TECHNICAL FISHERY REPORT 91-20

Alaska Department of Fish and Game
Division of Commercial Fisheries
P.O. Box 25526
Juneau, Alaska 99802-5526

December 1991

Upper Cook Inlet Salmon Escapement Studies, 1989

by

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and

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State of Alaska Walter J. Hickel, Governor

The Technical Fishery Report Series was established in 1987, replacing the Technical Data Report Series. The scope of this new series has been broadened to include reports that may contain data analysis, although data oriented reports lacking substantial analysis will continue to be included. The new series maintains an emphasis on timely reporting of recently gathered information, and this may sometimes require use of data subject to minor future adjustments. Reports published in this series are generally interim, annual, or iterative rather than final reports summarizing a completed study or project. They are technically oriented and intended for use primarily by fishery professionals and technically oriented fishing industry representatives. Publications in this series have received several editorial reviews and at least one *blind* peer review refereed by the division's editor and have been determined to be consistent with the division's publication policies and standards.

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ACKNOWLEDGMENTS

We would like to acknowledge the work of the permanent seasonal staff responsible for collection of data.

Kenai River sonar - Randall Davis (Crew Leader), Dennis Gretsch, Bill Glick, Jennifer Pezzenti, Pako Lehtinen.

Kasilof River Sonar - Dave Westerman (Crew Leader), Jenni Johnson, Phil Morin.

Yentna River Sonar - Morris Lambdin (Crew Leader), Lowell Fair, Kerri Derning.

Crescent River Sonar - Mark Schlenker (Crew Leader), Dennis Beliveau.

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TABLE OF CONTENTS

	Page
LIST OF TABLES	vi
LIST OF FIGURES	viii
LIST OF APPENDICES	ix
ABSTRACT	xiii
INTRODUCTION	1
METHODS	1
RESULTS	3
Kenai River	3
Kasilof River	4
Crescent River	5
Yentna River	6
Sockeye Salmon	6
Pink Salmon	6
Chum Salmon	7
Coho Salmon	7
Susitna River at Sunshine Station	7
DISCUSSION	8
LITERATURE CITED	9
TABLES	11
FIGURES	38
APPENDICES	53

LIST OF TABLES

Table		Page
1.	Estimated sockeye salmon escapement recorded by side-scanning sonar in the Kenai, Kasilof, Crescent, and Susitna Rivers, 1978-1989	11
2.	Late run Kenai River sockeye salmon escapement summary, 1968-1989	12
3.	Late run sockeye salmon escapement counts in eight index areas, Kenai River drainage, 1969-1989	13
4.	Cumulative proportion by date of late run sockeye salmon counts recorded in the Kenai River, 1980-1989	14
5.	Proportion of the sockeye salmon escapement recorded by side-scanning sonar on each bank of the Kenai, Kasilof, Crescent, and Yentna Rivers, 1981-1989	16
6.	Age composition of sockeye salmon collected in the Kenai River, 1970-1989	17
7.	Summary of chi-square analysis of temporal change in Kenai River sockeye salmon age composition, 1989	18
8.	Kasilof River sockeye salmon escapement summary, 1968-1989	19
9.	Peak sockeye salmon escapement counts in seven index areas, Kasilof River drainage, 1975-1989	20
10.	Distribution (percentage of total index counts) of sockeye salmon in the major tributary systems of Tustumena Lake, 1975-1989	21
11.	Cumulative proportion by date of sockeye salmon counts recorded in the Kasilof River, 1980-1989	22
12.	Age composition of sockeye salmon collected in the Kasilof River, 1969-1989	24
13.	Summary of chi-square analysis of temporal change in Kasilof River sockeye salmon age composition, 1989	25

LIST OF TABLES, continued

Table		Page
14.	Cumulative proportion by date of sockeye salmon counts recorded in the Crescent River, 1980-1989	26
15.	Age composition of sockeye salmon collected in the Crescent River, 1979-1989	30
16.	Salmon escapement observations in Susitna River tributaries, 1989	31
17.	Cumulative proportion by date of sockeye salmon counts recorded in the Yentna River, 1981-1989	32
18.	Age composition of sockeye salmon collected in the Yentna River, 1986-1989	34
19.	Summary of chi-square analysis of temporal change in Yentna River sockeye salmon age composition, 1989	35
20.	Cumulative proportion by date of pink salmon counts recordedin the Yentna River, 1981-1989	36

LIST OF FIGURES

Figure		Page
1.	Anadromous streams of Upper Cook Inlet, Alaska	38
2.	Kenai River drainage and major sockeye salmon rearing lakes	39
3.	Kasilof River drainage and major sockeye salmon spawning tributaries	40
4.	Crescent River drainage and major sockeye salmon rearing lake	41
5.	Susitna River and major tributaries	42
6.	Distribution from shore of salmon sonar counts in the Kenai River, 1989	43
7.	Hourly distribution of salmon migrating past the Kenai River sonar counters, 1989	44
8.	Distribution from shore of salmon sonar counts in the Kasilof River, 1989	45
9.	Distribution from shore of salmon sonar counts in the Kasilof River, 15-30 June 1989	46
10.	Hourly distribution of salmon migrating past the Kasilof River sonar counters, 1989. Counts by hour were combined for all days	47
11.	Hourly distribution of salmon migrating past the Kasilof River sonar counters, 1989	48
12.	Distribution from shore of salmon sonar counts in the Crescent River, 1989	49
13.	Hourly distribution of salmon migrating past the Crescent River sonar counters, 1989	50
14.	Distribution from shore of salmon sonar counts in the Yentna River, 1989	51
15.	Hourly distribution of salmon migrating past the Yentna River sonar counters, 1989	52

LIST OF APPENDICES

Page

A.1 - Estimated salmon escapement into the Kenai River, north and south banks combined, 1 July through 15 August 1989. Species composition of daily sonar counts based on fish wheel catches 53

A.2 - Kenai River north bank sonar counts by sector, 1 July through 15 August 1989. Counts expressed as percent of daily total 54

A.3 - Kenai River south bank sonar counts by sector, 1 July through 15 August, 1989. Counts expressed as percent of daily total 56

A.4 - Kenai River north bank sonar counts by hour, 1 July through 15 August 1989. Counts expressed as percent of daily total 58

A.5 - Kenai River south bank sonar counts by hour, 1 July through 15 August 1989. Counts expressed as percent of daily total 60

A.6 - Estimated salmon escapement on the north bank of the Kenai River, 1 July through 15 August 1989. Species composition of daily sonar counts based on fish wheel catches 62

A.7 - Estimated salmon escapement on the south bank of the Kenai River, 1 July through 15 August 1989. Species composition of daily sonar counts based on fish wheel catches 63

A.8 - Daily adjusted fish wheel catch by species for the Kenai River, 6 July through 15 August 1989 64

A.9 - Length composition of the major age classes of sockeye salmon collected in the Kenai River, 1980-1989. Length measured from mid-eye to fork of tail 65

A.10 - Estimated salmon escapement into the Kasilof River, north and south banks combined, 15 June through 15 August 1989. Species composition of daily sonar counts based on fish wheel catches 66

A.11 - Kasilof River north bank sonar counts by sector, 15 June through 15 August 1989. Counts expressed as percent of daily total 68

LIST OF APPENDICES, continued

Page

A.12 - Kasilof River south bank sonar counts by sector, 15 June through 15 August 1989. Count expressed as percent of daily total 70

A.13 - Kasilof River north bank sonar counts by hour, 15 June through 15 August 1989. Counts expressed as percent of daily total 72

A.14 - Kasilof River south bank sonar counts by hour, 15 June through 15 August 1989. Counts expressed as percent of daily total 74

A.15 - Estimated salmon escapement on the north bank of the Kasilof River, 15 June through 15 August 1989. Species composition of daily sonar counts based on fish wheel catches 76

A.16 - Estimated salmon escapement on the south bank of the Kasilof River, 15 June through 15 August 1989. Species composition of daily sonar counts based on fish wheel catches 78

A.17 - Daily adjusted fish wheel catch by species for the Kasilof River, 23 June through 9 August 1989 80

A.18 - Length composition of the major age classes of sockeye salmon collected in the Kasilof River, 1980-1989. Length measured from mid-eye to fork of tail 81

A.19 - Estimated salmon escapement into the Crescent River, north and south banks combined. 1 July through 1 August 1989. Species composition of daily sonar counts based on trap catches 82

A.20 - Daily fish trap catch by species for the Crescent River, 1 July through 1 August 1989 83

A.21 - Crescent River north bank sonar counts by sector, 1 July through 1 August 1989. Counts expressed as percent of daily total 84

A.22 - Crescent River south bank sonar counts by sector, 1 July through 1 August 1989. Counts expressed as percent of daily total 85

LIST OF APPENDICES, continued

Page

A.23 - Crescent River north bank sonar counts by hour, 1 July through 1 August 1989. Counts expressed as percent of daily total 86

A.24 - Crescent River south bank sonar counts by hour, 1 July through 1 August 1989. Counts expressed as percent of daily total 88

A.25 - Estimated salmon escapement on the north bank of the Crescent River, 1 July through 1 August 1989. Species composition of daily sonar counts based on trap catches 90

A.26 - Estimated salmon escapement on the south bank of the Crescent River, 1 July through 1 August 1989. Species composition of daily sonar count based on trap catches 91

A.27 - Length composition of the major age classes of sockeye salmon collected in the Crescent River, 1980-1989. Length measured from mid-eye to fork of tail 92

A.28 - Estimated salmon escapement into the Yentna River, north and south banks combined, 7 July through 20 August 1989. Species composition of daily sonar counts based on fish wheel catches 93

A.29 - Estimated salmon escapement on the north bank of the Yentna River, 7 July through 20 August 1989. Species composition of daily sonar counts based on fish wheel catches 94

A.30 - Estimated salmon escapement on the south bank of the Yentna River, 7 July through 20 August 1989. Species composition of daily fish targets based on fish wheel catch 95

A.31 - Yentna River south bank sonar counts by sector, 7 July through 20 August 1989. Counts expressed as percent of daily total 96

A.32 - Yentna River north bank sonar counts by sector, 7 July through 20 August 1989. Counts expressed as percent of daily total 97

LIST OF APPENDICES, continued

Page

A.33 - Yentna River north bank sonar counts by hour, 7 July through 20 August 1989. Counts expressed as percent of daily total 98

A.34 - Yentna River south bank sonar counts by hour, 7 July through 20 August 1989. Counts expressed as percent of daily total 100

A.35 - Daily adjusted fish wheel catch by species for the north bank of the Yentna River, 7 July through 20 August 1989 102

A.36 - Daily adjusted fish wheel for the south bank of the Yentna River, 6 July through 20 August 1989 103

A.37 - Length composition of the major age classes of sockeye salmon collected in the Yentna River, 1986-1989. Length measured from mid-eye to fork of tail 104

ABSTRACT

Sockeye salmon *Oncorhynchus nerka* spawning escapements into four river systems of Upper Cook Inlet, Alaska were estimated using side-scanning sonar equipment. Escapements totaled 1,599,959 sockeye salmon into the Kenai River, 158,206 sockeye salmon into the Kasilof River, 71,064 sockeye salmon into the Crescent River, and 96,269 sockeye salmon into the Yentna River. Indices of escapements of other salmon species into the Yentna River were also obtained by sonar: 173,698 pink *O. gorbuscha*, 63,379 chum *O.keta*, and 25,695 coho *O. kitsutch* salmon. Age composition of sockeye salmon was predominantly 1.3 in the Kenai River (75.3%), 1.2 (44.0%) and 1.3 (46.3%) in the Kasilof River, 1.3 (63.5%) and 1.2 (27.2%) in the Yentna River, and 1.3 (84.2%) and 2.3 (15.0%) in the Crescent River. Mean length and sex data were collected for sockeye salmon in each river. Sockeye salmon in all rivers migrated near shore. Most sockeye salmon passed the sonar sites at night in the Kasilof River and during the afternoon and evening in the Kenai, Crescent, and Yentna Rivers.

KEY WORDS: Pacific salmon, spawning escapements, hydroacoustic enumeration, biological sampling, migratory behavior, Upper Cook Inlet, sockeye salmon, *Oncorhynchus nerka*

INTRODUCTION

Due to the glacial nature of many rivers in Upper Cook Inlet (UCI), Alaska, spawning escapement enumeration of sockeye salmon *Oncorhynchus nerka* by the Alaska Department of Fish and Game (ADF&G) was limited to surveys of clear- water spawning areas prior to 1968 (King and Davis 1989). Survey information was inadequate for commercial fishery management because it did not specify the proportion of the escapement which spawned in glacially occluded waters. Efforts to manage the commercial harvest of sockeye salmon were also hampered by the lack of timely daily and cumulative estimates of total escapement. Therefore, hydroacoustic technology was developed and applied to the Kenai and Kasilof Rivers starting in 1968. Results of escapement enumeration projects have been documented by Waltemyer et al. (1980), Tarbox et al. (1983), and King and Tarbox (1984, 1986, 1987, 1988, 1989a, and 1989b).

In 1989 sockeye salmon escapements were monitored daily in the Kenai, Kasilof, Crescent and Yentna Rivers (Figures 1 through 5). Information concerning Yentna River pink *O. gorbuscha*, chum *O. keta*, and coho *O. kisutch* salmon abundance was obtained. The primary objectives of UCI escapement projects in 1989 were to estimate:

1) daily and cumulative abundance of sockeye salmon runs to the Kenai, Kasilof, Crescent and Yentna Rivers, and
2) age, length and sex composition of the sockeye salmon escapements.

A secondary objective was to investigate the abundance, timing, and distribution of spawning sockeye salmon within tributary index areas of the Kenai and Kasilof River drainages.

METHODS

Operational characteristics of *Bendix Corporation* side-scanning sonar counters have been described by King and Tarbox (1989a), Gaudet (1983) and Bendix Corp (1980 and 1984). Pulse width and frequency for all counters used was 100 s and 515 kHz, respectively. The minimum target strength necessary to register a count was approximately -38 dB. Three changes were made in operations in 1989: (1) Crescent River sonar was operated without the substrates; (2) the Kenai River north bank sonar location was moved approximately 50 m upstream; and (3) a modified 1980 counter was used on the north bank of the Kenai River. Projects were operated from 1 July to 15 August on the Kenai River, 15 June to 15 August on the Kasilof River, 7 July to 20 August on the Yentna River and 1 July to 1 August on the Crescent River.

Raw output data were edited to remove counts from debris, bottom echoes, and other sources of false counts. A daily average count was calculated for sonar sectors 1-6 and 7 -12 by

$$C_a = C_b/N,$$

where: C_a = average count per sector/hour,
C_b = valid counts, and
N = number of sector/hour units which contained only valid counts.

The average count was then substituted for any deleted false counts.

Migratory behavior of sockeye salmon at the sonar sites was assessed by examining distribution of fish by sector, hourly passage rate, side of the river preferred for travel, and cumulative proportion of sonar counts by day (migratory timing).

Information needed to estimate species composition of sonar counts, and the age, length, and sex composition of the escapements were obtained from salmon captured in fish wheels in the Kenai, Kasilof and Yentna Rivers and a fixed fish trap in the Crescent River. Fish wheel catches were expanded for each 24-h period (F_d) based on the hourly catch rate during the hours of operation were

$$F_d = (F_h/H)\ 24,$$

where: F_h = fish wheel catch for hours operated, and
H = hours fish wheel operated

Daily fish wheel or trap catches were grouped into samples of at least 150 salmon to estimate species proportion. The daily sonar count was multiplied by these proportions to obtain the sonar count for each species.

Sample sizes for estimating sockeye salmon age composition by period were based on methods for estimating proportions developed by Thompson (1987). Historic age class proportions (1983-88) were used to calculate the sample size required for each year such that the estimated proportion of each major age class was within 5 percentage points of the true proportion 90% of the time. The largest annual sample size calculated for the historic data base was chosen as a minimum sample size for each time stratum in 1989. The minimum sample size was increased by 10% to account for unusable scales, and this number was used as the total sample size required per stratum. The sample size per stratum was then multiplied by the number of strata to determine total season sample size.

Scale samples from all rivers were collected daily. The number of salmon sampled per day was based on a percentage of the previous day's escapement. These percentages were calculated by dividing the total season sample size by the anticipated escapement. In addition, scale samples were collected at least one day each week from the Kenai and Kasilof Rivers to provide scales for the stock identification program. These scales were also included in postseason age composition analysis.

A chi-square test was performed using data from all strata to determine if the number of salmon within each age class was the same among strata. If the null hypothesis was rejected, then chi-square tests were repeated between sampling strata to determine when changes occurred.

Length (mid-eye to fork-of-tail in millimeters) and sex were recorded for all sockeye salmon captured. Sex ratios and mean lengths were calculated by grouping all samples together regardless of type or timing of sampling.

Index-area escapement foot surveys were conducted by ADF&G Fisheries Rehabilitation Enhancement and Development (FRED) Division on Tustumena Lake (Kasilof River). Foot surveys of spawning streams of the Kenai River drainage were conducted by the United States Forest Service. All surveys were conducted between 1 August and 15 September. Index area counts and other survey data referenced in this report are totals of live and dead counts. If more than one survey was done on a system, only results of the survey having the highest total count was reported.

In addition to the regular sampling program a fish wheel was operated at Sunshine Station on the mainstem Susitna River (River Mile 79) from 14 July to 2 August. Samples collected at this site were included in Susitna River age composition estimates.

RESULTS

Kenai River

From 1 July through 15 August, 1,630,475 salmon migrated past the Kenai River sonar site (Appendix A.1). Of these, 1,599,959 were sockeye (Table 1). The estimated sockeye salmon spawning escapement (sonar count minus sport harvest above the Soldotna bridge) was 1,344,959 fish (Table 2), about twice the upper bound of the desired escapement goal range (400,000-700,000 fish). Record numbers of sockeye salmon were observed in all tributaries surveyed except Ptarmigan Creek and Hidden Lake (Table 3).

Most sockeye salmon migrated close to the river banks throughout the season (Figure 6; Appendices A.2, A.3). With the exception of the first 11 to 12 d of the counting period when less than 1% of the counts were recorded, more than 90% of the salmon counted were within 7.5 m of the transducer on both banks. There was, however, a tendency for salmon to move further offshore during daylight hours on the north bank.

The historical pattern of increased salmon passage in the afternoon and evening hours was again observed. Salmon passage measured between 1200 hours and 0200 hours on the south bank averaged 72.8% and 60.0% on the north bank between 1300 hours and 0100 hours (Figure 7; Appendices A.4, A.5).

Eighty percent of the total escapement passed the sonar counters in 23 d (Table 4; mean = 15 d; range for 1980-88 = 5-25 d). The midpoint and peak day of the escapement was 21 July, the same date as the 1979-88 average. Ten percent of the escapement was counted by 13 July, one of the earliest dates on record for a significant portion of the run to enter the river. Run timing data were not appreciably different by bank (Appendices A.6, A.7), although more (57%) sockeye salmon migrated along the north bank of the river (Table 5).

A total of 6,341 sockeye salmon were captured in the fish wheel (Appendix A.8). Lengths and readable scales were obtained from 2,275 sockeye salmon. Mean

lengths of samples from the predominant age classes were within the range of data collected during the previous 9 years (Appendix A.9).
The sockeye salmon escapement was 75.3% age-1.3 fish (Table 6). The proportion of age-1.3 sockeye salmon was significantly less (chi-square = 6.52, $P < 0.05$, 2 df) in samples collected during the latter portion of the run (period 3, 26 July-15 August; Table 7).

Age-1.3 sockeye salmon were bound primarily for Quartz Creek, the mainstem river, and the shorelines and outlets of Kenai and Skilak Lakes. Sockeye salmon bound for Russian River were predominantly age-2.2 (S. Hammarstrom, ADF&G, Soldotna, personal communication), while those bound for Hidden Lake were predominantly age-1.2 (G. Kyle, ADF&G, Soldotna, personal communication).

Sonar counts attributed to other species included 24,985 pink, 4,970 coho and 561 chinook salmon (Appendix A.1); these are considered index counts. Factors influencing accuracy of escapement estimates for these species (run timing, counter limitations, and spawning locations relative to the sonar site) were discussed by Tarbox et al. (1981; 1983). No additional pink or coho salmon escapement estimates were made for the mainstem Kenai River. The chinook salmon escapement (minus sport fishery harvest) measured by ADF&G (Sport Fish Division) was 10,736 early-run fish and 19,908 late-run fish (Nelson 1990).

Kasilof River

A total of 177,309 salmon were counted at the Kasilof River sonar site from 15 June through 15 August 1989 (Appendix A.10), of which 158,206 were sockeye salmon (Table 1). This level of escapement is within the desired escapement goal range of 150,000-250,000 fish. The estimated number of natural spawners (estimated escapement minus brood stock used for artificial propagation of Tustumena Lake) was 150,839 fish (Table 8).

Seventy-seven percent of the counted tributary spawners entered Bear and Glacier Flat Creeks (Tables 9, 10). Weirs placed on these creeks provided total escapement counts; peak spawning counts from ground surveys provided estimates for the other tributaries.

Sixty-one percent of the salmon counts for the season were made on the south bank. Most targets were concentrated in offshore sectors prior to 2 July, but only 10,205 salmon (5.7% of the total escapement) had been enumerated by this date. From 2 July through 15 August, when most sockeye salmon escapement occurred, more than 80% of the counts occurred within 4.5 m of the transducer The same pattern of offshore distribution of fish prior to 2 July was observed on the north bank. From 2 July through 15 August, when 92.3% of all salmon were enumerated, more than 87% of the counts occurred within 4.5 m of the transducer (Figures 8, 9; Appendices A.11, A.12). Salmon passage was greatest during the season from 2400 hours through 0800 hours on the north bank and 1900 hours through 0800 hours on the south bank (Figures 10, 11; Appendices A.13, A.14).

The midpoint of the sockeye salmon escapement occurred on 14 July, the same date as the historic mean (range 1-22 July; Table 11). Eighty percent of the escapement occurred in 33 d, 2 d longer than the historic mean. No differences in timing between the north and south banks were detected (Appendices A.15, A.16).

A total of 4,017 sockeye salmon were captured in the Kasilof River fish wheel (Appendix A.17). Age-1.3 (46.3%) and age-1.2 (44.0%) sockeye salmon were the dominant age classes (Table 12). The proportion of age-1.2 sockeye salmon increased, and the proportion of age-1.3 sockeye salmon decreased as the season progressed (Table 13; chi-square = 300.91, $P < 0.05$, 2 df). This trend has been observed in the past. Sockeye salmon average lengths at age for each sex were within the range of data collected during the previous eight years (Appendix A.18).

Run timing, counter limitations, and spawning locations relative to the sonar site are factors which prevent escapement sonar estimates for Kasilof River pink, coho, and chinook salmon. Coho salmon entered the river primarily in August. Pink salmon occurred in small numbers above the counting site. Chinook salmon migrated past the sonar site during the time when sockeye were counted, but the accuracy of counts attributed to this species was not known. Weir counts of chinook salmon were made by FRED Division personnel at Crooked Creek, a lower river tributary of the Kasilof River. An escapement of 3011 chinook salmon occurred in 1989. Seven hundred of these were allowed to spawn naturally and the rest were used for hatchery brood stock or sold (G. Kyle, ADF&G, Soldotna, Alaska, personal communication).

Crescent River

A total of 75,961 salmon were counted at the Crescent River sonar site from 1 July through 1 August 1989 (Appendix A.19). Approximately 85% of the fish captured in the trap were sockeye (Appendix A.20), resulting in an estimated sockeye salmon escapement of 71,064. The desired escapement goal range for this system is 50,000 to 100,000 sockeye salmon (King and Tarbox 1986).

Distribution of fish along the counting transect varied considerably through time, although less than 3% of the north bank counts and 0.4% of the south bank counts occurred in the outer three counting sectors (the counting distance varied from 4-6 m; Figure 12; Appendices A.21, A.22). Fish movement occurred primarily during 1100 hours and 2300 hours on the north bank and 1100 hours and 2400 hours on the south bank (Figure 13; Appendices A.23, A.24). Spatial and temporal distribution of salmon was similar to that observed in past years.

The midpoint of the sockeye salmon escapement occurred on 13 July, 3 d earlier than the historical mean (Table 14). The peak in daily passage on 16 July followed 2 d of extremely high water flows. Eighty percent of the escapement passed the site in 22 d. Salmon were evenly distributed on both sides of the river (Table 5; Appendices A.25, A.26). As noted in previous years, passage rate remained between 2% and 6% of the total escapement per day.

A total of 1,734 sockeye salmon were captured in the fish trap, of which 728 were sampled for AWL data. Age-1.3 (84.2%) and age-2.3 (15.0%) were the dominant age classes (Table 15). There was no change in age composition as the season progressed (Waltemyer 1989). Average length by sex and age class, and the ratio of males to females collected were within historical ranges (Appendix A.27).

Yentna River

Sockeye Salmon

From 7 July through 20 August, 359,434 salmon were counted at the Yentna River sonar site (Appendix A.28). The sockeye salmon escapement of 96,269 (Table 1) was just below the desired minimum escapement (100,000). Few sockeye salmon passing the sonar site were accounted for in spawning ground surveys made later in the season (Table 16).

The midpoint of the sockeye salmon escapement occurred on 25 July (Table 17), 2 d later than the historical mean. The south bank sockeye salmon count, which represented 88% of the total season count (Table 5), peaked on 26 July, 3 d before the north bank counts peaked (Appendices A.29, A.30). Eighty percent of the escapement passed the counters in 18 d, 5 d longer than the historical mean. This was the most protracted run timing ever observed for this system.

Most (80%) of the salmon counted from the south bank were within 7.5 m of the transducer (Appendix A.31), although daily variation was evident (Figure 14). On the north bank 92.9% of the salmon were also counted within 7.5 m of the transducer (Appendix A.32). In contrast to previous years, salmon passage on both banks was not evenly distributed throughout the day (Figure 15; Appendices A.33, A.34). Counts were below the expected constant passage rate of 4.2% per hour from 0200 hours through 1400 hours on the north bank and 0600 hours through 1700 hours on the south bank.

A total of 3,438 sockeye salmon were captured in fish wheels at Yentna Station, of which 1,727 were sampled for AWL data (Appendices A.35, A.36). The escapement consisted of primarily of age-1.3 (63.5%) and age-1.2 (27.2%) sockeye salmon (Table 18). There was a significant (chi-square = 11.51, $P<0.05$, 1 df) decrease in the proportion of age-.3 and increase in the proportion of age-.2 sockeye salmon during the last sampling period, 28 July to August 20 (Table 19).

Average lengths for each sex were within the range of values observed in previous years (Appendix A.37). There were twice as many age-1.2 males as females for the third time in the last 4 years.

Pink Salmon

Pink salmon escapement was estimated to be 173,698 (Appendix A.28). No estimates were available for the mainstem Susitna River above the confluence with the Yentna River.

Daily pink salmon escapement at Yentna Station peaked on 27 July, the same date as the midpoint. (Table 20). The midpoint of the escapement has occurred between 27 and 29 July in 7 of the previous 9 years, demonstrating a high degree of consistency in migratory timing. Eighty percent of the escapement was recorded in 21 d, the most extended entry pattern observed for pink salmon at this site.

Chum Salmon

Chum salmon escapement at Yentna Station was estimated to be 63,379, the highest total on record (Appendix A.28). The previous escapement range for the years 1981 to 1988 was 10,802-56,656, which included the years 1981-84 when counting operations extended into September. No information was available on escapements of this species into specific spawning areas.

Migratory timing could not be determined for chum salmon because enumeration activities ceased while significant numbers of this species (greater than the 1% of cumulative escapement) were still passing the sonar site. However, in the years 1981 to 1984 a range of 81.2% to 95.8% (mean- 87.8%) of the chum salmon escapement was recorded by 20 August (King and Tarbox 1986).

Coho Salmon

The coho salmon escapement was 25,695 fish (Appendix A.28). As with chum salmon, migratory timing information could not be calculated because the project was terminated too soon. In the years 1981 to 1984, 90.1% to 97.0% of the sonar counts attributed to coho salmon occurred prior to 20 August.

Age-1.1 and-2.1 fish comprised 26.4% and 64.5% of the monitored escapement (D. Waltemyer, ADF&G, Soldotna, personal communication).

Susitna River at Sunshine Station

Species composition of the fish wheel catch was 47.5% sockeye, 26.8% pink, 22.3% chum, 0.7% coho and 2.6% chinook salmon. A total of 3372 salmon were caught. Most of the sockeye salmon sampled were age-1.3 (66.0%) and -1.2 (28.7%). As was noted at Yentna Station, the proportion of age-1.3 sockeye salmon decreased with time. In addition, there were almost twice as many males as females, similar to Yentna Station samples. Chum salmon sampled at Sunshine Station were primarily age-0.3 (60.2%) and -0.4 (36.2%; D. Waltemyer, ADF&G, Soldotna, personal communication).

DISCUSSION

The 1989 sonar counting operations and overall results were similar to past years: (1) counting conditions on all rivers were within design and operation tolerances of the Bendix side-scanning sonar system; (2) salmon passage was inshore and near bottom during the peak of the return; (3) salmon densities were generally adequate for system calibration; and (4) once again, sockeye salmon comprised most of the run (89%-98%) except at Yentna River (27%). In addition, most of the escapement occurred during the time the sonar systems were operated.

Within the Kasilof River drainage the total spawning ground count was 107,505 sockeye salmon or 68% of the sonar count. Spawning ground counts for this drainage have averaged 76% of the sonar count since 1980.

The grounding of the tanker Exxon Valdez in Prince William Sound had some impacts on commercial fisheries management in Upper Cook Inlet. Because of oil contamination, ADF&G closed the Central District to drift gill net fishing and restricted the area within which the set net fishery could operate. This altered historical harvest patterns, but the influence of this on salmon entry patterns into the rivers was not known. An early and extended entry of sockeye salmon into the Kenai River was observed in 1988, but not in 1987 when the escapement also exceeded 1 million fish.

Age composition, sex ratios, and length at age data indicated no major deviations from historical values with one exception. The male-to-female ratio of age-1.2 sockeye salmon sampled at Yentna and Sunshine Stations was much higher than that observed in other rivers. Reasons for this phenomena are unknown at this time, but escapement objectives may need to be reassessed if this age class begins to predominate returns. Presently, the overall escapement sex ratio for Yentna River (all age classes combined) is close to 1:1 because of the predominance of age-1.3 sockeye salmon.

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Table 1. Estimated sockeye salmon escapement recorded by side-scanning sonar in the Kenai, Kasilof, Crescent, and Susitna Rivers, 1978-1989.

	System			
Year	Kenai R.[a]	Kasilof R.[b]	Crescent R.	Susitna R.[c]
1978	398,900	116,600	[d]	94,400
1979	285,020	152,179	86,654	156,890
1980	464,038	187,154	90,863	190,866
1981	407,639	256,625	41,213	340,232
1982	619,831	180,239	58,957	215,856[e]-265,332[f]
1983	630,340	210,270	92,343	112,314-175,936[f]
1984	344,571	231,685	118,345	194,480[e]-279,446[f]
1985	502,820	505,049	128,628	227,924[f]
1986	501,157	275,963	20,385[g]	92,077[h]
1987	1,596,870	249,246	118,896	66,053[h]
1988	1,021,500	204,000[i]	57,716	52,347[h]
1989	1,598,042	157,739	70,532	96,212[h]

[a] Includes counts after 22 June (1978-87), after 1 July (1988-89).
[b] Includes counts or estimates from designated early period (prior to 15 June).
[c] Sonar counts from Susitna Station unless otherwise indicated.
[d] No counts conducted.
[e] Sonar counts from Yentna Station and Susitna Station east bank.
[f] Sonar counts from Yentna Station and mark/recapture estimate from Sunshine Station.
[g] Counts through 16 July only.
[h] Counts from Yentna Station Only.
[i] Combined counts from wiers on Bear and Glacier Flats Creeks and surveys of remaining spawning streams.

Table 2. Late run Kenai River sockeye salmon escapement summary, 1968-1989.

Year	Estimated Escapement at Sonar Site[a]	Russian River Sport Harvest[b]	Kenai River Mainstem Sport Harvest[b]	Estimated Total Harvest Above Sonar Site[c]	Sonar Count Less Sport Harvest[d]
1968	88,000	5,820			
1969	53,000	1,150			
1970	73,000	600			
1971		10,730			
1972	318,000	16,050			
1973	367,000	8,930			
1974	161,000	8,500	8,030	16,530[e]	144,470
1975	142,000	8,390	5,110	13,500	128,500
1976	380,000	13,700	13,140	26,840	353,160
1977	708,000	27,440	16,933	44,373	663,627
1978	398,900	24,530	24,542	49,072	349,828
1979	285,020	26,830	12,328	39,158	245,862
1980	464,038	33,490	18,592	52,082	411,956
1981	407,639	23,720	14,451	38,171	369,468
1982	619,831	10,321	38,397	48,718	571,113
1983	630,340	16,000	48,306	64,306	566,034
1984	344,571	21,970	11,280	33,250	311,321
1985	502,820	58,410	42,272	100,682	402,138
1986	501,157	30,813	51,221	82,034	419,123
1987	1,596,870	40,575	155,170	195,745	1,401,125
1988	1,021,500	19,540	97,770	117,310	904,190
1989	1,599,959	55,210[f]	199,790[f]	255,000	1,344,959

[a] Bendix Corp. multiple transducer sonar 1968-1977, side-scanning sonar 1978-1989.
[b] Data from Sport Fish Division Statewide Harvest estimate. Mainstem harvest above the Soldotna bridge (and sonar site) only.
[c] Combined Russian River and mainstem (above bridge) harvests.
[d] Considered estimate of spawners above sonar site.
[e] Cross et al. (1983): 1974-1980.
[f] Preliminary estimate: Nelson (1990).

Table 3. Late run sockeye salmon escapement counts in eight index areas, Kenai River drainage, 1969-1989.

Year	Railroad Creek	Johnson Creek	Carter-Moose Creek	Ptarmigan Creek	Tern (Mud) Lake	Quartz Creek	Hidden Lake[b]	Russian River[a] Above Weir	Russian River[a] Below Weir	Total Index Area Escapement
1969	100	75	598	5	487	487	500	28,920	1,100	32,272
1970	99	118	348	7	561	200	323	28,200	220	30,076
1971	194	160	3,201	45	1,370	808	1,958	54,430	10,000	72,166
1972	700	150	3,400		1,200		4,956	79,000	6,000	95,406
1973	521	1,714	660	1,041	1,731	3,173	690	24,970	6,690	41,190
1974		46	939	558		255	1,150	24,650	2,210	29,808
1975	522	105	1,278	186	1,214	1,068	1,375	31,970	630	38,348
1976	1,032		5,558		1,548	3,372	4,860	31,950	3,470	51,790
1977	1,262	450	6,515	1,513	2,230	3,037	1,055	21,410	17,090	54,562
1978	1,749	780	1,933	3,529	1,126	10,627	4,647	32,760	18,330	75,481
1979		588	3,986	523	1,693	277	5,762	87,920	3,920	104,669
1980	1,259	253	4,879	5,752	2,575	7,982	27,448	83,980	3,220	137,348
1981	1,276	142	4,370	1,421	3,402	5,998	15,939	44,530	4,160	81,238
1982	2,518	498	4,752	7,525	4,300	70,540[c]	8,648	30,790	45,000	174,571
1983	1,289	338	1,819	9,709		73,345[c]	11,297	34,040	44,000	175,837
1984	2,090[d]	939[d]	5,927[d]	18,000[d]	2,728[d]	37,659[d]	27,792	92,660	3,000	190,795
1985	2,884[d]	151[d]	5,928[d]	26,879[d]			24,784	136,970	8,650	206,246
1986	600[d]	245[d]	1,659[d]				17,530	40,420	6,022	66,476
1987	736[e]	74[e]	625[e,f]	14,187[e]		45,400	43,487	53,930	76,732	235,171
1988	1,990[e]	1,243[e]	1,607[e]	31,696[e]			50,907	42,480	28,840	158,763
1989	4,959[e]	2,276[e]	5,958[e]	3,484[e]			7,770	138,320	28,480	191,247

[a] Nelson (1990)
[b] Weir count: 1971, 1973, 1976-1989 (F.R.E.D. Division).
[c] F.R.E.D. Division weir count.
[d] Ralph Browning, United States Department of Agriculture, Forest Service, Seward, Alaska, personal communication.
[e] Dan Logan, United States Department of Agriculture, Forest Service, Seward, Alaska, personal communication. With the exception of Ptarmigan Creek, 1987 data were the result of a single survey conducted in the last week of September.
[f] One-half of the index area surveyed.

Table 4. Cumulative proportion by date of late run sockeye salmon counts recorded in the Kenai River, 1980-1989.

	Cumulative Proportion[a]									
Date	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
22-Jun	0.002	0.001	0.002	0.001	0.003	0.001	0.001	0.001		
23-Jun	0.004	0.001	0.003	0.001	0.007	0.002	0.002	0.002		
24-Jun	0.005	0.002	0.004	0.002	0.010	0.003	0.003	0.002		
25-Jun	0.006	0.003	0.004	0.003	0.012	0.004	0.004	0.002		
26-Jun	0.008	0.004	0.005	0.004	0.013	0.005	0.004	0.003		
27-Jun	0.008	0.006	0.006	0.005	0.015	0.006	0.005	0.004		
28-Jun	0.009	0.007	0.007	0.006	0.017	0.007	0.006	0.005		
29-Jun	0.010	0.008	0.007	0.006	0.018	0.009	0.007	0.006		
30-Jun	0.011	0.009	0.008	0.007	0.021	0.010	0.008	0.007		
01-Jul	0.012	0.010	0.009	0.007	0.023	0.014	0.009	0.007	0.000	0.000
02-Jul	0.013	0.012	0.010	0.008	0.024	0.016	0.010	0.008	0.000	0.001
03-Jul	0.014	0.012	0.011	0.008	0.025	0.017	0.011	0.008	0.001	0.001
04-Jul	0.015	0.013	0.011	0.009	0.027	0.019	0.012	0.008	0.001	0.001
05-Jul	0.016	0.013	0.012	0.009	0.029	0.021	0.013	0.009	0.001	0.002
06-Jul	0.016	0.014	0.012	0.009	0.031	0.024	0.014	0.009	0.002	0.006
07-Jul	0.017	0.016	0.013	0.010	0.032	0.026	0.016	0.009	0.003	0.011
08-Jul	0.017	0.018	0.013	0.010	0.036	0.030	0.016	0.010	0.003	0.014
09-Jul	0.018	0.064	0.015	0.011	0.044	0.032	0.016	0.010	0.003	0.017
10-Jul	0.018	0.186	0.016	0.013	0.054	0.033	0.017	0.010	0.011	0.021
11-Jul	0.019	0.262	0.016	0.017	0.063	0.036	0.017	0.011	0.063	0.024
12-Jul	0.020	0.366	0.017	0.021	0.067	0.038	0.018	0.011	0.088	0.046
13-Jul	0.020	0.463	0.019	0.041	0.071	0.039	0.020	0.015	0.141	0.100
14-Jul	0.021	0.512	0.021	0.085	0.073	0.048	0.044	0.018	0.185	0.162
15-Jul	0.027	0.549	0.026	0.174	0.076	0.066	0.057	0.033	0.222	0.211
16-Jul	0.057	0.559	0.047	0.242	0.112	0.104	0.068	0.044	0.274	0.242
17-Jul	0.310	0.572	0.067	0.297	0.173	0.111	0.081	0.052	0.303	0.290
18-Jul	0.489	0.605	0.182	0.437	0.307	0.114	0.095	0.058	0.340	0.347
19-Jul	0.607	0.667	0.322	0.566	0.363	0.115	0.114	0.070	0.375	0.367
20-Jul	0.777	0.747	0.474	0.695	0.406	0.116	0.126	0.142	0.409	0.421
21-Jul	0.899	0.803	0.563	0.766	0.464	0.120	0.194	0.237	0.464	0.500
22-Jul	0.920	0.835	0.598	0.796	0.555	0.178	0.300	0.322	0.569	0.566
23-Jul	0.926	0.848	0.642	0.813	0.652	0.291	0.359	0.409	0.679	0.639
24-Jul	0.932	0.864	0.681	0.833	0.720	0.463	0.426	0.493	0.744	0.679
25-Jul	0.935	0.876	0.722	0.844	0.781	0.574	0.525	0.575	0.785	0.698
26-Jul	0.938	0.894	0.752	0.861	0.833	0.693	0.689	0.646	0.812	0.729
27-Jul	0.944	0.911	0.842	0.865	0.867	0.753	0.814	0.700	0.827	0.774
28-Jul	0.947	0.921	0.883	0.872	0.897	0.822	0.874	0.747	0.836	0.806
29-Jul	0.952	0.932	0.903	0.878	0.913	0.864	0.910	0.774	0.844	0.831
30-Jul	0.955	0.940	0.918	0.882	0.921	0.897	0.961	0.797	0.847	0.846
31-Jul	0.957	0.948	0.931	0.891	0.928	0.911	1.000	0.839	0.850	0.856
01-Aug	0.960	0.955	0.940	0.906	0.933	0.919		0.879	0.854	0.875
02-Aug	0.962	0.964	0.946	0.916	0.937	0.922		0.907	0.859	0.888
03-Aug	0.964	1.000	0.951	0.920	0.943	0.925		0.925	0.863	0.899
04-Aug	0.966		0.955	0.934	0.948	0.929		0.939	0.873	0.908
05-Aug	0.968		1.000	0.964	0.956	0.931		0.952	0.894	0.916
06-Aug	0.970			0.977	0.960	0.935		0.962	0.914	0.930
07-Aug	0.972			0.983	0.963	0.938		0.970	0.933	0.949
08-Aug	0.974			0.989	0.969	0.943		0.976	0.944	0.960
09-Aug	0.975			0.993	1.000	0.947		0.981	0.953	0.966
10-Aug	0.978			0.996		0.953		0.988	1.000	0.974
11-Aug	0.982			0.999		0.960		0.994		0.985
12-Aug	0.985			1.000		1.000		0.998		0.990
13-Aug	0.992							1.000		0.994

- Continued -

Table 4. (p 2 of 2)

	Cumulative Proportion[a]									
Date	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
14-Aug	0.993									0.998
15-Aug	0.993									1.000
16-Aug	0.995									
17-Aug	0.996									
18-Aug	0.997									
19-Aug	0.997									
20-Aug	0.997									
21-Aug	0.998									
22-Aug	0.998									
23-Aug	0.999									
24-Aug	0.999									
25-Aug	0.999									
26-Aug	0.999									
27-Aug	0.999									
28-Aug	1.000									
29-Aug	1.000									
30-Aug	1.000									
31-Aug	1.000									
01-Sep	1.000									
02-Sep	1.000									
03-Sep	1.000									
04-Sep	1.000									
Midpoint	7/19	7/14	7/21	7/19	7/22	7/25	7/25	7/25	7/22	7/21
No. days for 80%	5	18	12	18	14	16	12	14	25	23

[a] Proportion accrued on last day (1981, 1982, 1984-1986, 1988) represents that portion of the escapement estimated after termination of enumeration activities.

Table 5. Bank distribution of sockeye salmon escapement recorded by side-scanning sonar in the Kenai, Kasilof, Crescent, and Yentna Rivers, 1981-1989.

	Percentage of Total Fish Targets							
	Kenai		Kasilof		Crescent		Yentna	
Year	North Bank	South Bank	North Bank	South Bank	North Bank	South Bank	North Bank	South Bank
1979	72	28	53	47				
1980	61	39	52	48	49	51		
1981	72	28	69	31	57	43		
1982	39	61	73	27	54	46		
1983	42	58	51	49	39	61		
1984	65	35	56	44	71	29		
1985	54	46	70	30	70	30	9	91
1986	62	38	57	43	84	16	32	68
1987	48	52	55	45	64	34	10	90
1988	47	53	32	68	53	47	8	92
1989	57	43	39	61	52	48	12	88

Table 6. Age composition of sockeye salmon collected in the Kenai River, 1970-1989.

Sample Period	Percent Composition by Age Class[a]								Sample Size
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	Other	
7/01-7/18/89	0.0	9.5	76.1	0.9	0.0	3.0	10.3	0.3	790
7/19-7/25/89	0.4	7.5	78.7	1.2	0.1	2.6	9.3	0.4	862
7/26-8/15/89	0.0	10.6	69.7	1.0	1.6	7.7	9.5	0.0	623
Seasonal Summary									
1970	tr	10.0	17.0	tr	26.0	25.0	15.0	6.0	225
1971	0.0	8.0	39.0	1.0	3.0	38.0	11.0	0.0	168
1972	0.0	21.0	34.0	0.0	0.0	23.0	20.0	0.0	403
1973	0.0	5.0	68.0	1.0	1.0	8.0	16.0	0.0	632
1974	2.0	18.0	46.0	0.0	3.0	18.0	12.0	0.0	295
1975	2.0	10.0	36.0	2.0	4.0	31.0	14.0	1.0	162
1976	1.0	46.0	20.0	0.0	2.0	22.0	8.0	1.0	948
1977	0.0	6.0	76.0	1.0	tr	7.0	10.0	0.0	1,265
1978	0.0	2.5	86.7	0.0	0.0	4.9	5.4	tr	811
1979	tr	20.2	61.1	0.0	0.0	11.8	6.2	tr	601
1980	0.0	27.7	45.1	0.0	0.0	16.2	10.1	tr	715
1981	0.0	16.2	70.9	0.0	0.0	8.1	4.8	0.0	1,757
1982	0.1	5.8	87.5	tr	0.0	2.9	3.7	0.0	1,787
1983	0.4	8.2	79.1	0.2	0.5	2.2	8.9	0.4	1,765
1984	0.2	23.4	38.2	3.5	0.6	12.8	19.2	2.2	2,364
1985	0.1	15.9	56.4	0.3	0.1	14.7	11.4	1.1	2,201
1986	0.0	31.8	39.5	0.7	0.3	8.2	18.0	1.5	789
1987	0.0	12.8	78.4	0.1	0.0	3.2	5.2	0.3	745
1988	0.3	11.6	74.2	0.4	0.2	3.1	10.2	0.1	1420
1989	0.1	9.1	75.3	1.0	0.5	4.1	9.7	0.2	2,275

[a] Percentages weighted by total numbers in the escapement: 1978 (Bethe et al. 1980), 1979-1982, 1984-1989.

Table 7. Summary of chi-square analysis of temporal change in Kenai River sockeye salmon age composition, 1989.

		Chi-square Value					
		Calculated	Tabled				
Periods[a]	Number of Age Classes[b]		Alpha	df	Value	Significant?	Hypothesis[c]
1-3	3	6.80	0.05	4	9.49	no	accept
1-2	3	2.60	0.05	2	5.99	no	accept
2-3	3	6.52	0.05	2	5.99	yes	reject

[a] Period 1: 7/1-7/18.
Period 2: 7/18-7/25.
Period 3: 7/26-8/15.
[b] Age classes: 1.2, 1.3, 2.3.
[c] Hypothesis: Age class structure is independent of time of sampling.

Table 8. Kasilof River sockeye salmon escapement summary, 1968-1989.

Year	Escapement Estimated by Sonar Count[a]	Crooked Creek Hatchery Brood Stock	Sonar Count Less Egg Take[b]
1968	89,000		
1969	46,000		
1970	38,000		
1971	--		
1972	113,000		
1973	40,000		
1974	70,000	205[c]	69,795
1975	48,000	3,365	44,635
1976	139,000	5,463	133,537
1977	155,300	1,794	153,506
1978	116,600	6,681	109,919
1979	152,179	3,024	149,155
1980	187,154	6,030	181,124
1981	256,625	9,700[d]	246,925
1982	180,239	11,571	168,668
1983	210,271	9,903	200,368
1984	231,685	11,141	220,544
1985	505,049	11,280	493,769
1986	275,963	11,952	264,011
1987	249,246	9,865	239,381
1988	204,000	9,387	195,000
1989	158,206	7,367	150,839

[a] Multiple transducer sonar counts rounded to the nearest thousand (1968-77) from Namtvedt et al. (1979). Side-scanning sonar counts (1979-81) from Tarbox et al. (1983).
[b] Estimate of natural spawners above sonar site.
[c] From Cross et al. (1983): 1974-1980
[d] FRED Division, Soldotna, Alaska, personal communication: 1981-89.

Table 9. Peak sockeye salmon escapement counts in seven index areas, Kasilof River drainage, 1975-1989.

Year	Nikolai Creek	Crystal Creek	Clear Creek	Glacier Flat Creek[a]	Seepage Creek	Moose Creek	Bear Creek[a]	Total Index Count[b]
1975[b]	5,700	400	300	14,400	3,700	3,300	27,700	55,500
1976	12,000	800	300	7,100	800	14,000	51,800	86,800
1977	29,100	600	1,800	5,800	800	16,600	58,000	112,700
1978	34,200	200	200	4,700	1,100	15,900	43,400	99,700
1979	19,100	500	400	5,600	800	8,100	35,900	70,400
1980	10,000	1,000	2,100	15,500	1,800	15,600	125,000	171,000
1981	36,000	860	2,978	40,071	3,376	12,968	75,117	171,370
1982	16,800	1,785	4,183	17,348	1,638	13,400	51,350	106,504
1983	17,100	1,657	860	38,776	3,305	19,245	61,957	142,900
1984	8,270	141	2,619	76,217	6,250	13,999	54,328	161,824
1985	17,500	800	3,500	121,400	5,700	9,200	120,400	278,500
1986[c]	11,900	1,400	2,700	60,600	2,000	21,200	102,900	202,700
1987	9,002	1,385	7,704	61,000	791	17,601	71,250	168,733
1988	10,841	593	5,809	40,015	1,387	17,727	127,532	203,904
1989	4,818	1,033	559	20,156	940	17,058	62,941	107,505

[a]FRED Division weir count, 1980-1989.
[b]Counts standardized to common unit for years when entire stream not surveyed. Relative abundance per section (when entire system was surveyed) was used to extrapolate for years when only a portion of the stream was surveyed (1975-1980). Numbers rounded to nearest hundred fish.
[c]FRED Division stream survey counts (1986-89).

Table 10. Distribution (percentage of total index counts) of sockeye salmon in the major tributary systems of Tustumena Lake, 1975-1988.

Year	Nikolai Creek	Moose Creek	Bear Creek	Glacier Flat Creek	Other
1975	10.2	5.9	49.9	25.9	8.1
1976	13.8	16.2	59.8	8.2	2.0
1977	25.8	14.7	51.5	5.1	2.9
1978	34.3	15.9	43.5	4.7	1.6
1979	27.1	11.5	51.0	7.9	2.5
1980	5.8	9.1	73.1	9.0	3.0
1981	21.0	7.6	43.8	23.3	4.3
1982	15.8	12.6	48.2	16.3	7.1
1983	12.0	13.5	43.4	27.1	4.0
1984	5.1	8.7	33.6	47.1	5.5
1985	6.0	3.0	43.0	44.0	4.0
1986	5.9	10.4	50.8	29.9	3.0
1987	5.3	10.4	42.2	36.2	5.9
1988	5.3	8.7	62.5	19.6	3.8
1989	4.5	15.9	58.6	18.8	2.3

Table 11. Cumulative proportion by date of sockeye salmon counts recorded in the Kasilof River, 1980-1989.

	Cumulative Proportion[a]									
Date	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
14-May		0.000								
15-May		0.001								
16-May		0.003								
17-May		0.003								
18-May		0.005								
19-May		0.006								
20-May		0.006								
21-May		0.007								
22-May		0.008								
23-May		0.008								
24-May		0.010								
25-May		0.011								
26-May		0.012								
27-May		0.013								
28-May		0.014								
29-May		0.015								
30-May		0.016								
31-May		0.018								
01-Jun		0.020								
02-Jun		0.022								
03-Jun		0.025								
04-Jun		0.027								
05-Jun		0.030								
06-Jun		0.032								
07-Jun		0.035								
08-Jun		0.038								
09-Jun		0.040			0.007					
10-Jun		0.043	0.001	0.045	0.008					
11-Jun		0.045	0.003	0.046	0.009					
12-Jun		0.047	0.005	0.048	0.011	0.002	0.037	0.044		
13-Jun		0.049	0.007	0.050	0.012	0.003	0.041	0.051		
14-Jun		0.051	0.008	0.051	0.013	0.003	0.045	0.062	0.009	
15-Jun		0.055	0.010	0.053	0.015	0.004	0.048	0.073	0.014	0.001
16-Jun		0.059	0.011	0.056	0.018	0.004	0.053	0.091	0.018	0.002
17-Jun		0.064	0.013	0.058	0.020	0.005	0.059	0.106	0.021	0.004
18-Jun		0.075	0.015	0.060	0.022	0.005	0.062	0.120	0.025	0.006
19-Jun		0.082	0.027	0.063	0.025	0.006	0.066	0.146	0.028	0.007
20-Jun		0.099	0.035	0.065	0.031	0.007	0.068	0.171	0.032	0.011
21-Jun		0.114	0.040	0.068	0.039	0.007	0.071	0.190	0.038	0.014
22-Jun	0.003	0.133	0.043	0.070	0.048	0.008	0.073	0.198	0.046	0.016
23-Jun	0.007	0.162	0.045	0.074	0.058	0.009	0.074	0.201	0.053	0.019
24-Jun	0.009	0.195	0.049	0.076	0.069	0.012	0.075	0.206	0.065	0.021
25-Jun	0.022	0.223	0.053	0.078	0.075	0.015	0.077	0.212	0.077	0.024
26-Jun	0.035	0.261	0.055	0.080	0.080	0.017	0.079	0.218	0.089	0.031
27-Jun	0.051	0.288	0.058	0.082	0.089	0.019	0.082	0.222	0.105	0.037
28-Jun	0.075	0.342	0.061	0.085	0.099	0.022	0.085	0.227	0.133	0.046
29-Jun	0.094	0.389	0.064	0.090	0.111	0.025	0.095	0.238	0.157	0.057
30-Jun	0.136	0.438	0.069	0.110	0.123	0.029	0.121	0.249	0.173	0.074
01-Jul	0.166	0.500	0.078	0.153	0.136	0.035	0.153	0.267	0.184	0.098
02-Jul	0.217	0.512	0.091	0.165	0.150	0.039	0.180	0.297	0.189	0.153
03-Jul	0.250	0.522	0.104	0.188	0.157	0.044	0.198	0.317	0.196	0.178
04-Jul	0.280	0.529	0.115	0.212	0.178	0.056	0.215	0.334	0.224	0.183
05-Jul	0.314	0.534	0.122	0.221	0.217	0.066	0.228	0.357	0.235	0.225

- Continued -

Table 11. (p 2 of 2)

	Cumulative Proportion[a]									
Date	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
06-Jul	0.338	0.543	0.129	0.231	0.243	0.071	0.245	0.385	0.255	0.277
07-Jul	0.353	0.551	0.136	0.240	0.263	0.078	0.257	0.403	0.306	0.321
08-Jul	0.366	0.562	0.145	0.247	0.304	0.095	0.261	0.422	0.329	0.346
09-Jul	0.379	0.604	0.156	0.263	0.358	0.103	0.269	0.438	0.382	0.378
10-Jul	0.393	0.649	0.164	0.294	0.391	0.114	0.289	0.450	0.457	0.404
11-Jul	0.413	0.677	0.177	0.315	0.411	0.119	0.323	0.456	0.507	0.431
12-Jul	0.421	0.712	0.197	0.344	0.416	0.126	0.337	0.481	0.567	0.488
13-Jul	0.426	0.746	0.217	0.395	0.427	0.148	0.430	0.508	0.600	0.500
14-Jul	0.436	0.797	0.247	0.465	0.445	0.208	0.501	0.520	0.614	0.514
15-Jul	0.464	0.838	0.293	0.514	0.484	0.267	0.513	0.587	0.659	0.532
16-Jul	0.528	0.863	0.358	0.547	0.543	0.382	0.528	0.600	0.676	0.566
17-Jul	0.570	0.877	0.404	0.663	0.590	0.418	0.544	0.608	0.691	0.615
18-Jul	0.609	0.891	0.491	0.759	0.636	0.432	0.562	0.619	0.703	0.629
19-Jul	0.649	0.904	0.577	0.775	0.693	0.436	0.575	0.699	0.723	0.648
20-Jul	0.693	0.922	0.642	0.785	0.739	0.439	0.586	0.731	0.770	0.711
21-Jul	0.715	0.936	0.702	0.804	0.778	0.464	0.601	0.765	0.857	0.747
22-Jul	0.738	0.942	0.744	0.822	0.810	0.551	0.611	0.809	0.921	0.768
23-Jul	0.775	0.947	0.759	0.833	0.832	0.609	0.618	0.851	0.929	0.806
24-Jul	0.788	0.952	0.769	0.842	0.864	0.649	0.627	0.873	0.935	0.816
25-Jul	0.803	0.954	0.784	0.849	0.888	0.683	0.717	0.888	0.939	0.824
26-Jul	0.818	0.957	0.800	0.854	0.910	0.733	0.795	0.897	0.943	0.840
27-Jul	0.830	0.959	0.818	0.858	0.918	0.791	0.806	0.906	0.948	0.850
28-Jul	0.840	0.962	0.836	0.862	0.926	0.826	0.812	0.916	0.953	0.860
29-Jul	0.853	0.963	0.847	0.867	0.933	0.842	0.829	0.925	0.958	0.869
30-Jul	0.864	0.964	0.857	0.874	0.939	0.853	0.888	0.939	0.961	0.877
31-Jul	0.878	0.966	0.866	0.889	0.943	0.865	0.917	0.962	0.965	0.885
01-Aug	0.889	1.000	0.876	1.000	1.000	0.875	1.000	0.975	0.969	0.892
02-Aug	0.900		0.886			0.881		0.982	0.973	0.898
03-Aug	0.906		0.895			0.890		0.986	0.977	0.905
04-Aug	0.915		1.000			0.898		0.990	0.983	0.916
05-Aug	0.925					0.904		0.994	0.990	0.927
06-Aug	0.932					0.909		0.997	0.993	0.943
07-Aug	0.939					0.917		1.000	0.997	0.958
08-Aug	0.946					0.927			1.000	0.963
09-Aug	0.961					0.938				0.969
10-Aug	0.968					0.945				0.976
11-Aug	0.979					0.949				0.982
12-Aug	0.988					1.000				0.986
13-Aug	1.000									0.990
14-Aug										0.996
15-Aug										1.000
Midpoint	7/16	7/01	7/19	7/15	7/16	7/22	7/14	7/13	7/11	7/14
No. days for 80%	34	29	32	33	28	28	32	41	26	33

[a] Proportion accrued on first day (1983-1988) and last day (1981-1986) represents that portion of the escapement estimated before and after enumeration activities.

Table 12. Age composition of sockeye salmon collected in the Kasilof River, 1969-89.

Sample Period	Percent Composition by Age Class[a]								Sample Size
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	Other	
6/15-7/06/89	0.0	13.6	77.0	0.5	0.0	3.3	5.6	0.0	396
7/07-7/20/89	0.0	45.3	43.0	0.0	0.0	7.0	4.7	0.0	428
7/21-8/15/89	0.5	73.2	18.9	0.0	0.0	5.1	2.3	0.0	392
Seasonal Summary									
1969	0.0	14.0	39.0	1.0	0.0	30.0	16.0	0.0	399
1970	tr	32.0	37.0	2.0	0.0	16.0	11.0	2.0	297
1971	0.0	6.0	69.0	0.0	0.0	8.0	16.0	1.0	153
1972	tr	42.0	36.0	1.0	tr	3.0	18.0	0.0	668
1973	0.0	20.0	57.0	0.0	0.0	19.0	4.0	0.0	374
1974	0.0	35.0	59.0	0.0	tr	4.0	2.0	0.0	254
1975	1.0	29.0	7.0	0.0	0.0	58.0	4.0	1.0	931
1976	tr	32.0	20.0	0.0	tr	35.0	12.0	1.0	755
1977	tr	30.0	30.0	0.0	1.0	28.0	11.0	0.0	1,209
1978	0.0	42.0	35.0	0.0	0.0	14.0	9.0	0.0	967
1979	0.0	52.2	37.2	0.0	tr	8.4	1.7	0.5	590
1980	0.0	58.7	27.8	0.0	0.0	8.0	4.5	1.0	899
1981	0.0	30.2	62.2	0.0	0.0	6.0	1.6	0.0	1,479
1982	1.0	34.0	49.5	0.0	0.1	10.7	4.7	0.0	1,518
1983	0.0	48.4	34.3	0.0	0.0	12.8	4.5	0.0	1,997
1984	0.0	50.5	24.8	tr	0.2	17.9	6.6	0.0	2,269
1985	0.2	57.3	21.8	0.1	0.1	17.8	2.6	0.1	3,063
1986	0.0	40.9	42.0	0.3	0.1	11.9	4.6	0.2	1,660
1987		43.4	27.4	0.0	0.1	22.4	6.4	0.3	1,248
1988	0.9	37.5	32.9	0.1	0.1	18.6	10.6	0.2	2,282
1989	0.2	44.0	46.3	0.2	0.0	5.2	4.2	0.0	1,216

[a] Percentages weighted by total numbers in the escapement: 1979-1989.

Table 13. Summary of chi-square analysis of temporal change in Kasilof River sockeye salmon age composition, 1989.

		Chi-square Value					
		Calculated	Tabled				
Periods[a]	Number of Age Classes[b]		Alpha	DF	Value	Significant?	Hypothesis[c]
1-3	2	300.91	0.05	2	5.99	yes	reject
1-2	2	108.56	0.05	1	3.84	yes	reject
2-3	2	42.00	0.05	1	3.84	yes	reject

[a] Period 1: 6/15-7/6.
Period 2: 7/7-7/20.
Period 3: 7/21-8/15.
[b] Age classes: 1.2, 1.3
[c] H_o : Age class proportions do not change over time.

Table 14. Cumulative proportion by date of sockeye salmon counts recorded in the Crescent River, 1980-1989.

	Cumulative Proportion[a]									
Date	1980	1981	1982	1983	1984[b]	1985	1986[c]	1987	1988	1989
15-Jun					0.000	0.000				
16-Jun					0.001	0.000				
17-Jun					0.002	0.000				
18-Jun					0.003	0.000				
19-Jun					0.003	0.000				
20-Jun					0.005	0.001				
21-Jun					0.008	0.001				
22-Jun					0.012	0.001				
23-Jun					0.017	0.001				
24-Jun					0.020	0.001				
25-Jun					0.024	0.001	0.000			
26-Jun					0.027	0.001	0.000			
27-Jun					0.036	0.002	0.000			
28-Jun	0.000				0.041	0.002	0.001			
29-Jun	0.000				0.049	0.005	0.005			
30-Jun	0.000				0.069	0.007	0.008			
01-Jul	0.000	0.000	0.000	0.000	0.081	0.008	0.017	0.012	0.008	0.008
02-Jul	0.000	0.012	0.000	0.000	0.100	0.012	0.031	0.016	0.038	0.020
03-Jul	0.000	0.036	0.001	0.001	0.118	0.016	0.054	0.020	0.149	0.043
04-Jul	0.000	0.061	0.001	0.002	0.140	0.057	0.077	0.023	0.223	0.096
05-Jul	0.000	0.083	0.002	0.019	0.156	0.138	0.084	0.027	0.269	0.129
06-Jul	0.000	0.097	0.002	0.041	0.170	0.188	0.094	0.058	0.338	0.181
07-Jul	0.000	0.117	0.005	0.068	0.184	0.196	0.110	0.084	0.404	0.231
08-Jul	0.000	0.149	0.021	0.098	0.225	0.226	0.126	0.112	0.488	0.293
09-Jul	0.000	0.166	0.057	0.118	0.268	0.251	0.134	0.160	0.554	0.334
10-Jul	0.029	0.180	0.098	0.137	0.322	0.274	0.144	0.193	0.581	0.369
11-Jul	0.089	0.193	0.127	0.167	0.360	0.293	0.154	0.243	0.598	0.412
12-Jul	0.126	0.202	0.157	0.207	0.387	0.319	0.165	0.269	0.625	0.463
13-Jul	0.132	0.215	0.190	0.266	0.409	0.364	0.184	0.305	0.655	0.502
14-Jul	0.145	0.234	0.217	0.338	0.425	0.388	0.197	0.333	0.688	0.502
15-Jul	0.161	0.266	0.245	0.392	0.454	0.415	0.204	0.370	0.692	0.518
16-Jul	0.176	0.311	0.258	0.431	0.499	0.445	0.213	0.386	0.697	0.611
17-Jul	0.193	0.347	0.286	0.457	0.548	0.480		0.406	0.717	0.674
18-Jul	0.228	0.386	0.328	0.499	0.599	0.506		0.448	0.748	0.691
19-Jul	0.286	0.434	0.377	0.559	0.639	0.525		0.513	0.771	0.710
20-Jul	0.370	0.493	0.460	0.617	0.684	0.546		0.548	0.781	0.750
21-Jul	0.455	0.550	0.533	0.667	0.721	0.573		0.593	0.808	0.776
22-Jul	0.520	0.604	0.586	0.702	0.743	0.596		0.671	0.828	0.804
23-Jul	0.596	0.655	0.636	0.732	0.783	0.632		0.773	0.853	0.829
24-Jul	0.651	0.703	0.685	0.764	0.802	0.665		0.819	0.885	0.855
25-Jul	0.681	0.727	0.713	0.787	0.813	0.698		0.856	0.917	0.884
26-Jul	0.721	0.741	0.751	0.813	0.824	0.729		0.877	0.941	0.907
27-Jul	0.750	0.760	0.784	0.839	0.838	0.756		0.893	0.959	0.930
28-Jul	0.786	0.776	0.801	0.858	0.852	0.775		0.905	0.965	0.958
29-Jul	0.811	0.798	0.816	0.881	0.870	0.794		0.915	0.976	0.968
30-Jul	0.837	0.821	0.826	0.915	0.882	0.821		0.920	0.989	0.978
31-Jul	0.856	0.836	0.833	0.945	0.893	1.000		0.938	1.000	0.994
01-Aug	0.878	0.847	1.000	1.000	1.000			0.960		1.000
02-Aug	0.896	0.866						0.975		
03-Aug	0.914	0.886						0.985		
04-Aug	0.932	0.901						0.994		
05-Aug	0.944	0.918						0.996		
06-Aug	0.954	0.934						1.000		

- Continued -

Table 14. (p 2 of 2)

	Cumulative Proportion[a]									
Date	1980	1981	1982	1983	1984[b]	1985	1986[c]	1987	1988	1989
07-Aug	0.961	0.949								
08-Aug	0.970	0.964								
09-Aug	0.980	0.973								
10-Aug	0.985	1.000								
11-Aug	0.989									
12-Aug	0.994									
13-Aug	0.998									
14-Aug	1.000									
Midpoint	7/22	7/21	7/21	7/19	7/17	7/18		7/19	7/09	7/15
No. days for 80%	23	29	21+	22+	31+	26+		21	23	22

[a] Proportion accrued on last day (1981-1985) represents that portion of the escapement estimated after enumeration activities.
[b] The enumeration site was moved from the outlet of Crescent Lake to approximately 2 miles above the terminus of the river at Cook Inlet in 1984.
[c] Enumeration activities terminated on 16 July 1986. Estimated proportions from King and Tarbox (1988).

Table 14. Cumulative proportion by date of sockeye salmon counts recorded in the Crescent River, 1979-1989.

	Cumulative Proportion[a]									
Date	1980	1981	1982	1983	1984[b]	1985	1986[c]	1987	1988	1989
15-Jun					0.000	0.000				
16-Jun					0.001	0.000				
17-Jun					0.002	0.000				
18-Jun					0.003	0.000				
19-Jun					0.003	0.000				
20-Jun					0.005	0.001				
21-Jun					0.008	0.001				
22-Jun					0.012	0.001				
23-Jun					0.017	0.001				
24-Jun					0.020	0.001				
25-Jun					0.024	0.001	0.000			
26-Jun					0.027	0.001	0.000			
27-Jun					0.036	0.002	0.000			
28-Jun	0.000				0.041	0.002	0.001			
29-Jun	0.000				0.049	0.005	0.005			
30-Jun	0.000				0.069	0.007	0.008			
01-Jul	0.000	0.000	0.000	0.000	0.081	0.008	0.017	0.012	0.008	0.008
02-Jul	0.000	0.012	0.000	0.000	0.100	0.012	0.031	0.016	0.038	0.020
03-Jul	0.000	0.036	0.001	0.001	0.118	0.016	0.054	0.020	0.149	0.043
04-Jul	0.000	0.061	0.001	0.002	0.140	0.057	0.077	0.023	0.223	0.096
05-Jul	0.000	0.083	0.002	0.019	0.156	0.138	0.084	0.027	0.269	0.129
06-Jul	0.000	0.097	0.002	0.041	0.170	0.188	0.094	0.058	0.338	0.181
07-Jul	0.000	0.117	0.005	0.068	0.184	0.196	0.110	0.084	0.404	0.231
08-Jul	0.000	0.149	0.021	0.098	0.225	0.226	0.126	0.112	0.488	0.293
09-Jul	0.000	0.166	0.057	0.118	0.268	0.251	0.134	0.160	0.554	0.334
10-Jul	0.029	0.180	0.098	0.137	0.322	0.274	0.144	0.193	0.581	0.369
11-Jul	0.089	0.193	0.127	0.167	0.360	0.293	0.154	0.243	0.598	0.412
12-Jul	0.126	0.202	0.157	0.207	0.387	0.319	0.165	0.269	0.625	0.463
13-Jul	0.132	0.215	0.190	0.266	0.409	0.364	0.184	0.305	0.655	0.502
14-Jul	0.145	0.234	0.217	0.338	0.425	0.388	0.197	0.333	0.688	0.502
15-Jul	0.161	0.266	0.245	0.392	0.454	0.415	0.204	0.370	0.692	0.518
16-Jul	0.176	0.311	0.258	0.431	0.499	0.445	0.213	0.386	0.697	0.611
17-Jul	0.193	0.347	0.286	0.457	0.548	0.480		0.406	0.717	0.674
18-Jul	0.228	0.386	0.328	0.499	0.599	0.506		0.448	0.748	0.691
19-Jul	0.286	0.434	0.377	0.559	0.639	0.525		0.513	0.771	0.710
20-Jul	0.370	0.493	0.460	0.617	0.684	0.546		0.548	0.781	0.750
21-Jul	0.455	0.550	0.533	0.667	0.721	0.573		0.593	0.808	0.776
22-Jul	0.520	0.604	0.586	0.702	0.743	0.596		0.671	0.828	0.804
23-Jul	0.596	0.655	0.636	0.732	0.783	0.632		0.773	0.853	0.829
24-Jul	0.651	0.703	0.685	0.764	0.802	0.665		0.819	0.885	0.855
25-Jul	0.681	0.727	0.713	0.787	0.813	0.698		0.856	0.917	0.884
26-Jul	0.721	0.741	0.751	0.813	0.824	0.729		0.877	0.941	0.907
27-Jul	0.750	0.760	0.784	0.839	0.838	0.756		0.893	0.959	0.930
28-Jul	0.786	0.776	0.801	0.858	0.852	0.775		0.905	0.965	0.958
29-Jul	0.811	0.798	0.816	0.881	0.870	0.794		0.915	0.976	0.968
30-Jul	0.837	0.821	0.826	0.915	0.882	0.821		0.920	0.989	0.978
31-Jul	0.856	0.836	0.833	0.945	0.893	1.000		0.938	1.000	0.994
01-Aug	0.878	0.847	1.000	1.000	1.000			0.960		1.000
02-Aug	0.896	0.866						0.975		
03-Aug	0.914	0.886						0.985		
04-Aug	0.932	0.901						0.994		
05-Aug	0.944	0.918						0.996		
06-Aug	0.954	0.934						1.000		

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Table 14. (p 2 of 2)

	Cumulative Proportion[a]									
Date	1980	1981	1982	1983	1984[b]	1985	1986[c]	1987	1988	1989
07-Aug	0.961	0.949								
08-Aug	0.970	0.964								
09-Aug	0.980	0.973								
10-Aug	0.985	1.000								
11-Aug	0.989									
12-Aug	0.994									
13-Aug	0.998									
14-Aug	1.000									
Midpoint	7/22	7/21	7/21	7/19	7/17	7/18		7/19	7/09	7/15
No. days for 80%	23	29	21+	22+	31+	26+		21	23	22

[a] Proportion accrued on last day (1982-1985) represents that portion of the escapement estimated after enumeration activities.
[b] The enumeration site was moved from the outlet of Crescent Lake to approximately 2 miles above the terminus of the river at Cook Inlet in 1984.
[c] Enumeration activities terminated on 16 July 1986. Estimated proportions from King and Tarbox (1988).

Table 15. Age composition of sockeye salmon collected in the Crescent River, 1979-1989.

Sample Period	Percent Composition by Age Class[a]								Sample Size
	1.1	1.2	1.3	1.4	2.1	2.2	2.3	Other	
1979	tr	27.8	70.1	0.0	0.0	tr	tr	tr	643
1980	0.0	6.5	86.9	0.0	0.0	2.9	1.6	2.1	511
1981	0.0	8.2	32.1	0.0	0.0	9.6	49.9	tr	1117
1982	0.0	12.9	79.2	0.1	0.0	0.8	7.0	0.0	711
1983	0.0	10.9	42.2	0.2	0.7	27.4	18.6	0.0	731
1984	0.0	3.5	16.9	0.0	0.0	20.0	59.4	tr	780
1985	0.2	4.7	31.3	0.0	0.3	20.5	43.0	0.0	594
1986	0.0	6.5	15.8	0.0	0.0	13.0	64.0	0.7	139
1987	0.0	2.6	47.7	0.0	0.0	4.2	45.0	0.5	191
1988	0.0	10.4	44.9	0.5	0.1	17.8	26.1	0.1	741
1989	0	2.61	84.18	0.55	0	0.55	14.97	0.14	728

[a] Percentages weighted by total numbers in the escapement: 1979-1981, 1986-1989.

Table 16. Salmon escapement observations in Susitna River tributaries, 1989.

			Number of Fish Observed or Estimated				
	Method	Source	Sockeye	Pink	Chum	Coho	Chinook
Alexander Creek	air count	[a]					3497
Cache Creek	air count	[a]					362
Deception Creek	weir	[a]					800
Goose Creek		[a]					835
Hewitt/Whiskey Lakes	air count	[b]	400				
Little Willow Cr.		[a]					1325
Montana Creek		[a]					2701
Peters Creek		[a]					959
Prairie Creek		[a]					9463
Sheep Creek		[a]					610
Shell Lake	air count	[b]	900				
Talachulitna R.	tower	[c]	12792				
Trinity/Movie Lakes	air count	[b]	750				
West Fork Yentna R.	air count	[b]	4000				
Willow Creek		[a]					5060

[a] Sport Fish Division records, Alaska Department of Fish and Game, Anchorage.
[b] Commercial Fisheries Division records, Alaska Department of Fish and Game, Soldotna.
[c] Cook Inlet Aquaculture Association records, Soldotna.

Table 17. Cumulative proportion by date of sockeye salmon counts recorded in the Yentna River, 1981-1989.

	Cumulative Proportion[a]								
Date	1981	1982	1983	1984	1985	1986	1987	1988	1989
27-Jun		0.000							
28-Jun		0.000							
29-Jun	0.001	0.000				0.001			
30-Jun	0.004	0.000	0.000			0.002			
01-Jul	0.008	0.001	0.001	0.001	0.000	0.002	0.000		
02-Jul	0.013	0.001	0.001	0.001	0.001	0.003	0.001		
03-Jul	0.016	0.001	0.002	0.002	0.001	0.003	0.001		
04-Jul	0.017	0.002	0.003	0.003	0.001	0.004	0.002		
05-Jul	0.018	0.002	0.003	0.004	0.001	0.005	0.002		
06-Jul	0.020	0.002	0.004	0.004	0.002	0.005	0.003		
07-Jul	0.021	0.002	0.004	0.005	0.003	0.006	0.003	0.004	0.003
08-Jul	0.023	0.002	0.004	0.005	0.003	0.006	0.004	0.008	0.006
09-Jul	0.026	0.002	0.005	0.006	0.004	0.007	0.004	0.012	0.009
10-Jul	0.056	0.002	0.005	0.007	0.005	0.008	0.005	0.016	0.012
11-Jul	0.092	0.003	0.006	0.009	0.006	0.009	0.005	0.019	0.014
12-Jul	0.155	0.003	0.008	0.011	0.007	0.010	0.005	0.022	0.015
13-Jul	0.230	0.003	0.011	0.012	0.008	0.011	0.006	0.025	0.016
14-Jul	0.344	0.003	0.034	0.015	0.009	0.011	0.007	0.029	0.019
15-Jul	0.454	0.004	0.059	0.017	0.010	0.014	0.008	0.034	0.023
16-Jul	0.521	0.005	0.096	0.023	0.010	0.022	0.010	0.039	0.026
17-Jul	0.563	0.016	0.131	0.142	0.011	0.027	0.014	0.043	0.051
18-Jul	0.599	0.043	0.179	0.232	0.012	0.036	0.020	0.046	0.103
19-Jul	0.638	0.155	0.351	0.345	0.013	0.041	0.027	0.091	0.161
20-Jul	0.681	0.329	0.567	0.458	0.014	0.042	0.034	0.197	0.202
21-Jul	0.732	0.527	0.693	0.554	0.014	0.043	0.047	0.270	0.234
22-Jul	0.801	0.627	0.722	0.626	0.016	0.052	0.059	0.304	0.280
23-Jul	0.846	0.665	0.758	0.681	0.019	0.162	0.107	0.375	0.359
24-Jul	0.882	0.711	0.786	0.755	0.145	0.193	0.218	0.484	0.453
25-Jul	0.905	0.734	0.824	0.785	0.359	0.253	0.331	0.630	0.532
26-Jul	0.925	0.780	0.867	0.808	0.507	0.371	0.442	0.771	0.646
27-Jul	0.940	0.811	0.894	0.836	0.636	0.491	0.528	0.821	0.749
28-Jul	0.950	0.831	0.905	0.855	0.782	0.606	0.587	0.858	0.799
29-Jul	0.958	0.847	0.913	0.866	0.903	0.752	0.625	0.886	0.854
30-Jul	0.969	0.859	0.921	0.874	0.942	0.831	0.655	0.916	0.864
31-Jul	0.976	0.890	0.925	0.885	0.960	0.861	0.686	0.937	0.868
01-Aug	0.980	0.933	0.929	0.893	0.970	0.882	0.709	0.947	0.873
02-Aug	0.986	0.948	0.937	0.901	0.978	0.908	0.750	0.960	0.879
03-Aug	0.988	0.955	0.941	0.909	0.983	0.917	0.789	0.969	0.889
04-Aug	0.990	0.962	0.945	0.920	0.987	0.924	0.825	0.975	0.907
05-Aug	0.991	0.965	0.949	0.926	0.990	0.935	0.857	0.981	0.923
06-Aug	0.992	0.967	0.953	0.934	0.994	0.940	0.875	0.984	0.936
07-Aug	0.992	0.970	0.955	0.939	0.997	1.000	0.889	0.989	0.944
08-Aug	0.992	0.972	0.958	0.944	1.000		0.900	0.992	0.949
09-Aug	0.993	0.975	0.959	0.949			0.932	0.994	0.954
10-Aug	0.994	0.977	0.959	0.954			0.962	0.996	0.958
11-Aug	0.995	0.979	0.962	0.958			0.986	1.000	0.962
12-Aug	0.996	0.981	0.968	0.962			0.996		0.966
13-Aug	0.997	0.982	0.974	0.965			1.000		0.975
14-Aug	0.997	0.984	0.977	0.968					0.985
15-Aug	0.998	0.985	0.979	0.970					0.992
16-Aug	0.998	0.986	0.982	0.973					0.995
17-Aug	0.998	0.987	0.985	0.975					0.997
18-Aug	0.998	0.988	0.987	0.977					0.998
19-Aug	0.998	0.989	0.988	0.979					0.999
20-Aug	0.999	0.990	0.990	0.980					1.000
21-Aug	0.999	0.990	0.991	0.981					
22-Aug	0.999	0.990	0.992	0.984					
23-Aug	0.999	0.991	0.993	0.987					
24-Aug	1.000	0.992	0.994	0.989					
25-Aug	1.000	0.993	0.994	0.992					

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Table 17. (page 2 of 2).

Date	Cumulative Proportion[a]								
	1981	1982	1983	1984	1985	1986	1987	1988	1989
26-Aug	1.000	0.994	0.995	0.994					
27-Aug	1.000	0.994	0.996	0.996					
28-Aug	1.000	0.995	0.997	0.996					
29-Aug	1.000	0.996	0.998	0.998					
30-Aug		0.997	0.998	0.999					
31-Aug		0.997	0.999	0.999					
01-Sep		0.998	0.999	1.000					
02-Sep		0.999	0.999	1.000					
03-Sep		0.999	0.999	1.000					
04-Sep		1.000	1.000	1.000					
05-Sep		1.000	1.000	1.000					
Midpoint	7/16	7/21	7/20	7/21	7/26	7/28	7/27	7/25	7/25
No. days for 80%	14	14	12	17	6	11+	17	11	18

[a] Proportion accrued on last day (1986) represents that portion of the escapement estimated after termination of enumeration activities.

Table 18. Age composition of sockeye salmon collected in the Yentna River, 1986-1989.

Sample Period	Percent Composition by Age Class										Sample Size
	0.2	0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	
7/07-7/22	0.0	0.2	0.2	25.0	66.2	0.0	0.0	2.1	6.3	0.0	476
7/23-7/27	0.2	0.2	0.4	25.3	67.0	0.8	0.0	2.1	4.0	0.0	475
7/28-8/20	0.2	0.2	3.7	31.9	56.5	0.2	0.7	5.1	1.5	0.0	411
Seasonal Summary											
1986	0.0	2.1	1.9	22.7	56.5	0.2	0.6	5.9	10.0	0.1	492
1987	1.3	2.4	0.9	23.3	50.6	1.0	0.0	8.6	11.7	0.0	1,089
1988	2.7	2.4	0.4	33.5	41.9	0.2	1.7	6.5	10.4	0.1	1,727
1989	0.2	0.2	1.3	27.2	63.5	0.4	0.2	3.0	4.0	0.0	1,362

[a] Percentages weighted by total numbers in the escapement.

Table 19. Summary of chi-square analysis of temporal change in Yentna River sockeye salmon age composition, 1989.

		Chi-square Value					
		Calculated	Tabled				
Periods[a]	Number of Age Classes[b]		Alpha	DF	Value	Significant?	Hypothesis[c]
1-3	2	9.20	0.05	2	5.99	yes	reject
1-2	2	0.00	0.05	1	3.84	no	accept
2-3	2	11.51	0.05	1	3.84	yes	reject

[a] Period 1: 7/7-7/22.
Period 2: 7/23-7/27.
Period 3: 7/28-8/20.
[b] Age classes: 1.2, 1.3.
[c] H_o: Age class proportions do not change over time.

Table 20. Cumulative proportion by date of pink salmon counts recorded in the Yentna River, 1981-1989.

	Cumulative Proportion[a]								
Date	1981	1982	1983	1984	1985	1986	1987	1988	1989
27-Jun		0.000							
28-Jun		0.000							
29-Jun	0.000	0.000				0.000	0.000		
30-Jun	0.002	0.000	0.000			0.000	0.000		
01-Jul	0.003	0.000	0.001	0.000	0.001	0.000	0.002		
02-Jul	0.005	0.000	0.001	0.000	0.002	0.000	0.004		
03-Jul	0.007	0.000	0.001	0.000	0.003	0.000	0.008		
04-Jul	0.008	0.000	0.002	0.000	0.003	0.000	0.011		
05-Jul	0.008	0.000	0.003	0.000	0.005	0.001	0.015		
06-Jul	0.011	0.000	0.003	0.000	0.007	0.001	0.018		
07-Jul	0.015	0.000	0.003	0.000	0.011	0.001	0.022	0.000	0.003
08-Jul	0.021	0.000	0.003	0.000	0.012	0.001	0.025	0.000	0.008
09-Jul	0.025	0.000	0.004	0.000	0.015	0.001	0.029	0.000	0.013
10-Jul	0.037	0.000	0.004	0.000	0.018	0.001	0.031	0.000	0.018
11-Jul	0.039	0.000	0.005	0.001	0.021	0.001	0.035	0.000	0.026
12-Jul	0.039	0.000	0.006	0.001	0.025	0.001	0.041	0.000	0.034
13-Jul	0.042	0.000	0.009	0.001	0.030	0.001	0.047	0.000	0.043
14-Jul	0.050	0.000	0.030	0.001	0.033	0.002	0.051	0.000	0.052
15-Jul	0.057	0.000	0.039	0.001	0.038	0.003	0.056	0.001	0.058
16-Jul	0.061	0.000	0.056	0.001	0.042	0.007	0.065	0.001	0.060
17-Jul	0.062	0.001	0.098	0.003	0.046	0.011	0.075	0.001	0.071
18-Jul	0.072	0.002	0.171	0.008	0.050	0.014	0.088	0.001	0.105
19-Jul	0.082	0.010	0.288	0.023	0.053	0.015	0.099	0.002	0.158
20-Jul	0.105	0.021	0.400	0.067	0.056	0.016	0.110	0.005	0.196
21-Jul	0.132	0.040	0.511	0.126	0.060	0.017	0.135	0.013	0.224
22-Jul	0.158	0.056	0.565	0.190	0.064	0.021	0.156	0.019	0.255
23-Jul	0.236	0.078	0.638	0.277	0.078	0.059	0.180	0.032	0.287
24-Jul	0.311	0.126	0.704	0.365	0.135	0.125	0.222	0.061	0.349
25-Jul	0.398	0.162	0.743	0.420	0.226	0.222	0.307	0.129	0.420
26-Jul	0.464	0.192	0.791	0.466	0.329	0.369	0.407	0.231	0.493
27-Jul	0.512	0.237	0.820	0.510	0.475	0.535	0.537	0.338	0.570
28-Jul	0.580	0.330	0.843	0.578	0.636	0.695	0.624	0.459	0.638
29-Jul	0.639	0.447	0.855	0.669	0.763	0.830	0.668	0.589	0.691
30-Jul	0.705	0.562	0.864	0.728	0.833	0.894	0.701	0.662	0.730
31-Jul	0.752	0.654	0.871	0.784	0.877	0.924	0.729	0.722	0.748
01-Aug	0.795	0.735	0.879	0.837	0.903	0.957	0.741	0.768	0.759
02-Aug	0.819	0.824	0.903	0.873	0.926	0.979	0.767	0.826	0.770
03-Aug	0.834	0.896	0.908	0.903	0.942	0.991	0.799	0.878	0.781
04-Aug	0.849	0.934	0.912	0.925	0.956	0.996	0.838	0.909	0.812
05-Aug	0.865	0.953	0.918	0.943	0.966	0.999	0.870	0.931	0.850
06-Aug	0.883	0.962	0.924	0.956	0.978	1.000	0.887	0.951	0.883
07-Aug	0.897	0.969	0.931	0.962	0.991		0.895	0.969	0.912
08-Aug	0.905	0.978	0.936	0.969	1.000		0.901	0.982	0.924
09-Aug	0.913	0.984	0.937	0.975			0.921	0.990	0.938
10-Aug	0.918	0.989	0.938	0.982			0.950	0.995	0.943
11-Aug	0.924	0.991	0.943	0.986			0.975	1.000	0.948
12-Aug	0.929	0.994	0.951	0.988			0.989		0.952
13-Aug	0.930	0.996	0.958	0.991			0.996		0.963
14-Aug	0.931	0.997	0.966	0.992			1.000		0.974
15-Aug	0.935	0.998	0.971	0.994					0.989
16-Aug	0.942	0.998	0.978	0.994					0.994
17-Aug	0.949	0.999	0.984	0.995					0.997
18-Aug	0.958	0.999	0.988	0.996					0.998

- Continued -

Table 20. (p 2 of 2)

	Cumulative Proportion[a]								
Date	1981	1982	1983	1984	1985	1986	1987	1988	1989
19-Aug	0.967	0.999	0.990	0.997					0.999
20-Aug	0.979	0.999	0.992	0.997					1.000
21-Aug	0.984	0.999	0.993	0.997					
22-Aug	0.989	1.000	0.993	0.998					
23-Aug	0.992	1.000	0.994	0.998					
24-Aug	0.995	1.000	0.995	0.998					
25-Aug	0.997	1.000	0.996	0.999					
26-Aug	0.999	1.000	0.996	0.999					
27-Aug	1.000	1.000	0.997	0.999					
28-Aug	1.000	1.000	0.998	0.999					
29-Aug		1.000	0.998	0.999					
30-Aug		1.000	0.999	1.000					
31-Aug		1.000	0.999	1.000					
01-Sep		1.000	0.999	1.000					
02-Sep		1.000	0.999	1.000					
03-Sep		1.000	1.000	1.000					
04-Sep		1.000	1.000	1.000					
05-Sep		1.000	1.000	1.000					
Midpoint	7/27	7/30	7/21	7/27	7/28	7/27	7/27	7/29	7/27
No. days for 80%	20	12	16	14	9	8+	20	11	21

[a] Proportion accrued on last day (1986) represents that portion of the escapement estimated after termination of enumeration activities.

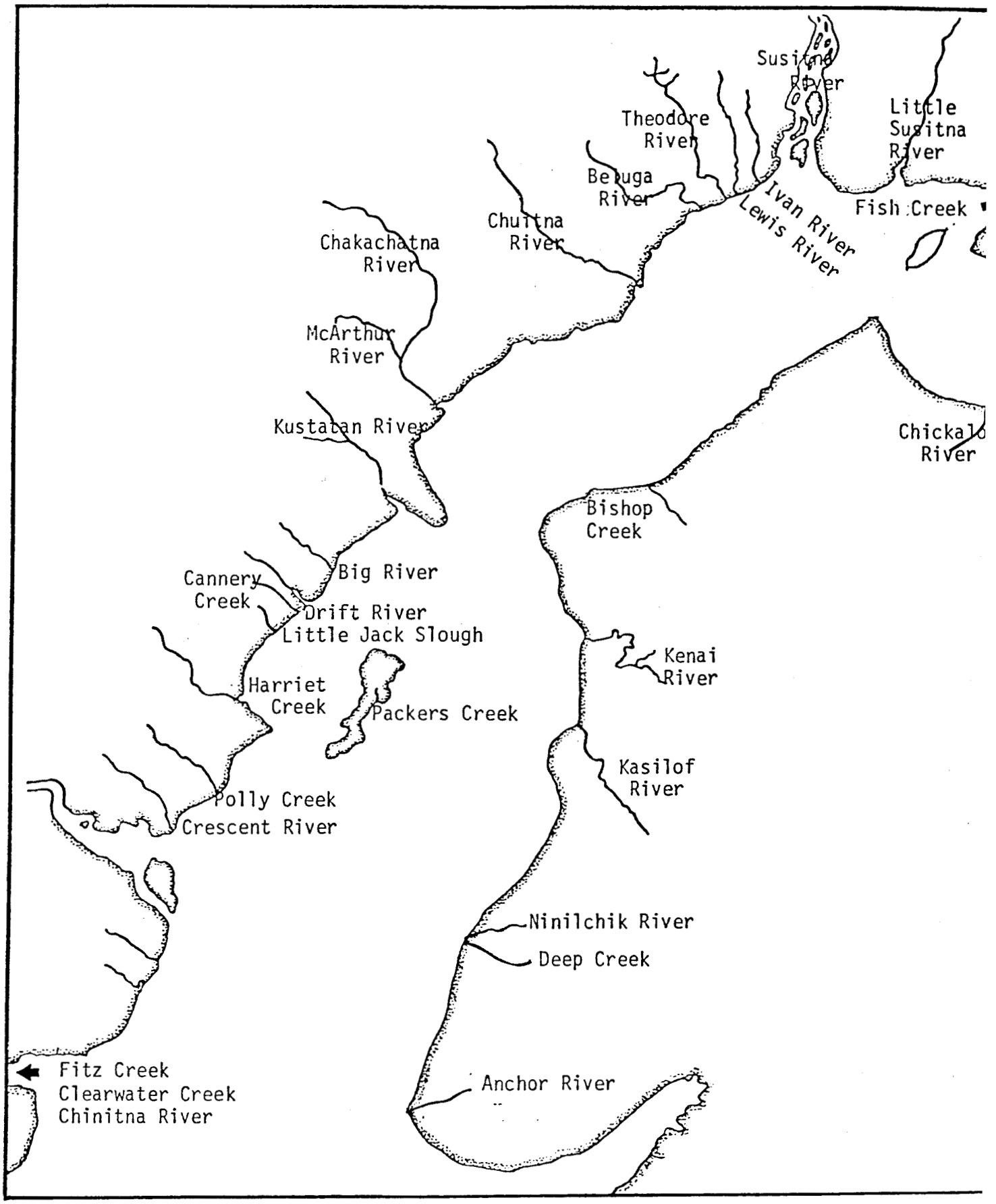


Figure 1. Anadromous streams of Upper Cook Inlet, Alaska.

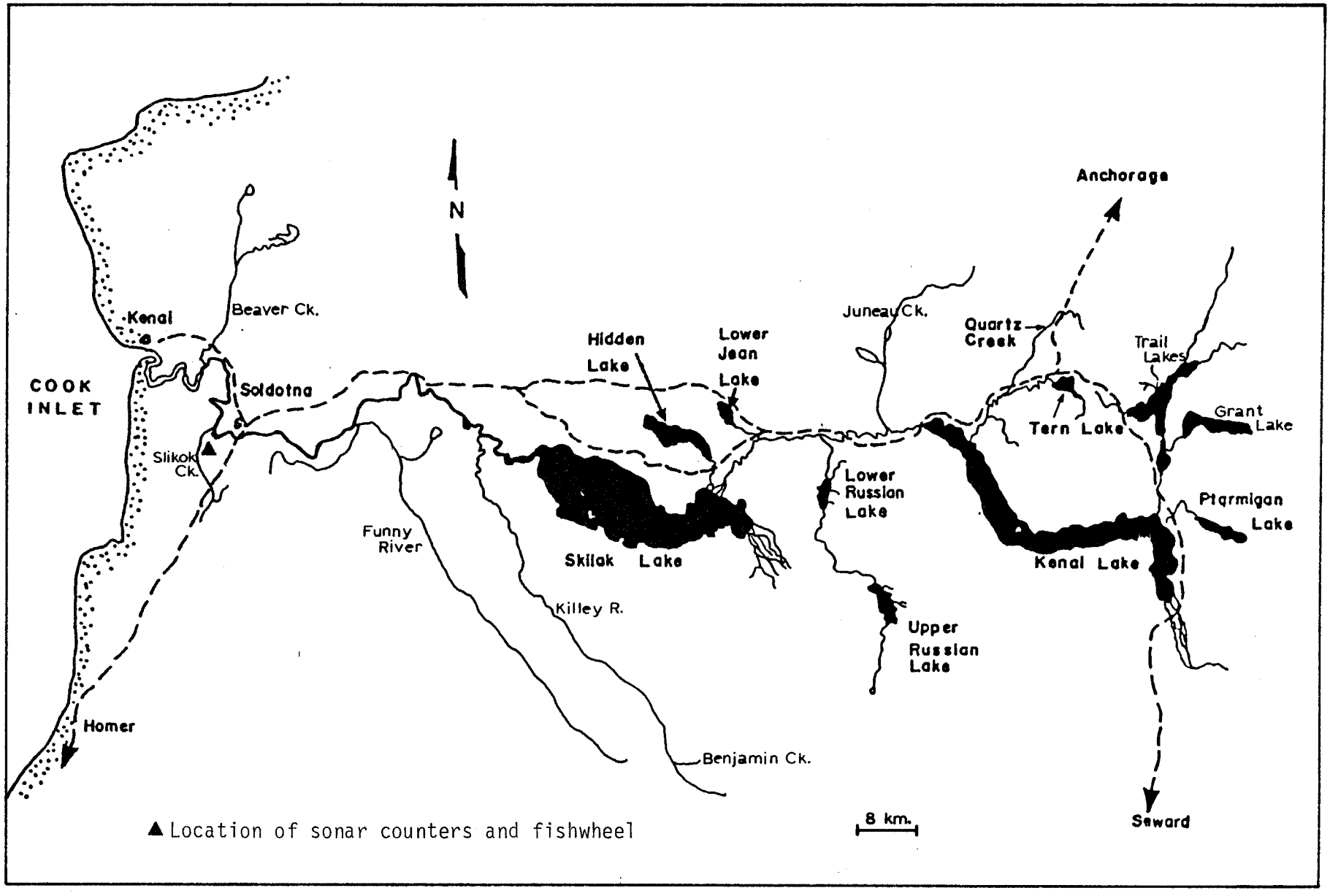


Figure 2. Kenai River drainage and major sockeye salmon rearing lakes.

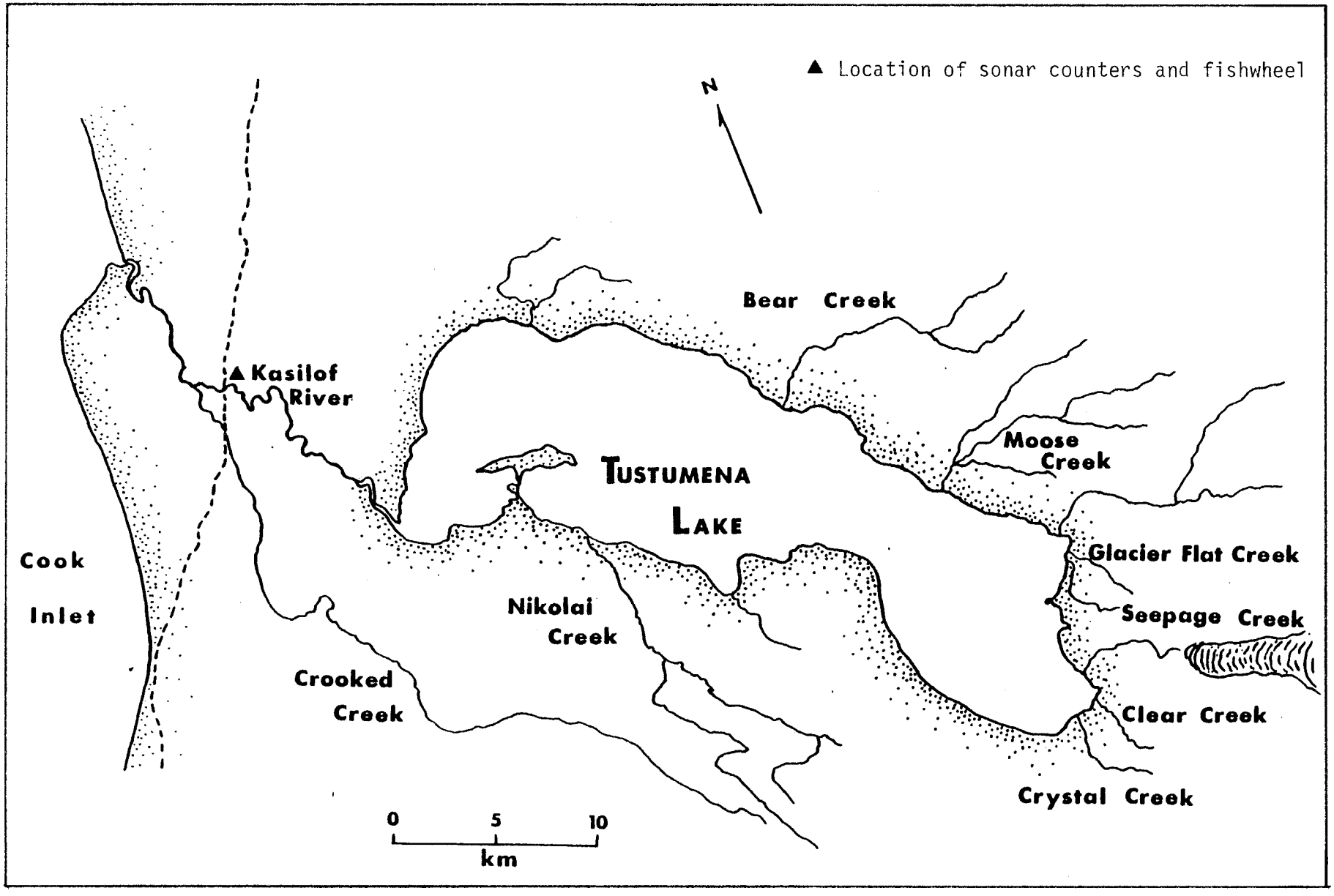


Figure 3. Kasilof River drainage and major sockeye salmon spawning tributaries.

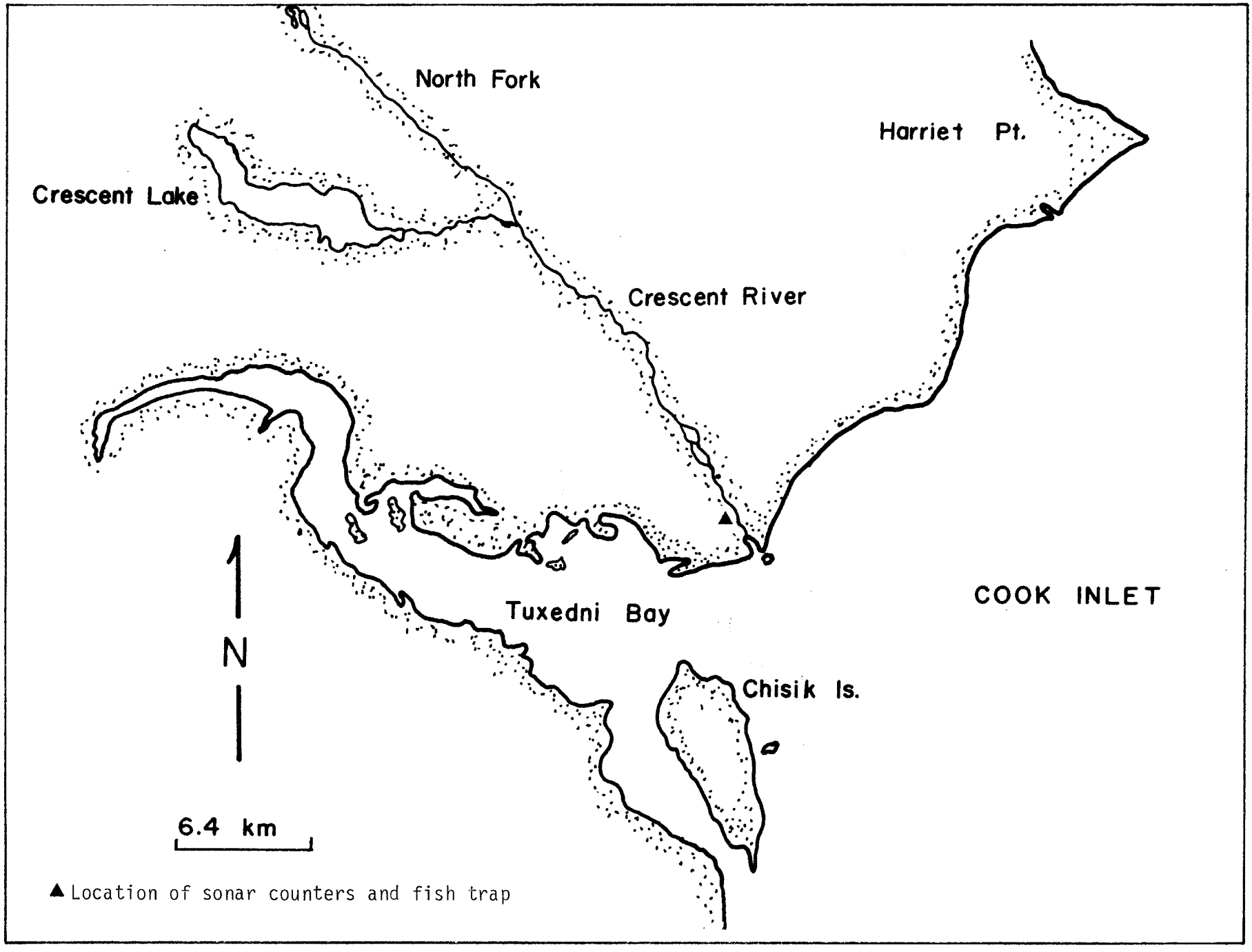


Figure 4. Crescent River drainage and major sockeye salmon rearing lake.

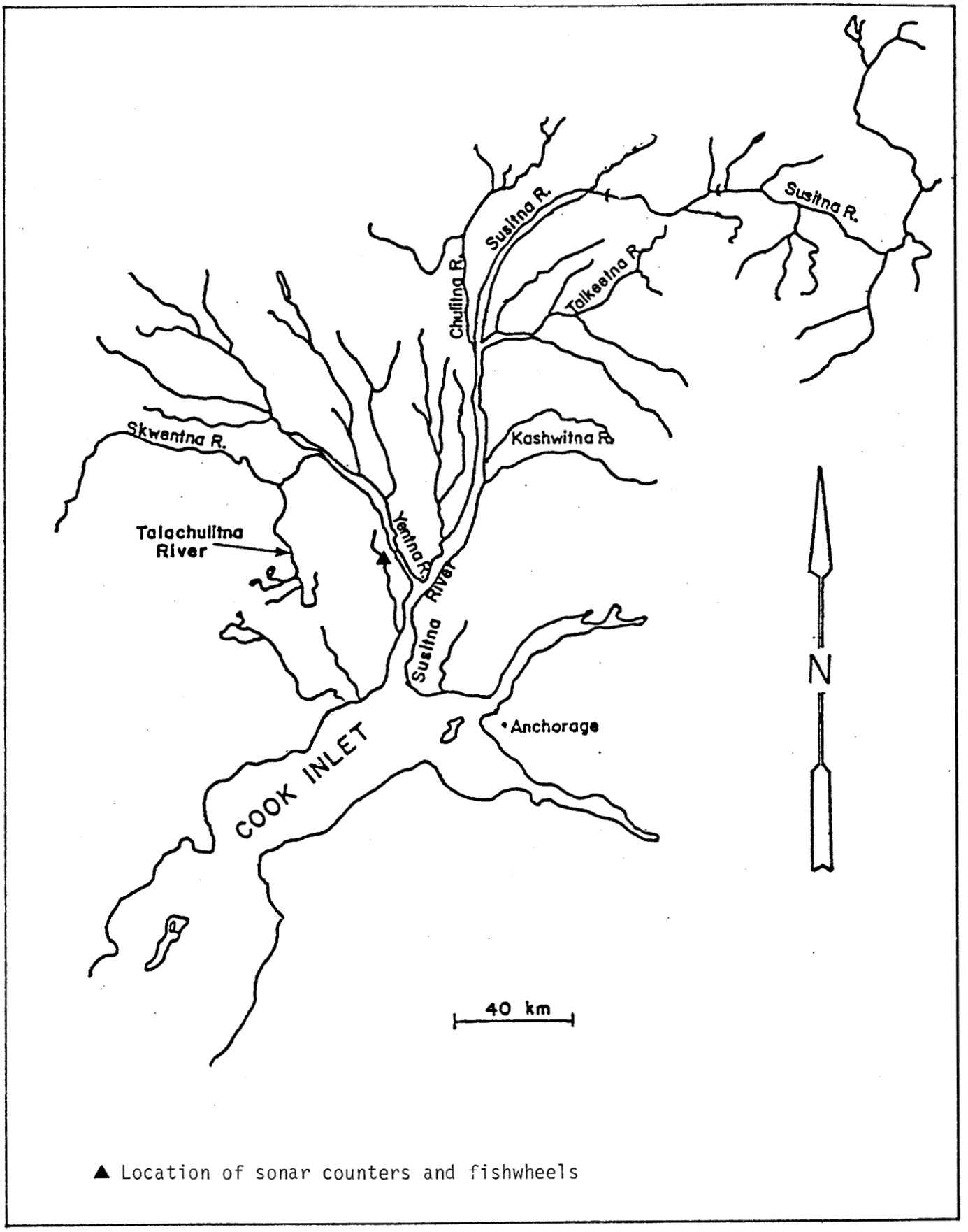
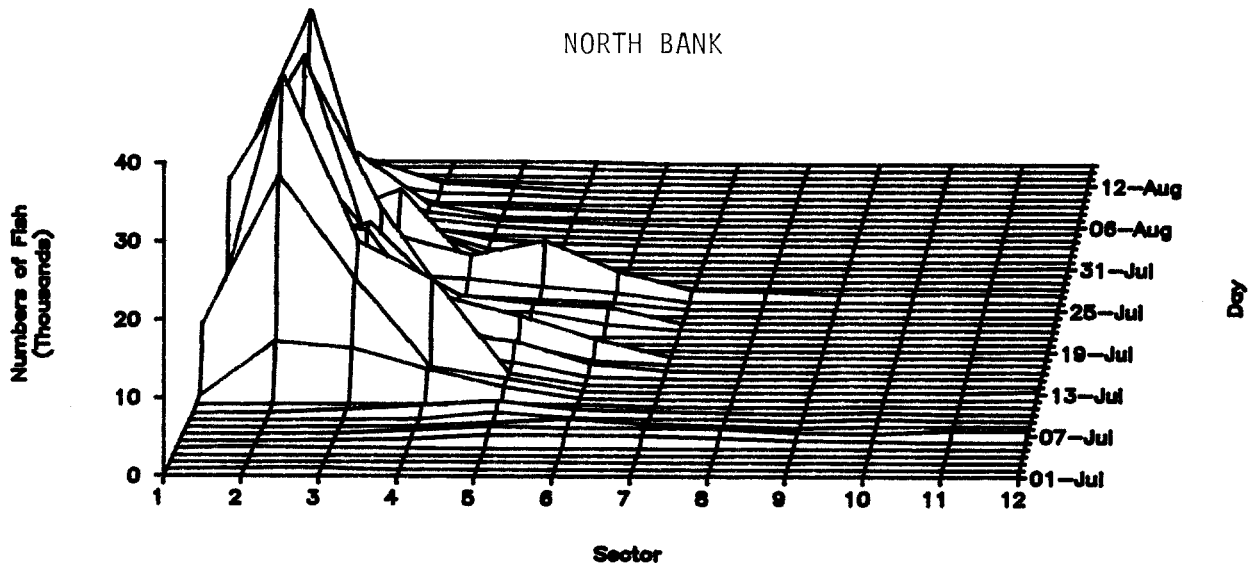


Figure 5. Susitna River and major tributaries.



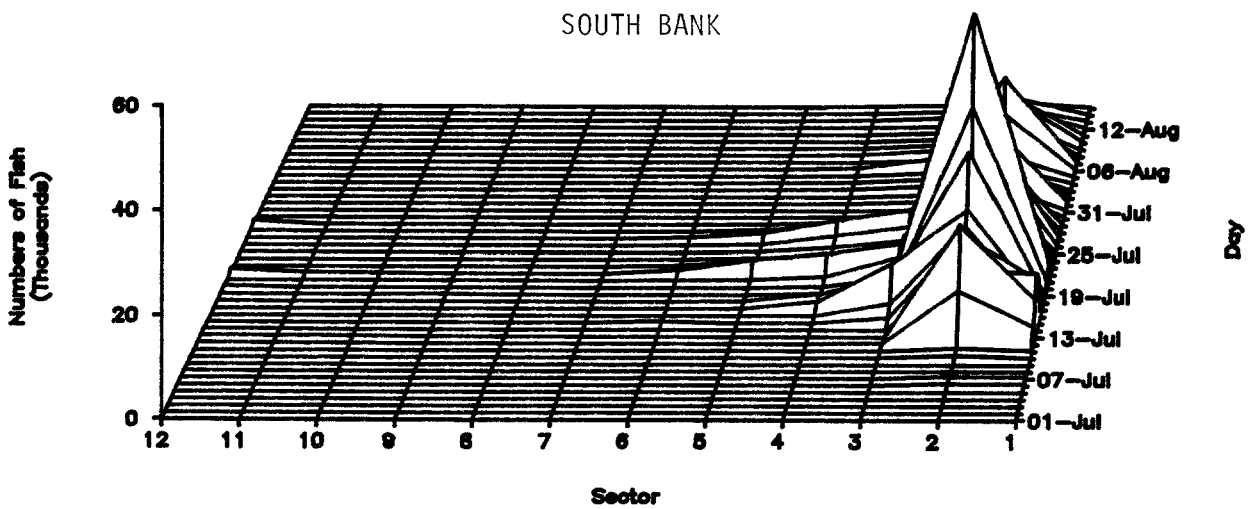


Figure 6. Distribution from shore of salmon sonar counts in the Kenai River, 1989.

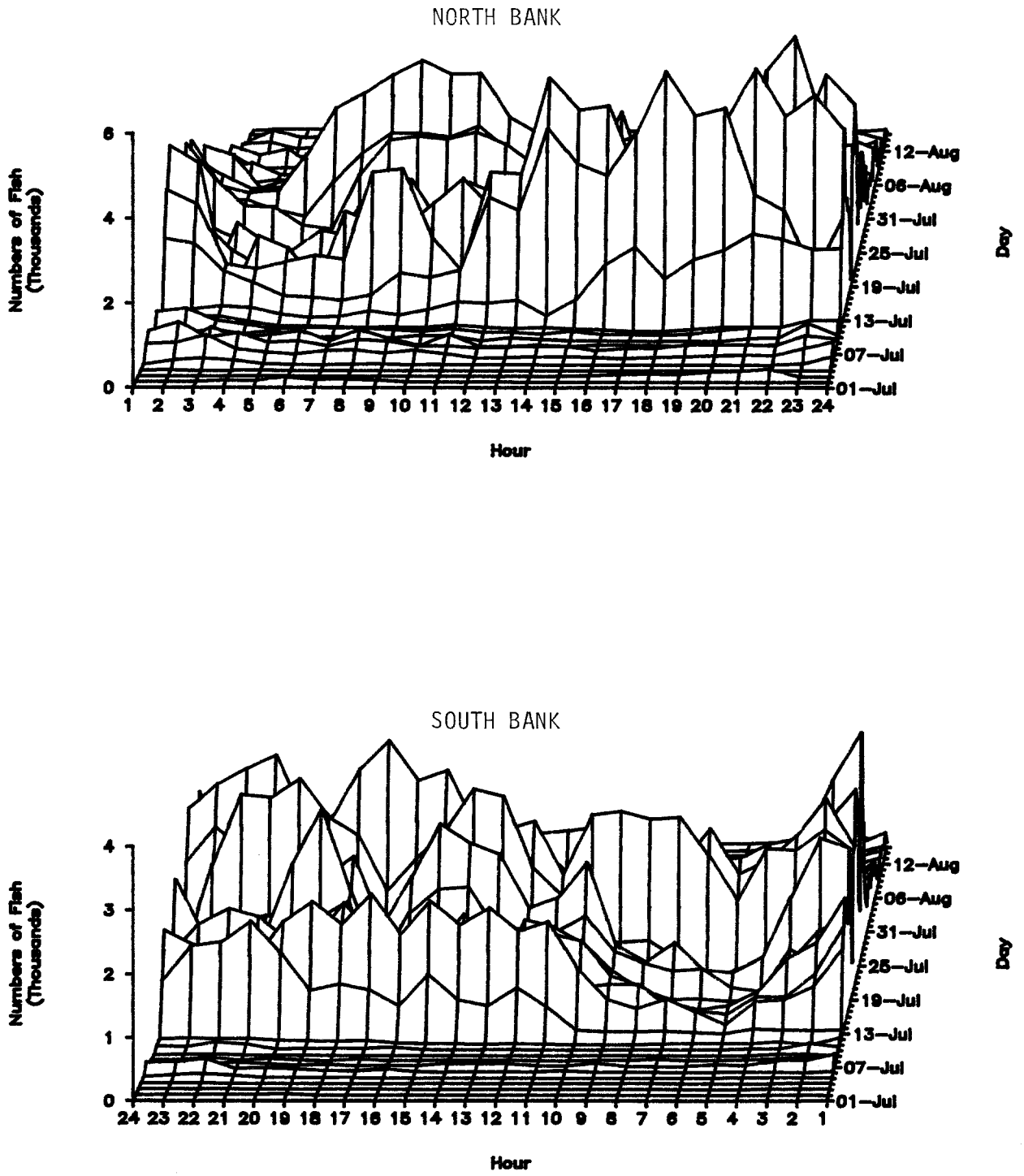


Figure 7. Hourly distribution of salmon migrating past the Kenai River sonar counters, 1989.

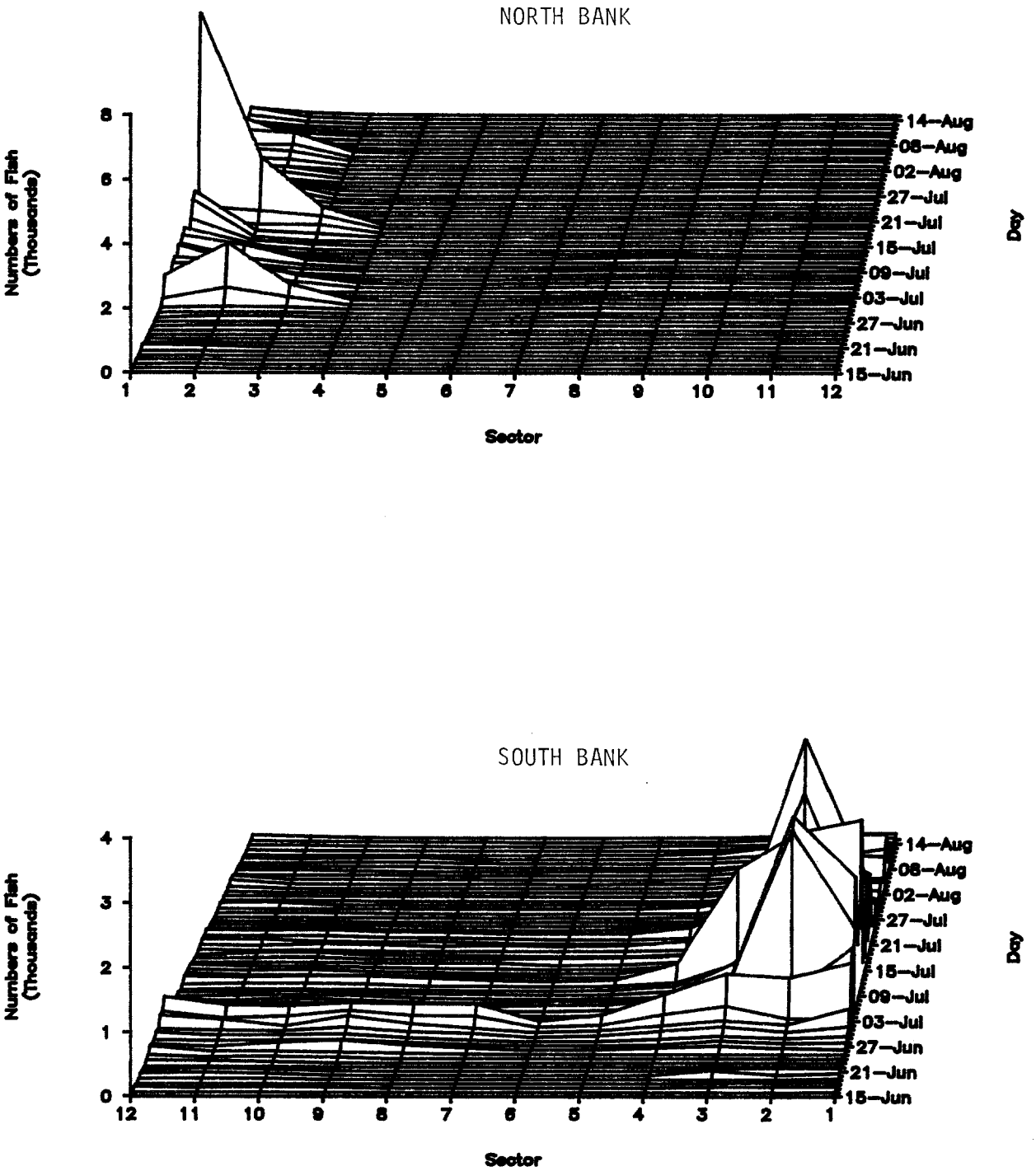


Figure 8. Distribution from shore of salmon sonar counts in the Kasilof River, 1989.

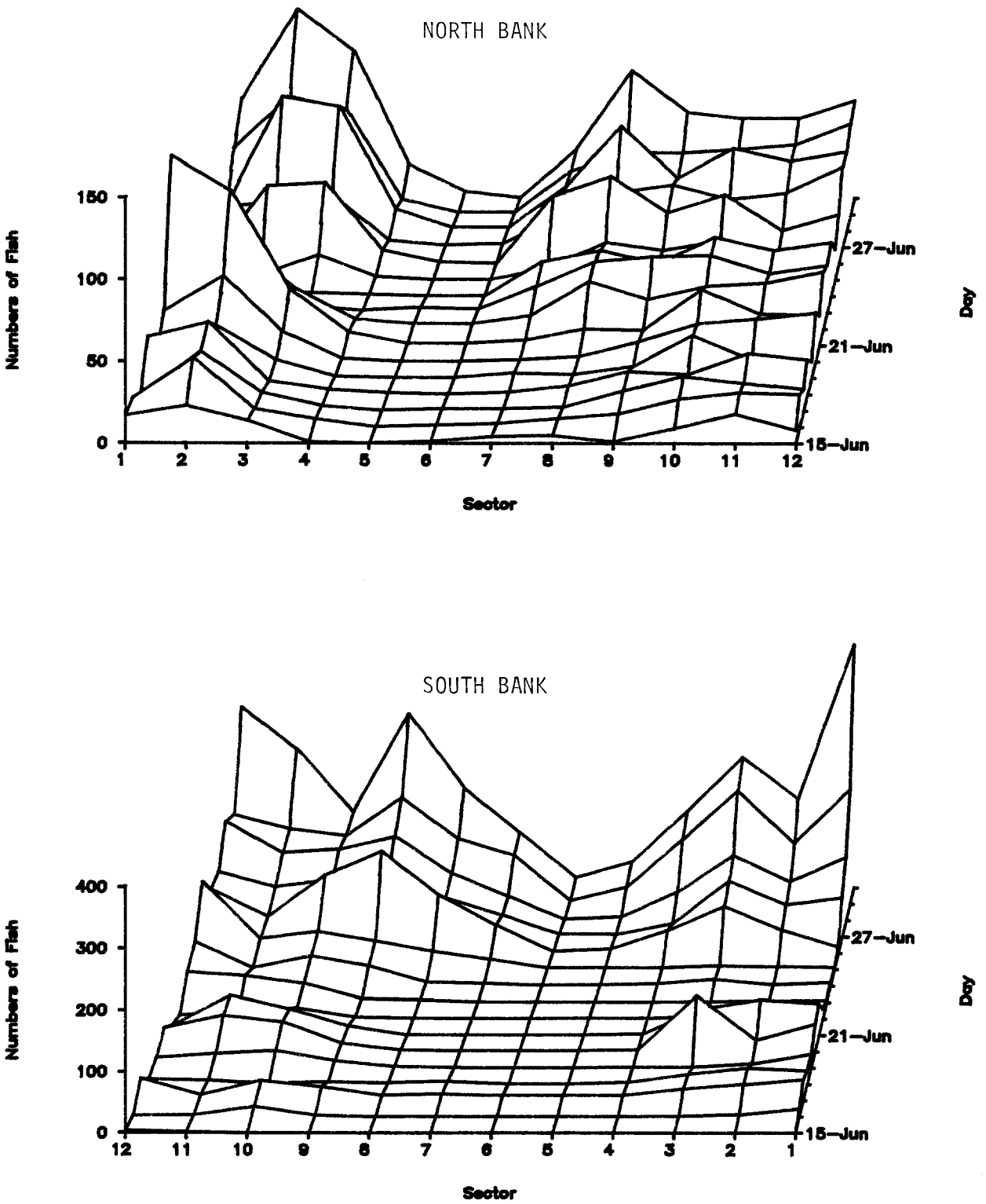


Figure 9. Distribution from shore of salmon sonar counts in the Kasilof River, 15-30 June 1989.

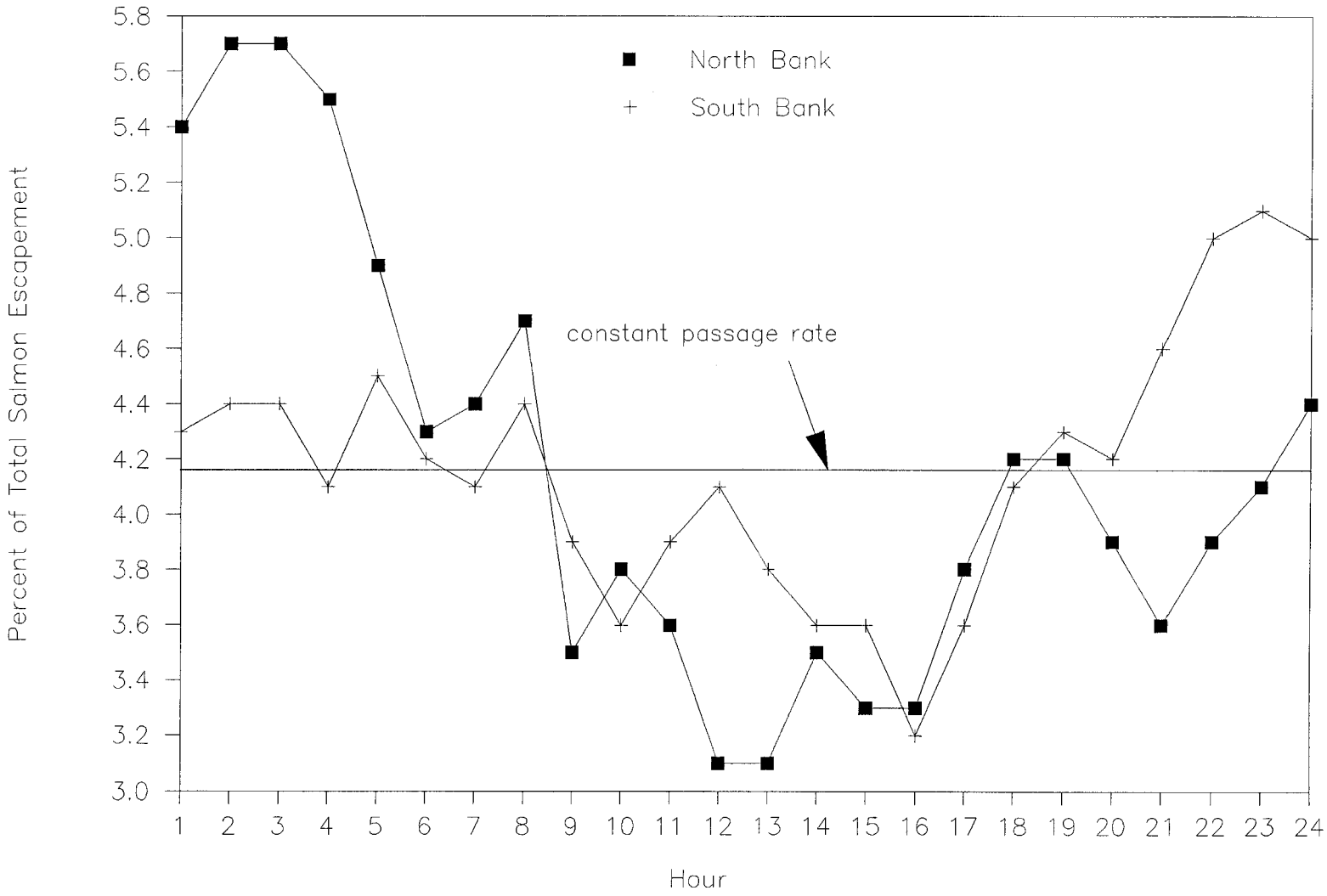


Figure 10. Hourly distribution of salmon migrating past the Kasilof River sonar counters, 1989. Counts by hour were combined for all days.

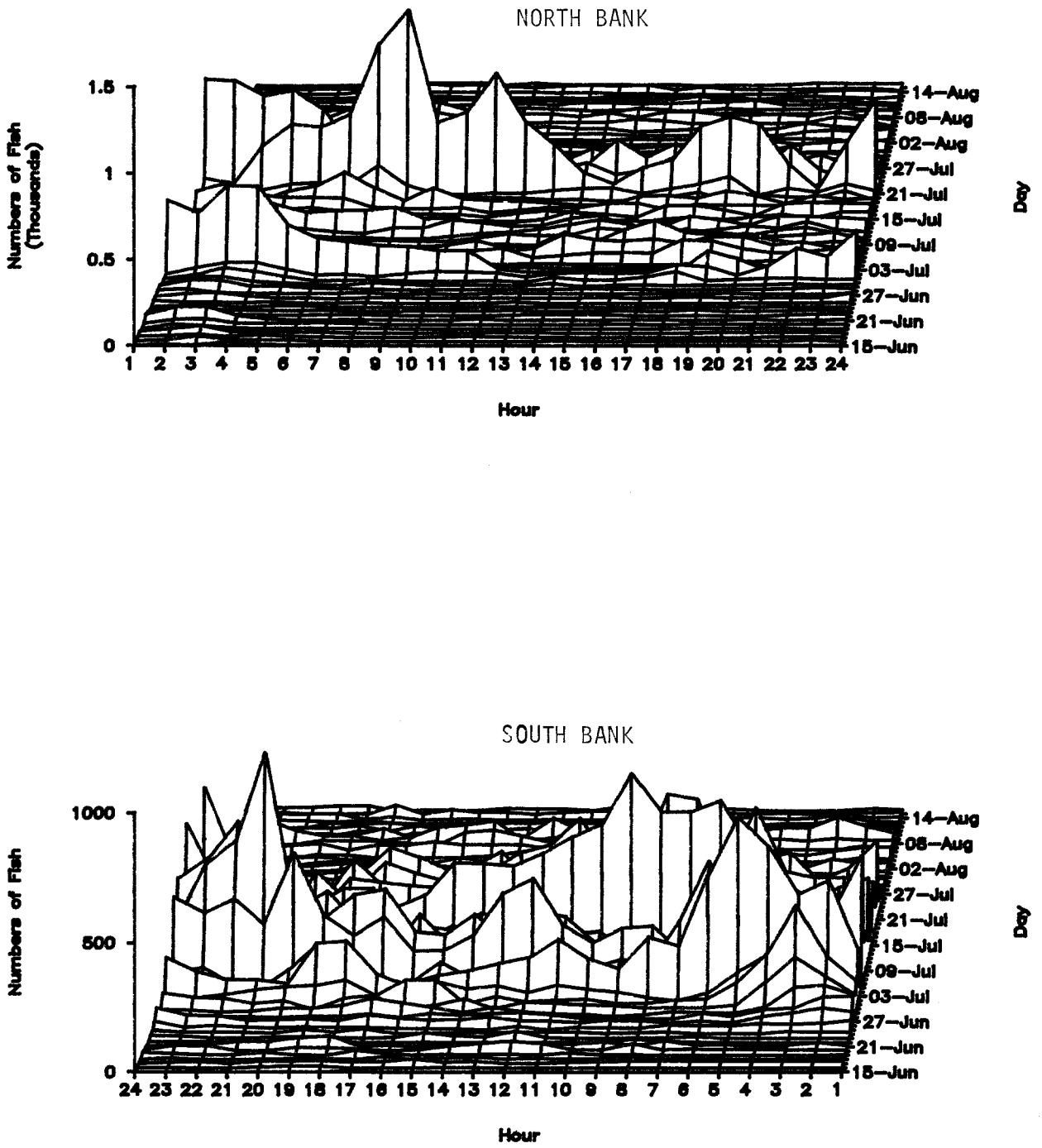


Figure 11. Hourly distribution of salmon migrating past the Kasilof River sonar counters, 1989.

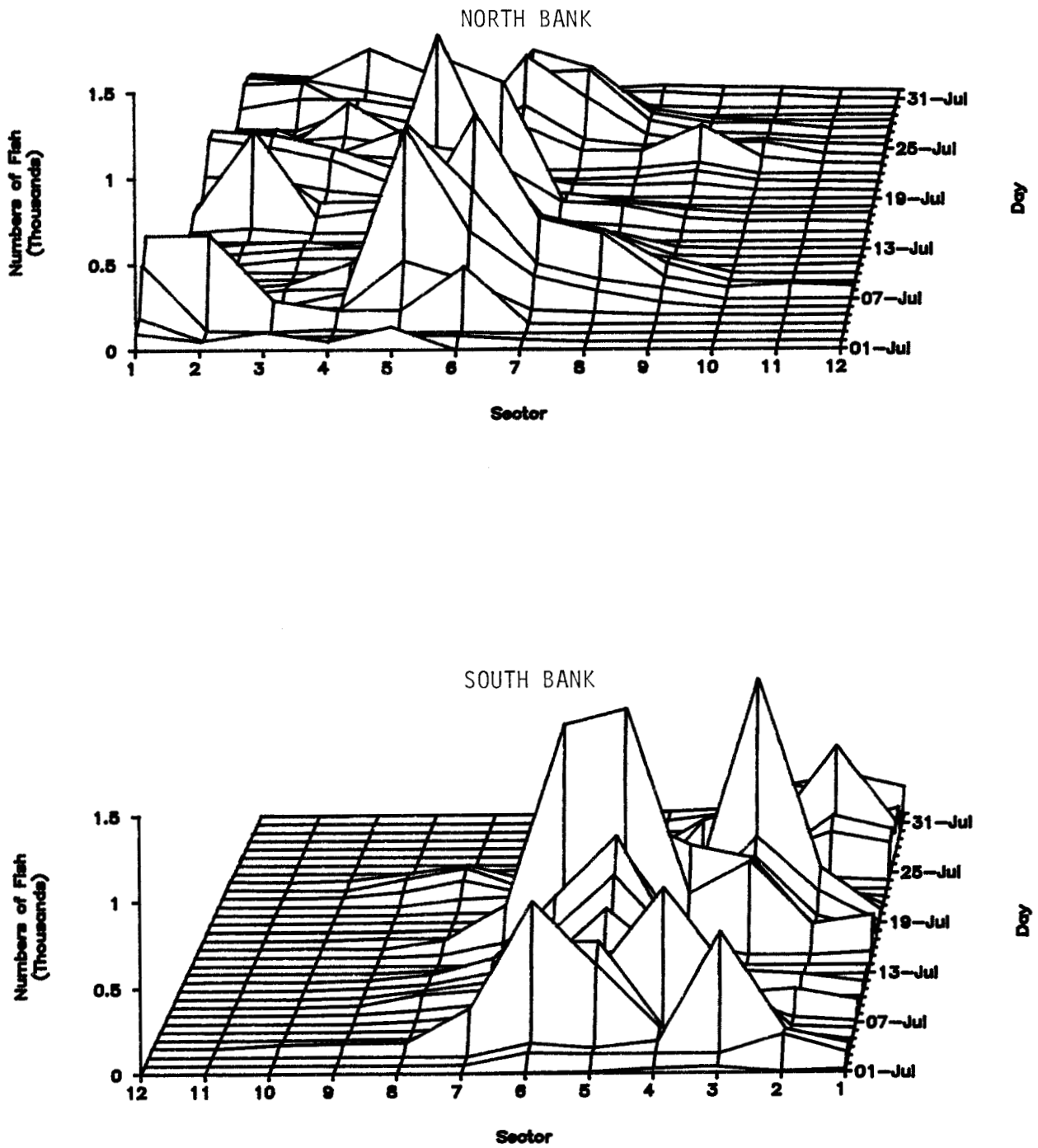
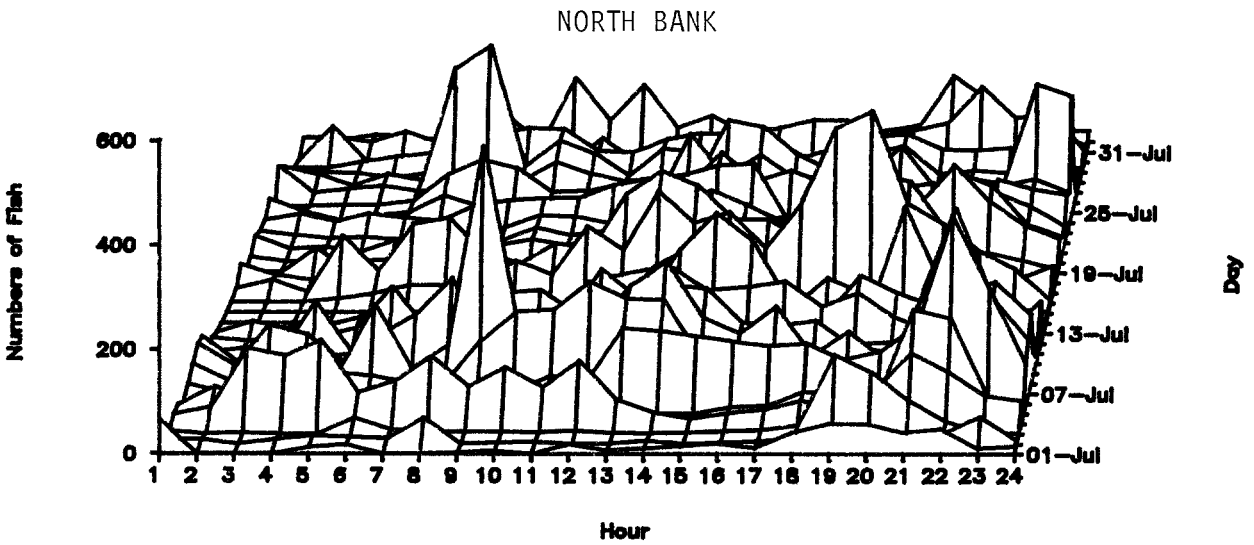


Figure 12. Distribution from shore of salmon sonar counts in the Crescent River, 1989.



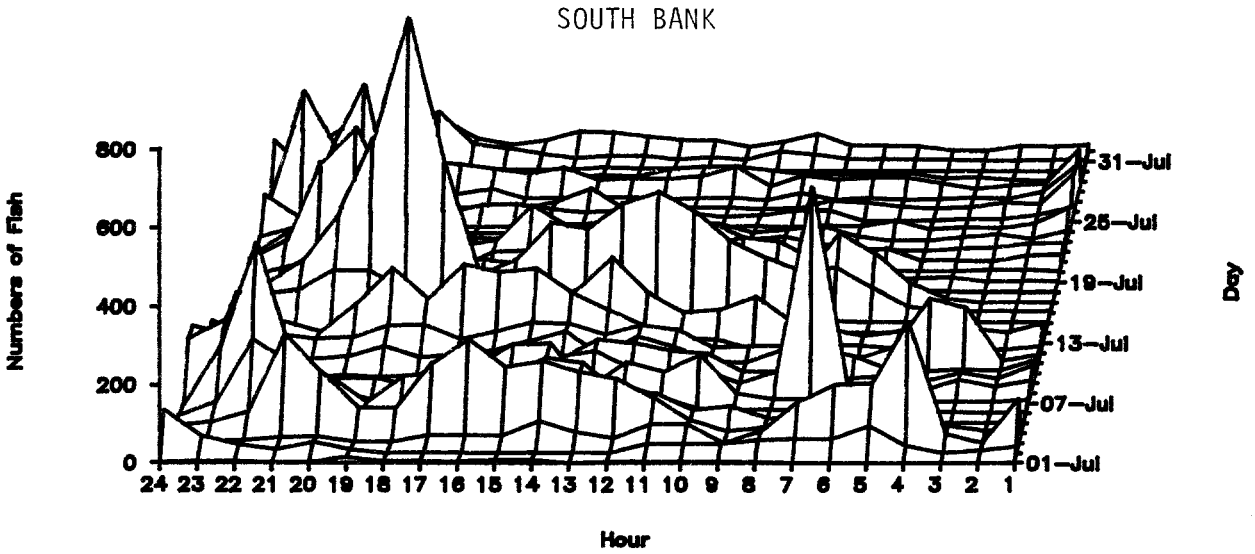
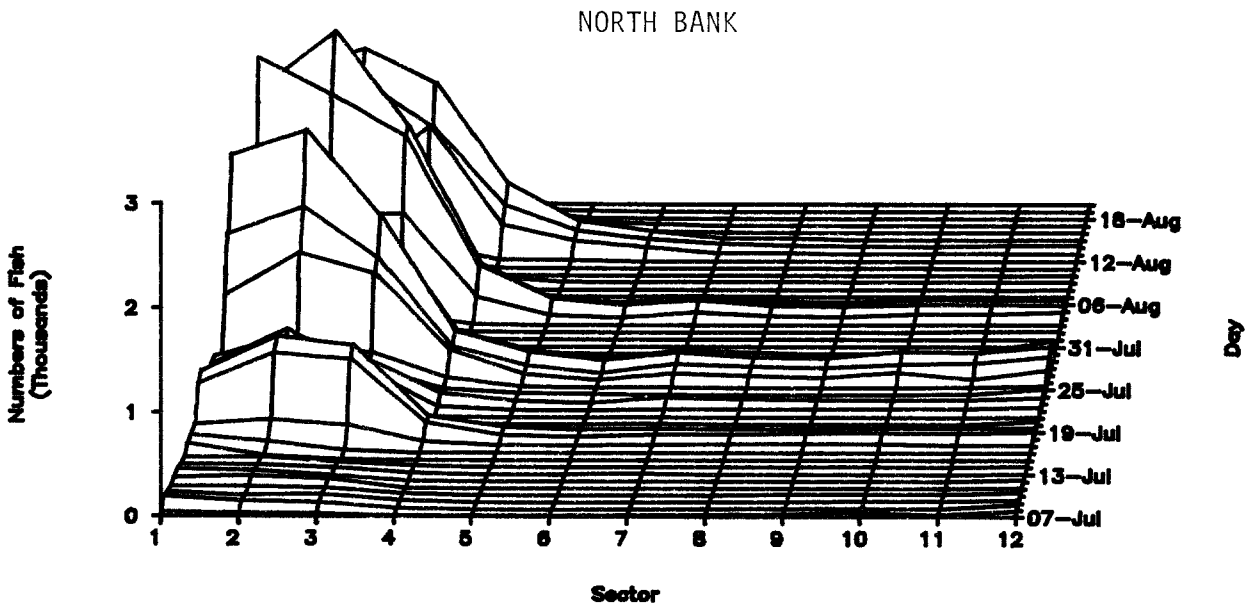


Figure 13. Hourly distribution of salmon migrating past the Crescent River sonar counters, 1989.



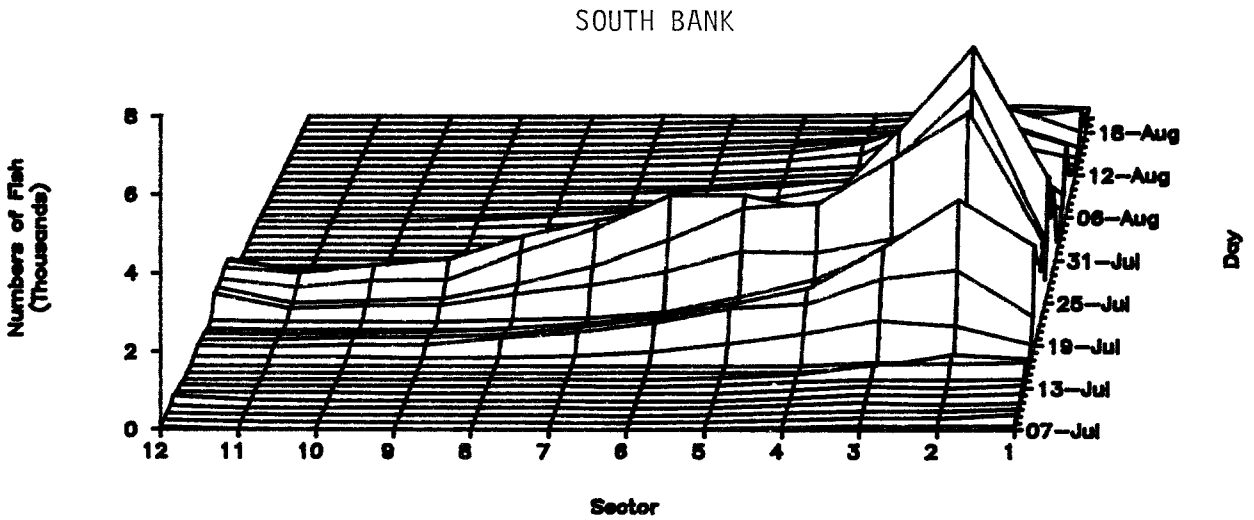
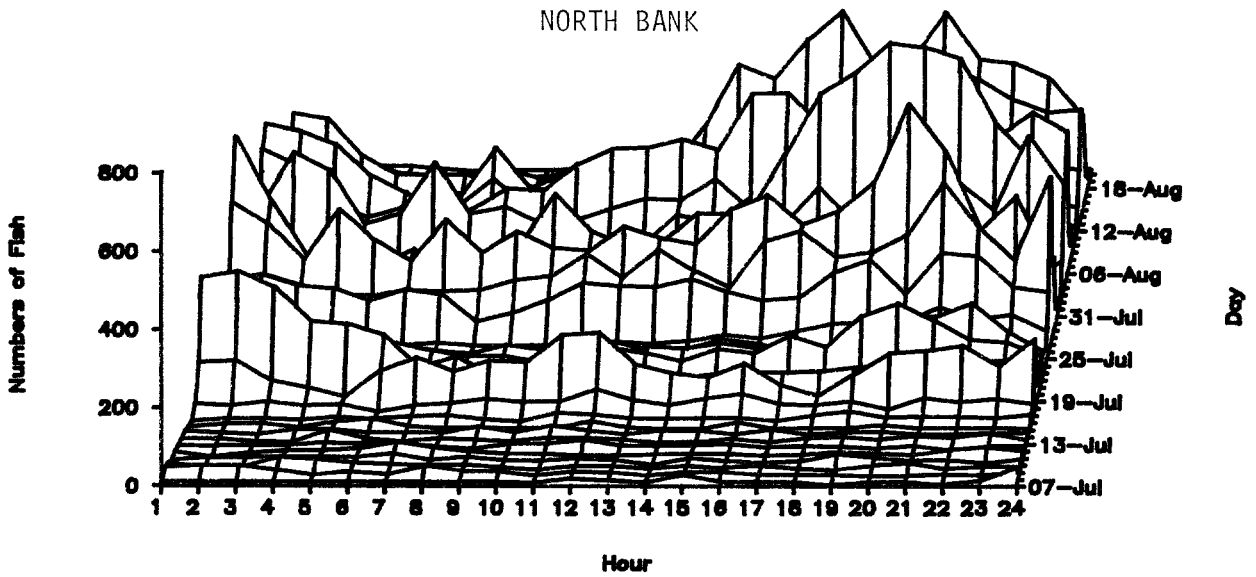


Figure 14. Distribution from shore of salmon sonar counts in the Yentna River, 1989.



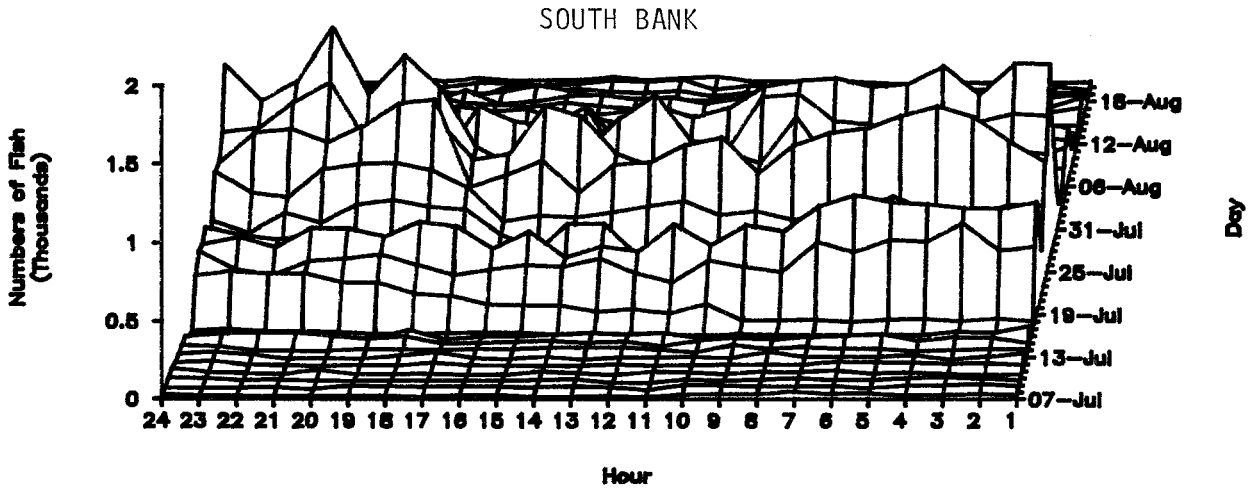


Figure 15. Hourly distribution of salmon migrating past the Yentna River sonar counters, 1989.

Appendix A.1. Estimated salmon escapement into the Kenai River, north and south banks combined, 1 July through 15 August, 1989. Species composition of daily sonar counts based on fish wheel catches.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
01-Jul	132	132	2	2	0	0	0	0
02-Jul	692	824	8	10	0	0	0	0
03-Jul	1,064	1,888	12	22	0	0	0	0
04-Jul	495	2,383	6	28	0	0	0	0
05-Jul	1,488	3,871	17	45	0	0	0	0
06-Jul	6,221	10,092	69	114	0	0	0	0
07-Jul	8,075	18,167	90	204	0	0	0	0
08-Jul	5,008	23,175	0	204	0	0	43	43
09-Jul	3,685	26,860	24	228	0	0	48	91
10-Jul	6,382	33,242	41	269	0	0	83	174
11-Jul	4,592	37,834	29	298	0	0	60	234
12-Jul	35,054	72,888	1,240	1,538	0	0	83	317
13-Jul	86,787	159,675	1,588	3,126	0	0	0	317
14-Jul	99,801	259,476	2,262	5,388	0	0	0	317
15-Jul	77,612	337,088	0	5,388	0	0	0	317
16-Jul	49,755	386,843	1,171	6,559	0	0	0	317
17-Jul	76,478	463,321	0	6,559	0	0	0	317
18-Jul	92,575	555,896	0	6,559	0	0	0	317
19-Jul	31,516	587,412	614	7,173	0	0	0	317
20-Jul	85,602	673,014	124	7,297	0	0	0	317
21-Jul	127,382	800,396	1,201	8,498	0	0	0	317
22-Jul	104,724	905,120	6,638	15,136	0	0	0	317
23-Jul	116,954	1,022,074	5,221	20,357	0	0	0	317
24-Jul	64,628	1,086,702	0	20,357	0	0	0	317
25-Jul	30,430	1,117,132	260	20,617	0	0	0	317
26-Jul	49,366	1,166,498	377	20,994	0	0	81	398
27-Jul	71,354	1,237,852	0	20,994	0	0	0	398
28-Jul	51,194	1,289,046	2,025	23,019	0	0	0	398
29-Jul	40,838	1,329,884	785	23,804	0	0	0	398
30-Jul	23,023	1,352,907	131	23,935	0	0	0	398
31-Jul	16,818	1,369,725	211	24,146	0	0	106	504
01-Aug	30,218	1,399,943	0	24,146	0	0	0	504
02-Aug	21,110	1,421,053	0	24,146	0	0	0	504
03-Aug	16,869	1,437,922	50	24,196	150	150	0	504
04-Aug	14,873	1,452,795	44	24,240	133	283	0	504
05-Aug	12,775	1,465,570	208	24,448	1,111	1,394	0	504
06-Aug	22,461	1,488,031	367	24,815	1,953	3,347	0	504
07-Aug	29,897	1,517,928	0	24,815	97	3,444	0	504
08-Aug	18,488	1,536,416	0	24,815	117	3,561	0	504
09-Aug	8,537	1,544,953	65	24,880	240	3,801	22	526
10-Aug	13,699	1,558,652	105	24,985	385	4,186	35	561
11-Aug	16,897	1,575,549	0	24,985	784	4,970	0	561
12-Aug	8,337	1,583,886	0	24,985	0	4,970	0	561
13-Aug	5,743	1,589,629	0	24,985	0	4,970	0	561
14-Aug	6,377	1,596,006	0	24,985	0	4,970	0	561
15-Aug	3,953	1,599,959	0	24,985	0	4,970	0	561

Appendix A.2. Kenai River north bank sonar counts by sector, 1 July through 15 August, 1989. Counts expressed as percent of daily total.

	Percent of Counts by Sector[a]												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
01-Jul	2.9	8.8	25.0	0.0	0.0	0.0	0.0	23.5	30.9	5.9	1.5	1.5	80
02-Jul	1.8	33.7	55.2	0.4	0.0	0.0	0.0	2.8	0.0	0.2	0.0	5.9	507
03-Jul	4.3	5.5	7.1	8.3	25.5	26.2	5.8	4.8	1.4	8.9	0.2	2.1	745
04-Jul	1.9	6.4	26.3	25.6	0.0	0.6	0.6	3.2	0.0	9.0	12.8	13.5	166
05-Jul	2.1	27.9	23.0	16.3	5.0	8.7	6.2	3.7	1.6	3.0	1.0	1.4	1,005
06-Jul	0.2	0.8	3.6	7.9	21.5	21.5	19.7	13.9	6.3	4.6	0.0	0.0	5,000
07-Jul	0.0	1.0	2.2	9.2	17.7	14.1	15.1	13.7	6.1	3.0	9.3	8.6	6,741
08-Jul	0.0	0.5	2.3	4.5	16.9	30.6	14.8	7.6	1.9	6.2	7.1	7.7	4,270
09-Jul	0.1	1.1	3.0	5.7	36.3	14.2	9.5	9.4	0.7	11.7	5.0	3.2	3,396
10-Jul	0.7	2.2	9.9	20.2	32.1	12.3	8.1	4.4	1.2	5.9	1.9	1.2	5,562
11-Jul	8.8	11.1	13.5	12.3	17.4	14.2	5.6	2.7	0.6	6.4	4.6	2.6	3,434
12-Jul	2.5	35.1	31.3	18.7	8.1	1.4	0.8	0.3	0.4	0.5	0.4	0.6	21,424
13-Jul	15.6	48.0	25.4	5.9	3.3	0.4	0.2	0.1	0.1	0.2	0.2	0.6	58,374
14-Jul	6.0	50.3	23.5	17.4	2.1	0.3	0.1	0.0	0.0	0.1	0.1	0.1	78,772
15-Jul	5.3	49.0	32.1	6.8	4.8	0.8	0.2	0.1	0.1	0.2	0.2	0.4	50,237
16-Jul	0.8	27.5	34.4	17.7	13.6	3.9	1.0	0.2	0.1	0.3	0.2	0.2	29,605
17-Jul	1.8	40.2	38.4	11.0	6.1	1.4	0.4	0.2	0.1	0.1	0.2	0.2	45,595
18-Jul	5.9	29.3	33.1	15.0	10.5	4.9	0.5	0.3	0.1	0.2	0.2	0.2	54,843
19-Jul	3.2	40.5	32.0	10.5	8.0	2.2	1.0	0.4	0.2	0.4	0.4	1.1	17,864
20-Jul	6.2	55.8	31.6	4.6	1.0	0.2	0.1	0.1	0.0	0.1	0.1	0.2	46,343
21-Jul	30.3	53.5	11.4	4.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	67,012
22-Jul	9.4	55.0	25.6	3.9	4.1	1.5	0.2	0.1	0.0	0.1	0.1	0.1	60,500
23-Jul	24.2	52.5	11.4	4.9	3.5	2.9	0.1	0.1	0.1	0.1	0.1	0.1	75,685
24-Jul	19.9	55.2	18.2	4.2	1.5	0.3	0.2	0.0	0.1	0.1	0.1	0.2	39,170
25-Jul	21.7	22.7	15.7	15.2	11.5	8.4	0.6	0.6	0.5	0.7	0.7	1.6	11,645
26-Jul	17.1	35.2	15.9	13.8	9.4	5.9	0.8	0.5	0.3	0.4	0.3	0.3	22,693
27-Jul	2.9	17.4	23.9	16.1	22.0	9.8	2.6	2.2	0.9	0.7	1.0	0.5	37,056
28-Jul	11.0	29.1	40.8	9.1	4.4	4.3	0.2	0.2	0.2	0.2	0.3	0.2	31,400
29-Jul	9.8	42.1	37.7	5.5	2.1	1.2	0.3	0.5	0.1	0.2	0.5	0.2	21,568
30-Jul	22.9	38.3	21.0	8.1	4.1	1.8	0.8	0.7	0.5	0.4	1.0	0.4	14,792
31-Jul	15.9	48.5	22.3	6.1	2.3	0.7	0.5	0.3	0.6	0.6	0.4	1.8	10,387
01-Aug	6.9	48.7	32.4	6.9	3.1	0.7	0.4	0.3	0.1	0.1	0.1	0.3	13,549
02-Aug	6.0	50.3	29.6	6.4	3.1	1.4	0.7	0.5	0.4	0.6	0.4	0.6	11,313
03-Aug	7.3	33.5	26.5	10.7	5.4	3.5	2.1	3.0	2.7	1.1	1.7	2.6	10,400
04-Aug	11.8	45.2	16.7	7.8	5.6	3.1	1.8	2.1	1.9	1.4	1.1	1.4	9,509
05-Aug	11.2	35.9	23.2	12.5	5.5	3.3	1.0	1.1	1.5	1.7	0.9	2.3	8,191
06-Aug	19.7	41.3	17.5	8.1	5.9	2.8	1.3	1.3	0.5	0.9	0.5	0.3	10,701
07-Aug	33.0	50.7	11.3	2.0	1.4	0.2	0.2	0.2	0.3	0.2	0.1	0.3	12,406
08-Aug	17.3	51.9	15.3	7.8	4.7	1.5	1.0	0.6	0.0	0.0	0.0	0.0	8,420
09-Aug	19.3	35.5	18.2	20.2	5.7	0.7	0.2	0.2	0.0	0.0	0.0	0.0	1,630
10-Aug	24.2	43.2	15.8	12.5	3.0	1.1	0.1	0.0	0.0	0.0	0.0	0.0	4,499
11-Aug	33.3	44.3	13.1	7.1	1.4	0.7	0.1	0.0	0.0	0.0	0.0	0.0	8,885
12-Aug	33.3	34.0	15.7	10.3	3.3	2.8	0.6	0.1	0.0	0.0	0.0	0.0	3,592
13-Aug	20.5	26.0	19.4	14.1	7.6	9.9	2.1	0.3	0.0	0.0	0.0	0.0	1,527
14-Aug	10.4	19.6	23.3	26.0	12.3	7.1	1.2	0.1	0.0	0.0	0.0	0.0	1,931

- Continued -

Appendix A.2. (p. 2 of 2)

	Percent of Counts by Sector[a]												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
15-Aug	19.4	18.6	16.4	21.4	17.4	5.3	1.4	0.1	0.0	0.0	0.0	0.0	1,610
Average	12.4	43.0	24.1	9.3	5.7	2.6	0.8	0.6	0.3	0.4	0.4	0.5	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.3. Kenai River south bank sonar counts by sector, 1 July through 15 August, 1989. Counts expressed as percent of daily total.

	Percent of Counts by Sector[a]												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
01-Jul	18.5	18.5	18.5	1.9	0.0	0.0	0.0	0.0	0.0	7.4	27.8	7.4	54
02-Jul	20.6	35.4	6.3	0.0	0.0	0.0	0.0	0.5	0.5	5.8	9.0	21.7	193
03-Jul	26.6	39.0	3.0	0.3	0.0	0.0	0.0	0.3	0.6	6.0	9.4	14.8	331
04-Jul	31.6	26.6	2.1	0.0	0.0	0.0	0.3	2.1	1.2	7.2	11.0	17.9	335
05-Jul	37.0	28.2	1.8	0.0	0.0	0.0	0.0	0.0	1.0	6.8	10.8	14.4	500
06-Jul	34.7	42.2	3.0	0.0	0.0	0.0	0.0	0.2	0.2	4.2	5.4	10.0	1,290
07-Jul	31.3	40.9	3.7	0.0	0.0	0.0	0.1	0.0	0.1	2.9	9.5	11.4	1,424
08-Jul	8.0	20.2	2.0	0.0	0.0	0.2	1.6	4.1	4.1	14.8	15.8	29.1	781
09-Jul	11.0	33.4	2.5	0.0	0.0	0.0	1.1	2.5	3.9	14.0	14.9	16.6	361
10-Jul	11.2	65.2	7.2	0.2	0.0	0.0	0.1	0.2	1.1	5.8	5.4	3.6	944
11-Jul	15.8	63.0	5.8	0.0	0.0	0.0	0.2	0.4	1.9	3.5	4.9	4.4	1,247
12-Jul	23.9	69.9	1.7	0.0	0.0	0.0	0.0	0.1	0.3	1.0	1.2	1.7	14,953
13-Jul	24.9	72.2	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.8	0.7	0.9	30,001
14-Jul	47.3	50.1	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.6	1.0	23,291
15-Jul	31.6	61.5	4.1	0.1	0.0	1.5	0.0	0.0	0.0	0.2	0.4	0.7	27,375
16-Jul	5.7	81.1	11.9	0.4	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.4	21,321
17-Jul	2.5	62.1	28.7	4.9	0.4	0.1	0.2	0.1	0.1	0.3	0.2	0.3	30,883
18-Jul	5.0	76.1	12.8	4.3	0.5	0.1	0.0	0.0	0.1	0.2	0.2	0.6	37,732
19-Jul	3.5	79.1	9.8	2.6	0.4	0.2	0.0	0.5	1.6	0.1	0.3	1.8	14,266
20-Jul	3.9	87.6	5.9	1.0	0.1	0.1	0.0	0.0	0.0	0.1	0.2	1.1	39,383
21-Jul	6.6	83.4	7.7	1.5	0.4	0.1	0.0	0.0	0.0	0.1	0.2	0.0	61,571
22-Jul	3.7	65.7	12.1	8.0	5.6	1.5	0.1	0.1	0.1	0.5	0.7	1.9	50,862
23-Jul	3.1	78.8	9.6	4.8	2.7	0.7	0.0	0.0	0.1	0.0	0.1	0.1	46,490
24-Jul	4.9	80.2	8.4	4.2	1.5	0.3	0.0	0.1	0.0	0.1	0.1	0.1	25,458
25-Jul	2.7	75.3	13.5	6.0	1.7	0.3	0.0	0.0	0.0	0.1	0.2	0.1	19,045
26-Jul	1.6	74.9	14.1	7.4	1.2	0.3	0.0	0.0	0.0	0.0	0.1	0.3	27,131
27-Jul	2.5	65.1	16.9	10.8	3.5	0.8	0.1	0.0	0.1	0.1	0.1	0.1	34,298
28-Jul	2.7	70.6	15.8	7.0	2.0	0.4	0.1	0.1	0.0	0.1	0.2	1.2	21,819
29-Jul	2.6	81.2	8.0	2.4	0.8	0.1	0.1	0.0	0.1	0.1	0.3	4.2	20,055
30-Jul	6.2	80.7	7.9	3.0	1.1	0.2	0.0	0.2	0.0	0.2	0.2	0.3	8,362
31-Jul	7.6	86.0	4.1	1.3	0.5	0.1	0.0	0.0	0.0	0.0	0.2	0.1	6,748
01-Aug	5.3	90.6	3.0	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	11,669
02-Aug	7.2	86.7	4.4	0.5	0.3	0.1	0.0	0.0	0.1	0.1	0.3	0.3	9,797
03-Aug	4.9	74.9	14.4	3.6	1.3	0.2	0.0	0.0	0.0	0.1	0.2	0.3	6,669
04-Aug	5.5	69.5	17.2	3.9	1.6	0.3	0.0	0.0	0.1	0.9	0.3	0.7	5,541
05-Aug	4.1	77.4	13.4	2.4	1.0	0.0	0.0	0.1	0.2	0.3	0.2	0.8	5,903
06-Aug	2.6	78.4	15.7	2.3	0.3	0.1	0.0	0.0	0.0	0.0	0.2	0.5	14,080
07-Aug	2.9	93.8	2.8	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	17,588
08-Aug	2.9	81.5	12.7	1.4	0.4	0.1	0.0	0.0	0.0	0.1	0.2	0.6	10,185
09-Aug	2.5	82.2	11.7	1.6	0.4	0.8	0.0	0.0	0.0	0.2	0.2	0.4	7,234
10-Aug	5.0	88.8	5.3	0.4	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	9,725
11-Aug	4.8	87.9	5.8	0.3	0.1	0.0	0.0	0.0	0.0	0.1	0.2	0.8	8,796
12-Aug	7.8	79.9	5.8	1.8	0.4	0.7	0.0	0.0	0.2	0.3	0.8	2.3	4,745
13-Aug	7.3	67.5	17.2	3.8	0.4	0.1	0.0	0.1	0.0	0.7	1.8	1.0	4,216
14-Aug	5.9	74.5	12.6	2.7	0.5	0.1	0.0	0.0	0.2	0.5	0.9	2.1	4,446

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Appendix A.3. (p. 2 of 2)

Date	Percent of Counts by Sector[a]												Daily Total
	1	2	3	4	5	6	7	8	9	10	11	12	
15-Aug	8.8	55.9	22.5	8.4	1.7	0.3	0.1	0.1	0.1	0.4	0.7	1.0	2,343
Average	8.2	75.3	9.9	3.4	1.2	0.4	0.0	0.1	0.1	0.3	0.4	0.9	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.4. Kenai River north bank sonar counts by hour, 1 July through 15 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
01-Jul	10.3	8.8	10.3	1.5	0.0	22.1	2.9	4.4	7.4	11.8	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	0.0	0.0	4.4	10.3	80
02-Jul	2.6	1.8	2.6	9.7	7.7	25.1	12.9	16.0	12.1	3.2	1.6	0.6	3.0	0.2	0.0	0.2	0.0	0.0	0.4	0.2	0.2	0.0	0.0	0.0	507
03-Jul	0.2	0.0	1.2	0.9	1.2	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	2.8	7.2	11.8	7.8	17.0	19.9	27.6	0.0	0.0	745
04-Jul	0.0	19.2	0.6	0.0	20.5	0.0	0.0	0.0	0.0	0.0	9.6	2.6	4.5	5.1	3.2	1.9	1.9	0.6	1.3	1.9	5.1	9.0	5.1	7.7	166
05-Jul	2.2	12.6	18.2	13.4	4.7	2.5	0.7	2.6	4.0	2.1	1.5	2.2	2.1	2.6	0.3	0.3	0.7	0.0	0.1	0.5	0.1	0.2	4.0	22.5	1,005
06-Jul	8.4	9.2	13.5	6.0	4.2	3.0	4.8	5.4	3.6	5.3	3.4	0.9	1.0	1.7	1.7	1.5	0.6	1.1	1.6	2.1	2.6	2.2	6.2	9.9	5,000
07-Jul	8.2	11.4	5.9	7.6	4.0	4.7	2.8	5.2	4.6	2.7	3.0	2.1	2.5	2.7	2.7	1.2	2.0	1.9	3.2	3.4	3.3	3.0	6.7	5.4	6,741
08-Jul	6.7	3.0	12.3	6.2	7.9	10.2	4.4	10.8	5.8	1.6	8.3	1.1	0.8	1.9	0.9	1.9	2.0	1.8	0.9	1.8	0.9	2.2	1.8	4.7	4,270
09-Jul	3.8	6.3	9.4	5.9	8.7	2.4	4.2	4.2	3.2	5.3	4.9	1.4	3.6	2.6	1.7	1.6	1.5	0.9	1.2	0.9	2.9	3.5	13.9	5.9	3,396
10-Jul	10.9	12.4	7.3	5.5	3.4	4.2	4.2	4.1	3.3	2.5	3.7	2.2	2.2	1.3	2.7	1.2	1.3	0.7	1.3	2.9	3.9	4.2	7.3	7.5	5,562
11-Jul	8.5	12.9	12.4	8.2	4.7	4.6	3.8	3.3	3.6	3.2	5.5	3.7	2.5	3.6	2.3	1.6	0.0	0.0	1.6	3.7	3.4	3.7	3.2	0.0	3,434
12-Jul	1.0	1.8	2.2	2.0	1.3	0.9	1.0	1.7	1.2	1.8	2.7	2.5	2.9	1.1	2.9	6.8	8.7	5.2	7.3	8.4	10.2	9.6	8.5	8.6	21,424
13-Jul	3.3	3.1	2.0	1.5	1.0	0.9	0.8	1.0	1.9	1.7	2.1	5.0	4.5	7.9	6.4	5.9	7.7	10.2	8.4	8.7	5.2	4.5	1.8	4.2	58,374
14-Jul	3.7	3.3	1.5	1.4	1.6	1.8	1.7	4.3	4.4	2.3	1.3	4.3	4.2	7.1	6.1	6.3	4.2	4.3	5.1	5.9	7.4	6.0	6.6	5.6	78,772
15-Jul	8.1	7.3	0.4	3.6	3.0	1.3	4.9	4.3	4.1	5.3	6.5	5.0	4.4	3.6	3.8	3.0	2.8	4.9	4.8	3.4	2.2	3.4	4.5	5.5	50,237
16-Jul	5.2	6.4	4.3	3.0	2.4	2.7	3.7	4.0	2.7	4.1	3.2	5.3	5.1	3.1	2.5	2.0	4.6	6.4	4.6	6.4	4.7	1.9	3.1	8.4	29,605
17-Jul	4.3	3.3	1.9	1.2	2.5	3.5	3.2	3.6	2.1	3.5	2.5	5.1	5.9	5.0	3.9	4.0	3.0	3.3	6.5	6.9	7.4	7.5	5.2	4.6	45,595
18-Jul	3.2	0.0	3.1	2.2	1.3	1.0	3.4	5.3	5.1	3.0	4.9	4.3	4.3	4.3	4.3	6.8	7.1	5.1	4.5	5.1	7.1	6.1	4.7	3.6	54,843
19-Jul	7.4	7.8	6.1	3.4	2.5	2.2	1.5	4.0	3.7	5.1	4.4	4.0	6.7	10.0	7.0	4.2	2.6	2.9	2.3	3.2	2.6	3.0	2.4	1.0	17,864
20-Jul	0.6	0.5	0.0	0.0	0.7	1.3	1.4	1.1	2.0	2.7	2.9	3.3	5.7	7.1	6.0	5.9	4.0	7.3	7.9	8.0	9.4	7.1	7.6	7.5	46,343
21-Jul	4.6	3.4	2.4	2.4	1.8	1.6	3.5	4.8	4.9	4.8	5.0	4.6	3.9	3.4	3.9	5.7	3.0	4.0	3.5	3.7	7.2	8.4	5.2	4.3	67,012
22-Jul	3.1	2.7	2.7	2.3	2.1	3.4	4.5	5.3	5.3	5.2	5.6	4.7	3.3	3.7	4.2	5.0	2.8	3.9	3.7	3.8	3.7	4.9	7.6	6.4	60,500
23-Jul	3.8	2.4	2.2	2.3	3.4	4.8	5.3	5.9	6.3	5.9	5.9	4.6	4.1	4.2	4.2	3.6	4.2	4.2	4.1	3.0	3.2	4.1	4.4	3.9	75,685
24-Jul	6.0	5.0	4.1	4.2	1.8	3.7	3.4	3.5	3.6	3.2	4.1	5.3	3.8	3.7	2.5	3.1	5.7	5.6	5.3	6.0	5.5	4.7	3.9	2.1	39,170
25-Jul	1.2	2.0	3.6	0.5	0.8	0.3	0.4	4.2	4.2	4.2	5.2	7.8	4.2	4.2	4.2	8.6	2.4	4.2	4.2	4.2	4.2	4.2	4.2	17.2	11,645
26-Jul	5.0	2.7	2.5	1.3	1.9	1.5	1.9	1.8	1.8	3.0	3.4	2.0	1.7	4.2	4.2	6.3	4.2	4.8	3.0	4.2	6.8	13.8	13.9	4.2	22,693
27-Jul	0.0	0.0	2.5	1.3	1.1	1.8	1.4	1.2	3.8	3.9	6.0	5.3	5.4	2.8	4.6	0.0	6.4	6.9	6.9	10.9	8.6	6.8	6.0	6.5	37,056
28-Jul	6.8	6.1	3.5	1.4	1.0	4.2	4.2	4.2	4.2	3.6	1.1	1.0	1.1	2.8	4.4	5.2	3.9	5.8	6.3	5.7	5.0	7.2	5.9	5.6	31,400
29-Jul	4.0	3.4	1.9	1.7	1.4	1.1	2.0	3.1	2.8	1.7	3.7	2.3	2.0	4.7	8.2	9.6	5.2	5.3	6.1	7.2	6.9	7.4	4.9	3.3	21,568
30-Jul	6.4	3.8	2.3	6.0	5.0	2.7	2.0	1.0	1.8	2.2	1.0	2.1	2.5	2.2	3.1	2.7	2.4	2.5	3.9	6.0	10.9	11.5	6.7	9.3	14,792
31-Jul	5.8	4.2	3.9	2.3	2.4	4.1	1.5	2.5	5.1	5.6	4.1	5.3	3.4	4.1	2.4	3.6	3.4	3.0	3.7	5.8	6.6	7.1	6.7	3.6	10,387
01-Aug	3.6	3.5	2.4	2.8	2.4	3.5	3.6	3.8	4.4	2.1	1.8	0.9	1.5	4.9	3.6	6.3	4.4	6.1	6.1	6.5	6.3	6.7	7.8	5.1	13,549
02-Aug	4.2	3.0	4.9	6.5	3.7	4.5	7.7	2.7	4.9	6.6	3.6	3.5	3.6	5.1	5.7	3.6	3.1	2.6	1.2	2.1	3.2	4.4	4.9	4.7	11,313

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Appendix A.4 (page 2 of 2).

Date	Percent of Counts by Hour																								Daily Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
03-Aug	2.9	3.9	5.0	3.8	6.1	5.0	3.1	3.5	3.2	2.1	1.6	0.9	2.5	3.5	2.2	1.7	1.6	4.6	3.3	7.8	7.6	9.8	7.8	6.5	10,400
04-Aug	6.2	8.2	5.3	4.8	8.0	3.6	7.9	9.3	3.1	2.0	2.0	0.8	1.0	0.6	1.3	2.0	2.1	3.0	2.9	3.9	8.9	4.6	4.3	4.0	9,509
05-Aug	3.5	2.9	2.0	3.8	2.5	5.8	4.1	4.1	5.1	2.2	1.4	2.2	2.9	3.3	2.4	0.8	1.3	1.5	2.4	2.9	5.7	9.3	15.3	12.5	8,191
06-Aug	6.9	3.5	3.7	3.7	3.7	2.3	2.4	3.5	3.4	1.7	0.9	0.7	1.4	1.9	1.0	4.0	4.5	5.5	7.9	4.9	7.5	7.8	10.0	7.2	10,701
07-Aug	4.7	3.4	4.3	1.6	3.5	2.5	2.7	2.4	3.9	3.8	3.4	5.6	4.4	5.4	5.5	4.3	4.5	3.6	4.9	4.6	6.4	5.4	4.0	5.4	12,406
08-Aug	5.3	3.7	2.8	5.9	4.7	5.2	3.8	3.8	5.8	2.4	5.8	4.1	5.9	6.5	6.2	6.3	3.2	1.8	2.0	3.8	2.7	3.0	2.9	2.4	8,420
09-Aug	2.1	2.6	5.1	6.1	4.7	3.9	3.0	0.9	1.3	1.7	1.4	1.5	1.7	2.5	4.6	6.8	2.2	7.2	9.6	5.3	8.8	8.3	5.7	3.2	1,630
10-Aug	2.0	1.7	2.4	2.7	1.8	1.6	2.2	3.1	2.4	2.3	2.0	3.4	3.2	4.4	3.7	3.4	6.5	7.4	7.0	5.4	12.1	8.2	6.8	4.5	4,499
11-Aug	3.0	3.7	1.9	2.6	3.4	4.7	6.1	1.8	3.8	3.4	3.3	2.1	2.9	2.6	4.3	6.1	3.9	6.0	9.1	6.0	3.8	4.2	6.7	4.7	8,885
12-Aug	4.9	13.3	8.8	8.9	6.8	3.4	9.5	4.3	4.2	4.0	1.5	2.2	2.2	1.7	3.2	1.4	1.2	1.1	2.8	1.6	2.0	3.7	4.7	2.7	3,592
13-Aug	3.6	5.8	6.6	7.6	4.3	3.1	10.9	4.5	3.4	5.3	1.4	3.1	1.7	2.0	1.4	2.4	1.5	2.5	2.6	2.4	1.5	8.9	6.0	7.5	1,527
14-Aug	5.7	3.9	2.1	2.3	6.7	4.2	8.7	2.9	4.5	5.1	3.1	1.6	1.2	1.0	1.1	1.6	2.1	1.6	1.3	3.5	4.0	9.7	9.6	12.5	1,931
15-Aug	4.5	6.8	7.3	6.3	2.0	3.3	9.4	2.8	4.7	4.6	3.9	2.7	4.8	6.6	4.5	4.8	2.0	3.1	0.7	0.8	0.8	3.8	5.3	4.5	1,610
Average	4.2	3.6	2.8	2.5	2.3	2.6	3.2	3.8	3.9	3.6	3.8	4.0	3.9	4.5	4.4	4.6	4.2	4.9	5.0	5.4	5.9	6.0	5.6	5.3	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.5. Kenai River south bank sonar counts by hour, 1 July through 15 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
01-Jul	16.7	3.7	16.7	3.7	1.9	7.4	3.7	13.0	0.0	0.0	3.7	3.7	0.0	1.9	0.0	7.4	3.7	1.9	3.7	0.0	0.0	1.9	0.0	5.6	54
02-Jul	0.0	5.3	4.2	0.0	0.5	0.0	1.1	0.5	4.2	1.6	1.1	2.6	2.1	5.8	2.6	1.6	5.8	4.8	16.9	7.4	13.2	9.0	5.8	3.7	189
03-Jul	5.4	6.0	7.6	0.9	2.1	3.3	1.5	4.2	1.8	3.0	4.2	2.1	2.7	0.9	5.1	5.7	6.3	3.0	6.3	3.6	7.3	5.1	6.9	4.5	331
04-Jul	6.6	6.9	2.4	1.8	3.0	1.5	6.3	3.9	1.8	3.6	4.2	3.3	2.7	4.2	3.6	2.1	3.3	4.5	4.5	3.6	6.3	8.1	6.9	5.4	335
05-Jul	4.4	3.8	4.6	3.4	1.4	1.8	0.4	2.6	1.0	0.8	2.2	1.8	1.2	1.8	2.4	3.4	3.8	3.6	5.0	4.0	12.0	17.0	11.6	6.0	500
06-Jul	2.9	0.8	1.5	2.0	0.6	0.6	1.3	1.0	1.3	3.4	1.3	1.8	1.8	1.0	2.2	5.4	3.1	3.3	5.9	7.0	5.4	18.3	14.2	13.7	1,290
07-Jul	15.7	8.0	7.7	2.1	3.6	0.8	0.6	1.6	5.2	1.5	2.2	4.7	4.3	4.6	1.6	2.3	1.6	3.5	1.9	4.1	6.1	3.6	8.1	4.5	1,424
08-Jul	9.6	11.0	5.6	3.5	2.2	2.3	5.8	2.2	2.8	1.4	2.3	3.6	2.3	3.7	2.1	1.9	6.0	1.2	4.2	6.8	2.6	9.5	3.5	3.8	781
09-Jul	3.7	12.4	9.8	2.2	2.8	2.5	2.5	3.4	2.8	1.1	2.2	0.6	1.4	2.2	2.8	2.0	2.0	3.9	4.8	4.5	6.7	10.4	7.3	5.9	361
10-Jul	6.2	13.2	3.0	2.7	1.3	1.6	1.6	1.0	0.8	0.8	1.3	2.0	1.4	1.8	2.2	6.0	3.6	3.4	3.7	2.1	11.1	14.8	6.1	8.2	946
11-Jul	11.0	0.0	5.3	2.0	2.7	1.9	1.3	0.3	0.3	0.0	1.9	2.1	1.1	2.3	1.9	3.5	7.1	4.9	6.7	6.8	9.8	8.7	10.5	8.1	1,247
12-Jul	1.1	1.0	1.1	1.1	0.6	0.8	0.9	0.8	0.9	1.0	3.5	5.4	3.6	4.2	6.8	3.6	5.2	5.8	5.2	9.0	12.4	10.2	9.8	6.2	14,953
13-Jul	4.5	2.5	1.8	1.7	0.5	1.2	1.9	1.3	1.8	3.4	5.9	5.4	6.6	5.7	7.0	5.2	7.4	5.7	6.9	5.9	3.8	3.8	4.7	5.4	30,001
14-Jul	6.8	3.7	2.1	2.1	1.0	1.2	1.5	3.0	3.0	2.7	3.9	6.7	6.3	3.9	4.6	4.2	6.3	8.4	6.2	5.3	4.6	4.4	4.4	3.9	23,291
15-Jul	7.2	4.6	3.7	1.8	1.0	0.7	1.1	2.1	2.7	4.7	5.1	2.5	4.6	6.2	4.2	4.7	5.3	4.5	6.4	4.7	6.1	6.5	5.7	3.8	27,375
16-Jul	7.3	6.3	3.9	1.2	1.1	1.3	1.3	2.0	3.4	5.3	6.6	7.1	2.3	4.0	5.3	3.6	1.7	8.5	7.3	4.1	3.5	2.6	4.9	5.4	21,321
17-Jul	4.5	2.3	3.2	1.0	1.2	2.2	2.0	2.4	3.0	4.8	4.0	4.1	4.1	6.3	6.2	5.0	2.5	6.1	10.2	7.5	3.7	3.3	3.8	6.7	30,883
18-Jul	6.6	7.0	4.5	2.0	1.4	1.5	2.6	1.8	2.5	6.0	4.5	4.1	6.3	6.8	7.6	5.4	3.3	6.2	5.3	3.6	3.7	3.4	2.0	2.2	37,732
19-Jul	10.3	7.8	6.9	4.2	3.2	1.8	2.4	2.8	4.0	3.1	3.1	4.5	4.8	5.6	6.3	4.4	3.3	2.4	2.1	2.9	4.5	3.9	2.9	2.8	14,266
20-Jul	1.3	1.4	1.7	1.3	0.6	0.6	1.4	2.1	2.1	2.0	4.0	5.0	7.9	8.2	6.5	5.4	4.1	6.3	7.1	8.6	7.9	8.0	5.2	1.5	39,383
21-Jul	3.5	4.1	3.5	3.6	2.3	3.4	4.4	4.3	4.5	4.4	2.9	4.3	4.0	4.1	5.6	5.3	6.3	5.6	4.3	5.0	3.6	3.5	4.1	3.2	61,571
22-Jul	4.4	5.8	4.7	3.9	3.5	4.9	3.8	2.0	1.3	1.4	2.0	3.5	3.8	3.1	4.2	3.0	3.3	5.9	4.4	5.3	7.2	6.8	6.3	5.5	50,862
23-Jul	6.4	5.2	4.7	4.5	4.0	3.9	3.9	3.8	2.6	2.1	2.2	3.0	2.3	4.7	5.5	3.5	2.7	6.3	5.2	5.5	5.2	4.0	4.8	3.8	46,490
24-Jul	10.8	8.6	7.3	4.8	3.5	2.8	2.4	2.8	4.4	0.6	5.2	4.9	4.1	2.7	2.2	2.3	4.2	6.4	4.4	5.3	2.6	2.5	2.9	2.2	25,458
25-Jul	5.2	3.2	1.3	0.7	0.3	0.6	0.9	1.1	2.7	2.3	2.4	2.7	7.6	5.4	5.0	6.1	9.6	5.7	10.8	9.2	8.1	4.6	2.8	1.7	19,045
26-Jul	2.9	2.9	2.9	2.5	1.0	1.3	1.8	3.0	3.0	2.2	2.0	3.4	3.6	3.2	4.0	5.3	3.1	6.0	7.8	7.2	8.6	6.5	6.2	9.7	27,131
27-Jul	10.2	8.0	5.3	1.5	1.0	1.0	1.2	3.5	2.9	2.1	3.5	4.6	3.2	6.2	6.1	5.2	3.5	3.3	3.3	4.5	5.6	4.6	4.0	5.7	34,298
28-Jul	9.1	7.1	4.6	1.8	0.7	0.4	0.7	2.1	2.0	1.3	1.8	4.7	3.1	8.6	4.4	4.7	6.8	7.4	6.6	8.3	4.6	3.5	2.1	3.5	21,819
29-Jul	6.2	6.1	0.7	2.9	0.8	0.4	0.9	1.5	3.4	2.9	2.8	5.9	7.6	9.0	6.7	7.2	6.1	6.0	6.1	5.1	4.0	3.2	1.3	2.9	20,055
30-Jul	7.4	7.5	2.9	3.0	2.5	1.0	1.7	1.5	3.1	3.9	2.6	3.5	5.2	5.2	7.3	3.9	5.1	3.8	6.5	4.8	5.5	2.0	4.5	5.7	8,362

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Appendix A.5. (page 2 of 2).

	Percent of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
31-Jul	6.0	3.8	2.4	1.9	1.0	0.3	0.7	0.5	1.3	1.5	1.2	2.3	4.6	4.3	5.6	5.5	4.2	5.2	9.0	10.6	8.7	5.6	7.1	6.6	6,748
01-Aug	3.5	1.7	1.8	1.2	1.2	0.7	1.0	0.7	2.3	1.8	2.5	2.9	4.2	4.7	7.2	8.6	7.6	6.7	5.8	8.6	8.3	7.8	5.1	4.0	16,669
02-Aug	7.4	3.5	2.0	1.8	2.3	1.3	2.3	2.9	3.1	3.3	3.4	5.2	5.8	7.7	4.2	7.4	7.2	5.9	5.2	2.2	3.0	3.3	4.9	4.7	9,797
03-Aug	6.6	3.1	1.7	1.5	0.8	1.1	2.9	2.0	4.0	3.3	3.2	4.5	4.1	5.2	7.3	11.4	6.4	3.2	6.4	4.7	2.6	3.6	2.9	7.5	6,669
04-Aug	13.3	3.6	2.8	1.8	1.2	0.9	1.8	1.3	2.3	3.0	1.1	0.4	1.6	1.6	1.8	2.7	3.2	11.4	9.8	6.9	3.4	6.1	8.5	9.3	5,541
05-Aug	7.8	5.2	4.2	3.4	2.4	0.7	0.7	1.8	3.7	2.9	1.9	1.3	2.4	2.9	2.6	5.4	9.5	5.7	4.5	2.3	4.8	9.8	7.1	7.0	5,903
06-Aug	4.1	2.1	2.1	3.2	1.7	1.0	1.4	2.6	4.2	3.6	1.9	2.2	3.7	3.6	5.9	6.5	8.3	7.7	6.4	8.0	9.1	5.0	4.3	1.3	14,080
07-Aug	2.0	1.2	1.0	1.6	1.3	0.9	1.8	2.2	4.0	4.2	5.8	5.5	5.2	5.4	4.4	6.2	9.0	7.6	7.3	6.9	5.1	2.9	1.9	6.4	17,588
08-Aug	1.5	4.6	3.0	2.8	1.6	2.0	2.8	4.3	5.0	6.1	3.7	9.4	6.8	7.3	5.2	3.1	5.4	6.4	5.6	3.0	4.2	2.5	1.9	1.8	10,185
09-Aug	2.0	1.4	1.6	1.1	0.8	0.7	0.9	1.0	1.3	2.1	2.3	3.7	4.3	5.6	8.8	9.5	9.6	8.3	4.5	5.9	7.3	7.9	4.8	4.6	7,234
10-Aug	2.9	1.6	1.1	0.7	0.9	0.5	0.7	1.0	1.4	1.8	2.6	3.1	5.6	5.6	7.0	6.9	9.2	8.1	6.3	7.1	3.3	7.9	7.9	6.8	9,725
11-Aug	3.5	2.4	1.3	1.0	0.9	0.8	1.0	0.8	1.3	1.5	1.8	3.3	3.9	3.2	3.2	4.7	9.6	10.3	7.0	12.1	8.8	5.9	7.4	4.5	8,796
12-Aug	6.1	3.7	1.9	2.0	1.2	1.2	3.3	2.9	1.9	6.0	3.7	5.3	6.5	5.6	5.0	5.1	4.0	5.0	5.3	4.0	4.0	4.5	4.3	7.4	4,745
13-Aug	3.7	1.8	1.2	1.3	1.3	0.8	1.1	0.8	0.9	1.2	2.4	2.5	3.5	5.7	7.1	9.3	7.4	8.8	6.1	7.2	7.5	8.8	3.7	6.0	4,216
14-Aug	7.3	3.4	2.5	1.6	0.7	0.6	0.4	1.0	0.6	2.9	3.1	1.8	2.1	3.3	4.3	6.1	6.2	6.0	6.1	7.9	8.9	8.5	5.6	9.4	4,446
15-Aug	4.1	8.0	6.3	3.8	3.0	2.3	2.4	3.5	3.0	4.3	5.6	4.2	2.5	5.3	5.0	5.6	3.2	3.0	2.8	3.8	3.2	3.0	4.6	7.4	2,343
Average	5.5	4.5	3.3	2.4	1.7	1.8	2.1	2.4	2.8	3.0	3.4	4.2	4.6	5.2	5.4	5.0	5.1	6.1	6.0	6.0	5.5	4.9	4.5	4.5	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.6. Estimated salmon escapement on the north bank of the Kenai River, 1 July through 15 August, 1989. Species composition of daily sonar counts based on fish wheel catches.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
01-Jul	79	79	1	1	0	0	0	0
02-Jul	501	580	6	7	0	0	0	0
03-Jul	737	1,317	8	15	0	0	0	0
04-Jul	164	1,481	2	17	0	0	0	0
05-Jul	994	2,475	11	28	0	0	0	0
06-Jul	4,945	7,420	55	83	0	0	0	0
07-Jul	6,667	14,087	74	157	0	0	0	0
08-Jul	4,234	18,321	0	157	0	0	36	36
09-Jul	3,331	21,652	22	179	0	0	43	79
10-Jul	5,456	27,108	35	214	0	0	71	150
11-Jul	3,369	30,477	21	235	0	0	44	194
12-Jul	20,645	51,122	730	965	0	0	49	243
13-Jul	57,325	108,447	1,049	2,014	0	0	0	243
14-Jul	77,026	185,473	1,746	3,760	0	0	0	243
15-Jul	50,237	235,710	0	3,760	0	0	0	243
16-Jul	28,924	264,634	681	4,441	0	0	0	243
17-Jul	45,595	310,229	0	4,441	0	0	0	243
18-Jul	54,843	365,072	0	4,441	0	0	0	243
19-Jul	17,523	382,595	341	4,782	0	0	0	243
20-Jul	46,276	428,871	67	4,849	0	0	0	243
21-Jul	66,386	495,257	626	5,475	0	0	0	243
22-Jul	56,894	552,151	3,606	9,081	0	0	0	243
23-Jul	72,451	624,602	3,234	12,315	0	0	0	243
24-Jul	39,170	663,772	0	12,315	0	0	0	243
25-Jul	11,546	675,318	99	12,414	0	0	0	243
26-Jul	22,484	697,802	172	12,586	0	0	37	280
27-Jul	37,056	734,858	0	12,586	0	0	0	280
28-Jul	30,205	765,063	1,195	13,781	0	0	0	280
29-Jul	21,161	786,224	407	14,188	0	0	0	280
30-Jul	14,708	800,932	84	14,272	0	0	0	280
31-Jul	10,195	811,127	128	14,400	0	0	64	344
01-Aug	13,549	824,676	0	14,400	0	0	0	344
02-Aug	11,313	835,989	0	14,400	0	0	0	344
03-Aug	10,278	846,267	31	14,431	91	91	0	344
04-Aug	9,397	855,664	28	14,459	84	175	0	344
05-Aug	7,424	863,088	121	14,580	646	821	0	344
06-Aug	9,699	872,787	159	14,739	843	1,664	0	344
07-Aug	12,366	885,153	0	14,739	40	1,704	0	344
08-Aug	8,367	893,520	0	14,739	53	1,757	0	344
09-Aug	1,570	895,090	12	14,751	44	1,801	4	348
10-Aug	4,333	899,423	33	14,784	122	1,923	11	359
11-Aug	8,491	907,914	0	14,784	394	2,317	0	359
12-Aug	3,592	911,506	0	14,784	0	2,317	0	359
13-Aug	1,527	913,033	0	14,784	0	2,317	0	359
14-Aug	1,931	914,964	0	14,784	0	2,317	0	359
15-Aug	1,610	916,574	0	14,784	0	2,317	0	359

Appendix A.7 Estimated salmon escapement on the south bank of the Kenai River, 1 July through 15 August, 1989. Species composition of daily sonar counts based on fish wheel catches.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
01-Jul	53	53	1	1	0	0	0	0
02-Jul	191	244	2	3	0	0	0	0
03-Jul	327	571	4	7	0	0	0	0
04-Jul	331	902	4	11	0	0	0	0
05-Jul	494	1,396	6	17	0	0	0	0
06-Jul	1,276	2,672	14	31	0	0	0	0
07-Jul	1,408	4,080	16	47	0	0	0	0
08-Jul	774	4,854	0	47	0	0	7	7
09-Jul	354	5,208	2	49	0	0	5	12
10-Jul	926	6,134	6	55	0	0	12	24
11-Jul	1,223	7,357	8	63	0	0	16	40
12-Jul	14,409	21,766	510	573	0	0	34	74
13-Jul	29,462	51,228	539	1,112	0	0	0	74
14-Jul	22,775	74,003	516	1,628	0	0	0	74
15-Jul	27,375	101,378	0	1,628	0	0	0	74
16-Jul	20,831	122,209	490	2,118	0	0	0	74
17-Jul	30,883	153,092	0	2,118	0	0	0	74
18-Jul	37,732	190,824	0	2,118	0	0	0	74
19-Jul	13,993	204,817	373	2,391	0	0	0	74
20-Jul	39,326	244,143	57	2,448	0	0	0	74
21-Jul	60,996	305,139	575	3,023	0	0	0	74
22-Jul	47,830	352,969	3,032	6,055	0	0	0	74
23-Jul	44,503	397,472	1,987	8,042	0	0	0	74
24-Jul	25,458	422,930	0	8,042	0	0	0	74
25-Jul	18,884	441,814	161	8,203	0	0	0	74
26-Jul	26,882	468,696	205	8,408	0	0	44	118
27-Jul	34,298	502,994	0	8,408	0	0	0	118
28-Jul	20,989	523,983	830	9,238	0	0	0	118
29-Jul	19,677	543,660	378	9,616	0	0	0	118
30-Jul	8,315	551,975	47	9,663	0	0	0	118
31-Jul	6,623	558,598	83	9,746	0	0	42	160
01-Aug	16,669	575,267	0	9,746	0	0	0	160
02-Aug	9,797	585,064	0	9,746	0	0	0	160
03-Aug	6,591	591,655	19	9,765	59	59	0	160
04-Aug	5,476	597,131	16	9,781	49	108	0	160
05-Aug	5,351	602,482	87	9,868	465	573	0	160
06-Aug	12,762	615,244	208	10,076	1,110	1,683	0	160
07-Aug	17,531	632,775	0	10,076	57	1,740	0	160
08-Aug	10,121	642,896	0	10,076	64	1,804	0	160
09-Aug	6,967	649,863	53	10,129	196	2,000	18	178
10-Aug	9,366	659,229	72	10,201	263	2,263	24	202
11-Aug	8,406	667,635	0	10,201	390	2,653	0	202
12-Aug	4,745	672,380	0	10,201	0	2,653	0	202
13-Aug	4,216	676,596	0	10,201	0	2,653	0	202
14-Aug	4,446	681,042	0	10,201	0	2,653	0	202
15-Aug	2,343	683,385	0	10,201	0	2,653	0	202

Appendix A.8. Daily adjusted fish wheel catch by species for the Kenai River, 6 July through 15 August 1989.[ab]

		Sockeye		Pink		Coho		Chinook	
Date	Hours Open	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
06-Jul	24.00	0	0	0	0	0	0	0	0
07-Jul	24.00	179	179	2	2	0	0	0	0
08-Jul	6.00	472	651	0	2	0	0	4	4
09-Jul	19.50	43	694	0	2	0	0	0	4
10-Jul	11.75	67	761	0	2	0	0	2	6
11-Jul	13.00	199	961	2	4	0	0	2	8
12-Jul	20.75	424	1385	15	19	0	0	1	9
13-Jul	2.00	3936	5321	72	91	0	0	0	9
14-Jul	1.75	2427	7749	55	146	0	0	0	9
15-Jul	0.35	6377	14126	0	146	0	0	0	9
16-Jul	1.50	1360	15486	32	178	0	0	0	9
17-Jul	0.75	4320	19806	0	178	0	0	0	9
18-Jul	0.50	6144	25950	0	178	0	0	0	9
19-Jul	1.00	3696	29646	72	250	0	0	0	9
20-Jul	13.50	1390	31036	2	252	0	0	0	9
21-Jul	0.25	10176	41212	96	348	0	0	0	9
22-Jul	0.30	11360	52572	720	1068	0	0	0	9
23-Jul	0.50	5376	57948	240	1308	0	0	0	9
24-Jul	2.25	1600	59548	0	1308	0	0	0	9
25-Jul	7.25	351	59899	3	1311	0	0	0	9
26-Jul	6.90	1833	61732	14	1325	0	0	3	13
27-Jul	2.70	1333	63065	0	1325	0	0	0	13
28-Jul	4.00	1062	64127	42	1367	0	0	0	13
29-Jul	4.00	624	64751	12	1379	0	0	0	13
30-Jul	9.50	528	65279	3	1381	0	0	0	13
31-Jul	13.00	319	65599	4	1385	0	0	2	14
01-Aug	7.25	460	66059	0	1385	0	0	0	14
02-Aug	11.30	314	66373	0	1385	0	0	0	14
03-Aug	6.75	114	66487	0	1385	0	0	0	14
04-Aug	16.45	223	66710	1	1386	3	3	0	14
05-Aug	11.90	109	66819	0	1386	0	3	0	14
06-Aug	7.60	259	67078	6	1393	32	34	0	14
07-Aug	6.35	1232	68310	0	1393	4	38	0	14
08-Aug	5.00	787	69097	0	1393	5	43	0	14
09-Aug	16.10	61	69159	1	1394	1	45	1	16
10-Aug	14.75	330	69489	2	1396	10	54	0	16
11-Aug	12.00	302	69791	0	1396	14	68	0	16
12-Aug	12.00	64	69855	0	1396	0	68	0	16
13-Aug	13.50	71	69926	0	1396	0	68	0	16
14-Aug	14.50	36	69962	0	1396	0	68	0	16
15-Aug	10.50	174	70136	0	1396	0	68	0	16

[a] Fish wheel catch adjusted for 24 h: (daily catch * 24 h)/hours open.
[b] Actual total catch by species: 6341 sockeye salmon; 69 pink salmon; 28 coho salmon; 16 chinook salmon.

Appendix A.9. Length composition of the major age classes of sockeye salmon collected in the Kenai River, 1980-1989. Length measured from mid-eye to fork of tail.

		Male			Female			Total			
Year	Age Class	Ave Length (mm)	Stndrd Error	Sample Size	Ave Length (mm)	Stndrd Error	Sample Size	Ave Length (mm)	Stndrd Error	Sample Size	Ratio Male/ Female
1980	1.2	482	4	168	494	4	100	486		268	1.7:1
1981		493	6	85	513	6	73	502		158	1.2:1
1982		483	9	70	505	13	32	490	10	63	2.2:1
1983		524	9	25	520	6	30	522	5	55	0.8:1
1984		474	3	280	473	4	196	474	2	476	1.4:1
1985		492	3	184	490	3	186	491	2	370	1.0:1
1986		488	4	155	492	6	96	489	4	251	1.6:1
1987		514	8	39	503	5	56	507	5	95	0.7:1
1988		522	8	79	511	4	84	516	4	163	0.9:1
1989		493	6	114	494	4	92	493	4	206	1.2:1
1980	1.3	580	3	180	561	2	192	570		372	0.9:1
1981		590	2	290	569	1	430	577		720	0.7:1
1982		596	2	723	572	1	841	583	2	1,564	0.9:1
1983		598	2	215	577	1	269	586	1	484	0.8:1
1984		582	2	385	559	1	395	571	1	780	1.0:1
1985		575	2	496	552	1	824	560	1	1,320	0.6:1
1986		584	3	112	564	2	200	571	2	312	0.6:1
1987		605	2	183	586	1	401	592	1	584	0.5:1
1988		598	1	428	572	2	624	583	1	1,052	0.7:1
1989		600	1	831	575	1	881	587	1	1,712	0.9:1
1984	2.2	505	4	116	508	3	159	507	2	275	0.7:1
1985		513	4	132	513	3	196	513	2	328	0.7:1
1980	2.3	589	3	67	579	3	80	584		147	0.8:1
1982		598	5	46	580	8	21	592	6	67	2.2:1
1983		595	4		582	4		587	3	61	0.7:1
1984		570	2	210	557	2	192	564	2	402	1.1:1
1985		270	3	106	555	2	129	562	2	235	0.8:1
1986		585	5	52	568	3	89	575	3	142	0.6:1
1988		596	3	53	577	3	92	584	2	145	0.6:1
1989		600	3	112	579	2	108	589	2	220	1.0:1

Appendix A.10. Estimated salmon escapement into the Kasilof River, north and south banks combined, 15 June through 15 August, 1989. Species composition of daily sonar counts based on fish wheel catches.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	116	116	0	0	0	0	1	1
16-Jun	193	309	0	0	0	0	3	4
17-Jun	347	656	0	0	0	0	4	8
18-Jun	261	917	0	0	0	0	3	11
19-Jun	230	1,147	0	0	0	0	2	13
20-Jun	515	1,662	0	0	0	0	6	19
21-Jun	628	2,290	0	0	0	0	7	26
22-Jun	313	2,603	0	0	0	0	4	30
23-Jun	344	2,947	0	0	0	0	4	34
24-Jun	381	3,328	0	0	0	0	4	38
25-Jun	484	3,812	0	0	0	0	5	43
26-Jun	1,071	4,883	0	0	0	0	13	56
27-Jun	996	5,879	0	0	0	0	11	67
28-Jun	1,392	7,271	0	0	0	0	16	83
29-Jun	1,741	9,012	0	0	0	0	21	104
30-Jun	2,675	11,687	0	0	0	0	32	136
01-Jul	3,817	15,504	0	0	0	0	44	180
02-Jul	8,769	24,273	155	155	0	0	0	180
03-Jul	3,935	28,208	69	224	0	0	0	180
04-Jul	822	29,030	10	234	0	0	0	180
05-Jul	6,529	35,559	75	309	0	0	0	180
06-Jul	8,231	43,790	47	356	0	0	24	204
07-Jul	7,051	50,841	25	381	0	0	0	204
08-Jul	3,851	54,692	78	459	0	0	0	204
09-Jul	5,067	59,759	66	525	0	0	0	204
10-Jul	4,131	63,890	127	652	0	0	0	204
11-Jul	4,303	68,193	203	855	0	0	0	204
12-Jul	9,030	77,223	283	1,138	0	0	31	235
13-Jul	1,879	79,102	299	1,437	0	0	12	247
14-Jul	2,240	81,342	356	1,793	0	0	15	262
15-Jul	2,786	84,128	444	2,237	0	0	18	280
16-Jul	5,437	89,565	95	2,332	0	0	95	375
17-Jul	7,693	97,258	135	2,467	0	0	134	509
18-Jul	2,298	99,556	622	3,089	0	0	188	697
19-Jul	2,976	102,532	805	3,894	0	0	244	941
20-Jul	9,982	112,514	2,553	6,447	0	0	697	1,638
21-Jul	5,730	118,244	1,466	7,913	0	0	399	2,037
22-Jul	3,316	121,560	848	8,761	0	0	231	2,268
23-Jul	6,011	127,571	653	9,414	35	35	549	2,817
24-Jul	1,539	129,110	167	9,581	9	44	141	2,958
25-Jul	1,280	130,390	139	9,720	7	51	117	3,075
26-Jul	2,547	132,937	276	9,996	15	66	233	3,308
27-Jul	1,595	134,532	173	10,169	9	75	146	3,454
28-Jul	1,521	136,053	166	10,335	9	84	139	3,593
29-Jul	1,388	137,441	58	10,393	18	102	242	3,835
30-Jul	1,265	138,706	54	10,447	16	118	221	4,056
31-Jul	1,264	139,970	54	10,501	17	135	220	4,276
01-Aug	1,204	141,174	51	10,552	16	151	210	4,486
02-Aug	875	142,049	37	10,589	11	162	153	4,639
03-Aug	1,080	143,129	46	10,635	13	175	189	4,828
04-Aug	1,800	144,929	76	10,711	23	198	314	5,142
05-Aug	1,703	146,632	73	10,784	22	220	297	5,439
06-Aug	2,539	149,171	108	10,892	33	253	443	5,882
07-Aug	2,416	151,587	102	10,994	32	285	421	6,303
08-Aug	793	152,380	34	11,028	10	295	139	6,442
09-Aug	958	153,338	40	11,068	12	307	167	6,609
10-Aug	1,124	154,462	49	11,117	14	321	196	6,805

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Appendix A.10. (p. 2 of 2)

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
11-Aug	886	155,348	37	11,154	12	333	154	6,959
12-Aug	631	155,979	27	11,181	8	341	110	7,069
13-Aug	702	156,681	31	11,212	8	349	123	7,192
14-Aug	871	157,552	37	11,249	11	360	152	7,344
15-Aug	654	158,206	27	11,276	9	369	114	7,458

Appendix A.11. Kasilof River north bank sonar counts by sector, 15 June through 15 August, 1989. Counts expressed as percent of daily total.

	Percent of Counts by Sector[a]												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
15-Jun	16.8	22.8	13.9	1.0	0.0	1.0	4.0	5.0	1.0	8.9	17.8	7.9	101
16-Jun	12.0	28.0	7.3	3.3	0.0	0.7	1.3	3.3	5.3	11.3	14.0	13.3	150
17-Jun	7.1	28.6	8.7	2.4	0.0	0.8	0.8	1.6	9.5	16.7	13.5	10.3	126
18-Jun	20.7	26.0	4.7	1.8	0.6	0.0	0.6	3.0	8.3	7.1	14.8	12.4	169
19-Jun	12.0	27.4	9.4	0.9	0.0	0.0	2.6	1.7	6.0	22.2	9.4	8.5	117
20-Jun	15.7	26.3	9.1	1.0	0.0	0.0	0.5	1.5	6.1	11.6	13.1	15.2	198
21-Jun	33.2	27.2	9.8	2.3	0.3	0.3	0.9	2.9	2.6	9.8	5.5	5.2	346
22-Jun	6.9	20.2	9.7	2.4	1.2	1.2	3.2	11.7	7.3	10.5	11.3	14.2	247
23-Jun	7.8	5.3	1.9	0.5	1.5	1.0	7.8	15.0	16.5	17.0	11.7	14.1	206
24-Jun	2.3	0.0	1.2	0.6	0.0	0.0	12.1	16.2	11.6	20.8	16.2	19.1	173
25-Jun	1.6	2.3	11.7	1.6	0.0	0.0	5.5	18.0	14.1	18.8	11.7	14.8	128
26-Jun	0.6	14.5	15.1	2.5	0.3	0.0	12.7	16.4	9.6	13.0	6.2	9.3	324
27-Jun	8.3	9.3	10.7	1.4	0.3	0.7	6.2	11.4	13.1	10.0	11.4	17.0	289
28-Jun	3.3	18.0	16.7	2.9	0.4	0.4	5.8	14.0	7.1	11.1	9.4	10.7	449
29-Jun	9.5	16.9	15.0	2.1	0.2	0.2	6.2	8.8	8.8	9.3	10.0	13.1	421
30-Jun	10.0	19.0	14.8	3.3	0.7	0.0	4.8	12.8	8.7	8.0	8.0	9.8	600
01-Jul	14.4	39.4	18.0	1.0	0.1	0.1	2.2	5.9	3.6	5.1	3.8	6.3	1,435
02-Jul	22.8	50.5	15.1	1.4	0.1	0.0	0.9	2.3	1.4	2.4	1.1	2.0	3,589
03-Jul	20.8	28.5	16.1	2.4	0.1	0.3	2.1	7.8	5.7	4.7	5.9	5.7	759
04-Jul	21.5	24.3	12.5	1.9	0.3	0.9	3.1	6.2	9.7	7.8	6.2	5.6	321
05-Jul	28.4	33.6	16.9	2.2	0.0	0.0	2.2	3.8	4.0	3.6	2.6	2.7	1,347
06-Jul	31.2	33.6	14.0	2.6	0.2	0.0	1.9	3.2	3.7	3.8	2.1	3.7	2,108
07-Jul	39.4	31.3	9.5	1.8	0.2	0.2	1.6	3.5	4.4	4.0	2.1	2.0	1,869
08-Jul	50.6	24.8	6.3	1.2	0.1	0.2	1.5	3.4	3.7	4.5	1.7	2.2	1,143
09-Jul	59.1	19.0	6.0	1.6	0.0	0.0	0.9	4.0	3.3	2.9	1.2	2.1	1,409
10-Jul	56.3	23.7	7.2	0.8	0.1	0.0	0.4	1.9	3.3	2.7	2.5	1.1	1,335
11-Jul	49.7	32.6	7.0	0.7	0.1	0.0	0.5	1.0	2.5	2.8	2.0	1.3	1,754
12-Jul	53.2	28.8	4.6	0.6	0.0	0.0	0.3	2.2	4.2	2.4	1.9	1.9	1,807
13-Jul	53.9	19.6	6.8	0.5	0.3	0.0	0.3	2.3	7.9	4.0	0.9	3.5	649
14-Jul	59.7	21.6	4.3	0.6	0.6	0.6	0.2	0.9	4.4	3.2	1.5	2.4	843
15-Jul	70.5	16.1	5.6	0.3	0.1	0.0	0.1	0.7	1.8	2.7	1.1	1.0	1,222
16-Jul	82.1	10.7	2.8	0.1	0.1	0.0	0.4	0.2	0.7	1.6	0.5	0.9	1,596
17-Jul	73.7	12.1	7.0	0.9	0.7	0.7	0.3	0.3	0.5	1.7	1.0	1.3	1,960
18-Jul	38.8	24.5	23.2	1.6	0.1	0.0	0.2	0.7	2.1	2.9	3.8	2.0	1,226
19-Jul	37.8	30.6	22.0	1.7	0.7	0.7	0.4	0.7	1.0	0.6	1.9	1.9	1,942
20-Jul	70.5	22.5	6.1	0.1	0.0	0.0	0.0	0.1	0.2	0.1	0.2	0.2	9,269
21-Jul	77.3	17.5	2.1	0.1	0.0	0.0	0.1	0.3	0.3	0.8	0.7	0.8	4,851
22-Jul	64.1	26.4	2.5	0.8	0.7	0.7	0.3	0.1	0.9	1.6	1.2	0.9	2,679
23-Jul	78.1	18.7	1.0	0.1	0.0	0.1	0.1	0.2	0.4	0.4	0.3	0.5	4,688
24-Jul	61.4	27.9	4.3	0.6	0.2	0.2	0.2	0.4	1.6	2.3	1.0	0.0	1,029
25-Jul	61.0	27.6	6.0	1.1	0.0	0.0	0.2	0.2	1.0	0.4	0.6	1.9	833
26-Jul	60.5	26.2	2.0	0.2	0.0	0.1	0.5	0.1	1.2	2.3	4.3	2.5	1,384
27-Jul	56.0	34.3	3.3	0.7	0.1	0.2	0.6	0.1	0.6	1.2	1.7	1.2	1,220
28-Jul	58.3	29.1	4.3	0.3	0.2	0.2	0.3	0.5	1.3	1.9	1.8	1.8	1,029
29-Jul	52.1	32.5	3.9	0.5	0.2	0.3	0.8	0.2	1.0	2.9	3.2	2.4	618
30-Jul	65.3	27.2	2.9	0.4	0.0	0.4	0.2	0.0	1.8	0.4	0.4	1.1	551
31-Jul	62.9	31.2	2.1	0.4	0.0	0.1	0.6	0.0	0.7	1.0	0.7	0.4	722
01-Aug	48.5	42.7	1.5	0.3	0.5	0.3	0.2	0.2	0.2	1.5	1.7	2.4	588
02-Aug	60.7	28.6	2.1	0.7	0.2	0.2	0.7	0.5	0.2	1.9	1.0	3.1	420
03-Aug	48.8	37.3	3.2	0.8	0.8	0.3	0.7	0.2	1.5	2.2	3.0	1.3	603

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Appendix A.11 (page 2 of 2).

Date	Percent of Counts by Sector[a]												Daily Total
	1	2	3	4	5	6	7	8	9	10	11	12	
04-Aug	50.8	36.8	2.9	1.2	0.3	0.4	0.1	0.1	0.2	1.0	4.1	2.0	927
05-Aug	44.5	47.3	1.4	0.4	0.1	0.2	0.2	0.2	0.9	1.7	1.4	1.4	898
06-Aug	49.5	42.1	3.4	0.4	0.1	0.3	0.1	0.3	0.1	0.7	1.2	1.9	1,529
07-Aug	67.1	25.5	2.0	0.6	0.4	0.3	0.3	0.2	0.5	0.8	1.9	0.5	1,580
08-Aug	62.3	12.9	3.3	0.9	1.2	0.2	0.9	0.2	0.7	4.9	9.1	3.3	427
09-Aug	70.1	15.4	3.8	0.9	0.0	0.2	0.4	0.6	0.4	3.2	3.8	1.1	468
10-Aug	67.2	18.8	4.2	1.5	0.5	0.0	0.3	0.0	0.3	1.7	3.2	2.2	592
11-Aug	71.1	17.4	1.9	1.3	0.4	0.2	0.4	0.0	1.3	2.1	3.2	0.8	530
12-Aug	56.7	15.9	4.0	1.7	1.0	0.7	0.7	0.2	1.7	7.7	7.0	2.5	402
13-Aug	63.3	16.9	3.6	2.7	0.9	0.7	0.7	1.3	1.1	2.4	3.6	2.9	449
14-Aug	66.4	15.5	3.9	2.0	0.2	0.2	1.1	0.0	0.2	2.8	3.7	4.1	563
15-Aug	60.2	22.4	5.1	1.5	0.3	0.5	1.0	0.8	0.0	1.0	4.1	3.1	392
Average	54.7	26.1	6.9	0.9	0.2	0.2	0.8	1.6	1.9	2.4	2.1	2.2	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.12. Kasilof River south bank sonar counts by sector, 15 June through 15 August, 1989. Count expressed as percent of daily total.[a]

	Percent of Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
15-Jun	11.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.3	55.6	9
16-Jun	31.1	8.9	2.2	0.0	0.0	0.0	2.2	0.0	6.7	37.8	6.7	4.4	45
17-Jun	15.6	12.0	8.4	3.6	3.6	3.6	4.9	3.6	10.2	14.7	4.0	16.0	225
18-Jun	23.2	28.4	16.8	3.2	0.0	1.1	5.3	2.1	4.2	0.0	7.4	8.4	95
19-Jun	20.0	6.1	0.9	0.9	0.0	0.0	0.9	2.6	10.4	24.3	20.0	13.9	115
20-Jun	13.9	5.9	28.2	0.9	0.3	0.3	0.3	0.9	4.3	14.9	18.3	11.8	323
21-Jun	17.6	20.1	14.5	0.7	0.0	0.0	0.0	0.0	5.2	14.5	22.1	5.2	289
22-Jun	24.3	15.7	7.1	1.4	1.4	0.0	0.0	1.4	4.3	24.3	12.9	7.1	70
23-Jun	2.8	2.1	0.7	0.0	0.0	0.0	0.7	2.8	4.2	21.8	30.3	34.5	142
24-Jun	2.8	0.9	5.2	1.4	0.5	0.0	1.9	2.8	15.1	22.6	13.2	33.5	212
25-Jun	0.8	1.1	1.7	0.6	0.6	0.6	4.4	8.0	12.7	16.9	13.6	39.1	361
26-Jun	1.3	5.0	10.0	4.7	0.8	0.3	5.9	12.4	21.7	16.6	7.8	13.6	760
27-Jun	8.9	7.2	12.7	2.9	0.4	0.6	4.9	8.8	14.9	13.0	11.1	14.6	718
28-Jun	10.7	6.6	11.1	4.8	0.5	0.1	4.1	7.9	14.2	12.0	11.4	16.7	959
29-Jun	13.9	7.4	13.7	7.8	2.0	0.4	5.9	7.9	12.8	8.3	9.1	10.8	1,341
30-Jun	18.8	6.9	10.1	5.9	2.0	0.8	4.2	7.6	13.4	5.8	10.6	13.9	2,107
01-Jul	6.5	7.0	15.3	9.6	2.7	1.2	8.7	9.3	12.4	8.4	7.2	11.7	2,426
02-Jul	18.4	13.9	15.2	9.0	3.1	1.1	6.3	6.3	6.7	5.6	6.0	8.4	5,335
03-Jul	35.0	13.9	12.3	6.1	2.5	1.6	4.2	4.7	4.9	4.0	5.2	5.6	3,245
04-Jul	12.1	38.0	13.1	2.0	1.0	0.2	2.0	2.9	5.9	10.6	7.0	5.3	511
05-Jul	25.2	53.6	9.8	1.6	0.5	0.1	0.6	0.8	1.9	2.7	1.6	1.6	5,257
06-Jul	33.0	48.0	8.6	2.0	0.9	0.7	0.4	0.7	1.2	1.4	1.6	1.5	6,194
07-Jul	29.3	51.9	9.3	1.7	0.8	0.7	0.2	0.6	1.2	1.7	1.0	1.5	5,207
08-Jul	31.1	44.3	11.8	1.9	0.4	0.1	0.4	0.8	2.4	2.8	2.4	1.7	2,786
09-Jul	33.4	43.8	13.9	1.6	0.2	0.1	0.5	0.8	1.2	1.9	1.4	1.3	3,724
10-Jul	33.8	42.5	15.3	2.7	0.5	0.1	0.2	0.7	1.0	1.2	1.3	0.6	2,923
11-Jul	35.5	39.1	13.7	2.4	0.3	0.1	0.5	0.6	1.9	2.3	2.0	1.4	2,752
12-Jul	33.6	31.0	23.6	4.0	0.5	0.2	0.6	1.0	1.5	1.4	1.1	1.4	7,537
13-Jul	17.5	22.9	30.1	6.6	0.8	0.6	2.3	2.8	3.4	3.7	3.4	6.0	1,541
14-Jul	20.4	27.7	26.2	6.4	0.9	0.3	0.8	1.8	2.7	4.6	3.3	4.9	1,768
15-Jul	10.9	48.4	20.4	3.6	0.6	0.1	1.3	1.5	2.3	3.2	3.2	4.5	2,026
16-Jul	11.7	66.1	13.1	1.5	0.3	0.1	1.2	1.1	1.0	1.3	1.2	1.4	4,031
17-Jul	21.7	57.5	13.0	1.7	0.9	0.8	0.6	0.5	0.6	1.1	0.9	0.8	6,002
18-Jul	14.6	59.2	10.3	1.6	0.3	0.2	1.0	1.7	2.1	4.1	3.3	1.6	1,882
19-Jul	20.9	47.9	18.5	2.1	1.0	0.7	1.0	1.1	1.2	2.0	1.4	4.4	2,083
20-Jul	29.6	42.5	15.3	2.9	1.0	0.7	1.2	0.7	1.6	1.8	1.1	1.5	3,963
21-Jul	30.8	52.8	5.2	0.4	0.1	0.1	0.5	1.5	1.1	1.7	2.9	2.8	2,744
22-Jul	14.7	47.7	17.1	1.8	0.2	0.1	1.4	2.2	2.7	4.4	3.7	4.1	1,716
23-Jul	8.6	44.0	22.5	5.2	1.2	1.2	1.1	2.3	2.7	3.8	3.4	4.0	2,560
24-Jul	12.9	23.9	20.9	10.0	3.0	1.6	1.1	3.4	2.3	9.8	5.8	5.2	827
25-Jul	13.1	34.2	19.4	5.1	2.5	1.3	1.3	2.5	3.5	6.2	6.2	4.6	710
26-Jul	18.6	58.5	12.9	1.5	0.8	0.7	0.3	0.7	0.6	2.1	1.5	1.9	1,687
27-Jul	12.2	47.1	18.8	4.0	1.1	2.4	0.7	2.6	2.1	2.4	3.4	3.1	703
28-Jul	23.7	41.9	16.4	2.0	1.2	0.7	0.5	1.5	2.5	4.3	3.0	2.2	806
29-Jul	16.5	42.4	18.9	5.3	2.1	1.8	2.0	2.1	1.7	2.3	1.9	2.8	1,088
30-Jul	24.9	34.5	14.0	3.6	2.3	1.5	2.2	1.6	1.2	2.1	6.8	5.4	1,005
31-Jul	39.9	35.8	9.8	1.2	0.7	0.8	1.4	1.2	0.7	2.3	3.6	2.5	833
01-Aug	35.4	32.7	9.7	2.1	1.1	1.9	2.5	3.1	2.4	2.0	3.2	3.8	893
02-Aug	34.0	36.0	9.8	1.4	1.4	2.1	2.1	2.6	2.3	1.8	1.5	5.0	656
03-Aug	18.5	42.6	15.6	2.6	1.8	2.8	1.2	1.8	2.5	0.7	2.9	7.0	725

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Appendix A.12 (page 2 of 2).

Date	Percent of Counts by Sector												Daily Total
	1	2	3	4	5	6	7	8	9	10	11	12	
04-Aug	35.5	40.0	8.5	1.2	1.1	0.5	1.5	1.0	0.8	1.3	1.9	6.8	1,286
05-Aug	42.9	32.5	4.9	2.0	0.5	1.4	1.2	1.6	1.5	2.4	1.7	7.4	1,197
06-Aug	42.5	41.2	6.0	1.4	0.7	0.6	0.6	0.5	1.6	1.9	1.0	1.9	1,594
07-Aug	31.5	42.7	9.8	2.2	1.3	1.4	0.6	0.8	1.2	2.5	3.3	2.7	1,391
08-Aug	21.1	40.3	12.4	0.7	0.7	1.3	0.4	2.4	5.1	5.1	4.7	5.8	549
09-Aug	23.0	49.1	9.2	2.7	0.1	0.4	1.1	2.0	4.9	3.7	1.8	2.0	709
10-Aug	26.9	44.6	9.7	2.7	0.8	0.5	0.3	1.0	5.2	3.0	1.5	3.8	791
11-Aug	22.0	35.4	26.8	6.6	2.0	1.8	0.4	0.7	0.4	1.3	0.5	2.1	559
12-Aug	25.7	27.0	17.1	6.1	2.7	3.5	1.3	2.1	2.1	2.4	3.7	6.1	374
13-Aug	19.3	28.4	9.9	5.5	4.8	1.4	2.7	3.1	3.9	4.8	8.4	7.7	415
14-Aug	17.3	40.4	11.2	3.0	2.8	1.2	0.4	3.7	3.5	4.5	4.7	7.3	508
15-Aug	22.1	23.3	8.7	4.1	2.7	1.5	2.7	2.7	3.9	5.1	8.7	14.6	412
Average	24.5	38.9	14.0	3.4	1.1	0.7	1.6	2.2	3.1	3.4	3.2	4.0	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.13. Kasilof River north bank sonar counts by hour, 15 June through 15 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
15-Jun	1.0	9.9	4.0	23.8	12.9	4.0	7.9	1.0	2.0	3.0	2.0	0.0	1.0	3.0	2.0	1.0	1.0	0.0	4.0	2.0	6.9	1.0	4.0	3.0	101
16-Jun	2.7	7.3	24.7	10.0	7.3	8.0	2.7	2.0	0.7	0.7	0.0	2.7	0.0	0.7	4.7	2.7	0.7	1.3	1.3	2.7	4.7	2.7	8.0	2.0	150
17-Jun	6.3	7.1	16.7	4.8	13.5	7.1	4.0	0.8	0.0	0.0	3.2	7.1	4.0	3.2	1.6	0.0	0.0	0.8	0.8	2.4	0.8	5.6	4.0	6.3	126
18-Jun	5.9	14.8	26.0	5.9	4.1	4.7	4.7	1.8	1.8	0.0	1.8	1.8	2.4	3.0	0.6	1.8	1.2	0.6	0.0	3.0	3.6	4.1	4.1	2.4	169
19-Jun	0.9	26.5	17.9	6.8	0.9	5.1	3.4	3.4	3.4	0.0	0.9	0.0	0.0	2.6	2.6	0.0	1.7	0.9	5.1	4.3	3.4	6.0	0.9	3.4	117
20-Jun	4.5	16.7	18.7	6.6	5.1	4.5	7.1	5.6	2.0	0.0	0.0	0.5	0.5	1.5	0.5	2.0	4.0	0.5	2.5	4.5	3.0	2.0	3.5	4.0	198
21-Jun	10.1	23.1	24.3	9.0	3.5	1.2	0.6	2.3	1.7	1.2	0.9	3.8	1.2	0.9	1.4	0.9	1.7	2.3	0.6	1.2	3.2	0.6	1.2	3.5	346
22-Jun	10.1	11.7	10.1	5.3	3.2	1.6	3.6	4.5	2.8	2.4	2.4	0.8	2.4	4.9	4.9	4.9	2.0	1.2	2.8	2.4	0.4	3.2	6.1	6.1	247
23-Jun	5.3	8.3	7.8	6.3	4.4	3.9	4.9	1.9	1.5	4.4	3.4	2.4	6.3	2.9	1.0	3.4	4.4	1.9	7.3	2.9	2.4	3.9	7.3	1.9	206
24-Jun	3.5	6.9	12.1	1.7	5.8	9.2	1.7	1.2	2.3	1.7	1.7	3.5	5.2	4.6	4.6	1.2	2.3	4.0	4.6	3.5	2.9	6.4	4.6	4.6	173
25-Jun	15.6	7.0	8.6	3.1	7.8	1.6	0.8	5.5	0.8	0.0	0.8	1.6	9.4	1.6	2.3	2.3	0.8	1.6	3.1	2.3	5.5	5.5	5.5	7.0	128
26-Jun	5.2	9.9	13.3	6.8	2.8	2.8	0.9	2.2	3.7	2.2	1.5	2.2	2.5	2.2	2.5	4.3	1.5	3.1	5.2	3.1	2.8	4.0	3.1	12.3	324
27-Jun	10.0	12.8	5.5	3.8	3.5	2.8	3.1	5.2	0.7	3.5	0.7	3.8	4.8	4.5	3.8	2.1	3.8	3.5	2.8	5.2	2.8	3.1	2.1	6.2	289
28-Jun	7.1	14.7	14.3	6.2	6.7	4.2	3.6	2.7	1.8	1.1	1.8	2.2	2.2	2.0	3.1	3.3	2.7	1.3	1.6	2.7	2.2	3.6	5.3	3.6	449
29-Jun	4.0	14.5	14.0	7.8	5.7	3.6	1.2	5.9	4.3	1.9	3.1	2.4	1.4	4.8	0.2	1.9	3.3	1.2	1.9	2.1	2.9	4.5	3.1	4.3	421
30-Jun	3.5	7.2	14.5	11.0	5.7	1.5	1.7	2.3	1.7	0.8	1.0	2.0	0.5	5.5	2.3	2.3	5.3	11.0	1.7	3.0	4.0	4.7	3.3	3.5	600
01-Jul	1.6	4.3	6.3	6.3	3.5	1.0	1.5	0.6	1.7	2.8	2.6	2.1	0.6	1.8	2.4	1.8	2.1	5.6	4.8	1.2	5.0	12.3	8.9	19.3	1,435
02-Jul	11.9	9.9	14.3	14.2	7.9	5.8	5.3	4.7	4.5	3.8	3.8	0.8	0.3	0.4	0.3	0.5	0.4	0.4	3.8	2.5	0.6	0.7	1.8	1.1	3,589
03-Jul	12.5	14.9	9.4	5.7	6.2	9.5	4.0	1.8	1.7	2.6	1.6	1.6	2.0	1.1	1.6	0.9	1.8	1.8	4.6	6.6	2.4	1.7	2.8	1.3	759
04-Jul	10.0	3.4	4.0	2.5	0.9	2.2	4.7	1.9	0.9	1.2	1.9	1.2	3.4	3.4	1.9	2.8	0.9	1.2	5.3	6.2	8.7	10.3	7.5	13.4	321
05-Jul	3.9	1.8	4.2	4.6	4.5	2.3	1.6	3.0	2.3	3.3	4.5	5.6	1.5	2.4	3.5	3.9	3.5	9.4	8.9	5.6	3.9	3.7	5.5	6.5	1,347
06-Jul	5.6	7.0	7.0	7.6	7.2	3.6	2.5	2.7	1.5	1.5	0.2	1.4	2.6	6.5	4.9	4.5	5.1	3.9	5.8	5.8	3.4	4.3	2.8	2.6	2,108
07-Jul	3.6	7.2	4.9	4.7	3.7	2.8	0.9	1.2	1.0	2.4	3.9	1.5	2.5	6.5	3.4	7.4	10.3	6.5	5.7	5.8	4.2	2.8	3.6	3.6	1,869
08-Jul	3.9	5.5	2.6	5.1	2.6	1.4	0.8	1.0	0.7	1.4	1.4	2.4	1.4	3.1	4.4	6.3	6.2	10.1	5.2	7.9	6.1	7.0	8.3	5.0	1,143
09-Jul	4.0	6.5	7.2	4.6	3.3	1.4	1.7	1.6	1.1	1.1	2.6	4.4	3.8	3.5	7.0	5.9	5.5	6.2	5.3	3.3	5.7	7.1	4.7	2.6	1,409
10-Jul	4.6	4.3	4.0	5.8	2.5	1.3	1.3	0.6	0.4	1.6	2.8	3.4	4.8	7.0	9.0	7.1	2.7	3.1	4.7	6.6	5.4	8.2	4.8	3.7	1,335
11-Jul	4.4	3.8	3.4	2.8	2.4	1.4	0.8	2.7	2.6	5.5	4.4	3.1	3.4	5.8	7.0	2.6	3.0	6.7	5.5	3.6	6.8	6.7	6.3	5.5	1,754
12-Jul	3.7	2.4	12.0	8.6	6.1	6.7	6.8	7.9	4.2	4.4	2.0	2.8	4.0	6.6	3.9	3.8	2.7	3.0	1.5	2.5	1.7	1.0	0.7	1.1	1,807
13-Jul	4.9	6.3	4.2	6.8	2.3	2.5	0.9	2.0	1.1	1.8	0.9	1.1	3.1	2.6	1.8	4.2	5.5	4.3	4.8	9.9	10.0	5.9	6.3	6.8	649
14-Jul	8.2	10.4	7.4	6.4	5.3	3.3	1.1	3.1	2.1	1.5	1.8	1.1	3.0	3.2	1.9	0.5	2.8	4.3	2.7	4.0	6.4	3.2	7.9	8.3	843
15-Jul	4.3	4.5	4.1	4.3	5.6	3.7	2.5	2.5	2.4	2.2	0.8	2.7	4.1	3.3	2.4	0.9	6.4	6.7	4.4	1.6	7.3	8.3	7.8	7.4	1,222
16-Jul	8.5	11.4	7.5	6.3	6.3	6.1	2.8	2.3	2.0	2.6	0.7	1.6	2.5	2.5	4.2	4.3	1.8	3.9	3.6	3.6	3.1	4.3	5.1	3.1	1,596
17-Jul	2.6	4.3	2.1	5.5	7.1	11.3	6.7	2.9	6.6	3.5	3.0	2.8	2.3	1.6	1.5	4.1	4.4	3.7	5.9	4.4	2.0	4.5	3.3	3.7	1,960

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Appendix A.13 (page 2 of 2).

Date	Percent of Counts by Hour																								Daily Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
18-Jul	4.6	4.9	2.6	5.5	5.5	5.7	3.6	1.5	2.8	3.8	4.3	4.2	3.1	3.5	2.4	3.1	4.5	6.9	2.3	5.7	4.7	4.2	7.7	3.1	1,226
19-Jul	3.1	1.8	3.5	5.3	5.6	5.3	10.8	5.0	2.6	2.1	2.7	2.5	3.5	4.1	4.3	2.5	4.0	5.4	7.7	1.9	4.2	3.0	5.6	3.5	1,942
20-Jul	1.2	0.9	3.2	4.6	4.4	5.2	9.6	11.7	4.7	5.4	7.8	4.8	3.3	1.6	0.9	1.9	2.4	4.5	5.1	4.6	2.1	0.6	3.5	6.2	9,269
21-Jul	13.6	13.4	11.6	12.3	10.1	5.4	4.3	9.8	2.3	0.8	1.1	2.0	2.0	1.1	0.6	0.4	1.1	1.1	0.9	1.5	0.1	1.1	1.4	1.9	4,851
22-Jul	4.7	3.8	2.5	2.0	1.3	0.7	1.2	3.1	9.0	4.0	1.4	1.5	4.5	5.8	3.2	4.3	7.0	6.5	6.5	5.2	9.7	4.3	2.2	5.9	2,679
23-Jul	8.2	9.0	5.7	4.3	4.4	3.0	2.7	1.8	5.9	9.5	5.5	2.5	2.2	2.7	5.7	3.5	5.2	2.9	2.6	2.3	2.9	3.8	2.2	1.5	4,688
24-Jul	4.2	5.5	5.2	5.2	4.7	4.3	1.8	3.3	2.2	2.3	6.2	6.1	4.3	3.6	2.5	3.6	4.5	2.7	4.0	4.2	2.8	5.1	7.4	4.2	1,029
25-Jul	3.2	3.7	2.6	2.2	2.5	1.8	2.3	2.2	2.8	4.7	1.8	6.1	7.7	7.6	7.6	4.0	3.5	4.4	3.6	3.2	3.0	4.7	6.7	8.2	833
26-Jul	4.0	2.8	2.1	3.0	3.2	2.4	2.0	1.6	2.0	3.1	2.1	2.4	4.7	10.3	6.9	5.9	7.5	4.4	4.1	6.1	2.6	5.6	4.6	6.7	1,384
27-Jul	6.4	2.4	2.0	1.5	3.5	4.0	5.3	4.6	3.2	5.2	4.7	3.4	4.6	2.9	5.2	7.5	7.2	4.8	4.6	3.1	3.0	4.8	3.3	3.0	1,220
28-Jul	4.4	2.8	1.3	2.9	2.4	1.7	3.6	4.0	2.6	2.9	4.3	3.4	3.4	4.6	4.2	5.9	5.5	5.2	3.9	8.9	6.4	6.3	5.5	3.7	1,029
29-Jul	3.2	3.6	4.7	2.8	4.5	2.1	4.5	4.0	3.4	4.9	3.1	6.1	5.3	5.0	3.1	4.9	3.9	6.3	5.7	4.0	1.9	4.5	5.5	2.9	618
30-Jul	3.8	1.6	3.8	5.3	8.2	5.8	6.5	1.8	2.4	4.2	2.2	3.3	3.4	2.7	2.7	4.2	2.9	5.6	7.4	5.4	3.4	3.6	4.5	5.1	551
31-Jul	3.5	2.2	0.8	2.5	3.9	5.8	4.8	3.5	2.4	4.6	3.3	3.3	4.2	3.5	1.8	4.0	3.7	5.8	4.0	1.5	5.8	7.3	9.1	8.6	722
01-Aug	6.8	3.7	2.4	5.1	5.6	10.7	7.5	3.7	4.1	6.0	0.9	3.2	4.6	2.7	1.5	2.2	2.7	1.9	3.6	6.0	2.0	3.9	2.7	6.5	588
02-Aug	6.2	2.1	2.9	3.3	2.6	6.4	6.7	5.7	6.4	1.4	3.6	3.6	4.5	2.6	5.5	4.3	4.5	2.1	2.1	5.5	6.0	5.5	1.4	5.0	420
03-Aug	2.5	3.8	2.8	1.2	3.8	5.5	2.2	3.0	3.3	2.8	3.3	4.1	4.1	5.0	3.2	2.5	2.5	4.5	5.3	2.7	6.1	8.8	6.6	10.4	603
04-Aug	8.6	5.1	4.5	4.0	5.5	2.2	2.9	2.7	4.2	7.2	4.1	4.9	3.5	3.9	1.4	2.0	3.1	3.5	2.2	3.5	7.2	5.3	4.0	4.6	927
05-Aug	4.9	2.1	1.7	2.0	2.6	2.3	3.0	3.0	2.9	3.2	4.1	4.8	4.8	4.9	7.2	6.2	4.3	4.2	4.7	4.2	4.7	8.8	6.7	2.6	898
06-Aug	2.6	3.9	3.5	2.4	6.6	5.4	4.2	4.9	2.9	4.3	4.4	4.6	3.5	4.9	3.1	5.2	5.6	4.3	4.1	4.5	3.7	5.4	3.5	2.4	1,529
07-Aug	3.7	3.7	4.4	3.9	4.7	8.4	8.0	7.0	4.1	5.1	5.1	4.7	4.4	3.4	5.0	4.5	3.2	2.8	4.1	1.6	1.5	3.0	1.9	1.8	1,580
08-Aug	5.6	4.2	2.1	0.9	0.7	2.8	2.3	3.5	3.5	2.8	1.9	2.6	4.2	4.7	4.2	5.4	5.9	4.7	2.3	5.2	4.9	4.9	10.8	9.8	427
09-Aug	6.6	3.8	1.5	0.4	2.6	6.0	7.1	5.6	3.0	4.5	4.1	3.4	2.1	3.0	4.1	2.6	2.6	5.8	4.5	4.5	4.7	7.7	4.9	5.1	468
10-Aug	1.7	3.0	1.5	1.7	0.5	3.7	4.7	2.4	3.5	4.1	5.4	3.5	6.4	5.9	4.9	5.1	6.3	6.9	8.8	4.1	4.1	4.7	4.6	2.5	592
11-Aug	3.8	2.1	1.3	1.9	2.8	3.2	3.8	5.7	5.5	3.2	5.5	4.2	4.3	4.5	4.7	5.7	9.4	6.0	3.0	5.5	4.2	5.8	2.3	1.7	530
12-Aug	7.2	2.0	2.2	2.0	2.5	4.0	5.2	5.5	4.0	3.7	3.7	4.0	2.5	6.5	6.0	5.0	3.7	5.0	1.2	3.7	6.7	5.0	3.2	5.5	402
13-Aug	2.4	4.2	1.6	1.6	4.7	7.3	4.0	5.1	4.9	4.2	5.6	3.8	5.1	3.3	3.1	2.0	2.4	1.6	2.9	2.0	6.0	8.0	7.8	6.2	449
14-Aug	2.0	2.7	2.0	2.3	2.3	3.7	8.7	6.4	7.6	5.7	4.3	5.7	7.3	6.0	7.1	2.0	5.3	3.0	2.7	2.3	2.7	3.4	3.7	1.2	563
15-Aug	2.6	1.5	1.3	2.0	2.6	3.1	5.9	5.6	6.9	3.3	6.4	4.1	3.8	4.6	3.1	4.6	2.3	3.8	3.3	3.8	6.9	6.4	6.1	6.1	392
Average	5.4	5.7	5.7	5.5	4.9	4.3	4.4	4.7	3.5	3.8	3.6	3.1	3.1	3.5	3.3	3.3	3.8	4.2	4.2	3.9	3.6	3.9	4.1	4.4	

[a] The process of substituting average counts for suspected counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.14. Kasilof River south bank sonar counts by hour, 15 June through 15 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
15-Jun	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.0	22.2	0.0	66.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9
16-Jun	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	8.9	8.9	0.0	6.7	0.0	22.2	24.4	8.9	2.2	2.2	8.9	0.0	45
17-Jun	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	3.1	2.2	0.9	0.9	5.3	2.7	9.3	4.0	3.6	6.2	4.9	5.3	0.9	4.4	2.7	0.9	225
18-Jun	6.3	4.2	1.1	1.1	3.2	6.3	1.1	11.6	2.1	3.2	5.3	2.1	10.5	6.3	0.0	13.7	1.1	6.3	4.2	1.1	2.1	0.0	7.4	0.0	95
19-Jun	2.6	0.9	0.9	1.7	0.9	0.0	1.7	3.5	2.6	9.6	0.0	5.2	2.6	2.6	0.0	7.0	19.1	0.0	3.5	11.3	1.7	3.5	7.0	12.2	115
20-Jun	1.2	1.9	2.2	2.8	2.2	3.1	1.5	9.3	1.9	1.9	9.9	12.4	9.3	6.2	1.9	0.6	3.7	4.6	5.0	0.6	1.2	7.1	7.7	1.9	323
21-Jun	1.7	6.2	1.7	0.7	3.8	2.1	8.7	1.7	7.3	3.5	3.5	1.4	1.7	1.7	0.3	2.8	1.4	15.6	12.5	7.6	8.0	2.8	2.4	1.0	289
22-Jun	0.0	0.0	0.0	1.4	4.3	2.9	10.0	21.4	1.4	4.3	1.4	1.4	1.4	2.9	0.0	4.3	0.0	12.9	2.9	2.9	2.9	7.1	7.1	7.1	70
23-Jun	0.0	0.0	0.7	0.7	0.0	5.6	1.4	1.4	0.0	0.0	3.5	20.4	4.2	9.2	16.9	2.8	0.0	4.9	4.9	2.8	0.0	2.8	8.5	9.2	142
24-Jun	3.3	4.7	6.1	0.9	1.9	1.9	5.2	2.8	1.9	4.7	4.2	3.3	3.8	2.8	1.9	2.4	10.4	4.2	9.9	2.4	4.2	5.2	4.2	7.5	212
25-Jun	10.8	7.5	6.4	7.5	4.4	5.3	5.8	1.9	2.8	3.3	0.3	4.4	0.0	1.4	1.9	2.2	3.3	3.0	3.9	2.2	3.6	5.3	3.0	9.7	361
26-Jun	7.2	9.5	6.7	4.7	1.6	2.5	1.4	2.9	2.9	1.8	2.5	2.6	4.7	3.0	3.0	4.2	5.8	2.9	3.7	3.2	2.8	5.3	5.7	9.3	760
27-Jun	14.1	13.5	7.4	6.3	2.9	4.6	1.3	1.5	1.7	1.9	3.8	5.0	4.2	3.5	4.6	2.2	4.3	2.6	2.9	2.1	2.6	2.4	1.5	3.1	718
28-Jun	9.4	13.1	12.2	4.2	1.8	2.1	2.4	1.1	0.3	1.5	1.7	2.4	4.2	2.0	4.3	6.0	7.9	4.8	3.8	3.8	2.5	2.2	3.0	3.4	959
29-Jun	5.5	10.7	16.3	8.9	2.2	1.5	1.6	1.6	2.3	2.5	3.0	3.3	1.3	4.3	2.3	1.0	5.1	4.3	1.0	3.6	2.8	4.4	4.7	5.9	1,341
30-Jun	5.3	9.8	18.9	10.1	4.8	1.8	1.6	1.0	1.0	1.8	1.6	1.2	2.3	0.9	5.4	5.4	2.5	5.4	4.3	4.0	3.5	2.6	1.9	2.9	2,107
01-Jul	3.1	3.1	6.4	7.8	5.2	1.9	0.6	1.2	2.1	2.5	3.1	1.9	3.1	2.5	3.7	3.0	4.9	10.1	9.8	3.4	4.0	4.0	5.3	7.5	2,426
02-Jul	3.8	8.7	7.7	11.2	13.3	9.1	4.0	4.6	2.3	3.0	4.4	3.1	2.7	2.2	1.8	1.2	1.7	2.6	4.1	2.3	0.7	1.6	1.7	2.2	5,335
03-Jul	4.8	6.7	8.2	6.3	10.5	16.0	9.0	4.0	4.4	3.2	3.0	4.2	2.5	2.2	4.1	1.6	1.3	0.8	2.3	2.0	1.4	0.3	0.4	0.8	3,245
04-Jul	4.3	5.5	7.0	3.9	3.5	1.8	5.1	2.2	1.6	1.2	2.9	2.7	3.7	0.6	2.0	0.4	2.0	1.6	2.0	3.5	4.3	6.5	18.8	13.1	511
05-Jul	1.4	1.5	1.5	1.5	1.7	1.5	2.7	4.5	4.3	3.3	4.6	8.0	6.9	3.8	2.7	2.7	5.2	3.8	5.2	9.9	4.6	6.5	5.4	6.6	5,257
06-Jul	8.0	4.5	3.5	3.2	1.3	1.8	1.9	2.0	2.5	2.2	0.9	0.8	2.9	4.3	3.1	3.2	5.9	5.5	4.2	4.0	14.4	8.9	7.4	3.8	6,194
07-Jul	2.8	3.2	3.1	1.8	4.1	2.5	1.8	1.6	1.3	2.7	4.6	5.1	2.2	4.5	2.9	2.5	3.0	4.2	6.5	5.2	6.2	11.7	8.9	7.5	5,207
08-Jul	6.0	4.4	3.9	4.0	3.2	2.5	1.0	1.1	0.6	0.5	1.7	3.4	2.3	3.8	4.0	2.8	4.5	4.1	4.1	6.3	7.3	12.1	7.8	8.5	2,786
09-Jul	3.4	3.0	3.2	1.8	2.4	1.6	0.6	0.8	1.6	1.6	3.7	6.1	4.7	1.9	2.7	5.8	2.3	5.5	3.8	9.0	10.4	8.4	9.1	6.4	3,724
10-Jul	3.6	2.8	4.2	4.1	3.6	2.6	1.0	1.5	1.8	4.7	4.2	8.8	6.1	7.0	4.8	5.4	4.2	4.0	7.5	5.4	2.1	3.7	3.7	3.4	2,923
11-Jul	3.1	1.4	1.6	0.7	1.0	0.8	2.0	2.7	1.5	2.5	2.5	3.8	2.4	1.0	5.1	2.9	3.8	4.6	6.5	4.9	7.0	7.2	11.4	19.4	2,752
12-Jul	4.1	3.6	3.0	4.0	5.7	8.1	7.5	7.5	9.4	6.9	6.2	5.4	4.7	4.8	4.9	3.2	2.6	2.1	1.8	1.3	1.0	1.1	0.8	0.6	7,537
13-Jul	3.4	3.3	3.0	1.6	2.1	2.9	1.2	1.8	1.6	1.7	2.8	1.8	0.9	3.0	2.8	3.4	3.9	3.1	4.2	8.6	13.0	11.8	10.3	7.9	1,541
14-Jul	5.3	5.4	4.1	3.0	5.4	4.7	3.6	3.0	1.2	2.7	1.8	2.5	3.2	3.9	2.6	3.3	4.0	4.6	3.0	4.2	8.1	9.2	6.7	4.4	1,768
15-Jul	2.8	2.0	2.5	2.7	3.4	3.2	4.1	4.2	4.1	3.0	2.5	2.6	2.2	1.4	3.7	3.4	0.6	3.2	3.4	3.2	8.8	9.3	12.9	10.7	2,026
16-Jul	4.1	4.3	4.3	4.1	5.9	5.4	2.0	3.7	5.0	3.2	2.4	1.0	2.1	1.8	2.1	2.4	1.8	5.0	5.0	3.5	3.5	11.8	9.5	6.3	4,031
17-Jul	3.5	3.8	3.8	4.2	8.3	4.6	8.9	9.2	5.2	5.0	7.6	5.9	5.4	4.3	2.1	1.8	1.4	1.8	2.4	4.2	0.9	1.9	2.0	1.9	6,002

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Appendix A.14. (page 2 of 2).

Date	Percent of Counts by Hour																								Daily Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
18-Jul	7.4	7.8	5.3	5.3	4.0	9.8	8.7	6.5	4.6	4.5	4.8	1.6	2.2	2.7	2.1	2.0	2.5	3.7	2.0	3.7	0.2	1.7	1.7	5.3	1,882
19-Jul	4.0	2.8	0.7	3.5	4.0	6.3	13.5	7.2	4.6	4.7	7.2	6.6	4.0	2.3	1.6	1.8	2.4	2.8	3.2	4.2	2.4	0.1	7.2	3.1	2,083
20-Jul	2.2	2.9	1.9	2.6	2.8	4.7	7.5	8.2	2.6	2.8	3.8	4.7	4.3	2.3	4.0	3.5	3.7	4.1	4.4	1.6	4.1	1.6	6.4	13.2	3,963
21-Jul	11.1	7.2	5.5	9.4	8.6	5.7	6.3	13.0	7.5	4.0	2.5	6.1	2.3	0.7	0.5	1.5	0.8	0.5	1.1	0.3	1.3	1.3	0.9	1.9	2,744
22-Jul	3.4	0.5	1.6	2.2	2.9	2.5	2.7	6.9	13.5	6.4	3.1	2.7	3.0	2.8	2.2	2.6	3.8	6.6	12.7	4.1	5.9	3.4	2.0	2.7	1,716
23-Jul	2.3	2.9	4.3	3.6	3.2	2.8	2.7	3.6	2.9	4.9	4.6	3.3	5.0	9.0	6.6	4.5	5.8	7.3	3.2	3.2	3.6	5.2	4.1	1.4	2,560
24-Jul	4.7	4.1	3.0	2.7	4.4	4.1	4.1	5.3	5.0	2.8	6.8	4.6	2.9	3.4	4.5	3.4	5.7	4.0	1.6	4.5	4.2	3.1	5.3	5.9	827
25-Jul	3.2	3.8	3.9	5.4	4.2	4.4	4.1	3.2	2.3	4.2	2.3	6.2	8.2	4.6	2.5	3.8	5.1	2.8	3.5	2.3	4.2	3.5	5.2	7.0	710
26-Jul	2.8	4.3	2.8	2.9	2.0	1.5	2.7	1.4	1.8	1.2	2.1	2.1	5.4	8.1	8.4	6.5	9.4	11.7	6.0	4.1	5.6	1.5	2.4	3.1	1,687
27-Jul	5.0	3.7	3.3	2.0	6.0	3.6	4.3	9.8	4.8	4.6	2.1	1.3	3.4	1.0	5.4	5.0	4.1	4.4	3.0	4.4	5.5	5.5	4.7	3.1	703
28-Jul	2.0	2.9	3.2	3.0	3.6	4.1	4.8	3.3	5.0	3.6	2.7	1.2	2.5	1.7	2.4	3.2	3.2	8.7	8.6	8.3	7.8	4.6	5.7	3.8	806
29-Jul	2.8	1.7	1.7	1.3	3.3	5.0	4.0	6.8	4.1	4.1	6.5	3.9	4.6	4.3	5.5	3.3	5.0	3.0	7.7	5.3	4.8	4.4	4.6	2.3	1,088
30-Jul	2.1	2.1	2.1	3.4	5.7	5.3	2.5	3.8	6.7	4.9	3.7	5.3	6.2	5.4	3.6	4.3	5.8	6.8	4.7	4.2	3.6	3.0	3.0	2.3	1,005
31-Jul	3.1	1.7	1.6	2.2	2.8	4.1	4.1	3.2	3.7	3.7	3.4	3.5	4.8	2.3	2.9	4.3	5.9	5.6	7.9	5.9	5.0	4.8	7.9	5.6	833
01-Aug	4.7	4.4	6.2	1.9	2.8	2.9	6.7	8.3	6.7	4.8	4.9	3.1	3.2	3.4	3.5	2.1	3.4	4.6	3.9	5.0	4.1	2.8	4.7	1.8	893
02-Aug	3.4	2.4	1.1	1.7	0.8	1.4	4.3	4.6	4.3	5.8	6.3	5.9	6.6	4.7	4.3	6.6	2.9	2.1	4.7	5.3	7.0	6.4	4.6	3.0	656
03-Aug	2.9	3.6	1.7	1.1	2.3	2.3	1.8	3.3	6.6	6.3	6.1	4.8	7.9	6.6	4.4	3.4	3.7	2.6	3.6	5.1	5.2	3.3	5.1	6.1	725
04-Aug	4.1	3.9	2.8	1.4	2.6	2.8	2.9	5.0	8.7	8.0	3.7	3.2	3.6	4.8	4.6	4.6	5.7	4.4	4.7	3.0	5.0	4.4	3.2	3.0	1,286
05-Aug	1.8	3.4	2.0	2.1	2.1	1.8	3.2	4.8	6.1	6.8	4.6	3.2	4.4	6.4	8.4	7.6	3.4	4.1	4.8	4.9	5.1	3.6	3.1	2.3	1,197
06-Aug	2.9	2.8	3.3	2.6	3.1	2.2	3.4	3.8	4.0	4.8	5.5	5.0	3.3	2.6	7.5	6.5	5.9	3.4	2.6	3.8	3.8	5.0	7.7	4.6	1,594
07-Aug	4.2	6.1	8.6	5.6	5.5	4.5	4.7	2.7	4.0	2.2	3.2	4.7	8.3	3.2	3.9	2.9	4.4	2.7	5.3	3.4	2.2	2.7	2.8	2.6	1,391
08-Aug	7.5	7.7	4.2	4.7	3.8	1.6	2.7	1.1	3.8	2.2	2.2	2.6	2.7	3.8	2.4	2.2	4.9	6.9	2.7	4.4	6.6	5.6	7.7	6.0	549
09-Aug	6.2	5.5	4.7	3.5	2.1	2.1	3.8	4.2	3.0	3.1	3.1	5.2	3.8	5.6	4.9	5.6	5.8	7.3	3.8	4.4	1.1	2.0	4.5	4.5	709
10-Aug	4.9	3.9	3.7	4.8	3.7	2.5	4.9	5.1	3.3	4.7	5.7	5.8	5.6	5.8	5.6	3.5	3.4	4.6	1.3	4.3	3.0	3.4	2.7	3.9	791
11-Aug	5.4	4.7	3.0	3.0	4.1	3.4	5.0	5.2	7.7	5.2	5.0	3.4	4.7	5.0	2.5	2.9	4.7	3.4	5.5	4.3	5.4	1.4	1.6	3.6	559
12-Aug	4.5	5.6	9.9	2.9	2.9	1.1	3.2	3.5	2.7	4.0	5.3	4.8	4.8	2.1	4.5	3.5	2.7	2.1	3.5	6.4	4.0	5.9	6.4	3.5	374
13-Aug	5.5	4.3	8.0	3.9	2.7	4.3	4.1	7.2	4.3	4.3	2.7	1.7	2.2	1.7	1.9	2.9	2.2	1.7	4.8	2.2	8.0	6.7	7.7	5.1	415
14-Aug	4.7	4.1	4.3	2.8	3.5	3.0	3.5	5.3	5.5	3.9	5.5	4.9	3.9	2.6	4.3	3.7	6.5	2.8	9.6	3.0	2.8	3.0	3.7	3.0	508
15-Aug	3.4	5.1	3.2	2.2	2.2	3.2	4.4	3.4	3.9	4.1	6.8	2.9	4.4	4.4	4.9	2.9	3.2	3.4	1.5	7.0	7.0	5.6	4.9	6.3	412
Average	4.3	4.4	4.4	4.1	4.5	4.2	4.1	4.4	3.9	3.6	3.9	4.1	3.8	3.6	3.6	3.2	3.6	4.1	4.3	4.2	4.6	5.0	5.1	5.0	

[a] The process of substituting average counts for suspected counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.15. Estimated salmon escapement on the north bank of the Kasilof River, 15 June through 15 August, 1989. Species composition of daily sonar counts based on fish wheel catches.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	100	100	0	0	0	0	1	1
16-Jun	148	248	0	0	0	0	2	3
17-Jun	125	373	0	0	0	0	1	4
18-Jun	167	540	0	0	0	0	2	6
19-Jun	116	656	0	0	0	0	1	7
20-Jun	196	852	0	0	0	0	2	9
21-Jun	342	1,194	0	0	0	0	4	13
22-Jun	244	1,438	0	0	0	0	3	16
23-Jun	204	1,642	0	0	0	0	2	18
24-Jun	171	1,813	0	0	0	0	2	20
25-Jun	127	1,940	0	0	0	0	1	21
26-Jun	320	2,260	0	0	0	0	4	25
27-Jun	286	2,546	0	0	0	0	3	28
28-Jun	444	2,990	0	0	0	0	5	33
29-Jun	416	3,406	0	0	0	0	5	38
30-Jun	593	3,999	0	0	0	0	7	45
01-Jul	1,419	5,418	0	0	0	0	16	61
02-Jul	3,527	8,945	62	62	0	0	0	61
03-Jul	746	9,691	13	75	0	0	0	61
04-Jul	317	10,008	4	79	0	0	0	61
05-Jul	1,332	11,340	15	94	0	0	0	61
06-Jul	2,090	13,430	12	106	0	0	6	67
07-Jul	1,862	15,292	7	113	0	0	0	67
08-Jul	1,120	16,412	23	136	0	0	0	67
09-Jul	1,391	17,803	18	154	0	0	0	67
10-Jul	1,295	19,098	40	194	0	0	0	67
11-Jul	1,675	20,773	79	273	0	0	0	67
12-Jul	1,746	22,519	55	328	0	0	6	73
13-Jul	557	23,076	88	416	0	0	4	77
14-Jul	723	23,799	115	531	0	0	5	82
15-Jul	1,048	24,847	167	698	0	0	7	89
16-Jul	1,542	26,389	27	725	0	0	27	116
17-Jul	1,894	28,283	33	758	0	0	33	149
18-Jul	906	29,189	246	1,004	0	0	74	223
19-Jul	1,436	30,625	388	1,392	0	0	118	341
20-Jul	6,992	37,617	1,789	3,181	0	0	488	829
21-Jul	3,660	41,277	936	4,117	0	0	255	1,084
22-Jul	2,021	43,298	517	4,634	0	0	141	1,225
23-Jul	3,888	47,186	422	5,056	23	23	355	1,580
24-Jul	853	48,039	93	5,149	5	28	78	1,658
25-Jul	691	48,730	75	5,224	4	32	63	1,721
26-Jul	1,148	49,878	124	5,348	7	39	105	1,826
27-Jul	1,012	50,890	110	5,458	5	44	93	1,919
28-Jul	853	51,743	93	5,551	5	49	78	1,997
29-Jul	503	52,246	21	5,572	6	55	88	2,085
30-Jul	448	52,694	19	5,591	6	61	78	2,163
31-Jul	587	53,281	25	5,616	8	69	102	2,265
01-Aug	478	53,759	20	5,636	7	76	83	2,348
02-Aug	342	54,101	14	5,650	4	80	60	2,408
03-Aug	490	54,591	21	5,671	6	86	86	2,494
04-Aug	754	55,345	32	5,703	9	95	132	2,626
05-Aug	730	56,075	31	5,734	10	105	127	2,753
06-Aug	1,243	57,318	53	5,787	16	121	217	2,970
07-Aug	1,285	58,603	54	5,841	17	138	224	3,194
08-Aug	347	58,950	15	5,856	4	142	61	3,255
09-Aug	381	59,331	16	5,872	5	147	66	3,321
10-Aug	481	59,812	21	5,893	6	153	84	3,405

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Appendix A.15. (p. 2 of 2)

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
11-Aug	431	60,243	18	5,911	6	159	75	3,480
12-Aug	327	60,570	14	5,925	4	163	57	3,537
13-Aug	365	60,935	16	5,941	4	167	64	3,601
14-Aug	458	61,393	19	5,960	6	173	80	3,681
15-Aug	319	61,712	13	5,973	4	177	56	3,737

Appendix A.16 Estimated salmon escapement on the south bank of the Kasilof River, 15 June through 15 August, 1989. Species composition of daily sonar counts based on fish wheel catches.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	16	16	0	0	0	0	0	0
16-Jun	45	61	0	0	0	0	1	1
17-Jun	222	283	0	0	0	0	3	4
18-Jun	94	377	0	0	0	0	1	5
19-Jun	114	491	0	0	0	0	1	6
20-Jun	319	810	0	0	0	0	4	10
21-Jun	286	1,096	0	0	0	0	3	13
22-Jun	69	1,165	0	0	0	0	1	14
23-Jun	140	1,305	0	0	0	0	2	16
24-Jun	210	1,515	0	0	0	0	2	18
25-Jun	357	1,872	0	0	0	0	4	22
26-Jun	751	2,623	0	0	0	0	9	31
27-Jun	710	3,333	0	0	0	0	8	39
28-Jun	948	4,281	0	0	0	0	11	50
29-Jun	1,325	5,606	0	0	0	0	16	66
30-Jun	2,082	7,688	0	0	0	0	25	91
01-Jul	2,398	10,086	0	0	0	0	28	119
02-Jul	5,242	15,328	93	93	0	0	0	119
03-Jul	3,189	18,517	56	149	0	0	0	119
04-Jul	505	19,022	6	155	0	0	0	119
05-Jul	5,197	24,219	60	215	0	0	0	119
06-Jul	6,141	30,360	35	250	0	0	18	137
07-Jul	5,189	35,549	18	268	0	0	0	137
08-Jul	2,731	38,280	55	323	0	0	0	137
09-Jul	3,676	41,956	48	371	0	0	0	137
10-Jul	2,836	44,792	87	458	0	0	0	137
11-Jul	2,628	47,420	124	582	0	0	0	137
12-Jul	7,284	54,704	228	810	0	0	25	162
13-Jul	1,322	56,026	211	1,021	0	0	8	170
14-Jul	1,517	57,543	241	1,262	0	0	10	180
15-Jul	1,738	59,281	277	1,539	0	0	11	191
16-Jul	3,895	63,176	68	1,607	0	0	68	259
17-Jul	5,799	68,975	102	1,709	0	0	101	360
18-Jul	1,392	70,367	376	2,085	0	0	114	474
19-Jul	1,540	71,907	417	2,502	0	0	126	600
20-Jul	2,990	74,897	764	3,266	0	0	209	809
21-Jul	2,070	76,967	530	3,796	0	0	144	953
22-Jul	1,295	78,262	331	4,127	0	0	90	1,043
23-Jul	2,123	80,385	231	4,358	12	12	194	1,237
24-Jul	686	81,071	74	4,432	4	16	63	1,300
25-Jul	589	81,660	64	4,496	3	19	54	1,354
26-Jul	1,399	83,059	152	4,648	8	27	128	1,482
27-Jul	583	83,642	63	4,711	4	31	53	1,535
28-Jul	668	84,310	73	4,784	4	35	61	1,596
29-Jul	885	85,195	37	4,821	12	47	154	1,750
30-Jul	817	86,012	35	4,856	10	57	143	1,893
31-Jul	677	86,689	29	4,885	9	66	118	2,011
01-Aug	726	87,415	31	4,916	9	75	127	2,138
02-Aug	533	87,948	23	4,939	7	82	93	2,231
03-Aug	590	88,538	25	4,964	7	89	103	2,334
04-Aug	1,046	89,584	44	5,008	14	103	182	2,516
05-Aug	973	90,557	42	5,050	12	115	170	2,686
06-Aug	1,296	91,853	55	5,105	17	132	226	2,912
07-Aug	1,131	92,984	48	5,153	15	147	197	3,109
08-Aug	446	93,430	19	5,172	6	153	78	3,187
09-Aug	577	94,007	24	5,196	7	160	101	3,288
10-Aug	643	94,650	28	5,224	8	168	112	3,400

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Appendix A.16. (p. 2 of 2)

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
11-Aug	455	95,105	19	5,243	6	174	79	3,479
12-Aug	304	95,409	13	5,256	4	178	53	3,532
13-Aug	337	95,746	15	5,271	4	182	59	3,591
14-Aug	413	96,159	18	5,289	5	187	72	3,663
15-Aug	335	96,494	14	5,303	5	192	58	3,721

Appendix A.17. Daily adjusted fish wheel catch by species for the Kasilof River, 23 June through 9 August 1989.[ab]

		Sockeye		Pink		Coho		Chinook	
Date	Hours Open	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
23-Jun	24.00	4	4	0	0	0	0	0	0
24-Jun	26.50	8	12	0	0	0	0	1	1
25-Jun	18.50	3	15	0	0	0	0	0	1
26-Jun	24.30	14	29	0	0	0	0	0	1
27-Jun	24.00	13	42	0	0	0	0	1	2
28-Jun	26.00	15	56	0	0	0	0	0	2
29-Jun	24.25	24	80	0	0	0	0	0	2
30-Jun	24.50	38	118	0	0	0	0	0	2
01-Jul	22.50	53	172	0	0	0	0	0	2
02-Jul	12.00	142	314	0	0	0	0	0	2
03-Jul	6.00	84	398	4	4	0	0	0	2
04-Jul	23.00	15	412	1	5	0	0	0	2
05-Jul	24.50	159	571	1	6	0	0	0	2
06-Jul	17.25	693	1,264	3	9	0	0	1	3
07-Jul	16.00	855	2,119	3	12	0	0	0	3
08-Jul	16.75	546	2,665	11	23	0	0	0	3
09-Jul	14.25	531	3,195	7	30	0	0	0	3
10-Jul	9.75	325	3,520	10	40	0	0	0	3
11-Jul	14.50	634	4,154	30	70	0	0	0	3
12-Jul	8.25	288	4,442	9	78	0	0	0	3
13-Jul	17.75	47	4,489	7	85	0	0	1	5
14-Jul	24.75	75	4,564	16	101	0	0	0	5
15-Jul	22.00	35	4,599	2	103	0	0	0	5
16-Jul	31.75	76	4,675	6	109	0	0	2	7
17-Jul	14.75	667	5,342	7	115	0	0	11	18
18-Jul	6.50	81	5,423	18	134	0	0	7	26
19-Jul	16.00	41	5,463	15	149	0	0	3	29
20-Jul	22.50	77	5,540	19	168	0	0	6	35
21-Jul	21.50	29	5,569	11	179	0	0	1	36
22-Jul	20.75	23	5,592	3	183	0	0	2	39
23-Jul	21.00	103	5,695	13	195	1	1	7	45
24-Jul	19.00	8	5,703	1	197	1	2	10	55
25-Jul	22.75	2	5,705	1	198	0	2	4	60
26-Jul	23.75	1	5,706	0	198	0	2	4	64
27-Jul	30.00	2	5,708	1	198	0	2	3	67
28-Jul	25.50	72	5,779	6	204	0	2	9	76
29-Jul	18.50	60	5,839	1	205	0	2	9	85
30-Jul	18.50	78	5,917	4	209	0	2	4	89
31-Jul	24.75	57	5,974	3	212	1	3	4	93
01-Aug	19.70	1	5,975	1	213	0	3	5	98
02-Aug	23.55	0	5,975	0	213	0	3	0	98
03-Aug	23.00	0	5,975	0	213	0	3	0	98
04-Aug	22.25	10	5,985	0	213	1	4	10	108
05-Aug	24.50	6	5,991	0	213	0	4	2	110
06-Aug	20.25	15	6,006	1	215	1	6	0	110
07-Aug	23.50	1	6,007	0	215	0	6	5	115
08-Aug	23.50	7	6,014	0	215	0	6	2	117

[a] Fish wheel catch adjusted for 24 h: (daily catch * 24 h)/hours open.
[b] Actual total catch by species: 4017 sockeye salmon; 154 pink salmon; 5 coho salmon; 99 chinook salmon.

Appendix A.18. Length composition of the major age classes of sockeye salmon collected in the Kasilof River, 1980-1989. Length measured from mid-eye to fork of tail.

		Male			Female			Total			
Year	Age Class	Ave Length (mm)	Stndrd Error	Sample Size	Ave Length (mm)	Stndrd Error	Sample Size	Ave Length (mm)	Stndrd Error	Sample Size	Ratio Male/ Female
1980	1.2	474	2	189	464	1	376	467		565	0.5:1
1981		503	2	241	492	3	146	499		387	1.7:1
1982		481	2	285	466	2	235	474	2	475	1.2:1
1983		493	2	113	491	3	78	492	2	191	1.4:1
1984		480	1	544	478	1	428	479	1	972	2.6:1
1985		474	1	723	472	1	897	473	1	1620	0.8:1
1986		482	2	266	482	1	368	482	1	634	0.7:1
1987		472	2	282	470	2	257	471	1	539	1.1:1
1988		480	1	353	477	1	480	478	1	833	0.7:1
1989		481	2	245	480	2	290	480	1	535	0.8:1
1980	1.3	531	7	35	516	2	115	520		150	0.3:1
1981		566	1	422	558	1	369	562		791	1.1:1
1982		549	1	377	542	1	428	545	1	805	0.9:1
1983		558	2	170	547	2	187	552	1	357	0.9:1
1984		539	1	304	533	1	383	535	1	687	0.8:1
1985		531	2	341	527	1	433	529	1	774	0.8:1
1986		550	2	342	543	1	405	546	1	747	0.8:1
1987		553	2	191	552	2	154	552	2	345	1.2:1
1988		550	1	311	543	1	382	546	1	693	0.8:1
1989		550	2	266	542	2	296	546	1	562	0.9:1
1982	2.2	479	3	65	472	3	81	475	3	146	0.8:1
1984		484	2	202	482	1	223	483	1	425	0.9:1
1985		482	2	248	476	1	319	479	1	567	0.8:1
1986		492	4	78	489	2	115	490	2	193	0.7:1
1987		478	2	137	475	2	141	476	2	278	1.0:1
1988		486	2	173	479	1	220	482	1	393	0.8:1
1982	2.3	548	4	41	543	4	40	546	4	86	1.0:1
1984		533	3	102	526	3	80	530	2	182	1.3:1
1988		544	2	104	543	2	115	543	2	219	0.9:1

Appendix A.19. Estimated salmon escapement into the Crescent River, north and south banks combined, 1 July through 1 August, 1989. Species composition of daily sonar counts based on trap catches.

	Sockeye		Pink		Chum		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
01-Jul	565	565	0	0	0	0	0	0
02-Jul	836	1,401	0	0	0	0	0	0
03-Jul	1,658	3,059	0	0	0	0	0	0
04-Jul	3,792	6,851	0	0	0	0	0	0
05-Jul	2,290	9,141	0	0	0	0	0	0
06-Jul	3,725	12,866	0	0	0	0	0	0
07-Jul	3,558	16,424	0	0	0	0	0	0
08-Jul	4,378	20,802	0	0	0	0	0	0
09-Jul	2,959	23,761	0	0	0	0	0	0
10-Jul	2,427	26,188	0	0	0	0	0	0
11-Jul	3,121	29,309	0	0	0	0	0	0
12-Jul	3,614	32,923	0	0	0	0	0	0
13-Jul	2,729	35,652	0	0	0	0	0	0
14-Jul	6	35,658	0	0	0	0	0	0
15-Jul	1,125	36,783	0	0	0	0	0	0
16-Jul	6,618	43,401	0	0	143	143	0	0
17-Jul	4,472	47,873	0	0	321	464	27	27
18-Jul	1,229	49,102	0	0	89	553	7	34
19-Jul	1,322	50,424	0	0	98	651	0	34
20-Jul	2,905	53,329	0	0	216	867	0	34
21-Jul	1,841	55,170	42	42	263	1,130	14	48
22-Jul	1,937	57,107	44	86	276	1,406	15	63
23-Jul	1,793	58,900	40	126	256	1,662	14	77
24-Jul	1,850	60,750	42	168	264	1,926	14	91
25-Jul	2,053	62,803	47	215	292	2,218	16	107
26-Jul	1,629	64,432	37	252	233	2,451	12	119
27-Jul	1,632	66,064	37	289	233	2,684	12	131
28-Jul	1,986	68,050	45	334	284	2,968	15	146
29-Jul	708	68,758	15	349	102	3,070	5	151
30-Jul	715	69,473	5	354	52	3,122	0	151
31-Jul	1,138	70,611	0	354	524	3,646	0	151
01-Aug	453	71,064	0	354	746	4,392	0	151

Appendix A.20. Daily fish trap catch by species for the Crescent River, 1 July through 1 August 1989.

	Sockeye		Pink		Chum		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
01-Jul	10	10	0	0	0	0	0	0
02-Jul	18	28	0	0	0	0	0	0
03-Jul	28	56	0	0	0	0	0	0
04-Jul	13	69	0	0	0	0	0	0
05-Jul	23	92	0	0	0	0	0	0
06-Jul	26	118	0	0	0	0	0	0
07-Jul	15	133	0	0	0	0	0	0
08-Jul	35	168	0	0	0	0	0	0
09-Jul	38	206	0	0	0	0	0	0
10-Jul	53	259	0	0	0	0	0	0
11-Jul	71	330	0	0	0	0	0	0
12-Jul	47	377	0	0	0	0	0	0
13-Jul	37	414	0	0	0	0	0	0
14-Jul	0	414	0	0	0	0	0	0
15-Jul	124	538	0	0	0	0	0	0
16-Jul	185	723	0	0	4	4	0	0
17-Jul	90	813	0	0	1	5	0	0
18-Jul	77	890	0	0	11	16	1	1
19-Jul	115	1,005	0	0	9	25	0	1
20-Jul	60	1,065	0	0	4	29	0	1
21-Jul	18	1,083	0	0	1	30	0	1
22-Jul	9	1,092	0	0	1	31	1	2
23-Jul	0	1,092	0	0	0	31	0	2
24-Jul	4	1,096	0	0	0	31	0	2
25-Jul	16	1,112	0	0	1	32	0	2
26-Jul	17	1,129	2	2	1	33	0	2
27-Jul	8	1,137	0	2	4	37	0	2
28-Jul	14	1,151	0	2	2	39	0	2
29-Jul	47	1,198	1	3	9	48	0	2
30-Jul	288	1,486	2	5	21	69	0	2
31-Jul	141	1,627	0	5	65	134	0	2
01-Aug	107	1,734	0	5	176	310	0	2

Appendix A.21. Crescent River north bank sonar counts by sector, 1 July through 1 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
01-Jul	21.7	11.7	23.3	11.5	30.0	0.2	1.5	0.0	0.0	0.0	0.0	0.0	460
02-Jul	45.5	2.6	10.7	10.1	13.0	12.7	5.2	0.3	0.0	0.0	0.0	0.0	308
03-Jul	84.7	4.5	1.9	5.1	1.3	1.9	0.4	0.2	0.0	0.0	0.0	0.0	470
04-Jul	30.1	30.4	8.4	4.9	5.1	19.7	0.6	0.1	0.3	0.3	0.0	0.0	1,735
05-Jul	6.6	8.1	6.6	5.7	37.5	23.9	4.8	2.9	1.4	1.3	0.3	0.9	877
06-Jul	0.2	0.9	0.6	4.5	53.8	23.1	9.7	5.3	1.9	0.0	0.0	0.0	1,941
07-Jul	0.3	0.9	2.8	2.9	45.8	29.0	9.6	5.4	3.1	0.0	0.1	0.1	2,217
08-Jul	0.2	0.6	1.7	6.3	16.0	39.0	16.3	12.9	3.2	0.8	1.7	1.1	2,651
09-Jul	0.3	0.9	1.2	1.1	10.2	42.4	20.5	16.1	6.0	0.7	0.3	0.2	1,935
10-Jul	0.0	1.6	1.1	1.5	12.2	46.3	16.1	11.8	7.5	1.0	0.4	0.4	1,338
11-Jul	0.4	1.0	3.5	3.7	39.7	30.3	11.7	7.0	0.8	0.2	0.5	1.1	1,414
12-Jul	0.3	1.7	3.3	3.7	38.5	35.1	7.1	8.4	1.0	0.3	0.3	0.2	1,719
13-Jul	0.6	3.2	4.4	1.5	36.7	33.8	8.9	8.2	1.4	0.6	0.4	0.3	1,253
14-Jul	83.3	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	6
15-Jul	2.3	8.9	1.5	1.3	19.0	30.4	18.2	12.4	2.5	1.5	1.0	1.0	395
16-Jul	3.0	21.6	1.9	3.5	42.8	13.6	5.4	4.6	1.6	0.8	0.8	0.4	2,580
17-Jul	2.9	12.9	3.3	3.5	36.4	30.8	3.2	3.3	1.7	0.6	0.6	0.8	2,558
18-Jul	6.9	13.7	2.9	1.5	26.7	19.0	16.5	8.2	2.6	1.3	0.2	0.5	547
19-Jul	28.6	25.4	12.4	5.1	6.5	8.7	5.7	3.0	3.0	0.8	0.4	0.4	507
20-Jul	28.1	23.5	17.1	4.8	3.6	9.5	4.2	3.4	4.5	0.8	0.5	0.1	1,130
21-Jul	26.4	24.4	17.6	7.7	7.4	3.3	1.8	2.9	6.1	1.4	0.6	0.3	1,192
22-Jul	20.0	30.2	14.0	11.2	4.0	3.9	3.2	4.3	8.0	0.6	0.6	0.1	908
23-Jul	4.0	11.4	6.1	14.5	12.7	16.4	6.7	6.3	16.4	3.7	1.3	0.7	1,486
24-Jul	3.0	8.5	11.1	5.8	10.3	26.2	9.6	6.3	7.9	7.9	2.2	1.0	1,184
25-Jul	1.5	1.4	16.8	4.7	9.1	32.8	18.4	5.5	2.7	3.8	1.9	1.3	1,673
26-Jul	1.4	1.8	11.3	3.2	3.1	29.3	30.7	9.2	4.1	3.2	1.2	1.5	1,367
27-Jul	2.2	1.4	9.3	4.0	6.9	31.6	25.2	7.8	4.0	4.1	1.6	2.0	1,532
28-Jul	7.3	11.5	11.1	7.1	6.5	21.4	20.8	6.6	2.8	1.9	1.4	1.6	1,404
29-Jul	35.8	38.2	5.1	3.5	1.8	4.8	4.2	2.9	0.4	0.7	0.9	1.5	544
30-Jul	27.2	24.3	15.2	6.2	9.6	9.2	5.6	2.1	0.3	0.3	0.1	0.0	699
31-Jul	13.9	12.0	25.8	13.9	9.3	10.2	4.7	4.3	2.5	2.5	0.6	0.2	1,157
01-Aug	8.8	15.1	33.9	14.8	4.7	1.5	3.5	6.9	5.1	4.2	1.3	0.2	548
Average	8.3	9.9	7.5	5.2	21.4	24.4	10.5	6.4	3.5	1.4	0.8	0.6	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.22. Crescent River south bank sonar counts by sector, 1 July through 1 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
01-Jul	18.1	7.6	38.1	25.7	6.7	3.8	0.0	0.0	0.0	0.0	0.0	0.0	105
02-Jul	13.3	33.9	12.7	13.1	12.5	14.2	0.4	0.0	0.0	0.0	0.0	0.0	528
03-Jul	6.3	13.7	60.8	7.6	4.2	6.9	0.2	0.2	0.2	0.0	0.0	0.0	1,188
04-Jul	2.3	4.8	5.3	6.0	23.8	41.4	11.5	1.8	1.6	1.1	0.1	0.3	2,057
05-Jul	0.1	1.1	2.6	5.7	40.8	41.2	7.1	0.8	0.4	0.1	0.0	0.2	1,413
06-Jul	0.8	1.8	20.3	46.6	21.9	6.4	1.6	0.4	0.1	0.0	0.0	0.0	1,784
07-Jul	0.7	2.5	11.6	36.5	30.4	13.3	3.7	1.2	0.0	0.0	0.0	0.0	1,341
08-Jul	5.1	8.9	7.2	19.1	35.7	17.5	3.8	1.7	0.5	0.2	0.1	0.1	1,727
09-Jul	1.0	1.7	2.6	10.9	41.9	23.2	10.2	7.5	1.0	0.0	0.0	0.0	1,024
10-Jul	0.6	1.3	4.6	15.2	41.7	22.0	9.1	4.6	0.8	0.1	0.0	0.0	1,089
11-Jul	2.6	5.6	6.8	16.2	39.0	20.4	6.0	2.1	0.8	0.1	0.1	0.3	1,707
12-Jul	2.4	2.1	3.2	10.5	44.6	26.1	7.4	2.4	0.7	0.1	0.4	0.1	1,895
13-Jul	3.0	3.3	3.5	16.3	50.3	17.1	4.7	1.3	0.2	0.2	0.2	0.0	1,476
14-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
15-Jul	4.0	1.5	1.5	10.3	32.5	35.5	11.8	1.9	0.1	0.3	0.1	0.5	730
16-Jul	4.6	3.4	12.1	7.6	33.4	31.3	6.0	1.3	0.1	0.2	0.1	0.0	4,181
17-Jul	1.7	3.4	21.1	24.4	31.7	14.3	1.9	0.6	0.6	0.1	0.0	0.0	2,262
18-Jul	0.6	11.7	55.5	23.9	5.3	0.5	0.5	1.5	0.4	0.0	0.0	0.0	778
19-Jul	1.0	20.4	54.9	17.9	2.5	1.0	0.5	0.8	0.7	0.4	0.0	0.0	913
20-Jul	1.3	14.0	68.9	12.3	1.7	0.5	0.6	0.6	0.0	0.0	0.1	0.0	1,991
21-Jul	1.0	16.1	53.1	10.7	3.0	4.3	6.4	4.5	0.4	0.3	0.0	0.0	968
22-Jul	0.1	3.0	43.0	33.1	5.1	1.4	2.2	8.0	2.9	0.7	0.2	0.4	1,364
23-Jul	0.3	0.5	20.3	28.0	12.2	2.4	1.6	21.6	11.2	0.0	0.6	1.3	617
24-Jul	0.3	1.9	21.6	38.0	18.6	1.6	0.9	10.0	5.3	0.9	0.0	0.8	986
25-Jul	23.8	32.7	16.1	11.6	6.5	4.2	3.5	1.0	0.3	0.0	0.4	0.0	735
26-Jul	37.9	53.1	8.3	0.2	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	544
27-Jul	34.9	56.5	7.8	0.0	0.0	0.0	0.0	0.5	0.3	0.0	0.0	0.0	384
28-Jul	16.7	64.1	17.2	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	926
29-Jul	65.4	28.3	5.2	0.3	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	286
30-Jul	19.2	72.6	5.5	1.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	73
31-Jul	5.9	29.7	47.1	11.1	3.2	0.4	0.6	0.2	0.6	0.4	0.8	0.0	505
01-Aug	24.6	36.7	26	5.1	2.9	3.1	0.6	0.5	0.3	0.3	0	0	651
Average	5.1	10.4	20.5	16.2	23.9	16.1	4.3	2.3	0.8	0.2	0.1	0.1	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.23. Crescent River north bank sonar counts by hour, 1 July through 1 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
01-Jul	14.3	0.0	0.0	0.0	2.8	3.9	0.0	0.0	0.4	1.3	0.0	4.1	1.5	2.2	3.3	4.6	2.6	8.9	12.8	12.6	8.9	10.4	2.2	3.0	460
02-Jul	3.2	2.9	0.0	2.6	5.2	4.5	3.6	16.2	0.0	0.6	1.6	0.3	0.0	2.3	0.3	0.6	1.6	3.2	8.4	11.0	5.2	6.5	17.2	2.6	308
03-Jul	1.3	0.0	0.4	0.0	0.0	6.6	1.9	1.1	0.9	1.1	0.6	1.3	0.6	0.2	0.4	1.1	1.5	3.4	32.6	25.3	13.8	5.3	0.4	0.2	470
04-Jul	1.0	1.8	8.4	7.6	9.2	3.5	4.8	7.4	4.1	6.2	4.1	7.0	2.7	1.3	0.6	1.2	1.6	2.6	1.8	3.8	7.8	5.8	3.2	2.6	1,735
05-Jul	2.1	6.0	2.3	4.4	3.1	1.9	3.5	8.2	3.1	0.1	0.1	0.2	0.2	0.0	0.0	1.4	1.7	4.9	4.0	3.8	22.9	21.0	4.0	1.0	877
06-Jul	0.1	0.1	0.0	0.6	1.4	0.4	0.6	0.2	0.3	1.1	2.7	2.4	7.5	7.2	6.7	6.2	5.7	6.0	4.3	5.2	7.7	18.5	11.3	4.1	1,941
07-Jul	0.8	0.0	0.4	0.5	1.8	1.6	0.9	0.9	4.6	7.0	7.3	9.7	8.3	8.2	3.3	1.9	2.6	1.1	0.9	1.3	7.9	16.1	8.3	4.7	2,217
08-Jul	1.4	0.2	0.6	0.3	0.9	5.7	1.1	2.8	17.2	3.1	3.9	4.0	7.1	8.9	4.8	3.7	5.6	2.1	3.8	1.7	2.4	6.5	7.4	5.1	2,651
09-Jul	2.9	0.8	4.8	3.9	1.2	3.8	5.8	9.5	3.2	3.8	4.7	4.0	6.8	8.8	8.5	5.1	4.8	5.3	2.8	2.1	1.4	0.8	3.3	2.1	1,935
10-Jul	3.8	0.1	0.2	0.7	1.2	2.8	2.3	2.2	2.6	4.6	6.7	13.5	9.5	13.7	10.3	4.5	4.3	3.8	2.8	3.1	2.8	1.6	1.9	1.1	1,338
11-Jul	0.0	0.7	0.1	7.0	0.1	1.4	1.0	1.3	2.6	2.3	3.5	5.7	5.4	8.2	8.6	9.1	9.8	6.4	8.2	5.0	3.1	4.0	4.3	2.0	1,414
12-Jul	0.6	0.2	0.2	0.7	1.6	6.2	1.6	1.7	2.7	2.1	3.4	4.2	5.1	10.5	14.5	11.5	4.5	3.0	7.6	5.7	4.2	2.2	1.2	4.7	1,719
13-Jul	0.1	1.8	0.6	1.0	2.5	2.0	3.8	4.2	6.1	6.6	3.1	8.7	9.8	12.6	7.4	4.2	4.0	8.5	6.2	2.9	1.0	2.2	0.4	0.0	1,253
14-Jul	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	16.7	33.3	16.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
15-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	0.3	1.5	1.3	0.8	2.3	3.0	2.5	3.3	3.5	2.3	2.8	51.6	14.4	6.6	2.0	0.8	395
16-Jul	0.0	0.0	0.0	0.3	0.7	1.3	1.3	1.8	3.1	2.1	5.7	4.0	8.3	6.0	6.7	4.1	7.3	13.0	14.3	7.4	5.9	3.9	2.6	0.3	2,580
17-Jul	0.3	0.9	0.0	4.2	1.7	5.2	5.6	2.9	2.2	3.7	3.4	7.4	9.1	8.1	5.6	5.5	4.1	3.6	9.1	8.4	4.6	1.1	1.1	2.0	2,558
18-Jul	6.4	2.6	0.9	0.2	0.2	0.2	0.4	1.3	2.6	8.2	3.5	11.0	17.0	4.2	3.1	3.5	5.1	3.8	6.9	11.3	3.5	1.3	1.3	1.6	547
19-Jul	0.2	0.2	9.3	0.2	0.0	0.2	12.6	4.5	1.0	1.0	4.7	6.1	3.7	1.6	2.8	7.1	5.1	6.5	2.8	7.3	9.3	7.7	4.7	1.4	507
20-Jul	1.0	0.1	0.0	0.0	0.4	0.2	4.0	2.9	4.0	2.9	4.3	2.5	3.3	4.0	6.8	4.8	3.2	3.6	4.4	10.0	16.6	10.4	6.5	4.2	1,130
21-Jul	2.6	0.5	0.8	0.0	2.0	2.0	1.6	1.8	4.0	2.8	3.5	4.4	8.1	10.1	7.8	5.0	4.4	0.8	2.4	4.0	13.1	10.8	4.6	2.7	1,192
22-Jul	2.4	1.5	0.8	1.1	0.6	1.5	1.5	3.1	5.8	5.5	4.0	4.7	5.0	4.2	4.5	5.3	5.5	3.6	5.1	4.4	7.7	10.7	7.8	3.6	908
23-Jul	1.5	2.4	1.3	2.4	1.9	1.4	3.4	4.1	4.4	4.4	6.1	6.9	7.4	8.7	9.0	1.5	6.8	4.2	2.6	1.3	0.7	6.9	5.7	4.9	1,486
24-Jul	3.7	1.7	0.2	0.9	1.5	4.3	2.5	2.9	1.7	3.5	1.0	3.4	6.2	11.3	6.8	8.5	6.3	4.6	6.3	3.3	1.6	5.9	7.1	4.9	1,184
25-Jul	0.5	0.6	0.7	0.7	1.3	4.3	6.0	5.0	2.3	2.4	3.2	1.3	9.0	4.1	6.6	4.0	4.1	5.0	2.7	3.4	1.6	3.3	14.6	13.3	1,673
26-Jul	4.9	1.2	1.8	2.3	1.5	1.4	4.0	3.0	5.6	4.0	2.9	3.4	2.8	11.6	10.6	6.8	4.3	3.9	7.8	1.8	3.4	2.5	5.2	3.4	1,367
27-Jul	3.1	2.2	0.7	2.2	1.4	15.4	18.2	3.3	6.5	4.8	2.1	5.5	5.0	3.3	1.2	3.5	2.5	5.0	5.8	2.3	2.7	2.3	0.8	0.0	1,532
28-Jul	1.4	1.3	1.2	0.4	1.1	3.0	6.4	7.4	7.3	4.3	4.1	5.8	6.7	6.6	4.8	3.5	4.8	6.1	6.6	4.6	4.3	4.7	2.2	1.3	1,404
29-Jul	1.3	1.3	3.5	5.1	6.3	5.5	12.7	9.9	2.8	11.9	3.9	11.9	4.6	7.5	3.3	0.9	0.4	0.0	0.2	1.8	0.9	0.0	2.9	1.3	544
30-Jul	0.3	9.6	0.0	0.0	0.6	0.6	0.0	0.3	0.4	0.1	1.4	0.6	0.4	7.3	5.2	0.7	0.4	2.9	8.6	10.7	20.5	12.2	13.7	3.6	699

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Appendix A.23. (p. 2 of 2)

Date	Percent of Counts by Hour																								Daily Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
31-Jul	2.2	2.2	1.6	3.3	1.4	5.1	5.8	1.6	12.0	5.2	11.0	4.0	6.1	3.0	4.0	5.4	5.3	2.6	4.1	3.5	4.5	1.9	3.5	1.0	1,157
01-Aug	1.3	0.4	2.2	1.5	0.2	1.3	2.2	0.5	1.1	2.6	9.1	1.6	1.5	2.6	2.4	7.3	1.5	3.8	5.7	22.8	14.6	6.0	4.2	3.8	548
Average	1.6	1.1	1.3	1.9	1.7	3.4	3.8	3.4	4.5	3.7	4.1	5.2	6.3	7.0	5.9	4.6	4.5	4.6	5.8	5.5	5.9	6.2	4.9	3.1	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.24. Crescent River south bank sonar counts by hour, 1 July through 1 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
01-Jul	1.0	1.0	1.0	1.0	1.0	1.0	1.9	4.8	5.7	5.7	5.7	1.9	0.0	9.5	7.6	3.8	6.7	6.7	16.2	1.9	2.9	5.7	5.7	1.9	105
02-Jul	3.6	1.3	0.0	3.8	13.4	7.0	7.0	6.3	4.5	4.5	4.5	0.2	0.0	0.4	0.0	0.4	0.2	0.0	1.9	5.5	1.9	4.4	8.5	20.6	528
03-Jul	9.5	0.0	2.0	26.0	12.9	12.6	8.8	2.6	0.0	4.0	4.0	1.1	2.4	4.8	1.6	1.8	1.7	0.3	0.3	1.4	1.3	0.6	0.2	0.1	1,188
04-Jul	0.4	0.3	1.0	1.6	0.4	5.6	0.4	0.7	0.2	1.7	4.4	6.8	7.7	9.0	8.3	11.7	8.7	3.1	3.2	7.6	12.3	2.6	1.4	0.9	2,057
05-Jul	0.1	0.0	0.0	0.1	0.0	0.6	0.6	1.0	3.1	2.4	5.4	5.2	11.0	11.9	8.6	6.4	5.1	2.3	1.7	3.0	11.2	15.1	3.8	1.3	1,413
06-Jul	0.2	0.0	0.2	0.2	0.1	0.1	0.3	0.6	0.4	0.7	2.4	4.0	4.1	10.0	9.9	6.9	5.8	5.3	1.6	5.1	7.3	24.2	9.4	1.1	1,784
07-Jul	0.7	0.2	0.4	0.1	0.3	0.6	0.7	0.7	1.9	9.2	6.0	7.8	3.2	3.4	1.8	2.1	3.0	2.2	0.7	2.2	4.6	20.1	15.7	12.3	1,341
08-Jul	1.9	0.9	2.0	0.3	1.3	0.5	30.4	3.2	1.4	3.4	2.1	3.8	6.3	5.3	4.2	2.6	2.5	0.9	2.3	2.2	0.1	3.7	8.7	9.9	1,727
09-Jul	4.4	1.1	2.6	0.4	2.0	1.1	0.8	2.9	2.8	7.5	8.2	10.1	10.9	6.1	4.3	6.3	5.2	1.7	1.5	2.0	1.0	0.8	10.0	6.5	1,024
10-Jul	3.0	0.6	0.8	0.4	0.7	3.9	6.1	5.5	2.5	2.8	6.2	8.6	4.1	9.8	7.4	5.1	4.2	3.6	6.2	3.8	3.1	2.4	4.5	4.4	1,089
11-Jul	1.2	0.4	8.3	9.7	2.3	0.6	1.6	2.6	2.5	2.3	5.0	5.7	4.2	5.9	6.1	4.7	3.5	5.7	5.6	3.7	3.5	4.2	6.7	3.9	1,707
12-Jul	0.9	0.4	0.2	1.4	0.6	1.1	1.1	0.4	0.4	1.8	2.1	3.7	5.8	8.1	11.3	10.8	11.8	7.3	11.3	6.6	2.8	4.2	1.7	4.3	1,895
13-Jul	3.4	1.8	2.6	2.4	2.0	1.2	2.5	3.7	8.0	5.7	5.2	8.6	14.6	9.0	5.8	3.3	3.7	5.5	5.0	4.0	1.0	0.7	0.2	0.1	1,476
14-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
15-Jul	0.0	0.1	0.0	0.0	0.1	0.1	0.8	0.4	1.0	1.2	1.2	1.8	1.1	3.0	4.5	6.0	3.8	5.1	11.0	17.9	18.2	11.1	9.6	1.8	730
16-Jul	0.1	0.1	0.1	0.1	0.4	1.5	2.7	2.5	3.3	4.4	6.2	7.3	6.6	5.1	5.5	3.2	2.2	9.0	18.0	10.6	5.9	3.1	1.7	0.4	4,181
17-Jul	0.0	0.0	0.0	0.5	2.1	5.5	7.8	3.1	2.3	5.0	8.6	5.6	9.0	8.8	5.9	4.2	4.8	5.0	6.7	7.2	4.1	1.9	1.1	0.9	2,262
18-Jul	0.3	0.0	0.0	0.4	0.4	1.3	1.9	2.1	2.2	3.3	6.4	7.1	10.3	7.6	4.2	5.3	3.7	2.8	8.0	13.0	10.3	8.0	1.4	0.1	778
19-Jul	0.1	0.2	0.1	1.3	0.9	0.5	2.0	2.0	1.9	2.7	2.5	6.6	7.2	11.3	10.0	8.7	8.2	3.4	4.2	9.0	6.6	6.1	3.5	1.1	913
20-Jul	0.0	0.3	0.2	0.0	0.1	0.2	1.1	1.7	3.9	4.4	3.3	4.0	4.7	5.6	5.9	8.4	4.0	3.3	1.0	10.1	18.4	14.0	3.8	1.6	1,991
21-Jul	2.1	1.7	0.0	0.4	0.2	3.5	2.1	1.2	0.6	4.5	5.0	6.0	2.4	4.1	4.8	9.6	3.1	6.0	2.8	3.4	12.3	14.0	8.1	2.2	968
22-Jul	1.5	0.7	0.5	0.0	0.3	0.4	1.5	2.8	2.1	5.1	0.4	5.6	4.9	3.5	3.6	2.2	2.6	1.4	2.6	31.2	18.5	4.3	2.6	1,364	
23-Jul	4.5	1.1	3.1	1.6	0.2	0.3	2.1	6.3	4.9	3.6	7.5	6.8	7.0	1.8	2.9	4.1	3.1	3.1	1.9	1.6	1.8	2.3	9.7	18.8	617
24-Jul	6.2	2.1	0.8	1.0	0.5	2.8	1.3	1.5	0.9	1.4	0.8	1.9	3.2	3.0	1.6	1.7	1.1	0.8	1.3	0.9	1.0	19.9	36.1	7.8	986
25-Jul	5.0	2.2	0.8	0.8	0.1	0.0	0.0	3.8	3.8	1.9	1.4	2.9	2.0	3.5	3.0	4.2	5.9	5.4	3.1	3.5	0.7	0.8	17.3	27.8	735
26-Jul	17.6	3.5	4.4	1.8	1.3	2.4	4.2	5.1	1.3	0.7	1.7	1.7	1.7	1.1	10.5	4.2	1.1	0.6	1.8	0.9	0.9	1.3	4.2	25.9	544
27-Jul	23.7	6.5	1.8	2.3	1.3	0.8	2.1	0.5	5.5	0.5	2.1	1.8	0.5	2.3	2.6	1.8	1.6	8.1	4.4	10.4	7.6	2.1	2.6	7.0	384
28-Jul	11.4	2.2	1.6	0.6	2.3	3.8	3.8	3.1	4.3	1.3	6.8	4.1	3.3	3.5	2.9	6.5	4.9	6.0	7.3	8.3	2.3	5.2	2.2	2.3	926
29-Jul	0.7	0.7	1.7	3.8	2.4	7.3	5.9	5.9	6.3	9.4	13.3	12.6	10.8	3.8	5.2	2.4	2.1	0.7	1.7	2.1	0.3	0.0	0.3	0.0	286
30-Jul	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	2.7	9.6	8.2	12.3	4.1	1.4	5.5	0.0	11.0	27.4	6.8	1.4	2.7	73

- Continued -

Appendix A.24. (p. 2 of 2)

	Percent of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
31-Jul	0.6	0.6	0.2	0.2	0.8	1.0	0.8	1.2	3.4	5.0	0.6	1.8	0.6	2.6	2.4	1.4	3.6	6.3	8.5	24.6	21.6	7.3	2.2	3.0	505
01-Aug	2.5	1.7	2.2	0.0	0.2	1.8	2.2	2.0	6.6	3.5	1.4	4.0	4.3	5.5	7.2	7.5	3.8	2.2	4.6	11.4	8.1	8.6	8.4	0.3	651
Average	2.3	0.7	1.2	2.0	1.4	2.2	3.8	2.3	2.6	3.5	4.6	5.2	5.9	6.3	5.7	5.3	4.3	4.3	5.6	6.3	7.2	7.4	5.7	4.2	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.25. Estimated salmon escapement on the north bank of the Crescent River, 1 July through 1 August, 1989. Species composition of daily sonar count based on trap catches.

	Sockeye		Pink		Chum		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
01-Jul	460	460	0	0	0	0	0	0
02-Jul	308	768	0	0	0	0	0	0
03-Jul	470	1,238	0	0	0	0	0	0
04-Jul	1,735	2,973	0	0	0	0	0	0
05-Jul	877	3,850	0	0	0	0	0	0
06-Jul	1,941	5,791	0	0	0	0	0	0
07-Jul	2,217	8,008	0	0	0	0	0	0
08-Jul	2,651	10,659	0	0	0	0	0	0
09-Jul	1,935	12,594	0	0	0	0	0	0
10-Jul	1,338	13,932	0	0	0	0	0	0
11-Jul	1,414	15,346	0	0	0	0	0	0
12-Jul	1,719	17,065	0	0	0	0	0	0
13-Jul	1,253	18,318	0	0	0	0	0	0
14-Jul	6	18,324	0	0	0	0	0	0
15-Jul	395	18,719	0	0	0	0	0	0
16-Jul	2,525	21,244	0	0	55	55	0	0
17-Jul	2,373	23,617	0	0	171	226	14	14
18-Jul	507	24,124	0	0	37	263	3	17
19-Jul	472	24,596	0	0	35	298	0	17
20-Jul	1,052	25,648	0	0	78	376	0	17
21-Jul	1,016	26,664	23	23	145	521	8	25
22-Jul	774	27,438	18	41	110	631	6	31
23-Jul	1,267	28,705	28	69	181	812	10	41
24-Jul	1,009	29,714	23	92	144	956	8	49
25-Jul	1,426	31,140	33	125	203	1,159	11	60
26-Jul	1,165	32,305	27	152	166	1,325	9	69
27-Jul	1,306	33,611	30	182	186	1,511	10	79
28-Jul	1,197	34,808	27	209	171	1,682	9	88
29-Jul	464	35,272	10	219	67	1,749	3	91
30-Jul	647	35,919	5	224	47	1,796	0	91
31-Jul	792	36,711	0	224	365	2,161	0	91
01-Aug	207	36,918	0	224	341	2,502	0	91

Appendix A.26. Estimated salmon escapement on the south bank of the Crescent River, 1 July through 1 August, 1989. Species composition of daily sonar counts based on trap catches.

	Sockeye		Pink		Chum		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
01-Jul	105	105	0	0	0	0	0	0
02-Jul	528	633	0	0	0	0	0	0
03-Jul	1,188	1,821	0	0	0	0	0	0
04-Jul	2,057	3,878	0	0	0	0	0	0
05-Jul	1,413	5,291	0	0	0	0	0	0
06-Jul	1,784	7,075	0	0	0	0	0	0
07-Jul	1,341	8,416	0	0	0	0	0	0
08-Jul	1,727	10,143	0	0	0	0	0	0
09-Jul	1,024	11,167	0	0	0	0	0	0
10-Jul	1,089	12,256	0	0	0	0	0	0
11-Jul	1,707	13,963	0	0	0	0	0	0
12-Jul	1,895	15,858	0	0	0	0	0	0
13-Jul	1,476	17,334	0	0	0	0	0	0
14-Jul	0	17,334	0	0	0	0	0	0
15-Jul	730	18,064	0	0	0	0	0	0
16-Jul	4,093	22,157	0	0	88	88	0	0
17-Jul	2,099	24,256	0	0	150	238	13	13
18-Jul	722	24,978	0	0	52	290	4	17
19-Jul	850	25,828	0	0	63	353	0	17
20-Jul	1,853	27,681	0	0	138	491	0	17
21-Jul	825	28,506	19	19	118	609	6	23
22-Jul	1,163	29,669	26	45	166	775	9	32
23-Jul	526	30,195	12	57	75	850	4	36
24-Jul	841	31,036	19	76	120	970	6	42
25-Jul	627	31,663	14	90	89	1,059	5	47
26-Jul	464	32,127	10	100	67	1,126	3	50
27-Jul	326	32,453	7	107	47	1,173	2	52
28-Jul	789	33,242	18	125	113	1,286	6	58
29-Jul	244	33,486	5	130	35	1,321	2	60
30-Jul	68	33,554	0	130	5	1,326	0	60
31-Jul	346	33,900	0	130	159	1,485	0	60
01-Aug	246	34,146	0	130	405	1,890	0	60

Appendix A.27. Length composition of the major age classes of sockeye salmon collected in the Crescent River, 1980-1989. Length measured from mid-eye to fork of tail.

		Male			Female			Total			
Year	Age Class	Ave Length (mm)	Stndrd Error	Sample Size	Ave Length (mm)	Stndrd Error	Sample Size	Ave Length (mm)	Stndrd Error	Sample Size	Ratio Male/ Female
1980	1.2	472	6	47	471	7	31	472		78	1.5:1
1981		522	9	59	491	9	33	511	9	92	1.8:1
1982		467	6	47	487	7	25	474	5	72	1.9:1
1980	1.3	568	2	167	549	2	223	557		390	0.7:1
1981		576	3	121	555	3	172	564		293	0.7:1
1982		586	1	303	556	1	259	572	1	562	1.2:1
1983		570	2	111	542	2	169	553	1	280	0.7:1
1984		574	5	60	552	2	72	562	3	132	0.8:1
1985		565	4	75	551	2	111	557	2	186	0.7:1
1987		601	3	54	573	3	37	590	2	91	1.5:1
1988		581	2	195	550	2	138	567	1	333	1.4:1
1989		593	1	320	561	2	271	578	1	591	1.2:1
1981	2.2	487	6	40	519	5	57	506		97	0.7:1
1983		494	4	93	488	3	89	491	3	182	1.0:1
1984		499	4	81	507	4	75	503	3	156	1.1:1
1985		496	5	75	490	4	47	494	4	122	1.6:1
1988		487	5	72	496	4	60	491	3	132	1.2:1
1980	2.3	584	2	158	554	2	237	566		395	0.7:1
1983		569	4	43	550	2	80	556	2	123	0.5:1
1984		581	2	261	553	2	202	569	1	463	1.3:1
1985		568	4	94	551	2	161	557	2	255	0.6:1
1986		573	5	44	556	3	45	564	3	89	1.0:1
1987		595	4	49	573	3	37	586	3	86	1.3:1
1988		585	3	110	556	2	83	572	2	193	1.3:1
1989		594	3	72	568	3	37	586	2	109	1.9:1

Appendix A.28. Estimated salmon escapement into the Yentna River, north and south banks combined, 7 July through 20 August 1989. Species composition of daily sonar counts based on fish wheel catches.

	Sockeye		Pink		Chum		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
07-Jul	262	262	572	572	196	196	2	2	18	18
08-Jul	345	607	744	1,316	251	447	3	5	22	40
09-Jul	281	888	957	2,273	64	511	6	11	15	55
10-Jul	266	1,154	906	3,179	60	571	5	16	14	69
11-Jul	171	1,325	1,265	4,444	26	597	7	23	19	88
12-Jul	78	1,403	1,452	5,896	8	605	10	33	4	92
13-Jul	91	1,494	1,501	7,397	6	611	16	49	20	112
14-Jul	326	1,820	1,707	9,104	19	630	13	62	10	122
15-Jul	432	2,252	889	9,993	30	660	19	81	10	132
16-Jul	280	2,532	347	10,340	23	683	15	96	9	141
17-Jul	2,410	4,942	1,944	12,284	226	909	131	227	30	171
18-Jul	4,948	9,890	6,037	18,321	924	1,833	255	482	37	208
19-Jul	5,642	15,532	9,096	27,417	1,119	2,952	240	722	8	216
20-Jul	3,901	19,433	6,541	33,958	773	3,725	228	950	2	218
21-Jul	3,068	22,501	4,929	38,887	396	4,121	187	1,137	28	246
22-Jul	4,411	26,912	5,320	44,207	540	4,661	120	1,257	9	255
23-Jul	7,636	34,548	5,689	49,896	1,095	5,756	425	1,682	5	260
24-Jul	9,014	43,562	10,810	60,706	1,638	7,394	497	2,179	26	286
25-Jul	7,649	51,211	12,182	72,888	1,415	8,809	177	2,356	0	286
26-Jul	10,964	62,175	12,699	85,587	2,388	11,197	1,141	3,497	46	332
27-Jul	9,905	72,080	13,352	98,939	2,926	14,123	1,933	5,430	0	332
28-Jul	4,851	76,931	11,804	110,743	4,606	18,729	1,743	7,173	19	351
29-Jul	5,246	82,177	9,225	119,968	4,340	23,069	2,408	9,581	0	351
30-Jul	990	83,167	6,890	126,858	1,750	24,819	541	10,122	14	365
31-Jul	356	83,523	3,116	129,974	996	25,815	96	10,218	0	365
01-Aug	553	84,076	1,881	131,855	367	26,182	50	10,268	10	375
02-Aug	576	84,652	1,822	133,677	368	26,550	56	10,324	13	388
03-Aug	927	85,579	1,969	135,646	657	27,207	342	10,666	3	391
04-Aug	1,746	87,325	5,370	141,016	1,719	28,926	763	11,429	0	391
05-Aug	1,518	88,843	6,651	147,667	5,233	34,159	1,223	12,652	0	391
06-Aug	1,268	90,111	5,763	153,430	5,278	39,437	1,519	14,171	0	391
07-Aug	730	90,841	4,992	158,422	4,166	43,603	1,139	15,310	0	391
08-Aug	483	91,324	2,003	160,425	952	44,555	335	15,645	0	391
09-Aug	529	91,853	2,446	162,871	1,191	45,746	460	16,105	2	393
10-Aug	351	92,204	892	163,763	817	46,563	360	16,465	0	393
11-Aug	447	92,651	853	164,616	829	47,392	392	16,857	0	393
12-Aug	390	93,041	778	165,394	570	47,962	466	17,323	0	393
13-Aug	837	93,878	1,821	167,215	1,845	49,807	963	18,286	0	393
14-Aug	986	94,864	1,913	169,128	2,724	52,531	1,734	20,020	0	393
15-Aug	655	95,519	2,679	171,807	3,482	56,013	2,256	22,276	0	393
16-Aug	240	95,759	769	172,576	3,276	59,289	1,149	23,425	0	393
17-Aug	210	95,969	532	173,108	1,709	60,998	809	24,234	0	393
18-Aug	139	96,108	289	173,397	718	61,716	616	24,850	0	393
19-Aug	106	96,214	187	173,584	962	62,678	492	25,342	0	393
20-Aug	55	96,269	114	173,698	701	63,379	353	25,695	0	393

Appendix A.29. Estimated salmon escapement on the north bank of the Yentna River, 7 July through 20 August, 1989. Species composition of daily sonar counts based on fish wheel catches.

	Sockeye		Pink		Chum		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
07-Jul	80	80	198	198	87	87	2	2	14	14
08-Jul	95	175	233	431	103	190	3	5	16	30
09-Jul	62	237	304	735	40	230	6	11	9	39
10-Jul	57	294	281	1,016	38	268	5	16	8	47
11-Jul	45	339	320	1,336	11	279	2	18	4	51
12-Jul	5	344	343	1,679	0	279	2	20	0	51
13-Jul	10	354	307	1,986	1	280	6	26	6	57
14-Jul	22	376	291	2,277	1	281	1	27	4	61
15-Jul	57	433	149	2,426	9	290	3	30	5	66
16-Jul	84	517	218	2,644	12	302	4	34	8	74
17-Jul	204	721	493	3,137	100	402	6	40	20	94
18-Jul	432	1,153	1,753	4,890	428	830	24	64	4	98
19-Jul	494	1,647	1,898	6,788	349	1,179	7	71	8	106
20-Jul	121	1,768	530	7,318	161	1,340	8	79	2	108
21-Jul	37	1,805	533	7,851	69	1,409	9	88	1	109
22-Jul	253	2,058	1,249	9,100	228	1,637	51	139	9	118
23-Jul	531	2,589	1,110	10,210	220	1,857	71	210	5	123
24-Jul	236	2,825	632	10,842	325	2,182	59	269	4	127
25-Jul	91	2,916	871	11,713	362	2,544	58	327	0	127
26-Jul	679	3,595	2,195	13,908	964	3,508	133	460	6	133
27-Jul	852	4,447	2,306	16,214	1,519	5,027	445	905	0	133
28-Jul	811	5,258	2,936	19,150	2,994	8,021	472	1,377	0	133
29-Jul	1,140	6,398	2,188	21,338	2,150	10,171	492	1,869	0	133
30-Jul	82	6,480	778	22,116	314	10,485	62	1,931	2	135
31-Jul	68	6,548	697	22,813	224	10,709	45	1,976	0	135
01-Aug	134	6,682	460	23,273	70	10,779	9	1,985	0	135
02-Aug	111	6,793	247	23,520	40	10,819	10	1,995	2	137
03-Aug	273	7,066	327	23,847	120	10,939	42	2,037	3	140
04-Aug	472	7,538	2,173	26,020	675	11,614	178	2,215	0	140
05-Aug	652	8,190	3,281	29,301	2,675	14,289	528	2,743	0	140
06-Aug	609	8,799	2,619	31,920	3,430	17,719	385	3,128	0	140
07-Aug	470	9,269	2,020	33,940	2,219	19,938	166	3,294	0	140
08-Aug	97	9,366	494	34,434	267	20,205	48	3,342	0	140
09-Aug	137	9,503	878	35,312	360	20,565	68	3,410	2	142
10-Aug	71	9,574	317	35,629	169	20,734	50	3,460	0	142
11-Aug	165	9,739	273	35,902	175	20,909	80	3,540	0	142
12-Aug	125	9,864	263	36,165	131	21,040	89	3,629	0	142
13-Aug	385	10,249	943	37,108	1,098	22,138	320	3,949	0	142
14-Aug	714	10,963	1,236	38,344	1,558	23,696	630	4,579	0	142
15-Aug	408	11,371	2,102	40,446	2,688	26,384	607	5,186	0	142
16-Aug	125	11,496	342	40,788	1,953	28,337	459	5,645	0	142
17-Aug	97	11,593	364	41,152	909	29,246	214	5,859	0	142
18-Aug	32	11,625	126	41,278	282	29,528	151	6,010	0	142
19-Aug	17	11,642	98	41,376	387	29,915	98	6,108	0	142
20-Aug	7	11,649	44	41,420	245	30,160	85	6,193	0	142

Appendix A.30. Estimated salmon escapement on the south bank of the Yentna River, 7 July through 20 August, 1989. Species composition of daily fish targets based on fish wheel catch.

	Sockeye		Pink		Chum		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
07-Jul	182	182	374	374	109	109	0	0	4	4
08-Jul	250	432	511	885	148	257	0	0	6	10
09-Jul	219	651	653	1,538	24	281	0	0	6	16
10-Jul	209	860	625	2,163	22	303	0	0	6	22
11-Jul	126	986	945	3,108	15	318	5	5	15	37
12-Jul	73	1,059	1,109	4,217	8	326	8	13	4	41
13-Jul	81	1,140	1,194	5,411	5	331	10	23	14	55
14-Jul	304	1,444	1,416	6,827	18	349	12	35	6	61
15-Jul	375	1,819	740	7,567	21	370	16	51	5	66
16-Jul	196	2,015	129	7,696	11	381	11	62	1	67
17-Jul	2,206	4,221	1,451	9,147	126	507	125	187	10	77
18-Jul	4,516	8,737	4,284	13,431	496	1,003	231	418	33	110
19-Jul	5,148	13,885	7,198	20,629	770	1,773	233	651	0	110
20-Jul	3,780	17,665	6,011	26,640	612	2,385	220	871	0	110
21-Jul	3,031	20,696	4,396	31,036	327	2,712	178	1,049	27	137
22-Jul	4,158	24,854	4,071	35,107	312	3,024	69	1,118	0	137
23-Jul	7,105	31,959	4,579	39,686	875	3,899	354	1,472	0	137
24-Jul	8,778	40,737	10,178	49,864	1,313	5,212	438	1,910	22	159
25-Jul	7,558	48,295	11,311	61,175	1,053	6,265	119	2,029	0	159
26-Jul	10,285	58,580	10,504	71,679	1,424	7,689	1,008	3,037	40	199
27-Jul	9,053	67,633	11,046	82,725	1,407	9,096	1,488	4,525	0	199
28-Jul	4,040	71,673	8,868	91,593	1,612	10,708	1,271	5,796	19	218
29-Jul	4,106	75,779	7,037	98,630	2,190	12,898	1,916	7,712	0	218
30-Jul	908	76,687	6,112	104,742	1,436	14,334	479	8,191	12	230
31-Jul	288	76,975	2,419	107,161	772	15,106	51	8,242	0	230
01-Aug	419	77,394	1,421	108,582	297	15,403	41	8,283	10	240
02-Aug	465	77,859	1,575	110,157	328	15,731	46	8,329	11	251
03-Aug	654	78,513	1,642	111,799	537	16,268	300	8,629	0	251
04-Aug	1,274	79,787	3,197	114,996	1,044	17,312	585	9,214	0	251
05-Aug	866	80,653	3,370	118,366	2,558	19,870	695	9,909	0	251
06-Aug	659	81,312	3,144	121,510	1,848	21,718	1,134	11,043	0	251
07-Aug	260	81,572	2,972	124,482	1,947	23,665	973	12,016	0	251
08-Aug	386	81,958	1,509	125,991	685	24,350	287	12,303	0	251
09-Aug	392	82,350	1,568	127,559	831	25,181	392	12,695	0	251
10-Aug	280	82,630	575	128,134	648	25,829	310	13,005	0	251
11-Aug	282	82,912	580	128,714	654	26,483	312	13,317	0	251
12-Aug	265	83,177	515	129,229	439	26,922	377	13,694	0	251
13-Aug	452	83,629	878	130,107	747	27,669	643	14,337	0	251
14-Aug	272	83,901	677	130,784	1,166	28,835	1,104	15,441	0	251
15-Aug	247	84,148	577	131,361	794	29,629	1,649	17,090	0	251
16-Aug	115	84,263	427	131,788	1,323	30,952	690	17,780	0	251
17-Aug	113	84,376	168	131,956	800	31,752	595	18,375	0	251
18-Aug	107	84,483	163	132,119	436	32,188	465	18,840	0	251
19-Aug	89	84,572	89	132,208	575	32,763	394	19,234	0	251
20-Aug	48	84,620	70	132,278	456	33,219	268	19,502	0	251

Appendix A.31. Yentna River south bank sonar counts by sector, 7 July through 20 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
07-Jul	17.2	17.3	16.7	10.5	4.0	0.4	5.2	4.9	3.1	3.0	5.2	12.3	669
08-Jul	26.4	15.2	15.4	8.6	3.4	0.8	3.8	3.6	2.6	4.8	5.4	9.9	915
09-Jul	22.9	15.9	15.7	10.2	3.3	0.4	4.1	4.0	3.8	4.4	6.3	8.9	902
10-Jul	19.6	15.3	20.8	11.6	3.6	0.5	5.5	3.7	3.4	2.2	3.2	10.7	862
11-Jul	21.7	16.5	19.3	8.0	1.7	0.5	3.9	2.5	2.4	3.2	5.2	14.9	1,106
12-Jul	22.7	15.8	20.6	9.8	2.8	1.9	3.5	2.5	2.3	5.9	5.2	6.9	1,202
13-Jul	18.4	16.9	16.9	12.0	5.4	1.8	5.4	3.3	4.3	4.3	4.8	6.7	1,304
14-Jul	28.1	25.8	24.2	9.6	3.9	1.0	2.3	1.7	0.6	0.9	0.7	1.3	1,756
15-Jul	33.5	44.3	15.2	2.8	2.1	2.1	0.0	0.0	0.0	0.0	0.0	0.0	1,157
16-Jul	36.5	27.0	31.0	3.7	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.6	348
17-Jul	10.3	22.6	26.1	16.8	10.4	4.9	2.2	0.9	0.5	1.8	1.6	1.9	3,918
18-Jul	9.8	22.1	19.8	12.9	11.8	7.9	5.3	3.8	1.9	1.8	1.3	1.7	9,560
19-Jul	19.2	27.8	18.8	10.9	8.0	5.2	3.5	2.0	1.5	1.4	1.0	0.9	13,349
20-Jul	19.6	27.6	18.5	10.1	8.5	5.3	3.4	2.3	1.5	1.1	0.8	1.1	10,623
21-Jul	22.3	33.3	20.8	11.0	6.5	2.8	1.3	0.6	0.3	0.3	0.2	0.6	7,959
22-Jul	18.4	28.6	22.9	13.2	8.1	3.4	1.7	1.1	0.5	0.5	0.6	1.0	8,610
23-Jul	9.3	19.9	15.4	12.7	12.9	9.0	6.2	4.5	2.3	2.0	1.4	4.4	12,913
24-Jul	8.6	24.4	18.6	13.1	12.4	8.6	5.3	3.2	1.3	1.0	0.7	2.7	20,729
25-Jul	3.1	16.0	15.8	11.8	13.7	13.7	9.4	6.3	2.8	2.7	1.8	3.0	20,041
26-Jul	6.1	22.8	15.2	9.1	9.8	9.6	8.2	6.4	4.0	3.3	2.4	3.0	23,270
27-Jul	12.4	26.8	17.6	9.1	8.6	7.3	5.1	4.1	2.2	2.1	1.9	3.0	22,994
28-Jul	10.4	22.0	20.3	10.5	10.0	7.7	5.5	4.3	2.3	2.0	1.6	3.3	15,810
29-Jul	12.1	26.7	22.0	12.1	9.8	6.9	3.8	2.3	1.2	1.2	0.9	1.1	15,249
30-Jul	22.9	33.5	22.8	9.3	6.0	2.9	1.4	0.7	0.2	0.1	0.0	0.1	8,947
31-Jul	35.8	38.9	19.2	4.6	1.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	3,530
01-Aug	13.6	36.3	34.6	9.5	3.6	1.4	0.5	0.2	0.1	0.0	0.1	0.0	2,188
02-Aug	17.0	40.4	29.4	10.0	2.4	0.6	0.2	0.0	0.0	0.0	0.0	0.0	2,425
03-Aug	9.6	32.9	31.7	14.4	6.6	1.9	1.0	0.1	0.1	0.3	0.7	0.7	3,133
04-Aug	9.5	26.0	27.7	13.4	9.3	4.7	3.3	2.1	1.1	0.7	1.1	1.1	6,100
05-Aug	10.4	27.4	23.7	12.8	8.8	7.3	4.1	2.6	1.1	0.7	0.5	0.8	7,489
06-Aug	23.2	29.3	24.5	10.9	6.3	3.2	1.3	0.7	0.2	0.2	0.0	0.1	6,785
07-Aug	27.5	36.5	23.6	7.2	3.2	1.2	0.7	0.1	0.0	0.0	0.0	0.0	6,152
08-Aug	26.0	35.2	24.3	8.2	4.2	1.2	0.4	0.4	0.1	0.0	0.1	0.0	2,867
09-Aug	21.3	26.6	23.4	13.1	7.0	4.2	1.9	1.3	0.3	0.3	0.2	0.3	3,183
10-Aug	22.0	30.1	23.3	12.1	8.5	2.4	0.9	0.3	0.2	0.0	0.1	0.0	1,813
11-Aug	12.5	34.1	31.5	11.4	6.6	2.1	1.6	0.2	0.0	0.0	0.0	0.0	1,828
12-Aug	16.5	28.1	33.0	13.2	6.1	2.3	0.6	0.3	0.0	0.0	0.0	0.0	1,596
13-Aug	10.2	22.5	42.6	12.8	6.2	3.2	1.4	0.6	0.1	0.1	0.0	0.1	2,720
14-Aug	11.5	29.4	32.7	13.9	6.1	3.2	1.4	1.1	0.3	0.2	0.1	0.2	3,219
15-Aug	17.8	36.2	24.2	10.4	5.4	3.2	1.3	0.5	0.2	0.4	0.4	0.1	3,267
16-Aug	37.6	29.4	14.9	7.0	5.0	3.2	1.3	0.8	0.3	0.2	0.1	0.2	2,555
17-Aug	22.6	29.3	15.5	10.1	7.9	6.4	2.9	2.3	1.2	0.7	0.5	0.7	1,676
18-Aug	18.4	32.5	19.9	6.9	7.9	8.7	3.8	1.2	0.3	0.2	0.0	0.2	1,171
19-Aug	25.2	32.7	16.9	7.1	6.9	5.6	2.9	1.7	0.1	0.4	0.4	0.2	1,147
20-Aug	29.7	38.7	13.2	8.3	4.5	2.6	2.5	0.1	0.1	0.1	0.0	0.1	842
Average	14.0	26.1	20.4	11.0	8.9	6.3	4.3	3.0	1.6	1.4	1.1	2.0	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.32. Yentna River north bank sonar counts by sector, 7 July through 20 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
07-Jul	14.6	11.9	10.7	4.8	3.6	3.0	4.5	5.1	6.5	14.0	5.4	16.1	336
08-Jul	30.2	20.7	17.6	4.9	1.8	0.4	1.1	2.0	2.2	3.1	3.3	12.7	450
09-Jul	26.8	17.8	20.7	7.1	3.1	0.7	1.2	3.1	1.9	5.0	4.3	8.3	421
10-Jul	24.7	23.4	20.6	6.9	2.1	0.5	1.0	0.0	3.3	3.6	4.1	9.8	389
11-Jul	27.5	33.8	26.7	3.4	0.8	0.0	1.3	0.3	1.3	0.3	0.5	4.2	382
12-Jul	35.4	32.3	18.9	2.9	1.4	0.0	0.3	0.0	0.0	0.9	0.9	7.1	350
13-Jul	30.3	30.0	22.1	6.4	1.5	0.3	4.2	0.3	0.3	0.3	0.6	3.6	330
14-Jul	30.4	33.2	16.9	6.6	1.6	0.9	1.3	0.3	0.6	2.8	0.9	4.4	319
15-Jul	71.7	22.0	5.4	0.0	0.4	0.0	0.4	0.0	0.0	0.0	0.0	0.0	223
16-Jul	54.3	35.0	9.5	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	326
17-Jul	24.8	31.2	24.8	6.0	1.5	0.6	1.2	2.2	2.7	3.2	0.9	1.1	823
18-Jul	20.1	31.3	29.0	5.9	1.4	0.7	1.6	1.4	1.9	2.2	1.9	2.7	2,641
19-Jul	21.3	33.3	30.2	5.6	1.9	0.8	1.2	1.0	0.8	1.3	1.3	1.5	2,756
20-Jul	30.3	30.9	25.3	2.8	0.9	0.5	1.8	0.5	0.4	1.1	0.7	4.9	822
21-Jul	45.8	32.0	17.3	2.0	0.2	0.0	1.2	0.2	0.2	0.2	0.0	1.1	649
22-Jul	25.1	43.7	22.2	2.6	0.4	0.1	0.8	0.6	0.6	0.8	1.0	2.2	1,790
23-Jul	23.4	33.7	22.3	5.2	1.4	0.3	3.2	2.4	1.9	1.5	1.8	3.0	1,937
24-Jul	26.2	28.2	21.9	6.2	2.8	2.2	1.4	0.9	0.9	1.3	1.8	6.3	1,256
25-Jul	23.7	31.5	25.3	8.2	2.2	1.0	1.7	0.7	0.7	0.7	1.4	2.7	1,382
26-Jul	21.0	31.2	26.2	7.8	2.1	0.6	2.2	1.6	1.1	2.5	0.8	3.0	3,977
27-Jul	26.4	31.4	21.8	5.4	1.9	0.4	2.1	1.6	1.3	1.9	2.2	3.6	5,122
28-Jul	28.2	31.5	20.1	4.9	2.2	1.0	2.1	1.5	1.3	2.2	2.1	2.9	7,213
29-Jul	29.7	32.5	21.4	4.7	1.7	0.4	1.7	1.4	0.9	1.1	1.3	3.2	5,970
30-Jul	33.8	38.5	22.1	3.0	0.8	0.2	0.2	0.0	0.0	0.0	0.2	1.3	1,238
31-Jul	43.4	40.0	16.0	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1,034
01-Aug	31.6	42.6	23.0	1.9	0.3	0.1	0.1	0.0	0.0	0.0	0.0	0.1	673
02-Aug	39.5	34.6	15.1	3.2	0.2	0.0	0.0	0.0	0.0	0.0	2.9	4.4	410
03-Aug	53.9	26.5	13.6	2.0	0.0	0.0	0.7	0.3	0.3	0.8	1.3	0.8	765
04-Aug	29.8	27.4	28.8	6.0	1.0	0.1	1.7	0.7	0.3	1.1	1.2	1.9	3,498
05-Aug	33.7	28.9	23.3	6.2	1.8	0.8	1.5	0.8	0.6	0.9	0.9	0.8	7,136
06-Aug	29.4	36.8	24.1	5.5	0.7	0.2	1.0	0.4	0.2	0.6	0.6	0.5	7,043
07-Aug	32.1	41.4	24.0	1.8	0.1	0.0	0.3	0.1	0.0	0.0	0.0	0.1	4,875
08-Aug	47.4	34.2	15.8	1.3	0.1	0.0	0.1	0.1	0.0	0.0	0.0	1.0	906
09-Aug	43.9	27.1	20.6	4.2	0.7	0.0	0.6	0.8	0.4	0.3	0.6	0.9	1,445
10-Aug	56.8	27.7	12.5	0.7	0.2	0.2	0.0	0.0	0.0	0.2	0.5	1.3	607
11-Aug	41.1	44.3	11.7	1.4	0.0	0.0	0.1	0.0	0.0	1.2	0.1	0.0	693
12-Aug	30.6	37.8	25.3	2.5	3.1	0.3	0.2	0.0	0.0	0.0	0.0	0.2	608
13-Aug	9.5	26.3	44.4	10.4	4.9	2.7	0.5	0.5	0.1	0.3	0.2	0.1	2,746
14-Aug	16.4	37.9	27.5	9.7	3.9	1.9	0.9	0.5	0.2	0.1	0.3	0.5	4,138
15-Aug	27.9	31.3	25.7	9.3	3.2	1.6	0.4	0.4	0.1	0.0	0.1	0.1	5,805
16-Aug	36.2	25.9	26.8	7.3	2.4	0.6	0.3	0.1	0.1	0.0	0.0	0.3	2,879
17-Aug	31.9	30.2	25.6	7.1	2.9	1.5	0.4	0.1	0.2	0.0	0.0	0.0	1,584
18-Aug	19.5	26.2	39.1	11.2	2.5	0.7	0.3	0.3	0.2	0.0	0.0	0.0	591
19-Aug	29.3	35.5	26.3	5.0	2.3	0.8	0.0	0.2	0.3	0.2	0.0	0.0	600
20-Aug	28.3	40.4	26.2	3.9	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	381
Average	28.7	32.5	24.2	5.7	1.8	0.7	1.2	0.8	0.7	1.0	0.9	1.8	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.33. Yentna River north bank sonar counts by hour, 7 July through 20 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
07-Jul	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	2.4	6.3	4.8	3.0	8.9	3.9	3.6	3.6	0.9	3.0	3.9	1.5	4.5	14.3	336
08-Jul	6.9	8.0	8.0	5.3	2.4	4.4	2.9	7.6	5.1	4.9	2.2	4.7	4.2	2.2	4.0	4.7	2.7	2.7	2.9	2.0	2.0	3.3	2.7	4.2	450
09-Jul	5.7	2.4	3.3	9.5	8.3	6.2	5.2	4.3	5.0	3.3	1.7	4.0	4.0	2.4	4.0	2.9	4.3	2.6	1.4	4.3	5.7	2.1	3.8	3.6	421
10-Jul	3.3	5.1	4.9	5.7	5.7	5.1	7.7	3.3	5.7	3.6	2.8	4.6	3.9	0.3	4.9	3.3	1.5	2.6	7.5	5.4	3.1	3.9	1.8	4.4	389
11-Jul	4.2	0.8	3.1	5.0	5.0	6.3	11.0	7.3	4.7	3.4	3.4	1.8	1.8	2.4	3.1	3.4	1.8	2.4	4.2	3.7	2.4	6.0	7.9	5.0	382
12-Jul	4.3	3.4	4.0	4.0	6.3	5.1	6.6	3.4	1.4	4.9	5.1	8.3	4.3	3.7	4.3	5.4	2.6	4.0	3.7	2.0	4.3	0.6	4.0	4.3	350
13-Jul	3.9	4.2	2.1	1.5	10.9	4.5	1.8	4.5	3.6	2.1	5.2	4.8	3.9	0.9	1.5	4.5	1.5	4.5	5.8	3.6	6.7	5.2	8.8	3.6	330
14-Jul	4.7	3.1	1.9	6.3	6.0	3.1	3.4	3.1	8.2	3.8	9.4	5.0	2.2	5.0	5.3	2.2	6.0	1.9	3.4	4.7	2.2	2.2	3.1	3.8	319
15-Jul	3.1	6.3	7.6	2.7	9.0	13.0	4.0	1.8	2.7	1.3	2.7	10.3	3.1	1.3	0.9	9.0	0.9	2.2	2.2	6.3	2.2	3.1	2.7	1.3	223
16-Jul	0.9	2.8	3.4	1.8	4.6	2.5	4.6	5.8	2.8	0.9	8.0	6.7	3.7	3.1	3.4	4.0	1.5	5.5	9.2	4.0	4.9	4.9	4.0	7.1	326
17-Jul	3.8	2.9	4.4	2.9	3.4	1.1	2.9	3.8	5.2	4.1	4.4	8.3	4.9	3.3	5.3	6.8	3.8	3.3	4.5	1.9	5.7	4.3	5.3	3.8	823
18-Jul	4.4	4.6	2.7	2.0	1.1	3.6	4.9	3.6	4.6	4.5	7.1	7.3	4.2	3.4	3.0	4.4	2.2	1.2	3.3	5.3	5.6	6.1	4.1	6.7	2,641
19-Jul	11.5	12.0	10.6	7.5	7.2	6.2	3.1	4.1	2.5	1.4	1.7	1.9	2.5	2.1	2.4	2.8	2.6	2.8	3.1	3.4	2.5	2.9	1.5	1.6	2,756
20-Jul	5.7	6.3	5.4	5.0	5.6	5.4	6.0	3.6	1.3	1.6	2.1	2.6	3.2	3.6	4.0	4.6	4.3	6.3	6.3	6.1	2.9	1.8	2.9	3.4	822
21-Jul	6.9	4.0	2.2	0.9	3.7	3.2	2.2	1.5	2.9	1.2	2.3	4.3	4.6	3.1	2.2	2.9	2.0	5.5	5.4	5.2	4.2	9.7	10.5	9.2	649
22-Jul	2.2	3.6	3.0	1.5	2.1	2.0	2.0	1.7	2.7	2.2	2.6	4.6	3.9	2.7	4.5	3.9	6.4	4.7	9.2	11.0	8.5	5.9	5.5	3.6	1,790
23-Jul	5.2	7.3	5.5	3.3	4.0	3.9	2.9	2.1	2.2	1.3	2.1	1.8	3.6	3.2	4.0	3.3	3.1	3.1	5.8	7.3	7.5	9.2	5.4	2.9	1,937
24-Jul	8.0	5.9	3.9	3.0	4.3	4.3	3.1	2.5	4.3	3.3	6.0	4.9	3.2	3.3	5.6	4.6	2.5	4.2	3.3	5.3	5.1	2.7	3.4	3.3	1,256
25-Jul	1.7	2.2	2.7	2.0	3.9	2.3	2.9	2.4	2.2	2.4	2.6	3.1	2.7	3.3	4.5	3.8	5.1	6.4	6.6	6.8	9.6	7.3	8.2	5.2	1,382
26-Jul	4.6	5.0	4.2	4.0	3.2	4.0	3.7	1.9	2.5	3.3	4.4	4.2	4.2	4.7	3.8	3.3	3.5	5.1	5.9	3.7	6.4	6.2	4.2	3.8	3,977
27-Jul	3.2	3.5	2.9	2.5	2.4	2.7	2.6	2.7	3.2	3.4	4.5	3.3	4.7	3.7	2.9	5.2	5.7	4.4	4.6	5.5	8.1	5.8	4.2	8.4	5,122
28-Jul	4.8	4.0	2.8	4.5	3.4	2.7	4.2	3.0	3.8	3.2	3.1	3.9	3.5	3.3	4.5	5.0	4.0	4.5	5.5	8.2	6.6	3.9	5.0	2.6	7,213
29-Jul	8.3	5.5	3.2	2.3	2.8	3.5	2.5	2.4	3.7	5.8	4.2	3.6	3.8	5.0	5.0	5.1	3.0	4.4	4.7	5.7	5.9	3.4	3.1	3.1	5,970
30-Jul	7.8	4.4	7.2	5.3	2.7	3.8	3.2	4.4	3.6	4.4	3.2	3.1	4.3	5.2	6.0	5.0	3.6	3.6	3.5	2.8	2.4	2.7	4.8	3.2	1,238
31-Jul	3.3	2.6	3.2	3.2	2.8	1.5	3.1	2.4	2.9	4.6	4.2	4.1	2.9	5.6	6.2	4.4	4.4	5.6	8.2	4.0	5.3	6.1	5.1	4.4	1,034
01-Aug	3.0	5.2	4.3	3.9	2.2	5.9	4.8	1.8	3.1	2.4	2.8	2.5	5.1	2.8	5.5	4.9	3.7	5.8	7.4	6.1	5.2	4.8	3.9	3.0	673
02-Aug	10.0	4.6	4.4	5.9	7.3	3.9	2.7	6.8	4.1	2.0	4.1	3.4	1.7	2.7	2.2	2.9	8.3	4.6	2.0	2.2	2.9	3.2	5.6	2.4	410
03-Aug	2.6	2.1	2.1	1.3	2.0	1.2	2.2	0.7	2.6	2.2	2.5	3.3	3.7	3.8	2.6	5.6	5.2	4.8	5.5	6.5	10.8	9.0	6.4	11.2	765
04-Aug	1.9	1.9	2.1	1.8	1.1	1.4	1.2	1.8	2.2	2.1	1.8	3.2	5.3	4.7	6.5	4.6	7.3	4.9	4.7	7.3	7.7	5.7	11.1	7.5	3,498
05-Aug	2.6	4.6	3.9	2.0	2.4	4.2	2.4	2.6	2.0	2.1	2.6	2.9	2.9	3.6	2.5	4.5	6.7	7.4	8.5	8.3	7.9	5.6	4.4	3.3	7,136
06-Aug	4.5	3.9	2.5	2.0	2.4	1.8	2.3	3.1	3.0	4.0	4.5	4.5	4.9	4.5	6.5	6.5	5.4	5.2	5.8	3.4	3.4	5.0	5.8	5.1	7,043
07-Aug	7.4	7.0	6.4	4.7	3.8	2.8	1.7	3.8	3.1	3.0	3.6	3.1	3.4	3.2	4.9	5.9	6.3	5.2	5.1	3.7	3.5	3.1	3.4	1.8	4,875
08-Aug	6.6	3.0	4.6	1.0	2.2	1.8	3.9	2.9	2.8	2.3	2.9	2.6	3.8	7.1	5.0	5.3	5.4	5.4	6.6	5.6	5.2	4.3	5.7	4.1	906
09-Aug	4.0	2.2	1.9	0.9	1.5	1.1	1.6	1.6	1.8	1.8	2.7	7.1	4.7	4.7	5.3	6.2	2.5	6.0	8.9	8.1	7.1	6.4	7.3	4.6	1,445
10-Aug	10.4	11.7	2.8	3.0	4.1	2.6	2.8	1.5	1.8	1.0	2.8	1.2	3.1	2.3	5.1	2.0	1.3	4.1	4.1	6.1	8.9	5.1	5.4	6.8	607

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Appendix A.33. (page 2 of 2).

Date	Percent of Counts by Hour																								Daily Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
11-Aug	3.9	5.2	2.7	1.7	1.3	1.7	2.0	2.3	3.6	8.1	6.3	4.9	5.9	5.1	6.2	2.7	3.8	8.2	7.8	5.1	2.5	5.5	2.5	1.0	693
12-Aug	2.1	0.8	1.6	1.2	1.3	2.3	1.3	0.5	0.5	1.8	1.2	2.1	3.1	0.7	1.3	2.3	2.1	2.5	3.0	17.1	10.4	18.1	12.5	10.2	608
13-Aug	1.7	1.9	2.3	1.2	1.2	1.7	4.2	1.6	1.7	1.8	1.6	2.9	4.3	4.6	8.7	5.6	5.1	6.5	8.2	7.5	7.8	7.4	5.5	5.1	2,746
14-Aug	2.9	1.9	1.4	0.9	1.2	1.4	4.2	1.7	1.4	1.9	1.9	3.1	3.6	4.0	3.7	6.3	6.9	6.3	7.2	9.3	8.4	7.2	6.4	6.6	4,138
15-Aug	4.2	3.9	2.3	1.5	1.5	1.5	1.3	1.0	1.6	1.6	1.5	1.9	3.7	6.3	5.7	7.4	8.7	6.2	6.5	8.6	6.6	6.4	5.8	4.1	5,805
16-Aug	6.7	4.9	3.6	2.5	2.3	1.8	1.4	1.2	1.1	2.4	2.0	3.3	4.1	3.8	3.3	3.6	5.0	5.9	4.7	6.4	8.9	10.1	4.9	6.0	2,879
17-Aug	8.3	5.1	2.5	2.6	2.8	2.8	4.2	2.8	1.8	1.4	3.6	1.0	3.0	2.2	2.1	4.7	3.5	7.2	6.8	8.5	10.9	4.9	4.2	3.2	1,584
18-Aug	13.7	7.8	4.1	4.4	1.7	1.9	1.9	2.2	2.5	4.7	3.6	3.6	2.2	2.5	5.1	5.6	3.4	2.7	2.5	4.7	3.9	6.8	3.9	4.7	591
19-Aug	3.0	4.7	3.5	3.0	1.2	2.5	0.7	1.8	3.0	2.2	2.2	1.3	3.5	5.7	4.8	6.8	4.3	7.3	6.7	6.3	8.8	7.3	4.0	5.3	600
20-Aug	5.5	5.2	4.7	5.0	3.1	1.3	2.1	2.1	3.7	4.7	2.1	2.9	2.1	4.5	3.9	2.1	7.3	10.2	5.5	7.1	5.5	4.2	2.1	2.9	381
Average	4.9	4.5	3.5	2.8	2.8	2.9	2.9	2.6	2.8	2.9	3.2	3.6	3.8	4.0	4.5	5.0	4.9	5.1	5.8	6.3	6.3	5.5	5.0	4.5	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.34. Yentna River south bank sonar counts by hour, 7 July through 20 August, 1989. Counts expressed as percent of daily total.[a]

	Percent of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
07-Jul	4.2	5.2	4.0	4.0	6.6	5.5	8.1	4.9	4.8	4.3	2.2	3.6	1.8	3.0	4.6	4.2	2.5	3.7	3.9	3.1	2.8	3.9	3.4	5.4	669
08-Jul	4.5	6.2	4.9	5.2	3.0	5.0	4.2	4.4	5.5	5.7	1.9	3.7	4.7	3.5	4.4	4.2	3.9	4.4	4.9	2.2	4.0	3.1	3.1	3.6	915
09-Jul	3.7	5.2	6.5	5.2	4.1	4.0	5.9	4.0	3.5	4.7	1.8	2.1	4.9	3.8	3.4	3.7	3.9	3.2	3.4	3.7	4.3	3.7	5.7	5.8	902
10-Jul	3.8	2.8	3.4	4.8	3.8	6.3	4.4	5.2	3.2	4.9	5.2	2.3	4.2	5.3	2.3	3.0	3.4	2.9	2.9	6.4	2.9	4.1	4.8	7.8	862
11-Jul	3.6	4.9	4.4	5.5	5.7	5.9	3.9	4.0	4.2	3.5	3.3	4.3	3.1	3.3	3.1	3.7	5.2	3.3	3.7	2.9	3.6	4.0	6.1	4.9	1,106
12-Jul	6.2	4.1	2.5	5.2	4.0	4.0	4.0	6.7	3.5	4.1	3.3	3.7	2.3	3.9	2.7	3.4	6.4	4.3	2.9	3.2	2.7	5.2	6.6	5.2	1,202
13-Jul	4.0	4.1	3.5	2.9	4.5	4.3	5.2	4.2	6.4	2.5	4.0	5.0	4.8	4.8	3.9	3.8	3.5	4.0	3.8	2.8	3.1	3.4	5.6	6.0	1,304
14-Jul	2.7	4.6	4.8	3.4	6.0	5.2	4.7	4.0	4.6	3.5	1.5	3.2	2.6	3.5	2.9	2.4	2.2	5.0	4.0	5.3	6.4	6.4	5.9	4.9	1,756
15-Jul	9.8	5.8	6.6	4.1	4.1	4.1	2.6	4.1	5.4	2.7	5.6	4.9	5.6	4.8	3.5	3.4	1.7	7.3	2.3	2.9	2.4	2.1	0.6	3.4	1,157
16-Jul	3.4	3.7	1.4	2.0	3.4	1.7	0.9	2.9	0.9	1.7	2.0	3.7	5.2	2.0	5.7	5.5	4.0	2.0	2.9	7.5	8.6	8.0	12.6	8.0	348
17-Jul	1.3	1.7	1.3	1.7	1.5	1.1	1.5	1.4	1.4	4.1	2.6	3.3	2.8	3.8	4.0	4.1	5.4	5.8	7.5	7.6	9.1	9.0	9.4	8.6	3,918
18-Jul	5.1	4.8	6.6	5.4	5.5	4.7	5.3	3.3	3.7	4.1	2.6	3.2	4.2	3.7	3.8	3.5	3.1	3.8	4.5	4.2	4.0	3.1	3.5	4.7	9,560
19-Jul	5.4	5.1	5.1	5.3	5.4	5.7	5.2	4.0	4.3	3.3	4.3	3.0	3.3	2.7	4.0	3.2	4.2	4.4	3.7	4.1	4.1	3.2	3.7	3.3	13,349
20-Jul	4.4	3.6	4.8	5.8	6.7	5.8	4.7	3.6	3.6	3.4	2.8	3.0	5.0	5.0	3.2	3.0	3.2	3.0	3.6	4.1	4.5	4.1	4.3	4.8	10,623
21-Jul	6.9	5.2	5.4	5.0	4.9	3.7	4.3	4.5	4.0	3.5	4.4	2.7	3.7	3.8	3.9	3.8	4.1	3.8	3.4	3.3	3.6	4.0	4.1	4.0	7,959
22-Jul	3.2	4.8	3.7	3.5	3.4	3.5	3.3	2.5	2.3	3.1	4.2	2.5	2.8	2.8	3.3	4.4	6.2	6.4	6.9	6.5	5.2	5.9	4.4	5.3	8,610
23-Jul	4.0	4.0	3.4	3.6	3.1	3.5	3.4	3.3	3.7	3.5	4.2	3.9	3.6	3.4	3.5	3.2	4.8	5.7	6.1	6.0	5.7	4.4	4.6	5.6	12,913
24-Jul	3.6	4.3	5.0	5.3	5.0	4.6	4.5	4.1	3.3	4.4	4.1	3.6	3.5	2.6	3.6	3.2	2.8	5.5	5.4	4.7	4.2	4.6	4.5	3.6	20,729
25-Jul	3.7	3.9	3.9	3.6	3.5	3.6	3.4	4.9	3.5	3.8	3.9	3.3	3.7	4.9	5.3	3.7	3.6	4.8	4.4	4.1	6.0	5.4	4.5	4.4	20,041
26-Jul	4.1	4.2	3.9	3.9	3.4	3.9	3.9	4.7	4.6	3.1	3.4	4.7	4.0	3.1	2.6	2.7	3.2	4.9	5.7	4.7	6.5	5.0	4.5	5.4	23,270
27-Jul	5.4	5.4	4.5	5.3	4.8	4.7	5.0	4.9	4.7	4.2	3.9	4.2	2.5	4.2	3.6	3.8	4.2	2.8	3.2	3.9	3.8	4.4	3.8	2.8	22,994
28-Jul	5.1	6.1	4.8	4.5	5.1	5.4	4.6	4.4	3.7	3.5	4.2	3.1	2.9	5.2	4.2	3.4	3.2	3.0	4.2	3.9	4.4	3.9	3.8	3.6	15,810
29-Jul	4.1	5.2	4.5	5.6	4.6	5.0	4.6	4.5	4.9	5.6	3.6	4.2	3.8	5.6	4.9	3.4	3.1	2.0	4.2	2.7	3.6	3.4	3.2	3.6	15,249
30-Jul	5.7	5.1	5.6	5.5	4.2	3.7	4.1	5.0	4.7	4.1	4.8	5.0	5.3	3.4	4.5	4.5	3.8	3.3	2.7	3.6	2.9	2.6	3.1	3.0	8,947
31-Jul	6.7	6.1	7.3	5.2	5.8	5.3	4.6	3.5	3.3	3.7	1.5	2.8	2.8	4.1	3.7	3.6	4.1	3.7	4.4	3.3	3.9	3.9	3.7	3.0	3,530
01-Aug	5.3	4.9	3.3	4.2	2.7	2.4	2.3	3.2	3.5	2.7	1.8	4.0	2.8	3.7	4.7	3.9	5.2	3.8	8.5	6.7	5.4	5.6	5.1	4.1	2,188
02-Aug	3.0	3.4	3.9	2.6	3.7	2.3	2.9	2.2	2.0	2.6	3.1	2.8	3.7	3.0	5.2	4.6	5.0	3.7	6.9	7.3	7.4	7.0	7.5	4.4	2,425
03-Aug	3.3	3.7	2.9	3.5	2.5	2.8	2.7	3.8	3.0	3.3	2.8	5.0	2.6	4.8	3.1	5.9	5.5	4.9	5.1	5.6	6.9	5.8	6.2	4.3	3,133
04-Aug	3.4	3.0	3.8	2.6	2.0	2.4	3.0	2.1	2.1	1.7	2.0	4.4	3.7	5.2	5.8	5.0	3.5	4.4	5.2	5.2	6.3	8.7	8.1	6.4	6,100
05-Aug	3.9	3.0	2.8	2.9	3.3	3.0	3.3	3.6	3.3	2.8	5.2	3.8	5.0	6.1	6.7	4.4	3.6	4.8	4.3	4.8	5.2	5.8	5.5	2.9	7,489
06-Aug	4.4	4.7	4.0	3.9	3.9	3.0	2.9	3.5	3.3	3.6	6.3	3.6	5.1	4.4	3.5	4.1	3.9	4.8	4.7	4.5	4.8	4.3	5.1	3.8	6,785
07-Aug	5.3	5.9	3.9	4.3	5.2	4.0	2.5	4.1	2.5	6.2	3.5	5.8	4.6	4.7	4.2	3.8	3.8	3.9	4.2	3.4	3.9	3.6	2.9	3.7	6,152
08-Aug	7.2	7.1	5.1	3.1	3.2	3.8	3.5	3.4	3.1	3.6	4.6	4.5	4.0	3.6	2.5	3.7	4.0	4.5	3.4	4.8	4.3	4.5	3.7	4.8	2,867
09-Aug	3.4	2.3	3.3	2.1	1.8	1.8	2.2	1.7	2.5	2.7	3.2	5.9	3.4	5.4	5.7	6.7	6.4	5.7	5.5	5.1	6.0	7.2	5.9	4.2	3,183
10-Aug	8.7	6.3	3.9	4.7	3.3	3.8	4.9	3.5	3.6	3.0	3.6	4.0	6.7	6.5	6.1	4.0	3.6	2.8	1.5	3.4	4.3	2.5	2.6	2.9	1,813

-Continued-

Appendix A.34. (page 2 of 2).

	Percent of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
11-Aug	2.0	2.2	2.1	1.6	1.8	1.4	1.9	2.2	2.8	3.2	3.1	6.9	5.5	5.5	6.5	4.0	6.8	6.2	7.3	6.7	7.0	5.5	5.0	2.9	1,828
12-Aug	3.3	4.6	2.1	1.2	1.9	1.4	1.1	1.8	1.6	5.3	5.5	3.0	5.1	5.5	4.4	4.8	4.8	6.1	5.5	7.6	5.4	6.6	6.0	5.4	1,596
13-Aug	2.6	2.7	2.0	1.6	2.1	1.3	1.8	1.6	2.6	2.4	2.8	4.6	5.4	6.1	5.0	2.9	6.4	5.8	7.0	7.1	7.8	6.9	5.6	5.7	2,720
14-Aug	4.3	3.3	2.5	2.4	2.2	2.1	1.6	2.9	3.4	2.0	2.5	2.5	2.9	4.0	4.6	5.3	4.3	4.8	5.3	6.9	8.4	7.7	7.3	6.7	3,219
15-Aug	5.0	3.0	3.2	3.2	3.2	1.8	2.6	2.9	5.4	4.8	4.7	3.6	4.9	4.5	5.4	5.1	4.0	3.5	6.2	4.0	5.1	6.5	4.0	3.6	3,267
16-Aug	5.5	4.6	5.2	3.2	3.2	1.9	3.5	2.5	4.4	5.0	3.6	2.7	4.4	3.9	4.1	6.0	7.5	5.6	5.0	3.7	3.7	3.8	3.2	4.0	2,555
17-Aug	4.2	5.0	2.8	3.2	5.4	2.6	2.1	3.3	4.7	4.2	5.9	2.8	2.9	3.7	3.5	5.1	6.9	7.9	3.0	4.1	5.9	5.8	3.8	1.3	1,676
18-Aug	4.3	4.9	6.0	3.2	3.6	3.1	2.6	3.2	5.3	4.6	4.0	2.3	5.5	4.1	5.0	6.5	4.2	4.2	3.5	4.6	2.1	3.5	6.9	2.8	1,171
19-Aug	2.4	4.4	2.7	2.7	2.9	1.0	3.7	3.7	3.1	4.0	4.6	2.2	8.0	6.6	7.6	5.3	4.4	6.2	6.0	3.1	3.9	3.7	4.6	3.1	1,147
20-Aug	4.0	3.3	4.2	3.2	3.0	1.7	2.9	4.0	3.2	4.2	3.9	7.5	6.3	4.5	7.2	4.8	4.4	4.0	6.4	3.7	6.5	2.4	3.3	1.4	842
Average	4.5	4.5	4.3	4.3	4.2	4.0	3.9	3.9	3.8	3.8	3.8	3.8	3.8	4.1	4.1	3.7	3.9	4.3	4.6	4.5	4.9	4.7	4.4	4.2	

[a] The process of substituting average counts for suspect counts in individual sector/hour blocks may have resulted in daily totals which do not equal those presented in other tables in this report.

Appendix A.35. Daily adjusted fish wheel catch by species for the north bank of the Yentna River, 7 July through 20 August 1989.[ab]

		Sockeye		Pink		Chum		Coho		Chinook	
Date	Hours Open	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
07-Jul	22.00	15	15	29	29	17	17	0	0	1	1
08-Jul	25.60	20	35	57	87	21	38	1	1	5	6
09-Jul	24.56	16	51	68	155	12	50	0	1	2	8
10-Jul	23.60	18	69	99	254	10	60	3	4	3	11
11-Jul	23.30	21	90	148	402	5	65	1	5	2	13
12-Jul	23.85	3	93	221	623	0	65	1	6	0	13
13-Jul	24.33	7	99	209	833	1	66	4	10	4	17
14-Jul	25.30	21	120	271	1,104	1	67	1	11	4	21
15-Jul	16.50	26	146	108	1,211	4	71	1	12	3	23
16-Jul	25.56	29	176	35	1,246	4	75	2	14	2	25
17-Jul	18.75	102	278	247	1,493	50	125	3	17	10	36
18-Jul	16.75	107	385	434	1,927	106	231	6	23	1	37
19-Jul	13.25	129	514	496	2,424	91	322	2	24	2	39
20-Jul	17.62	74	588	323	2,747	98	420	5	30	1	40
21-Jul	16.60	30	618	431	3,177	56	476	7	37	1	42
22-Jul	16.40	80	698	395	3,572	72	548	16	53	3	45
23-Jul	15.80	217	916	454	4,027	90	637	29	82	2	46
24-Jul	19.30	56	972	150	4,177	77	715	14	96	1	47
25-Jul	14.00	38	1,009	363	4,541	151	865	24	120	0	47
26-Jul	17.50	112	1,122	362	4,903	159	1,025	22	142	1	49
27-Jul	22.37	92	1,214	249	5,152	164	1,189	48	190	0	49
28-Jul	32.50	55	1,269	199	5,350	203	1,392	32	222	0	49
29-Jul	19.47	88	1,357	169	5,519	166	1,558	38	261	0	49
30-Jul	18.68	40	1,397	379	5,898	153	1,711	30	290	1	50
31-Jul	7.65	47	1,444	480	6,378	154	1,865	31	322	0	50
01-Aug	34.60	102	1,546	352	6,730	53	1,917	7	328	0	50
02-Aug	19.30	47	1,593	104	6,835	17	1,935	4	332	1	51
03-Aug	23.68	91	1,684	109	6,944	40	1,974	14	346	1	52
04-Aug	23.03	162	1,846	746	7,690	232	2,207	61	408	0	52
05-Aug	7.83	178	2,024	895	8,586	730	2,936	144	552	0	52
06-Aug	6.32	114	2,138	490	9,075	642	3,578	72	624	0	52
07-Aug	6.40	116	2,254	499	9,574	548	4,126	41	665	0	52
08-Aug	10.50	87	2,341	443	10,018	240	4,366	43	709	0	52
09-Aug	20.10	78	2,418	501	10,519	205	4,571	39	748	1	53
10-Aug	19.50	44	2,463	196	10,715	101	4,672	31	779	0	53
11-Aug	18.33	72	2,535	119	10,834	76	4,748	35	814	0	53
12-Aug	21.50	38	2,573	80	10,914	40	4,788	27	841	0	53
13-Aug	19.00	47	2,619	115	11,029	134	4,922	39	880	0	53
14-Aug	7.98	153	2,773	265	11,294	334	5,256	135	1,016	0	53
15-Aug	4.83	80	2,852	412	11,706	527	5,782	119	1,135	0	53
16-Aug	7.00	45	2,897	123	11,830	703	6,485	165	1,299	0	53
17-Aug	8.75	30	2,927	112	11,942	280	6,765	66	1,365	0	53
18-Aug	11.34	19	2,946	76	12,018	169	6,934	91	1,456	0	53
19-Aug	10.25	9	2,955	52	12,070	204	7,138	52	1,508	0	53
20-Aug	8.75	5	2,961	30	12,100	167	7,305	58	1,565	0	53

[a] Fishwheel catch adjusted for 24 hours: (daily catch * 24 hours)/hours open.
[b] Actual catch: 2016 sockeye salmon; 8099 pink salmon; 3669 chum salmon; 803 coho salmon; 46 chinook salmon.

Appendix A.36. Daily adjusted fish wheel for the south bank ofthe Yentna River, 6 July through 20 August 1989.[ab]

Date	Hours Open	Sockeye Daily	Sockeye Cum	Pink Daily	Pink Cum	Chum Daily	Chum Cum	Coho Daily	Coho Cum	Chinook Daily	Chinook Cum
06-Jul	24.00	7	7	23	23	5	5	0	0	1	1
07-Jul	23.00	21	28	55	78	22	27	0	0	1	2
08-Jul	26.10	21	49	31	110	3	30	0	0	0	2
09-Jul	24.70	37	86	101	211	5	35	0	0	1	3
10-Jul	23.43	37	123	120	330	3	38	0	0	1	4
11-Jul	23.30	25	148	187	518	3	41	1	1	3	7
12-Jul	24.08	18	165	275	793	2	43	2	3	1	8
13-Jul	24.16	17	182	249	1,042	1	44	2	5	3	11
14-Jul	25.25	51	234	238	1,280	3	47	2	7	1	12
15-Jul	16.17	71	305	140	1,419	4	51	3	10	1	14
16-Jul	25.25	29	333	8	1,427	0	51	0	10	0	14
17-Jul	19.08	199	532	142	1,569	13	64	13	22	1	15
18-Jul	15.10	410	942	389	1,959	45	108	21	43	3	18
19-Jul	16.40	354	1,296	495	2,453	53	161	16	59	0	18
20-Jul	14.82	327	1,624	520	2,973	53	214	19	79	0	18
21-Jul	14.70	222	1,846	322	3,295	24	239	13	92	2	20
22-Jul	13.50	240	2,086	235	3,529	18	256	4	95	0	20
23-Jul	14.90	422	2,508	272	3,802	52	308	21	116	0	20
24-Jul	20.70	401	2,909	465	4,267	60	368	20	136	1	21
25-Jul	9.70	445	3,354	666	4,932	62	430	7	143	0	21
26-Jul	12.60	520	3,874	531	5,464	72	503	51	195	2	23
27-Jul	11.00	663	4,537	809	6,273	103	605	109	304	0	23
28-Jul	20.05	426	4,964	935	7,208	170	775	134	438	2	25
29-Jul	20.08	210	5,174	360	7,568	112	887	98	536	0	25
30-Jul	19.08	74	5,248	498	8,066	117	1,004	39	575	1	26
31-Jul	14.90	19	5,267	163	8,228	52	1,056	3	578	0	26
01-Aug	28.30	18	5,285	80	8,308	19	1,075	4	582	0	26
02-Aug	19.50	23	5,309	59	8,367	10	1,084	0	582	1	28
03-Aug	23.35	42	5,351	70	8,437	12	1,097	4	586	0	28
04-Aug	22.72	80	5,431	236	8,673	88	1,184	52	638	0	28
05-Aug	11.22	66	5,497	257	8,929	195	1,379	53	692	0	28
06-Aug	9.83	61	5,558	291	9,220	171	1,550	105	797	0	28
07-Aug	13.10	20	5,579	229	9,449	150	1,700	75	872	0	28
08-Aug	20.10	31	5,610	121	9,570	55	1,755	23	895	0	28
09-Aug	20.33	50	5,659	200	9,769	106	1,861	50	944	0	28
10-Aug	22.12	13	5,672	39	9,808	63	1,924	31	976	0	28
11-Aug	19.00	25	5,697	39	9,847	25	1,950	11	987	0	28
12-Aug	21.77	25	5,723	43	9,890	20	1,969	8	995	0	28
13-Aug	22.70	27	5,750	58	9,948	66	2,035	66	1,060	0	28
14-Aug	9.62	35	5,785	87	10,036	150	2,185	142	1,202	0	28
15-Aug	9.00	24	5,809	56	10,092	77	2,262	160	1,362	0	28
16-Aug	11.93	14	5,823	52	10,144	161	2,423	84	1,447	0	28
17-Aug	6.90	35	5,858	52	10,196	247	2,670	184	1,631	0	28
18-Aug	11.58	29	5,887	44	10,240	118	2,788	126	1,758	0	28
19-Aug	10.00	26	5,913	26	10,266	168	2,956	115	1,873	0	28
20-Aug	9.00	11	5,924	16	10,282	104	3,060	61	1,934	0	28

[a] Fishwheel catch adjusted for 24 hours: (daily catch * 24 hours)/hours open.
[b] Actual catch: 3856 sockeye salmon; 7169 pink salmon; 1804 chum salmon; 1081 coho salmon; 23 chinook salmon.

Appendix A.37. Length composition of the major age classes of sockeye salmon collected in the Yentna River, 1986-1989. Length measured from mid-eye to fork of tail.

		Male			Female			Total			
Year	Age Class	Ave Length (mm)	Stndrd Error	Sample Size	Ave Length (mm)	Stndrd Error	Sample Size	Ave Length (mm)	Stndrd Error	Sample Size	Ratio Male/ Female
1986	1.2	455	3	104	472	5	52	461	3	156	2.0:1
1987		484	3	158	477	2	156	480	2	314	1.0:1
1988		461	2	408	486	3	170	469	2	578	2.4:1
1989		463	4	246	485	4	122	471	3	368	2.0:1
1986	1.3	579	3	172	563	2	216	570	2	388	0.8:1
1987		591	2	246	565	2	222	580	1	468	1.1:1
1988		580	2	365	552	1	359	567	1	724	1.0:1
1989		575	3	390	553	1	474	563	1	864	0.8:1
1986	2.3	588	5	25	555	4	44	567	3	69	0.6:1
1987		583	4	62	566	3	52	577	3	114	1.2:1
1988		585	4	92	554	3	87	570	2	179	1.1:1

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