TECHNICAL FISHERY REPORT 91-21

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, 1990

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), Dave Westerman, Jennifer Pezzenti, Pako Lehtinen, Laurie McGarry.

Kasilof River Sonar - Dennis Gretsch (Crew Leader), Bill Glick, Phil Morin.

Yentna River Sonar - Morris Lambdin (Crew Leader), Stan Walker, Wayne Lehtinen.

Crescent River Sonar - Mark Schlenker (Crew Leader), Kerri Derning.

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## ABSTRACT

Sockeye salmon *Oncorhynchus nerka* spawning escapements into four river systems of Upper Cook Inlet, Alaska, were estimated using Bendix Corporation side-scanning sonar equipment. Sockeye salmon escapements totaled 659,520 into the Kenai River, 144,136 into the Kasilof River, 52,238 into the Crescent River, and 140,290 into the Yentna River. Indices of escapements of other salmon species into the Yentna River were also obtained by sonar: 244,569 pink *O. gorbuscha*, 33,566 chum *O.keta*, and 21,346 coho *O. kitsutch* salmon. Age composition of sockeye salmon in the Kenai and Kasilof Rivers was distributed among 4 age classes: 1.3 (41.4%), 1.2 (21.6%), 2.3 (21.1%), and 2.2 (13.7%) in the Kenai River; and 2.2 (33.2%), 1.2 (32.9%), 1.3 (20.7%), and 2.3 (12.4%) in the Kasilof River. Age-1.3 sockeye salmon were the most abundant age class in the Yentna (47.6%) and Crescent (48.5%) Rivers. Mean length and sex composition data were collected for sockeye salmon in each river. Sockeye salmon in all rivers migrated near the shore. Most sockeye salmon migrated during the hours of darkness in the Kenai and Yentna Rivers and during the afternoon and evening in the Kasilof and Crescent Rivers.



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

## INTRODUCTION

Due to the glacial nature of many rivers in Upper Cook Inlet, Alaska (Figure 1), sockeye salmon *Oncorhynchus nerka* escapement enumeration by the Alaska Department of Fish and Game (ADF&G) prior to 1968 was limited to surveys of clear water spawning areas (King and Davis 1989). These surveys were inadequate for commercial fishery management because they provided no information about 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 techniques were developed to enumerate salmon in the Kenai and Kasilof Rivers starting in 1968. Results of subsequent escapement enumeration projects have been documented by Waltemyer et al. (1980), Tarbox et al. (1983), and King and Tarbox (1984, 1986, 1987, 1988, 1989a, 1989b, and 1991).

The program objectives of UCI escapement projects in 1990 were to estimate (1) the daily and cumulative abundance of sockeye salmon runs to the Kenai, Kasilof, Crescent and Yentna Rivers, and (2) the age, length and sex composition of the sockeye salmon escapements. Information concerning Yentna River pink *O. gorbuscha*, chum *O. keta*, and coho *O. kisutch* salmon abundance was also obtained.

## METHODS

Operational characteristics of Bendix Corporation[1] side-scanning sonar counters have been described by King and Tarbox (1989a), Gaudet (1983) and Bendix Corp (1980 and 1984). Pulse width was 100 s and frequency 515 Khz for all counters used. Two- and four-degree transducers were multiplexed and operated in an alternate mode. The counting threshold was approximately -38 Db (A. Menin, Bendix Corporation, Sylmar, Ca., personal communication). Counters were operated without artificial substrates on the north bank of the Kenai River and both banks of the Crescent River. We conducted this project from 1 July to 7 August on the Kenai River, 15 June to 15 August on the Kasilof River, 7 July to 12 August on the Yentna River and 26 June to 4 August on the Crescent River.

We removed counts from debris, bottom echoes, or other sources of false counts from the raw data. A daily average hourly count was calculated for inshore (1-6) and offshore (7-12) sonar sectors by:

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

$$C_a = C_b/N$$

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.

We assessed the migratory behavior of sockeye salmon at the sonar sites 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).

We estimated species composition of sonar counts, and age, length and sex composition of the escapements from salmon captured in fish wheels in the Kenai (north bank), Kasilof (north bank), and Yentna (both banks) Rivers, and a fixed fish trap in the Crescent River. In addition, age-weight-length (AWL) information was collected from sockeye salmon captured in a fish wheel located in the upper Susitna River near Talkeetna. Fish wheel catches were expanded for each 24-h period based on the hourly catch rate during the hours of operation:

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

where: $F_d$ = expanded fish wheel catch for 24 h,
$F_h$ = fish wheel catch for hours operated, and
$H$ = hours fish wheel operated.

Daily fish wheel or trap catches were grouped into sample sizes of at least 150 salmon to calculate proportion of catch by species. 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 were based on methods for estimating multinomial proportions developed by Thompson (1987). Historical age class proportions (1983-89) were used to calculate a sample size so that the estimated proportion of each major age class was within 5% of the true proportion 90% of the time. The largest sample size calculated in this manner was chosen as a minimum sample size. 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 used to determine fish age 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. Sockeye salmon were sampled 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.

We performed a chi-square analysis to determine if the number of salmon within each age class changed through time. If the null hypothesis was rejected, then chi-square tests were repeated between sampling strata to determine when changes occurred.

Fork length (mm) 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 FRED Division on Tustumena Lake (Kasilof River), and on the Kenai River drainage by the United States Forest Service (USFS). 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 completed on a system, only results of the survey having the highest total count was reported.

In previous years all data collected were included in this report series to supplement the summary tables and figures. Backup data for the present report were published in a separate archival report (King 1991).

## RESULTS

### *Kenai River*

From 1 July through 7 August, 668,353 salmon migrated past the Kenai River sonar site (Table 1); 659,520 of these were sockeye salmon (Table 2). The sonar estimated sockeye escapement--count minus sport harvest above the Soldotna bridge--was 547,836 (Table 3), approximately the midpoint of the desired escapement goal range of 400,000-700,000 fish. Record numbers of sockeye salmon (77,959) were observed in Hidden Lake (Table 4).

Eighty percent of the sockeye escapement passed the sonar counters in 18 d (Table 5; mean = 17 d; range for 1981-89 = 12-25 d). The midpoint of the escapement was 23 July, and there were 5 distinct peaks in passage at the sonar site (Figure 2). Run timing was not appreciably different by bank (King 1991), but more sockeye salmon (62%) migrated along the north bank of the river (Table 6).

Over 90% of the sockeye salmon migration along the south bank occurred within 8 m of the transducer (Figure 3). However, during the first 17 d of operation when less than 4% of the counts were recorded, 64.8% of the salmon were counted in the offshore 4.5 m of the counting range (Table 7). The distance from shore at which fish passed the counter on the north bank also changed as the season progressed. During the period of 1 through 10 July, 80.4% of the fish moved within 10 m of shore. Passage during the next 7 d occurred predominantly (86.8%) betweem 7.5 and

19 m from shore. After 16 July 94.2% of the sockeye salmon resumed their passage within 10 m of the north bank.

The historical pattern of increased salmon passage in the evening and early morning hours was again observed on the south bank (Figure 4). Passage measured between 2000 hours and 0400 hours accounted for 53.6% of the total migration (King 1991). On the north bank the temporal passage of fish was somewhat less defined. During the period of 1900 hours through 0200 hours, 39.6% of the fish were counted, which is approximately 6% above the expected level for a constant passage rate throughout the day.

A total of 4,270 sockeye salmon were captured in the fish wheel (Table 8). Lengths and scale samples were obtained from 1,513 sockeye salmon. Mean lengths of the predominant age classes were within the range of data collected during the previous 10 years (Table 9).

The largest component of the sockeye escapement was age 1.3 (41.4%), followed by age 1.2 (21.6%), 2.3 (21.1%) and 2.2 (13.7%; Table 10). The proportions of all the major age classes changed significantly over time ($\chi^2 = 74.3$, $P < 0.05$, 6 df). Significant changes in age class proportions also occurred between the three time strata (Table 11).

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 (J. Carlon, ADF&G, Soldotna, personal communication), while those bound for Hidden Lake were predominantly age 1.2 (D. Waltemyer, ADF&G, Soldotna, personal communication).

Sonar counts attributed to pink (4,224), coho (1,853) and chinook salmon (2,756) accounted for approximately 1% of the total (Table 1). Factors influencing accuracy of escapement estimates for these species such as run timing, counter limitations, and spawning locations relative to the sonar site were discussed by Tarbox et al. (1981 and 1983). Therefore, these species counts are considered to be index counts. No additional pink or coho escapement estimates were made for the mainstem Kenai River. The estimated chinook escapement was 10,679 early-run fish and 32,163 late-run fish (Nelson 1990).

### *Kasilof River*

A total of 168,193 salmon were counted at the Kasilof River sonar site from 15 June through 15 August 1990 (Table 12). Sockeye salmon accounted for 85.7% (144,136) of the total count (Table 2). This level of escapement was slightly below the desired escapement goal (150,000-250,000 fish). The estimated number of natural spawners (estimated escapement minus brood stock used for artificial propagation of Tustumena Lake) was 137,305 fish (Table 13).

Over 50% of the counted tributary spawners entered Bear Creek (Table 14). Weirs placed on Glacier Flat and Bear Creeks provided total escapement counts, and peak spawning counts from ground surveys provided estimates for the other tributaries (Table 15). For the first time since the commencement of hatchery releases,

adult returns from an unenhanced tributary, Moose Creek, exceeded those of an enhanced tributary, Glacier Flat Creek.

Seventy-one percent of the salmon counts for the season occurred on the south bank (Table 6). Most fish were counted in offshore half of the counting range on the south bank prior to 29 June, but only 3.7%, or 4,329 salmon, of the total escapement had been observed by this date (Figure 5, Table 7). More than 90% of the counts occurred within 3.0 m of the transducer from 30 June through 15 August when most of the sockeye salmon escapement occurred. The same pattern of offshore distribution of fish prior to 25 June was observed on the north bank. From 26 June through 15 August, when 98.3% of all salmon were enumerated, more than 90% of the north bank counts occurred within 4.5 m of the transducer.

Although salmon passage was slightly higher than average from 0600 hours through 2200 hours, it was not consistent each day (Figure 6 and King 1991).

The midpoint of the sockeye escapement occurred on 18 July, 3 d after the mean for the previous 11 years (range 1-22 July; Table 16). Eighty percent of the escapement occurred in 29 d, 2 d less than the historic mean (1981-89). The pattern of roughly 25% of the fish passing the counters in 2 d was uncharacteristic of this system (Figure 2). No differences in timing between the north and south banks were detected (King 1991).

A total of 1,750 sockeye salmon were captured in the Kasilof River fish wheel (Table 17). Age-2.2 (33.2%), -1.2 (32.9%), -1.3 (20.7%) and -2.3 (12.4%) sockeye salmon were the dominant age classes (Table 18). The proportion of age-.2 sockeye salmon increased, and the proportion of age-.3 sockeye salmon decreased as the season progressed (Table 11; $\chi^2$ = 69.94, P <0.05, 3 df). With the exception of 3-ocean females, sockeye salmon average lengths at age by sex were substantially smaller than the range of data collected during the previous nine years (Table 19).

Run timing, counter limitations, and spawning locations relative to the sonar site made sonar escapement estimates for Kasilof River pink, coho and chinook salmon impractical. Coho salmon entered the river primarily in August. The proportion of pink salmon spawning below the counting site was not known. Early- and late-run 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. FRED Division estimated a total return of 10,718 early run chinook salmon to Crooked Creek, a lower river tributary of the Kasilof River. Approximately 1,400 of these were allowed to spawn naturally and the rest were caught in the sport fishery, used for hatchery brood stock or sold (G. Kyle, ADF&G, Soldotna, Alaska, personal communication).

### *Crescent River*

A total of 60,228 salmon were counted at the Crescent River sonar site from 26 June through 4 August 1990 (Table 20). Approximately 87% of the fish captured in the trap were sockeye salmon (Table 21), resulting in an estimated sockeye

escapement of 52,238. The desired sockeye escapement goal for this system is 50,000 to 100,000.

Distribution of fish occurred primarily within 2.0 m of the transducer (Table 7, Figure 7). Fish migrated primarily between 1100 hours and 2000 hours, although there were 5- to 6-d periods on both banks where fish preferred to migrate during other parts of the day (Figure 8, King 1991). Spatial and temporal distribution of salmon was similar to that observed in past years. Highest hourly passage rates generally occurred during the time of day when water levels were highest (Figure 9).

The midpoint of the sockeye escapement occurred on 18 July, 2 d later than the historical mean at this site (Table 22). The peak in daily passage occurred on 17 and 18 July (Figure 2), and 80% of the escapement passed the site in 25 d. For the first time since the inception of the project, more fish migrated along the south bank (Table 6).

A total of 1,584 sockeye salmon were captured in the fish trap, of which 591 were sampled for AWL data. Age-1.3 (48.5%) and age-2.3 (43.2%) fish were the most abundant age classes (Table 23). There was a significant difference ($\chi^2 = 46.59$, $P < 0.05$, 2 df) in the proportions of these two age classes as the season progressed (Table 11). Average lengths by sex and age class were within historical ranges (Table 24) with the exception of age-2.3 males which were larger by 6 mm than previously recorded mean lengths. The ratio of males to females was higher in the major age classes (1.5:1 and 2.3:1 for ages- 1.3 and 2.3 respectively) than previously seen in this stock.

## *Yentna River*

### Sockeye Salmon

From 7 July through 12 August, 440,378 salmon were counted at the Yentna River sonar site (Table 25). The sockeye escapement of 140,290 (Table 2) was near the high end of the desired escapement goal (100,000-150,000) and the second highest estimate since the inception of the project. Few sockeye salmon passing the sonar site were accounted for in the limited spawning ground surveys conducted later in the season (Table 26).

The midpoint of the sockeye escapement occurred on 25 July (Table 27), 2 d later than the historical mean. Eighty percent of the escapement passed the counters in 13 d (Figure 2). Nearly all of the sockeye salmon (98%) migrated adjacent to the south bank (Table 6).

Ninety-five percent of the salmon counted from the south bank were within 4.5 m of the transducer (Table 7, Figure 10). On the north bank 92.4% of the salmon were counted within 6.0 m of the transducer. For the second consecutive year, salmon migration was not evenly distributed throughout the day. Counts were below the expected constant passage rate of 4.2% per hour from 0300 h through 1600 h on the north bank and 0700 h through 1900 h on the south bank (Figure 11).

A total of 5,068 sockeye salmon were captured in fish wheels at Yentna Station (Tables 28, 29). Species composition of the catch summarized by time of day showed that there was a difference ($\chi^2$ = 152.51, P< 0.05, 6df) when each species was caught (Table 30). Pink salmon made up a larger proportion of the catch from 0600 hours through 1200 hours.

The escapement consisted of primarily of age-1.3 (47.6%) and age-1.2 (29.9%) sockeye salmon although the proportion of age-.2 fish exceeded 20% for half of the season (Table 31). There was a significant decrease ($\chi^2$ = 12.7, P<0.05, 1 df) in the proportion of age-1.3 and increase in the proportion of age-1.2 sockeye salmon during the last sampling period, 26 July to August 12 (Table 11).

Average lengths for each sex were smaller than the range of values observed in previous years (Table 32). As in previous years there were more age-1.2 males than females.

## Pink Salmon

Pink salmon escapement was estimated to be 244,569 (Table 25). No estimates were available for the mainstem Susitna River above the confluence with the Yentna River.

The midpoint of the escapement occurred on 28 July. Migratory timing of this species has been remarkably consistent at this site, with the midpoint occurring between 27 and 29 July in 8 of the previous 10 years (Table 33). Eighty percent of the escapement was recorded in 12 d.

## Chum Salmon

Chum salmon escapement at Yentna Station was estimated to be 33,566 fish (Table 25). No information was available on escapements of this species into specific spawning areas.

Migratory timing could not be determined for chum salmon because when enumeration activities ceased on August 12 there were 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 69.8% to 92.0% (mean- 78.7%) of the chum escapement was recorded by 12 August (King and Tarbox 1986).

## Coho Salmon

The coho salmon escapement was 21,346 fish (Table 25). Similar to chum salmon, migratory timing information could not be calculated because the project was terminated too soon. In the years 1981 to 1984, 79.6% to 89.9% of the sonar counts attributed to coho salmon occurred prior to 12 August (King and Tarbox 1986).

### *Susitna River at Sunshine Station*

Species composition of the fish wheel catch was 37.3% sockeye, 40.9% pink, 19.6% chum, 1.1% coho and 1.1% chinook salmon (Table 34). A total of 4,758 salmon were caught. Most of the sockeye salmon sampled were age-1.3 (49.5%) and -1.2 (35.3%). As was noted at Yentna Station, the proportion of age-1.3 sockeye salmon decreased over the season. The ratio of males to females was 0.6:1 and consistent between age classes (D. Waltemyer, ADF&G, Soldotna, personal communication).

## DISCUSSION

The 1990 field season and sonar counting operations were similar to past years. Counting conditions on all rivers were thought to be within design and operational tolerances of the Bendix side-scanning sonar system because (1) salmon passage was inshore and near the bottom during the peak of the run, (2) salmon densities were generally adequate for system calibration, and (3) one species, sockeye salmon, comprised most of the run (86%-99%) except at Yentna River (32%). In addition, most of the escapement occurred during the time the sonar systems were operated.

With one exception, there were no obvious relationships between changes in environmental conditions and changes in the temporal and spatial distribution of fish at each sonar site. Fish passage at Crescent River occurred primarily in the afternoon and evening hours when river level was generally highest for the day. During the period of 11 to 15 July when fish passage occurred in the hours of darkness, there was no measurable increase in water level during the day, and water clarity was very high.

There was a preference exhibited by sockeye and pink salmon for movement during certain portions of the day in the Yentna River. Sockeye salmon were proportionally higher in the fish wheel catch from 1200 hours through 2400 hours, and pink salmon were more frequently captured from 0600 hours through 1200 hours. Although we have not examined this issue in detail, there is some potential for error in pink and sockeye salmon counts associated with using total daily adjusted fish wheel catch to apportion sonar counts without considering when the fish wheel was opened. In the Kenai and Kasilof Rivers, spatial distribution appeared to be related to the onset of the main body of the sockeye escapement.

We also had difficulty guaging the accuracy of sonar counts attributed to chinook salmon in the Kasilof River. Almost 21,000 counts were attributed to this species, nearly twice as many as have been recorded in previous years. Because of the location of the fish wheel in an area of extremely high water velocity, we think that there may have been a bias toward higher capture rate of chinook salmon. In the latter part of the season, water velocity was so high that sockeye salmon may have been forced inshore and thus not captured in relation to their abundance.

Sockeye age composition was typical of previous years for stocks migrating up the Crescent and Yentna Rivers. The percentage of age-.2 fish in the Kenai and Kasilof Rivers was higher than the previous 15 years. Interestingly, the highest proportion of age-.2 fish previously documented in these two drainages also occurred in the same year, 1975. Virtually all of the age-2.2 fish captured in the Kenai River can be accounted for by the Russian River escapement and sport harvest.

Sex ratios varied considerably depending on stock and age class. More than 60% of the Crescent River escapement were males, resulting in less than 20,000 female spawners entering the drainage in 1990. In the Yentna River, the pattern of more males in the age-1.2 class and fewer males in the age-1.3 class occurred again in 1990, but spawning females made up 47% of the total escapement. There was approximately 25% fewer males than females in the fish sampled at Sunshine Station. Mean lengths of sockeye salmon were at the low end of the range, the lowest recorded at three of the four sites, although the values did not appear to be statistically significant.

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 reduction in proportion of adults returning to Glacier Flats Creek since 1987 was probably related to a decline in overall hatchery production and a decline in survival of hatchery-produced fish in recent years (G. Kyle, ADF&G, Soldotna, personal communication).

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Table 1. Estimated salmon escapement into the Kenai River, north and south banks combined, 1 July through 7 August, 1990. 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 | 420 | 420 | 0 | 0 | 0 | 0 | 9 | 9 |
| 02-Jul | 567 | 987 | 0 | 0 | 0 | 0 | 12 | 21 |
| 03-Jul | 896 | 1,883 | 0 | 0 | 0 | 0 | 20 | 41 |
| 04-Jul | 4,455 | 6,338 | 0 | 0 | 0 | 0 | 96 | 137 |
| 05-Jul | 5,865 | 12,203 | 0 | 0 | 0 | 0 | 126 | 263 |
| 06-Jul | 7,116 | 19,319 | 0 | 0 | 0 | 0 | 154 | 417 |
| 07-Jul | 4,495 | 23,814 | 0 | 0 | 0 | 0 | 97 | 514 |
| 08-Jul | 4,877 | 28,691 | 0 | 0 | 0 | 0 | 0 | 514 |
| 09-Jul | 3,370 | 32,061 | 41 | 41 | 0 | 0 | 121 | 635 |
| 10-Jul | 1,224 | 33,285 | 15 | 56 | 0 | 0 | 44 | 679 |
| 11-Jul | 960 | 34,245 | 12 | 68 | 0 | 0 | 34 | 713 |
| 12-Jul | 1,347 | 35,592 | 16 | 84 | 0 | 0 | 49 | 762 |
| 13-Jul | 1,852 | 37,444 | 0 | 84 | 0 | 0 | 56 | 818 |
| 14-Jul | 2,381 | 39,825 | 0 | 84 | 0 | 0 | 73 | 891 |
| 15-Jul | 2,119 | 41,944 | 0 | 84 | 0 | 0 | 65 | 956 |
| 16-Jul | 3,091 | 45,035 | 0 | 84 | 0 | 0 | 52 | 1,008 |
| 17-Jul | 45,984 | 91,019 | 0 | 84 | 0 | 0 | 778 | 1,786 |
| 18-Jul | 92,672 | 183,691 | 0 | 84 | 0 | 0 | 323 | 2,109 |
| 19-Jul | 42,968 | 226,659 | 0 | 84 | 0 | 0 | 0 | 2,109 |
| 20-Jul | 36,999 | 263,658 | 1,206 | 1,290 | 0 | 0 | 0 | 2,109 |
| 21-Jul | 37,841 | 301,499 | 0 | 1,290 | 0 | 0 | 0 | 2,109 |
| 22-Jul | 10,265 | 311,764 | 0 | 1,290 | 0 | 0 | 138 | 2,247 |
| 23-Jul | 29,547 | 341,311 | 0 | 1,290 | 0 | 0 | 383 | 2,630 |
| 24-Jul | 38,417 | 379,728 | 0 | 1,290 | 0 | 0 | 0 | 2,630 |
| 25-Jul | 65,703 | 445,431 | 0 | 1,290 | 0 | 0 | 0 | 2,630 |
| 26-Jul | 28,975 | 474,406 | 0 | 1,290 | 0 | 0 | 0 | 2,630 |
| 27-Jul | 6,211 | 480,617 | 97 | 1,387 | 0 | 0 | 0 | 2,630 |
| 28-Jul | 9,752 | 490,369 | 0 | 1,387 | 0 | 0 | 0 | 2,630 |
| 29-Jul | 34,442 | 524,811 | 0 | 1,387 | 0 | 0 | 0 | 2,630 |
| 30-Jul | 33,183 | 557,994 | 148 | 1,535 | 0 | 0 | 0 | 2,630 |
| 31-Jul | 13,781 | 571,775 | 239 | 1,774 | 0 | 0 | 0 | 2,630 |
| 01-Aug | 7,832 | 579,607 | 62 | 1,836 | 0 | 0 | 0 | 2,630 |
| 02-Aug | 11,556 | 591,163 | 0 | 1,836 | 0 | 0 | 0 | 2,630 |
| 03-Aug | 23,330 | 614,493 | 73 | 1,909 | 74 | 74 | 73 | 2,703 |
| 04-Aug | 20,581 | 635,074 | 242 | 2,151 | 460 | 534 | 0 | 2,703 |
| 05-Aug | 9,850 | 644,924 | 190 | 2,341 | 189 | 723 | 0 | 2,703 |
| 06-Aug | 8,896 | 653,820 | 885 | 3,226 | 526 | 1,249 | 0 | 2,703 |
| 07-Aug | 5,700 | 659,520 | 998 | 4,224 | 604 | 1,853 | 53 | 2,756 |

Table 2. Estimated sockeye salmon escapement recorded by side-scanning sonar in the Kenai, Kasilof, Crescent, and Susitna Rivers, 1978-1990.

| | 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 |
| 1988 | 1,021,500 | 204,000[i] | 57,716 | 52,347 |
| 1989 | 1,599,959 | 158,206 | 71,064 | 96,269 |
| 1990 | 659,520 | 144,136 | 52,238 | 140,290 |

[a] Includes counts after 22 June (1978-87) and after 1 July (1988-90).
[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 (1986-90).
[i] Combined counts from weirs on Bear and Glacier Flats Creeks and surveys of remaining spawning streams.

Table 3. Late run Kenai River sockeye salmon escapement summary, 1968-1990.

| 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 | 26,840 | 12,328 | 39,158 | 245,862 |
| 1980 | 464,038 | 33,500 | 18,592 | 52,082 | 411,956 |
| 1981 | 407,639 | 23,720 | 14,450 | 38,171 | 369,468 |
| 1982 | 619,831 | 10,320 | 38,400 | 48,718 | 571,113 |
| 1983 | 630,340 | 16,000 | 48,310 | 64,306 | 566,034 |
| 1984 | 344,571 | 21,970 | 11,160 | 33,250 | 311,321 |
| 1985 | 502,820 | 58,410 | 40,440 | 98,850 | 403,970 |
| 1986 | 501,157 | 30,810 | 47,920 | 78,730 | 422,427 |
| 1987 | 1,596,871 | 40,580 | 148,300 | 188,880 | 1,407,991 |
| 1988 | 1,021,469 | 19,540 | 91,770 | 111,310 | 910,159 |
| 1989 | 1,599,959 | 55,210 | 165,340 | 220,550 | 1,379,409 |
| 1990 | 659,520 | 52,984[f] | 58,700[f] | 111,684 | 547,836 |

[a] Bendix Corp. multiple transducer sonar 1968-1977, side-scanning sonar 1978-1990.
[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 4. Late run sockeye salmon escapement counts in eight index areas, Kenai River drainage, 1969-1990.

| Year | Railroad Creek[b] | Johnson Creek[b] | Carter-Moose Creek[b] | Ptarmigan Creek[b] | Tern (Mud) Lake[b] | Quartz Creek | Hidden Lake[c] | 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[d] | 8,648 | 30,790 | 45,000 | 174,571 |
| 1983 | 1,289 | 338 | 1,819 | 9,709 | | 73,345 | 11,297 | 34,040 | 44,000 | 175,837 |
| 1984 | 2,090 | 939 | 5,927 | 18,000 | 2,728 | 37,659 | 27,792 | 92,660 | 3,000 | 190,795 |
| 1985 | 2,884 | 151 | 5,928 | 26,879 | | | 24,784 | 136,970 | 8,650 | 206,246 |
| 1986 | 600 | 245 | 1,659 | | | | 17,530 | 40,420 | 6,022 | 66,476 |
| 1987 | 736 | 74 | 625 | 14,187 | | 45,400 | 43,487 | 53,930 | 76,732 | 235,171 |
| 1988 | 1,990 | 1,243 | 1,607 | 31,696 | | | 50,907 | 42,480 | 28,840 | 158,763 |
| 1989 | 4,959 | 2,276 | 5,958 | 3,484 | | | 7,770 | 138,320 | 28,480 | 191,247 |
| 1990 | | | 2,306 | 3,230 | | | 77,959 | 83,336 | 11,760 | 178,591 |

[a] Nelson (1990)
[b] United States Department of Agriculture, Forest Service, Seward, Alaska (1984-90).
[c] Weir count: 1971, 1973, 1976-89 (FRED Division); 1990 (Cook Inlet Aquaculture Association).
[d] FRED Division weir count (1982-83).

Table 5. Cumulative proportion by date of late run sockeye salmon counts recorded in the Kenai River, 1981-1990.

| | Cumulative Proportion[a] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
| 22-Jun | 0.001 | 0.002 | 0.001 | 0.003 | 0.001 | 0.001 | 0.001 | | | |
| 23-Jun | 0.001 | 0.003 | 0.001 | 0.007 | 0.002 | 0.002 | 0.002 | | | |
| 24-Jun | 0.002 | 0.004 | 0.002 | 0.010 | 0.003 | 0.003 | 0.002 | | | |
| 25-Jun | 0.003 | 0.004 | 0.003 | 0.012 | 0.004 | 0.004 | 0.002 | | | |
| 26-Jun | 0.004 | 0.005 | 0.004 | 0.013 | 0.005 | 0.004 | 0.003 | | | |
| 27-Jun | 0.006 | 0.006 | 0.005 | 0.015 | 0.006 | 0.005 | 0.004 | | | |
| 28-Jun | 0.007 | 0.007 | 0.006 | 0.017 | 0.007 | 0.006 | 0.005 | | | |
| 29-Jun | 0.008 | 0.007 | 0.006 | 0.018 | 0.009 | 0.007 | 0.006 | | | |
| 30-Jun | 0.009 | 0.008 | 0.007 | 0.021 | 0.010 | 0.008 | 0.007 | | | |
| 01-Jul | 0.010 | 0.009 | 0.007 | 0.023 | 0.014 | 0.009 | 0.007 | 0.000 | 0.000 | 0.001 |
| 02-Jul | 0.012 | 0.010 | 0.008 | 0.024 | 0.016 | 0.010 | 0.008 | 0.000 | 0.001 | 0.001 |
| 03-Jul | 0.012 | 0.011 | 0.008 | 0.025 | 0.017 | 0.011 | 0.008 | 0.001 | 0.001 | 0.003 |
| 04-Jul | 0.013 | 0.011 | 0.009 | 0.027 | 0.019 | 0.012 | 0.008 | 0.001 | 0.001 | 0.010 |
| 05-Jul | 0.013 | 0.012 | 0.009 | 0.029 | 0.021 | 0.013 | 0.009 | 0.001 | 0.002 | 0.019 |
| 06-Jul | 0.014 | 0.012 | 0.009 | 0.031 | 0.024 | 0.014 | 0.009 | 0.002 | 0.006 | 0.029 |
| 07-Jul | 0.016 | 0.013 | 0.010 | 0.032 | 0.026 | 0.016 | 0.009 | 0.003 | 0.011 | 0.036 |
| 08-Jul | 0.018 | 0.013 | 0.010 | 0.036 | 0.030 | 0.016 | 0.010 | 0.003 | 0.014 | 0.044 |
| 09-Jul | 0.064 | 0.015 | 0.011 | 0.044 | 0.032 | 0.016 | 0.010 | 0.003 | 0.017 | 0.049 |
| 10-Jul | 0.186 | 0.016 | 0.013 | 0.054 | 0.033 | 0.017 | 0.010 | 0.011 | 0.021 | 0.050 |
| 11-Jul | 0.262 | 0.016 | 0.017 | 0.063 | 0.036 | 0.017 | 0.011 | 0.063 | 0.024 | 0.052 |
| 12-Jul | 0.366 | 0.017 | 0.021 | 0.067 | 0.038 | 0.018 | 0.011 | 0.088 | 0.046 | 0.054 |
| 13-Jul | 0.463 | 0.019 | 0.041 | 0.071 | 0.039 | 0.020 | 0.015 | 0.141 | 0.100 | 0.057 |
| 14-Jul | 0.512 | 0.021 | 0.085 | 0.073 | 0.048 | 0.044 | 0.018 | 0.185 | 0.162 | 0.060 |
| 15-Jul | 0.549 | 0.026 | 0.174 | 0.076 | 0.066 | 0.057 | 0.033 | 0.222 | 0.211 | 0.064 |
| 16-Jul | 0.559 | 0.047 | 0.242 | 0.112 | 0.104 | 0.068 | 0.044 | 0.274 | 0.242 | 0.068 |
| 17-Jul | 0.572 | 0.067 | 0.297 | 0.173 | 0.111 | 0.081 | 0.052 | 0.303 | 0.290 | 0.138 |
| 18-Jul | 0.605 | 0.182 | 0.437 | 0.307 | 0.114 | 0.095 | 0.058 | 0.340 | 0.347 | 0.279 |
| 19-Jul | 0.667 | 0.322 | 0.566 | 0.363 | 0.115 | 0.114 | 0.070 | 0.375 | 0.367 | 0.344 |
| 20-Jul | 0.747 | 0.474 | 0.695 | 0.406 | 0.116 | 0.126 | 0.142 | 0.409 | 0.421 | 0.400 |
| 21-Jul | 0.803 | 0.563 | 0.766 | 0.464 | 0.120 | 0.194 | 0.237 | 0.464 | 0.500 | 0.457 |
| 22-Jul | 0.835 | 0.598 | 0.796 | 0.555 | 0.178 | 0.300 | 0.322 | 0.569 | 0.566 | 0.473 |
| 23-Jul | 0.848 | 0.642 | 0.813 | 0.652 | 0.291 | 0.359 | 0.409 | 0.679 | 0.639 | 0.518 |
| 24-Jul | 0.864 | 0.681 | 0.833 | 0.720 | 0.463 | 0.426 | 0.493 | 0.744 | 0.679 | 0.576 |
| 25-Jul | 0.876 | 0.722 | 0.844 | 0.781 | 0.574 | 0.525 | 0.575 | 0.785 | 0.698 | 0.675 |
| 26-Jul | 0.894 | 0.752 | 0.861 | 0.833 | 0.693 | 0.689 | 0.646 | 0.812 | 0.729 | 0.719 |
| 27-Jul | 0.911 | 0.842 | 0.865 | 0.867 | 0.753 | 0.814 | 0.700 | 0.827 | 0.774 | 0.729 |
| 28-Jul | 0.921 | 0.883 | 0.872 | 0.897 | 0.822 | 0.874 | 0.747 | 0.836 | 0.806 | 0.744 |
| 29-Jul | 0.932 | 0.903 | 0.878 | 0.913 | 0.864 | 0.910 | 0.774 | 0.844 | 0.831 | 0.796 |
| 30-Jul | 0.940 | 0.918 | 0.882 | 0.921 | 0.897 | 0.961 | 0.797 | 0.847 | 0.846 | 0.846 |
| 31-Jul | 0.948 | 0.931 | 0.891 | 0.928 | 0.911 | 1.000 | 0.839 | 0.850 | 0.856 | 0.867 |
| 01-Aug | 0.955 | 0.940 | 0.906 | 0.933 | 0.919 | | 0.879 | 0.854 | 0.875 | 0.879 |
| 02-Aug | 0.964 | 0.946 | 0.916 | 0.937 | 0.922 | | 0.907 | 0.859 | 0.888 | 0.896 |
| 03-Aug | 1.000 | 0.951 | 0.920 | 0.943 | 0.925 | | 0.925 | 0.863 | 0.899 | 0.932 |
| 04-Aug | | 0.955 | 0.934 | 0.948 | 0.929 | | 0.939 | 0.873 | 0.908 | 0.963 |
| 05-Aug | | 1.000 | 0.964 | 0.956 | 0.931 | | 0.952 | 0.894 | 0.916 | 0.978 |
| 06-Aug | | | 0.977 | 0.960 | 0.935 | | 0.962 | 0.914 | 0.930 | 0.991 |
| 07-Aug | | | 0.983 | 0.963 | 0.938 | | 0.970 | 0.933 | 0.949 | 1.000 |
| 08-Aug | | | 0.989 | 0.969 | 0.943 | | 0.976 | 0.944 | 0.960 | |
| 09-Aug | | | 0.993 | 1.000 | 0.947 | | 0.981 | 0.953 | 0.966 | |
| 10-Aug | | | 0.996 | | 0.953 | | 0.988 | 1.000 | 0.974 | |
| 11-Aug | | | 0.999 | | 0.960 | | 0.994 | | 0.985 | |
| 12-Aug | | | 1.000 | | 1.000 | | 0.998 | | 0.990 | |

- Continued -

Table 5. (p. 2 of 2)

| | Cumulative Proportion[a] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
| 13-Aug | | | | | | | 1.000 | | 0.994 | |
| 14-Aug | | | | | | | | | 0.998 | |
| 15-Aug | | | | | | | | | 1.000 | |
| Midpoint[b] | 7/14 | 7/21 | 7/19 | 7/22 | 7/25 | 7/25 | 7/25 | 7/22 | 7/21 | 7/23 |
| No. days for 80% | 18 | 12 | 18 | 14 | 16 | 12 | 14 | 25 | 23 | 18 |

[a] Proportion accrued on last day (1981, 1982, 1984-1986, 1988) represents that portion of the escapement estimated after termination of enumeration activities.
[b] Midpoint for previous years: 1979 (7/19); 1980 (7/19).

Table 6. Distribution of sockeye salmon escapement by bank recorded by side-scanning sonar in the Kenai, Kasilof, Crescent, and Yentna Rivers, 1979-1990.

| | Percent of Total Fish Targets | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Kenai River | | Kasilof River | | Crescent River | | Yentna River | |
| 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 |
| 1990 | 62 | 38 | 29 | 71 | 44 | 56 | 2 | 98 |

Table 7. Summary of sonar counts by sector from the Kenai, Kasilof, Crescent and Yentna Rivers, 1990.

| | | | Sector[a] | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| River | Bank | Dates | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Total Counts |
| Kenai | north | 7/1-10 | 1.3 | 12.3 | 13.3 | 13.0 | 26.2 | 14.3 | 3.4 | 3.4 | 3.9 | 3.7 | 2.9 | 2.2 | 27,984 |
| | | 7/11-16 | 0.4 | 2.0 | 4.5 | 4.3 | 16.2 | 16.0 | 12.2 | 12.2 | 13.5 | 9.7 | 7.0 | 1.8 | 9,772 |
| | | 7/17-8/7 | 4.9 | 27.5 | 28.2 | 12.6 | 13.3 | 7.9 | 1.9 | 1.2 | 0.8 | 0.7 | 0.6 | 0.4 | 378,379 |
| | | all | 4.5 | 25.8 | 26.7 | 12.4 | 14.3 | 8.5 | 2.2 | 1.6 | 1.3 | 1.1 | 0.9 | 0.6 | 416,135 |
| Kenai | south | 7/1-16 | 1.6 | 3.5 | 5.8 | 10.8 | 5.4 | 2.8 | 1.0 | 1.5 | 2.9 | 10.5 | 16.6 | 37.7 | 8,438 |
| | | 7/17-8/7 | 1.7 | 47.0 | 18.9 | 18.2 | 6.5 | 1.6 | 0.3 | 0.4 | 0.5 | 1.4 | 1.5 | 2.0 | 243,801 |
| | | all | 1.7 | 45.6 | 18.4 | 18.0 | 6.4 | 1.7 | 0.4 | 0.4 | 0.6 | 1.7 | 2.0 | 3.2 | 252,239 |
| Kasilof | north | 6/15-25 | 12.4 | 10.7 | 13.9 | 6.9 | 3.9 | 8.8 | 1.7 | 2.4 | 5.4 | 9.4 | 8.8 | 15.6 | 858 |
| | | 6/26-8/15 | 80.3 | 10.0 | 2.6 | 0.8 | 0.4 | 0.4 | 0.2 | 0.4 | 0.7 | 1.5 | 1.3 | 1.4 | 49,388 |
| | | all | 79.2 | 10.0 | 2.8 | 0.9 | 0.4 | 0.5 | 0.3 | 0.4 | 0.8 | 1.6 | 1.4 | 1.6 | 50,246 |
| Kasilof | south | 6/15-29 | 3.8 | 8.3 | 3.0 | 0.3 | 0.0 | 0.0 | 4.1 | 8.1 | 9.8 | 16.7 | 17.8 | 28.0 | 4,329 |
| | | 6/30-8/15 | 76.2 | 17.1 | 1.7 | 0.3 | 0.2 | 0.1 | 0.3 | 0.4 | 0.4 | 0.8 | 1.0 | 1.4 | 113,618 |
| | | all | 73.5 | 16.8 | 1.8 | 0.3 | 0.2 | 0.1 | 0.4 | 0.7 | 0.8 | 1.4 | 1.6 | 2.4 | 117,947 |
| Crescent | north | all | 75.4 | 16.5 | 4.2 | 2.1 | 1.2 | 0.4 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 26,595 |
| Crescent | south | all | 70.8 | 16.5 | 6.5 | 3.2 | 1.3 | 1.3 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 33,633 |
| Yentna | north | all | 37.8 | 31.7 | 18.1 | 4.8 | 0.8 | 0.3 | 0.6 | 0.4 | 0.3 | 0.5 | 1.5 | 3.4 | 31,951 |
| Yentna | south | all | 36.4 | 43.3 | 15.3 | 2.7 | 0.6 | 0.3 | 0.3 | 0.2 | 0.1 | 0.1 | 0.1 | 0.5 | 408,427 |

[a] Counts by sector and hour by day from King (1991).

Table 8. Daily adjusted fish wheel catch by species for the Kenai River, 4 July through 7 August 1990.

| Date | Hours Open[a] | Sockeye | | Pink | | Coho | | Chinook | |
|---|---|---|---|---|---|---|---|---|---|
| | | Daily | Cum[b] | Daily | Cum[b] | Daily | Cum[b] | Daily | Cum[b] |
| 04-Jul | 15.5 | 82 | 82 | 0 | 0 | 0 | 0 | 2 | 2 |
| 05-Jul | 0.00 | 0 | 82 | | 0 | | 0 | | 2 |
| 06-Jul | 23.30 | 59 | 59 | 0 | 0 | 0 | 0 | 1 | 1 |
| 07-Jul | 20.50 | 90 | 149 | 0 | 0 | 0 | 0 | 2 | 3 |
| 08-Jul | 24.00 | 179 | 328 | 0 | 0 | 0 | 0 | 0 | 3 |
| 09-Jul | 14.50 | 86 | 414 | 2 | 2 | 0 | 0 | 2 | 5 |
| 10-Jul | 13.00 | 31 | 445 | 0 | 2 | 0 | 0 | 2 | 7 |
| 11-Jul | 19.25 | 21 | 466 | 0 | 2 | 0 | 0 | 1 | 8 |
| 12-Jul | 22.00 | 28 | 494 | 0 | 2 | 0 | 0 | 1 | 9 |
| 13-Jul | 28.00 | 38 | 532 | 0 | 2 | 0 | 0 | 1 | 10 |
| 14-Jul | 22.25 | 69 | 601 | 0 | 2 | 0 | 0 | 3 | 13 |
| 15-Jul | 25.00 | 56 | 657 | 0 | 2 | 0 | 0 | 1 | 14 |
| 16-Jul | 22.75 | 66 | 723 | 0 | 2 | 0 | 0 | 3 | 17 |
| 17-Jul | 18.75 | 407 | 1,130 | 0 | 2 | 0 | 0 | 5 | 22 |
| 18-Jul | 3.50 | 1,721 | 2,851 | 0 | 2 | 0 | 0 | 6 | 28 |
| 19-Jul | 1.00 | 3,792 | 6,643 | 0 | 2 | 0 | 0 | 0 | 28 |
| 20-Jul | 2.00 | 1,104 | 7,747 | 36 | 38 | 0 | 0 | 0 | 28 |
| 21-Jul | 1.00 | 3,744 | 11,491 | 0 | 38 | 0 | 0 | 0 | 28 |
| 22-Jul | 5.00 | 744 | 12,235 | 0 | 38 | 0 | 0 | 10 | 38 |
| 23-Jul | 5.25 | 695 | 12,930 | 0 | 38 | 0 | 0 | 9 | 47 |
| 24-Jul | 7.75 | 576 | 13,506 | 0 | 38 | 0 | 0 | 0 | 47 |
| 25-Jul | 2.25 | 3,040 | 16,546 | 0 | 38 | 0 | 0 | 0 | 47 |
| 26-Jul | 1.75 | 685 | 17,231 | 0 | 38 | 0 | 0 | 0 | 47 |
| 27-Jul | 9.00 | 192 | 17,423 | 3 | 41 | 0 | 0 | 0 | 47 |
| 28-Jul | 6.00 | 324 | 17,747 | 0 | 41 | 0 | 0 | 0 | 47 |
| 29-Jul | 2.00 | 1,008 | 18,755 | 0 | 41 | 0 | 0 | 0 | 47 |
| 30-Jul | 1.50 | 3,584 | 22,339 | 16 | 57 | 0 | 0 | 0 | 47 |
| 31-Jul | 4.00 | 690 | 23,029 | 12 | 69 | 0 | 0 | 0 | 47 |
| 01-Aug | 5.45 | 506 | 23,535 | 4 | 73 | 0 | 0 | 0 | 47 |
| 02-Aug | 5.83 | 301 | 23,836 | 0 | 73 | 0 | 0 | 0 | 47 |
| 03-Aug | 7.00 | 953 | 24,789 | 3 | 76 | 3 | 3 | 3 | 50 |
| 04-Aug | 2.25 | 938 | 25,727 | 11 | 87 | 21 | 24 | 0 | 50 |
| 05-Aug | 2.00 | 1,248 | 26,975 | 24 | 111 | 24 | 48 | 0 | 50 |
| 06-Aug | 7.75 | 372 | 27,347 | 37 | 148 | 22 | 70 | 0 | 50 |
| 07-Aug | 12.50 | 217 | 27,564 | 38 | 186 | 23 | 93 | 2 | 52 |

[a] Fish wheel catch adjusted for 24 h: (daily catch * 24 h)/hours open.
[b] Actual total catch by species: 4270 sockeye salmon; 46 pink salmon; 24 coho salmon; 26 chinook salmon.

Table 9. Length composition of the major age classes of sockeye salmon collected in the Kenai River, 1980-1990. Length measured from mid-eye to fork of tail.

| | | Male | | | Female | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Age Class | Avg Length (mm) | Stndrd Error | Sample Size | Avg Length (mm) | Stndrd Error | Sample Size | Avg 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 |
| 1990 | | 474 | 0 | 168 | 478 | 0 | 127 | 476 | 0 | 295 | 1.3:1 |
| 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 |
| 1990 | | 586 | 0 | 358 | 559 | 0 | 318 | 574 | 0 | 676 | 1.1:1 |
| 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 | 25 | 582 | 4 | 36 | 587 | 3 | 61 | 0.7:1 |
| 1984 | | 570 | 2 | 210 | 557 | 2 | 192 | 564 | 2 | 402 | 1.1:1 |
| 1985 | | 570 | 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 |
| 1990 | | 589 | 0 | 177 | 568 | 0 | 132 | 580 | 0 | 309 | 1.3:1 |

Table 10. Age composition of sockeye salmon collected in the Kenai River, 1970-1990.

| 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 | |
| 7/01-7/16/90 | | 9.3 | 62.2 | 0.9 | | 11.3 | 16.1 | 0.3 | 354 |
| 7/17-7/24/90 | 0.2 | 21.2 | 44.8 | 0.4 | 0.2 | 13.3 | 19.1 | 0.9 | 571 |
| 7/25-8/07/90 | 1.2 | 24.0 | 34.0 | 0.9 | 0.5 | 14.5 | 24.3 | 0.7 | 588 |
| Seasonal Summary | | | | | | | | | |
| 1970 | tr[b] | 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 |
| 1990 | 0.6 | 21.6 | 41.4 | 0.6 | 0.3 | 13.7 | 21.1 | 0.8 | 1513 |

[a] Percentages weighted by total numbers in the escapement: 1978 (Bethe et al. 1980), 1979-1982, 1984-1990.
[b] Trace- less than 0.1%.

Table 11. Summary of chi-square analysis of temporal change in sockeye salmon age composition in the Kenai, Kasilof, Yentna, and Crescent Rivers, 1990.

| | | | | Chi-square Value | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Tabled | | | | |
| River | Number of Periods | Dates | Age Classes | Calculated | Alpha | DF | Value | Significant? | Hypothesis[a] |
| Kenai | 3 | 7/1-8/7 | 1.2, 1.3, 2.2, 2.3 | 74.30 | 0.05 | 6 | 12.59 | yes | reject |
| Kenai | 2 | 7/1-24 | 1.2, 1.3, 2.2, 2.3 | 32.97 | 0.05 | 3 | 7.81 | yes | reject |
| Kenai | 2 | 7/17-8/7 | 1.2, 1.3, 2.2, 2.3 | 13.45 | 0.05 | 3 | 7.81 | yes | reject |
| Kasilof | 2 | 6/15-7/7<br>7/8-8/15 | 1.2, 1.3, 2.2, 2.3 | 69.94 | 0.05 | 3 | 7.81 | yes | reject |
| Yentna | 3 | 7/7-8/12 | 1.2, 1.3 | 27.91 | 0.05 | 2 | 5.99 | yes | reject |
| Yentna | 2 | 7/7-25 | 1.2, 1.3 | 3.67 | 0.05 | 1 | 3.84 | no | accept |
| Yentna | 2 | 7/20-8/12 | 1.2, 1.3 | 12.7 | 0.05 | 1 | 3.84 | yes | reject |
| Crescent | 2 | 6/26-7/23<br>7/24-8/4 | 1.3, 2.3 | 46.59 | 0.05 | 1 | 3.84 | yes | reject |

[a]Hypothesis: Age class proportions do not change over time.

Table 12. Estimated salmon escapement into the Kasilof River, north and south banks combined, 15 June through 15 August, 1990. Species composition of daily sonar counts based on fish wheel catches.

| | Sockeye | | Pink | | Chinook | |
|---|---|---|---|---|---|---|
| Date | Daily | Cum | Daily | Cum | Daily | Cum |
| 15-Jun | 310 | 310 | 0 | 0 | 14 | 14 |
| 16-Jun | 255 | 565 | 0 | 0 | 12 | 26 |
| 17-Jun | 247 | 812 | 0 | 0 | 11 | 37 |
| 18-Jun | 278 | 1,090 | 0 | 0 | 12 | 49 |
| 19-Jun | 208 | 1,298 | 0 | 0 | 9 | 58 |
| 20-Jun | 176 | 1,474 | 0 | 0 | 8 | 66 |
| 21-Jun | 216 | 1,690 | 0 | 0 | 10 | 76 |
| 22-Jun | 324 | 2,014 | 0 | 0 | 14 | 90 |
| 23-Jun | 201 | 2,215 | 0 | 0 | 9 | 99 |
| 24-Jun | 290 | 2,505 | 0 | 0 | 13 | 112 |
| 25-Jun | 257 | 2,762 | 0 | 0 | 12 | 124 |
| 26-Jun | 351 | 3,113 | 0 | 0 | 16 | 140 |
| 27-Jun | 518 | 3,631 | 0 | 0 | 23 | 163 |
| 28-Jun | 657 | 4,288 | 6 | 6 | 3 | 166 |
| 29-Jun | 1,079 | 5,367 | 10 | 16 | 6 | 172 |
| 30-Jun | 1,979 | 7,346 | 19 | 35 | 10 | 182 |
| 01-Jul | 2,019 | 9,365 | 20 | 55 | 9 | 191 |
| 02-Jul | 1,616 | 10,981 | 0 | 55 | 0 | 191 |
| 03-Jul | 2,181 | 13,162 | 0 | 55 | 0 | 191 |
| 04-Jul | 4,099 | 17,261 | 0 | 55 | 68 | 259 |
| 05-Jul | 5,505 | 22,766 | 0 | 55 | 92 | 351 |
| 06-Jul | 5,093 | 27,859 | 0 | 55 | 85 | 436 |
| 07-Jul | 2,327 | 30,186 | 79 | 134 | 11 | 447 |
| 08-Jul | 3,622 | 33,808 | 122 | 256 | 17 | 464 |
| 09-Jul | 2,762 | 36,570 | 69 | 325 | 191 | 655 |
| 10-Jul | 557 | 37,127 | 15 | 340 | 38 | 693 |
| 11-Jul | 1,429 | 38,556 | 36 | 376 | 99 | 792 |
| 12-Jul | 1,942 | 40,498 | 50 | 426 | 134 | 926 |
| 13-Jul | 1,833 | 42,331 | 46 | 472 | 127 | 1,053 |
| 14-Jul | 1,391 | 43,722 | 19 | 491 | 104 | 1,157 |
| 15-Jul | 1,904 | 45,626 | 26 | 517 | 143 | 1,300 |
| 16-Jul | 4,755 | 50,381 | 65 | 582 | 356 | 1,656 |
| 17-Jul | 21,340 | 71,721 | 157 | 739 | 2,981 | 4,637 |
| 18-Jul | 15,065 | 86,786 | 111 | 850 | 2,105 | 6,742 |
| 19-Jul | 3,038 | 89,824 | 84 | 934 | 437 | 7,179 |
| 20-Jul | 5,851 | 95,675 | 160 | 1,094 | 842 | 8,021 |
| 21-Jul | 1,782 | 97,457 | 49 | 1,143 | 256 | 8,277 |
| 22-Jul | 1,598 | 99,055 | 44 | 1,187 | 230 | 8,507 |
| 23-Jul | 2,707 | 101,762 | 74 | 1,261 | 390 | 8,897 |
| 24-Jul | 2,480 | 104,242 | 118 | 1,379 | 695 | 9,592 |
| 25-Jul | 4,417 | 108,659 | 212 | 1,591 | 1,236 | 10,828 |
| 26-Jul | 3,145 | 111,804 | 150 | 1,741 | 881 | 11,709 |
| 27-Jul | 2,026 | 113,830 | 97 | 1,838 | 567 | 12,276 |
| 28-Jul | 2,605 | 116,435 | 125 | 1,963 | 730 | 13,006 |
| 29-Jul | 4,094 | 120,529 | 197 | 2,160 | 1,147 | 14,153 |
| 30-Jul | 2,896 | 123,425 | 139 | 2,299 | 811 | 14,964 |
| 31-Jul | 2,220 | 125,645 | 107 | 2,406 | 621 | 15,585 |
| 01-Aug | 1,899 | 127,544 | 92 | 2,498 | 531 | 16,116 |
| 02-Aug | 2,382 | 129,926 | 115 | 2,613 | 667 | 16,783 |
| 03-Aug | 2,040 | 131,966 | 98 | 2,711 | 571 | 17,354 |
| 04-Aug | 1,252 | 133,218 | 60 | 2,771 | 351 | 17,705 |
| 05-Aug | 1,236 | 134,454 | 59 | 2,830 | 346 | 18,051 |
| 06-Aug | 1,129 | 135,583 | 54 | 2,884 | 317 | 18,368 |

- Continued -

Table 12. (p. 2 of 2)

| | Sockeye | | Pink | | Chinook | |
|---|---|---|---|---|---|---|
| Date | Daily | Cum | Daily | Cum | Daily | Cum |
| 07-Aug | 708 | 136,291 | 34 | 2,918 | 198 | 18,566 |
| 08-Aug | 1,101 | 137,392 | 52 | 2,970 | 309 | 18,875 |
| 09-Aug | 1,432 | 138,824 | 68 | 3,038 | 401 | 19,276 |
| 10-Aug | 1,269 | 140,093 | 61 | 3,099 | 356 | 19,632 |
| 11-Aug | 756 | 140,849 | 36 | 3,135 | 211 | 19,843 |
| 12-Aug | 936 | 141,785 | 46 | 3,181 | 262 | 20,105 |
| 13-Aug | 829 | 142,614 | 39 | 3,220 | 232 | 20,337 |
| 14-Aug | 738 | 143,352 | 35 | 3,255 | 207 | 20,544 |
| 15-Aug | 784 | 144,136 | 38 | 3,293 | 220 | 20,764 |

Table 13. Kasilof River sockeye salmon escapement summary, 1968-1990.

| Year | Escapement Estimated by Sonar Count[a] | Fish used for Artificial Propagation of Tustumena Lake[b] | Sonar Count Less Egg Take[c] |
|---|---|---|---|
| 1968 | 89,000 | | |
| 1969 | 46,000 | | |
| 1970 | 38,000 | | |
| 1971 | -- | | |
| 1972 | 113,000 | | |
| 1973 | 40,000 | | |
| 1974 | 70,000 | 205 | 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 | 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[d] | 9,387 | 195,000 |
| 1989 | 158,206 | 7,367 | 150,839 |
| 1990 | 144,136 | 6,831 | 137,305 |

[a] Multiple transducer sonar counts rounded to the nearest thousand (1968-78) from Namtvedt et al. (1979).
[b] From Cross et al. (1983): 1974-1980, FRED Div., Soldotna, Alaska files: 1981-90.
[c] Considered estimate of natural spawners above sonar site.
[d] Combined counts from weirs on Bear and Glacier Flats Creeks and surveys of remaining spawning streams.

Table 14. Distribution (percent of total index counts) of sockeye salmon in the major tributary systems of Tustumena Lake, 1975-1990.

| 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 |
| 1990 | 8.4 | 21.1 | 51.9 | 16.1 | 2.6 |

Table 15. Peak sockeye salmon escapement counts in seven index areas, Kasilof River drainage, 1975-1990.

| Year | Nikolai Creek[a] | Crystal Creek[a] | Clear Creek[a] | Glacier Flat Creek[b] | Seepage Creek[a] | Moose Creek[a] | Bear Creek[b] | Total Index Count[c] |
|---|---|---|---|---|---|---|---|---|
| 1975 | 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[d] | 17,500 | 800 | 3,500 | 121,400 | 5,700 | 9,200 | 120,400 | 278,500 |
| 1986[d] | 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 |
| 1990 | 7,474 | 879 | 220 | 14,355 | 1,217 | 18,800 | 46,300 | 89,245 |

[a] Commercial Fisheries Division stream survey counts (1975-85); FRED Division stream survey counts (1986-90).
[b] FRED Division weir count, 1980-1990.
[c] 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.
[d] Flagg (1986). Numbers rounded to nearest hundred fish.

Table 16. Cumulative proportion by date of sockeye salmon counts recorded in the Kasilof River, 1981-1990.

| | Cumulative Proportion[a] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
| 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 | 0.002 |
| 16-Jun | 0.059 | 0.011 | 0.056 | 0.018 | 0.004 | 0.053 | 0.091 | 0.018 | 0.002 | 0.004 |
| 17-Jun | 0.064 | 0.013 | 0.058 | 0.020 | 0.005 | 0.059 | 0.106 | 0.021 | 0.004 | 0.006 |
| 18-Jun | 0.075 | 0.015 | 0.060 | 0.022 | 0.005 | 0.062 | 0.120 | 0.025 | 0.006 | 0.008 |
| 19-Jun | 0.082 | 0.027 | 0.063 | 0.025 | 0.006 | 0.066 | 0.146 | 0.028 | 0.007 | 0.009 |
| 20-Jun | 0.099 | 0.035 | 0.065 | 0.031 | 0.007 | 0.068 | 0.171 | 0.032 | 0.011 | 0.010 |
| 21-Jun | 0.114 | 0.040 | 0.068 | 0.039 | 0.007 | 0.071 | 0.190 | 0.038 | 0.014 | 0.012 |
| 22-Jun | 0.133 | 0.043 | 0.070 | 0.048 | 0.008 | 0.073 | 0.198 | 0.046 | 0.016 | 0.014 |
| 23-Jun | 0.162 | 0.045 | 0.074 | 0.058 | 0.009 | 0.074 | 0.201 | 0.053 | 0.019 | 0.015 |
| 24-Jun | 0.195 | 0.049 | 0.076 | 0.069 | 0.012 | 0.075 | 0.206 | 0.065 | 0.021 | 0.017 |
| 25-Jun | 0.223 | 0.053 | 0.078 | 0.075 | 0.015 | 0.077 | 0.212 | 0.077 | 0.024 | 0.019 |
| 26-Jun | 0.261 | 0.055 | 0.080 | 0.080 | 0.017 | 0.079 | 0.218 | 0.089 | 0.031 | 0.022 |
| 27-Jun | 0.288 | 0.058 | 0.082 | 0.089 | 0.019 | 0.082 | 0.222 | 0.105 | 0.037 | 0.025 |
| 28-Jun | 0.342 | 0.061 | 0.085 | 0.099 | 0.022 | 0.085 | 0.227 | 0.133 | 0.046 | 0.030 |
| 29-Jun | 0.389 | 0.064 | 0.090 | 0.111 | 0.025 | 0.095 | 0.238 | 0.157 | 0.057 | 0.037 |
| 30-Jun | 0.438 | 0.069 | 0.110 | 0.123 | 0.029 | 0.121 | 0.249 | 0.173 | 0.074 | 0.051 |
| 01-Jul | 0.500 | 0.078 | 0.153 | 0.136 | 0.035 | 0.153 | 0.267 | 0.184 | 0.098 | 0.065 |
| 02-Jul | 0.512 | 0.091 | 0.165 | 0.150 | 0.039 | 0.180 | 0.297 | 0.189 | 0.153 | 0.076 |
| 03-Jul | 0.522 | 0.104 | 0.188 | 0.157 | 0.044 | 0.198 | 0.317 | 0.196 | 0.178 | 0.091 |
| 04-Jul | 0.529 | 0.115 | 0.212 | 0.178 | 0.056 | 0.215 | 0.334 | 0.224 | 0.183 | 0.120 |
| 05-Jul | 0.534 | 0.122 | 0.221 | 0.217 | 0.066 | 0.228 | 0.357 | 0.235 | 0.225 | 0.158 |
| 06-Jul | 0.543 | 0.129 | 0.231 | 0.243 | 0.071 | 0.245 | 0.385 | 0.255 | 0.277 | 0.193 |

- Continued -

Table 16. (p. 2 of 2)

| | Cumulative Proportion[a] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
| 07-Jul | 0.551 | 0.136 | 0.240 | 0.263 | 0.078 | 0.257 | 0.403 | 0.306 | 0.321 | 0.209 |
| 08-Jul | 0.562 | 0.145 | 0.247 | 0.304 | 0.095 | 0.261 | 0.422 | 0.329 | 0.346 | 0.235 |
| 09-Jul | 0.604 | 0.156 | 0.263 | 0.358 | 0.103 | 0.269 | 0.438 | 0.382 | 0.378 | 0.254 |
| 10-Jul | 0.649 | 0.164 | 0.294 | 0.391 | 0.114 | 0.289 | 0.450 | 0.457 | 0.404 | 0.258 |
| 11-Jul | 0.677 | 0.177 | 0.315 | 0.411 | 0.119 | 0.323 | 0.456 | 0.507 | 0.431 | 0.267 |
| 12-Jul | 0.712 | 0.197 | 0.344 | 0.416 | 0.126 | 0.337 | 0.481 | 0.567 | 0.488 | 0.281 |
| 13-Jul | 0.746 | 0.217 | 0.395 | 0.427 | 0.148 | 0.430 | 0.508 | 0.600 | 0.500 | 0.294 |
| 14-Jul | 0.797 | 0.247 | 0.465 | 0.445 | 0.208 | 0.501 | 0.520 | 0.614 | 0.514 | 0.303 |
| 15-Jul | 0.838 | 0.293 | 0.514 | 0.484 | 0.267 | 0.513 | 0.587 | 0.659 | 0.532 | 0.317 |
| 16-Jul | 0.863 | 0.358 | 0.547 | 0.543 | 0.382 | 0.528 | 0.600 | 0.676 | 0.566 | 0.350 |
| 17-Jul | 0.877 | 0.404 | 0.663 | 0.590 | 0.418 | 0.544 | 0.608 | 0.691 | 0.615 | 0.498 |
| 18-Jul | 0.891 | 0.491 | 0.759 | 0.636 | 0.432 | 0.562 | 0.619 | 0.703 | 0.629 | 0.602 |
| 19-Jul | 0.904 | 0.577 | 0.775 | 0.693 | 0.436 | 0.575 | 0.699 | 0.723 | 0.648 | 0.623 |
| 20-Jul | 0.922 | 0.642 | 0.785 | 0.739 | 0.439 | 0.586 | 0.731 | 0.770 | 0.711 | 0.664 |
| 21-Jul | 0.936 | 0.702 | 0.804 | 0.778 | 0.464 | 0.601 | 0.765 | 0.857 | 0.747 | 0.676 |
| 22-Jul | 0.942 | 0.744 | 0.822 | 0.810 | 0.551 | 0.611 | 0.809 | 0.921 | 0.768 | 0.687 |
| 23-Jul | 0.947 | 0.759 | 0.833 | 0.832 | 0.609 | 0.618 | 0.851 | 0.929 | 0.806 | 0.706 |
| 24-Jul | 0.952 | 0.769 | 0.842 | 0.864 | 0.649 | 0.627 | 0.873 | 0.935 | 0.816 | 0.723 |
| 25-Jul | 0.954 | 0.784 | 0.849 | 0.888 | 0.683 | 0.717 | 0.888 | 0.939 | 0.824 | 0.754 |
| 26-Jul | 0.957 | 0.800 | 0.854 | 0.910 | 0.733 | 0.795 | 0.897 | 0.943 | 0.840 | 0.776 |
| 27-Jul | 0.959 | 0.818 | 0.858 | 0.918 | 0.791 | 0.806 | 0.906 | 0.948 | 0.850 | 0.790 |
| 28-Jul | 0.962 | 0.836 | 0.862 | 0.926 | 0.826 | 0.812 | 0.916 | 0.953 | 0.860 | 0.808 |
| 29-Jul | 0.963 | 0.847 | 0.867 | 0.933 | 0.842 | 0.829 | 0.925 | 0.958 | 0.869 | 0.836 |
| 30-Jul | 0.964 | 0.857 | 0.874 | 0.939 | 0.853 | 0.888 | 0.939 | 0.961 | 0.877 | 0.856 |
| 31-Jul | 0.966 | 0.866 | 0.889 | 0.943 | 0.865 | 0.917 | 0.962 | 0.965 | 0.885 | 0.872 |
| 01-Aug | 1.000 | 0.876 | 1.000 | 1.000 | 0.875 | 1.000 | 0.975 | 0.969 | 0.892 | 0.885 |
| 02-Aug | | 0.886 | | | 0.881 | | 0.982 | 0.973 | 0.898 | 0.901 |
| 03-Aug | | 0.895 | | | 0.890 | | 0.986 | 0.977 | 0.905 | 0.916 |
| 04-Aug | | 1.000 | | | 0.898 | | 0.990 | 0.983 | 0.916 | 0.924 |
| 05-Aug | | | | | 0.904 | | 0.994 | 0.990 | 0.927 | 0.933 |
| 06-Aug | | | | | 0.909 | | 0.997 | 0.993 | 0.943 | 0.941 |
| 07-Aug | | | | | 0.917 | | 1.000 | 0.997 | 0.958 | 0.946 |
| 08-Aug | | | | | 0.927 | | | 1.000 | 0.963 | 0.953 |
| 09-Aug | | | | | 0.938 | | | | 0.969 | 0.963 |
| 10-Aug | | | | | 0.945 | | | | 0.976 | 0.972 |
| 11-Aug | | | | | 0.949 | | | | 0.982 | 0.977 |
| 12-Aug | | | | | 1.000 | | | | 0.986 | 0.984 |
| 13-Aug | | | | | | | | | 0.990 | 0.989 |
| 14-Aug | | | | | | | | | 0.996 | 0.995 |
| 15-Aug | | | | | | | | | 1.000 | 1.000 |
| Midpoint[b] | 7/01 | 7/19 | 7/15 | 7/16 | 7/22 | 7/14 | 7/13 | 7/11 | 7/14 | 7/18 |
| No. days for 80% | 29 | 32 | 33 | 28 | 28 | 32 | 41 | 26 | 33 | 29 |

[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.
[b] Midpoint for previous years: 1979 (7/10); 1980 (7/16).

Table 17. Daily adjusted fish wheel catch by species for the Kasilof River, 17 June through 2 August 1990.

| | | Sockeye | | Pink | | Chinook | |
|---|---|---|---|---|---|---|---|
| Date | Hours Open | Daily | Cum[b] | Daily | Cum[b] | Daily | Cum[b] |
| 18-Jun | 44.00 | 14 | 14 | 0 | 0 | 0 | 0 |
| 19-Jun | 25.00 | 10 | 24 | 0 | 0 | 2 | 2 |
| 20-Jun | 8.00 | 18 | 42 | 0 | 0 | 0 | 2 |
| 21-Jun | 21.00 | 22 | 64 | 0 | 0 | 2 | 4 |
| 22-Jun | 26.50 | 9 | 73 | 0 | 0 | 1 | 5 |
| 23-Jun | 24.00 | 9 | 82 | 0 | 0 | 0 | 5 |
| 24-Jun | 24.00 | 4 | 86 | 0 | 0 | 2 | 7 |
| 25-Jun | 24.00 | 6 | 92 | 0 | 0 | 0 | 7 |
| 26-Jun | 24.00 | 20 | 112 | 0 | 0 | 0 | 7 |
| 27-Jun | 24.00 | 42 | 154 | 0 | 0 | 0 | 7 |
| 28-Jun | 24.00 | 51 | 205 | 1 | 1 | 0 | 7 |
| 29-Jun | 24.00 | 50 | 255 | 0 | 1 | 1 | 8 |
| 30-Jun | 24.00 | 38 | 293 | 0 | 1 | 0 | 8 |
| 01-Jul | 24.50 | 67 | 360 | 1 | 2 | 0 | 8 |
| 02-Jul | 24.00 | 95 | 455 | 0 | 2 | 0 | 8 |
| 03-Jul | 20.00 | 108 | 563 | 0 | 2 | 0 | 8 |
| 04-Jul | | | 563 | | 2 | | 8 |
| 05-Jul | 40.00 | 131 | 694 | 0 | 2 | 2 | 10 |
| 06-Jul | 24.00 | 108 | 802 | 0 | 2 | 2 | 12 |
| 07-Jul | 24.00 | 106 | 908 | 1 | 3 | 0 | 12 |
| 08-Jul | 24.00 | 102 | 1,010 | 6 | 9 | 1 | 13 |
| 09-Jul | 24.00 | 43 | 1,053 | 2 | 11 | 2 | 15 |
| 10-Jul | 20.00 | 31 | 1,084 | 1 | 12 | 1 | 16 |
| 11-Jul | 25.00 | 26 | 1,110 | 0 | 12 | 5 | 21 |
| 12-Jul | 24.00 | 31 | 1,141 | 1 | 13 | 2 | 23 |
| 13-Jul | 24.50 | 28 | 1,169 | 0 | 13 | 1 | 24 |
| 14-Jul | 19.50 | 9 | 1,178 | 0 | 13 | 0 | 24 |
| 15-Jul | 24.00 | 70 | 1,248 | 1 | 14 | 7 | 31 |
| 16-Jul | 24.00 | 68 | 1,316 | 1 | 15 | 4 | 35 |
| 17-Jul | 20.50 | 75 | 1,391 | 1 | 16 | 8 | 43 |
| 18-Jul | 24.00 | 61 | 1,452 | 0 | 16 | 11 | 54 |
| 19-Jul | 16.50 | 52 | 1,504 | 0 | 16 | 10 | 64 |
| 20-Jul | 24.00 | 35 | 1,539 | 1 | 17 | 1 | 65 |
| 21-Jul | 24.00 | 15 | 1,554 | 1 | 18 | 4 | 69 |
| 22-Jul | 26.50 | 8 | 1,562 | 0 | 18 | 4 | 73 |
| 23-Jul | 25.00 | 36 | 1,598 | 2 | 20 | 2 | 75 |
| 24-Jul | 19.50 | 16 | 1,614 | 2 | 22 | 1 | 76 |
| 25-Jul | 18.50 | 34 | 1,648 | 0 | 22 | 0 | 76 |
| 26-Jul | 24.00 | 6 | 1,654 | 0 | 22 | 3 | 79 |
| 27-Jul | 24.75 | 12 | 1,666 | 0 | 22 | 2 | 81 |
| 28-Jul | 26.00 | 14 | 1,680 | 0 | 22 | 2 | 83 |
| 29-Jul | 23.00 | 25 | 1,705 | 0 | 22 | 7 | 90 |
| 30-Jul | 24.00 | 4 | 1,709 | 0 | 22 | 4 | 94 |
| 31-Jul | 20.00 | 5 | 1,714 | 2 | 24 | 4 | 98 |
| 01-Aug | 23.00 | 6 | 1,720 | 2 | 26 | 6 | 104 |
| 02-Aug | 28.50 | 3 | 1,723 | 0 | 26 | 6 | 110 |

[a] Fish wheel catch adjusted for 24 h: (daily catch * 24 h)/hours open.
[b] Actual total catch by species: 1,750 sockeye salmon; 26 pink salmon; 0 coho salmon; 107 chinook salmon.

Table 18. Age composition of sockeye salmon collected in the Kasilof River, 1969-1990

| 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 | |
| 6/15-7/07/90 | 0.0 | 24.9 | 32.1 | 0.3 | 0.0 | 18.6 | 23.8 | 0.3 | 365 |
| 7/08-8/15/90 | 0.5 | 35.0 | 17.6 | 0.3 | 0.0 | 37.0 | 9.3 | 0.3 | 397 |
| 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 |
| 1990 | 0.4 | 32.9 | 20.7 | 0.3 | 0.0 | 33.2 | 12.4 | 0.3 | 762 |

[a] Percentages weighted by total numbers in the escapement: 1979-1990.

Table 19. Length composition of the major age classes of sockeye salmon collected in the Kasilof River, 1980-1990. Length measured from mid-eye to fork of tail.

| | | Male | | | Female | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Age Class | Avg Length (mm) | Stndrd Error | Sample Size | Avg Length (mm) | Stndrd Error | Sample Size | Avg 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 |
| 1990 | | 462 | 0 | 139 | 458 | 0 | 91 | 460 | 0 | 230 | 1.5:1 |
| 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 |
| 1990 | | 518 | 0 | 81 | 523 | 0 | 106 | 521 | 0 | 187 | 0.8:1 |
| 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 |
| 1990 | | 453 | 0 | 104 | 457 | 0 | 111 | 455 | 0 | 215 | 0.9:1 |
| 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 |
| 1990 | | 514 | 0 | 63 | 529 | 0 | 61 | 522 | 0 | 124 | 1.0:1 |

Table 20. Estimated salmon escapement into the Crescent River, north and south banks combined, 26 June through 4 August, 1990. Species composition of daily sonar counts based on trap catches.

| | Sockeye | | Chum | | Coho | | Chinook | |
|---|---|---|---|---|---|---|---|---|
| Date | Daily | Cum | Daily | Cum | Daily | Cum | Daily | Cum |
| 26-Jun | 172 | 172 | 1 | 1 | 0 | 0 | 1 | 1 |
| 27-Jun | 185 | 357 | 1 | 2 | 0 | 0 | 1 | 2 |
| 28-Jun | 339 | 696 | 1 | 3 | 0 | 0 | 2 | 4 |
| 29-Jun | 408 | 1104 | 3 | 6 | 0 | 0 | 2 | 6 |
| 30-Jun | 205 | 1309 | 1 | 7 | 0 | 0 | 1 | 7 |
| 01-Jul | 477 | 1,786 | 2 | 9 | 0 | 0 | 3 | 10 |
| 02-Jul | 1,077 | 2,863 | 6 | 15 | 0 | 0 | 5 | 15 |
| 03-Jul | 518 | 3,381 | 4 | 19 | 0 | 0 | 2 | 17 |
| 04-Jul | 666 | 4,047 | 3 | 22 | 0 | 0 | 4 | 21 |
| 05-Jul | 1,049 | 5,096 | 0 | 22 | 0 | 0 | 0 | 21 |
| 06-Jul | 1,574 | 6,670 | 0 | 22 | 0 | 0 | 0 | 21 |
| 07-Jul | 692 | 7,362 | 4 | 26 | 3 | 3 | 0 | 21 |
| 08-Jul | 757 | 8,119 | 5 | 31 | 2 | 5 | 0 | 21 |
| 09-Jul | 1,515 | 9,634 | 10 | 41 | 4 | 9 | 0 | 21 |
| 10-Jul | 1,159 | 10,793 | 7 | 48 | 3 | 12 | 0 | 21 |
| 11-Jul | 3,009 | 13,802 | 19 | 67 | 10 | 22 | 0 | 21 |
| 12-Jul | 1,115 | 14,917 | 7 | 74 | 4 | 26 | 0 | 21 |
| 13-Jul | 710 | 15,627 | 4 | 78 | 3 | 29 | 0 | 21 |
| 14-Jul | 1,126 | 16,753 | 7 | 85 | 4 | 33 | 0 | 21 |
| 15-Jul | 1,284 | 18,037 | 8 | 93 | 4 | 37 | 0 | 21 |
| 16-Jul | 2,495 | 20,532 | 16 | 109 | 7 | 44 | 0 | 21 |
| 17-Jul | 4,117 | 24,649 | 26 | 135 | 13 | 57 | 0 | 21 |
| 18-Jul | 3,584 | 28,233 | 22 | 157 | 11 | 68 | 0 | 21 |
| 19-Jul | 1,743 | 29,976 | 11 | 168 | 5 | 73 | 0 | 21 |
| 20-Jul | 1,901 | 31,877 | 26 | 194 | 0 | 73 | 0 | 21 |
| 21-Jul | 2,248 | 34,125 | 159 | 353 | 0 | 73 | 0 | 21 |
| 22-Jul | 2,686 | 36,811 | 189 | 542 | 0 | 73 | 0 | 21 |
| 23-Jul | 1,971 | 38,782 | 552 | 1,094 | 0 | 73 | 0 | 21 |
| 24-Jul | 1,049 | 39,831 | 294 | 1,388 | 0 | 73 | 0 | 21 |
| 25-Jul | 2,016 | 41,847 | 566 | 1,954 | 0 | 73 | 0 | 21 |
| 26-Jul | 1,979 | 43,826 | 875 | 2,829 | 0 | 73 | 0 | 21 |
| 27-Jul | 1,306 | 45,132 | 577 | 3,406 | 0 | 73 | 0 | 21 |
| 28-Jul | 852 | 45,984 | 377 | 3,783 | 0 | 73 | 0 | 21 |
| 29-Jul | 815 | 46,799 | 329 | 4,112 | 0 | 73 | 0 | 21 |
| 30-Jul | 1,941 | 48,740 | 785 | 4,897 | 0 | 73 | 0 | 21 |
| 31-Jul | 1,190 | 49,930 | 1,021 | 5,918 | 0 | 73 | 0 | 21 |
| 01-Aug | 909 | 50,839 | 779 | 6,697 | 0 | 73 | 0 | 21 |
| 02-Aug | 649 | 51,488 | 556 | 7,253 | 0 | 73 | 0 | 21 |
| 03-Aug | 368 | 51,856 | 316 | 7,569 | 0 | 73 | 0 | 21 |
| 04-Aug | 382 | 52,238 | 327 | 7,896 | 0 | 73 | 0 | 21 |

Table 21. Daily fish trap catch by species for the Crescent River, 26 June through 4 August 1990.

| | Sockeye | | Chum | | Coho | | Chinook | |
|---|---|---|---|---|---|---|---|---|
| Date | Daily | Cum | Daily | Cum | Daily | Cum | Daily | Cum |
| 26-Jun | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27-Jun | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 |
| 28-Jun | 3 | 7 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29-Jun | 2 | 9 | 0 | 0 | 0 | 0 | 1 | 1 |
| 30-Jun | 4 | 13 | 0 | 0 | 0 | 0 | 0 | 1 |
| 01-Jul | 10 | 23 | 0 | 0 | 0 | 0 | 0 | 1 |
| 02-Jul | 50 | 73 | 0 | 0 | 0 | 0 | 0 | 1 |
| 03-Jul | 60 | 133 | 0 | 0 | 0 | 0 | 0 | 1 |
| 04-Jul | 60 | 193 | 0 | 0 | 0 | 0 | 0 | 1 |
| 05-Jul | 70 | 263 | 0 | 0 | 0 | 0 | 0 | 1 |
| 06-Jul | 97 | 360 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07-Jul | 29 | 389 | 0 | 0 | 0 | 0 | 0 | 1 |
| 08-Jul | 6 | 395 | 0 | 0 | 0 | 0 | 0 | 1 |
| 09-Jul | 7 | 402 | 0 | 0 | 0 | 0 | 0 | 1 |
| 10-Jul | 3 | 405 | 0 | 0 | 0 | 0 | 0 | 1 |
| 11-Jul | 0 | 405 | 0 | 0 | 0 | 0 | 0 | 1 |
| 12-Jul | 1 | 406 | 0 | 0 | 0 | 0 | 0 | 1 |
| 13-Jul | 0 | 406 | 0 | 0 | 0 | 0 | 0 | 1 |
| 14-Jul | 0 | 406 | 0 | 0 | 0 | 0 | 0 | 1 |
| 15-Jul | 0 | 406 | 0 | 0 | 0 | 0 | 0 | 1 |
| 16-Jul | 1 | 407 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17-Jul | 46 | 453 | 0 | 0 | 0 | 0 | 0 | 1 |
| 18-Jul | 68 | 521 | 0 | 0 | 0 | 0 | 0 | 1 |
| 19-Jul | 159 | 680 | 2 | 2 | 1 | 1 | 0 | 1 |
| 20-Jul | 239 | 919 | 3 | 5 | 0 | 1 | 0 | 1 |
| 21-Jul | 134 | 1,053 | 8 | 13 | 0 | 1 | 0 | 1 |
| 22-Jul | 36 | 1,089 | 4 | 17 | 0 | 1 | 0 | 1 |
| 23-Jul | 58 | 1,147 | 19 | 36 | 0 | 1 | 0 | 1 |
| 24-Jul | 57 | 1,204 | 12 | 48 | 0 | 1 | 0 | 1 |
| 25-Jul | 49 | 1,253 | 15 | 63 | 0 | 1 | 0 | 1 |
| 26-Jul | 33 | 1,286 | 4 | 67 | 0 | 1 | 0 | 1 |
| 27-Jul | 45 | 1,331 | 12 | 79 | 0 | 1 | 0 | 1 |
| 28-Jul | 51 | 1,382 | 41 | 120 | 0 | 1 | 0 | 1 |
| 29-Jul | 99 | 1,481 | 16 | 136 | 0 | 1 | 0 | 1 |
| 30-Jul | 47 | 1,528 | 43 | 179 | 0 | 1 | 0 | 1 |
| 31-Jul | 17 | 1,545 | 7 | 186 | 0 | 1 | 0 | 1 |
| 01-Aug | 18 | 1,563 | 7 | 193 | 0 | 1 | 0 | 1 |
| 02-Aug | 10 | 1,573 | 11 | 204 | 0 | 1 | 0 | 1 |
| 03-Aug | 6 | 1,579 | 11 | 215 | 0 | 1 | 0 | 1 |
| 04-Aug | 5 | 1,584 | 12 | 227 | 0 | 1 | 0 | 1 |

Table 22. Cumulative proportion by date of sockeye salmon counts recorded in the Crescent River, 1981-1990.

| | Cumulative Proportion[a] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 1981 | 1982 | 1983 | 1984[b] | 1985 | 1986[c] | 1987 | 1988 | 1989 | 1990 |
| 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 | | | | 0.003 |
| 27-Jun | | | | 0.036 | 0.002 | 0.000 | | | | 0.007 |
| 28-Jun | | | | 0.041 | 0.002 | 0.001 | | | | 0.013 |
| 29-Jun | | | | 0.049 | 0.005 | 0.005 | | | | 0.021 |
| 30-Jun | | | | 0.069 | 0.007 | 0.008 | | | | 0.025 |
| 01-Jul | 0.000 | 0.000 | 0.000 | 0.081 | 0.008 | 0.017 | 0.012 | 0.008 | 0.008 | 0.034 |
| 02-Jul | 0.012 | 0.000 | 0.000 | 0.100 | 0.012 | 0.031 | 0.016 | 0.038 | 0.020 | 0.055 |
| 03-Jul | 0.036 | 0.001 | 0.001 | 0.118 | 0.016 | 0.054 | 0.020 | 0.149 | 0.043 | 0.065 |
| 04-Jul | 0.061 | 0.001 | 0.002 | 0.140 | 0.057 | 0.077 | 0.023 | 0.223 | 0.096 | 0.077 |
| 05-Jul | 0.083 | 0.002 | 0.019 | 0.156 | 0.138 | 0.084 | 0.027 | 0.269 | 0.129 | 0.098 |
| 06-Jul | 0.097 | 0.002 | 0.041 | 0.170 | 0.188 | 0.094 | 0.058 | 0.338 | 0.181 | 0.128 |
| 07-Jul | 0.117 | 0.005 | 0.068 | 0.184 | 0.196 | 0.110 | 0.084 | 0.404 | 0.231 | 0.141 |
| 08-Jul | 0.149 | 0.021 | 0.098 | 0.225 | 0.226 | 0.126 | 0.112 | 0.488 | 0.293 | 0.155 |
| 09-Jul | 0.166 | 0.057 | 0.118 | 0.268 | 0.251 | 0.134 | 0.160 | 0.554 | 0.334 | 0.184 |
| 10-Jul | 0.180 | 0.098 | 0.137 | 0.322 | 0.274 | 0.144 | 0.193 | 0.581 | 0.369 | 0.207 |
| 11-Jul | 0.193 | 0.127 | 0.167 | 0.360 | 0.293 | 0.154 | 0.243 | 0.598 | 0.412 | 0.264 |
| 12-Jul | 0.202 | 0.157 | 0.207 | 0.387 | 0.319 | 0.165 | 0.269 | 0.625 | 0.463 | 0.286 |
| 13-Jul | 0.215 | 0.190 | 0.266 | 0.409 | 0.364 | 0.184 | 0.305 | 0.655 | 0.502 | 0.299 |
| 14-Jul | 0.234 | 0.217 | 0.338 | 0.425 | 0.388 | 0.197 | 0.333 | 0.688 | 0.502 | 0.321 |
| 15-Jul | 0.266 | 0.245 | 0.392 | 0.454 | 0.415 | 0.204 | 0.370 | 0.692 | 0.518 | 0.345 |
| 16-Jul | 0.311 | 0.258 | 0.431 | 0.499 | 0.445 | 0.213 | 0.386 | 0.697 | 0.611 | 0.393 |
| 17-Jul | 0.347 | 0.286 | 0.457 | 0.548 | 0.480 | | 0.406 | 0.717 | 0.674 | 0.472 |
| 18-Jul | 0.386 | 0.328 | 0.499 | 0.599 | 0.506 | | 0.448 | 0.748 | 0.691 | 0.540 |
| 19-Jul | 0.434 | 0.377 | 0.559 | 0.639 | 0.525 | | 0.513 | 0.771 | 0.710 | 0.574 |
| 20-Jul | 0.493 | 0.460 | 0.617 | 0.684 | 0.546 | | 0.548 | 0.781 | 0.750 | 0.610 |
| 21-Jul | 0.550 | 0.533 | 0.667 | 0.721 | 0.573 | | 0.593 | 0.808 | 0.776 | 0.653 |
| 22-Jul | 0.604 | 0.586 | 0.702 | 0.743 | 0.596 | | 0.671 | 0.828 | 0.804 | 0.705 |
| 23-Jul | 0.655 | 0.636 | 0.732 | 0.783 | 0.632 | | 0.773 | 0.853 | 0.829 | 0.742 |
| 24-Jul | 0.703 | 0.685 | 0.764 | 0.802 | 0.665 | | 0.819 | 0.885 | 0.855 | 0.762 |
| 25-Jul | 0.727 | 0.713 | 0.787 | 0.813 | 0.698 | | 0.856 | 0.917 | 0.884 | 0.801 |
| 26-Jul | 0.741 | 0.751 | 0.813 | 0.824 | 0.729 | | 0.877 | 0.941 | 0.907 | 0.839 |
| 27-Jul | 0.760 | 0.784 | 0.839 | 0.838 | 0.756 | | 0.893 | 0.959 | 0.930 | 0.864 |
| 28-Jul | 0.776 | 0.801 | 0.858 | 0.852 | 0.775 | | 0.905 | 0.965 | 0.958 | 0.880 |
| 29-Jul | 0.798 | 0.816 | 0.881 | 0.870 | 0.794 | | 0.915 | 0.976 | 0.968 | 0.896 |
| 30-Jul | 0.821 | 0.826 | 0.915 | 0.882 | 0.821 | | 0.920 | 0.989 | 0.978 | 0.933 |
| 31-Jul | 0.836 | 0.833 | 0.945 | 0.893 | 1.000 | | 0.938 | 1.000 | 0.994 | 0.956 |
| 01-Aug | 0.847 | 1.000 | 1.000 | 1.000 | | | 0.960 | | 1.000 | 0.973 |
| 02-Aug | 0.866 | | | | | | 0.975 | | | 0.986 |
| 03-Aug | 0.886 | | | | | | 0.985 | | | 0.993 |
| 04-Aug | 0.901 | | | | | | 0.994 | | | 1.000 |
| 05-Aug | 0.918 | | | | | | 0.996 | | | |
| 06-Aug | 0.934 | | | | | | 1.000 | | | |
| 07-Aug | 0.949 | | | | | | | | | |

- Continued -

Table 22. (p. 2 of 2)

| | Cumulative Proportion[a] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 1981 | 1982 | 1983 | 1984[b] | 1985 | 1986[c] | 1987 | 1988 | 1989 | 1990 |
| 08-Aug | 0.964 | | | | | | | | | |
| 09-Aug | 0.973 | | | | | | | | | |
| 10-Aug | 1.000 | | | | | | | | | |
| 11-Aug | | | | | | | | | | |
| 12-Aug | | | | | | | | | | |
| 13-Aug | | | | | | | | | | |
| 14-Aug | | | | | | | | | | |
| Midpoint | 7/21 | 7/21 | 7/19 | 7/17 | 7/18 | | 7/19 | 7/09 | 7/15 | 7/18 |
| No. days for 80% | 29 | 21+ | 22+ | 31+ | 26+ | | 21 | 23 | 22 | 25 |

[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 23. Age composition of sockeye salmon collected in the Crescent River, 1979-1990.

| 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 | |
| 6/26-7/23/90 | | 2.9 | 41.7 | 0.5 | 0.0 | 3.7 | 50.5 | 0.5 | 374 |
| 7/24-8/04/90 | | 6.0 | 68.2 | 0.0 | 0.5 | 2.8 | 22.1 | 0.5 | 217 |
| 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 | 0.0 | 2.6 | 84.2 | 0.6 | 0.0 | 0.6 | 15.0 | 0.1 | 728 |
| 1990 | 0.0 | 3.7 | 48.5 | 0.4 | 0.1 | 3.5 | 43.2 | 0.5 | 591 |

[a] Percentages weighted by total numbers in the escapement: 1979-1981, 1986-1990.

Table 24. Length composition of the major age classes of sockeye salmon collected in the Crescent River, 1980-1990. Length measured from mid-eye to fork of tail.

| | | Male | | | Female | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Age Class | Avg Length (mm) | Stndrd Error | Sample Size | Avg Length (mm) | Stndrd Error | Sample Size | Avg 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 |
| 1990 | | 592 | 3 | 184 | 571 | 0 | 120 | 584 | 0 | 304 | 1.5:1 |
| 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 |
| 1990 | | 601 | 0 | 165 | 571 | 0 | 72 | 592 | 0 | 237 | 2.3:1 |

Table 25. Estimated salmon escapement into the Yentna River, north and south banks combined, 7 July through 12 August, 1990. 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 | 300 | 300 | 13 | 13 | 39 | 39 | 11 | 11 | 14 | 14 |
| 08-Jul | 363 | 663 | 11 | 24 | 43 | 82 | 14 | 25 | 14 | 28 |
| 09-Jul | 414 | 1,077 | 18 | 42 | 54 | 136 | 15 | 40 | 20 | 48 |
| 10-Jul | 371 | 1,448 | 26 | 68 | 57 | 193 | 13 | 53 | 24 | 72 |
| 11-Jul | 333 | 1,781 | 22 | 90 | 48 | 241 | 13 | 66 | 20 | 92 |
| 12-Jul | 244 | 2,025 | 20 | 110 | 38 | 279 | 9 | 75 | 17 | 109 |
| 13-Jul | 196 | 2,221 | 53 | 163 | 26 | 305 | 6 | 81 | 13 | 122 |
| 14-Jul | 224 | 2,445 | 60 | 223 | 25 | 330 | 6 | 87 | 12 | 134 |
| 15-Jul | 184 | 2,629 | 47 | 270 | 22 | 352 | 4 | 91 | 11 | 145 |
| 16-Jul | 221 | 2,850 | 61 | 331 | 37 | 389 | 6 | 97 | 19 | 164 |
| 17-Jul | 220 | 3,070 | 59 | 390 | 27 | 416 | 6 | 103 | 12 | 176 |
| 18-Jul | 484 | 3,554 | 125 | 515 | 48 | 464 | 11 | 114 | 20 | 196 |
| 19-Jul | 11,136 | 14,690 | 2,887 | 3,402 | 918 | 1,382 | 244 | 358 | 324 | 520 |
| 20-Jul | 15,811 | 30,501 | 3,975 | 7,377 | 1,083 | 2,465 | 249 | 607 | 0 | 520 |
| 21-Jul | 9,342 | 39,843 | 4,746 | 12,123 | 1,657 | 4,122 | 252 | 859 | 29 | 549 |
| 22-Jul | 6,035 | 45,878 | 8,423 | 20,546 | 649 | 4,771 | 153 | 1,012 | 0 | 549 |
| 23-Jul | 7,794 | 53,672 | 11,657 | 32,203 | 885 | 5,656 | 412 | 1,424 | 3 | 552 |
| 24-Jul | 9,762 | 63,434 | 14,348 | 46,551 | 1,345 | 7,001 | 440 | 1,864 | 33 | 585 |
| 25-Jul | 7,422 | 70,856 | 17,733 | 64,284 | 1,266 | 8,267 | 536 | 2,400 | 0 | 585 |
| 26-Jul | 9,547 | 80,403 | 19,318 | 83,602 | 2,037 | 10,304 | 803 | 3,203 | 0 | 585 |
| 27-Jul | 13,113 | 93,516 | 22,204 | 105,806 | 1,826 | 12,130 | 2,312 | 5,515 | 0 | 585 |
| 28-Jul | 9,500 | 103,016 | 19,795 | 125,601 | 935 | 13,065 | 710 | 6,225 | 0 | 585 |
| 29-Jul | 4,871 | 107,887 | 16,366 | 141,967 | 1,393 | 14,458 | 1,129 | 7,354 | 0 | 585 |
| 30-Jul | 3,807 | 111,694 | 14,617 | 156,584 | 714 | 15,172 | 848 | 8,202 | 0 | 585 |
| 31-Jul | 4,039 | 115,733 | 19,918 | 176,502 | 813 | 15,985 | 1,034 | 9,236 | 0 | 585 |
| 01-Aug | 4,846 | 120,579 | 22,938 | 199,440 | 2,122 | 18,107 | 2,245 | 11,481 | 0 | 585 |
| 02-Aug | 6,658 | 127,237 | 16,694 | 216,134 | 3,293 | 21,400 | 2,997 | 14,478 | 0 | 585 |
| 03-Aug | 5,569 | 132,806 | 10,575 | 226,709 | 3,737 | 25,137 | 2,885 | 17,363 | 0 | 585 |
| 04-Aug | 2,194 | 135,000 | 4,950 | 231,659 | 2,801 | 27,938 | 1,317 | 18,680 | 0 | 585 |
| 05-Aug | 1,227 | 136,227 | 4,136 | 235,795 | 1,179 | 29,117 | 651 | 19,331 | 14 | 599 |
| 06-Aug | 1,039 | 137,266 | 2,892 | 238,687 | 928 | 30,045 | 628 | 19,959 | 0 | 599 |
| 07-Aug | 942 | 138,208 | 1,999 | 240,686 | 559 | 30,604 | 334 | 20,293 | 0 | 599 |
| 08-Aug | 660 | 138,868 | 1,331 | 242,017 | 617 | 31,221 | 196 | 20,489 | 3 | 602 |
| 09-Aug | 541 | 139,409 | 1,094 | 243,111 | 561 | 31,782 | 285 | 20,774 | 0 | 602 |
| 10-Aug | 229 | 139,638 | 614 | 243,725 | 670 | 32,452 | 239 | 21,013 | 3 | 605 |
| 11-Aug | 378 | 140,016 | 456 | 244,181 | 533 | 32,985 | 121 | 21,134 | 2 | 607 |
| 12-Aug | 274 | 140,290 | 388 | 244,569 | 581 | 33,566 | 212 | 21,346 | 0 | 607 |

Table 26. Salmon escapement observations in Susitna River tributaries, 1990.

| | | | Number of Fish Observed or Estimated | | | | |
|---|---|---|---|---|---|---|---|
| | Method | Source | Sockeye | Pink | Chum | Coho | Chinook |
| Alexander Creek | | a | | | | | 2,596 |
| Cache Creek | | a | | | | | 484 |
| Chelatna Lake | mark/recap | b | 5,283 | | | | |
| Deception Creek | | a | | | | | 700 |
| Goose Creek | | a | | | | | 552 |
| Hewitt/Whiskey Lakes | weir | b | 12,943 | | | | |
| Little Willow Cr. | | a | | | | | 1,115 |
| Montana Creek | | a | | | | | 1,576 |
| Peters Creek | | a | | | | | 2,027 |
| Prairie Creek | | a | | | | | 9,113 |
| Sheep Creek | | a | | | | | 634 |
| Willow Creek | | a | | | | | 2,365 |

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

Table 27. Cumulative proportion by date of sockeye salmon counts recorded in the Yentna River, 1981-1990.

| | Cumulative Proportion[a] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
| 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 | 0.002 |
| 08-Jul | 0.023 | 0.002 | 0.004 | 0.005 | 0.003 | 0.006 | 0.004 | 0.008 | 0.006 | 0.005 |
| 09-Jul | 0.026 | 0.002 | 0.005 | 0.006 | 0.004 | 0.007 | 0.004 | 0.012 | 0.009 | 0.008 |
| 10-Jul | 0.056 | 0.002 | 0.005 | 0.007 | 0.005 | 0.008 | 0.005 | 0.016 | 0.012 | 0.010 |
| 11-Jul | 0.092 | 0.003 | 0.006 | 0.009 | 0.006 | 0.009 | 0.005 | 0.019 | 0.014 | 0.013 |
| 12-Jul | 0.155 | 0.003 | 0.008 | 0.011 | 0.007 | 0.010 | 0.005 | 0.022 | 0.015 | 0.014 |
| 13-Jul | 0.230 | 0.003 | 0.011 | 0.012 | 0.008 | 0.011 | 0.006 | 0.025 | 0.016 | 0.016 |
| 14-Jul | 0.344 | 0.003 | 0.034 | 0.015 | 0.009 | 0.011 | 0.007 | 0.029 | 0.019 | 0.017 |
| 15-Jul | 0.454 | 0.004 | 0.059 | 0.017 | 0.010 | 0.014 | 0.008 | 0.034 | 0.023 | 0.019 |
| 16-Jul | 0.521 | 0.005 | 0.096 | 0.023 | 0.010 | 0.022 | 0.010 | 0.039 | 0.026 | 0.020 |
| 17-Jul | 0.563 | 0.016 | 0.131 | 0.142 | 0.011 | 0.027 | 0.014 | 0.043 | 0.051 | 0.022 |
| 18-Jul | 0.599 | 0.043 | 0.179 | 0.232 | 0.012 | 0.036 | 0.020 | 0.046 | 0.103 | 0.025 |
| 19-Jul | 0.638 | 0.155 | 0.351 | 0.345 | 0.013 | 0.041 | 0.027 | 0.091 | 0.161 | 0.105 |
| 20-Jul | 0.681 | 0.329 | 0.567 | 0.458 | 0.014 | 0.042 | 0.034 | 0.197 | 0.202 | 0.217 |
| 21-Jul | 0.732 | 0.527 | 0.693 | 0.554 | 0.014 | 0.043 | 0.047 | 0.270 | 0.234 | 0.284 |
| 22-Jul | 0.801 | 0.627 | 0.722 | 0.626 | 0.016 | 0.052 | 0.059 | 0.304 | 0.280 | 0.327 |
| 23-Jul | 0.846 | 0.665 | 0.758 | 0.681 | 0.019 | 0.162 | 0.107 | 0.375 | 0.359 | 0.383 |
| 24-Jul | 0.882 | 0.711 | 0.786 | 0.755 | 0.145 | 0.193 | 0.218 | 0.484 | 0.453 | 0.452 |
| 25-Jul | 0.905 | 0.734 | 0.824 | 0.785 | 0.359 | 0.253 | 0.331 | 0.630 | 0.532 | 0.505 |
| 26-Jul | 0.925 | 0.780 | 0.867 | 0.808 | 0.507 | 0.371 | 0.442 | 0.771 | 0.646 | 0.573 |
| 27-Jul | 0.940 | 0.811 | 0.894 | 0.836 | 0.636 | 0.491 | 0.528 | 0.821 | 0.749 | 0.667 |
| 28-Jul | 0.950 | 0.831 | 0.905 | 0.855 | 0.782 | 0.606 | 0.587 | 0.858 | 0.799 | 0.734 |
| 29-Jul | 0.958 | 0.847 | 0.913 | 0.866 | 0.903 | 0.752 | 0.625 | 0.886 | 0.854 | 0.769 |
| 30-Jul | 0.969 | 0.859 | 0.921 | 0.874 | 0.942 | 0.831 | 0.655 | 0.916 | 0.864 | 0.796 |
| 31-Jul | 0.976 | 0.890 | 0.925 | 0.885 | 0.960 | 0.861 | 0.686 | 0.937 | 0.868 | 0.825 |
| 01-Aug | 0.980 | 0.933 | 0.929 | 0.893 | 0.970 | 0.882 | 0.709 | 0.947 | 0.873 | 0.859 |
| 02-Aug | 0.986 | 0.948 | 0.937 | 0.901 | 0.978 | 0.908 | 0.750 | 0.960 | 0.879 | 0.907 |
| 03-Aug | 0.988 | 0.955 | 0.941 | 0.909 | 0.983 | 0.917 | 0.789 | 0.969 | 0.889 | 0.947 |
| 04-Aug | 0.990 | 0.962 | 0.945 | 0.920 | 0.987 | 0.924 | 0.825 | 0.975 | 0.907 | 0.962 |
| 05-Aug | 0.991 | 0.965 | 0.949 | 0.926 | 0.990 | 0.935 | 0.857 | 0.981 | 0.923 | 0.971 |
| 06-Aug | 0.992 | 0.967 | 0.953 | 0.934 | 0.994 | 0.940 | 0.875 | 0.984 | 0.936 | 0.978 |
| 07-Aug | 0.992 | 0.970 | 0.955 | 0.939 | 0.997 | 1.000 | 0.889 | 0.989 | 0.944 | 0.985 |
| 08-Aug | 0.992 | 0.972 | 0.958 | 0.944 | 1.000 | | 0.900 | 0.992 | 0.949 | 0.990 |
| 09-Aug | 0.993 | 0.975 | 0.959 | 0.949 | | | 0.932 | 0.994 | 0.954 | 0.994 |
| 10-Aug | 0.994 | 0.977 | 0.959 | 0.954 | | | 0.962 | 0.996 | 0.958 | 0.995 |
| 11-Aug | 0.995 | 0.979 | 0.962 | 0.958 | | | 0.986 | 1.000 | 0.962 | 0.998 |
| 12-Aug | 0.996 | 0.981 | 0.968 | 0.962 | | | 0.996 | | 0.966 | 1.000 |
| 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 | |

- Continued -

Table 27. (p. 2 of 2)

| | Cumulative Proportion[a] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
| 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 | | | | | | |
| 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 | 7/25 |
| No. days for 80% | 14 | 14 | 12 | 17 | 6 | 11+ | 17 | 11 | 18 | 15 |

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

Table 28. Daily adjusted fish wheel catch by species for the north bank of the Yentna River, 8 July through 12 August 1990.

| | | Sockeye | | Pink | | Chum | | Coho | | Chinook | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Hours Open[a] | Daily | Cum[b] | Daily | Cum[b] | Daily | Cum[b] | Daily | Cum[b] | Daily | Cum[b] |
| 08-Jul | 21.70 | 18 | 18 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 0 |
| 09-Jul | 26.20 | 11 | 29 | 1 | 1 | 6 | 14 | 0 | 0 | 5 | 5 |
| 10-Jul | 23.10 | 7 | 36 | 1 | 2 | 11 | 25 | 1 | 1 | 5 | 10 |
| 11-Jul | 16.90 | 14 | 50 | 0 | 2 | 1 | 26 | 1 | 2 | 1 | 11 |
| 12-Jul | 26.40 | 5 | 55 | 0 | 2 | 0 | 26 | 1 | 3 | 3 | 14 |
| 13-Jul | 25.30 | 3 | 58 | 1 | 3 | 2 | 28 | 0 | 3 | 2 | 16 |
| 14-Jul | 24.80 | 4 | 62 | 0 | 3 | 0 | 28 | 0 | 3 | 1 | 17 |
| 15-Jul | 24.80 | 2 | 64 | 3 | 6 | 0 | 28 | 0 | 3 | 1 | 18 |
| 16-Jul | 25.80 | 2 | 66 | 3 | 9 | 0 | 28 | 0 | 3 | 3 | 21 |
| 17-Jul | 20.30 | 7 | 73 | 7 | 16 | 0 | 28 | 0 | 3 | 1 | 22 |
| 18-Jul | 19.80 | 5 | 78 | 10 | 26 | 0 | 28 | 0 | 3 | 0 | 22 |
| 19-Jul | 27.70 | 25 | 103 | 83 | 109 | 39 | 67 | 3 | 6 | 2 | 24 |
| 20-Jul | 7.90 | 164 | 267 | 273 | 382 | 173 | 240 | 9 | 15 | 0 | 24 |
| 21-Jul | 11.30 | 206 | 473 | 493 | 875 | 170 | 410 | 4 | 19 | 0 | 24 |
| 22-Jul | 9.00 | 173 | 646 | 611 | 1,486 | 168 | 578 | 13 | 32 | 0 | 24 |
| 23-Jul | 7.60 | 199 | 845 | 1,127 | 2,613 | 208 | 786 | 16 | 48 | 3 | 27 |
| 24-Jul | 10.70 | 236 | 1,081 | 1,344 | 3,957 | 256 | 1,042 | 18 | 66 | 0 | 27 |
| 25-Jul | 8.80 | 188 | 1,269 | 1,364 | 5,321 | 259 | 1,301 | 14 | 80 | 0 | 27 |
| 26-Jul | 4.90 | 157 | 1,426 | 862 | 6,183 | 93 | 1,394 | 24 | 104 | 0 | 27 |
| 27-Jul | 8.70 | 135 | 1,561 | 1,355 | 7,538 | 181 | 1,575 | 19 | 123 | 0 | 27 |
| 28-Jul | 4.50 | 53 | 1,614 | 1,040 | 8,578 | 85 | 1,660 | 21 | 144 | 0 | 27 |
| 29-Jul | 7.80 | 62 | 1,676 | 763 | 9,341 | 105 | 1,765 | 25 | 169 | 0 | 27 |
| 30-Jul | 5.90 | 73 | 1,749 | 932 | 10,273 | 61 | 1,826 | 28 | 197 | 0 | 27 |
| 31-Jul | 6.70 | 154 | 1,903 | 1,211 | 11,484 | 68 | 1,894 | 39 | 236 | 0 | 27 |
| 01-Aug | 7.80 | 40 | 1,943 | 745 | 12,229 | 111 | 2,005 | 37 | 273 | 0 | 27 |
| 02-Aug | 9.40 | 49 | 1,992 | 784 | 13,013 | 102 | 2,107 | 51 | 324 | 0 | 27 |
| 03-Aug | 6.90 | 49 | 2,041 | 410 | 13,423 | 167 | 2,274 | 83 | 407 | 0 | 27 |
| 04-Aug | 12.80 | 21 | 2,062 | 263 | 13,686 | 133 | 2,407 | 41 | 448 | 0 | 27 |
| 05-Aug | 8.90 | 30 | 2,092 | 426 | 14,112 | 105 | 2,512 | 24 | 472 | 0 | 27 |
| 06-Aug | 12.00 | 32 | 2,124 | 410 | 14,522 | 96 | 2,608 | 44 | 516 | 0 | 27 |
| 07-Aug | 13.50 | 28 | 2,152 | 137 | 14,659 | 50 | 2,658 | 27 | 543 | 0 | 27 |
| 08-Aug | 12.40 | 19 | 2,171 | 116 | 14,775 | 50 | 2,708 | 17 | 560 | 2 | 29 |
| 09-Aug | 14.70 | 24 | 2,195 | 134 | 14,909 | 62 | 2,770 | 23 | 583 | 0 | 29 |
| 10-Aug | 16.10 | 12 | 2,207 | 43 | 14,952 | 66 | 2,836 | 15 | 598 | 0 | 29 |
| 11-Aug | 14.20 | 8 | 2,215 | 17 | 14,969 | 27 | 2,863 | 12 | 610 | 2 | 31 |
| 12-Aug | 12.30 | 8 | 2,223 | 25 | 14,994 | 27 | 2,890 | 16 | 626 | 0 | 31 |

[a] Fishwheel catch adjusted for 24 hours: (daily catch * 24 hours)/hours open.
[b] Actual catch: 867 sockeye salmon; 5,246 pink salmon; 1,165 chum salmon; 248 coho salmon; 27 chinook salmon.

Table 29. Daily adjusted fish wheel catch by species for the south bank of the Yentna River, 8 July through 12 August 1990.

| | | Sockeye | | Pink | | Chum | | Coho | | Chinook | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Hours Open[a] | Daily | Cum[b] | Daily | Cum[b] | Daily | Cum[b] | Daily | Cum[b] | Daily | Cum[b] |
| 08-Jul | 27.60 | 24 | 24 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 |
| 09-Jul | 18.30 | 36 | 60 | 0 | 0 | 8 | 11 | 0 | 0 | 1 | 1 |
| 10-Jul | 23.30 | 30 | 90 | 1 | 1 | 1 | 12 | 2 | 2 | 1 | 2 |
| 11-Jul | 19.00 | 27 | 117 | 0 | 1 | 1 | 13 | 1 | 3 | 3 | 5 |
| 12-Jul | 26.40 | 18 | 135 | 1 | 2 | 1 | 14 | 2 | 5 | 0 | 5 |
| 13-Jul | 25.30 | 7 | 142 | 0 | 2 | 2 | 16 | 0 | 5 | 1 | 6 |
| 14-Jul | 24.80 | 7 | 149 | 0 | 2 | 0 | 16 | 0 | 5 | 2 | 8 |
| 15-Jul | 24.80 | 8 | 157 | 2 | 4 | 1 | 17 | 0 | 5 | 0 | 8 |
| 16-Jul | 24.90 | 3 | 160 | 1 | 5 | 1 | 18 | 0 | 5 | 0 | 8 |
| 17-Jul | 20.50 | 5 | 165 | 2 | 7 | 0 | 18 | 0 | 5 | 1 | 9 |
| 18-Jul | 14.30 | 10 | 175 | 12 | 19 | 2 | 20 | 0 | 5 | 0 | 9 |
| 19-Jul | 20.90 | 98 | 273 | 18 | 37 | 5 | 25 | 3 | 8 | 0 | 9 |
| 20-Jul | 13.30 | 841 | 1,114 | 202 | 239 | 51 | 76 | 13 | 21 | 0 | 9 |
| 21-Jul | 15.00 | 597 | 1,711 | 286 | 525 | 101 | 177 | 16 | 37 | 2 | 11 |
| 22-Jul | 9.60 | 528 | 2,239 | 720 | 1,245 | 50 | 227 | 13 | 50 | 0 | 11 |
| 23-Jul | 8.40 | 651 | 2,890 | 911 | 2,156 | 60 | 287 | 34 | 84 | 0 | 11 |
| 24-Jul | 12.90 | 586 | 3,476 | 800 | 2,956 | 67 | 354 | 26 | 110 | 2 | 13 |
| 25-Jul | 10.60 | 790 | 4,266 | 1,800 | 4,756 | 113 | 467 | 57 | 167 | 0 | 13 |
| 26-Jul | 11.40 | 413 | 4,679 | 798 | 5,554 | 84 | 551 | 34 | 201 | 0 | 13 |
| 27-Jul | 10.50 | 571 | 5,250 | 894 | 6,448 | 69 | 620 | 101 | 302 | 0 | 13 |
| 28-Jul | 8.30 | 882 | 6,132 | 1,735 | 8,183 | 78 | 698 | 64 | 366 | 0 | 13 |
| 29-Jul | 7.80 | 311 | 6,443 | 988 | 9,171 | 80 | 778 | 71 | 437 | 0 | 13 |
| 30-Jul | 7.70 | 458 | 6,901 | 1,649 | 10,820 | 78 | 856 | 100 | 537 | 0 | 13 |
| 31-Jul | 7.00 | 562 | 7,463 | 2,647 | 13,467 | 103 | 959 | 144 | 681 | 0 | 13 |
| 01-Aug | 6.60 | 280 | 7,743 | 1,244 | 14,711 | 109 | 1,068 | 127 | 808 | 0 | 13 |
| 02-Aug | 9.20 | 222 | 7,965 | 490 | 15,201 | 102 | 1,170 | 97 | 905 | 0 | 13 |
| 03-Aug | 11.80 | 222 | 8,187 | 372 | 15,573 | 128 | 1,298 | 106 | 1,011 | 0 | 13 |
| 04-Aug | 12.60 | 166 | 8,353 | 324 | 15,897 | 187 | 1,485 | 93 | 1,104 | 0 | 13 |
| 05-Aug | 13.40 | 165 | 8,518 | 498 | 16,395 | 145 | 1,630 | 86 | 1,190 | 2 | 15 |
| 06-Aug | 14.80 | 133 | 8,651 | 300 | 16,695 | 104 | 1,734 | 75 | 1,265 | 0 | 15 |
| 07-Aug | 13.90 | 166 | 8,817 | 321 | 17,016 | 85 | 1,819 | 52 | 1,317 | 0 | 15 |
| 08-Aug | 12.10 | 143 | 8,960 | 258 | 17,274 | 121 | 1,940 | 38 | 1,355 | 0 | 15 |
| 09-Aug | 14.60 | 89 | 9,049 | 156 | 17,430 | 82 | 2,022 | 44 | 1,399 | 0 | 15 |
| 10-Aug | 15.80 | 50 | 9,099 | 132 | 17,562 | 134 | 2,156 | 50 | 1,449 | 0 | 15 |
| 11-Aug | 13.50 | 80 | 9,179 | 87 | 17,649 | 96 | 2,252 | 20 | 1,469 | 0 | 15 |
| 12-Aug | 11.30 | 38 | 9,217 | 42 | 17,691 | 72 | 2,324 | 21 | 1,490 | 0 | 15 |

[a] Fishwheel catch adjusted for 24 hours: (daily catch * 24 hours)/hours open.
[b] Actual catch: 4,201 sockeye salmon; 7,058 pink salmon; 1,129 chum salmon; 657 coho salmon; 11 chinook salmon.

Table 30. Comparison of temporal differences in species composition of the Yentna River south bank fish wheel catch, 1990.

| Date | Time Period | Hours Open | Sockeye # | Sockeye % | Pink # | Pink % | Chum | Coho |
|---|---|---|---|---|---|---|---|---|
| 8/1 | 0600-1200 | 2 | 29 | 13.6 | 155 | 72.4 | 9 | 21 |
| 8/2 | | 2 | 16 | 26.7 | 31 | 51.7 | 4 | 9 |
| 8/2 | | 2 | 39 | 21.9 | 100 | 56.2 | 19 | 20 |
| 7/25 | | 2 | 97 | 22.0 | 316 | 71.7 | 20 | 8 |
| 7/28 | | 2 | 104 | 31.0 | 220 | 65.7 | 4 | 7 |
| 7/29 | | 2 | 41 | 21.7 | 132 | 69.8 | 6 | 10 |
| 7/30 | | 2 | 93 | 19.1 | 361 | 74.0 | 11 | 23 |
| 7/31 | | 2 | 103 | 14.4 | 561 | 78.6 | 22 | 28 |
| Total | | | 522 | | 1876 | | 95 | 126 |
| Mean Percent | | | | 21.3 | | 67.5 | | |
| 8/1 | 1201-1800 | 3 | 28 | 19.3 | 96 | 66.2 | 13 | 8 |
| 8/3 | | 3 | 31 | 35.6 | 32 | 36.8 | 14 | 10 |
| 8/3 | | 3 | 78 | 24.4 | 151 | 47.2 | 49 | 42 |
| 8/4 | | 3 | 38 | 22.4 | 69 | 40.6 | 47 | 16 |
| 7/23 | | 3 | 76 | 53.9 | 61 | 43.3 | 1 | 3 |
| 7/23 | | 3 | 228 | 39.3 | 319 | 55.0 | 21 | 12 |
| 7/25 | | 3 | 175 | 30.6 | 370 | 64.7 | 17 | 10 |
| 7/27 | | 3 | 135 | 39.9 | 189 | 55.9 | 12 | 2 |
| 7/28 | | 3 | 66 | 23.5 | 191 | 68.0 | 11 | 13 |
| 7/29 | | 3 | 60 | 21.3 | 189 | 67.0 | 20 | 13 |
| Total | | | 915 | | 1667 | | 205 | 129 |
| Mean Percent | | | | 31.0 | | 54.5 | | |
| 8/2 | 1801-2400 | 4 | 30 | 27.0 | 57 | 51.4 | 16 | 8 |
| 7/23 | | 4 | 57 | 52.3 | 47 | 43.1 | 5 | 0 |
| 7/24 | | 4 | 77 | 37.4 | 109 | 52.9 | 13 | 7 |
| 7/25 | | 4 | 29 | 34.1 | 49 | 57.6 | 6 | 1 |
| 7/26 | | 4 | 22 | 50.0 | 17 | 38.6 | 3 | 2 |
| 7/26 | | 4 | 14 | 38.9 | 15 | 41.7 | 6 | 1 |
| 7/29 | | 4 | 54 | 22.0 | 168 | 68.6 | 14 | 9 |
| 7/30 | | 4 | 61 | 20.7 | 211 | 71.8 | 8 | 14 |
| 7/31 | | 4 | 30 | 22.2 | 91 | 67.4 | 8 | 6 |
| Total | | | 374 | | 764 | | 79 | 48 |
| Mean Percent | | | | 33.9 | | 54.8 | | |

Table 31. Age composition of sockeye salmon collected in the Yentna River, 1986-1990.

| Sample Period | Percent Composition by Age Class[a] | | | | | | | | | | Sample Size |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.2 | 0.3 | 1.1 | 1.2 | 1.3 | 1.4 | 2.1 | 2.2 | 2.3 | 2.4 | |
| 7/07-7/20 | 0.6 | 4.9 | 0.2 | 20.4 | 51.5 | 0.0 | 0.2 | 10.6 | 11.6 | 0.0 | 491 |
| 7/21-7/25 | 1.0 | 2.2 | 0.1 | 26.1 | 49.7 | 0.3 | 0.1 | 10.4 | 9.9 | 0.0 | 522 |
| 7/26-8/12 | 0.7 | 1.4 | 0.4 | 36.3 | 44.6 | 1.3 | 0.0 | 9.0 | 5.7 | 0.1 | 697 |
| 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 |
| 1990 | 0.8 | 2.4 | 0.3 | 29.9 | 47.6 | 0.7 | 0.1 | 9.8 | 8.2 | 0.1 | 1,710 |

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

Table 32. Length composition of the major age classes of sockeye salmon collected in the Yentna River, 1986-1990. Length measured from mid-eye to fork of tail.

| | | Male | | | Female | | | Total | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | Age Class | Avg Length (mm) | Stndrd Error | Sample Size | Avg Length (mm) | Stndrd Error | Sample Size | Avg 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 |
| 1990 | | 446 | 0 | 305 | 446 | 0 | 238 | 446 | 0 | 543 | 1.3:1 |
| 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 |
| 1990 | | 573 | 0 | 400 | 552 | 0 | 526 | 561 | 0 | 926 | 0.7:1 |
| 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 |
| 1990 | | 574 | 0 | 73 | 542 | 0 | 96 | 555 | 0 | 169 | 0.8:1 |

Table 33. Cumulative proportion by date of pink salmon counts recorded in the Yentna River, 1981-1990.

| | Cumulative Proportion | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
| 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 | 0.000 |
| 08-Jul | 0.021 | 0.000 | 0.003 | 0.000 | 0.012 | 0.001 | 0.025 | 0.000 | 0.008 | 0.000 |
| 09-Jul | 0.025 | 0.000 | 0.004 | 0.000 | 0.015 | 0.001 | 0.029 | 0.000 | 0.013 | 0.000 |
| 10-Jul | 0.037 | 0.000 | 0.004 | 0.000 | 0.018 | 0.001 | 0.031 | 0.000 | 0.018 | 0.000 |
| 11-Jul | 0.039 | 0.000 | 0.005 | 0.001 | 0.021 | 0.001 | 0.035 | 0.000 | 0.026 | 0.000 |
| 12-Jul | 0.039 | 0.000 | 0.006 | 0.001 | 0.025 | 0.001 | 0.041 | 0.000 | 0.034 | 0.000 |
| 13-Jul | 0.042 | 0.000 | 0.009 | 0.001 | 0.030 | 0.001 | 0.047 | 0.000 | 0.043 | 0.001 |
| 14-Jul | 0.050 | 0.000 | 0.030 | 0.001 | 0.033 | 0.002 | 0.051 | 0.000 | 0.052 | 0.001 |
| 15-Jul | 0.057 | 0.000 | 0.039 | 0.001 | 0.038 | 0.003 | 0.056 | 0.001 | 0.058 | 0.001 |
| 16-Jul | 0.061 | 0.000 | 0.056 | 0.001 | 0.042 | 0.007 | 0.065 | 0.001 | 0.060 | 0.001 |
| 17-Jul | 0.062 | 0.001 | 0.098 | 0.003 | 0.046 | 0.011 | 0.075 | 0.001 | 0.071 | 0.002 |
| 18-Jul | 0.072 | 0.002 | 0.171 | 0.008 | 0.050 | 0.014 | 0.088 | 0.001 | 0.105 | 0.002 |
| 19-Jul | 0.082 | 0.010 | 0.288 | 0.023 | 0.053 | 0.015 | 0.099 | 0.002 | 0.158 | 0.014 |
| 20-Jul | 0.105 | 0.021 | 0.400 | 0.067 | 0.056 | 0.016 | 0.110 | 0.005 | 0.196 | 0.030 |
| 21-Jul | 0.132 | 0.040 | 0.511 | 0.126 | 0.060 | 0.017 | 0.135 | 0.013 | 0.224 | 0.050 |
| 22-Jul | 0.158 | 0.056 | 0.565 | 0.190 | 0.064 | 0.021 | 0.156 | 0.019 | 0.255 | 0.084 |
| 23-Jul | 0.236 | 0.078 | 0.638 | 0.277 | 0.078 | 0.059 | 0.180 | 0.032 | 0.287 | 0.132 |
| 24-Jul | 0.311 | 0.126 | 0.704 | 0.365 | 0.135 | 0.125 | 0.222 | 0.061 | 0.349 | 0.190 |
| 25-Jul | 0.398 | 0.162 | 0.743 | 0.420 | 0.226 | 0.222 | 0.307 | 0.129 | 0.420 | 0.263 |
| 26-Jul | 0.464 | 0.192 | 0.791 | 0.466 | 0.329 | 0.369 | 0.407 | 0.231 | 0.493 | 0.342 |
| 27-Jul | 0.512 | 0.237 | 0.820 | 0.510 | 0.475 | 0.535 | 0.537 | 0.338 | 0.570 | 0.433 |
| 28-Jul | 0.580 | 0.330 | 0.843 | 0.578 | 0.636 | 0.695 | 0.624 | 0.459 | 0.638 | 0.514 |
| 29-Jul | 0.639 | 0.447 | 0.855 | 0.669 | 0.763 | 0.830 | 0.668 | 0.589 | 0.691 | 0.580 |
| 30-Jul | 0.705 | 0.562 | 0.864 | 0.728 | 0.833 | 0.894 | 0.701 | 0.662 | 0.730 | 0.640 |
| 31-Jul | 0.752 | 0.654 | 0.871 | 0.784 | 0.877 | 0.924 | 0.729 | 0.722 | 0.748 | 0.722 |
| 01-Aug | 0.795 | 0.735 | 0.879 | 0.837 | 0.903 | 0.957 | 0.741 | 0.768 | 0.759 | 0.815 |
| 02-Aug | 0.819 | 0.824 | 0.903 | 0.873 | 0.926 | 0.979 | 0.767 | 0.826 | 0.770 | 0.884 |
| 03-Aug | 0.834 | 0.896 | 0.908 | 0.903 | 0.942 | 0.991 | 0.799 | 0.878 | 0.781 | 0.927 |
| 04-Aug | 0.849 | 0.934 | 0.912 | 0.925 | 0.956 | 0.996 | 0.838 | 0.909 | 0.812 | 0.947 |
| 05-Aug | 0.865 | 0.953 | 0.918 | 0.943 | 0.966 | 0.999 | 0.870 | 0.931 | 0.850 | 0.964 |
| 06-Aug | 0.883 | 0.962 | 0.924 | 0.956 | 0.978 | 1.000 | 0.887 | 0.951 | 0.883 | 0.976 |
| 07-Aug | 0.897 | 0.969 | 0.931 | 0.962 | 0.991 | | 0.895 | 0.969 | 0.912 | 0.984 |
| 08-Aug | 0.905 | 0.978 | 0.936 | 0.969 | 1.000 | | 0.901 | 0.982 | 0.924 | 0.990 |
| 09-Aug | 0.913 | 0.984 | 0.937 | 0.975 | | | 0.921 | 0.990 | 0.938 | 0.994 |
| 10-Aug | 0.918 | 0.989 | 0.938 | 0.982 | | | 0.950 | 0.995 | 0.943 | 0.997 |
| 11-Aug | 0.924 | 0.991 | 0.943 | 0.986 | | | 0.975 | 1.000 | 0.948 | 0.998 |
| 12-Aug | 0.929 | 0.994 | 0.951 | 0.988 | | | 0.989 | | 0.952 | 1.000 |
| 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 | |
| 19-Aug | 0.967 | 0.999 | 0.990 | 0.997 | | | | | 0.999 | |

- Continued -

Table 33. (p. 2 of 2)

| | Cumulative Proportion | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Date | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
| 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 | 7/28 |
| No. days for 80% | 20 | 12 | 16 | 14 | 9 | 8+ | 20 | 11 | 21 | 12 |

Table 34. Daily adjusted fish wheel catch by species for the east bank of the Susitna River, 12 July through 1 August 1990.

| | | Sockeye | | Pink | | Chum | | Coho | | Chinook | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Date | Hours Open | Daily | Cum | Daily | Cum | Daily | Cum | Daily | Cum | Daily | Cum |
| 12-Jul | 24.00 | 8 | 8 | 6 | 6 | 1 | 1 | 0 | 0 | 7 | 7 |
| 13-Jul | 22.00 | 12 | 20 | 7 | 13 | 2 | 3 | 0 | 0 | 9 | 16 |
| 14-Jul | 21.50 | 6 | 26 | 1 | 14 | 4 | 7 | 1 | 1 | 6 | 22 |
| 15-Jul | 6.00 | 1 | 27 | 0 | 14 | 1 | 8 | 0 | 1 | 2 | 24 |
| 16-Jul | 6.50 | 0 | 27 | 0 | 14 | 0 | 8 | 0 | 1 | 2 | 26 |
| 17-Jul | 23.00 | 1 | 28 | 0 | 14 | 4 | 12 | 0 | 1 | 2 | 28 |
| 18-Jul | 24.00 | 2 | 30 | 1 | 15 | 6 | 18 | 0 | 1 | 0 | 28 |
| 19-Jul | 23.00 | 1 | 31 | 2 | 17 | 3 | 21 | 0 | 1 | 0 | 28 |
| 20-Jul | 23.00 | 15 | 46 | 4 | 21 | 3 | 24 | 0 | 1 | 4 | 32 |
| 21-Jul | 16.30 | 146 | 192 | 15 | 36 | 1 | 25 | 0 | 1 | 5 | 37 |
| 22-Jul | 10.50 | 160 | 352 | 26 | 62 | 10 | 35 | 0 | 1 | 3 | 40 |
| 23-Jul | 12.00 | 196 | 548 | 40 | 102 | 20 | 55 | 0 | 1 | 2 | 42 |
| 24-Jul | 10.50 | 114 | 662 | 40 | 142 | 54 | 109 | 0 | 1 | 3 | 45 |
| 25-Jul | 15.50 | 291 | 953 | 188 | 330 | 144 | 253 | 0 | 1 | 3 | 48 |
| 26-Jul | 10.50 | 154 | 1,107 | 125 | 455 | 84 | 337 | 2 | 3 | 0 | 48 |
| 27-Jul | 12.50 | 172 | 1,279 | 336 | 791 | 111 | 448 | 3 | 6 | 4 | 52 |
| 28-Jul | 12.00 | 180 | 1,459 | 380 | 1,171 | 164 | 612 | 7 | 13 | 1 | 53 |
| 29-Jul | 10.00 | 79 | 1,538 | 157 | 1,328 | 84 | 696 | 3 | 16 | 0 | 53 |
| 30-Jul | 13.00 | 141 | 1,679 | 403 | 1,731 | 124 | 820 | 25 | 41 | 0 | 53 |
| 31-Jul | 8.50 | 87 | 1,766 | 239 | 1,970 | 87 | 907 | 9 | 50 | 0 | 53 |
| 01-Aug | 10.00 | 18 | 1,784 | 75 | 2,045 | 26 | 933 | 4 | 54 | 0 | 53 |

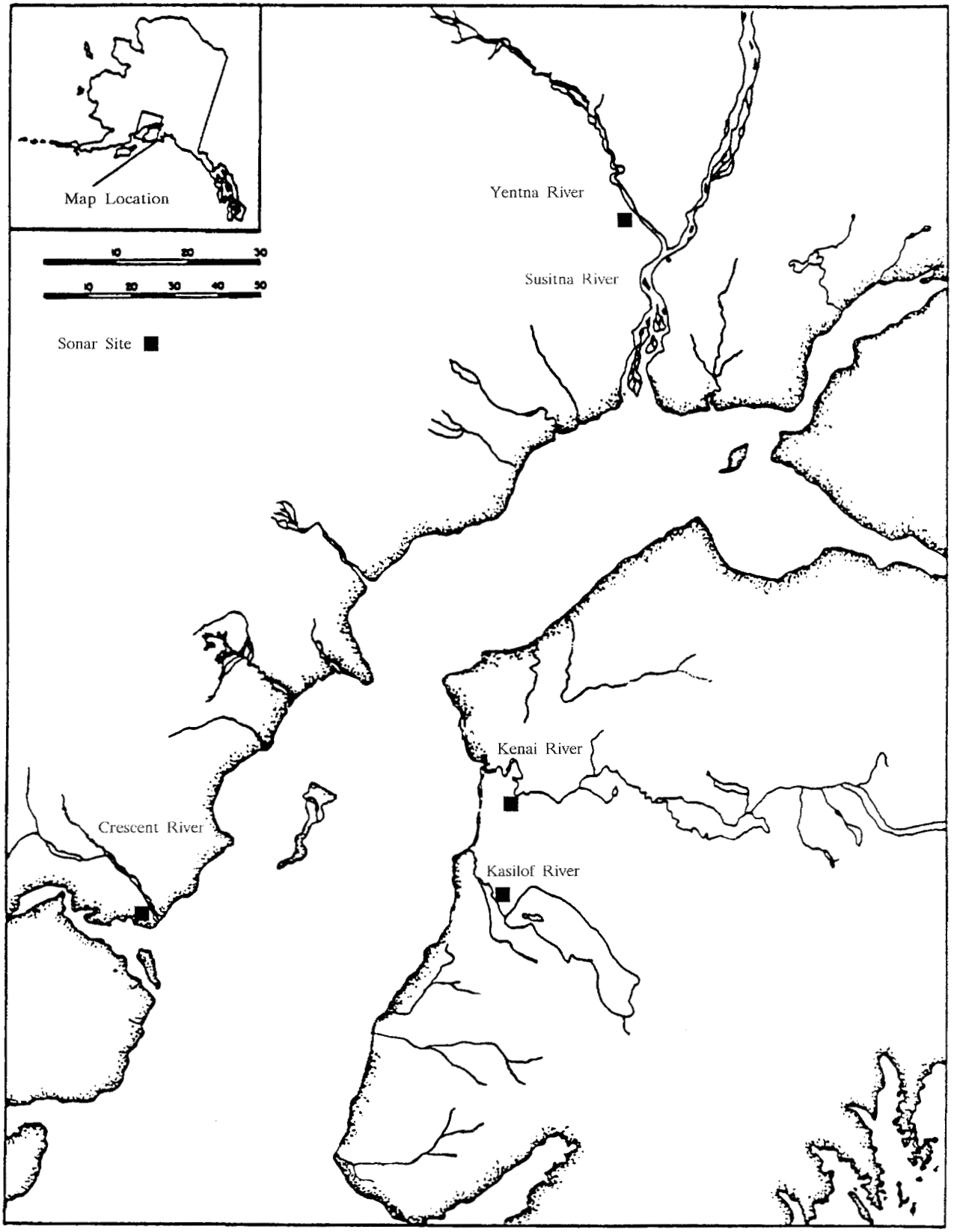



Figure 1. Upper Cook Inlet, Alaska, and sites where sockeye salmon escapement was monitored with side-scanning sonar.

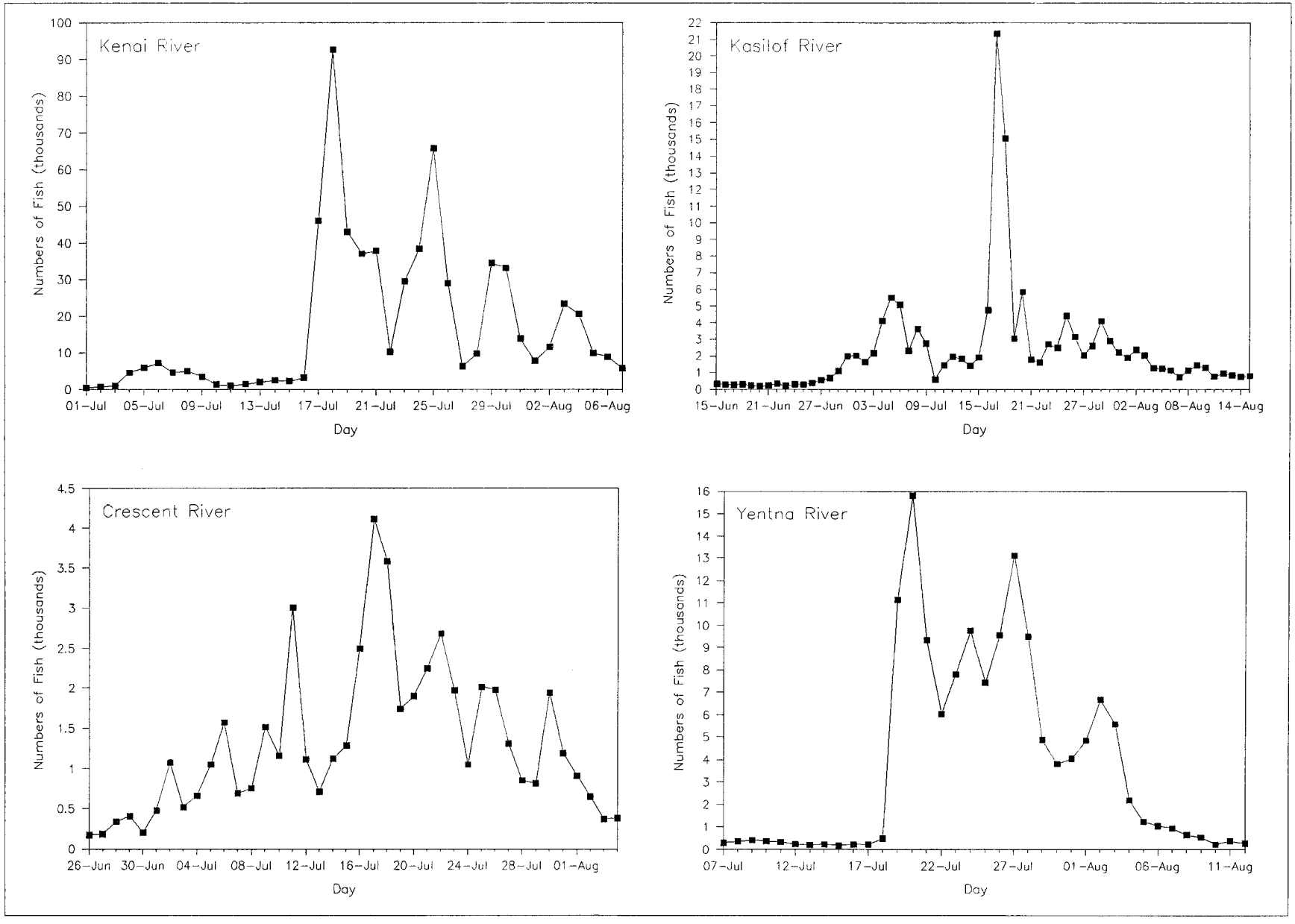



Figure 2. Daily escapement of sockeye salmon into the Kenai, Kasilof, Crescent and Yentna Rivers, 1990.

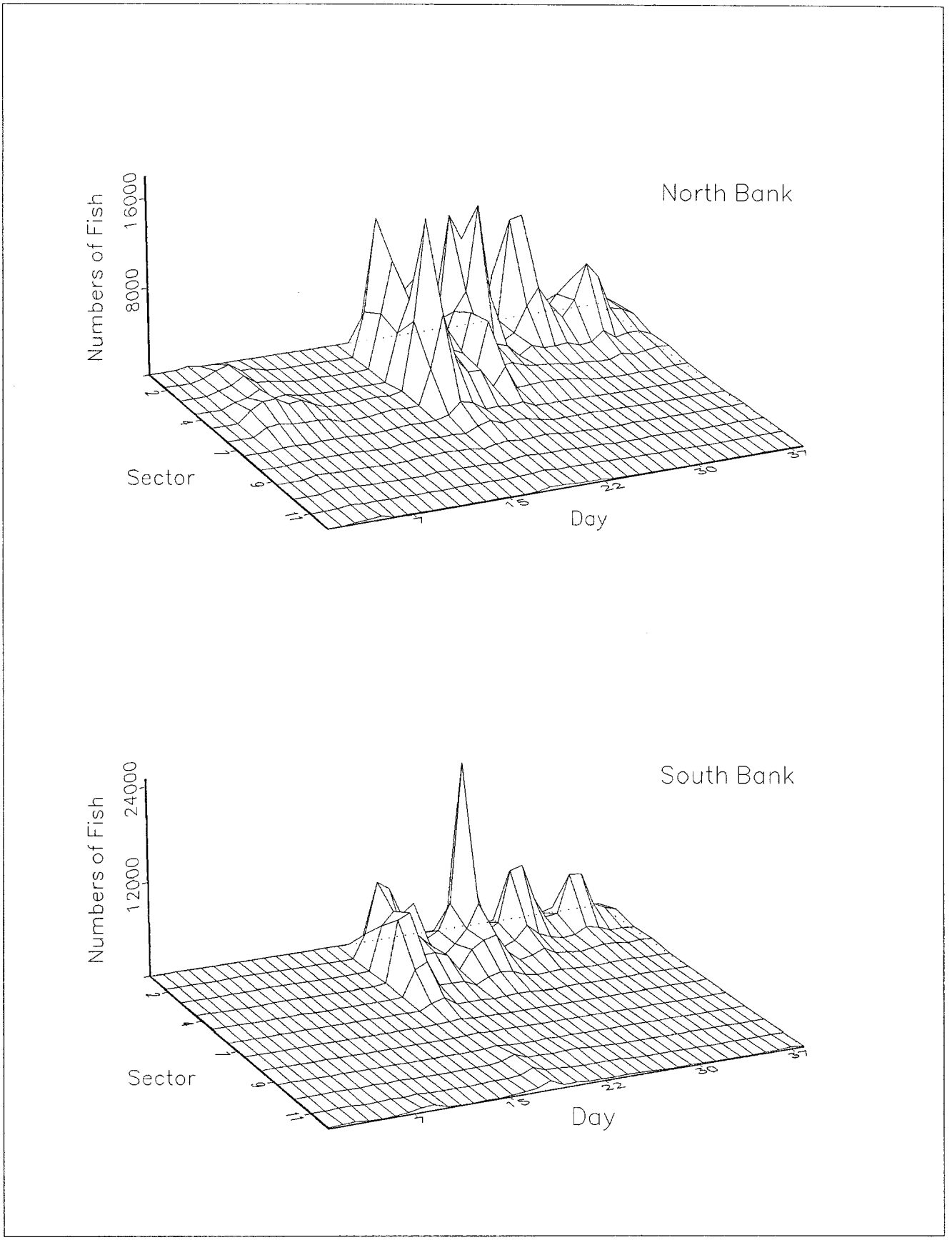



Figure 3. Distribution of salmon sonar counts from shore in the Kenai River, 1990.

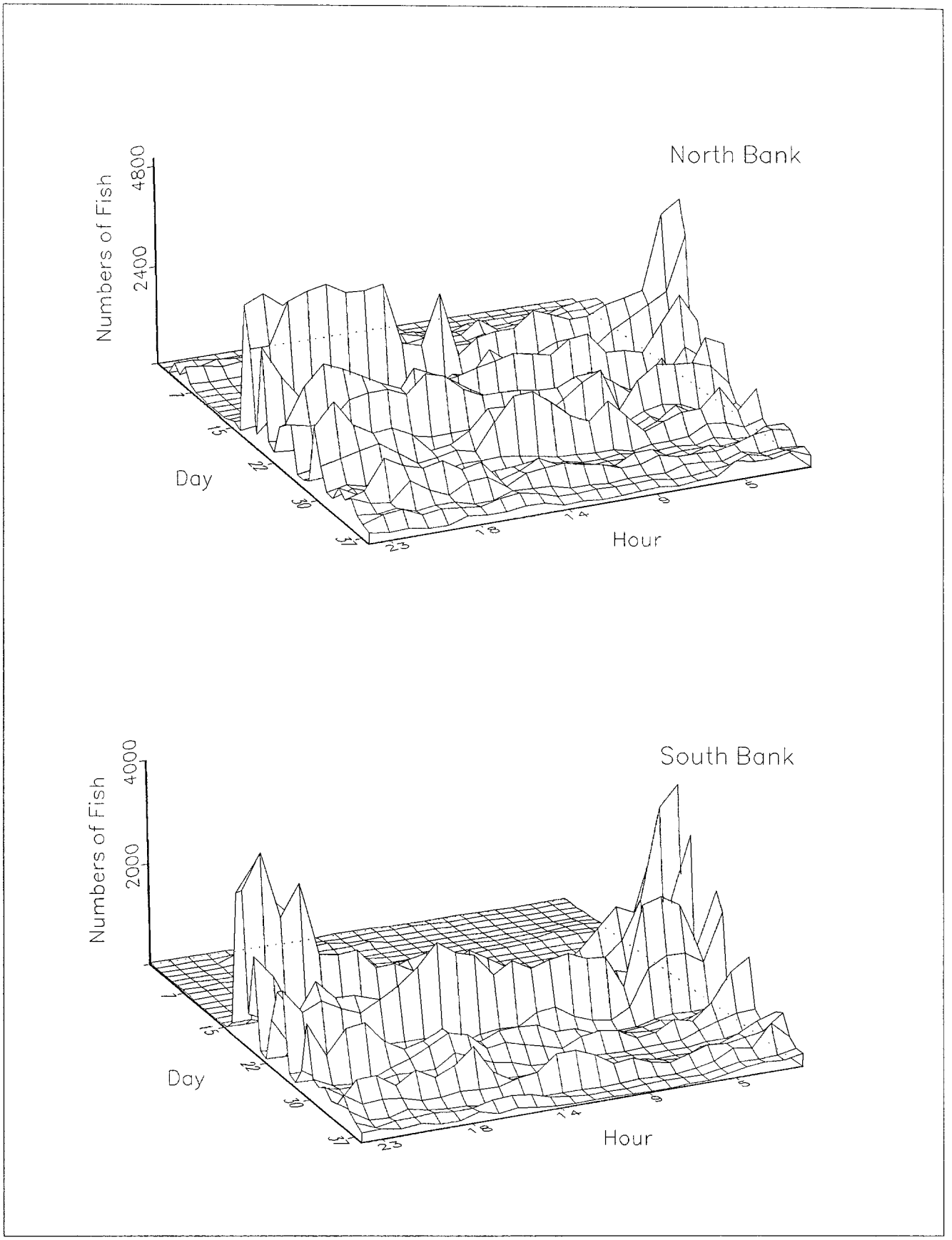



Figure 4. Hourly distribution of salmon migrating past the Kenai River sonar counters, 1990.

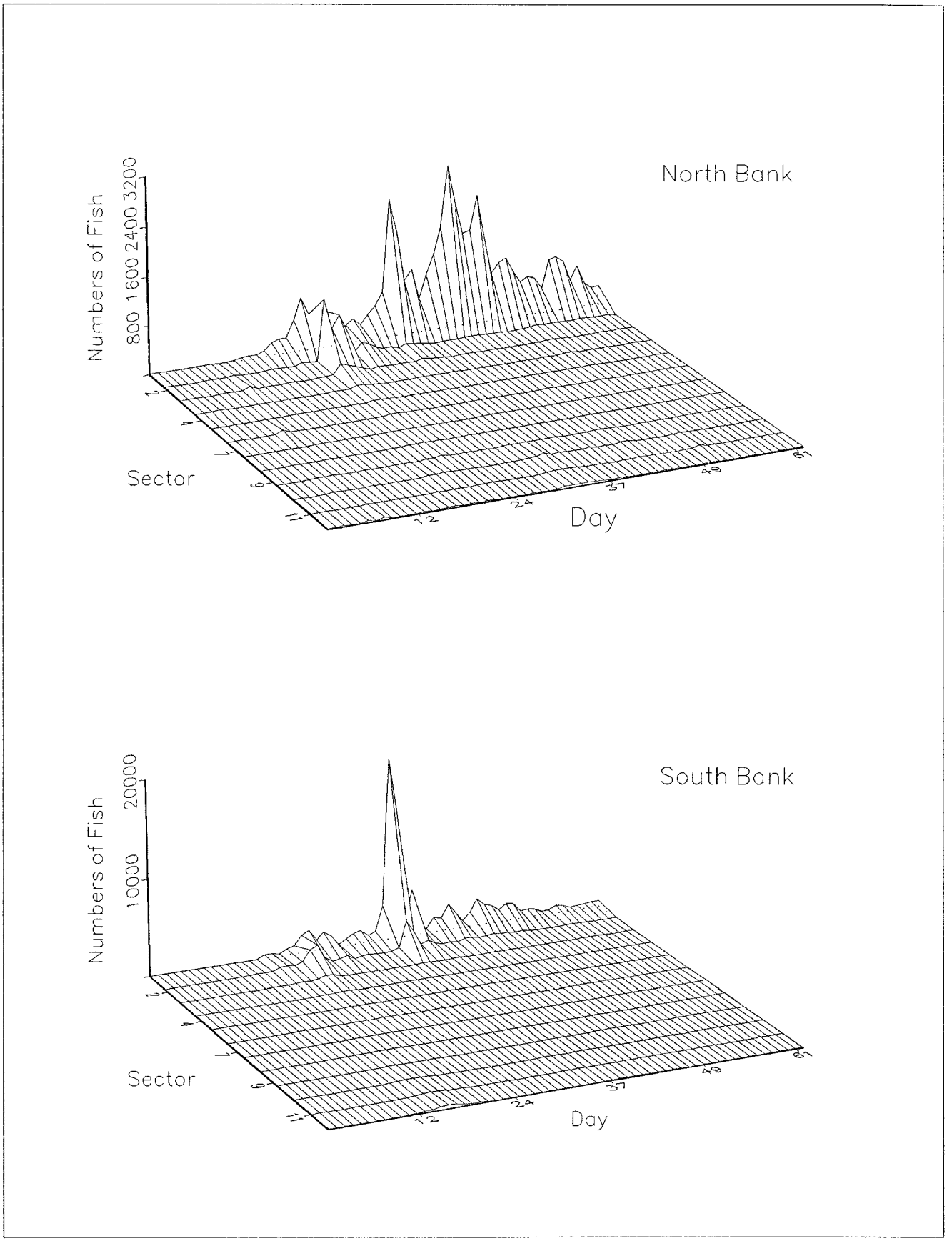



Figure 5. Distribution of salmon sonar counts from shore in the Kasilof River, 1990.

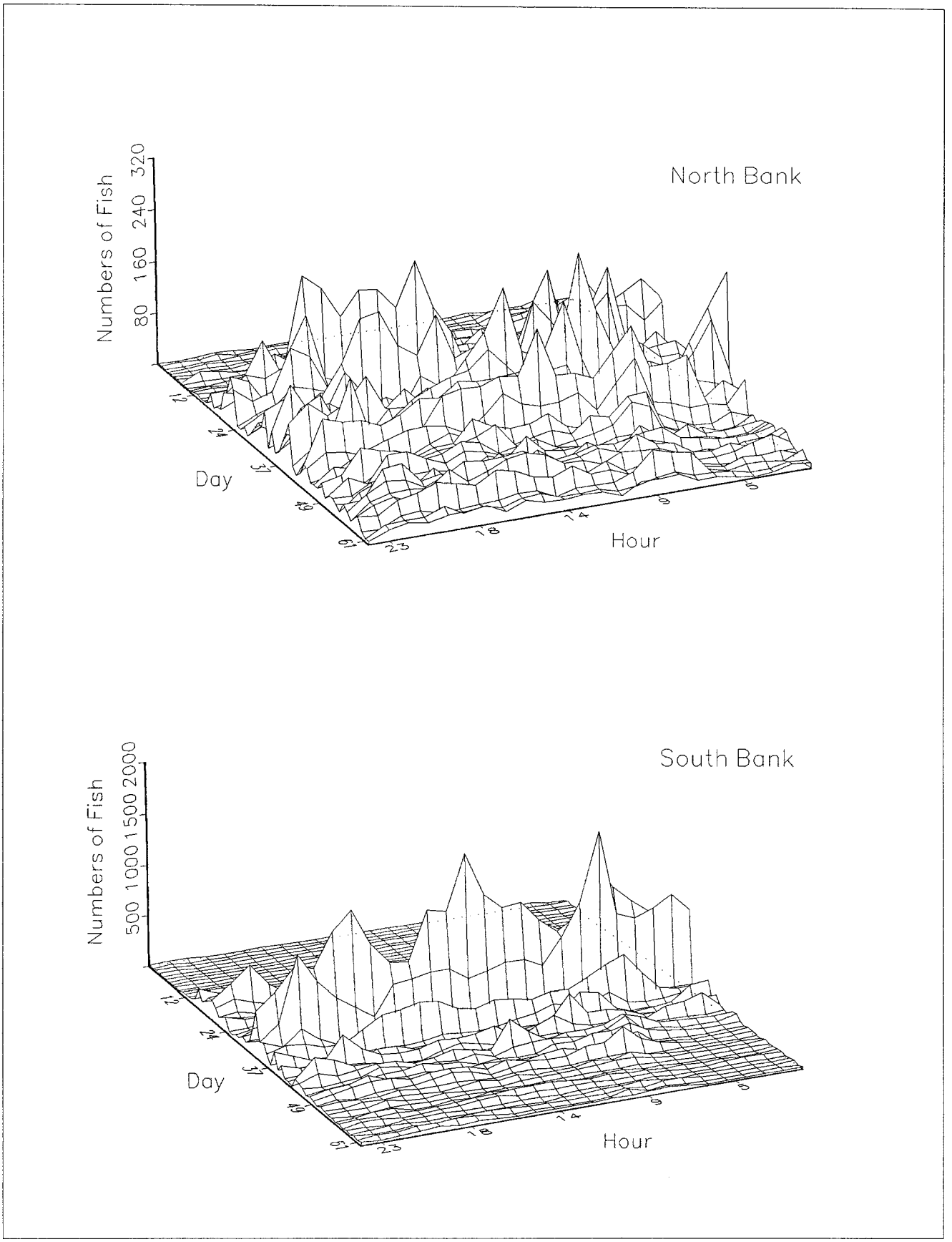



Figure 6. Hourly distribution of salmon migrating past the Kasilof River sonar counters, 1990.

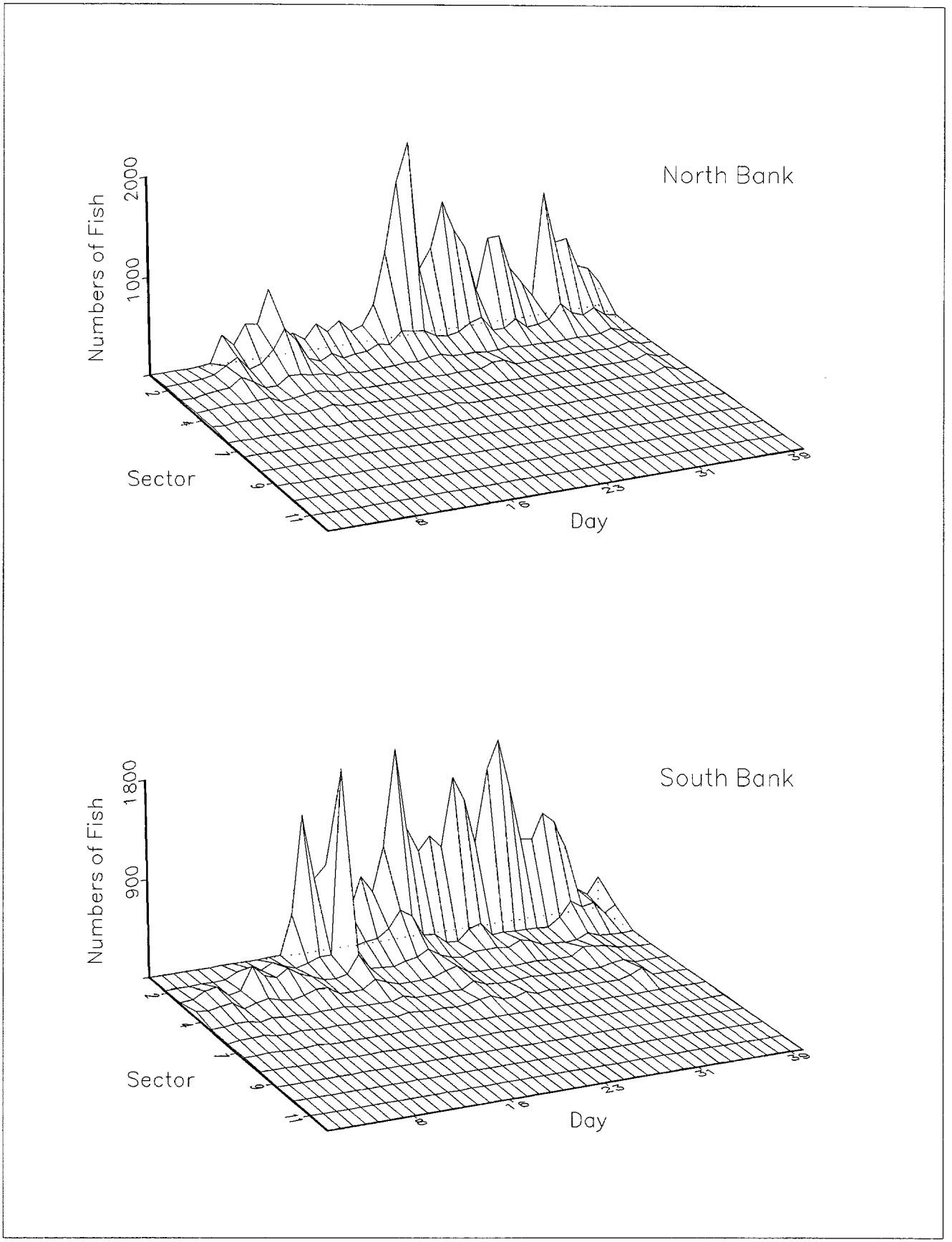



Figure 7. Distribution of salmon sonar counts from shore in the Crescent River, 1990.

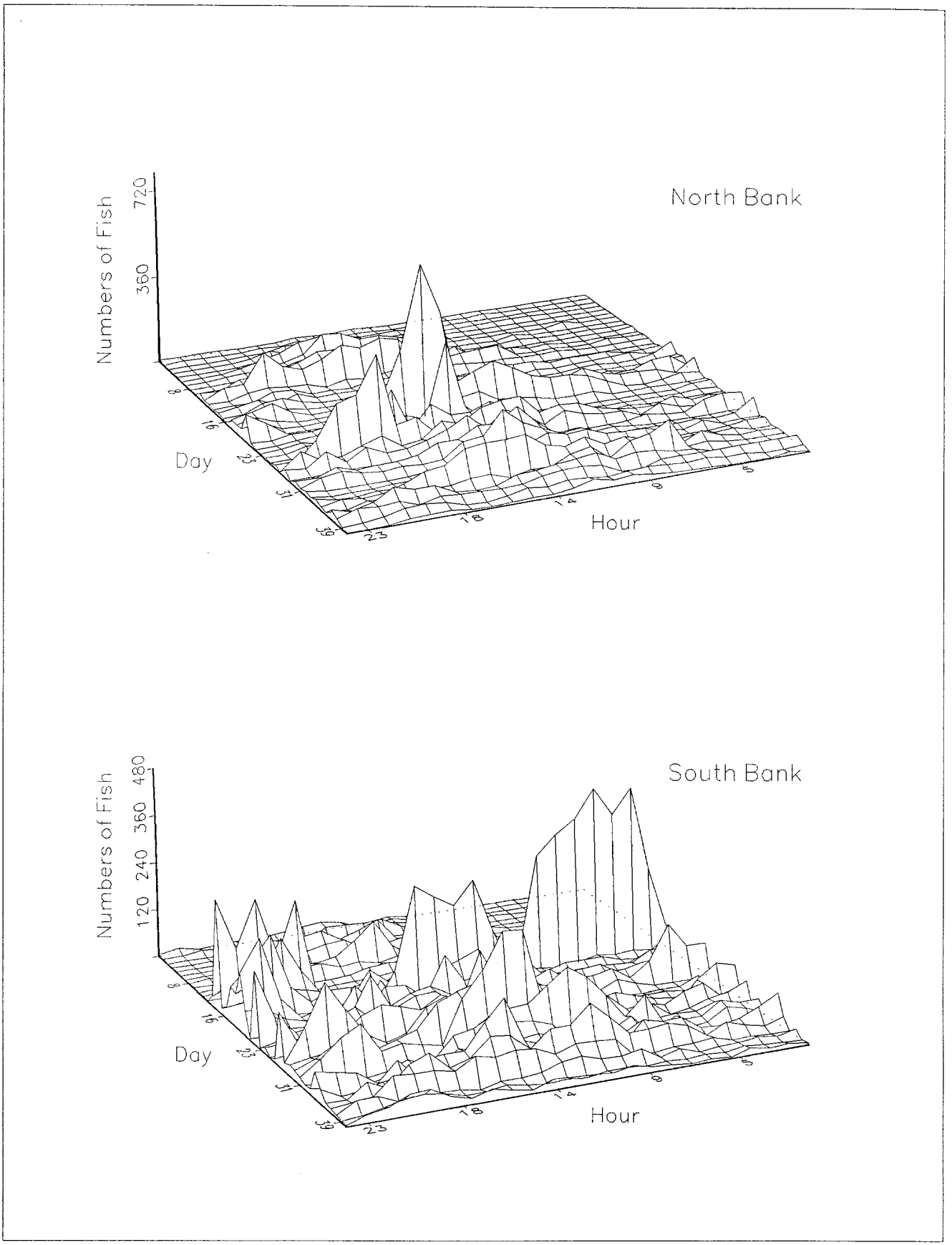



Figure 8. Hourly distribution of salmon migrating past the Crescent River sonar counters, 1990.

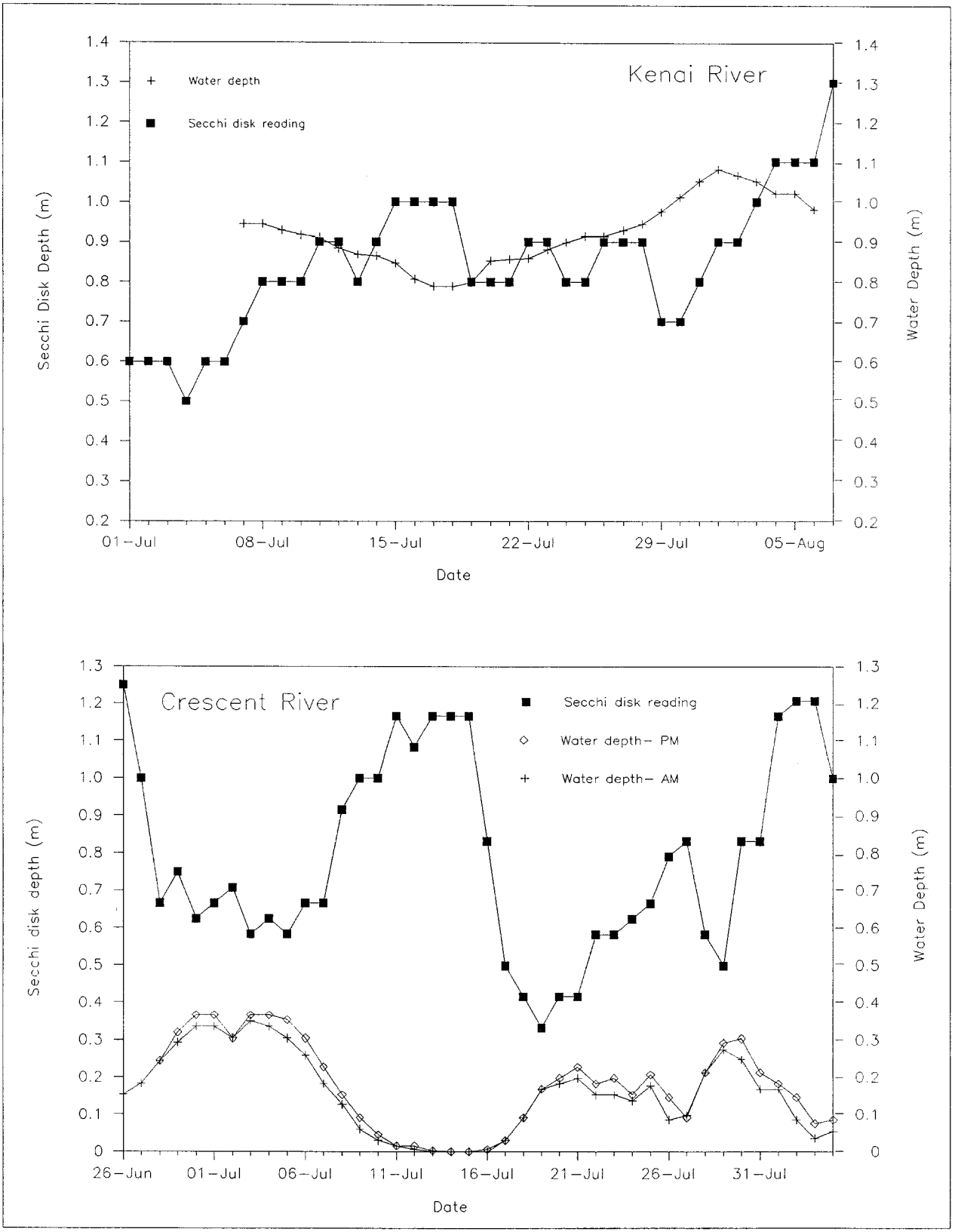
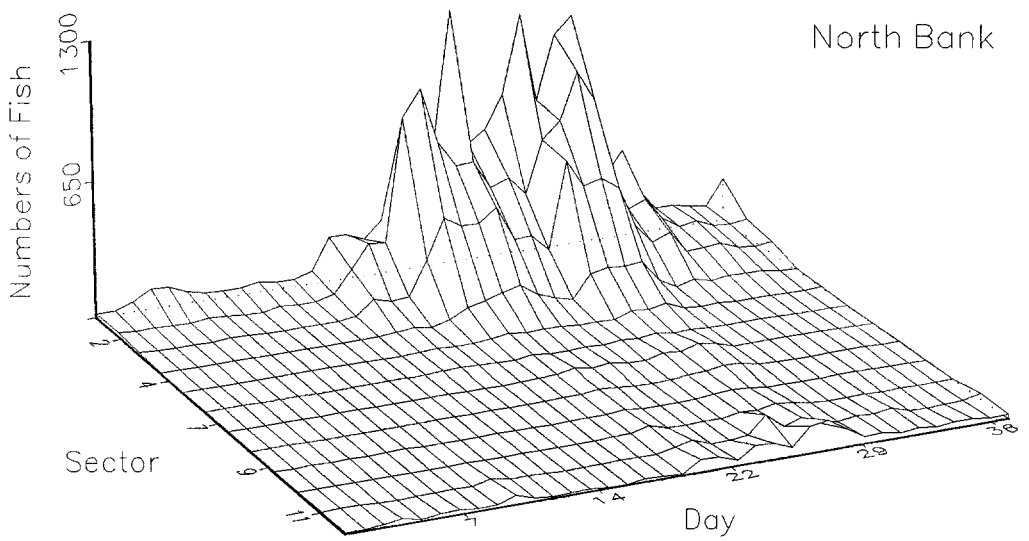



Figure 9. Water depth and light penetration measured in the Kenai and Crescent Rivers, 1990.



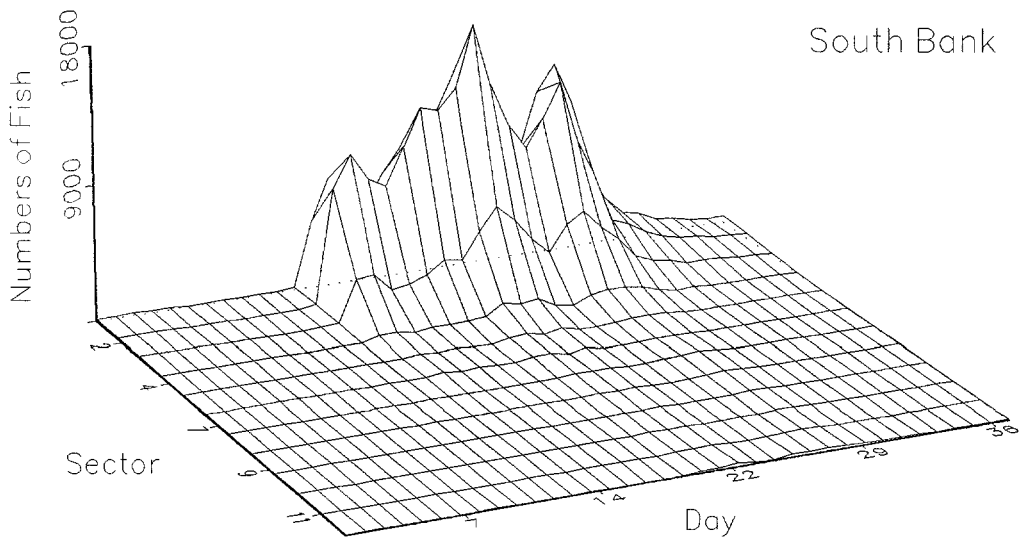




Figure 10. Distribution of salmon sonar counts from shore in the Yentna River, 1990.

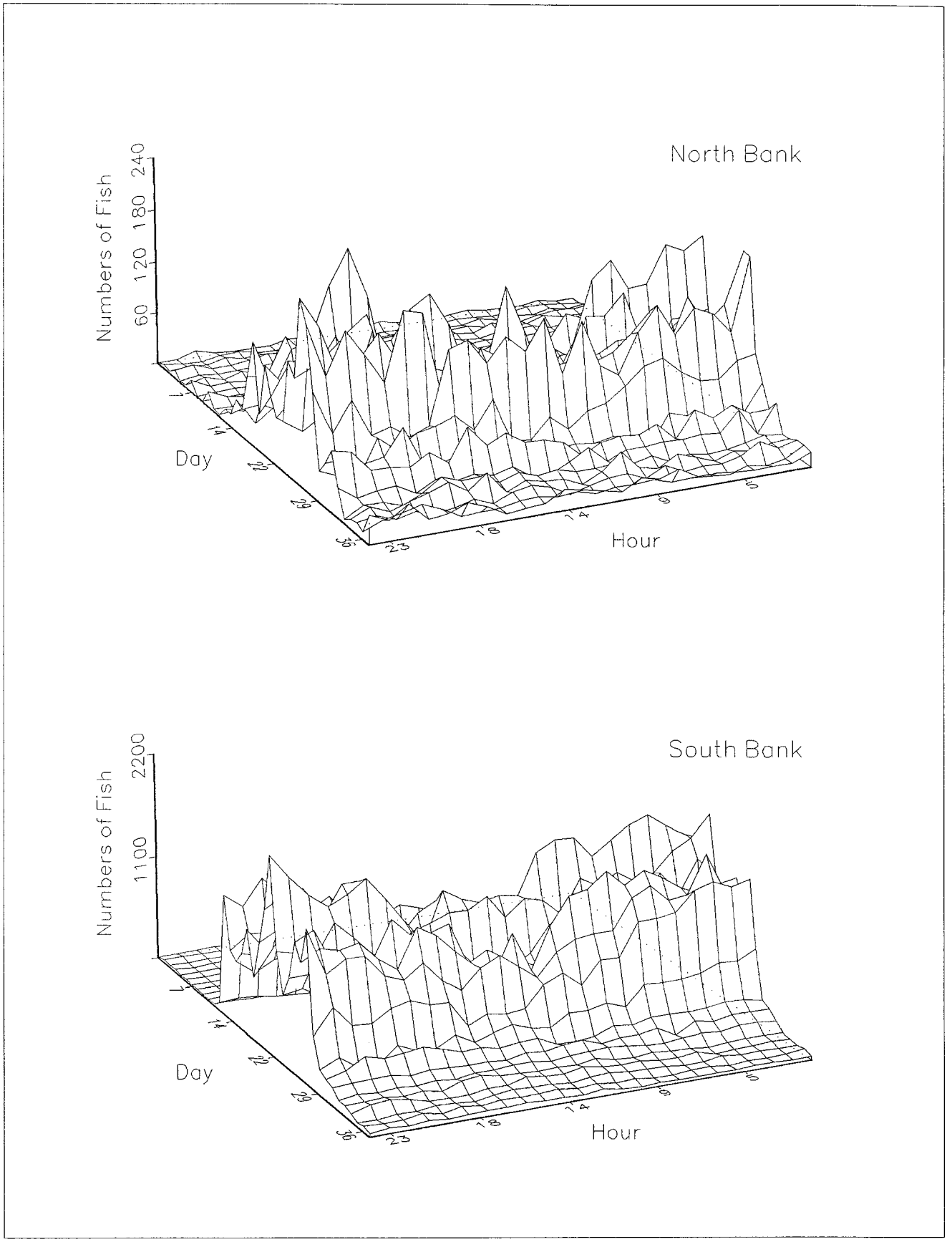



Figure 11. Hourly distribution of salmon migrating past the Yentna River sonar counters, 1990

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