days the fishery was open to guided anglers and 26 of the 41 (63%) unguided powerboat fishing days were sampled (Table 1). During the late run, the creel survey sampled 13 of the 21 (62%) days the fishery was open to guided anglers and 18 of the 26 (69%) unguided powerboat fishing days (Table 2). A total of 3,388 angler interviews were conducted: 1,296 during the early run and 2,092 during the late run (Tables 1 and 2).

During the early run, angler counts ranged from 0 to 189 for unguided anglers and from 2 to 355 for guided anglers (Appendix A1). The largest count occurred on 18 June for unguided anglers and on 30 June for guided anglers. The largest count in the early run for guided and unguided anglers combined was 448 anglers on 20 June. During the late run, angler counts ranged from 11 to 722 for unguided anglers and from 183 to 774 for guided anglers (Appendix A2). The largest counts occurred on 16 July for unguided anglers and on 25 July for guided anglers. The largest count in the late run for guided and unguided anglers combined was 1,350 anglers on 25 July.

Table 1.-Estimated effort, catch, and harvest between the Soldotna Bridge and the Warren Ames Bridge during the early-run Kenai River Chinook salmon fishery, 2006.

				Effort		Catch[a]		Harvest[a]	
	N[b]	n[c]	Int.[d]	Est.	SE	Est.	SE	Est.	SE
16-21 May									
Guided weekdays	4	2	16	528	104	8	6	5	4
Guided weekends	2	1	9	188	67	12	7	4	4
Unguided weekdays	4	2	20	200	88	7	9	0	0
Unguided weekends	2	2	30	190	64	10	5	1	1
23-29 May									
Guided weekdays	4	2	55	1,500	328	26	19	10	8
Guided weekends	2	1	10	1,104	79	0	0	0	0
Unguided weekdays	4	2	42	560	155	4	4	0	0
Unguided weekends	3	2	41	615	148	0	0	0	0
30 May-4 June									
Guided weekdays	4	2	27	1,160	167	0	0	0	0
Guided weekends	1	1	19	1,200	72	65	32	65	32
Unguided weekdays	4	2	18	660	166	12	12	0	0
Unguided weekends	2	2	100	1,545	233	80	24	51	17
6-11 June									
Guided weekdays	4	2	57	7,040	2,117	379	96	299	81
Guided weekends	1	1	46	1,968	720	129	57	72	37
Unguided weekdays	4	2	50	2,000	338	66	31	44	18
Unguided weekends	2	2	52	2,405	489	297	92	152	53
13-18 June									
Guided weekdays	4	2	78	7,744	1,105	835	214	780	238
Guided weekends	1	1	60	1,734	522	71	28	56	24
Unguided weekdays	4	2	66	4,190	546	271	74	129	48
Unguided weekends	2	2	128	3,775	556	89	27	68	24
20-25 June									
Guided weekdays	4	2	83	9,840	2,321	639	187	506	132
Guided weekends	1	1	36	1,744	404	96	36	59	26
Unguided weekdays	4	2	30	3,730	892	60	60	30	30
Unguided weekends	2	2	108	3,975	691	173	55	136	46
27-30 June									
Guided weekdays	4	2	66	9,036	1,808	845	219	709	249
Unguided weekdays	4	2	49	4,140	515	351	162	221	119
Day Type Subtotals									
Guided weekdays	28	14	382	36,848	3,809	2,732	372	2,309	378
Guided weekends/holiday	8	6	180	7,938	985	372	80	254	60
Unguided weekdays	28	14	275	15,480	1,238	771	191	425	133
Unguided weekends/holiday	13	12	459	12,505	1,052	648	113	409	76
Angler Type Subtotals									
Guided	36	20	562	44,786	3,934	3,104	380	2,564	383
% Guided			43%	62%		69%		75%	
Unguided[e]	41	26	734	27,985	1,625	1,419	222	833	153
% Unguided			57%	38%		31%		25%	
Early-run Total[e]			1,296	72,771	4,256	4,523	441	3,397	412

[a] Catch and harvest estimates may not sum to total due to rounding.

[b] Number of days fishery was open to fishing from powerboats.

[c] Number of days sampled.

[d] Number of interviews conducted.

[e] Unguided angler estimates biased low because Mondays were not sampled.

Table 2.-Estimated effort, catch, and harvest between the Soldotna Bridge and the Warren Ames Bridge during the late-run Kenai River Chinook salmon fishery, 2006.

				Effort		Catch[a]		Harvest[a]	
	N[b]	n[c]	Int.[d]	Est.	SE	Est.	SE	Est.	SE
1-2 July									
Guided weekends	1	1	24	4,116	931	432	146	262	106
Unguided weekends	2	2	117	6,040	677	357	78	160	49
4-9 July									
Guided weekdays	4	2	108	17,316	3,070	1,949	312	1,158	197
Guided weekends	1	1	21	4,136	1,124	238	89	117	55
Unguided weekdays	4	2	75	10,090	2,312	1,077	514	586	311
Unguided weekends	2	2	136	10,145	992	608	118	289	72
11-16 July									
Guided weekdays	4	2	131	24,436	5,051	958	266	745	228
Guided weekends	1	1	34	7,134	760	419	129	278	107
Unguided weekdays	4	2	116	15,380	1,255	768	227	350	116
Unguided weekends	2	2	165	14,400	2,746	1,370	369	687	186
18-23 July									
Guided weekdays	4	2	136	27,204	3,397	2,383	351	1,913	283
Guided weekends	1	1	39	3,956	935	302	90	248	78
Unguided weekdays	4	2	203	29,030	5,329	1,374	292	792	192
Unguided weekends	2	2	170	15,535	1,311	1,206	168	856	131
25-30 July									
Guided weekdays	4	2	129	23,812	5,823	2,704	777	2,000	508
Guided weekends	1	1	39	5,100	1,594	886	310	575	210
Unguided weekdays	4	2	242	25,850	2,305	1,573	282	1,407	296
Unguided weekends	2	2	207	14,020	1,917	1,184	197	769	139
Day Type Subtotals									
Guided weekdays	16	8	504	92,768	8,966	7,994	946	5,816	655
Guided weekends	5	5	157	24,442	2,475	2,277	387	1,480	276
Unguided weekdays	16	8	636	80,350	6,374	4,792	694	3,134	485
Unguided weekends	10	10	795	60,140	3,792	4,724	473	2,761	280
Angler Type Subtotals									
Guided	21	13	661	117,210	9,301	10,272	1,023	7,295	711
% Guided			32%	45%		52%		55%	
Unguided[e]	26	18	1,431	140,490	7,417	9,516	840	5,895	560
% Unguided			68%	55%		48%		45%	
Late-run Total[e]			2,092	257,700	11,896	19,788	1,323	13,190	905

[a] Catch and harvest estimates may not sum to total due to rounding.

[b] Number of days fishery was open to fishing from powerboats.

[c] Number of days sampled.

[d] Number of interviews conducted.

[e] Unguided angler estimates biased low because Mondays were not sampled.

Estimated effort was 72,771 (SE = 4,256) angler-hours during the early run (Table 1) and 257,700 (SE = 11,896) angler-hours during the late run (Table 2). Guided anglers accounted for 62% of the early-run effort and 45% of the late-run effort.

In the early run, daily catch rates (CPUE) for unguided anglers varied from 0 to 0.189 and averaged 0.041 fish per hour, while daily CPUE for guided anglers ranged from 0 to 0.126 and averaged 0.049 fish per hour (Appendices B1 and B2). Daily CPUE in the early run was highest on 10 June for unguided anglers and on 13 June for guided anglers. In the late run, daily CPUE varied from 0.033 to 0.136 and averaged 0.068 fish per hour for unguided anglers, while daily CPUE for guided anglers ranged from 0.033 to 0.201 and averaged 0.093 fish per hour (Appendices B3 and B4). Daily CPUE was highest in the late run on 4 July for unguided anglers and 28 July for guided anglers.

The estimated harvest of Chinook salmon during the early run was 3,397 (SE = 412) (Table 1). Guided anglers accounted for 75% of the harvest compared to 25% for unguided anglers. The estimated catch of early-run Chinook salmon was 4,523 (SE = 441), meaning 25% of the catch was released. Anglers reported releasing 107 Chinook salmon for the 1,299 interviews conducted during the early run of which 65 (65%) were reported to be below the slot limit of 44 inches TL and 35 (35%) were reported to be within the slot limit (44 to 54.99 inches TL). The absolute precision for total harvest (808 fish) and relative precision of catch (19.1%) were within 20% or 1,000 fish of the true value 95% of the time.

The estimated harvest of Chinook salmon during the late run was 13,190 (SE = 905) (Table 2). Guided anglers accounted for 55% of the harvest compared to 45% for unguided anglers. The estimated catch of late-run Chinook salmon was 19,788 (SE = 1,323), meaning 33% of the catch was released. The relative precision for total harvest (13.4%) and catch (13.1%) were within 20% of the true value 95% of the time.

Approximately 4.0% of the early-run effort and 21.3% of the late-run effort occurred downstream of the Chinook salmon sonar site (Appendices C1 and C2). Of the late-run Chinook salmon harvest downstream of the Soldotna bridge, 25.2% (3,322, SE= 509) occurred downstream of the Chinook salmon sonar site and 74.8% (9,869, SE = 749) occurred upstream of the sonar site (Appendix C2).

Daily angler counts and interpolated values of HPUE and CPUE used to index effort, harvest, and catch on Mondays during the late run, indicated an effort of 11,326 angler-hours, a harvest of approximately 497 Chinook salmon, and a catch of 924 on Mondays (Figure 6). This represented approximately 4% of total late-run effort, catch and harvest. Early-run effort, catch, and harvest were less than 2% of seasonal totals. Effort, catch, and harvest estimates on Mondays are not included in the seasonal totals because the estimates on Mondays are only an index and not statistically valid.

INRIVER GILLNETTING

Species Composition of Inriver Return

During the early run, 308 Chinook salmon, 1,421 sockeye salmon and 8 Dolly Varden greater than 400 mm MEF length were captured with gillnets (Appendices D1 and D2). CPUE and Chinook salmon ratios were calculated using only salmonids greater than 400 mm MEF length because this length approximates the lower length limit detectable by the sonar (Debby Burwen, ADF&G, Sport Fish Division, Anchorage, personal communication). A total of 126 other fish

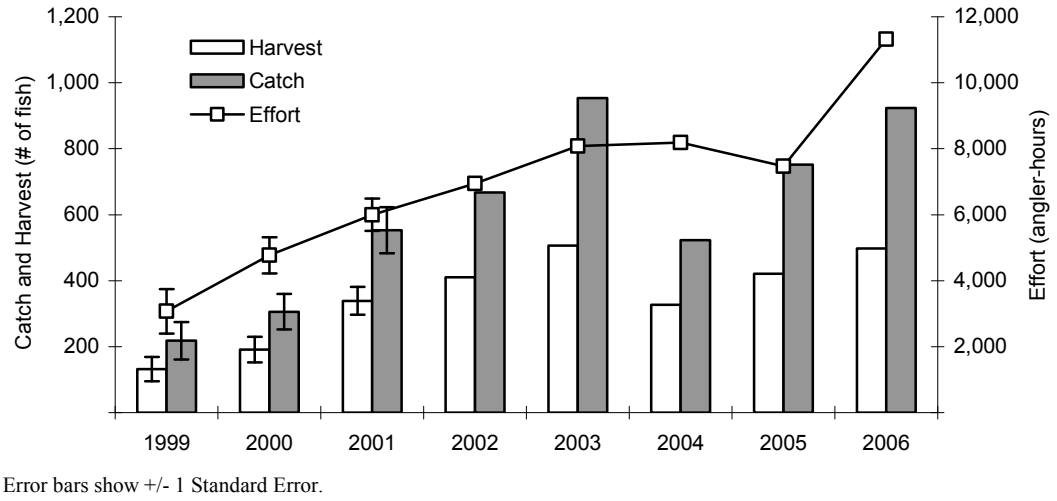


Figure 6.-Monday unguided drift boat catch, harvest and angler effort, 1999-2006.

(less than 400 mm in MEF length) were captured, 2 sockeye salmon and 124 eulachon *Thaleichthys pacificus.* Daily Chinook salmon CPUE ranged from 0 to 0.230 and averaged 0.062 Chinook salmon per minute drifted (Appendix D3). The daily ratio of Chinook salmon to total salmon captured ranged from 0 to 1.00 and averaged 0.25 (Appendix D3).

During the late run, 1,372 Chinook salmon, 586 sockeye salmon, 79 coho salmon, 326 pink salmon, 5 Dolly Varden (Appendices D4 and D5) and 1 rainbow trout greater than 400 mm MEF length were captured. In addition, 1 Dolly Varden and 1 Chinook salmon less than 400 mm MEF length were captured in the late run. Daily Chinook salmon CPUE ranged from 0.093 to 1.196 and averaged 0.424 (Appendix D6). The daily ratio of Chinook salmon to total salmon captured ranged from 0.19 to 0.89 and averaged 0.62 (Appendix D6).

Sockeye salmon CPUE was conspicuously above the 2003-2005 average in the early run and well below the 2003-2005 average in the late run (Figure 7). Chinook salmon CPUE was slightly below the 2003-2005 average for the entire early run. In the late run, Chinook salmon CPUE was below the 2003-2005 average until approximately 27 July, and then increased dramatically to well above the 2003-2005 average. The high catches of Chinook salmon continued into August with no signs of decline so the gillnetting program was extended for 2 additional days (12-13 August). Chinook salmon CPUE from 12 August (0.358, SE = 0.194) and 13 August (0.301, SE = 0.074) were below the Chinook salmon CPUE seasonal average (0.429) and netting ended on 13 August.

Catches from the 5.0 and 7.5 inch mesh gillnets were compared to assess age, size and/or species selectivity bias. Chinook salmon less than 600 mm MEF length were more abundant in the 5.0 inch mesh gillnets whereas other length classes were of comparable abundance in each mesh size (Figure 8). Length frequency distributions and mean daily length of sockeye salmon caught in each mesh size were similar (Figure 8 and Appendices E1 and E2).

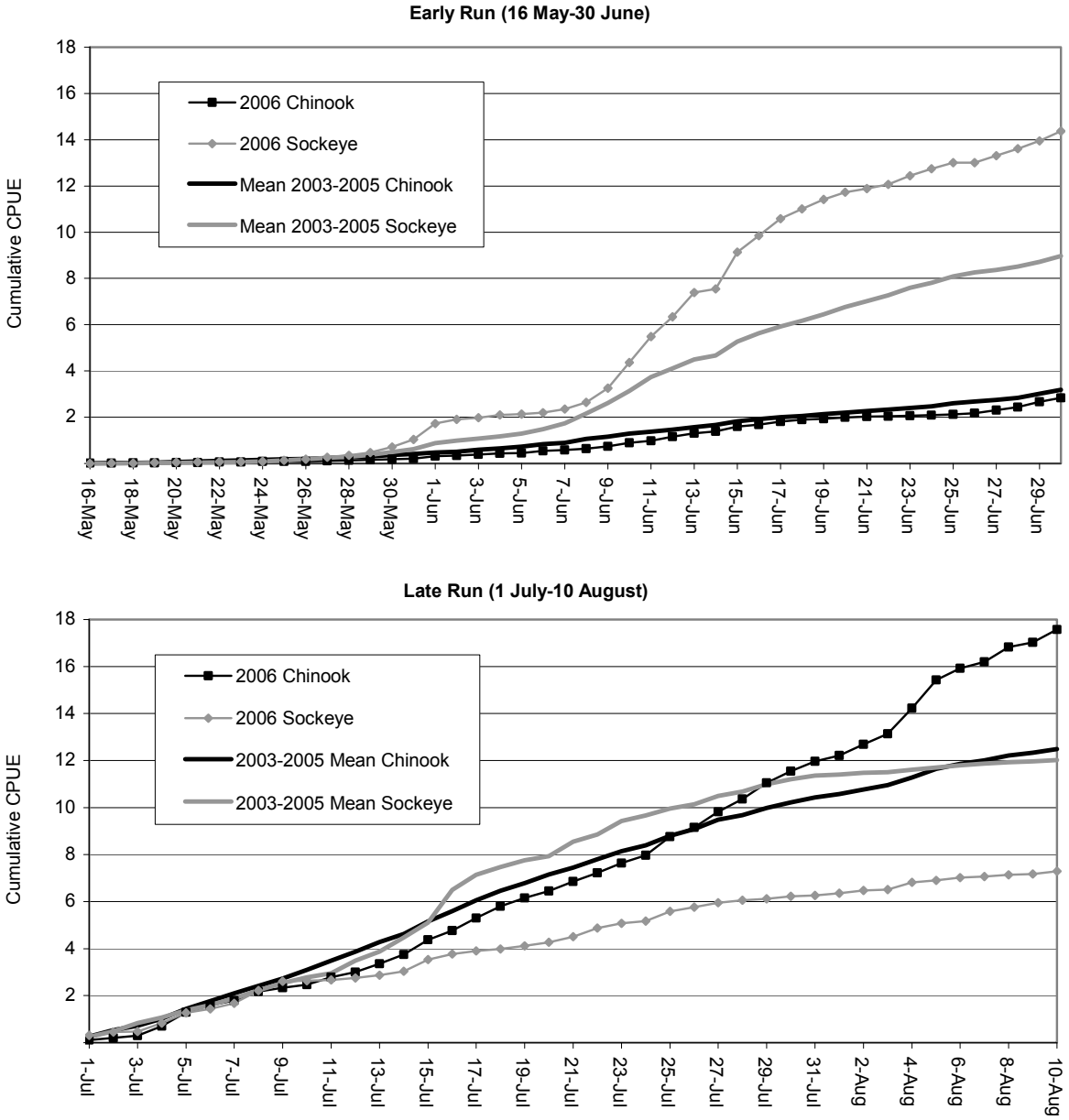


Figure 7.-Cumulative CPUE for Chinook salmon and sockeye salmon caught from inriver gillnets in the early run and late run, Kenai River, 2003-2006.

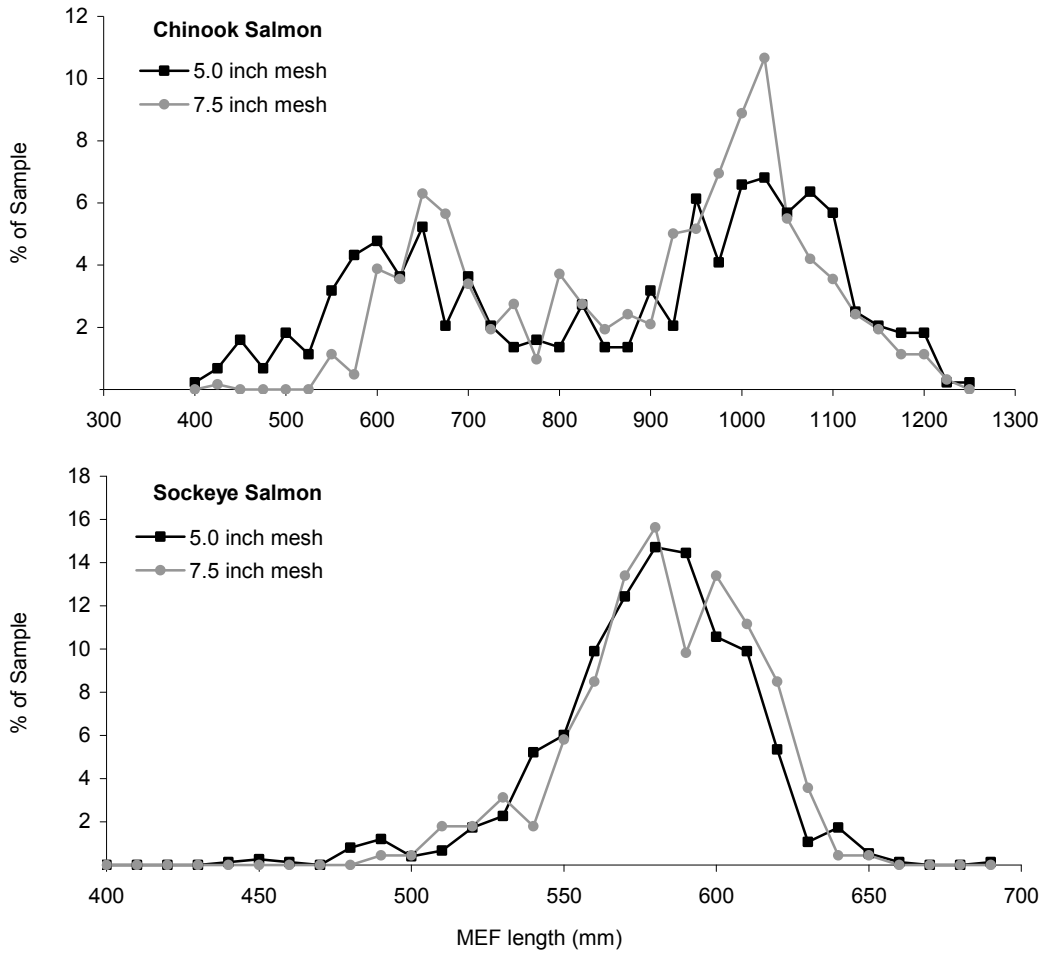


Figure 8.-Length distribution of Kenai River Chinook salmon and sockeye salmon caught with 5.0 and 7.5 inch mesh gillnets, 2006.

The species composition of fish captured in the 5.0 and 7.5 inch mesh gillnets was significantly different in both the early run (χ^2 = 125.2, df = 1, $P < 0.0001$) and the late run (χ^2 = 268.7, df = 1, $P < 0.0001$). The 5.0 inch mesh captured more sockeye salmon and fewer Chinook salmon (Appendices D1 and D4) than the 7.5 inch mesh, which captured fewer sockeye salmon and more Chinook salmon (Appendices D2 and D5).

AGE, SEX, AND LENGTH

Creel Survey

The early-run harvest was composed of 1.1% (SE = 0.8%) age-1.1 fish, 15.5% (SE = 2.8%) age-1.2 fish, 38.5% (SE = 3.7%) age-1.3 fish, and 44.8% (SE = 3.8%) age-1.4 fish (Table 3). Age-1.4 males (9.8%, SE = 2.3%) comprised a lower percentage of the total early-run harvest than age-1.4 females (35.1%, SE = 3.6%) (Table 3). The slot limit truncated the early-run harvest length composition at 44 inches, except for one fish that was illegally harvested (Figure 9).

Table 3.-Age composition and estimated harvest by age class for the sport harvest of early-run Kenai River Chinook salmon between the Soldotna Bridge and the Warren Ames Bridge, 2006.

	Age				
Parameter	1.1	1.2	1.3	1.4	Total
Early Run, 16 May-30 June					
Female					
Sample size		3	30	61	94
% sample		1.7%	17.2%	35.1%	54.0%
SE % sample		1.0%	2.9%	3.6%	3.8%
Total Harvest		65	583	1,104	1,752
SE Total Harvest		34	120	189	257
Male					
Sample size	2	24	37	17	80
% sample	1.1%	13.8%	21.3%	9.8%	46.0%
SE % sample	0.8%	2.6%	3.1%	2.3%	3.8%
Total Harvest	43	500	772	330	1,645
SE Total Harvest	28	105	137	86	229
Combined					
Sample size	2	27	67	78	174
% sample	1.1%	15.5%	38.5%	44.8%	100.0%
SE % sample	0.8%	2.8%	3.7%	3.8%	0.0%
Total Harvest	43	565	1,355	1,434	3,397
SE Total Harvest	28	113	202	224	412

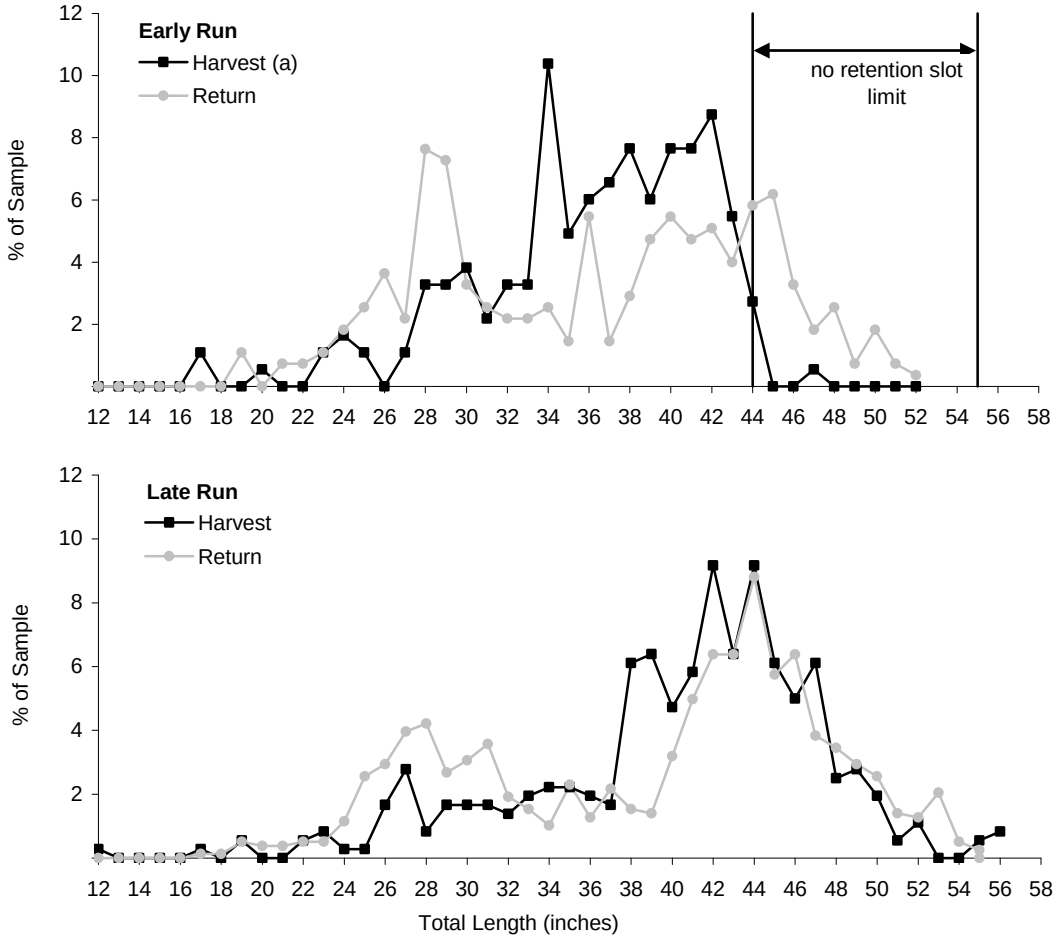
Notes: Values given by age and sex may not sum to totals due to rounding.

Estimates of age composition and harvest, by temporal strata for the sport harvest of 2006 early-run Kenai River Chinook salmon between the Soldotna Bridge and the Warren Ames Bridge are presented in Appendix F1.

The late-run harvest was composed of 0.3% (SE = 0.3%) age-1.1 fish, 11.5% (SE = 1.8%) age-1.2 fish, 21.4% (SE = 2.3%) age-1.3 fish, 60.2% (SE = 2.7%) age-1.4 fish and 6.5% (SE = 1.4%) age-1.5 fish (Table 4). Age-1.4 females (38.2%, SE = 2.7%) comprised a higher percentage of the total late-run harvest than age-1.4 males (22.0%, SE = 2.3%), whereas age-1.3 females (6.8%, SE = 1.4%) comprised a lower percentage of the total late-run harvest than age-1.3 males (14.6%, SE = 2.0%) (Table 4). Sample size and relative precision goals for age composition estimates of the harvest were met for each sampling stratum.

Inriver Gillnetting

During the early run, the age composition of the inriver return differed among temporal strata ($\chi^2 = 15.907$, df = 2, $P = 0.0004$) with age-1.2, age-1.3, and age-1.4 fish considered (Table 5 and Appendix F2). Age-1.4 fish were most abundant, comprising 42.6% (SE = 3.0%) of the inriver return, followed by age-1.2 fish (31.6%, SE = 2.8%) and age-1.3 fish (21.2%, SE = 2.5%) (Table 5).



a Length distribution of the early run harvest is truncated at 44 inches TL due to the 44-55 inch slot limit. The non-zero value at 47 inches represents an illegally harvested fish sampled in the creel survey.

Figure 9.-Length distributions of early- and late-run Kenai River Chinook salmon sampled by the creel survey and the inriver gillnetting program, 2006.

During the late run, the age composition of the inriver return also differed among temporal strata (χ^2 = 53.926, df = 3, P < 0.0001) (Table 6 and Appendix F3). Age-1.4 fish were most abundant, comprising 49.6% (SE = 1.8%) of the inriver return, followed by age-1.2 fish (27.5%, SE = 1.7%) and age-1.3 fish (14.6%, SE = 1.4%).

The age composition of the early-run and the late-run drift gillnet catch differed (χ^2 = 15.143, df = 3, P = 0.0017). Age-1.5 (7.0%, SE = 0.9%) fish in the late run were more prevalent in the inriver return than age-1.5 (3.5%, SE = 1.1%) fish in the early run. All other ages were similar for both the early-run and late-run drift gillnet catch.

Age compositions by mesh size differed for the late run (χ^2 = 10.34, df = 2, P = 0.0057), but not for the early run (χ^2 = 4.833, df = 2, P = 0.09). Age composition estimates derived from the 5.0 and 7.5 inch mesh gillnets combined (Tables 5 and 6) were similar to the age composition estimates derived from the 7.5 inch mesh (Appendices G1 and G2) and are compiled for historical comparison to years (prior to 2002) when only 7.5 inch mesh gillnets were used to estimate the age composition of the inriver return.

Table 4.-Age composition and estimated harvest by age class and geographic strata for the sport harvest of late-run Kenai River Chinook salmon between the Soldotna Bridge and the Warren Ames Bridge, 2006.

	Age					
Parameter	1.1	1.2	1.3	1.4	1.5	Total
Late Run, 1-31 July						
Female						
Sample size		1	22	123	5	151
% sample		0.3%	6.8%	38.2%	1.6%	46.9%
SE % sample		0.3%	1.4%	2.7%	0.7%	2.8%
Downstream Harvest		10	227	1,269	52	1,558
SE Downstream Harvest		10	58	214	24	255
Upstream Harvest		31	674	3,770	153	4,628
SE Upstream Harvest		31	148	391	69	445
Total Harvest		41	901	5,039	205	6,186
SE Total Harvest		41	195	497	92	561
Male						
Sample size	1	36	47	71	16	171
% sample	0.3%	11.2%	14.6%	22.0%	5.0%	53.1%
SE % sample	0.3%	1.8%	2.0%	2.3%	1.2%	2.8%
Downstream Harvest	10	371	485	732	165	1,764
SE Downstream Harvest	10	81	98	135	47	285
Upstream Harvest	31	1,103	1,440	2,176	490	5,241
SE Upstream Harvest	31	192	223	281	125	483
Total Harvest	41	1,475	1,925	2,908	655	7,005
SE Total Harvest	41	253	291	364	166	604
Combined						
Sample size	1	37	69	194	21	322
% sample	0.3%	11.5%	21.4%	60.2%	6.5%	100.0%
SE % sample	0.3%	1.8%	2.3%	2.7%	1.4%	0.0%
Downstream Harvest	10	382	712	2,001	217	3,322
SE Downstream Harvest	10	83	132	319	56	509
Upstream Harvest	31	1,134	2,115	5,946	644	9,869
SE Upstream Harvest	31	195	277	525	144	749
Total Harvest	41	1,516	2,827	7,947	860	13,190
SE Total Harvest	41	256	358	653	191	905

Notes: Values given by age and sex may not sum to totals due to rounding.

Downstream is between the Warren Ames Bridge and the Chinook salmon sonar site. Upstream is between the Chinook salmon sonar site and the Soldotna Bridge. Total harvest is between the Soldotna Bridge and the Warren Ames Bridge.

Table 5.-Age composition and estimated sonar passage by age class for early-run Kenai River Chinook salmon, 2006.

	Age					
Parameter	1.1	1.2	1.3	1.4	1.5	Total
Early Run, 16 May-30 June						
Female						
Sample size		22	23	67	4	116
Sonar passage estimate		2,017	1,997	5,725	354	10,092
SE sonar passage estimate		403	402	621	175	721
% sonar passage		8.6%	8.6%	24.5%	1.5%	43.3%
SE % sonar passage		1.7%	1.7%	2.6%	0.8%	3.0%
Male						
Sample size	3	60	33	49	5	150
Sonar passage estimate	277	5,352	2,937	4,206	462	13,234
SE sonar passage estimate	155	606	477	553	200	729
% sonar passage	1.2%	22.9%	12.6%	18.0%	2.0%	56.7%
SE % sonar passage	0.7%	2.6%	2.0%	2.4%	0.9%	3.0%
Combined						
Sample size	3	82	56	116	9	266
Sonar passage estimate	277	7,368	4,934	9,931	816	23,326
SE sonar passage estimate	159	676	595	711	268	295
% sonar passage	1.2%	31.6%	21.2%	42.6%	3.5%	100.0%
SE % sonar passage	0.7%	2.8%	2.5%	3.0%	1.1%	0.0%

Notes: Values given by age and sex may not sum to totals due to rounding.

Estimates of age composition and sonar passage by temporal strata for 2006 early-run Kenai River Chinook salmon are presented in Appendix F2.

The age composition of the early-run harvest and the early-run inriver return differed (χ^2 = 49.326, df = 2, $P < 0.001$) with age-1.2, age-1.3, and age-1.4 fish considered. Anglers harvested a larger percentage of age-1.3 fish, a smaller percentage of age-1.2, and a similar percentage of age-1.4 fish than the inriver return (Tables 3 and 5, Figure 10). The age composition of the late-run harvest and the late-run inriver return also differed (χ^2 = 15.144, df = 3, P = 0.0017). Anglers harvested a smaller percentage of age-1.2 and age-1.5 fish, and a larger percentage of age-1.3 and age-1.4 fish (Tables 4 and 6).

LENGTH-AT-AGE COMPARISONS

MEF lengths are compiled by age and sex for the early run (Table 7) and the late run (Table 8). A graphical depiction of length-at-age is shown in Figure 11. Mean length-at-age and sex was similar for the creel survey and inriver gillnets except for age-1.4 males and age-1.4 females in the early run. Age-1.4 females (975 mm, SE = 8) sampled from early-run inriver gillnets averaged 37 mm longer than age-1.4 females (938 mm, SE = 6) sampled from the creel survey in the early run. Age-1.4 males (1,009 mm, SE = 11) sampled from early-run inriver gillnets averaged 60 mm longer than age-1.4 males (949 mm, SE = 17) sampled from the creel survey in the early run.

Table 6.-Age composition and estimated sonar passage by age class for late-run Kenai River Chinook salmon, 2006.

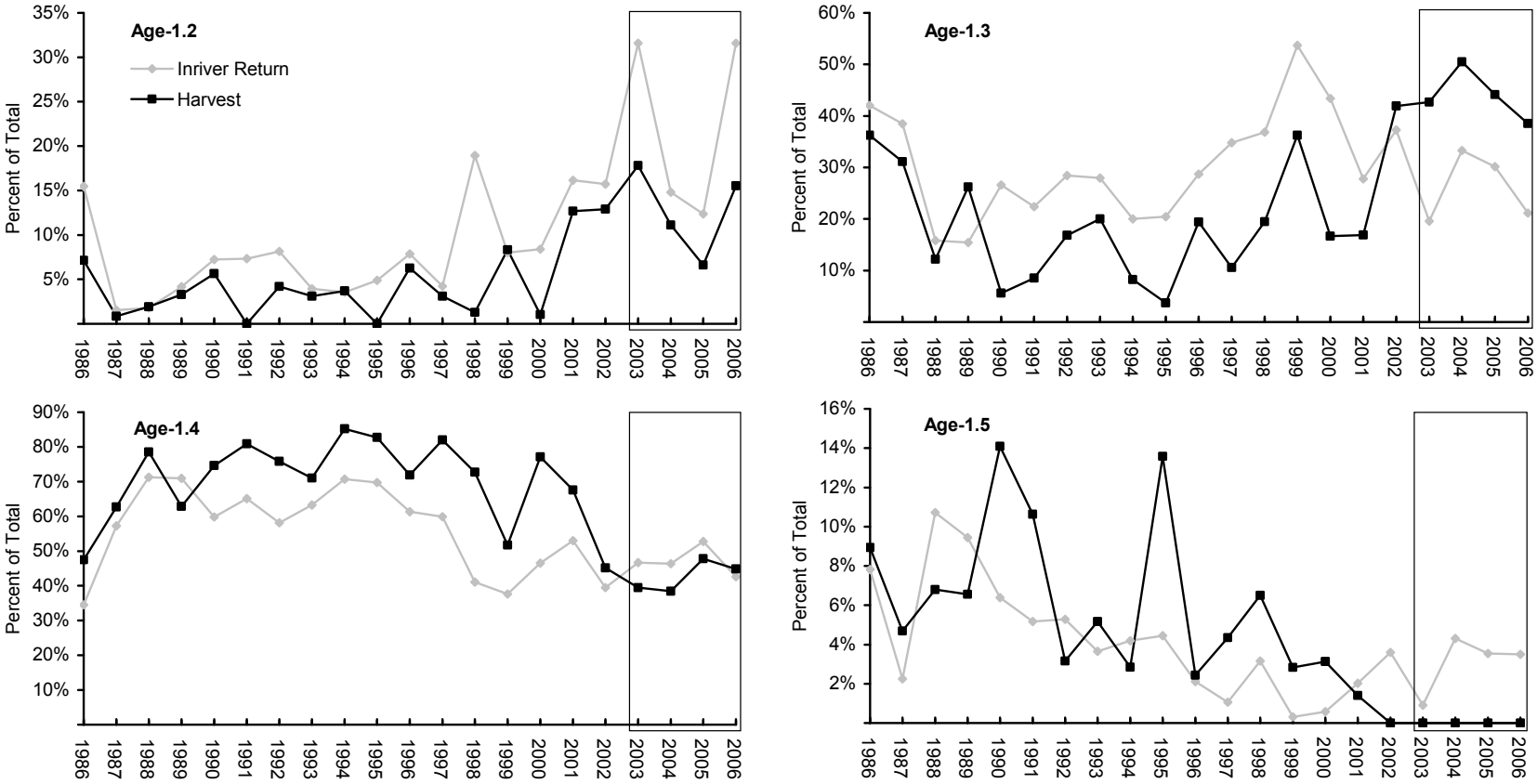
Parameter	Age 1.1	1.2	1.3	1.4	1.5	Total
Late Run, 1 July-13 August						
Female						
Sample size		62	31	250	16	359
Sonar passage estimate		3,650	1,761	12,617	794	18,822
SE sonar passage estimate		400	284	684	190	859
% sonar passage		9.7%	4.7%	33.4%	2.1%	49.9%
SE % sonar passage		1.0%	0.7%	1.6%	0.5%	1.9%
Male						
Sample size	8	125	70	122	37	362
Sonar passage estimate	488	6,745	3,738	6,100	1,850	18,921
SE sonar passage estimate	172	564	435	528	303	800
% sonar passage	1.3%	17.9%	9.9%	16.2%	4.9%	50.1%
SE % sonar passage	0.5%	1.5%	1.1%	1.4%	0.8%	1.9%
Combined						
Sample size	8	187	101	372	53	721
Sonar passage estimate	488	10,395	5,499	18,717	2,644	37,743
SE sonar passage estimate	172	660	519	799	359	1,370
% sonar passage	1.3%	27.5%	14.6%	49.6%	7.0%	100.0%
SE % sonar passage	0.5%	1.7%	1.4%	1.8%	0.9%	0.0%

Notes: Values given by age and sex may not sum to totals due to rounding.

Estimates of age composition and sonar passage by temporal strata for 2006 late-run Kenai River Chinook salmon are presented in Appendix F3.

OTHER RESULTS

Kenai River Secchi disk measurements of water clarity were average for the early run and above average for most of the late run, while discharge was above average for the early run and average for most of the late run (Figure 12). There were 550 unique Chinook salmon examined in the sport harvest for the presence of an adipose fin, and one was missing the adipose fin. There were 1,571 Chinook salmon examined in gillnets for the presence of an adipose fin, of which, three Chinook salmon were missing the adipose fin. ADF&G staff sealed eight Chinook salmon brought in to the Soldotna office during the late run in fulfillment of the 55 inch or greater sealing requirement. Finally, tissue samples (fin clips) were taken from 535 Chinook salmon sampled from inriver gillnets and 492 tissue samples were taken from Chinook salmon sampled from the creel survey for future genetic analysis.



Boxes represent years when the 44-55 inch slot limit was in effect, 2003-2006.

Figure 10.-Comparison of age composition of early-run harvest versus early-run inriver return, 1986-2006.

Table 7.-MEF length of Chinook salmon sampled during the early-run Kenai River Chinook salmon fishery, 2006.

Parameter	Age 1.1	1.2	1.3	1.4	1.5	Combined
Creel Survey						
Females						
Sample size		3	30	61		94
Mean length		660	828	938		893
SE length		12	9	6		8
Min length		640	735	810		640
Max length		680	920	1,010		1,010
Males						
Sample size	2	23	37	17		79
Mean length	395	620	784	949		766
SE length		13	8	17		16
Min length	395	510	635	775		395
Max length	395	725	890	1,080		1,080
Combined						
Sample size	2	26	67	78		173
Mean length	395	625	804	940		836
SE length		12	7	6		10
Min length	395	510	635	775		395
Max length	395	725	920	1,080		1,080
Inriver Gillnetting Survey						
Females						
Sample size		21	23	67	4	115
Mean length		618	830	975	1,055	883
SE length		12	13	8	12	14
Min length		505	745	790	1,025	505
Max length		680	980	1,110	1,080	1,110
Males						
Sample size	4	60	33	49	5	151
Mean length	446	630	794	1,009	1,121	800
SE length	13	6	14	11	17	16
Min length	415	485	660	835	1,085	415
Max length	480	710	930	1,150	1,170	1,170
Combined						
Sample size	4	81	56	116	9	266
Mean length	446	627	809	989	1,092	836
SE length	13	6	10	7	15	11
Min length	415	485	660	790	1,025	415
Max length	480	710	980	1,150	1,170	1,170

Table 8.-MEF length of Chinook salmon sampled during the late-run Kenai River Chinook salmon fishery, 2006.

Parameter	Age 1.1	1.2	1.3	1.4	1.5	Combined
Creel Survey						
Females						
Sample size		1	22	123	5	151
Mean length		620	850	979	1,048	960
SE length			10	5	21	6
Min length		620	760	825	1,015	620
Max length		620	915	1,100	1,130	1,130
Males						
Sample size	1	36	47	71	16	171
Mean length	440	607	810	1,027	1,153	887
SE length		13	9	7	24	15
Min length	440	405	675	875	1,005	405
Max length	440	730	940	1,140	1,295	1,295
Combined						
Sample size	1	37	69	194	21	322
Mean length	440	608	823	997	1,128	922
SE length		12	7	4	21	9
Min length	440	405	675	825	1,005	405
Max length	440	730	940	1,140	1,295	1,295
Inriver Gillnetting Survey						
Females						
Sample size		62	31	250	16	359
Mean length		627	840	1,006	1,086	930
SE length		7	15	3	11	8
Min length		460	680	830	1,010	460
Max length		720	990	1,175	1,150	1,175
Males						
Sample size	8	125	70	122	37	362
Mean length	447	634	804	1,050	1,159	857
SE length	13	5	7	6	6	11
Min length	390	480	675	870	1,070	390
Max length	500	750	970	1,235	1,240	1,240
Combined						
Sample size	8	187	101	372	53	721
Mean length	447	632	815	1,020	1,137	893
SE length	13	4	7	3	7	7
Min length	390	460	675	830	1,010	390
Max length	500	750	990	1,235	1,240	1,240

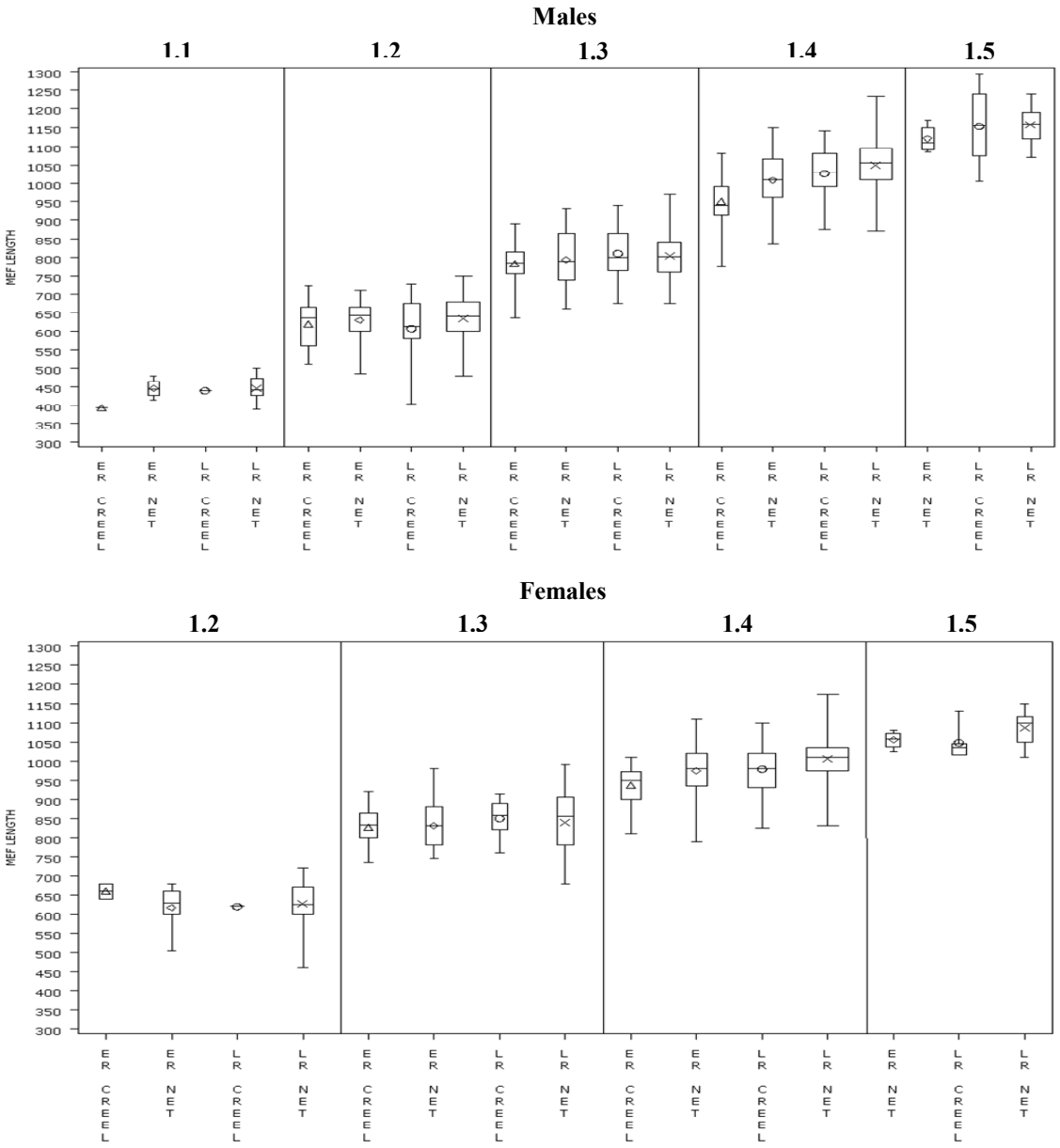
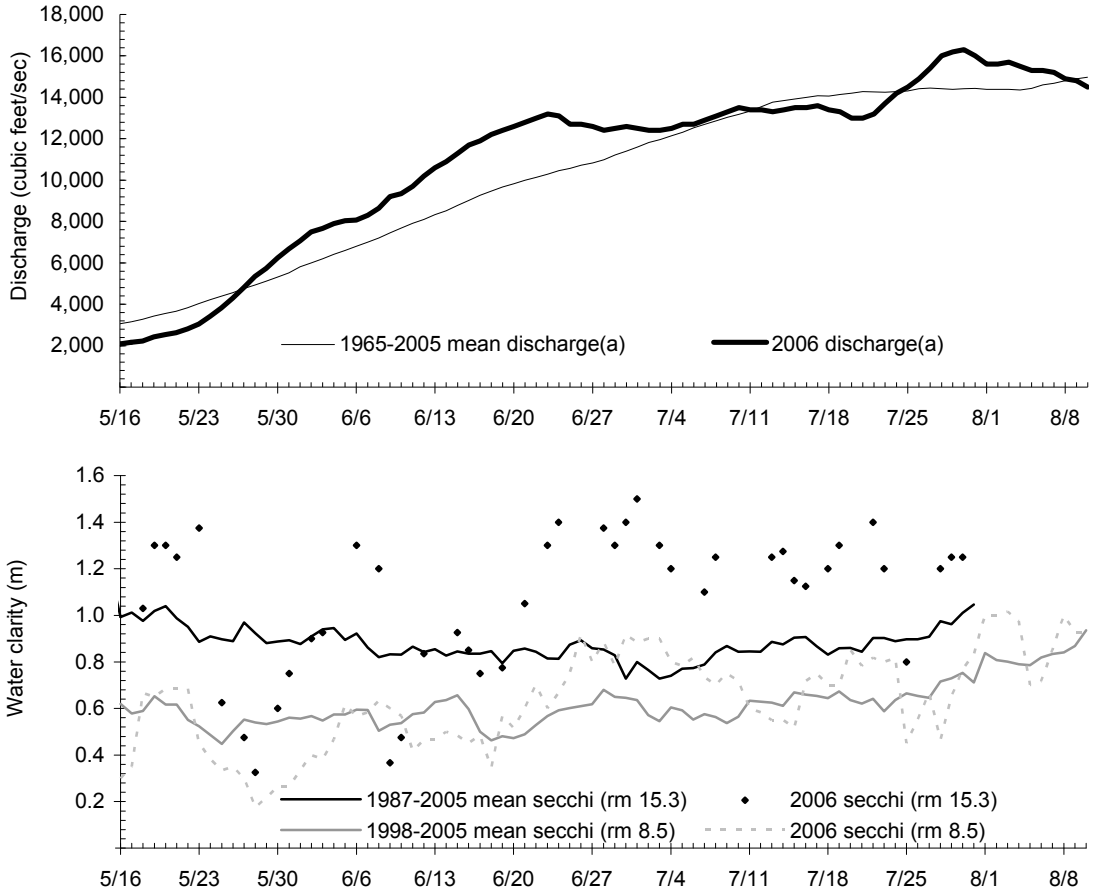


Figure 11.-Length distribution by age of early- and late-run Kenai River Chinook salmon by the creel survey and the inriver gillnetting program, 2006.



(a) discharge data downloaded from USGS 15266300 KENAI RIVER AT SOLDOTNA AK. 2007-01-10 14:38:47 EST http://waterdata.usgs.gov/ak/nwis/discharge?

Figure 12.-Kenai River discharge and water clarity, 16 May-10 August 2006.

DISCUSSION AND RECOMMENDATIONS

CREEL SURVEY

In 2006, the early-run fishery was liberalized on 10 June by emergency order to allow bait, the earliest the fishery has been liberalized since inception of the slot limit in 2003. Both early-run harvest and HPUE were the highest since 2003, yet effort was approximately 7,000 angler-hours (9%) less than the early-run fishery in 2005 (Eskelin 2007). Despite the early liberalization and increased harvest, the estimated early-run escapement (18,428, SE = 495) (McKinley *In prep*) was above the OEG range of 5,300 to 9,000.

The early-run slot limit regulation prohibiting retention of Chinook salmon between 44 and 55 inches TL has been effective at protecting 5-ocean-age Chinook salmon in the early run. There has not been an early-run 5-ocean-age Chinook salmon sampled in the creel survey or brought in to the Soldotna ADF&G office to be sealed during the 4 years (2003-2006) the slot limit has been in effect. The regulation has also reversed anglers' long standing tendency to selectively harvest 4-ocean-age Chinook salmon because some 4-ocean-age fish are also

protected by the slot limit. Among 4-ocean-age fish in the early run, females have been harvested at a higher rate than males because 4-ocean-age males are on average larger than 4-ocean-age females, hence more males are protected under the slot limit than females. Also, 3-ocean-age fish have been selectively harvested in the early run since 2003, another result due in part to the imposed slot limit.

There were no inseason management actions in the late-run Chinook salmon fishery. Late-run harvest was approximately 14% below the late-run harvest in 2005 (Eskelin 2007) and near the 5-year (2001-2005) moving average, whereas late-run effort was 10% above the late-run effort in 2005 and the highest since 1995. Part of the increase in effort in the fishery in 2006 could be a result of inseason restrictions placed on the sockeye salmon sport and personal use fisheries in late July because of low numbers of returning sockeye salmon at that time.

Harvest of Chinook salmon downstream of the Chinook sonar has continued to increase since the creel survey began estimating by geographic strata (upstream and downstream of the Chinook sonar) in 1996 (Figure 13). The estimate of late-run harvest downstream of the Chinook sonar (3,322, SE = 509) in 2006 was the largest since the annual creel survey was conducted (Appendix C2), approximately 39% more than the previous high of 2,386 (SE = 268) fish in 2004 (Reimer 2007). This portion of the fishery has expanded dramatically in recent years, has not shown signs of leveling off, and can harvest a significant number of Chinook salmon prior to them reaching the sonar site. Approximately 25% of the total lower river harvest of Chinook salmon and 10% of the inriver return of Chinook salmon in July were harvested downstream of the Chinook sonar site. Anglers are moving further downstream in greater numbers to fish for Chinook salmon. A few anglers were observed fishing below the downstream end of the creel survey area (Warren Ames Bridge). The negative bias associated with not counting these few anglers is considered negligible; however, anglers fishing downstream of the Warren Ames Bridge should be closely monitored to consider if extending the creel survey study area is necessary.

Unguided anglers have been allowed to fish from drift boats on Mondays in the late run since 1999 and on Mondays during both the early and late runs since 2003. Mondays during the early run have never been sampled and Mondays have not been included in the late-run regular creel sampling since 2001, replaced instead by the single index angler count and ad hoc estimation method. Consequently, 2002-2006 estimates of effort, catch, and harvest have a small negative bias because they do not include Mondays, meaning the seasonal estimates are slightly larger than the estimates presented. Monday estimates of harvest have never exceeded 4% of total late-run estimates even though effort during Mondays in the late run has trended upwards since 1999. The single angler count and ad hoc estimation procedure was calibrated based on Mondays sampled in the late run from 1999 to 2001. Five years have passed since Mondays were last sampled as part of the late-run regular creel sampling schedule and angler use patterns have likely changed during that time. Consequently, it is recommended that Mondays during the late run be added to the regular creel sampling schedule in 2007 to allow for re-calibration of the single angler count estimation procedure and provide a more precise estimate of effort, catch and harvest on Mondays.

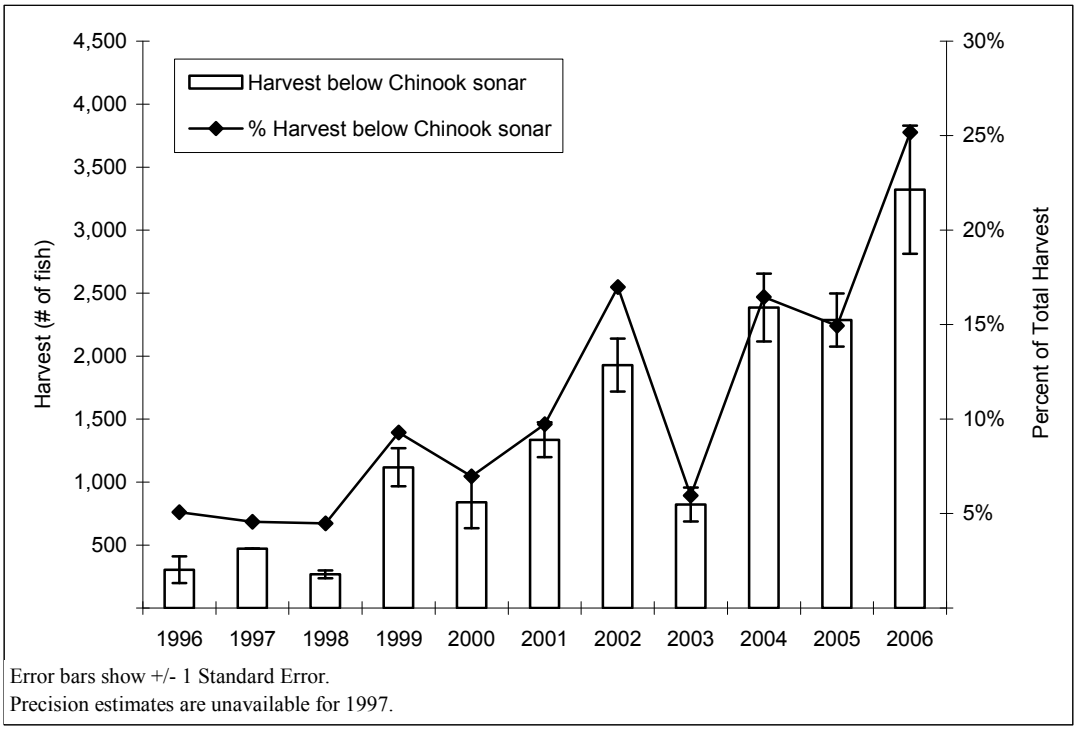


Figure 13.-Estimated harvest between the Chinook sonar site (rm 8.5) and Warren Ames Bridge (rm 6.1), 1996-2006.

INRIVER GILLNETTING

The inriver gillnetting program has undergone major changes in recent years. Changes include: (1) standardizing the netting area directly below the Kenai Chinook salmon sonar site, (2) adding CPUE and species composition estimates to the project objectives, (3) alternating nets with differing mesh sizes (5.0 and 7.5 inch) rather than using one 7.5 inch mesh gillnet, (4) changing the mesh material used from traditional cable-lay nylon mesh to a more transparent multifiber mesh material, and (5) subsampling the Chinook salmon inriver gillnet catch for age, sex, and length in the late run rather than sampling every Chinook salmon captured.

The most recent change was subsampling of every other Chinook salmon, first instituted in 2005 during the late run. Subsampling of Chinook salmon has dramatically reduced conflicts between the gillnetting program and the angling public while still achieving precision objectives in the late run. Consequently, the same level of subsampling should continue unless inseason projections suggest that late-run precision objectives for age and sex compositions will not be met.

For many years, the timing of gillnet sampling for this project has been scheduled around low tide. Yet, Chinook salmon sonar data indicate that a relatively small fraction of total fish passage occurs during low tide. In 2007 we intend to investigate the feasibility of sampling earlier in the tide cycle, beginning during the falling tide, to intercept a larger proportion of migrating fish.

Finally, we are developing methodologies to estimate the degree to which gillnet capture probabilities differ by mesh size, length, and age of Chinook salmon. This technique would

allow for direct comparison between the 7.5 inch selectivity curve and the 5.0 inch and 7.5 inch combined selectivity curve with respect to the historic inriver return ASL database. Gillnet size-selectivity is currently assessed by comparing the length distribution of Chinook salmon caught in the 5.0 inch and the 7.5 inch mesh gillnets (Figure 8). In 2006, the 5.0 inch mesh was selective for Chinook salmon between 400 mm and 600 mm MEF length, which has relevance to the historical age composition when just the 7.5 inch mesh was used.

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APPENDIX A. BOAT AND ANGLER COUNTS DURING THE KENAI RIVER CHINOOK SALMON FISHERY, 2006

Appendix A1.-Guided and unguided boat angler counts, by geographic strata, during the early-run Kenai River Chinook salmon fishery, 2006.

		Downstream[a]								Upstream[a]								Combined Strata							
	Day	Unguided Anglers				Guided Anglers				Unguided Anglers				Guided Anglers				Unguided Anglers				Guided Anglers			
Date	Type[b]	A[c]	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
5/18/2006	wd	0	0	0	0	0	0	0		10	0	3	0	12	13	2		10	0	3	0	12	13	2	
5/19/2006	wd	0	0	0	0	0	0	0		1	6	0	0	14	18	7		1	6	0	0	14	18	7	
5/20/2006	we/hol	0	0	0	0	0	0	0		2	12	5	0	20	23	4		2	12	5	0	20	23	4	
5/21/2006	we/hol	0	0	0	0					11	8	0	0					11	8	0	0				
5/23/2006	wd	0	0	0	0		3	0		6	16	0	4		49	28		6	16	0	4		52	28	
5/25/2006	wd	0	0	0	0	0	0			17	2	9	2	24	21			17	2	9	2	24	21		
5/27/2006	we/hol	3	0	0	0	0	0	0		6	17	21	8	47	53	38		9	17	21	8	47	53	38	
5/28/2006	we/hol	0	0	0	0					3	7	12	5					3	7	12	5				
5/31/2006	wd	0	0	0	0	0	0	0		10	14	0	4	43	18	5		10	14	0	4	43	18	5	
6/1/2006	wd	0	0	0	0	0	0	0		7	10	1	20	31	21	27		7	10	1	20	31	21	27	
6/3/2006	we/hol	0	0	0	0	0	0			60	52	13	14	106	94			60	52	13	14	106	94		
6/4/2006	we/hol	0	0	0	0					56	67	35	12					56	67	35	12				
6/7/2006	wd	0	4	0	0	0	14	0		26	25	17	7	156	73	25		26	29	17	7	156	87	25	
6/9/2006	wd	0	3	0	0	0	3			49	32	21	16	232	173			49	35	21	16	232	176		
6/10/2006[d]	we/hol	0	2	0	4		0	0		50	118	58	63		224	104		50	120	58	67		224	104	
6/11/2006	we/hol	0	4	0	0					33	89	37	23					33	93	37	23				
6/13/2006	wd	0	3	0	0	0	0	5		101	45	32	49	306	145	56		101	48	32	49	306	145	61	
6/16/2006	wd	0	3	0	0		0	10		18	67	48	53		177	117		18	70	48	53		177	127	
6/17/2006	we/hol	0	3	2	0		0	0		24	117	86	99		188	101		24	120	88	99		188	101	
6/18/2006	we/hol	6	9	10	2					183	125	66	23					189	134	76	25				
6/20/2006	wd	4	0	13	0	17	0			134	34	41	12	293	219			138	34	54	12	310	219		
6/22/2006	wd	0	0	0	3		17	0		19	27	34	52		192	82		19	27	34	55		209	82	
6/24/2006	we/hol	2	2	0	0	0	5	0		82	92	86	84	230	132	69		84	94	86	84	230	137	69	
6/25/2006	we/hol	0	12	14	0					10	171	136	104					10	183	150	104				
6/29/2006	wd	2	6	3	0		28	49		42	41	23	84		206	74		44	47	26	84		234	123	
6/30/2006	wd	0	0	6	0	3	32	11		71	38	26	72	352	132	64		71	38	32	72	355	164	75	
	Minimum		0				0				0				2				0				2		
	Average		1				4				37				97				39				101		
	Maximum		14				49				183				352				189				355		

[a] Downstream = Warren Ames Bridge to the Chinook salmon sonar site, Upstream = Chinook salmon sonar site to the Soldotna Bridge

[b] wd = weekday, we/hol = weekend/holiday

[c] Angler count timeframes: A = 0400-0859 hours, B = 0900-1359 hours, C = 1400-1959 hours, D = 2000-2359 hours

[d] Fishery was liberalized to allow the use of bait, slot limit (44-55 inches TL) still in effect.

Appendix A2.-Guided and unguided boat angler counts, by geographic strata, during the late-run Kenai River Chinook salmon fishery, 2006.

		Downstream[a]								Upstream[a]								Combined Strata							
	Day	Unguided Anglers				Guided Anglers				Unguided Anglers				Guided Anglers				Unguided Anglers				Guided Anglers			
Date	Type[b]	A[c]	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
7/1/2006	we/hol	0	22	5	2		29			11	151	93	120		369	219		11	173	98	122		398	288	
7/2/2006	we/hol	25	45	20	13					193	201	167	140					218	246	187	153				
7/4/2006	wd	13	75	18	28		180	86		173	181	90	119		415	125		186	256	108	147		595	211	
7/5/2006	wd	3	23	7	11	130	133			76	72	52	68	238	136			79	95	59	79	368	269		
7/8/2006	we/hol	46	44	17	23	129	109	10		234	152	237	169	453	147	186		280	196	254	192	582	256	196	
7/9/2006	we/hol	9	91	8	5					263	275	307	149					272	366	315	154				
7/13/2006	wd	0	23	58	5		89	198		170	139	91	238		441	151		170	162	149	243		530	349	
7/14/2006	wd	17	39	31	2	68	127	26		227	180	141	177	627	383	194		244	219	172	179	695	510	220	
7/15/2006	we/hol	30	87	41	0	31	122			350	294	248	155	562	474			380	381	289	155	593	596		
7/16/2006	we/hol	4	48	73	45					84	674	394	353					88	722	467	398				
7/18/2006	wd	26	31	33	104		92	236		666	304	167	406		473	299		692	335	200	510		565	535	
7/19/2006	wd	8	98	43	110		372	140		177	263	214	253		283	372		185	361	257	363		655	512	
7/22/2006	we/hol	78	73	21	57	208	204	2		250	285	289	208	280	114	181		328	358	310	265	488	318	183	
7/23/2006	we/hol	30	159	56	123					486	315	411	266					516	474	467	389				
7/25/2006	wd	74	54	15	40	40	93	45		502	222	184	219	734	462	359		576	276	199	259	774	555	404	
7/28/2006	wd	1	73	95	28		156	216		234	276	173	395		325	132		235	349	268	423		481	348	
7/29/2006	we/hol	49	125	0	5	83	205			359	169	282	63	399	163			408	294	282	68	482	368		
7/30/2006	we/hol	3	215	175	61					453	340	201	304					456	555	376	365				
	Minimum		0				2				11				114				11				183		
	Average		43				123				235				323				279				444		
	Maximum		215				372				674				734				722				774		

[a] Downstream = Warren Ames Bridge to the Chinook salmon sonar site, Upstream = Chinook salmon sonar site to the Soldotna Bridge

[b] wd = weekday, we/hol = weekend/holiday

[c] Angler count timeframes: A = 0400-0859 hours, B = 0900-1359 hours, C = 1400-1959 hours, D = 2000-2359 hours

APPENDIX B. EFFORT, CATCH, AND HARVEST ESTIMATES BY GEOGRAPHIC STRATA DURING THE KENAI RIVER CHINOOK SALMON FISHERY, 2006

Appendix B1.-Daily estimates of unguided boat angler CPUE, HPUE, angler effort, catch and harvest, by geographic strata, during the early-run Kenai River Chinook salmon fishery, 2006.

		Angler interview data[a]					Downstream[b]								Upstream[b]							
			Catch		Harvest		Counts		Effort		Catch		Harvest		Counts		Effort		Catch		Harvest	
Date	Day Type[c]	*n*[d]	CPUE	SE	HPUE	SE	*n*	mean	Est.	SE	Est.	SE	Est.	SE	*n*	mean	Est.	SE	Est.	SE	Est.	SE
5/18/2006	wd	12	0.057	0.063	0.000	0.000	4	0	0	0	0	0	0	0	4	3	65	44	4	5	0	0
5/19/2006	wd	8	0.000	0.000	0.000	0.000	4	0	0	0	0	0	0	0	4	2	35	32	0	0	0	0
5/20/2006	we/hol	11	0.061	0.030	0.000	0.000	4	0	0	0	0	0	0	0	4	5	95	54	6	4	0	0
5/21/2006	we/hol	19	0.041	0.023	0.014	0.014	4	0	0	0	0	0	0	0	4	5	95	35	4	3	1	1
5/23/2006	wd	20	0.014	0.014	0.000	0.000	4	0	0	0	0	0	0	0	4	7	130	79	2	2	0	0
5/25/2006	wd	22	0.000	0.000	0.000	0.000	4	0	0	0	0	0	0	0	4	8	150	73	0	0	0	0
5/27/2006	we/hol	30	0.000	0.000	0.000	0.000	4	1	15	12	0	0	0	0	4	13	260	71	0	0	0	0
5/28/2006	we/hol	11	0.000	0.000	0.000	0.000	4	0	0	0	0	0	0	0	4	7	135	39	0	0	0	0
5/31/2006	wd	8	0.000	0.000	0.000	0.000	4	0	0	0	0	0	0	0	4	7	140	62	0	0	0	0
6/1/2006	wd	10	0.031	0.030	0.000	0.000	4	0	0	0	0	0	0	0	4	10	190	87	6	6	0	0
6/3/2006	we/hol	32	0.059	0.021	0.044	0.018	4	0	0	0	0	0	0	0	4	35	695	163	41	17	31	14
6/4/2006	we/hol	68	0.046	0.018	0.025	0.009	4	0	0	0	0	0	0	0	4	43	850	167	39	17	21	9
6/7/2006	wd	15	0.019	0.021	0.019	0.021	4	1	20	23	0	1	0	1	4	19	375	52	7	8	7	8
6/9/2006	wd	35	0.042	0.015	0.024	0.012	4	1	15	17	1	1	0	0	4	30	590	85	25	10	14	7
6/10/2006[e]	we/hol	41	0.189	0.039	0.091	0.024	4	2	30	20	6	4	3	2	4	72	1,445	371	273	90	131	49
6/11/2006	we/hol	11	0.019	0.021	0.019	0.021	4	1	20	23	0	1	0	1	4	46	910	317	18	20	18	20
6/13/2006	wd	19	0.048	0.031	0.032	0.025	4	1	15	17	1	1	0	1	4	57	1,135	245	55	37	36	30
6/16/2006	wd	47	0.085	0.023	0.030	0.014	4	1	15	17	1	2	0	1	4	47	930	216	79	28	28	14
6/17/2006	we/hol	63	0.016	0.008	0.008	0.006	4	1	25	15	0	0	0	0	4	82	1,630	404	26	14	13	10
6/18/2006	we/hol	65	0.030	0.010	0.026	0.010	4	7	135	35	4	2	4	2	4	99	1,985	381	59	23	51	22
6/20/2006	wd	18	0.000	0.000	0.000	0.000	4	4	85	77	0	0	0	0	4	55	1,105	426	0	0	0	0
6/22/2006	wd	12	0.045	0.046	0.022	0.023	4	1	15	12	1	1	0	0	4	33	660	85	29	31	15	15
6/24/2006	we/hol	61	0.040	0.012	0.026	0.009	4	1	20	8	1	0	1	0	4	86	1,720	48	68	21	45	16
6/25/2006	we/hol	47	0.046	0.018	0.041	0.016	4	7	130	76	6	4	5	4	4	105	2,105	685	98	50	85	43
6/29/2006	wd	24	0.035	0.018	0.017	0.013	4	3	55	24	2	1	1	1	4	48	950	260	33	19	16	13
6/30/2006	wd	25	0.132	0.033	0.088	0.029	4	2	30	35	4	5	3	3	4	52	1,035	236	136	46	91	37
Min		8	0.000		0.000		4	0	0		0		0		4	2	35		0		0	
Mean		29	0.041		0.020		4	1	25		1		1		4	39	774		40		24	
Max		68	0.189		0.091		4	7	135		6		5		4	105	2,105		273		131	

[a] Angler counts are geographically stratified, angler interviews are not.

[b] Downstream = Warren Ames Bridge to the Chinook salmon sonar site, Upstream = Chinook salmon sonar site to the Soldotna Bridge

[c] wd = weekday, we/hol = weekend/holiday

[d] On days with less than 5 interviews, pooled estimates of CPUE and HPUE from other days in the stratum were used.

[e] Fishery was liberalized to allow the use of bait, slot limit (44-55 inches TL) still in effect.

Appendix B2.-Daily estimates of guided boat angler CPUE, HPUE, angler effort, catch and harvest, by geographic strata, during the early-run Kenai River Chinook salmon fishery, 2006.

		Angler interview data[a]					Downstream[b]								Upstream[b]							
	Day		Catch		Harvest		Counts		Effort		Catch		Harvest		Counts		Effort		Catch		Harvest	
Date	Type[c]	*n* [d]	CPUE	SE	HPUE	SE	*n*	mean	Est.	SE	Est.	SE	Est.	SE	*n*	mean	Est.	SE	Est.	SE	Est.	SE
5/18/2006	wd	0	0.026	0.036	0.013	0.019	3	0	0	0	0	0	0	0	3	9	108	38	3	4	1	2
5/19/2006	wd	16	0.009	0.009	0.009	0.009	3	0	0	0	0	0	0	0	3	13	156	41	1	1	1	1
5/20/2006	we/hol	9	0.064	0.032	0.020	0.022	3	0	0	0	0	0	0	0	3	16	188	67	12	7	4	4
5/23/2006	wd	42	0.027	0.009	0.010	0.006	3	2	18	18	0	1	0	0	3	39	462	126	12	5	5	3
5/25/2006	wd	13	0.000	0.000	0.000	0.000	2	0	0	0	0	0	0	0	2	23	270	18	0	0	0	0
5/27/2006	we/hol	10	0.000	0.000	0.000	0.000	3	0	0	0	0	0	0	0	3	46	552	56	0	0	0	0
5/31/2006	wd	18	0.000	0.000	0.000	0.000	3	0	0	0	0	0	0	0	3	22	264	98	0	0	0	0
6/1/2006	wd	9	0.000	0.000	0.000	0.000	3	0	0	0	0	0	0	0	3	26	316	40	0	0	0	0
6/3/2006	we/hol	19	0.054	0.026	0.054	0.026	2	0	0	0	0	0	0	0	2	100	1,200	72	65	32	65	32
6/7/2006	wd	29	0.079	0.023	0.058	0.018	3	5	56	69	4	6	3	4	3	85	1,016	332	81	35	59	27
6/9/2006	wd	28	0.043	0.021	0.036	0.016	2	2	18	18	1	1	1	1	2	203	2,430	354	104	53	87	42
6/10/2006[e]	we/hol	46	0.065	0.016	0.036	0.013	3	0	0	0	0	0	0	0	3	164	1,968	720	129	57	72	37
6/13/2006	wd	25	0.126	0.033	0.126	0.033	3	2	20	17	3	2	3	2	3	169	2,028	637	255	105	255	105
6/16/2006	wd	53	0.088	0.016	0.073	0.014	3	5	60	60	5	5	4	4	3	147	1,764	360	155	43	128	37
6/17/2006	we/hol	60	0.041	0.010	0.032	0.010	3	0	0	0	0	0	0	0	3	145	1,734	522	71	28	56	24
6/20/2006	wd	52	0.068	0.013	0.051	0.012	2	9	102	102	7	7	5	5	2	256	3,072	444	208	51	156	42
6/22/2006	wd	31	0.060	0.020	0.053	0.019	3	9	102	102	6	6	5	6	3	137	1,644	660	98	51	87	47
6/24/2006	we/hol	36	0.055	0.017	0.034	0.013	3	2	20	24	1	1	1	1	3	144	1,724	404	95	36	58	26
6/29/2006	wd	51	0.087	0.015	0.056	0.014	3	39	462	126	40	13	26	9	3	140	1,680	792	147	74	93	50
6/30/2006	wd	15	0.099	0.037	0.099	0.037	3	15	184	124	18	14	18	14	3	183	2,192	798	217	113	217	113
Min		0	0.000		0.000		2	0	0		0		0		2	9	108		0		0	
Mean		28	0.049		0.038		3	4	52		4		3		3	103	1,238		83		67	
Max		60	0.126		0.126		3	39	462		40		26		3	256	3,072		255		255	

[a] Angler counts are geographically stratified, angler interviews are not.

[b] Downstream = Warren Ames Bridge to the Chinook salmon sonar site, Upstream = Chinook salmon sonar site to the Soldotna Bridge

[c] wd = weekday, we/hol = weekend/holiday

[d] On days with less than 5 interviews, pooled estimates of CPUE and HPUE from other days in the stratum were used.

[e] Fishery was liberalized to allow the use of bait, slot limit (44-55 inches TL) still in effect.

Appendix B3.-Daily estimates of unguided boat angler CPUE, HPUE, angler effort, catch and harvest, by geographic strata, during the late-run Kenai River Chinook salmon fishery, 2006.

		Angler interview data[a]					Downstream[b]								Upstream[b]							
			Catch		Harvest		Counts		Effort		Catch		Harvest		Counts		Effort		Catch		Harvest	
Date	Day Type[c]	*n*	CPUE	SE	HPUE	SE	*n*	mean	Est.	SE	Est.	SE	Est.	SE	*n*	mean	Est.	SE	Est.	SE	Est.	SE
7/1/2006	we/hol	43	0.057	0.022	0.035	0.016	4	7	145	114	8	7	5	5	4	94	1,875	628	107	55	66	38
7/2/2006	we/hol	74	0.060	0.015	0.022	0.008	4	26	515	134	31	11	11	5	4	175	3,505	180	211	53	78	30
7/4/2006	wd	59	0.136	0.037	0.078	0.020	4	34	670	346	91	53	52	30	4	141	2,815	391	384	117	219	64
7/5/2006	wd	16	0.041	0.022	0.014	0.014	4	11	220	106	9	7	3	3	4	67	1,340	106	55	30	18	18
7/8/2006	we/hol	53	0.041	0.014	0.027	0.011	4	33	650	113	27	10	18	8	4	198	3,960	556	164	58	109	48
7/9/2006	we/hol	83	0.075	0.016	0.029	0.010	4	28	565	476	43	37	17	15	4	249	4,970	660	375	95	146	52
7/13/2006	wd	47	0.033	0.014	0.014	0.008	4	22	430	276	14	11	6	5	4	160	3,190	644	105	49	45	27
7/14/2006	wd	69	0.065	0.020	0.030	0.011	4	22	445	152	29	13	14	7	4	181	3,625	289	236	75	110	40
7/15/2006	we/hol	61	0.059	0.018	0.034	0.011	4	40	790	343	46	25	27	15	4	262	5,235	481	307	98	180	61
7/16/2006	we/hol	110	0.121	0.019	0.057	0.011	4	43	850	236	103	33	49	16	4	376	7,525	2,671	914	354	431	174
7/18/2006	wd	62	0.047	0.013	0.027	0.011	4	49	970	291	46	19	26	13	4	386	7,715	1,857	363	134	211	96
7/19/2006	wd	141	0.048	0.009	0.027	0.007	4	65	1,295	510	62	27	35	16	4	227	4,535	434	216	45	123	33
7/22/2006	we/hol	58	0.074	0.017	0.062	0.016	4	57	1,145	259	85	27	71	24	4	258	5,160	361	383	90	319	85
7/23/2006	we/hol	112	0.080	0.013	0.051	0.010	4	92	1,840	727	147	63	93	41	4	370	7,390	996	591	124	374	88
7/25/2006	wd	128	0.047	0.009	0.038	0.009	4	46	915	206	43	13	35	11	4	282	5,635	1,162	262	75	216	66
7/28/2006	wd	114	0.076	0.013	0.071	0.013	4	49	985	411	74	34	70	32	4	270	5,390	1,014	407	103	382	99
7/29/2006	we/hol	89	0.061	0.013	0.055	0.013	4	45	895	598	55	38	49	35	4	218	4,365	1,270	266	97	241	90
7/30/2006	we/hol	118	0.099	0.015	0.055	0.010	4	114	2,270	996	224	104	124	59	4	325	6,490	844	640	130	355	80
Min		16	0.033		0.014		4	7	145		8		3		4	67	1,340		55		18	
Mean		80	0.068		0.040		4	43	866		63		39		4	235	4,707		332		201	
Max		141	0.136		0.078		4	114	2,270		224		124		4	386	7,715		914		431	

[a] Angler counts are geographically stratified, angler interviews are not.

[b] Downstream = Warren Ames Bridge to the Chinook salmon sonar site, Upstream = Chinook salmon sonar site to the Soldotna Bridge

[c] wd = weekday, we/hol = weekend/holiday

Appendix B4.-Daily estimates of guided boat angler CPUE, HPUE, angler effort, catch and harvest, by geographic strata, during the late-run Kenai River Chinook salmon fishery, 2006.

		Angler interview data[a]					Downstream[b]								Upstream[b]							
			Catch		Harvest		Counts		Effort		Catch		Harvest		Counts		Effort		Catch		Harvest	
Date	Day Type[c]	*n*	CPUE	SE	HPUE	SE	*n*	mean	Est.	SE	Est.	SE	Est.	SE	*n*	mean	Est.	SE	Est.	SE	Est.	SE
7/1/2006	we/hol	24	0.105	0.030	0.064	0.025	3	49	588	240	62	31	37	21	3	294	3,528	900	370	143	225	104
7/4/2006	wd	48	0.096	0.017	0.051	0.012	3	133	1,596	564	154	61	82	35	3	270	3,240	1,740	312	177	166	98
7/5/2006	wd	60	0.133	0.022	0.087	0.016	2	132	1,578	18	210	35	137	25	2	187	2,244	612	299	96	194	64
7/8/2006	we/hol	21	0.058	0.019	0.028	0.014	3	83	992	350	57	27	28	17	3	262	3,144	1,069	181	85	89	53
7/13/2006	wd	77	0.033	0.008	0.024	0.007	3	144	1,722	654	57	26	41	19	3	296	3,552	1,740	119	65	86	48
7/14/2006	wd	54	0.044	0.011	0.035	0.010	3	74	884	405	39	20	31	17	2	505	6,060	1,464	264	92	214	80
7/15/2006	we/hol	28	0.059	0.019	0.039	0.016	2	77	918	546	54	37	36	26	2	518	6,216	528	365	123	242	104
7/18/2006	wd	45	0.092	0.021	0.068	0.017	3	164	1,968	864	182	90	134	68	3	386	4,632	1,044	428	136	316	106
7/19/2006	wd	91	0.083	0.013	0.072	0.013	3	256	3,072	1,392	255	122	222	108	3	328	3,930	534	326	67	284	63
7/22/2006	we/hol	39	0.076	0.019	0.063	0.018	3	138	1,656	700	126	62	104	53	3	192	2,300	620	176	65	144	57
7/25/2006	wd	88	0.051	0.009	0.045	0.009	3	59	712	248	36	14	32	13	3	518	6,220	1,008	318	77	282	72
7/28/2006	wd	41	0.201	0.033	0.138	0.029	3	186	2,232	360	448	103	308	82	3	229	2,742	1,158	550	249	378	179
7/29/2006	we/hol	39	0.174	0.037	0.113	0.029	2	144	1,728	732	300	142	195	96	2	281	3,372	1,416	586	275	380	187
Min		21	0.033		0.024		2	49	588		36		28		2	187	2,244		119		86	
Mean		50	0.093		0.064		3	126	1,511		152		107		3	328	3,937		330		231	
Max		91	0.201		0.138		3	256	3,072		448		308		3	518	6,220		586		380	

[a] Angler counts are geographically stratified, angler interviews are not.

[b] Downstream = Warren Ames Bridge to the Chinook salmon sonar site, Upstream = Chinook salmon sonar site to the Soldotna Bridge

[c] wd = weekday, we/hol = weekend/holiday

APPENDIX C. EFFORT, CATCH AND HARVEST ESTIMATES BY TEMPORAL AND GEOGRAPHIC STRATA DURING THE KENAI RIVER CHINOOK SALMON FISHERY, 2006

Appendix C1.-Effort, catch, and harvest estimates by geographic strata, during the early-run Kenai River Chinook salmon fishery, 2006.

	Downstream[a] Creel Estimates						Upstream[a] Creel Estimates								
	Effort		Catch		Harvest		Effort		Catch		Harvest		% Downstream		
	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Effort	Catch	Harvest
16-21 May															
Guided weekdays	0	0	0	0	0	0	528	104	8	6	5	4	0.0%	0.0%	0.0%
Guided weekends	0	0	0	0	0	0	188	67	12	7	4	4	0.0%	0.0%	0.0%
Unguided weekdays	0	0	0	0	0	0	200	88	7	9	0	0	0.0%	0.0%	N/A
Unguided weekends	0	0	0	0	0	0	190	64	10	5	1	1	0.0%	0.0%	0.0%
23-29 May															
Guided weekdays	36	36	1	1	0	0	1,464	326	25	19	9	8	2.4%	3.8%	3.8%
Guided weekends	0	0	0	0	0	0	1,104	79	0	0	0	0	0.0%	N/A	N/A
Unguided weekdays	0	0	0	0	0	0	560	155	4	4	0	0	0.0%	0.0%	N/A
Unguided weekends	23	20	0	0	0	0	593	147	0	0	0	0	3.7%	N/A	N/A
30 May-4 June															
Guided weekdays	0	0	0	0	0	0	1,160	167	0	0	0	0	0.0%	N/A	N/A
Guided weekends	0	0	0	0	0	0	1,200	72	65	32	65	32	0.0%	0.0%	0.0%
Unguided weekdays	0	0	0	0	0	0	660	166	12	12	0	0	0.0%	0.0%	N/A
Unguided weekends	0	0	0	0	0	0	1,545	233	80	24	51	17	0.0%	0.0%	0.0%
6-11 June															
Guided weekdays	148	114	10	10	8	7	6,892	2,114	369	96	291	80	2.1%	2.8%	2.6%
Guided weekends	0	0	0	0	0	0	1,968	720	129	57	72	37	0.0%	0.0%	0.0%
Unguided weekdays	70	41	2	1	1	1	1,930	335	64	31	43	18	3.5%	3.1%	3.4%
Unguided weekends	50	31	6	4	3	2	2,355	488	290	92	148	53	2.1%	2.0%	2.0%
13-18 June															
Guided weekdays	160	105	16	9	14	8	7,584	1,100	820	214	766	238	2.1%	1.9%	1.8%
Guided weekends	0	0	0	0	0	0	1,734	522	71	28	56	24	0.0%	0.0%	0.0%
Unguided weekdays	60	35	4	3	2	1	4,130	545	267	74	128	48	1.4%	1.5%	1.4%
Unguided weekends	160	38	4	2	4	2	3,615	555	84	27	64	24	4.2%	5.0%	5.4%
20-25 June															
Guided weekdays	408	204	26	14	21	11	9,432	2,312	613	186	485	132	4.1%	4.1%	4.2%
Guided weekends	20	24	1	1	1	1	1,724	404	95	36	58	26	1.1%	1.1%	1.1%
Unguided weekdays	200	148	1	2	1	1	3,530	880	59	60	29	30	5.4%	2.2%	2.2%
Unguided weekends	150	76	7	4	6	4	3,825	687	166	54	131	46	3.8%	4.0%	4.2%
27-30 June															
Guided weekdays	1,292	466	117	41	88	26	7,744	1,747	728	216	621	247	14.3%	13.9%	12.4%
Unguided weekdays	170	69	12	7	7	5	3,970	511	339	162	214	119	4.1%	3.3%	3.2%

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	Downstream[a] Creel Estimates						Upstream[a] Creel Estimates								
	Effort		Catch		Harvest		Effort		Catch		Harvest		% Downstream		
	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Effort	Catch	Harvest
Day Type Subtotals															
Guided weekdays	2,044	533	170	45	131	30	34,804	3,771	2,562	369	2,178	377	5.5%	6.2%	5.7%
Guided weekends	20	24	1	1	1	1	7,918	985	371	80	254	60	0.3%	0.3%	0.3%
Unguided weekdays	500	172	19	8	11	6	14,980	1,226	752	191	414	133	3.2%	2.5%	2.6%
Unguided weekends	383	93	17	6	13	5	12,123	1,048	630	113	396	76	3.1%	2.7%	3.1%
Angler Type Subtotals															
Guided	2,064	533	171	45	132	30	42,722	3,897	2,933	378	2,432	381	4.6%	5.5%	5.1%
% guided	70.0%		82.5%		84.7%		61.2%		68.0%		75.0%				
Unguided	883	195	36	10	24	7	27,103	1,613	1,382	222	810	153	3.2%	2.6%	2.8%
% unguided	30.0%		17.5%		15.3%		38.8%		32.0%		25.0%				
Early-run Total	2,947	568	208	47	155	31	69,825	4,218	4,315	438	3,242	411	4.0%	4.6%	4.6%

[a] Downstream = Warren Ames Bridge to the Chinook salmon sonar site, Upstream = Chinook salmon sonar site to the Soldotna Bridge

Appendix C2.-Effort, catch, and harvest estimates, by geographic strata, during the late-run Kenai River Chinook salmon fishery, 2006.

	Downstream[a] Creel Estimates						Upstream[a] Creel Estimates								
	Effort		Catch		Harvest		Effort		Catch		Harvest		% Downstream		
	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Est.	SE	Effort	Catch	Harvest
1-2 July															
Guided weekends	588	240	62	31	37	21	3,528	900	370	143	225	104	14.3%	14.3%	14.3%
Unguided weekends	660	176	39	13	17	7	5,380	654	318	77	144	48	10.9%	11.0%	10.3%
4-9 July															
Guided weekdays	6,348	798	728	128	437	99	10,968	2,965	1,222	285	721	170	36.7%	37.3%	37.7%
Guided weekends	992	350	57	27	28	17	3,144	1,069	181	85	89	53	24.0%	24.0%	24.0%
Unguided weekdays	1,780	817	201	139	110	82	8,310	2,163	877	495	475	300	17.6%	18.6%	18.9%
Unguided weekends	1,215	490	69	38	34	17	8,930	863	538	112	255	70	12.0%	11.4%	11.9%
11-16 July															
Guided weekdays	5,212	1,609	192	53	145	39	19,224	4,788	766	260	599	225	21.3%	20.1%	19.5%
Guided weekends	918	546	54	37	36	26	6,216	528	365	123	242	104	12.9%	12.9%	12.9%
Unguided weekdays	1,750	446	86	32	39	16	13,630	1,173	682	225	311	115	11.4%	11.2%	11.2%
Unguided weekends	1,640	416	149	41	76	22	12,760	2,714	1,220	367	611	185	11.4%	10.9%	11.0%
18-23 July															
Guided weekdays	10,080	2,794	874	238	713	219	17,124	1,933	1,509	258	1,200	180	37.1%	36.7%	37.3%
Guided weekends	1,656	700	126	62	104	53	2,300	620	176	65	144	57	41.9%	41.9%	41.9%
Unguided weekdays	4,530	949	215	52	123	32	24,500	5,244	1,159	288	668	190	15.6%	15.6%	15.6%
Unguided weekends	2,985	772	232	68	164	47	12,550	1,059	974	153	692	122	19.2%	19.2%	19.1%
25-30 July															
Guided weekdays	5,888	2,237	969	600	680	407	17,924	5,376	1,736	494	1,320	304	24.7%	35.8%	34.0%
Guided weekends	1,728	732	300	142	195	96	3,372	1,416	586	275	380	187	33.9%	33.9%	33.9%
Unguided weekdays	3,800	658	234	68	210	68	22,050	2,209	1,339	273	1,197	288	14.7%	14.9%	14.9%
Unguided weekends	3,165	1,162	278	111	173	69	10,855	1,525	906	163	596	120	22.6%	23.5%	22.6%
Day Type Subtotals															
Guided weekdays	27,528	4,004	2,762	660	1,975	474	65,240	8,022	5,232	678	3,840	452	29.7%	34.6%	34.0%
Guided weekends	5,882	1,226	599	165	400	116	18,560	2,149	1,678	351	1,080	250	24.1%	26.3%	27.0%
Unguided weekdays	11,860	1,483	736	166	483	112	68,490	6,199	4,056	674	2,651	472	14.8%	15.4%	15.4%
Unguided weekends	9,665	1,546	769	143	464	88	50,475	3,462	3,956	451	2,297	266	16.1%	16.3%	16.8%
Angler Type Subtotals															
Guided	33,410	4,188	3,362	681	2,375	488	83,800	8,305	6,910	763	4,920	517	28.5%	32.7%	32.6%
% Guided	60.8%		69.1%		71.5%		41.3%		46.3%		49.9%				
Unguided	21,525	2,142	1,504	219	947	143	118,965	7,101	8,012	810	4,948	541	15.3%	15.8%	16.1%
% Unguided	39.2%		30.9%		28.5%		58.7%		53.7%		50.1%				
Late-run Total	54,935	4,704	4,866	715	3,322	509	202,765	10,927	14,922	1,113	9,869	749	21.3%	24.6%	25.2%

[a] Downstream = Warren Ames Bridge to the Chinook salmon sonar site, Upstream = Chinook salmon sonar site to the Soldotna Bridge

APPENDIX D. INRIVER GILLNETTING DAILY CATCH, CPUE, AND SPECIES PROPORTION DURING THE KENAI RIVER CHINOOK SALMON FISHERY, 2006

Appendix D1.-Inriver gillnetting catch, CPUE, and proportion of Chinook salmon caught in the 5.0 inch mesh gillnet during the early-run Kenai River Chinook salmon fishery, 2006.

			Total	Chinook			Sockeye			Dolly Varden			Proportion	
Date	Drifts	Minutes	Catch	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	Chinook[a]	SE
5/16/2006	10	78	0	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.00	0.00
5/17/2006	8	64	1	0	0.000	0.000	1	0.016	0.016	0	0.000	0.000	0.00	0.00
5/18/2006	10	88	2	1	0.011	0.011	1	0.011	0.012	0	0.000	0.000	0.50	0.37
5/19/2006	10	75	1	0	0.000	0.000	1	0.013	0.013	0	0.000	0.000	0.00	0.00
5/20/2006	12	83	1	0	0.000	0.000	1	0.012	0.012	0	0.000	0.000	0.00	0.00
5/21/2006	10	72	1	0	0.000	0.000	1	0.014	0.014	0	0.000	0.000	0.00	0.00
5/22/2006	10	84	1	1	0.012	0.012	0	0.000	0.000	0	0.000	0.000	1.00	0.00
5/23/2006	10	73	1	0	0.000	0.000	1	0.014	0.014	0	0.000	0.000	0.00	0.00
5/24/2006	10	88	1	0	0.000	0.000	1	0.011	0.011	0	0.000	0.000	0.00	0.00
5/25/2006	10	104	8	0	0.000	0.000	8	0.077	0.044	0	0.000	0.000	0.00	0.00
5/26/2006	10	109	10	1	0.009	0.009	9	0.083	0.041	0	0.000	0.000	0.10	0.06
5/27/2006	8	77	13	0	0.000	0.000	13	0.168	0.065	0	0.000	0.000	0.00	0.00
5/28/2006	10	88	15	2	0.023	0.015	13	0.147	0.048	0	0.000	0.000	0.13	0.10
5/29/2006	8	69	16	1	0.015	0.014	15	0.219	0.063	0	0.000	0.000	0.06	0.05
5/30/2006	8	72	32	1	0.014	0.014	31	0.431	0.073	0	0.000	0.000	0.03	0.03
5/31/2006	10	47	29	1	0.021	0.021	28	0.601	0.171	0	0.000	0.000	0.03	0.04
6/1/2006	11	54	54	7	0.129	0.041	47	0.866	0.165	0	0.000	0.000	0.13	0.04
6/2/2006	12	69	24	3	0.044	0.023	21	0.305	0.105	0	0.000	0.000	0.13	0.08
6/3/2006	14	59	12	4	0.067	0.039	8	0.135	0.056	0	0.000	0.000	0.33	0.16
6/4/2006	16	67	16	2	0.030	0.020	14	0.210	0.047	0	0.000	0.000	0.13	0.07
6/5/2006	14	102	6	2	0.020	0.013	4	0.039	0.022	0	0.000	0.000	0.33	0.14
6/6/2006	8	52	12	6	0.114	0.035	6	0.114	0.039	0	0.000	0.000	0.50	0.09
6/7/2006	10	69	17	1	0.015	0.015	14	0.204	0.058	2	0.029	0.034	0.06	0.06
6/8/2006	10	73	36	5	0.069	0.033	30	0.413	0.109	1	0.014	0.019	0.14	0.07
6/9/2006	10	56	52	5	0.089	0.028	46	0.817	0.124	1	0.018	0.023	0.10	0.03
6/10/2006	8	37	62	4	0.107	0.089	58	1.551	0.305	0	0.000	0.000	0.06	0.04
6/11/2006	8	45	79	3	0.067	0.032	76	1.707	0.275	0	0.000	0.000	0.04	0.02
6/12/2006	9	41	59	8	0.196	0.081	50	1.223	0.198	1	0.024	0.033	0.14	0.05
6/13/2006	10	42	63	8	0.191	0.068	54	1.290	0.310	1	0.024	0.023	0.13	0.05
6/14/2006	8	56	17	3	0.053	0.038	14	0.249	0.085	0	0.000	0.000	0.18	0.11
6/15/2006	8	29	77	6	0.209	0.045	70	2.443	0.580	1	0.035	0.044	0.08	0.02
6/16/2006	10	52	35	1	0.019	0.018	34	0.651	0.218	0	0.000	0.000	0.03	0.03
6/17/2006	8	40	44	0	0.000	0.000	44	1.095	0.347	0	0.000	0.000	0.00	0.00
6/18/2006	10	56	30	2	0.035	0.023	28	0.496	0.115	0	0.000	0.000	0.07	0.05
6/19/2006	10	45	28	0	0.000	0.000	28	0.625	0.239	0	0.000	0.000	0.00	0.00
6/20/2006	11	55	32	2	0.037	0.024	30	0.549	0.229	0	0.000	0.000	0.06	0.05
6/21/2006	14	65	22	2	0.031	0.020	20	0.306	0.073	0	0.000	0.000	0.09	0.05
6/22/2006	12	58	19	1	0.017	0.017	18	0.309	0.078	0	0.000	0.000	0.05	0.05
6/23/2006	11	46	28	0	0.000	0.000	28	0.604	0.147	0	0.000	0.000	0.00	0.00
6/24/2006	12	53	21	1	0.019	0.019	20	0.380	0.135	0	0.000	0.000	0.05	0.04
6/25/2006	14	69	31	0	0.000	0.000	31	0.447	0.107	0	0.000	0.000	0.00	0.00
6/26/2006	10	47	5	4	0.086	0.035	1	0.021	0.021	0	0.000	0.000	0.80	0.19
6/27/2006	12	56	34	7	0.125	0.072	27	0.483	0.104	0	0.000	0.000	0.21	0.09
6/28/2006	10	49	33	8	0.163	0.087	25	0.509	0.148	0	0.000	0.000	0.24	0.09
6/29/2006	10	48	38	12	0.253	0.078	26	0.547	0.117	0	0.000	0.000	0.32	0.06
6/30/2006	10	46	25	3	0.065	0.032	22	0.474	0.235	0	0.000	0.000	0.12	0.09
Total	474	2,906	1,143	118	2.355		1,018	20.882		7	0.144			
Min	8	29	0	0	0.000		0	0.000		0	0.000		0.000	
Mean	10	63	25	3	0.051		22	0.454		0	0.003		0.138	
Max	16	109	79	12	0.253		76	2.443		2	0.035		1.000	

[a] Chinook salmon CPUE / all species CPUE.

Appendix D2.-Inriver gillnetting catch, CPUE, and proportion of Chinook salmon caught in the 7.5 inch mesh gillnet during the early-run Kenai River Chinook salmon fishery, 2006.

			Total	Chinook			Sockeye			Dolly Varden			Proportion	
Date	Drifts	Minutes	Catch	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	Chinook[a]	SE
5/16/2006	10	75	1	1	0.013	0.014	0	0.000	0.000	0	0.000	0.000	1.00	0.00
5/17/2006	10	84	1	1	0.012	0.012	0	0.000	0.000	0	0.000	0.000	1.00	0.00
5/18/2006	8	73	0	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.00	0.00
5/19/2006	12	90	3	1	0.011	0.011	2	0.022	0.015	0	0.000	0.000	0.33	0.28
5/20/2006	11	77	3	2	0.026	0.027	1	0.013	0.013	0	0.000	0.000	0.67	0.33
5/21/2006	10	82	1	1	0.012	0.012	0	0.000	0.000	0	0.000	0.000	1.00	0.00
5/22/2006	10	81	3	1	0.012	0.013	2	0.025	0.017	0	0.000	0.000	0.33	0.29
5/23/2006	10	76	0	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.00	0.00
5/24/2006	10	78	4	4	0.051	0.021	0	0.000	0.000	0	0.000	0.000	1.00	0.00
5/25/2006	10	106	2	0	0.000	0.000	2	0.019	0.012	0	0.000	0.000	0.00	0.00
5/26/2006	9	94	1	0	0.000	0.000	1	0.011	0.011	0	0.000	0.000	0.00	0.00
5/27/2006	10	98	5	4	0.041	0.023	1	0.010	0.010	0	0.000	0.000	0.80	0.10
5/28/2006	10	83	4	2	0.024	0.016	2	0.024	0.015	0	0.000	0.000	0.50	0.26
5/29/2006	8	61	3	2	0.033	0.022	1	0.016	0.016	0	0.000	0.000	0.67	0.17
5/30/2006	8	8	9	3	0.389	2.934	6	0.778	6.166	0	0.000	0.000	0.33	0.25
5/31/2006	12	56	5	1	0.018	0.018	4	0.071	0.041	0	0.000	0.000	0.20	0.20
6/1/2006	10	49	24	5	0.102	0.045	19	0.388	0.133	0	0.000	0.000	0.21	0.10
6/2/2006	12	65	3	0	0.000	0.000	3	0.046	0.024	0	0.000	0.000	0.00	0.00
6/3/2006	14	62	1	1	0.016	0.016	0	0.000	0.000	0	0.000	0.000	1.00	0.00
6/4/2006	16	70	8	5	0.071	0.028	3	0.043	0.023	0	0.000	0.000	0.63	0.15
6/5/2006	14	91	3	1	0.011	0.011	2	0.022	0.015	0	0.000	0.000	0.33	0.28
6/6/2006	8	61	4	3	0.049	0.035	1	0.016	0.017	0	0.000	0.000	0.75	0.25
6/7/2006	10	75	10	4	0.054	0.022	6	0.080	0.049	0	0.000	0.000	0.40	0.17
6/8/2006	10	71	13	3	0.042	0.028	10	0.140	0.061	0	0.000	0.000	0.23	0.14
6/9/2006	9	54	27	7	0.129	0.047	20	0.369	0.132	0	0.000	0.000	0.26	0.10
6/10/2006	9	72	43	11	0.152	0.050	32	0.443	0.086	0	0.000	0.000	0.26	0.08
6/11/2006	8	63	36	6	0.095	0.030	30	0.474	0.080	0	0.000	0.000	0.17	0.05
6/12/2006	10	62	41	6	0.096	0.051	35	0.561	0.145	0	0.000	0.000	0.15	0.07
6/13/2006	10	59	48	8	0.135	0.050	40	0.675	0.124	0	0.000	0.000	0.17	0.07
6/14/2006	8	49	11	6	0.122	0.063	5	0.102	0.056	0	0.000	0.000	0.55	0.08
6/15/2006	7	44	40	9	0.206	0.086	31	0.709	0.160	0	0.000	0.000	0.23	0.07
6/16/2006	10	63	51	10	0.159	0.044	41	0.650	0.143	0	0.000	0.000	0.20	0.04
6/17/2006	8	56	30	14	0.250	0.067	16	0.286	0.087	0	0.000	0.000	0.47	0.08
6/18/2006	12	83	27	10	0.121	0.035	17	0.206	0.065	0	0.000	0.000	0.37	0.09
6/19/2006	9	41	11	4	0.098	0.075	7	0.172	0.128	0	0.000	0.000	0.36	0.09
6/20/2006	12	60	13	4	0.067	0.038	9	0.151	0.074	0	0.000	0.000	0.31	0.17
6/21/2006	14	65	4	3	0.046	0.024	1	0.015	0.015	0	0.000	0.000	0.75	0.22
6/22/2006	12	59	3	1	0.017	0.017	2	0.034	0.023	0	0.000	0.000	0.33	0.28
6/23/2006	10	46	8	2	0.044	0.030	6	0.132	0.049	0	0.000	0.000	0.25	0.15
6/24/2006	12	54	8	2	0.037	0.025	6	0.112	0.052	0	0.000	0.000	0.25	0.10
6/25/2006	14	66	9	4	0.061	0.034	5	0.076	0.043	0	0.000	0.000	0.44	0.19
6/26/2006	11	51	0	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.00	0.00
6/27/2006	12	59	15	9	0.153	0.057	6	0.102	0.058	0	0.000	0.000	0.60	0.18
6/28/2006	12	59	12	6	0.101	0.038	6	0.101	0.051	0	0.000	0.000	0.50	0.11
6/29/2006	10	49	18	10	0.203	0.058	7	0.142	0.051	1	0.020	0.028	0.56	0.09
6/30/2006	12	56	28	13	0.234	0.060	15	0.270	0.115	0	0.000	0.000	0.46	0.11
Total	483	3,032	594	190	3.515		403	7.508		1	0.020			
Min	7	8	0	0	0.000		0	0.000		0	0.000		0.000	
Mean	11	66	13	4	0.076		9	0.163		0	0.000		0.413	
Max	16	106	51	14	0.389		41	0.778		1	0.020		1.000	

[a] Chinook salmon CPUE / all species CPUE.

Appendix D3.-Inriver gillnetting catch, CPUE, and proportion of Chinook salmon caught in the 5.0 and 7.5 inch mesh gillnets during the early-run Kenai River Chinook salmon fishery, 2006.

				Total	Chinook			Sockeye			Dolly Varden			Proportion	
Date	Reps	Drifts	Minutes	Catch	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	Chinook[a]	SE
5/16/2006	5	20	153	1	1	0.008	0.008	0	0.000	0.000	0	0.000	0.000	1.00	0.00
5/17/2006	4	16	129	2	1	0.007	0.007	1	0.009	0.009	0	0.000	0.000	0.44	0.00
5/18/2006	4	16	143	2	1	0.007	0.007	1	0.007	0.007	0	0.000	0.000	0.50	0.00
5/19/2006	5	20	152	3	0	0.000	0.000	3	0.019	0.013	0	0.000	0.000	0.00	0.00
5/20/2006	6	23	160	4	2	0.014	0.014	2	0.014	0.009	0	0.000	0.000	0.49	0.34
5/21/2006	5	20	154	2	1	0.006	0.006	1	0.006	0.006	0	0.000	0.000	0.48	0.39
5/22/2006	5	20	165	4	2	0.014	0.009	2	0.013	0.008	0	0.000	0.000	0.52	0.22
5/23/2006	5	20	149	1	0	0.000	0.000	1	0.007	0.007	0	0.000	0.000	0.00	0.00
5/24/2006	5	20	166	5	4	0.027	0.012	1	0.007	0.007	0	0.000	0.000	0.80	0.15
5/25/2006	5	20	209	10	0	0.000	0.000	10	0.046	0.023	0	0.000	0.000	0.00	0.00
5/26/2006	5	19	202	11	1	0.005	0.005	10	0.048	0.025	0	0.000	0.000	0.09	0.07
5/27/2006	4	16	156	18	4	0.026	0.015	14	0.084	0.045	0	0.000	0.000	0.23	0.16
5/28/2006	5	20	171	19	4	0.022	0.011	15	0.088	0.005	0	0.000	0.000	0.20	0.09
5/29/2006	4	16	129	19	3	0.024	0.009	16	0.120	0.023	0	0.000	0.000	0.16	0.07
5/30/2006	4	16	80	41	4	0.027	0.020	37	0.242	0.039	0	0.000	0.000	0.10	0.08
5/31/2006	5	20	92	33	2	0.020	0.020	31	0.330	0.104	0	0.000	0.000	0.06	0.07
6/1/2006	5	20	98	76	11	0.110	0.020	65	0.685	0.169	0	0.000	0.000	0.14	0.03
6/2/2006	6	24	134	27	3	0.021	0.009	24	0.180	0.058	0	0.000	0.000	0.11	0.07
6/3/2006	7	28	122	13	5	0.045	0.019	8	0.070	0.036	0	0.000	0.000	0.39	0.18
6/4/2006	8	32	137	24	7	0.049	0.019	17	0.124	0.020	0	0.000	0.000	0.28	0.07
6/5/2006	7	28	193	9	3	0.015	0.007	6	0.031	0.017	0	0.000	0.000	0.33	0.11
6/6/2006	4	16	113	16	9	0.091	0.036	7	0.067	0.015	0	0.000	0.000	0.58	0.10
6/7/2006	5	20	143	27	5	0.037	0.021	20	0.153	0.041	2	0.012	0.008	0.18	0.06
6/8/2006	5	20	144	49	8	0.061	0.014	40	0.285	0.067	1	0.006	0.006	0.17	0.04
6/9/2006	5	19	111	79	12	0.101	0.038	66	0.625	0.094	1	0.006	0.006	0.14	0.06
6/10/2006	4	16	102	103	15	0.154	0.067	88	1.103	0.176	0	0.000	0.000	0.12	0.04
6/11/2006	4	16	108	115	9	0.084	0.011	106	1.126	0.170	0	0.000	0.000	0.07	0.01
6/12/2006	5	19	103	100	14	0.178	0.051	85	0.852	0.162	1	0.009	0.009	0.17	0.06
6/13/2006	5	20	101	111	16	0.151	0.051	94	1.046	0.302	1	0.011	0.011	0.13	0.05
6/14/2006	4	16	105	28	9	0.082	0.019	19	0.164	0.086	0	0.000	0.000	0.33	0.08
6/15/2006	4	15	72	117	15	0.211	0.072	101	1.584	0.413	1	0.015	0.015	0.12	0.03
6/16/2006	5	20	115	86	11	0.084	0.030	75	0.713	0.246	0	0.000	0.000	0.11	0.05
6/17/2006	4	16	96	74	14	0.125	0.045	60	0.741	0.262	0	0.000	0.000	0.14	0.02
6/18/2006	5	20	124	56	11	0.081	0.018	45	0.422	0.131	0	0.000	0.000	0.16	0.05
6/19/2006	5	19	86	39	4	0.046	0.034	35	0.403	0.165	0	0.000	0.000	0.10	0.05
6/20/2006	6	23	114	45	6	0.051	0.035	39	0.323	0.196	0	0.000	0.000	0.14	0.11
6/21/2006	7	28	130	26	5	0.037	0.015	21	0.157	0.041	0	0.000	0.000	0.19	0.06
6/22/2006	6	24	117	22	2	0.016	0.016	20	0.170	0.044	0	0.000	0.000	0.09	0.08
6/23/2006	5	20	92	36	2	0.025	0.015	34	0.376	0.068	0	0.000	0.000	0.06	0.03
6/24/2006	6	24	106	29	3	0.028	0.013	26	0.304	0.121	0	0.000	0.000	0.08	0.03
6/25/2006	7	28	135	40	4	0.030	0.023	36	0.259	0.082	0	0.000	0.000	0.10	0.05
6/26/2006	5	20	93	5	4	0.044	0.020	1	0.010	0.010	0	0.000	0.000	0.82	0.20
6/27/2006	6	24	115	49	16	0.137	0.058	33	0.295	0.073	0	0.000	0.000	0.32	0.06
6/28/2006	5	20	100	45	14	0.133	0.064	31	0.302	0.127	0	0.000	0.000	0.31	0.09
6/29/2006	5	20	97	56	22	0.230	0.075	33	0.345	0.088	1	0.011	0.011	0.39	0.06
6/30/2006	5	20	91	52	15	0.167	0.042	37	0.411	0.176	0	0.000	0.000	0.29	0.09
Total	236	937	5807	1,729	304	2.831		1,417	14.366		8	0.070			
Min	4	15	72	1	0	0.000		0	0.000		0	0.000		0.00	
Mean	5	20	126	38	7	0.062		31	0.312		0	0.002		0.25	
Max	8	32	209	117	22	0.230		106	1.584		2	0.015		1.00	

Note: A complete rep consists of four drifts (two mesh sizes, two banks). Only reps that had at least one drift from each mesh size were used in this table.

[a] Chinook salmon CPUE / all species CPUE.

Appendix D4.-Inriver gillnetting catch, CPUE, and proportion of Chinook salmon caught in the 5.0 inch mesh gillnet during the late-run Kenai River Chinook salmon fishery, 2006.

			Total	Chinook			Sockeye			Coho			Pink			Dolly Varden			Proportion	
Date	Drifts	Minutes	Catch	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	Chinook[a]	SE
7/1/2006	12	60	38	7	0.116	0.051	31	0.513	0.151	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.18	0.08
7/2/2006	10	48	16	3	0.063	0.032	13	0.272	0.076	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.19	0.10
7/3/2006	12	70	11	8	0.114	0.049	3	0.043	0.022	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.73	0.16
7/4/2006	8	38	37	13	0.343	0.095	24	0.634	0.119	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.35	0.08
7/5/2006	8	36	38	13	0.362	0.097	24	0.669	0.129	0	0.000	0.000	1	0.028	0.038	0	0.000	0.000	0.34	0.07
7/6/2006	8	37	20	9	0.245	0.080	11	0.299	0.127	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.45	0.11
7/7/2006	12	55	36	20	0.363	0.083	16	0.290	0.091	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.56	0.08
7/8/2006	8	36	45	13	0.362	0.069	32	0.891	0.152	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.29	0.04
7/9/2006	8	37	31	6	0.162	0.090	25	0.676	0.217	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.19	0.04
7/10/2006	12	57	7	5	0.088	0.042	2	0.035	0.024	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.71	0.13
7/11/2006	11	52	20	16	0.309	0.115	4	0.077	0.032	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.80	0.08
7/12/2006	10	49	15	12	0.244	0.081	3	0.061	0.032	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.80	0.12
7/13/2006	8	40	21	12	0.298	0.109	9	0.223	0.088	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.57	0.10
7/14/2006	8	37	18	9	0.241	0.079	9	0.241	0.145	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.50	0.21
7/15/2006	8	36	55	24	0.671	0.151	30	0.839	0.206	1	0.028	0.038	0	0.000	0.000	0	0.000	0.000	0.44	0.09
7/16/2006	8	39	29	12	0.305	0.112	16	0.407	0.140	0	0.000	0.000	0	0.000	0.000	1	0.025	0.033	0.41	0.10
7/17/2006	8	42	33	26	0.621	0.199	7	0.167	0.060	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.79	0.07
7/18/2006	6	30	15	13	0.430	0.113	2	0.066	0.042	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.87	0.05
7/19/2006	10	51	29	15	0.296	0.067	13	0.257	0.076	1	0.020	0.027	0	0.000	0.000	0	0.000	0.000	0.52	0.09
7/20/2006	8	41	17	8	0.197	0.064	9	0.222	0.083	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.47	0.15
7/21/2006	8	38	30	13	0.345	0.085	16	0.425	0.194	0	0.000	0.000	0	0.000	0.000	1	0.027	0.036	0.43	0.13
7/22/2006	8	36	25	6	0.166	0.057	19	0.524	0.228	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.24	0.07
7/23/2006	8	45	34	19	0.425	0.109	15	0.335	0.145	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.56	0.12
7/24/2006	10	46	27	14	0.304	0.067	10	0.217	0.113	3	0.065	0.069	0	0.000	0.000	0	0.000	0.000	0.52	0.13
7/25/2006	7	32	53	27	0.834	0.150	26	0.803	0.184	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.51	0.07
7/26/2006	10	44	26	11	0.252	0.058	14	0.320	0.137	1	0.023	0.032	0	0.000	0.000	0	0.000	0.000	0.42	0.14
7/27/2006	8	44	37	21	0.480	0.080	14	0.320	0.107	0	0.000	0.000	2	0.046	0.050	0	0.000	0.000	0.57	0.07
7/28/2006	8	37	19	11	0.294	0.079	6	0.160	0.052	1	0.027	0.036	1	0.027	0.026	0	0.000	0.000	0.58	0.11
7/29/2006	8	32	29	21	0.663	0.257	3	0.095	0.067	2	0.063	0.072	3	0.095	0.109	0	0.000	0.000	0.72	0.09
7/30/2006	8	37	30	19	0.519	0.153	7	0.191	0.085	0	0.000	0.000	3	0.082	0.087	1	0.027	0.038	0.63	0.09
7/31/2006	8	46	19	17	0.371	0.101	2	0.044	0.031	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.89	0.07
8/1/2006	8	44	20	6	0.137	0.031	7	0.160	0.097	5	0.114	0.119	2	0.046	0.052	0	0.000	0.000	0.30	0.09
8/2/2006	9	49	28	19	0.386	0.113	8	0.162	0.099	1	0.020	0.028	0	0.000	0.000	0	0.000	0.000	0.68	0.08
8/3/2006	8	41	20	13	0.316	0.053	3	0.073	0.036	2	0.049	0.055	1	0.024	0.033	1	0.024	0.024	0.65	0.09
8/4/2006	6	21	32	20	0.932	0.344	10	0.466	0.296	2	0.093	0.096	0	0.000	0.000	0	0.000	0.000	0.63	0.13
8/5/2006	6	22	36	18	0.802	0.278	4	0.178	0.081	1	0.045	0.061	13	0.579	0.566	0	0.000	0.000	0.50	0.10
8/6/2006	10	40	25	13	0.325	0.083	9	0.225	0.095	1	0.025	0.034	2	0.050	0.068	0	0.000	0.000	0.52	0.13
8/7/2006	10	53	18	11	0.207	0.092	3	0.056	0.041	2	0.038	0.052	2	0.038	0.043	0	0.000	0.000	0.61	0.13
8/8/2006	8	38	42	16	0.424	0.117	3	0.080	0.039	1	0.027	0.036	22	0.583	0.539	0	0.000	0.000	0.38	0.08
8/9/2006	8	33	18	7	0.209	0.098	2	0.060	0.039	1	0.030	0.041	8	0.239	0.269	0	0.000	0.000	0.39	0.12
8/10/2006	10	43	58	18	0.418	0.132	7	0.162	0.093	3	0.070	0.082	30	0.696	0.677	0	0.000	0.000	0.31	0.05
8/12/2006	9	37	83	16	0.429	0.102	2	0.054	0.036	6	0.161	0.166	59	1.580	1.478	0	0.000	0.000	0.19	0.05
8/13/2006	9	38	88	10	0.264	0.075	15	0.396	0.121	23	0.607	0.571	40	1.055	0.990	0	0.000	0.000	0.11	0.04
Total	375	1,787	1,328	590	15.3308		488	12.3889		57	1.5026		189	5.1685		4	0.1036			
Min	6	21	7	3	0.06276		2	0.0354		0	0.000		0	0.000		0	0.000		0.11	
Mean	9	42	31	14	0.35653		11	0.28811		1	0.0349		4	0.120		0	0.0024		0.50	
Max	12	70	88	27	0.93168		32	0.89136		23	0.6069		59	1.580		1	0.0273		0.89	

[a] Chinook salmon CPUE / all species CPUE.

Appendix D5.-Inriver gillnetting catch, CPUE, and proportion of Chinook salmon caught in the 7.5 inch mesh gillnet during the late-run Kenai River Chinook salmon fishery, 2006.

			Total	Chinook			Sockeye			Coho			Pink			Dolly Varden			Proportion	
Date	Drifts	Minutes	Catch	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	Chinook[a]	SE
7/1/2006	10	52	8	4	0.077	0.031	4	0.077	0.059	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.50	0.25
7/2/2006	12	60	7	6	0.100	0.040	1	0.017	0.017	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.86	0.10
7/3/2006	12	66	5	5	0.076	0.027	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	1.00	0.00
7/4/2006	8	41	22	19	0.465	0.108	3	0.073	0.035	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.86	0.07
7/5/2006	6	27	28	23	0.849	0.138	5	0.185	0.107	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.82	0.08
7/6/2006	10	47	16	14	0.296	0.102	1	0.021	0.021	0	0.000	0.000	0	0.000	0.000	1	0.021	0.029	0.88	0.09
7/7/2006	10	47	13	5	0.107	0.035	8	0.171	0.071	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.38	0.15
7/8/2006	10	44	22	14	0.319	0.070	8	0.182	0.073	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.64	0.07
7/9/2006	7	34	10	6	0.176	0.073	4	0.117	0.077	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.60	0.23
7/10/2006	12	62	11	11	0.178	0.075	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	1.00	0.00
7/11/2006	10	47	14	14	0.299	0.069	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	1.00	0.00
7/12/2006	10	47	14	8	0.170	0.071	5	0.106	0.047	1	0.021	0.029	0	0.000	0.000	0	0.000	0.000	0.57	0.16
7/13/2006	8	40	18	17	0.423	0.137	1	0.025	0.024	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.94	0.06
7/14/2006	8	37	24	20	0.547	0.114	3	0.082	0.056	1	0.027	0.037	0	0.000	0.000	0	0.000	0.000	0.83	0.10
7/15/2006	8	34	25	20	0.583	0.154	5	0.146	0.074	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.80	0.11
7/16/2006	8	35	22	18	0.511	0.159	4	0.114	0.086	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.82	0.13
7/17/2006	8	42	21	18	0.426	0.070	3	0.071	0.052	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.86	0.09
7/18/2006	7	36	23	20	0.563	0.129	3	0.084	0.043	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.87	0.06
7/19/2006	10	54	24	23	0.426	0.072	1	0.019	0.019	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.96	0.04
7/20/2006	8	40	19	16	0.401	0.072	3	0.075	0.053	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.84	0.10
7/21/2006	8	36	20	17	0.477	0.078	2	0.056	0.038	0	0.000	0.000	1	0.028	0.038	0	0.000	0.000	0.85	0.06
7/22/2006	8	34	26	19	0.565	0.120	7	0.208	0.095	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.73	0.12
7/23/2006	8	44	21	18	0.406	0.098	3	0.068	0.046	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.86	0.09
7/24/2006	10	62	22	21	0.338	0.099	0	0.000	0.000	0	0.000	0.000	1	0.016	0.023	0	0.000	0.000	0.95	0.04
7/25/2006	6	29	27	23	0.798	0.246	3	0.104	0.048	1	0.035	0.046	0	0.000	0.000	0	0.000	0.000	0.85	0.06
7/26/2006	10	43	26	24	0.561	0.219	1	0.023	0.023	0	0.000	0.000	1	0.023	0.032	0	0.000	0.000	0.92	0.07
7/27/2006	8	37	38	31	0.829	0.095	3	0.080	0.050	0	0.000	0.000	4	0.107	0.108	0	0.000	0.000	0.82	0.05
7/28/2006	10	48	41	35	0.725	0.132	2	0.041	0.042	1	0.021	0.021	3	0.062	0.062	0	0.000	0.000	0.85	0.11
7/29/2006	8	33	28	23	0.702	0.156	1	0.031	0.031	4	0.122	0.134	0	0.000	0.000	0	0.000	0.000	0.82	0.12
7/30/2006	8	39	21	18	0.463	0.108	1	0.026	0.025	1	0.026	0.035	1	0.026	0.035	0	0.000	0.000	0.86	0.10
7/31/2006	8	36	17	15	0.413	0.099	1	0.028	0.028	0	0.000	0.000	1	0.028	0.038	0	0.000	0.000	0.88	0.11
8/1/2006	8	38	14	14	0.369	0.083	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	1.00	0.00
8/2/2006	8	41	24	22	0.538	0.113	2	0.049	0.049	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.92	0.08
8/3/2006	8	40	23	23	0.573	0.157	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	1.00	0.00
8/4/2006	6	25	26	26	1.039	0.111	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	1.00	0.00
8/5/2006	6	27	62	42	1.539	0.306	0	0.000	0.000	0	0.000	0.000	20	0.733	0.759	0	0.000	0.000	0.68	0.09
8/6/2006	8	34	26	21	0.624	0.136	0	0.000	0.000	0	0.000	0.000	5	0.149	0.170	0	0.000	0.000	0.81	0.12
8/7/2006	10	50	22	17	0.340	0.092	1	0.020	0.020	0	0.000	0.000	4	0.080	0.086	0	0.000	0.000	0.77	0.09
8/8/2006	6	31	45	24	0.785	0.098	2	0.065	0.046	2	0.065	0.086	17	0.556	0.492	0	0.000	0.000	0.53	0.05
8/9/2006	10	49	24	16	0.329	0.111	0	0.000	0.000	0	0.000	0.000	8	0.165	0.172	0	0.000	0.000	0.67	0.09
8/10/2006	8	36	38	21	0.583	0.112	1	0.028	0.028	3	0.083	0.099	13	0.361	0.351	0	0.000	0.000	0.55	0.07
8/12/2006	8	25	64	17	0.671	0.302	3	0.118	0.088	3	0.118	0.116	41	1.619	1.502	0	0.000	0.000	0.27	0.07
8/13/2006	10	42	39	14	0.330	0.111	3	0.071	0.050	5	0.118	0.133	17	0.401	0.387	0	0.000	0.000	0.36	0.09
Total	370	1,771	1,040	782	20.9865		98	2.580		22	0.6369		137	4.3532		1	0.0211			
Min	6	25	5	4	0.07599		0	0		0	0.000		0	0.000		0	0.000		0.27	
Mean	9	41	24	18	0.48806		2	0.06		1	0.0148		3	0.1012		0	0.000		0.79	
Max	12	66	64	42	1.5394		8	0.20823		5	0.1221		41	1.6195		1	0.0211		1.00	

[a] Chinook salmon CPUE / all species CPUE.

Appendix D6.-Inriver gillnetting catch, CPUE, and proportion of Chinook salmon caught in the 5.0 and 7.5 inch mesh gillnets during the late-run Kenai River Chinook salmon fishery, 2006.

				Total	Chinook			Sockeye			Coho			Pink			Dolly Varden			Proportion	
Date	Reps	Drifts	Minutes	Catch	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	#	CPUE	SE	Chinook[a]	SE
7/1/2006	5	20	101	42	11	0.109	0.029	31	0.309	0.126	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.26	0.09
7/2/2006	5	20	96	23	9	0.093	0.037	14	0.146	0.035	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.39	0.08
7/3/2006	6	24	136	16	13	0.095	0.038	3	0.020	0.013	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.82	0.12
7/4/2006	4	16	79	59	32	0.406	0.072	27	0.353	0.094	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.53	0.07
7/5/2006	3	12	54	57	32	0.589	0.088	24	0.444	0.023	0	0.000	0.000	1	0.018	0.018	0	0.000	0.000	0.56	0.05
7/6/2006	4	16	75	35	22	0.298	0.053	12	0.167	0.081	0	0.000	0.000	0	0.000	0.000	1	0.012	0.012	0.62	0.09
7/7/2006	5	20	92	40	19	0.204	0.056	21	0.229	0.023	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.47	0.06
7/8/2006	4	16	71	67	27	0.378	0.059	40	0.554	0.146	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.41	0.03
7/9/2006	4	15	71	41	12	0.160	0.058	29	0.388	0.131	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.29	0.06
7/10/2006	6	24	118	18	16	0.136	0.060	2	0.018	0.011	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.89	0.06
7/11/2006	5	20	94	34	30	0.324	0.112	4	0.041	0.025	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.89	0.07
7/12/2006	5	20	96	29	20	0.207	0.042	8	0.083	0.032	1	0.010	0.010	0	0.000	0.000	0	0.000	0.000	0.69	0.09
7/13/2006	4	16	81	39	29	0.357	0.119	10	0.123	0.075	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.74	0.10
7/14/2006	4	16	74	42	29	0.397	0.094	12	0.163	0.115	1	0.015	0.015	0	0.000	0.000	0	0.000	0.000	0.69	0.17
7/15/2006	4	16	70	80	44	0.625	0.146	35	0.496	0.140	1	0.014	0.014	0	0.000	0.000	0	0.000	0.000	0.55	0.12
7/16/2006	4	16	75	51	30	0.393	0.080	20	0.240	0.105	0	0.000	0.000	0	0.000	0.000	1	0.009	0.009	0.61	0.11
7/17/2006	4	16	84	54	44	0.530	0.142	10	0.125	0.043	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.81	0.04
7/18/2006	3	12	59	34	29	0.498	0.186	5	0.086	0.032	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.85	0.01
7/19/2006	5	20	105	53	38	0.353	0.040	14	0.134	0.055	1	0.010	0.010	0	0.000	0.000	0	0.000	0.000	0.71	0.10
7/20/2006	4	16	80	36	24	0.295	0.059	12	0.152	0.049	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.66	0.11
7/21/2006	4	16	73	50	30	0.410	0.081	18	0.230	0.128	0	0.000	0.000	1	0.013	0.013	1	0.013	0.013	0.61	0.11
7/22/2006	4	16	70	51	25	0.370	0.087	26	0.376	0.200	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.50	0.17
7/23/2006	4	16	89	55	37	0.411	0.089	18	0.195	0.099	0	0.000	0.000	0	0.000	0.000	0	0.000	0.000	0.68	0.08
7/24/2006	5	20	108	49	35	0.336	0.068	10	0.098	0.050	3	0.034	0.014	1	0.012	0.012	0	0.000	0.000	0.70	0.07
7/25/2006	3	12	56	69	45	0.793	0.187	23	0.419	0.103	1	0.018	0.018	0	0.000	0.000	0	0.000	0.000	0.65	0.10
7/26/2006	5	20	87	52	35	0.394	0.104	15	0.174	0.060	1	0.012	0.012	1	0.012	0.012	0	0.000	0.000	0.67	0.08
7/27/2006	4	16	81	75	52	0.657	0.107	17	0.187	0.066	0	0.000	0.000	6	0.079	0.034	0	0.000	0.000	0.71	0.04
7/28/2006	4	16	76	56	42	0.543	0.110	8	0.102	0.052	2	0.025	0.014	4	0.048	0.048	0	0.000	0.000	0.76	0.10
7/29/2006	4	16	64	57	44	0.698	0.116	4	0.064	0.037	6	0.094	0.042	3	0.048	0.030	0	0.000	0.000	0.77	0.04
7/30/2006	4	16	76	51	37	0.495	0.089	8	0.104	0.047	1	0.012	0.012	4	0.054	0.023	1	0.015	0.015	0.73	0.06
7/31/2006	4	16	82	36	32	0.413	0.074	3	0.043	0.018	0	0.000	0.000	1	0.022	0.022	0	0.000	0.000	0.86	0.05
8/1/2006	4	16	82	34	20	0.250	0.033	7	0.086	0.048	5	0.057	0.010	2	0.021	0.012	0	0.000	0.000	0.60	0.08
8/2/2006	4	16	83	49	38	0.467	0.085	10	0.118	0.046	1	0.010	0.010	0	0.000	0.000	0	0.000	0.000	0.78	0.07
8/3/2006	4	16	81	43	36	0.453	0.085	3	0.037	0.023	2	0.024	0.014	1	0.011	0.011	1	0.012	0.012	0.84	0.03
8/4/2006	3	12	46	58	46	1.100	0.321	10	0.309	0.204	2	0.039	0.019	0	0.000	0.000	0	0.000	0.000	0.76	0.05
8/5/2006	3	12	50	98	60	1.196	0.259	4	0.086	0.053	1	0.025	0.025	33	0.719	0.308	0	0.000	0.000	0.59	0.07
8/6/2006	4	16	66	49	33	0.498	0.139	8	0.122	0.071	1	0.015	0.015	7	0.104	0.037	0	0.000	0.000	0.67	0.09
8/7/2006	5	20	103	40	28	0.267	0.047	4	0.044	0.022	2	0.014	0.014	6	0.055	0.016	0	0.000	0.000	0.70	0.09
8/8/2006	3	12	59	78	37	0.626	0.034	4	0.075	0.023	3	0.059	0.035	34	0.555	0.031	0	0.000	0.000	0.48	0.01
8/9/2006	4	16	74	31	15	0.204	0.068	2	0.031	0.018	1	0.015	0.015	13	0.200	0.091	0	0.000	0.000	0.45	0.15
8/10/2006	4	16	70	96	39	0.550	0.071	8	0.117	0.067	6	0.087	0.039	43	0.610	0.123	0	0.000	0.000	0.40	0.01
8/12/2006	4	16	58	140	30	0.358	0.194	5	0.069	0.032	9	0.124	0.067	96	0.611	0.885	0	0.000	0.000	0.31	0.22
8/13/2006	5	19	80	127	24	0.301	0.074	18	0.224	0.056	28	0.357	0.051	57	0.734	0.068	0	0.000	0.000	0.19	0.04
Total	180	718	3,428	2,294	1,330	18.235		566	7.584		79	1.070		314	3.925		5	0.061			
Min	3	12	46	16	9	0.093		2	0.018		0	0.000		0	0.000		0	0.000		0.19	
Mean	4	17	80	53	31	0.424		13	0.176		2	0.025		7	0.091		0	0.001		0.62	
Max	6	24	136	140	60	1.196		40	0.554		28	0.357		96	0.734		1	0.015		0.89	

Note: A complete rep consists of four drifts (two mesh sizes, two banks). Only reps that had at least one drift from each mesh size were used in this table.

[a] Chinook salmon CPUE / all species CPUE.

APPENDIX E. AVERAGE MEF LENGTHS OF SOCKEYE SALMON SAMPLED IN THE INRIVER GILLNETS, 2006

Appendix E1.-Average MEF length of sockeye salmon sampled in the early run from inriver gillnets, 2006.

	5.0 inch Mesh					7.5 inch Mesh					5.0 and 7.5 inch Mesh				
Date[a]	n	Min	Max	Mean	SD	n	Min	Max	Mean	SD	n	Min	Max	Mean	SD
5/18/2006	1	600	600	600		1	520	520	520		1	600	600	600	
5/20/2006	1	610	610	610							2	520	610	565	64
5/22/2006						2	540	580	560	28	2	540	580	560	28
5/24/2006	1	600	600	600							1	600	600	600	
5/26/2006	8	560	610	579	17	1	550	550	550		9	550	610	576	19
5/28/2006	10	485	620	571	41	2	580	620	600	28	12	485	620	576	40
5/30/2006	28	550	640	588	23	4	560	650	601	38	32	550	650	589	25
6/1/2006	43	490	630	582	28	17	550	630	586	25	60	490	630	583	27
6/3/2006	8	560	630	585	23						8	560	630	585	23
6/4/2006	3	570	590	580	10						3	570	590	580	10
6/5/2006	3	560	600	580	20	2	560	580	570	14	5	560	600	576	17
6/7/2006	12	540	620	589	21	6	570	630	603	21	18	540	630	594	21
6/9/2006	40	530	650	590	28	20	500	620	574	37	60	500	650	584	32
6/11/2006	45	530	640	591	29	25	555	640	595	25	70	530	640	592	27
6/13/2006	33	530	650	584	29	28	550	630	589	22	61	530	650	586	26
6/15/2006	49	240	660	572	56	20	520	610	571	24	69	240	660	571	48
6/17/2006	27	540	690	590	32	12	560	630	595	19	39	540	690	592	28
6/19/2006	25	560	650	597	25	6	550	610	579	22	31	550	650	593	25
6/21/2006	20	550	620	590	21	1	600	600	600		21	550	620	591	21
6/23/2006	24	505	610	554	29	3	555	590	568	19	27	505	610	556	28
6/25/2006	28	530	640	572	25	4	530	600	573	31	32	530	640	572	25
6/27/2006	24	520	620	572	26	5	510	610	556	37	29	510	620	569	28
6/29/2006	23	480	630	570	34	7	550	600	573	18	30	480	630	570	31
Min	0	240	590	554		0	500	520	520		1	240	580	556	
Mean	21	529	628	581		9	548	605	583		27	523	627	582	
Max	49	610	690	610		28	600	650	603		70	600	690	600	

[a] Sockeye salmon lengths were measured on alternate days for both runs.

Appendix E2.-Average MEF length of sockeye salmon sampled in the late run from inriver gillnets, 2006.

	5.0 inch Mesh					7.5 inch Mesh					5.0 and 7.5 inch Mesh				
Date[a]	n	Min	Max	Mean	SD	n	Min	Max	Mean	SD	n	Min	Max	Mean	SD
7/1/2006	20	530	600	571	22	2	580	590	585	7	22	530	600	572	21
7/3/2006	2	570	580	575	7						2	570	580	575	7
7/5/2006	20	440	620	538	42	4	530	580	553	26	24	440	620	540	40
7/7/2006	13	490	640	577	42	8	510	630	567	37	21	490	640	573	39
7/9/2006	20	480	605	559	34	4	490	630	565	61	24	480	630	560	38
7/11/2006	4	510	610	561	54						4	510	610	561	54
7/13/2006	7	540	640	589	38	1	580	580	580		8	540	640	588	35
7/15/2006	23	480	650	565	45	4	520	620	570	52	27	480	650	566	45
7/17/2006	4	560	605	584	22	2	580	620	600	28	6	560	620	589	23
7/19/2006	8	550	590	569	13	1	610	610	610		9	550	610	573	19
7/21/2006	14	540	610	575	21	2	580	610	595	21	16	540	610	578	22
7/23/2006	12	450	630	578	46	2	620	620	620	0	14	450	630	584	45
7/25/2006	20	450	640	553	49	2	570	610	590	28	22	450	640	556	49
7/27/2006	13	490	600	578	30	3	590	610	600	10	16	490	610	582	28
7/29/2006	3	540	600	567	31	1	550	550	550		4	540	600	563	26
7/31/2006	2	580	590	585	7	1	605	605	605		3	580	605	592	13
8/2/2006	6	530	615	573	35	2	565	580	573	11	8	530	615	573	30
8/4/2006	8	550	610	593	19						8	550	610	593	19
8/6/2006	8	540	620	572	28						8	540	620	572	28
8/8/2006	3	490	610	560	62	2	580	610	595	21	5	490	610	574	49
8/10/2006	7	540	620	592	26	1	580	580	580		8	540	620	591	24
8/12/2006	2	540	590	565	35	1	510	510	510		3	510	590	547	40
Min	0	440	580	538		0	490	510	510		2	440	580	540	
Mean	10	518	613	568		2	564	597	578		12	516	616	570	
Max	23	580	650	593		8	620	630	620		27	580	650	593	

[a] Sockeye salmon lengths were measured on alternate days for both runs.

APPENDIX F. TEMPORALLY STRATIFIED AGE COMPOSITION ESTIMATES FOR THE KENAI RIVER CHINOOK SALMON FISHERY, 2006

Appendix F1.-Temporally stratified age composition and estimated harvest, by age class and geographic strata, for the sport harvest of early-run Kenai River Chinook salmon between the Soldotna Bridge and the Warren Ames Bridge, 2006.

	Age				
Parameter	1.1	1.2	1.3	1.4	Total
Early Run, 16 May-9 June					
Female					
Sample size			7	23	30
% sample			17.9%	59.0%	76.9%
SE % sample			6.2%	8.0%	6.8%
Total Harvest			86	283	369
SE Total Harvest			34	65	77
Male					
Sample size		2	3	4	9
% sample		5.1%	7.7%	10.3%	23.1%
SE % sample		3.6%	4.3%	4.9%	6.8%
Total Harvest		25	37	49	111
SE Total Harvest		17	22	25	38
Combined					
Sample size		2	10	27	39
% sample		5.1%	25.6%	69.2%	100.0%
SE % sample		3.6%	7.1%	7.5%	0.0%
Total Harvest		25	123	332	479
SE Total Harvest		17	41	72	91
Early Run, 10-30 June					
Female					
Sample size		3	23	38	64
% sample		2.2%	17.0%	28.1%	47.4%
SE % sample		1.3%	3.2%	3.9%	4.3%
Total Harvest		65	497	821	1,383
SE Total Harvest		38	116	159	228
Male					
Sample size	2	22	34	13	71
% sample	1.5%	16.3%	25.2%	9.6%	52.6%
SE % sample	1.0%	3.2%	3.7%	2.5%	4.3%
Total Harvest	43	475	735	281	1,534
SE Total Harvest	31	113	148	83	245
Combined					
Sample size	2	25	57	51	135
% sample	1.5%	18.5%	42.2%	37.8%	100.0%
SE % sample	1.0%	3.4%	4.3%	4.2%	0.0%
Total Harvest	43	540	1,232	1,102	2,918
SE Total Harvest	31	122	210	194	402

Notes: Values given by age and sex may not sum to totals due to rounding.

Age composition and estimated harvest, by age class, for the sport harvest of 2006 early-run Kenai River Chinook salmon between the Soldotna Bridge and the Warren Ames Bridge are presented in Table 3.

Appendix F2.-Temporally stratified age composition and sonar passage by age class for early-run Kenai River Chinook salmon, 2006.

Parameter	1.1	1.2	1.3	1.4	1.5	Total
Early Run, 16 May-9 June						
Female						
Sample size		1	8	29	1	39
% sample		1.3%	10.3%	37.2%	1.3%	50.0%
SE % sample		0.8%	2.2%	3.5%	0.8%	5.7%
Sonar passage estimate		76	611	2,213	76	2,977
SE sonar passage estimate		143	387	628	143	1,005
Male						
Sample size		12	7	20		39
% sample		15.4%	9.0%	25.6%		50.0%
SE % sample		4.1%	3.3%	5.0%		5.7%
Sonar passage estimate		916	534	1,526		2,977
SE sonar passage estimate		246	194	299		350
Combined						
Sample size		13	15	49	1	78
% sample		16.7%	19.2%	62.8%	1.3%	100.0%
SE % sample		4.2%	4.5%	5.5%	1.3%	0.0%
Sonar passage estimate		992	1,145	3,740	76	5,953
SE sonar passage estimate		254	269	345	76	172
Early Run, 10 June-30 June						
Female						
Sample size		21	15	38	3	77
% sample		11.2%	8.0%	20.2%	1.6%	41.0%
SE % sample		2.3%	2.0%	2.9%	0.9%	3.6%
Sonar passage estimate		1,941	1,386	3,512	277	7,116
SE sonar passage estimate		402	345	515	159	641
Male						
Sample size	3	48	26	29	5	111
% sample	1.6%	25.5%	13.8%	15.4%	2.7%	59.0%
SE % sample	0.9%	3.2%	2.5%	2.6%	1.2%	3.6%
Sonar passage estimate	277	4,436	2,403	2,680	462	10,257
SE sonar passage estimate	159	561	441	462	205	659
Combined						
Sample size	3	69	41	67	8	188
% sample	1.6%	36.7%	21.8%	35.6%	4.3%	100.0%
SE % sample	0.9%	3.5%	3.0%	3.5%	1.5%	0.0%
Sonar passage estimate	277	6,376	3,789	6,191	739	17,373
SE sonar passage estimate	159	626	530	621	257	355

Notes: Values given by age and sex may not sum to totals due to rounding.

Age composition and sonar passage by age class for 2006 late-run Kenai River Chinook salmon are presented in Table 6.

Appendix F3.-Temporally stratified age composition and sonar passage by age class for late-run Kenai River Chinook salmon, 2006.

Parameter		1.2	1.3	1.4	1.5	Total
Late Run, 1 July-20 July						
Female						
Sample size		47	20	74	4	145
% sample		16.3%	6.9%	25.7%	1.4%	50.3%
SE % sample		1.8%	1.2%	2.1%	0.6%	3.0%
Sonar passage estimate		2,974	1,265	4,682	253	9,174
SE sonar passage estimate		361	242	439	110	653
Male						
Sample size	7	61	32	33	10	143
% sample	2.4%	21.2%	11.1%	11.5%	3.5%	49.7%
SE % sample	0.9%	2.4%	1.9%	1.9%	1.1%	3.0%
Sonar passage estimate	443	3,859	2,025	2,088	633	9,047
SE sonar passage estimate	166	447	341	345	197	569
Combined						
Sample size	7	108	52	107	14	288
% sample	2.4%	37.5%	18.1%	37.2%	4.9%	100.0%
SE % sample	0.9%	2.9%	2.3%	2.9%	1.3%	0.0%
Sonar passage estimate	443	6,833	3,290	6,770	886	18,221
SE sonar passage estimate	166	540	419	538	232	378
Late Run, 21 July-13 August						
Female						
Sample size		15	11	176	12	214
% sample		3.5%	2.5%	40.6%	2.8%	49.4%
SE % sample		0.9%	0.8%	2.4%	0.8%	2.4%
Sonar passage estimate		676	496	7,935	541	9,648
SE sonar passage estimate		173	149	524	155	558
Male						
Sample size	1	64	38	89	27	219
% sample	0.2%	14.8%	8.8%	20.6%	6.2%	50.6%
SE % sample	0.2%	1.7%	1.4%	1.9%	1.2%	2.4%
Sonar passage estimate	45	2,885	1,713	4,013	1,217	9,874
SE sonar passage estimate	45	345	271	400	230	562
Combined						
Sample size	1	79	49	265	39	433
% sample	0.2%	18.2%	11.3%	61.2%	9.0%	100.0%
SE % sample	0.2%	1.9%	1.5%	2.3%	1.4%	0.0%
Sonar passage estimate	45	3,562	2,209	11,948	1,758	19,522
SE sonar passage estimate	45	379	305	591	274	611

Notes: Values given by age and sex may not sum to totals due to rounding.

Age composition and sonar passage by age class for 2006 late-run Kenai River Chinook salmon are presented in Table 6.

APPENDIX G. AGE COMPOSITION ESTIMATES FOR THE KENAI RIVER CHINOOK SALMON INRIVER RETURN USING CATCH FROM 7.5 INCH MESH GILLNET, 2006

Appendix G1.-Age composition and estimated sonar passage by age class for early-run Kenai River Chinook salmon estimated from catches in a 7.5 inch mesh gillnet, 2006.

Parameter	1.2	1.3	1.4	1.5	Total
	Early Run, 16 May-9 June				
Female					
Sample size	1	5	15	1	22
% sample	2.3%	11.4%	34.1%	2.3%	50.0%
SE % sample	2.3%	4.8%	7.2%	2.3%	7.6%
Sonar passage estimate	135	676	2,029	135	2,977
SE sonar passage estimate	135	289	434	135	462
Male					
Sample size	6	4	12		22
% sample	13.6%	9.1%	27.3%		50.0%
SE % sample	5.2%	4.4%	6.8%		7.6%
Sonar passage estimate	812	541	1,624		2,977
SE sonar passage estimate	312	261	407		462
Combined					
Sample size	15	10	26	2	44
% sample	34.1%	22.7%	59.1%	4.5%	100.0%
SE % sample	7.2%	6.4%	7.5%	3.2%	0.0%
Sonar passage estimate	2,029	1,353	3,518	271	5,953
SE sonar passage estimate	434	382	458	189	172
	Early Run, 10-30 June				
Female					
Sample size	15	11	27	2	55
% sample	12.0%	8.8%	21.6%	1.6%	44.0%
SE % sample	2.9%	2.5%	3.7%	1.1%	4.5%
Sonar passage estimate	2,085	1,529	3,753	278	7,644
SE sonar passage estimate	509	443	646	196	790
Male					
Sample size	28	23	16	3	70
% sample	22.4%	18.4%	12.8%	2.4%	56.0%
SE % sample	3.7%	3.5%	3.0%	1.4%	4.5%
Sonar passage estimate	3,892	3,197	2,224	417	9,729
SE sonar passage estimate	655	608	523	239	799
Combined					
Sample size	43	34	43	5	125
% sample	34.4%	27.2%	34.4%	4.0%	100.0%
SE % sample	4.3%	4.0%	4.3%	2.5%	0.0%
Sonar passage estimate	5,976	4,725	5,976	695	17,373
SE sonar passage estimate	751	701	751	435	355

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Parameter	1.2	1.3	1.4	1.5	Total
	Early Run, 16 May-30 June				
Female					
Summed sample size	58	44	69	7	178
Sonar passage estimate	2,220	2,205	5,782	413	10,621
SE sonar passage estimate	526	529	779	238	915
% sonar passage	9.5%	9.5%	24.8%	1.8%	45.5%
SE % sonar passage	2.3%	2.3%	3.3%	1.0%	3.8%
Male					
Summed sample size	34	27	28	3	92
Sonar passage estimate	4,703	3,738	3,847	417	12,705
SE sonar passage estimate	726	662	663	239	923
% sonar passage	20.2%	16.0%	16.5%	1.8%	54.5%
SE % sonar passage	3.1%	2.8%	2.8%	1.0%	3.8%
Combined					
Summed sample size	92	71	97	10	270
Sonar passage estimate	8,006	6,078	9,494	966	23,326
SE sonar passage estimate	867	798	879	474	295
% sonar passage	34.3%	26.1%	40.7%	4.1%	100.0%
SE % sonar passage	3.7%	3.4%	3.7%	2.0%	0.0%

Notes: Values given by age and sex may not sum to totals due to rounding.

These estimates are shown to allow comparison of age composition estimates from the inriver return when only 7.5 inch mesh was used (prior to 2002).

Appendix G2.-Age composition and estimated sonar passage by age class for late-run Kenai River Chinook salmon estimated from catches in a 7.5 inch mesh gillnet, 2006.

	Age					
Parameter	1.1	1.2	1.3	1.4	1.5	Total
Late Run, 1-20 July						
Female						
Sample size		26	15	46	3	90
% sample		16.0%	9.3%	28.4%	1.9%	55.6%
SE % sample		2.9%	2.3%	3.6%	1.1%	3.9%
Sonar passage estimate		2,924	1,687	5,174	337	10,123
SE sonar passage estimate		530	418	656	194	744
Male						
Sample size	1	27	18	23	3	72
% sample	0.6%	0.6%	16.7%	11.1%	14.2%	44.4%
SE % sample	0.6%	0.6%	2.9%	2.5%	2.8%	3.9%
Sonar passage estimate	112	112	3,037	2,025	2,587	8,098
SE sonar passage estimate	112	112	539	453	504	733
Combined						
Sample size	1	53	33	69	6	162
% sample	0.6%	32.7%	20.4%	42.6%	3.7%	100.0%
SE % sample	0.6%	3.7%	3.2%	3.9%	1.5%	0.0%
Sonar passage estimate	112	5,961	3,712	7,761	675	18,221
SE sonar passage estimate	112	685	583	728	271	378
Late Run, 21 July-13 August						
Female						
Sample size		13	6	105	10	134
% sample		5.3%	2.4%	42.9%	4.1%	54.7%
SE % sample		1.4%	1.0%	3.2%	1.3%	3.2%
Sonar passage estimate		1,036	478	8,367	797	10,677
SE sonar passage estimate		282	194	671	248	706
Male						
Sample size		27	23	51	10	111
% sample		11.0%	9.4%	20.8%	4.1%	45.3%
SE % sample		2.0%	1.9%	2.6%	1.3%	3.2%
Sonar passage estimate		2,151	1,833	4,064	797	8,845
SE sonar passage estimate		397	369	523	248	681
Combined						
Sample size		40	29	156	20	245
% sample		16.3%	11.8%	63.7%	8.2%	100.0%
SE % sample		2.4%	2.1%	3.1%	1.8%	0.0%
Sonar passage estimate		3,187	2,311	12,430	1,594	19,522
SE sonar passage estimate		472	410	716	497	611

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Parameter	Age 1.1	1.2	1.3	1.4	1.5	Total
Late Run, 1 July-13 August						
Female						
Summed sample size		39	21	151	13	224
Sonar passage estimate		3,960	2,165	13,540	1,134	20,800
SE sonar passage estimate		601	460	939	315	1,025
% sonar passage		10.5%	5.7%	35.9%	3.0%	55.1%
SE % sonar passage		1.6%	1.2%	2.4%	0.8%	2.5%
Male						
Summed sample size	1	54	41	74	13	183
Sonar passage estimate	112	2,264	4,870	6,088	3,384	16,943
SE sonar passage estimate	112	413	653	692	562	1,000
% sonar passage	0.3%	6.0%	12.9%	16.1%	9.0%	44.9%
SE % sonar passage	0.3%	1.1%	1.7%	1.8%	1.5%	2.5%
Combined						
Summed sample size	1	93	62	225	26	407
Sonar passage estimate	112	9,148	6,022	20,191	2,268	37,743
SE sonar passage estimate	112	832	713	1,021	566	718
% sonar passage	0.3%	24.2%	16.0%	53.5%	6.0%	100.0%
SE % sonar passage	0.3%	2.2%	1.9%	2.5%	1.2%	0.0%

Notes: Values given by age and sex may not sum to totals due to rounding.

These estimates are shown to allow comparison of age composition estimates from the inriver return when only 7.5 inch mesh was used (prior to 2002).