UPPER COOK INLET SALMON ESCAPEMENT STUDIES 2001

by

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ABSTRACT

Sockeye salmon *Oncorhynchus nerka* spawning escapements into four river systems of Upper Cook Inlet, Alaska, were estimated using side-scanning sonar equipment. Fish wheel catch was used to apportion sonar counts in the Crescent and Yentna Rivers, and during the last six days of the counting operation in the Kenai River. Estimated sockeye salmon escapements were 650,036 into the Kenai River, 307,570 into the Kasilof River, 78,081 into the Crescent River, and 83,532 into the Yentna River. Indices of escapements of other salmon species into the Yentna River were also obtained by sonar: 217,123 pink *O. gorbuscha*, 23,568 chum *O. keta*, and 47,077 coho *O. kitsutch* salmon. Sockeye salmon in the Kenai River were primarily distributed within two age classes: 1.3 (68.9%); and 1.2 (10.8%). Kasilof River sockeye salmon were primarily age: 1.3 (48.6%); 1.2 (29.3%); and 2.2 (16.5%). Age-2.3 sockeye salmon were the most abundant (38.8%) age class in the Crescent River, followed by age class 2.2 (22.7%), 1.3 (21.0%) and 1.2 (15.7%). Yentna River sockeye salmon were primarily age: 1.3 (47.8%), 1.2 (21.3%) and 2.3 (17.7%). Length and sex ratio data were collected for sockeye salmon in each river. Sockeye salmon migration routes in all rivers were near shore. Hourly peak salmon counts were typically recorded during the afternoon and evening in the Kenai River. The Kasilof River north bank hourly peak counts generally occurred in the afternoon and evening, but south bank peak hourly counts were fairly consistent over the 24 hour period during the period when the peak of the migration occurred. Peak hourly counts in the Crescent River were related to the post meridiem high tides. Peak hourly counts for the Yentna River were recorded during the evening and early morning hours on both banks.

KEY WORDS: Alaska, Cook Inlet, salmon, Kenai River, Kasilof River, Crescent River, Yentna River, Susitna River, age/sex/size, sonar, escapement enumeration, fish wheel.

INTRODUCTION

Prior to 1968, sockeye salmon escapement estimates in Upper Cook Inlet (UCI), Alaska (Figure 1) were based on surveys of clear water spawning areas and provided no information about the distribution or number of sockeye salmon which spawned in glacially occluded waters (King and Davis 1989). Commercial and recreational fishery management efforts were further hampered by lack of daily and cumulative estimates of escapement. These constraints were significantly reduced by the development of hydroacoustic techniques to enumerate sockeye salmon in some glacial tributaries of UCI. Hydroacoustic enumeration of escapement began on the Kenai and Kasilof Rivers in 1968 with the use of multiple transducer systems (MTS) which were arrayed linearly in up-looking positions (Namtvedt et al. 1977). Transition from MTS to side-scanning sonar (SSS) occurred in the Kenai River in 1977 when all counts were derived with a 1974 model MTS, except during the period 12 July through 3 August when a 1977 model SSS was employed on the north bank. Similarly, SSS was utilized on the north bank of the Kasilof River in 1977, but south bank counts were derived by use of a MTS array. An attempt to utilize MTS equipment in the Susitna River in 1976 failed, but enumeration of salmon escapement with SSS was expanded to the Susitna River in 1978. Escapement enumeration utilizing SSS began at the Crescent River in 1980. The Kenai River counting site is located at river mile (RM) 19.5. The Kasilof River counting site was relocated from the outlet area of the lake to approximately RM 10.5 in 1985. The Susitna River counting site was abandoned in 1985 when recurrent flooding rendered the site untenable, and counting operations began on the Yentna River, a major tributary of the Susitna River, in 1986. The Crescent River counting site, initially located near the outlet of Crescent Lake, was relocated to approximately RM 1.5 in 1984. Results of escapement enumeration studies were documented by Barrett (1985), Davis (1997, 1998, 1999, 2000), Davis and King (1993, 1994a, 1994b, 1995, and 1996), Davis et al. (1993), King (1990), King and Davis (1989, 1992), King and Tarbox (1984, 1986, 1987, 1988, 1989a, 1990 and 1991), King et al. (1989b, 1992), Namtvedt (1974), Namtvedt et al. (1979), Tarbox et al. (1981, 1983), Waltemyer (1992, 1993, 1994) and Waltemyer et al. (1980).

The program objectives of UCI escapement projects in 2001 were to estimate: (1) the daily and cumulative number of sockeye salmon entering the Kenai, Kasilof, Crescent, and Yentna Rivers; and, (2) determine the age, length, and sex composition of those escapements.

METHODS

Bendix Corporation[1] side-scanning sonar counters described by King and Tarbox (1989a), Gaudet (1983) and Bendix Corp. (1980 and 1984) were used to enumerate salmon escapements. Pulse width was 100ms and the frequency was 515Khz. Two- and four-degree transducer elements were

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

multiplexed in an alternating mode. The manufacturer preset the counting threshold at approximately -38dB. However, tests with a standard target of –41dB typically saturated the counters, indicating the counting threshold to be lower than –38dB. The pulse repetition rate was variable. Counters were operated without artificial substrates in the Kenai, Crescent and Yentna Rivers. A technical consultant tested the counters for proper operation prior to deployment, and reinspected counters when migrating fish densities neared maximum levels in each river system, except Crescent River (A. Menin, Hydroacoustic Consulting, Sylmar, CA).

Project operational dates were: 1 July through 13 August on the Kenai River; 15 June through 5 August on the Kasilof River; 28 June through 1 August on the Crescent River; and 7 July through 5 August on the Yentna River. Counting operations ceased when daily counts were < 1% of the cumulative count for 3 consecutive days, or when budgetary considerations mandated cessation of counting activities. Kenai and Kasilof River counting operation cessation criteria were not instituted until cessation of commercial fishing.

Raw hourly output data were edited to account for debris, bottom echoes, or other sources of non-fish counts. Hourly sonar counts by day were entered into a database program which calculated a daily average hourly count for inshore (1-6) and offshore (7-12) sonar sectors by

$$Ca = Cb/N, \qquad (1)$$

where:

Ca = average count per sector per hour;
Cb = valid hourly counts for all inshore or offshore sectors; and
N = number of sector per hour units which contained only valid counts.

The average count was then substituted into any sector/hour block where counts were deleted through editing.

Temporal and spacial behavior of sockeye salmon was assessed by examining distribution of fish by sector, hourly passage rate, bank preference, and cumulative proportion of sonar counts by day.

The Kenai River ensonified areas ranged from 12.8 m to 22.0 m for the north bank and 5.2 m to 6.1 m for the south bank during the time 80% (10% - 90%) of the migrating salmon passed the counters. Peak sector counts' distance from the bank and the distance from the bank of 80% of the escapement counts were described. Ensonified areas at the Kasilof River ranged from 9.1 m to 15.2 m on the north bank and 12.5 m to 16.8 m on the south bank. The ensonified area on the north bank of the Crescent River ranged from 1.8 m to 5.5 m and 1.7 m to 3.7 m for the south bank. In the Yentna River, ensonified areas for the north bank were 11.6 m to 13.9 m. On the south bank fish were counted between 7.0 m and 7.9 m. Reported ranges encompassed the period when 80% (10%-90%) of the run occurred and the maximum counting range employed was used for descriptive purposes. Transducer distance from shore varied among systems and is not reflected in the reported counting range. The distance from shore in which 80% of the salmon migration occurred was examined and the peak sector and its distance from the bank were described.

Transducer orientation was accomplished by remotely controlled rotators except on the Kasilof River and the south bank of the Kenai River. Correct orientation of the acoustic axis was tested periodically by the use of an artificial target. A sealed plastic sphere was weighted and moved through the ensonified area at various distances from the transducer. Simultaneous detection of the target by the counter and visual recognition on an oscilloscope verified correct axis orientation. Transducers were moved nearer shores as water depth increased. Fish passage between (behind) the transducers and the bank was prevented by the use of weirs.

Counters were generally monitored throughout the 24-hour period on the Kenai River and 0700 hours to 2400 hours on the Kasilof River. At Crescent River counters were monitored throughout the day, but observations were concentrated during the late afternoon and evening hours when passage rates were at their daily peaks. Yentna River counters were monitored 0600 to 0200 hours on the south bank and 0700 to 2400 hours on the north bank. In addition to regularly scheduled monitoring, intensified monitoring was conducted during episodic periods of high rates of fish passage. In all cases, visual counts from an oscilloscope were compared to the counts accumulated by the counter during a minimum 10-min period or for a minimum oscilloscope count of 100 fish. During periods of low density passage (<500 fish per hour), Kenai and Yentna River oscilloscope/counter observations were made at a minimum of 1 hour per bank each day. When passage rates reached 500 fish per hour, minimum observation time increased to 2 hours per bank per day. Kasilof and Crescent River counters were monitored for a minimum of 2 hours per bank per day. If a relative error greater than 20% occurred between targets counted on the oscilloscope and targets recorded by the counter, counter adjustments were made to reduce the relative error. However, operators typically made adjustments to the counters to adjust for less than 20% relative error. The basic counter adjustment consisted of changing the pulse repetition rate.

Historically fish wheel catches were grouped into increments of 150 fish to apportion sonar counts. This practice was discontinued in 1999, and daily fish wheel catches were used instead. Information used to estimate species composition of sonar counts, and age, length, and sex composition of sockeye salmon escapements was obtained from salmon captured in fish wheels. Fish wheels were located on the north banks of the Kenai, Kasilof, and Crescent Rivers (1 at each site), and on both banks of the Yentna River. Fish wheels were operated 24 hours per day at Crescent River, up to 24 hours per day at the Yentna River, and during daylight hours at the Kasilof River. The Kenai River fish wheel (RM 19.5) was typically operated during evening hours when the passage rate and proximity to shore of migrating sockeye salmon maximized capture rate. The fish wheel was generally stopped when operators estimated the minimum sample size required to estimate age, sex and length composition had been determined. During the period when apportionment occurred on the Kenai River (8-13 August) the fish wheel was operated an average of 16.3 hours per day.

Because of their size and number, Dolly Varden char were included in sonar count apportionment at Crescent River. Few chinook salmon are captured in the fish wheel indicating that run timing for this species probably places the majority of the run in the river before counting operations begin. Dolly Varden char and chinook salmon had been lumped together for sonar count apportionment purposes prior to 2000, but sonar counts were apportioned to each of these species in 2000 - 2001. Fish wheels at Yentna Station were operated in time blocks over the 24-hour period. Three

operational time blocks were applied to the north bank fish wheel and four time blocks were used for the south bank fish wheel. The number of hours the fish wheels were operated within each time block varied from one to three hours, depending on fish passage, river conditions and time allocation of employees.

Factors influencing the accuracy of escapement estimates for pink, coho, chum, and chinook salmon in the Yentna River were discussed by Tarbox et al. (1981, 1983). Counts recorded in the Kasilof River were treated as sockeye salmon, and apportionment of sonar counts to species began on 8 August in the Kenai River.

Sample sizes for estimating sockeye salmon age composition were based on methods for estimating multinomial proportions developed by Thompson (1987). Minimum sample sizes were calculated so that the estimated proportion of each major age class was within 5% of the true proportion 90% of the time. Previous years' age composition proportions were analyzed to determine adequate sample sizes for a variety of age class ratios. The largest sample size calculated in this manner was chosen as a minimum sample size for year 2001. The minimum sample size was increased by 10% to account for unreadable scales, and this number was used as the total sample size required. Sockeye salmon scale samples were collected daily from the Kenai, Kasilof, Crescent, and Yentna Rivers. Sample size of salmon sampled for age composition per day was based on a percentage of the escapement count for the previous day. These percentages were calculated by dividing the total season sample size by the anticipated total escapement.

Mid-eye to fork-of-tail length (mm) and sex were also recorded for all sockeye salmon sampled. Sex ratios and mean lengths were calculated by grouping all samples together regardless of type or timing of sampling. Age classes ≥ 10% of the total escapement in each river were included in the age and length composition tables.

RESULTS

Kenai River

An estimated 650,036 sockeye salmon migrated past the Kenai River sonar site (Table 1) from 1 July through 13 August. The pre-season total return estimate for UCI was 2.4 million sockeye salmon, but as the season progressed the estimate was reduced to < 2.0 million sockeye salmon. The desired in-river goal range for total returns < 2.0 million is 600,000 to 850,000 sockeye salmon. The biological escapement goal (number of spawners) is 500,000-800,000 and the optimum escapement range is 500,000-1,000,000 sockeye salmon. Historical estimates of sockeye salmon spawning escapement (sonar count minus sport harvest above the Soldotna Bridge) were made through 2001 (Table 2). A total of 42,462 sockeye salmon were passed upstream of the Hidden Lake weir (Fandrei 2001a). The late-run Russian River sockeye salmon escapement totaled 92,039 fish (Berkhahn, P. ADF&G, Soldotna, personal communication; Table 3).

Eighty percent of the sockeye salmon escapement passed the sonar counters in 21 d (Table 4; mean = 20 d; range for 1979 to 2000 is 6 to 39 d). In 2001, the midpoint of the escapement was 24 July. Peak counts occurred on 26 July when 51,570 targets were detected (Table 5). Sockeye salmon migration along the north bank of the river accounted for 50.0% of the total escapement (Table 6). There were two distinct peaks in the daily numbers of fish passing the counters (Figure 2). During the time that 80% of the fish migrated past the north bank counting site the ensonified area ranged from 12.8 m to 22.0 m from the transducer. Fish targets were bank oriented, ranging from 1.3 m to 5.5 m from the transducer during the time 80% of the migration occurred.

Most (81.8%) of the salmon migration adjacent to the north bank was within 5.5 m of the transducer. Salmon distribution adjacent to the south bank was more shore oriented (Figure 3), with 86.7% of the counts within 2.0 m of the transducer. During the time that 80% of the migration occurred (10% - 90%, 15 July – 6 August), salmon were most abundant on the north bank in sector 2 (Figure 3), or an average distance of 2.7 m from the transducer. During this time the transducer was located approximately 3.0 m from the bank. On the south bank salmon were most abundant in sectors 3 and 4, or an average distance of 1.0 m from the transducer. Eighty percent (10% - 90%) of the migration ranged 0.4 m – 2.0 m from the transducer. The transducer was located approximately 1.5 m from the bank.

Salmon passage by the north bank counter was inconsistent over the 24 hour period, with passage rates above 4.2% of the daily total (required for a constant passage rate) exceeded from 1500 through 0200 hours. Fish targets recorded during the hours when fish passage exceeded the 4.2% per hour rate accounted for 63.1% of the bank total (Figure 4,5). A similarly pronounced pattern of fish passage occurred on the south bank, where 72.6% of the fish migrated past the counter during the 1300- through 2400-hour period.

Actual fish wheel catch was 3,309 sockeye salmon (Table 7), from which 601 scale samples, sex determinations, and lengths were obtained. The largest component (68.9%) of the sockeye salmon escapement was age-1.3 fish, followed by –1.2 (10.8%; Table 8). Mean length by sex was within historical bounds for age-1.2 and –1.3 fish. Age –2.2 and –2.3 fish were the largest recorded (Table 9). The male-to-female ratios fell within historical bounds. Female spawners of the major age classes constituted 51.8% of the total escapement.

Age-1.3 and -2.3 sockeye salmon were bound primarily for Quartz Creek, Tern Lake, the mainstem river, and the shorelines and outlets of Kenai and Skilak Lakes. Late-run sockeye salmon bound for Russian River (above the falls) were predominantly age-2.1 (34.1%), -2.2 (28.8%), -2.3 (16.1%) and –1.3 (10.3%) fish (L. Marsh, ADF&G, Sport Fish Division, Soldotna, personal communication), while those bound for Hidden Lake were predominantly (47.5 %) age 1.2 (Tobias et al. 2001).

A pattern of consistent daily pink salmon catches began on August 8. Apportionment of sonar counts to species began on 8 August when pink salmon represented 5.3% of the daily total catch.

Kasilof River

A total of 307,570 sockeye salmon were counted at the Kasilof River sonar site from 15 June through 10 August (Table 10). The desired escapement range for this system is 150,000 to 250,000 sockeye salmon. Brood stock for artificial propagation at the Crooked Creek Hatchery (8,724 fish) were taken from Bear Creek (Fandrei 2001b, Table 11). The index area spawning escapement estimate for Bear Creek was 130,164 sockeye salmon (Table 12).

The midpoint of the sockeye salmon escapement occurred on 12 July, 1 d earlier than the mean for the previous 22 years (range 1-22 July; Table 13). Peak passage was recorded on 25 July when 31,148 salmon passed the counters. Eighty percent of the escapement occurred in 35 d, 2 d greater than the historical mean (1979-2000).

Six-three percent of the salmon counts occurred on the north bank (Table 6). Spatial distribution adjacent to the north bank was near shore (Figure 6), where 89.0% of the salmon migrated within 6.6 m of the transducer. Fish passage was less shore oriented on the south bank where 78.7% of the salmon passed within 8.8 m of the transducer.

Fish passage rates by both banks increased at 1500 hours (Figures 5, 7). The average hourly passage rate on the north bank exceeded the average for a consistent passage rate (4.2%) between 1500-2300 hours (except 2000 hours when the passage rate was 4.2% of the total), 2100-2200 hours and 0200-0400 hours. Targets detected during these hours accounted for 48.1% of the total. Passage rates adjacent to the south bank exceeded 4.2% of the total between 1500-0500 hours (except 1800-1900 hours, 2400 hours and 0200-0300 hours). Salmon counted during these hours accounted for 50.1% of the south bank total. There was one major peak in daily passage of fish past the counting site (Figure 2).

A total of 1,765 sockeye salmon were captured in the Kasilof River fish wheel (Table 14), of which 564 were sampled for age, length, and sex characteristics. Age-1.3 (48.6%), -1.2 (29.3%), and -2.2(16.5%) sockeye salmon were the predominant age classes (Table 15). Mean lengths for the major age classes fell within historical bounds (Table 16). Male-to-female ratios were within historical bounds. Female spawners comprised 49.8% of the major age classes.

Crescent River

A total of 94,564 fish targets were counted at the Crescent River sonar site from 28 June through 1 August. Sockeye salmon escapement was estimated to have been 78,081 fish or 82.6% of the total targets (Table 17). The desired sockeye salmon escapement goal for this system is 25,000 to 50,000 fish.

The midpoint of the sockeye salmon escapement occurred on 13 July, 4 d earlier than the date of the historical mean (mean = 17.7 d). The peak in daily salmon passage occurred on 3 July when 4,905 fish targets were recorded (Table 18). Eighty percent of the escapement passed the site in 24

d, one day greater than the historical mean (Table 19). Run timing between banks was similar, and 79.0% of the fish migrated along the north bank (Table 6).

Spatial distribution of fish targets was strongly shore oriented, with 98.1% of the counts within 3.4 m of the transducer on the north bank and (Figure 8) and 97.2% of the south bank counts within 4.0 m of the transducer. One peak in daily passage was observed (Figure 2). A greater than expected (4.2% of the daily total) passage rate occurred adjacent to the north bank from 1200-2200 hours (Figure 5), accounting for 69.9% of the bank total. On the south bank the highest hourly passage rates occurred between 1000-2200 hours (except 2000 h, Figure 9), accounting for 72.3% of the bank total.

The Crescent River fish wheel was operated 24 hours per day except 2 and 3 July when the fish wheel was operated 12 h/d) and captured 638 sockeye salmon (Table 20), of which 527 were sampled for age, length, and sex data. Age-2.3 fish were the most abundant (38.8%), with other major components of the escapement represented by age-2.2 (22.7%), –1.3 (21.0%) and –1.2 (15.7%; Table 21) fish. Mean lengths for the major age classes fell within historical bounds except male age –2.2 fish, which were the smallest recorded (Table 22). Male-to-female ratios for the major age classes were within historical bounds except age –1.3 in which the ratio of males to females was the lowest on record (0.6:1). Females accounted for 49.5% of the total sockeye salmon escapement.

Crescent River hourly fish passage rates peaked during the afternoon and evening hours following high tides (Figure 10), but the association with post meridiem high tide was not as clearly evident as in previous years.

Yentna River

From 7 July through 5 August, 372,049 salmon were counted at the Yentna River sonar site, of which an estimated 83,532 were sockeye salmon (Table 23). The escapement goal range for the Yentna River is 100,000 to 150,000 sockeye salmon. Sonar counts apportioned to species other than sockeye salmon were: pink salmon, 217,123; coho salmon, 47,077; chum salmon, 23,568; and chinook salmon, 749 (Table 24). Estimates of coho and chinook salmon escapements for other tributaries of the Susitna River were also made (Table 25). No estimates for pink or chum salmon were available for the Susitna River above its confluence with the Yentna River.

The midpoint of the sockeye salmon escapement occurred on 24 July, two days later than the historical mean. Eighty percent of the escapement passed the counters in 13 d (Table 26). The peak in daily passage rate occurred on 27 July, when 8,241 sockeye salmon passed the counting site. Run timing was not appreciably different by bank. In accord with the historical trend, 63% of the salmon migrated adjacent to the south bank (Table 6).

Salmon passage was shore oriented (Figure 11). Of the salmon counted from the north bank during 80% of the migration, 97.2% were within 3.6 m of the transducer. On the south bank, 96.4% of the salmon were counted within 5.6 m of the transducer.

Fish passage rates increased during afternoon hours (Figure 12) and generally remained above the 4.2% required for a constant passage rate through the early morning hours. The seasonal hourly passage rate on the north bank met or exceeded the average for a constant hourly passage rate (4.2%) 1500 through 0300 hours, except 1700 and 2100 hours (Figure 5). Counts accumulated during these hours accounted for 50.6% of the north bank total. On the south bank counts met or exceeded the 4.2% passage rate 1400 through 0100 hours, except 1500 hours. Counts accumulated during these hours accounted for 54.6% of the bank total. There were two major peaks in the daily numbers of fish passing the counters (Figure 2).

A total of 3,423 sockeye salmon were captured in fish wheels at Yentna Station (Tables 27; 28), of which 475 were sampled for age, sex, and length data. The major components of the escapement were ages 1.3 (47.8%), 1.2 (21.3%) and 2.3 (17.7%; Table 29). Average lengths for all age classes fell within historical bounds. Male-to-female ratios fell within historical bounds (Table 30). Female spawners composed 51.9% of the major age classes sampled.

Eighty percent of the pink salmon escapement occurred in 16 d, with the midpoint occurring on 29 July (Table 31). Pink salmon run duration (80%) in the Yentna River has ranged 9 to 20 d. Migratory timing has been remarkably consistent, with the midpoint occurring between 25 and 30 July in 17 of the 21 years for which data are available.

DISCUSSION

The 2001 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 adjustment; and, 3) one species, sockeye salmon, composed most of the run except in the Yentna River (22.5 %).

Kenai River

Species apportionment of sonar counts was discontinued in 1995 and ensuing years because we perceived a potential problem in the apportionment process. The primary purpose of operating the Kenai River fish wheel is to procure samples of sockeye salmon for age class, length and sex composition analysis. Depending on passage rates, an adequate sample can be procured in a short period of time. The fish wheel catch also serves as an indicator of change in species composition of near-shore migrants passing the counting site. Based on historical observations, the number of fish of species other than sockeye salmon passing the sonar site is deemed to be insignificant during the time when the main body of the sockeye salmon migration is occurring. When the presence of species other than sockeye salmon in fish wheel catches becomes significant, apportionment begins. Salmon species other than sockeye salmon composed 1.0% of the fish wheel catch in 1995 and 4.0% in 1996 (a pink salmon year). In 1997 protracted run timing required extended counting

operations, and species apportionment began on 13 August, resulting in 1.3% of the total fish targets being apportioned to species other than sockeye salmon. In 1998 apportionment of fish wheel counts began on 3 August when fish wheel catch of sockeye salmon began to decline and pink salmon began to increase. Counts apportioned to species other than sockeye accounted for 2.0% of total targets. A somewhat protracted migration occurred in 1999, and species apportionment began on 1 August. Species other than sockeye salmon accounted for 5.21% of the fish wheel catch on the north bank and 5.36% on the south bank for the period 1 August through 18 August. The fish wheel catch for the north bank prior to 1 August was 97.4% sockeye salmon. Species apportionment began on 2 August in 2000 and 2.1% of the total sonar counts were apportioned to species other than sockeye salmon. Species apportionment of sonar counts began on 8 August in 2001, when the fish wheel catch of pink salmon comprised 5% of the total catch. Results were 2,179 targets (.003%) being identified as pink salmon, or 4.72 % of the total counts accumulated 8 – 13 August. Counts of species other than sockeye salmon are of no value as index counts as extended run duration (coho salmon), passage upstream outside the ensonified area (coho and chinook salmon), and disproportionate fish wheel catch combine to limit the usefulness of these data. Based on these data we have established criteria for beginning apportionment to species in the Kenai River. When the fish wheel species composition contains 5 % species other than sockeye, and in our best professional judgement the presence of other species at or near the 5 % level is a trend, then apportionment of sonar counts will begin. This guideline was developed primarily to accommodate situations where run timing of sockeye and pink salmon overlap.

Prior to 1999, a minimum fish wheel sample of 150 fish was required to constitute a period for apportionment. Several days may have been required to attain an adequate sample size. This method of apportioning sonar counts was replaced by daily apportionment based on actual fish wheel catch in year 2000 and was continued through year 2001. Altering the method by which sonar counts were apportioned did not significantly change the final estimates ($p<.05$; S. Carlson, ADF&G, Soldotna, personal communication) and was more defensible from a biostatistical viewpoint.

Kasilof River

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 (G. Kyle, ADF&G, Soldotna, personal communication). The total proportion of pink salmon was not known (due to differential run timing), but the average historical (1984 to1999) proportion of the pink salmon captured in the north bank fish wheel is 1.4% (range 0.2% to 5.1%) for the portion of the pink salmon run available to fish wheel capture during the operational time frame. Early- and late-run chinook salmon migrated past the sonar site during the time when sockeye were counted, but no counts were apportioned to this species. We believe that the ratio of sockeye salmon to chinook salmon captured in the fish wheel had been biased toward chinook salmon during the latter portion of the run, resulting in total chinook estimates that exceed the actual spawners passing the counting site. We are uncertain as to the causes of this perceived bias, but fish wheel position, river current pattern or other similar environmental factors could be influencing chinook migration patterns at this site. The historical

proportion of chinook salmon in the north bank fish wheel catch is 2.4% (range 0.01% to 5.1%). Some of the captured chinook salmon were adipose fin clipped, indicating they were probably from the enhanced Crooked Creek stock, a stream located several miles downstream of the counting site. The error associated with apportionment of chinook salmon counts to sockeye salmon is more acceptable than an inflated chinook salmon estimate.

On 24 July the north bank counter recorded 13,401 counts and on the 25 July 27,688 counts were recorded. South bank passage for 24 July was 3,350 fish and for 25 July 3,460 fish. We have not observed this disproportionate bank distribution or the atypically high passage at this point in the migration previously.

Due to the nature of the natural substrate, the Kasilof River sonar site is the only remaining sonar site in UCI at which artificial substrates are utilized. Some offshore distribution of fish passage has been historically observed during the early part of the salmon migration adjacent to the south bank, which can probably be attributed to a gradually declining bottom profile and low flow conditions usually prevalent during the early part of the counting operation. The offshore distribution pattern occurred again in 2001 but was less pronounced than in 2000 (staff gauge measurements of water depth rose from 0.4 feet at installation to 4.79 feet at termination of counting). The main body of the migration passed within the ensonified area.

Crescent River

Prior to 1993, fish were collected for species composition with drifted gill nets and a fish trap. The installation of a fish wheel at Crescent River (1993) provided a larger sample size and probably reduced the degree of size selectivity inherent to the gear types formerly used. Dolly Varden char had not appeared in the catch in previous years, but appeared in the fish wheel catch in 1993 (Davis and King 1994a). We determined that the char captured at Crescent River were of adequate size to meet target detection thresholds of the counters and included them in the apportionment of daily sonar counts in 1993 through 2001. We also concluded that these fish were migratory based on morphological characteristics and results of marking all Dolly Varden char captured in 1993 through 1995. Of the Dolly Varden char marked in 1993 through 1995, none were recaptured. The high proportion (18.6% or 548 fish) of char in the fish wheel catch in 1994 led us to believe that the sockeye salmon escapement may have historically been overestimated. The proportion of char in 1993 (0.5%) and 1995 (0.7%) may be more indicative of the degree of historical over apportionment to sockeye salmon than the high proportion observed in 1994 (Davis and King 1994a, 1996). In 1996, 3,487 sonar counts were apportioned to Dolly Varden char and chinook salmon, or 9.9% of the total. In 1997, 3,092 sonar counts were apportioned to Dolly Varden char and chinook salmon, or 3.5% of the total counts. In 1998 only 0.82% of the fish wheel catch was Dolly Varden char. In 1999 fish wheel catch at Crescent River produced 423 Dolly Varden char, or 17.5% of the total fish wheel catch. Fish wheel catch in 2000 produced 35 (5.0% of the total) Dolly Varden char and 4 (0.6%) chinook salmon. Year 2001 apportionment based on fish wheel catch resulted in 7,988 counts being apportioned to Dolly Varden char, or 8.5 % of the total count.

We concluded from the hourly passage rate that daily migration timing is probably related to tide stage. However, we have not observed a diurnal bimodal entry pattern into Crescent River, so some other as yet unidentified variable(s) must also be influencing fish migration at this site. We have been unable to correlate fluctuations in water level or temperature to fish entry patterns into Crescent River.

Yentna River

High flow conditions prevailed at the Yentna River counting site in 2001 and peaked on 21 and 22 July. Increased flows presented manageable problems until 21 July when flood conditions caused cessation of fish wheel operation and sonar counts declined from several thousand counts per day to several hundred counts per day (counts increased to several thousand per day when water levels subsided). Data collected by Barrette (1985) utilizing marked fish indicated that upstream migration in this system is slowed during episodic high flow events. Sonar counting continued during the flood event, but fish wheel operation was terminated due to the threat to equipment and personnel safety posed by large debris. In order to apportion the sonar counts, an estimate of fish wheel catch was made for the north bank for two days for which no fish wheel catch was obtained. The fish wheel catch for 19 and 20 July were averaged to provide an estimate for 21 July and the fish wheel catch for 23 and 24 July were averaged to provide an estimated fish wheel catch for 22 July. No fish wheel catch was available for the south bank for 22 July and an estimate of fish wheel catch was made for that bank by averaging the fish wheel catch of 20 and 21 July.

King and Tarbox (1990) indicated sockeye and pink salmon exhibited differential migratory behavior in the Yentna River. They found that sockeye salmon were proportionally higher in the fish wheel catch 1200 to 2400 hours and pink salmon were more frequently captured 0600 to1200 hours. This observation identified a potential source of error in the use of total daily adjusted fish wheel catches to apportion sonar counts. To overcome this potential bias, fish wheels catches used to apportion sonar counts were collected by operating the fish wheels in 3 time blocks of 6 hours each over a 24-hour period in 1993 and 1994. We determined that the degree of bias did not justify the additional expense of operating the fish wheels in this manner, and this method of fish wheel operation was discontinued in 1995. In 1997 and 1998 a second fisheries research project was conducted which required fish wheel operation 24 hours per day, but fish sampling schedules reverted to the pre-1997 strategies in 1999 through 2001. We have attempted to mitigate sampling bias as much as possible (and remain with budgetary constraints) by sampling the south bank fish wheel four times daily, once in each of four six-hour blocks. No samples are taken on the north bank during the 0001-0600 hour-block.

Enumeration activities ceased on the Yentna River on 5 August. Migratory timing information could not be calculated for chum and coho salmon because migration continued past that date and spatial distribution (these species are not known to be bank oriented) of these species allows an unknown proportion of the migrating fish to pass outside the ensonified areas. The range for 1981

to 1984 is 69.8% to 92.0% (mean 78.7%) of the chum salmon escapement and 79.6% to 89.9% (mean 84.8%) of the coho salmon escapement was recorded by 12 August (King and Tarbox 1986).

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Table 1. Estimated sockeye salmon escapement recorded by side-scanning sonar in the Kenai, Kasilof, Crescent and Susitna Rivers 1978-2001.

	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		156,980	
1980	464,038	187,154	90,863		190,866	
1981	407,639	256,625	41,213	139,401[e]	340,232	
1982	619,831	180,239	58,957	215,856[f]	265,332	113,847[e]
1983	630,340	210,271	92,122	112,314	175,936[g]	104,414[e]
1984	344,571	231,685	118,345	194,480[f]	279,446[g]	149,375[e]
1985	502,820	505,049	128,628	107,124[e]	227,924[g]	
1986	501,157	275,963	20,385[h]		92,076[e]	
1987	1,596,871	249,250	120,219		66,054[e]	
1988	1,021,469	204,000[i]	57,716		52,330[e]	
1989	1,599,959	158,206	71,064		96,269[e]	
1990	659,520	144,136	52,238		140,290[e]	
1991	647,597	238,269	44,578		109,632[e]	
1992	994,798	184,178	58,229		66,074[e]	
1993	813,617	149,939	37,556		141,694[e]	
1994	1,003,446	205,117	30,355		128,032[e]	
1995	630,447	204,935	52,311		121,220[e]	
1996	797,847	249,944	28,729		90,660[e]	
1997	1,064,818	266,025	70,768		157,822[e]	
1998	767,558	273,213	62,257		119,623[e]	
1999	803,379	312,587	66,519		99,029[e]	
2000	624,578	256,053	56,599		133,094[e]	
2001	650,036	307,570	78,081		83,532[e]	

[a] Includes counts after 22 June (1978-87) and after 1 July (1988-98).
[b] Includes counts or estimates prior to 15 June (1983-88) and post enumeration estimates (1981-86).
[c] Sonar counts from Susitna Station unless otherwise indicated.
[d] No counts conducted.
[e] Sonar counts from Yentna Station only.
[f] Sonar counts from Yentna Station and east bank of the Susitna River.
[g] Counts from Yentna Station and mark-recapture estimate from Sunshine Station.
[h] Counts through 16 July only.
[i] Combined counts from wiers on Bear and Glacier Flat Creeks and surveys of remaining spawning streams.

FN: HISTESC.XLS

Table 2. Late-run Kenai River sockeye salmon escapement summary 1968-2001.

Year	Estimated Escapement at Sonar Site[a]	Estimated Russian River Sport Harvest[b]	Estimated Kenai River Mainstem Sport Harvest[c]	Estimated Total Harvest Above Sonar Site[d]	Sonar Count Less Sport Harvest
1968	88,000	5,820			
1969	53,000	1,150			
1970	73,000	600			
1971	300,000	10,730			
1972	318,000	16,050			
1973	367,000	8,930			
1974	161,000	8,500	8,030	16,530	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	39,168	245,852
1980	464,038	33,500	18,592	52,092	411,946
1981	407,639	23,720	14,450	38,170	369,469
1982	619,831	10,320	38,400	48,720	571,111
1983	630,340	16,000	48,310	64,310	566,030
1984	344,571	21,970	11,160	33,130	311,441
1985	502,820	58,410	42,272	100,682	402,138
1986	501,157	30,810	51,221	82,031	419,126
1987	1,596,871	40,575	155,799	196,374	1,400,497
1988	1,021,469	19,536	103,124	122,660	898,809
1989	1,599,959	55,210	165,340	220,550	1,379,409
1990	659,520	56,175	87,580	143,755	515,765
1991	647,597	31,449	108,271	139,720	507,877
1992	994,798	26,101	161,957	188,058	806,740
1993	813,617	26,772	60,306	87,078	726,539
1994	1,003,446	26,375	93,616	119,991	883,455
1995	630,447	11,986	98,651	110,637	519,810
1996	797,847	20,142	140,270	160,412	637,435
1997	1,064,818	17,635	105,049	122,684	942,134
1998	767,558	74,299	150,644	224,943	542,615
1999	803,379	32,335	122,426	154,761	648,618
2000	624,578	30,229	132,935	163,164	461,414
2001[f]	650,036				

[a] Bendix Corp. multiple transducer sonar 1968-1977, side-scanning sonar 1978-2000.
[b] Based on creel census data 1968-1996, Statewide Harvest Estimate 1997-2000, Sport Fish Division, Soldotna.
[c] Sport Fish Division Statewide Harvest Estimate, above the Soldotna Bridge (and sonar site) only.
[d] Combined Russian River and mainstem (above bridge) harvests.
[e] Sonar count less sport harvest reduced by 77,060 fish harvested by dip net at Hidden Creek.
[f] Data not available at time of publication.

FN: ESCSUM.XLS

Table 3. Late-run sockeye salmon escapement counts in eight index areas, Kenai River drainage 1969-2001.

Year	Railroad Creek[b]	Johnson Creek[b]	Carter-Moose Creek[b]	Ptarmigan Creek[b]	Tern (Mud) Lake[b]	Quartz Creek[c]	Hidden Lake[d]	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	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
1991			750 [e]	2,764 [e]	1,750 [f]		35,676	78,175	22,267	141,382
1992			1,106 [e]	3,147 [e]	970 [f]		32,912	63,478	4,980	106,593
1993							11,582	99,259	12,258	123,099
1994				1,204			6,086	122,277	15,211	144,778
1995						2,000 [g]	7,542	61,982	12,479	84,003
1996						4,181 [g]	55,526	34,691	31,601	121,818
1997						27,660 [g]	56,053	65,905	11,337	160,955
1998						11,128 [g]	67,727	113,480	14,593	206,928
1999						3,951 [g]	49,390	139,863	19,519	159,382
2000						1,389 [g]	45,685	56,580	13,930	117,585
2001						4,792 [g]	42,462	74,964	17,075	139,293

[a] 1969-75, ADF&G archives, Division of Sport Fish, Anchorage. 1976-01, ADF&G, Division of Sport Fish, Soldotna.
[b] United States Department of Agriculture, Forest Service, Seward, Alaska (1984-92, 1994).
[c] FRED Division weir count (1982-83).
[d] Weir count: 1971, 1973, 1976-89 (FRED Division); 1990-01 (Cook Inlet Aquaculture Association).
[e] Carter-Moose Creek survey conducted on lower 1.0 mile of creek, Ptarmigan Creek survey conducted on lower 1.5 miles of creek (1991-1992, 1994).
[f] Survey conducted on an unnamed stream at eastern end of Tern (Mud) Lake.
[g] CFM&D ground survey, appx. 10 miles, Qtz. Cr. substation to Kenai Lk.

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Table 4. Cumulative proportion by date of sockeye salmon counts recorded in the Kenai River 1979 - 2001

	Cumulative Proportion[a]																						
Date	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
22-Jun	0.001	0.002	0.001	0.002	0.001	0.003	0.001	0.000	0.001														
23-Jun	0.003	0.004	0.001	0.003	0.001	0.007	0.002	0.002	0.002														
24-Jun	0.006	0.005	0.002	0.004	0.002	0.010	0.003	0.003	0.002														
25-Jun	0.008	0.006	0.003	0.004	0.003	0.012	0.004	0.003	0.002														
26-Jun	0.010	0.008	0.004	0.005	0.004	0.013	0.005	0.004	0.003														
27-Jun	0.012	0.008	0.006	0.006	0.005	0.015	0.006	0.004	0.004														
28-Jun	0.013	0.009	0.007	0.007	0.006	0.017	0.007	0.006	0.005														
29-Jun	0.015	0.010	0.008	0.007	0.006	0.018	0.009	0.006	0.006														
30-Jun	0.017	0.011	0.009	0.008	0.007	0.021	0.010	0.007	0.007														
01-Jul	0.019	0.012	0.010	0.009	0.007	0.023	0.014	0.008	0.007	0.000	0.000	0.001	0.001	0.003	0.004		0.000	0.001	0.003	0.002	0.001	0.003	0.002
02-Jul	0.020	0.013	0.012	0.010	0.008	0.024	0.016	0.009	0.008	0.000	0.001	0.001	0.003	0.005	0.010	0.000	0.001	0.002	0.008	0.007	0.003	0.005	0.010
03-Jul	0.023	0.014	0.012	0.011	0.008	0.025	0.017	0.010	0.008	0.001	0.001	0.003	0.004	0.008	0.013	0.001	0.001	0.003	0.014	0.010	0.004	0.011	0.017
04-Jul	0.025	0.015	0.013	0.011	0.009	0.027	0.019	0.011	0.008	0.001	0.001	0.010	0.005	0.010	0.019	0.001	0.002	0.005	0.021	0.013	0.005	0.016	0.023
05-Jul	0.030	0.016	0.013	0.012	0.009	0.029	0.021	0.012	0.009	0.001	0.002	0.019	0.012	0.011	0.037	0.002	0.003	0.007	0.029	0.017	0.006	0.019	0.028
06-Jul	0.050	0.016	0.014	0.012	0.009	0.031	0.024	0.013	0.009	0.002	0.006	0.029	0.018	0.014	0.058	0.003	0.007	0.010	0.034	0.025	0.008	0.023	0.033
07-Jul	0.067	0.017	0.016	0.013	0.010	0.032	0.026	0.014	0.009	0.003	0.011	0.036	0.019	0.015	0.061	0.007	0.011	0.012	0.037	0.033	0.012	0.029	0.038
08-Jul	0.077	0.017	0.018	0.013	0.010	0.036	0.030	0.014	0.010	0.003	0.014	0.044	0.020	0.016	0.067	0.011	0.013	0.017	0.044	0.041	0.016	0.035	0.046
09-Jul	0.082	0.018	0.064	0.015	0.011	0.044	0.032	0.015	0.010	0.003	0.017	0.049	0.022	0.018	0.081	0.013	0.016	0.019	0.047	0.052	0.022	0.047	0.056
10-Jul	0.086	0.018	0.186	0.016	0.013	0.054	0.033	0.015	0.010	0.011	0.021	0.050	0.024	0.020	0.085	0.016	0.019	0.021	0.068	0.065	0.026	0.060	0.063
11-Jul	0.089	0.019	0.262	0.016	0.017	0.063	0.036	0.015	0.010	0.063	0.024	0.052	0.028	0.022	0.087	0.019	0.021	0.025	0.117	0.071	0.029	0.068	0.070
12-Jul	0.092	0.020	0.366	0.017	0.021	0.067	0.038	0.016	0.011	0.088	0.046	0.054	0.034	0.043	0.092	0.021	0.023	0.029	0.171	0.075	0.032	0.075	0.075
13-Jul	0.095	0.020	0.463	0.019	0.041	0.071	0.039	0.018	0.015	0.141	0.100	0.057	0.037	0.111	0.101	0.023	0.025	0.032	0.233	0.078	0.034	0.115	0.080
14-Jul	0.100	0.021	0.512	0.021	0.085	0.073	0.048	0.039	0.017	0.185	0.162	0.060	0.038	0.175	0.210	0.025	0.032	0.065	0.292	0.083	0.039	0.260	0.096
15-Jul	0.126	0.027	0.549	0.026	0.174	0.076	0.066	0.051	0.033	0.222	0.211	0.064	0.041	0.202	0.301	0.032	0.062	0.213	0.309	0.088	0.049	0.386	0.141
16-Jul	0.170	0.057	0.559	0.047	0.242	0.112	0.104	0.061	0.043	0.274	0.242	0.068	0.046	0.218	0.400	0.062	0.073	0.347	0.346	0.102	0.054	0.459	0.187
17-Jul	0.238	0.310	0.572	0.067	0.297	0.173	0.111	0.073	0.052	0.303	0.290	0.138	0.058	0.229	0.485	0.073	0.122	0.402	0.416	0.150	0.067	0.496	0.251
18-Jul	0.342	0.489	0.605	0.182	0.437	0.307	0.114	0.086	0.058	0.340	0.347	0.279	0.086	0.246	0.517	0.122	0.164	0.435	0.495	0.183	0.097	0.545	0.295
19-Jul	0.504	0.607	0.667	0.322	0.566	0.363	0.115	0.102	0.069	0.375	0.367	0.344	0.136	0.255	0.533	0.164	0.190	0.468	0.501	0.209	0.138	0.584	0.348
20-Jul	0.670	0.777	0.747	0.474	0.695	0.406	0.116	0.113	0.141	0.409	0.421	0.400	0.194	0.284	0.557	0.190	0.232	0.498	0.522	0.231	0.164	0.604	0.389
21-Jul	0.795	0.899	0.803	0.563	0.766	0.464	0.120	0.174	0.235	0.464	0.500	0.457	0.225	0.334	0.582	0.232	0.269	0.531	0.542	0.246	0.200	0.624	0.411
22-Jul	0.840	0.920	0.835	0.598	0.796	0.555	0.178	0.269	0.319	0.569	0.566	0.473	0.261	0.370	0.599	0.269	0.298	0.555	0.552	0.272	0.249	0.643	0.434
23-Jul	0.872	0.926	0.848	0.642	0.813	0.652	0.291	0.322	0.406	0.679	0.639	0.518	0.308	0.402	0.612	0.298	0.343	0.592	0.583	0.333	0.308	0.673	0.466
24-Jul	0.888	0.932	0.864	0.681	0.833	0.720	0.463	0.382	0.488	0.744	0.679	0.576	0.376	0.451	0.624	0.343	0.399	0.640	0.648	0.392	0.360	0.714	0.523
25-Jul	0.913	0.935	0.876	0.722	0.844	0.781	0.574	0.471	0.570	0.785	0.698	0.675	0.424	0.535	0.635	0.399	0.420	0.713	0.659	0.434	0.447	0.752	0.597
26-Jul	0.925	0.938	0.894	0.752	0.861	0.833	0.693	0.618	0.640	0.812	0.729	0.719	0.477	0.612	0.670	0.420	0.428	0.755	0.666	0.460	0.515	0.787	0.676
27-Jul	0.931	0.944	0.911	0.842	0.865	0.867	0.753	0.730	0.694	0.827	0.774	0.729	0.546	0.678	0.720	0.428	0.432	0.774	0.670	0.490	0.589	0.816	0.730
28-Jul	0.934	0.947	0.921	0.883	0.872	0.897	0.822	0.783	0.740	0.836	0.806	0.744	0.637	0.740	0.748	0.432	0.440	0.786	0.674	0.544	0.647	0.842	0.759
29-Jul	0.939	0.952	0.932	0.903	0.878	0.913	0.864	0.816	0.766	0.844	0.831	0.796	0.711	0.798	0.773	0.440	0.450	0.794	0.681	0.602	0.685	0.868	0.782
30-Jul	0.945	0.955	0.940	0.918	0.882	0.921	0.897	0.862	0.790	0.847	0.846	0.846	0.772	0.830	0.795	0.450	0.469	0.801	0.688	0.644	0.713	0.882	0.809
31-Jul	0.950	0.957	0.948	0.931	0.891	0.928	0.911	0.897	0.831	0.850	0.856	0.867	0.838	0.843	0.814	0.469	0.525	0.825	0.694	0.694	0.731	0.893	0.832
01-Aug	0.953	0.960	0.955	0.940	0.906	0.933	0.919	1.000	0.871	0.854	0.875	0.879	0.885	0.854	0.827	0.525	0.620	0.854	0.698	0.766	0.755	0.905	0.854
02-Aug	0.955	0.962	0.964	0.946	0.916	0.937	0.922		0.899	0.859	0.888	0.896	0.912	0.864	0.845	0.620	0.673	0.877	0.701	0.855	0.779	0.913	0.877
03-Aug	0.958	0.964	1.000	0.951	0.920	0.943	0.925		0.917	0.863	0.899	0.932	0.927	0.871	0.858	0.673	0.696	0.898	0.705	0.871	0.796	0.927	0.894
04-Aug	0.961	0.966		0.955	0.934	0.948	0.929		0.930	0.873	0.908	0.963	0.934	0.877	0.866	0.696	0.713	0.916	0.708	0.882	0.814	0.943	0.914
05-Aug	0.965	0.968		1.000	0.964	0.956	0.931		0.943	0.894	0.916	0.978	0.939	0.888	0.879	0.713	0.728	0.928	0.712	0.894	0.829	0.955	0.928
06-Aug	0.968	0.970			0.977	0.960	0.935		0.953	0.914	0.930	0.991	0.946	0.903	0.908	0.728	0.740	0.938	0.724	0.914	0.845	0.967	0.942

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Table 4. (p. 2 of 2)

	Cumulative Proportion[a]																						
Date	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
07-Aug	0.971	0.972			0.983	0.963	0.938		0.962	0.933	0.949	1.000	0.953	0.915	0.927	0.740	0.748	0.953	0.737	0.929	0.869	0.976	0.957
08-Aug	0.973	0.974			0.989	0.969	0.943		0.967	0.944	0.960		0.967	0.930	0.938	0.748	0.757	0.967	0.758	0.943	0.893	0.984	0.971
09-Aug	0.977	0.975			0.993	1.000	0.947		0.972	0.953	0.966		0.979	0.942	0.959	0.757	0.771	0.982	0.774	0.953	0.912	0.991	0.978
10-Aug	0.981	0.978			0.996		0.953		0.979	1.000	0.974		0.988	0.955	0.970	0.771	0.791	0.991	0.784	0.962	0.921	1.000	0.986
11-Aug	0.987	0.982			0.999		0.960		0.985		0.985		0.995	0.969	0.979	0.791	0.814	1.000	0.805	0.974	0.930		0.989
12-Aug	0.993	0.985			1.000		1.000		0.988		0.990		1.000	0.981	0.989	0.814	0.835		0.821	0.986	0.944		0.998
13-Aug	0.995	0.992							0.991		0.994			1.000	1.000	0.835	0.857		0.841	1.000	0.951		1.000
14-Aug	0.996	0.993							0.998		0.998					0.857	0.874		0.856		0.962		
15-Aug	1.000	0.993							1.000		1.000					0.874	0.896		0.868		0.976		
16-Aug		0.995														0.896	0.914		0.877		0.984		
17-Aug		0.996														0.914	0.926		0.893		0.992		
18-Aug		0.997														0.926	0.942		0.906		1.000		
19-Aug		0.997														0.942	0.963		0.919				
21-Aug		0.997														0.963	0.977		0.932				
21-Aug		0.998														0.977	0.985		0.944				
22-Aug		0.998														0.985	0.992		0.956				
23-Aug		0.999														0.992	1.000		0.970				
24-Aug		0.999														1.000			0.985				
25-Aug		0.999																	1.000				
26-Aug		0.999																					
27-Aug		0.999																					
28-Aug		1.000																					
Midpoint	19-Jul	19-Jul	14-Jul	21-Jul	19-Jul	10-Jul	25-Jul	26-Jul	25-Jul	22-Jul	21-Jul	23-Jul	27-Jul	25-Jul	18-Jul	01-Aug	31-Jul	21-Jul	19-Jul	28-Jul	26-Jul	18-Jul	24-Jul
No. days for 80%[b]	12	6	18	12	18	14	16	12	14	25	23	18	15	25	26	31	31	21	39	22	22	20	21

[a]Proportion accrued on last day (1981, 1982, 1984-1986, 1988) represents that portion of the escapement estimated to have entered the river after termination of counting operations.

[b]Inclusive dates: date proportion of escapement reached 10% through date proportion of escapement reached 90%.

Table 5. Estimated salmon escapement into the Kenai River, 1 July through 13 August 2001. Species composition of daily sonar counts based on fish wheel catches.[a]

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
1-Jul	1,209	1,209	0	0	0	0	0	0
2-Jul	5,471	6,680	0	0	0	0	0	0
3-Jul	4,205	10,885	0	0	0	0	0	0
4-Jul	3,912	14,797	0	0	0	0	0	0
5-Jul	3,698	18,495	0	0	0	0	0	0
6-Jul	2,697	21,192	0	0	0	0	0	0
7-Jul	3,627	24,819	0	0	0	0	0	0
8-Jul	5,306	30,125	0	0	0	0	0	0
9-Jul	5,995	36,120	0	0	0	0	0	0
10-Jul	4,524	40,644	0	0	0	0	0	0
11-Jul	4,986	45,630	0	0	0	0	0	0
12-Jul	3,011	48,641	0	0	0	0	0	0
13-Jul	3,572	52,213	0	0	0	0	0	0
14-Jul	10,263	62,476	0	0	0	0	0	0
15-Jul	28,880	91,356	0	0	0	0	0	0
16-Jul	30,502	121,858	0	0	0	0	0	0
17-Jul	41,551	163,409	0	0	0	0	0	0
18-Jul	28,385	191,794	0	0	0	0	0	0
19-Jul	34,547	226,341	0	0	0	0	0	0
20-Jul	26,534	252,875	0	0	0	0	0	0
21-Jul	14,166	267,041	0	0	0	0	0	0
22-Jul	15,357	282,398	0	0	0	0	0	0
23-Jul	20,555	302,953	0	0	0	0	0	0
24-Jul	36,805	339,758	0	0	0	0	0	0
25-Jul	48,156	387,914	0	0	0	0	0	0
26-Jul	51,570	439,484	0	0	0	0	0	0
27-Jul	34,999	474,483	0	0	0	0	0	0
28-Jul	18,668	493,151	0	0	0	0	0	0
29-Jul	15,325	508,476	0	0	0	0	0	0
30-Jul	17,691	526,167	0	0	0	0	0	0
31-Jul	14,943	541,110	0	0	0	0	0	0
1-Aug	14,203	555,313	0	0	0	0	0	0
2-Aug	14,821	570,134	0	0	0	0	0	0
3-Aug	11,111	581,245	0	0	0	0	0	0
4-Aug	12,914	594,159	0	0	0	0	0	0
5-Aug	8,789	602,948	0	0	0	0	0	0
6-Aug	9,206	612,154	0	0	0	0	0	0
7-Aug	9,714	621,868	0	0	0	0	0	0
8-Aug	9,086	630,954	505	505	0	0	0	0
9-Aug	4,549	635,503	0	505	828	828	2,067	2,067
10-Aug	5,118	640,621	394	899	393	1,221	1,182	3,249
11-Aug	2,132	642,753	1,280	2,179	2,345	3,566	853	4,102
12-Aug	5,671	648,424	0	2,179	283	3,849	1,418	5,520
13-Aug	1,612	650,036	0	2,179	4,834	8,683	1,612	7,132

[a] Species apportionment began on 8 August.

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Table 6. Distribution of sockeye salmon escapement by bank (% of total count) recorded by side-scanning sonan in the Kenai, Kasilof, Crescent, and Yentna Rivers 1979-2001.

	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	28		
1985	54	46	70	30	70	30	9	91
1986	62	38	57	43	84	16	32	68
1987	48	52	55	45	64	36	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
1991	73	27	39	61	33	67	8	92
1992	60	40	45	55	56	44	5	95
1993	49	51	28	72	41	56	14	86
1994	52	48	47	53	65	35	8	92
1995	52	48	38	62	68	32	11	89
1996	54	46	61	39	68	32	21	79
1997	56	44	41	59	79	21	11	89
1998	55	45	36	64	70	30	49	51
1999	55	45	51	49	53	47	26	74
2000	64	36	51	49	63	37	22	78
2001	50	50	63	37	79	21	38	63

Table 7. Daily fish wheel catch by species for the north bank of the Kenai River, 1 July through 13 August 2001.[a]

		Sockeye		Pink		Chum		Coho		Chinook	
Date	Hours open	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
1-Jul	7.00	1	1	0	0	0	0	0	0	1	1
2-Jul	13.1	4	5	0	0	0	0	0	0	4	5
3-Jul	4.00	4	9	0	0	0	0	0	0	2	7
4-Jul	11.00	2	11	0	0	0	0	0	0	0	7
5-Jul	14.00	37	48	1	1	0	0	0	0	1	8
6-Jul	4.25	12	60	0	1	0	0	0	0	0	8
7-Jul	13.00	31	91	1	2	0	0	0	0	1	9
8-Jul	12.67	39	130	2	4	0	0	0	0	0	9
9-Jul	10.50	29	159	0	4	0	0	0	0	2	11
10-Jul	15.25	39	198	3	7	0	0	0	0	1	12
11-Jul	20.50	34	232	1	8	0	0	0	0	1	13
12-Jul	21.75	21	253	1	9	0	0	0	0	0	13
13-Jul	24.00	27	280	2	11	0	0	0	0	1	14
14-Jul	20.75	75	355	2	13	0	0	0	0	0	14
15-Jul	4.50	156	511	2	15	0	0	0	0	0	14
16-Jul	6.75	97	608	0	15	0	0	0	0	0	14
17-Jul	2.50	189	797	0	15	0	0	0	0	0	14
18-Jul	1.00	154	951	0	15	0	0	0	0	0	14
19-Jul	2.00	165	1,116	1	16	0	0	0	0	0	14
20-Jul	1.50	132	1,248	0	16	0	0	0	0	0	14
21-Jul	4.00	109	1,357	2	18	0	0	0	0	1	15
22-Jul	8.75	120	1,477	0	18	0	0	0	0	0	15
23-Jul	8.75	89	1,566	0	18	0	0	0	0	1	16
24-Jul	4.00	254	1,820	0	18	0	0	0	0	0	16
25-Jul	3.00	253	2,073	0	18	0	0	0	0	1	17
26-Jul	3.50	168	2,241	0	18	0	0	0	0	0	17
27-Jul	4.25	230	2,471	0	18	0	0	0	0	0	17
28-Jul	5.50	54	2,525	1	19	0	0	0	0	0	17
29-Jul	14.50	73	2,598	0	19	0	0	0	0	0	17
30-Jul	9.00	69	2,667	1	20	0	0	0	0	0	17
31-Jul	7.50	84	2,751	3	23	0	0	4	4	0	17
1-Aug	8.25	136	2,887	0	23	0	0	2	6	0	17
2-Aug	7.75	99	2,986	2	25	0	0	1	7	0	17
3-Aug	12.25	67	3,053	2	27	0	0	1	8	3	20
4-Aug	7.25	56	3,109	0	27	0	0	1	9	0	20
5-Aug	8.75	30	3,139	0	27	0	0	0	9	0	20
6-Aug	13.25	71	3,210	1	28	0	0	1	10	2	22
7-Aug	8.00	6	3,216	0	28	1	1	0	10	0	22
8-Aug	10.67	18	3,234	1	29	0	1	0	10	0	22
9-Aug	11.83	11	3,245	0	29	0	1	2	12	5	27
10-Aug	17.08	13	3,258	1	30	0	1	1	13	3	30
11-Aug	27.25	10	3,268	6	36	0	1	12	25	4	34
12-Aug	23.00	40	3,308	0	36	0	1	2	27	10	44
13-Aug	8.62	1	3,309	0	36	0	1	3	30	1	45

[a] Fish wheel catch included 34 Dolly Varden char; 19 rainbow trout and 1 white fish.

Table 8. Age composition of sockeye salmon collected in the Kenai River 1970-2001.

	Percentage Compostion by Age Class[a,b,c]								
Year	1.1	1.2	1.3	1.4	2.1	2.2	2.3	Other	Sample Size
1970	tr	10.0	17.0	tr	26.0	25.0	15.0	6.0	225
1971	0.0	8.0	39.0	1.0	3.0	38.0	11.0	0.0	168
1972	0.0	21.0	34.0	0.0	0.0	23.0	20.0	0.0	403
1973	0.0	5.0	68.0	1.0	1.0	8.0	16.0	0.0	632
1974	2.0	18.0	46.0	0.0	3.0	18.0	12.0	0.0	295
1975	2.0	10.0	36.0	2.0	4.0	31.0	14.0	1.0	162
1976	1.0	46.0	20.0	0.0	2.0	22.0	8.0	1.0	948
1977	0.0	6.0	76.0	1.0	tr	7.0	10.0	0.0	1,265
1978	0.0	2.5	86.7	0.0	0.0	4.9	5.4	tr	811
1979	tr	20.2	61.1	0.0	0.0	11.8	6.2	tr	601
1980	0.0	27.7	45.1	0.0	0.0	16.2	10.1	tr	715
1981	0.0	16.2	70.9	0.0	0.0	8.1	4.8	0.0	1,757
1982	0.1	5.8	87.5	tr	0.0	2.9	3.7	0.0	1,787
1983	0.4	8.2	79.1	0.2	0.5	2.2	8.9	0.4	1,765
1984	0.2	23.4	38.2	3.5	6.0	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	1,420
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	1,513
1991	0.2	48.2	31.6	0.1	0.5	5.7	11.4	2.7	2,504
1992	0.0	2.9	79.4	tr	tr	6.1	11.0	tr	1,338
1993	0.3	12.2	30.5	2.6	6.3	6.4	41.2	0.5	2,088
1994	0.3	6.6	61.1	0.8	0.8	17.8	12.1	0.5	1,341
1995	0.3	31.9	26.4	0.4	2.4	6.6	31.3	0.7	712
1996	0.0	10.8	75.4	0.3	0.7	6.1	5.4	1.1	684
1997	0.1	7.6	75.2	0.4	0.4	2.8	13.0	0.5	963
1998	0.3	27.1	40.7	1.3	6.6	9.6	13.9	0.5	700
1999	0.0	15.1	55.4	0.4	1.2	16.8	9.6	1.5	733
2000	0.2	15.3	55.1	1.0	2.6	9.4	14.5	2.1	588
2001	0.3	10.8	68.9	0.8	1.5	8.3	9.2	0.2	601

[a] Percentages weighted by total numbers in the escapement: 1978 (Bethe et al. 1980), 1979-1982, 1984-2001.

[b] 1978-1997 from Waltemyer, ADF&G, Soldotna.

[c] 1998-2001 from Tobias, ADF&G, Soldotna.

FN: KEAGCOMP.XLS

Table 9. Length composition of the major age classes of sockeye salmon collected in the Kenai River 1980-2001. Length measured from mid-eye to fork-of-tail.[a, b]

		Male			Female			
Year	Age Class	Ave Length (mm)	Stndrd Error	Sample Size	Ave Length (mm)	Stndrd Error	Sample Size	Ratio Male-Female
1980	1.2	482	4	168	494	4	100	1.7:1
1981		493	6	85	513	6	73	1.2:1
1982		483	9	70	505	13	32	2.2:1
1983		524	9	25	520	6	30	0.8:1
1984		474	3	280	473	4	196	1.4:1
1985		492	3	184	490	3	186	1.0:1
1986		488	4	155	492	6	96	1.6:1
1987		514	8	39	503	5	56	0.7:1
1988		522	8	79	511	4	84	0.9:1
1989		493	6	114	494	4	92	1.2:1
1990		474	0	168	478	0	127	1.3:1
1991		488	2	613	497	13	577	1.1:1
1993		474	4	123	481	4	132	0.9:1
1994		452	5	46	462	6	42	1.1:1
1995		492	4	116	487	4	111	1.0:1
1996		507	8	47	519	5	27	1.7:1
1998		483	4	95	494	3	95	1.0:1
1999		490	5	72	488	7	39	1.9:1
2000		513	6	47	513	5	43	1.1:1
2001		522	6	35	507	6	30	1.2:1
1980	1.3	580	3	180	561	2	192	0.9:1
1981		590	2	290	569	1	430	0.7:1
1982		596	2	723	572	1	841	0.9:1
1983		598	2	215	577	1	269	0.8:1
1984		582	2	385	559	1	395	1.0:1
1985		575	2	496	552	1	824	0.6:1
1986		584	3	112	564	2	200	0.6:1
1987		605	2	183	586	1	401	0.5:1
1988		598	1	428	572	2	624	0.7:1
1989		600	1	831	575	1	881	0.9:1
1990		586	0	358	559	0	318	1.1:1
1991		561	2	357	539	1	441	0.8:1
1992		572	2	370	547	1	714	0.5:1
1993		583	2	247	556	2	390	0.6:1
1994		579	2	367	552	1	452	0.8:1
1995		584	3	81	564	2	107	0.8:1
1996		607	2	243	589	1	273	0.9:1
1997		593	2	327	582	1	352	0.9:1
1998		577	2	146	547	2	139	1.1:1
1999		600	2	202	576	2	204	1.0:1
2000		605	2	159	584	2	165	1.0:1
2001		596	2	196	577	2	218	0.9:1

-Continued-

Table 9 (p. 2 of 2)

		Male			Female			
Year	Age Class	Ave Length (mm)	Stndrd Error	Sample Size	Ave Length (mm)	Stndrd Error	Sample Size	Ratio Male-Female
1984	2.2	505	4	116	508	3	159	0.7:1
1985		513	4	132	513	3	196	0.7:1
1994		481	4	67	488	2	171	0.4:1
1998		501	8	28	507	4	39	0.7:1
1999		517	6	38	512	3	85	0.5:1
1980	2.3	589	3	67	579	3	80	0.8:1
1982		598	5	46	580	8	21	2.2:1
1983		595	4	25	582	4	36	0.7:1
1984		570	2	210	557	2	192	1.1:1
1985		570	3	106	555	2	129	0.8:1
1986		585	5	52	568	3	89	0.6:1
1988		596	3	53	577	3	92	0.6:1
1989		600	3	112	579	2	108	1.0:1
1990		589	0	177	568	0	132	1.3:1
1991		572	2	153	543	3	139	1.1:1
1992		569	4	46	546	2	88	0.5:1
1993		583	2	357	560	1	503	0.7:1
1994		578	4	73	551	3	89	0.8:1
1995		588	3	114	569	3	109	1.1:1
1997		600	4	52	576	4	73	0.7:1
1998		574	4	48	559	3	49	1.0:1
2000		603	4	44	583	3	41	1.1:1

[a] 1980-1997 from Waltemyer, ADF&G, Soldotna.
[b] 1998-2001 from Tobias, ADF&G, Soldotna.

Table 10. Estimated sockeye salmon escapement into the Kasilof River, 15 June through 3 August 2001.

Date	Daily	Cum	Date	Daily	Cum
15-Jun	1,802	1,802	23-Jul	3,858	229,333
16-Jun	4,380	6,182	24-Jul	16,751	246,084
17-Jun	6,959	13,141	25-Jul	31,148	277,232
18-Jun	6,531	19,672	26-Jul	2,913	280,145
19-Jun	6,619	26,291	27-Jul	4,906	285,051
20-Jun	3,595	29,886	28-Jul	2,848	287,899
21-Jun	4,037	33,923	29-Jul	4,266	292,165
22-Jun	4,111	38,034	30-Jul	5,220	297,385
23-Jun	6,911	44,945	31-Jul	3,990	301,375
24-Jun	8,710	53,655	1-Aug	2,423	303,798
25-Jun	10,972	64,627	2-Aug	1,571	305,369
26-Jun	5,741	70,368	3-Aug	2,201	307,570
27-Jun	9,119	79,487			
28-Jun	10,969	90,456			
29-Jun	3,881	94,337			
30-Jun	7,312	101,649			
1-Jul	4,205	105,854			
2-Jul	9,612	115,466			
3-Jul	4,216	119,682			
4-Jul	5,984	125,666			
5-Jul	1,728	127,394			
6-Jul	2,886	130,280			
7-Jul	7,804	138,084			
8-Jul	8,298	146,382			
9-Jul	1,955	148,337			
10-Jul	3,435	151,772			
11-Jul	1,523	153,295			
12-Jul	2,060	155,355			
13-Jul	2,437	157,792			
14-Jul	5,224	163,016			
15-Jul	9,868	172,884			
16-Jul	10,498	183,382			
17-Jul	13,572	196,954			
18-Jul	14,780	211,734			
19-Jul	5,487	217,221			
20-Jul	3,185	220,406			
21-Jul	3,677	224,083			
22-Jul	1,392	225,475			

FN: 01KA.XLS

Table 11. Kasilof River sockeye salmon escapement estimates 1968-2001.

Year	Escapement Estimated by Sonar Count[a]	Fish used for Artificial Propogation 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
1980	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
1991	238,269	8,850	229,419
1992	184,178	6,550	177,628
1993	149,939	9,098	140,841
1994	205,117	13,596 [e]	191,521
1995	204,935	12,416	192,519
1996	249,944	11,724 [f]	238,220
1997	266,025	8,289	257,736
1998	273,558	9,963	263,595
1999	312,587	9,922 [f]	302,665
2000	256,053	8,717 [f]	247,335
2001	307,570	8,724 [f]	298,846

[a] Multiple transducer sonar counts rounded to the nearest thousand (1968-1978) from Namtvedt et al. (1979).
[b] From Cross et al. (1983): 1974-1980; FRED Div., Soldotna, Ak. files: 1981-1992; Fandrei, Cook Inlet Aquaculture Association: 1993-2001.
[c] Considered estimate of natural spawners above sonar site.
[d] Combined counts from weirs on Bear and Glacier Flat Creeks and surveys of spawning streams.
[e] Includes 290 fish not used for artificial propogation of Tustumena Lake, Fandrei (1995).
[f] Includes 550 fish not used for artificial propogation of Tustumena Lake, Fandrei (1996).
[f] Includes 32 fish not used for artificial propogation of Tustumena Lake, Fandrei (1999).
[f] Includes 227 fish not used for artificial propogation of Tustumena Lake, Fandrei (2000).
[f] Includes 558 fish not used for artificial propogation of Tustumena Lake, Fandrei (2001).

FN: KAHIST.XLS

Table 12. Peak sockeye salmon escapement counts in seven index areas, Kasilof River drainage 1975-2001.

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
1991	21,582	391	1,223	12,068	1,661	18,105	68,880	123,910
1992	10,145	1,105	1,979	9,144	349	15,235	44,100	82,057
1993							36,002	36,002
1994	63,723			13,347[e]			39,100	116,170
1995							29,017	29,017
1996							58,692	58,692
1997							81,989	81,989
1998							113,500	113,500
1999							68,291	68,291
2000							84,993	84,993
2001							130,164	130,164

[a] Commercial Fisheries Division stream survey counts (1975-85); FRED Division stream survey counts (1982-92); U.S. Biological Service weir count (Nikolai Creek 1994).
[b] FRED Division weir count, 1980-90, 1992. 1991 count is result of foot survey. 1993-01 counts are results of foot and aerial surveys and weir count, Cook Inlet Aquaculture Association, Gary Fandrei (personal communication).
[c] Counts standardized to common unit for years when entire stream not surveyed.
[d] Flagg (1986). Numbers rounded to nearest 100 fish.
[e] U.S. Biological Service weir count (Glacier Flat Creek 1994). 1994 Glacier Flat Creek count includes 10,347 sockeye salmon passed through the weir and an estimated 3,000 sockeye salmon spawning downstream of the weir.

FN: KAESCIDX.XLS

Table 13. Cumulative proportion by date of salmon counts recorded in the Kasilof River 1979-2001.

	Cumulative Proportion[a, b]																						
Date	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
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	0.000		0.008																				
24-May	0.003		0.010																				
25-May	0.004		0.011																				
26-May	0.006		0.012																				
27-May	0.008		0.013																				
28-May	0.009		0.014																				
29-May	0.011		0.015																				
30-May	0.014		0.016																				
31-May	0.017		0.018																				
01-Jun	0.020		0.020																				
02-Jun	0.023		0.022																				
03-Jun	0.026		0.025																				
04-Jun	0.030		0.027																				
05-Jun	0.034		0.030																				
06-Jun	0.036		0.032																				
07-Jun	0.037		0.035																				
08-Jun	0.039		0.038																				
09-Jun	0.040		0.040			0.007																	
10-Jun	0.041		0.043	0.001	0.045	0.008																	
11-Jun	0.041		0.045	0.003	0.046	0.009																	
12-Jun	0.042		0.047	0.005	0.048	0.011	0.002	0.037	0.044						0.011	0.000							
13-Jun	0.043		0.049	0.007	0.050	0.012	0.003	0.041	0.051						0.026	0.002							
14-Jun	0.044		0.051	0.008	0.051	0.013	0.003	0.045	0.062	0.009					0.043	0.004			0.003				
15-Jun	0.044		0.055	0.010	0.053	0.015	0.004	0.048	0.073	0.014	0.001	0.002	0.002	0.004	0.052	0.007	0.001	0.003	0.007	0.001	0.002	0.001	0.006
16-Jun	0.045		0.059	0.011	0.056	0.018	0.004	0.053	0.091	0.018	0.002	0.004	0.009	0.014	0.064	0.010	0.002	0.007	0.013	0.003	0.004	0.002	0.020
17-Jun	0.046		0.064	0.013	0.058	0.020	0.005	0.059	0.106	0.021	0.004	0.006	0.015	0.020	0.074	0.014	0.004	0.016	0.026	0.006	0.007	0.004	0.043
18-Jun	0.048		0.075	0.015	0.060	0.022	0.005	0.062	0.120	0.025	0.006	0.008	0.019	0.031	0.090	0.017	0.006	0.023	0.039	0.016	0.009	0.010	0.064
19-Jun	0.049		0.082	0.027	0.063	0.025	0.006	0.066	0.146	0.028	0.007	0.009	0.026	0.038	0.103	0.020	0.010	0.033	0.061	0.029	0.012	0.015	0.085
20-Jun	0.051		0.099	0.035	0.065	0.031	0.007	0.068	0.171	0.032	0.011	0.010	0.033	0.050	0.118	0.025	0.016	0.047	0.098	0.036	0.016	0.022	0.097
21-Jun	0.054		0.114	0.040	0.068	0.039	0.007	0.071	0.190	0.038	0.014	0.012	0.044	0.064	0.132	0.029	0.024	0.055	0.125	0.048	0.025	0.027	0.110
22-Jun	0.060	0.003	0.133	0.043	0.070	0.048	0.008	0.073	0.198	0.046	0.016	0.014	0.056	0.082	0.143	0.034	0.032	0.079	0.141	0.065	0.038	0.040	0.124
23-Jun	0.066	0.007	0.162	0.045	0.074	0.058	0.009	0.074	0.201	0.053	0.019	0.015	0.070	0.101	0.154	0.039	0.040	0.111	0.157	0.082	0.055	0.055	0.146
24-Jun	0.077	0.009	0.195	0.049	0.076	0.069	0.012	0.075	0.206	0.065	0.021	0.017	0.085	0.125	0.179	0.047	0.047	0.145	0.184	0.094	0.072	0.075	0.174
25-Jun	0.093	0.022	0.223	0.053	0.078	0.075	0.015	0.077	0.212	0.077	0.024	0.019	0.096	0.146	0.217	0.058	0.059	0.162	0.227	0.107	0.099	0.096	0.210
26-Jun	0.108	0.035	0.261	0.055	0.080	0.080	0.017	0.079	0.218	0.089	0.031	0.022	0.110	0.174	0.257	0.071	0.071	0.181	0.276	0.124	0.120	0.122	0.229
27-Jun	0.125	0.051	0.288	0.058	0.082	0.089	0.019	0.082	0.222	0.105	0.037	0.025	0.135	0.215	0.293	0.094	0.088	0.227	0.321	0.152	0.147	0.147	0.258
28-Jun	0.153	0.075	0.342	0.061	0.085	0.099	0.022	0.085	0.227	0.133	0.046	0.030	0.171	0.250	0.317	0.129	0.120	0.295	0.337	0.181	0.181	0.169	0.294
29-Jun	0.169	0.094	0.389	0.064	0.090	0.111	0.025	0.095	0.238	0.157	0.057	0.037	0.204	0.290	0.330	0.172	0.166	0.318	0.360	0.212	0.216	0.202	0.307
30-Jun	0.196	0.136	0.438	0.069	0.110	0.123	0.029	0.121	0.249	0.173	0.074	0.051	0.238	0.323	0.357	0.220	0.196	0.346	0.392	0.224	0.244	0.233	0.330
01-Jul	0.229	0.166	0.500	0.078	0.153	0.136	0.035	0.153	0.267	0.184	0.098	0.065	0.259	0.338	0.386	0.250	0.216	0.381	0.412	0.252	0.277	0.264	0.344
02-Jul	0.248	0.217	0.512	0.091	0.165	0.150	0.039	0.180	0.297	0.189	0.153	0.076	0.275	0.349	0.419	0.256	0.229	0.386	0.454	0.276	0.291	0.301	0.375
03-Jul	0.281	0.250	0.522	0.104	0.188	0.157	0.044	0.198	0.317	0.196	0.178	0.091	0.293	0.372	0.429	0.282	0.241	0.389	0.468	0.290	0.307	0.328	0.389

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Table 13. (p. 2 of 2)

	Cumulative Proportion[a, b]																						
Date	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
04-Jul	0.325	0.280	0.529	0.115	0.212	0.178	0.056	0.215	0.334	0.224	0.183	0.120	0.338	0.377	0.441	0.322	0.248	0.399	0.513	0.297	0.315	0.337	0.409
05-Jul	0.374	0.314	0.534	0.122	0.221	0.217	0.066	0.228	0.357	0.235	0.225	0.158	0.385	0.394	0.459	0.333	0.265	0.438	0.521	0.321	0.332	0.361	0.414
06-Jul	0.404	0.338	0.543	0.129	0.231	0.243	0.071	0.245	0.385	0.255	0.277	0.193	0.400	0.414	0.467	0.375	0.293	0.452	0.526	0.353	0.347	0.383	0.424
07-Jul	0.458	0.353	0.551	0.136	0.240	0.263	0.078	0.257	0.403	0.306	0.321	0.209	0.406	0.419	0.496	0.437	0.315	0.475	0.544	0.365	0.377	0.394	0.449
08-Jul	0.473	0.366	0.562	0.145	0.247	0.304	0.095	0.261	0.422	0.329	0.346	0.235	0.417	0.428	0.537	0.483	0.322	0.496	0.548	0.385	0.412	0.416	0.476
09-Jul	0.496	0.379	0.604	0.156	0.263	0.358	0.103	0.269	0.438	0.382	0.378	0.254	0.431	0.439	0.548	0.501	0.335	0.499	0.556	0.411	0.419	0.441	0.482
10-Jul	0.509	0.393	0.649	0.164	0.294	0.391	0.114	0.289	0.450	0.457	0.404	0.258	0.450	0.453	0.558	0.535	0.355	0.507	0.566	0.438	0.427	0.472	0.493
11-Jul	0.519	0.413	0.677	0.177	0.315	0.411	0.119	0.323	0.456	0.507	0.431	0.267	0.477	0.462	0.571	0.545	0.359	0.524	0.582	0.446	0.439	0.481	0.498
12-Jul	0.532	0.421	0.712	0.197	0.344	0.416	0.126	0.337	0.481	0.567	0.488	0.281	0.488	0.522	0.590	0.552	0.365	0.528	0.598	0.452	0.445	0.502	0.505
13-Jul	0.550	0.426	0.746	0.217	0.395	0.427	0.148	0.430	0.508	0.600	0.500	0.294	0.490	0.586	0.680	0.565	0.373	0.538	0.617	0.465	0.453	0.534	0.513
14-Jul	0.579	0.436	0.797	0.247	0.465	0.445	0.208	0.501	0.520	0.614	0.514	0.303	0.492	0.598	0.707	0.584	0.387	0.650	0.624	0.474	0.467	0.594	0.530
15-Jul	0.629	0.464	0.838	0.293	0.514	0.484	0.267	0.513	0.587	0.659	0.532	0.317	0.508	0.608	0.748	0.623	0.395	0.710	0.630	0.496	0.473	0.664	0.562
16-Jul	0.643	0.528	0.863	0.358	0.547	0.543	0.382	0.528	0.600	0.676	0.566	0.350	0.523	0.616	0.792	0.636	0.487	0.721	0.643	0.522	0.481	0.673	0.596
17-Jul	0.674	0.570	0.877	0.404	0.663	0.590	0.418	0.544	0.608	0.691	0.615	0.498	0.546	0.629	0.804	0.679	0.618	0.728	0.673	0.573	0.501	0.691	0.640
18-Jul	0.703	0.609	0.891	0.491	0.759	0.636	0.432	0.562	0.619	0.703	0.629	0.602	0.615	0.645	0.816	0.711	0.641	0.737	0.682	0.603	0.516	0.702	0.688
19-Jul	0.730	0.649	0.904	0.577	0.775	0.693	0.436	0.575	0.699	0.723	0.648	0.623	0.649	0.665	0.828	0.732	0.667	0.758	0.689	0.642	0.534	0.730	0.706
20-Jul	0.755	0.693	0.922	0.642	0.785	0.739	0.439	0.586	0.731	0.770	0.711	0.664	0.661	0.705	0.839	0.750	0.688	0.777	0.696	0.671	0.563	0.763	0.717
21-Jul	0.767	0.715	0.936	0.702	0.804	0.778	0.464	0.601	0.765	0.857	0.747	0.676	0.679	0.725	0.849	0.763	0.704	0.790	0.700	0.687	0.619	0.777	0.729
22-Jul	0.781	0.738	0.942	0.744	0.822	0.810	0.551	0.611	0.809	0.921	0.768	0.687	0.710	0.740	0.857	0.771	0.753	0.806	0.707	0.713	0.679	0.807	0.733
23-Jul	0.848	0.775	0.947	0.759	0.833	0.832	0.609	0.618	0.851	0.929	0.806	0.706	0.751	0.770	0.877	0.778	0.807	0.823	0.727	0.740	0.721	0.843	0.746
24-Jul	0.860	0.788	0.952	0.769	0.842	0.864	0.649	0.627	0.873	0.935	0.816	0.723	0.781	0.844	0.892	0.789	0.868	0.850	0.741	0.773	0.757	0.876	0.800
25-Jul	0.875	0.803	0.954	0.784	0.849	0.888	0.683	0.717	0.888	0.939	0.824	0.754	0.813	0.890	0.909	0.799	0.883	0.875	0.750	0.799	0.792	0.895	0.901
26-Jul	0.896	0.818	0.957	0.800	0.854	0.910	0.733	0.795	0.897	0.943	0.840	0.776	0.849	0.933	0.921	0.806	0.898	0.883	0.756	0.820	0.829	0.912	0.911
27-Jul	0.910	0.830	0.959	0.818	0.858	0.918	0.791	0.806	0.906	0.948	0.850	0.790	0.881	0.962	0.930	0.813	0.919	0.890	0.763	0.839	0.865	0.931	0.927
28-Jul	0.930	0.840	0.962	0.836	0.862	0.926	0.826	0.812	0.916	0.953	0.860	0.808	0.914	0.971	0.946	0.826	0.927	0.896	0.773	0.870	0.881	0.947	0.936
29-Jul	0.941	0.853	0.963	0.847	0.867	0.933	0.842	0.829	0.925	0.958	0.869	0.836	0.935	0.977	0.958	0.846	0.934	0.900	0.781	0.893	0.900	0.965	0.950
30-Jul	0.947	0.864	0.964	0.857	0.874	0.939	0.853	0.888	0.939	0.961	0.877	0.856	0.947	0.983	0.969	0.868	0.939	0.904	0.793	0.913	0.913	0.974	0.967
31-Jul	0.954	0.878	0.966	0.866	0.889	0.943	0.865	0.917	0.962	0.965	0.885	0.872	0.956	0.989	0.974	0.892	0.945	0.907	0.802	0.938	0.925	0.983	0.980
01-Aug	0.957	0.889	1.000	0.876	1.000	1.000	0.875	1.000	0.975	0.969	0.892	0.885	0.960	0.994	0.979	0.928	0.950	0.923	0.810	0.960	0.935	0.990	0.988
02-Aug	0.963	0.900		0.886			0.881		0.982	0.973	0.898	0.901	0.966	1.000	0.987	0.943	0.956	0.938	0.820	0.968	0.948	1.000	0.993
03-Aug	0.966	0.906		0.895			0.890		0.986	0.977	0.905	0.916	0.973		0.992	0.952	0.969	0.952	0.829	0.974	0.961		1.000
04-Aug	0.969	0.915		1.000			0.898		0.990	0.983	0.916	0.924	0.978		0.996	0.959	0.984	0.969	0.836	0.980	0.972		
05-Aug	0.980	0.925					0.904		0.994	0.990	0.927	0.933	0.981		1.000	0.966	0.988	0.979	0.850	0.988	0.979		
06-Aug	0.983	0.932					0.909		0.997	0.993	0.943	0.941	0.987			0.972	0.993	0.984	0.872	0.992	0.986		
07-Aug	0.986	0.939					0.917		1.000	0.997	0.958	0.946	0.994			0.977	1.000	0.992	0.896	0.997	0.993		
08-Aug	0.989	0.946					0.927			1.000	0.963	0.953	1.000			0.981		1.000	0.925	1.000	1.000		
09-Aug	0.991	0.961					0.938				0.969	0.963				0.987			0.945				
10-Aug	0.994	0.968					0.945				0.976	0.972				0.994			0.962				
11-Aug	0.998	0.979					0.949				0.982	0.977				1.000			0.984				
12-Aug	1.000	0.988					1.000				0.986	0.984							1.000				
13-Aug		1.000									0.990	0.989											
14-Aug											0.996	0.995											
15-Aug											1.000	1.000											
Midpoint	10-Jul	16-Jul	01-Jul	19-Jul	15-Jul	16-Jul	22-Jul	14-Jul	13-Jul	11-Jul	13-Jul	18-Jul	15-Jul	12-Jul	08-Jul	09-Jul	14-Jul	10-Jul	4-Jul	16-Jul	17-Jul	12-Jul	12-Jul
No. days for 80%[c]	32	34	29	32	33	28	28	32	41	26	33	29	33	34	37	35	30	30	49	36	34	31	35

[a] Proportion for first day (1983-1988) represents that portion of the escapement estimated to have passed the counting site prior to start of counting operations.
[b] Proportion for last date (1981-1986) represents that portion of the escapement estimated to have entered the river after termination of counting operatons.
[c] Inclusive dates: date proportion of escapement reached 10% through date proportion of escapement reached 90%.

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Table 14. Daily fish wheel catch by species for the north bank of the Kasilof River, 18 June through 4 August 2001.

		Sockeye		Pink		Coho		Chinook[a]	
Date	Hours open	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
18-Jun	3.80	20	20	0	0	0	0	0	0
19-Jun	4.40	25	45	0	0	0	0	0	0
20-Jun	11.00	20	65	0	0	0	0	0	0
21-Jun	8.30	8	73	0	0	0	0	0	0
22-Jun	13.80	37	110	0	0	0	0	0	0
23-Jun	4.10	37	147	0	0	0	0	0	0
24-Jun	3.00	0	147	0	0	0	0	0	0
25-Jun	6.50	151	298	0	0	0	0	0	0
26-Jun	13.90	47	345	0	0	0	0	1	1
27-Jun	11.00	74	419	0	0	0	0	0	1
28-Jun	7.20	62	481	1	1	0	0	0	1
29-Jun	7.60	0	481	0	1	0	0	0	1
30-Jun	11.50	41	522	0	1	0	0	0	1
01-Jul	3.00	40	562	0	1	0	0	0	1
02-Jul	1.80	0	562	1	2	0	0	0	1
03-Jul	15.80	35	597	1	3	0	0	1	2
04-Jul	3.80	0	597	0	3	0	0	0	2
05-Jul	6.90	22	619	0	3	0	0	0	2
06-Jul	12.70	3	622	0	3	0	0	3	5
07-Jul	24.20	82	704	5	8	0	0	3	8
08-Jul	14.10	112	816	6	14	0	0	0	8
09-Jul	4.00	36	852	0	14	0	0	5	13
10-Jul	10.80	106	958	2	16	0	0	3	16
11-Jul	7.50	0	958	0	16	0	0	0	16
12-Jul	6.60	35	993	0	16	0	0	0	16
13-Jul	4.30	43	1,036	0	16	0	0	0	16
14-Jul	3.80	19	1,055	0	16	0	0	0	16
15-Jul	4.50	89	1,144	0	16	0	0	0	16
16-Jul	NS	0	1,144	0	16	0	0	0	16
17-Jul	2.70	245	1,389	1	17	0	0	0	16
18-Jul	3.00	74	1,463	1	18	0	0	2	18
19-Jul	5.60	32	1,495	0	18	0	0	0	18
20-Jul	5.00	31	1,526	1	19	0	0	0	18
21-Jul	4.90	0	1,526	0	19	0	0	0	18
22-Jul	11.30	38	1,564	0	19	0	0	2	20
23-Jul	5.00	7	1,571	0	19	0	0	1	21
24-Jul	10.00	7	1,578	0	19	0	0	0	21
25-Jul	4.20	61	1,639	2	21	0	0	4	25
26-Jul	14.60	45	1,684	2	23	0	0	9	34
27-Jul	11.80	0	1,684	0	23	0	0	0	34
28-Jul	14.20	50	1,734	0	23	0	0	4	38
29-Jul	10.50	0	1,734	0	23	0	0	0	38
30-Jul	14.50	18	1,752	0	23	0	0	3	41
31-Jul	6.00	5	1,757	0	23	0	0	0	41
01-Aug	10.20	0	1,757	0	23	0	0	0	41
02-Aug	15.30	6	1,763	0	23	0	0	0	41
03-Aug	1.70	1	1,764	0	23	0	0	1	42
04-Aug	11.00	1	1,765	0	23	1	1	0	42

[a] Other fish wheel captures included 6 Dolly Varden char and 2 rainbow trout.
[b] NS = no sampling for this date.

FN: 01KA1FWR.XLS

Table 15. Age composition of sockeye salmon collected in the Kasilof River 1969-2001.

	Percentage Compostion by Age Class [a, b, c]								
Year	1.1	1.2	1.3	1.4	2.1	2.2	2.3	Other	Sample Size
1969	0.0	14.0	39.0	1.0	0.0	30.0	16.0	0.0	399
1970	tr	2.0	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	988
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
1991	0.0	31.5	33.4	0.1	0.1	29.0	5.8	0.1	2,106
1992	0.0	21.2	27.6	0.0	0.2	35.0	15.9	0.0	1,717
1993	0.4	16.3	29.8	0.0	0.4	28.0	25.2	0.0	571
1994	0.0	26.0	28.3	0.0	0.0	28.6	17.2	0.0	697
1995	0.2	44.0	15.5	0.0	0.0	25.0	15.3	0.0	587
1996	0.0	24.8	48.3	0.0	0.0	21.4	5.6	0.0	721
1997	0.0	21.1	54.8	0.0	0.0	13.5	10.7	0.0	758
1998	0.1	39.7	28.1	0.4	0.6	22.2	8.9	0.0	857
1999	0.0	29.7	33.8	0.2	0.1	26.7	9.4	0.1	964
2000	0.1	41.9	33.9	0.0	0.4	11.4	12.3	0.0	512
2001	0.4	29.3	48.6	0.2	0.2	16.5	4.8	0.0	564

[a] Percentages weighted by total numbers in the escapement: 1979-2001.

[b] 1978-1997 from Waltemyer, ADF&G, Soldotna.

[c] 1998-2001 from Tobias, ADF&G, Soldotna.

FN: KAAGCOMP.XLS

Table 16. Length composition of the major age classes of sockeye salmon collected in the Kasilof River 1980-2001. Length measured from mid-eye to fork-of-tail.[a, b]

		Male			Female			
Year	Age Class	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ratio Male-Female
1980	1.2	474	2	189	464	1	376	0.5:1
1981		503	2	241	492	3	146	1.7:1
1982		481	2	285	466	2	235	1.2:1
1983		493	2	113	491	3	78	1.4:1
1984		480	1	544	478	1	428	2.6:1
1985		474	1	723	472	1	897	0.8:1
1986		482	2	266	482	1	368	0.7:1
1987		472	2	282	470	2	257	1.1:1
1988		480	1	353	477	1	480	0.7:1
1989		481	2	245	480	2	290	0.8:1
1990		462	0	139	458	0	91	1.5:1
1991		467	2	326	461	2	305	1.1:1
1992		467	2	184	466	2	212	0.9:1
1993		479	4	40	479	3	53	0.8:1
1994		465	2	90	465	2	91	1.0:1
1995		491	2	117	483	2	141	0.8:1
1996		476	3	94	475	3	85	1.1:1
1997		456	4	80	452	3	80	1.0:1
1998		475	2	178	468	2	162	1.1:1
1999		479	2	140	474	2	146	1.0:1
2000		481	2	162	474	2	162	1.0:1
2001		479	3	77	477	2	88	0.9:1
1980	1.3	531	7	35	516	2	115	0.3:1
1981		566	1	422	558	1	369	1.1:1
1982		549	1	377	542	1	428	0.9:1
1983		558	2	170	547	2	187	0.9:1
1984		539	1	304	533	1	383	0.8:1
1985		531	2	341	527	1	433	0.8:1
1986		550	2	342	543	1	405	0.8:1
1987		553	2	191	552	2	154	1.2:1
1988		550	1	311	543	1	382	0.8:1
1989		550	2	266	542	2	296	0.9:1
1990		518	0	81	523	0	106	0.8:1
1991		531	1	418	518	1	335	1.3:1
1992		536	2	195	527	2	197	1.0:1
1993		550	3	101	542	3	69	1.5:1
1994		538	3	98	530	3	99	1.1:1
1995		542	5	42	534	3	49	0.9:1
1996		566	2	213	556	2	135	1.6:1
1997		555	2	223	541	2	192	1.2:1
1998		527	3	110	525	2	131	0.8:1
1999		543	2	167	542	2	159	1.1:1
2000		555	3	140	547	3	122	1.2:1
2001		549	2	149	545	2	125	1.2:1

-Continued-

FN: KALECOMP.XLS

Table 16 (p. 2 of 2)

		Male			Female			
Year	Age Class	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ratio Male-Female
1982	2.2	479	3	65	472	3	81	0.8:1
1984		484	2	202	482	1	223	0.9:1
1985		482	2	248	476	1	319	0.8:1
1986		492	4	78	489	2	115	0.7:1
1987		478	2	137	475	2	141	1.0:1
1988		486	2	173	479	1	220	0.8:1
1990		453	0	104	457	0	111	0.9:1
1991		471	2	289	480	11	301	1.0:1
1992		464	2	264	464	1	427	0.6:1
1993		486	3	58	480	2	102	0.7:1
1994		469	2	97	468	2	102	1.0:1
1995		492	3	61	485	2	86	0.7:1
1996		482	3	69	472	2	85	0.8:1
1997		459	4	47	450	3	55	0.9:1
1998		473	2	95	469	3	95	1.0:1
1999		480	2	125	475	2	132	1.0:1
2000		486	4	36	482	3	52	0.7:1
2001		482	4	41	473	3	52	0.8:1
1982	2.3	548	4	41	543	4	40	1.0:1
1984		533	3	102	526	3	80	1.3:1
1988		544	2	104	543	2	115	0.9:1
1990		514	0	63	529	0	61	1.0:1
1991		516	4	61	514	3	64	1.0:1
1992		534	3	112	532	2	122	0.9:1
1993		542	3	66	533	3	78	0.8:1
1994		545	4	49	529	3	71	0.7:1
1995		546	4	42	536	3	48	0.9:1
1997		546	6	39	526	5	42	0.9:1
2000		551	3	47	551	3	48	1.0:1

[a]1980-1997 from Waltemyer, ADF&G, Soldotna.
[b]1998-2001 from Tobias, ADF&G, Soldotna.

FN: KALECOMP.XLS

Table 17. Estimated salmon escapement into the Crescent River 1979-2001.

Date	Sockeye	Pink	Chum	Coho	Chinook	Dolly Varden Char	Total
1979	86,654	3,685	95		122		90,556
1980	90,863						90,863
1981	41,213	376			199		41,788
1982	58,957	111					59,068
1983	92,122	221					92,343
1984	118,345		4,880	538			123,763
1985	128,628	984	505	850			130,967
1986	20,385						20,385
1987	120,219	2,044	7,258	552	552		130,625
1988	57,716	85	3,362	245	549		61,957
1989	71,064	354	4,392	0	151		75,961
1990	52,238	219	7,677	73	21		60,228
1991	44,578	322	6,080	83	0		51,063
1992	58,241	738	6,892	303	68	103	66,345
1993	37,556	1,976	1,872	0	0	1,619	43,023
1994	30,355	657	2,939	73	112	7,659	41,795
1995	52,311	1,938	4,583	554	535	4,156	64,077
1996	28,729	250	2,821	52	138	3,349	35,339
1997	70,768	12,428	1,559	0	2,497	595	87,847
1998	62,257	1,376	2,439	261	663	479	67,476
1999	66,519	19,748	1,449	0	1,969	17,356	107,041
2000	56,599	390	432	0	2,537	290	60,248
2001	78,081	5,237	3,022	0	236	7,988	94,564

FN: CRHIST.XLS

Table 18. Estimated salmon escapement into the Crescent River, 28 June through 1 August 2001. Species composition of daily sonar counts based on fish wheel catches.

	Sockeye		Pink		Chum		Coho		Chinook		Dolly Varden	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
28-Jun	488	488	0	0	0	0	0	0	0	0	0	0
29-Jun	174	662	0	0	0	0	0	0	0	0	0	0
30-Jun	606	1,268	0	0	0	0	0	0	0	0	0	0
1-Jul	1,520	2,788	84	84	0	0	0	0	0	0	0	0
2-Jul	2,993	5,781	251	335	0	0	0	0	63	63	0	0
3-Jul	4,878	10,659	0	335	0	0	0	0	0	63	813	813
4-Jul	4,905	15,564	377	712	0	0	0	0	0	63	189	1,002
5-Jul	4,179	19,743	87	799	0	0	0	0	0	63	87	1,089
6-Jul	4,230	23,973	577	1,376	192	192	0	0	0	63	192	1,281
7-Jul	2,415	26,388	517	1,893	0	192	0	0	0	63	345	1,626
8-Jul	1,373	27,761	411	2,304	0	192	0	0	0	63	275	1,901
9-Jul	2,108	29,869	384	2,688	0	192	0	0	0	63	766	2,667
10-Jul	1,297	31,166	0	2,688	649	841	0	0	0	63	0	2,667
11-Jul	3,863	35,029	0	2,688	0	841	0	0	0	63	0	2,667
12-Jul	1,721	36,750	0	2,688	0	841	0	0	0	63	264	2,931
13-Jul	2,657	39,407	280	2,968	0	841	0	0	0	63	979	3,910
14-Jul	4,123	43,530	197	3,165	0	841	0	0	0	63	393	4,303
15-Jul	2,947	46,477	0	3,165	0	841	0	0	0	63	1,178	5,481
16-Jul	3,370	49,847	269	3,434	0	841	0	0	0	63	539	6,020
17-Jul	2,989	52,836	552	3,986	78	919	0	0	0	63	472	6,492
18-Jul	1,587	54,423	75	4,061	0	919	0	0	0	63	454	6,946
19-Jul	710	55,133	0	4,061	0	919	0	0	0	63	267	7,213
20-Jul	1,622	56,755	136	4,197	135	1,054	0	0	0	63	0	7,213
21-Jul	3,003	59,758	65	4,262	0	1,054	0	0	0	63	131	7,344
22-Jul	2,918	62,676	109	4,371	111	1,165	0	0	0	63	110	7,454
23-Jul	3,271	65,947	112	4,483	226	1,391	0	0	0	63	113	7,567
24-Jul	2,091	68,038	104	4,587	0	1,391	0	0	0	63	0	7,567
25-Jul	2,072	70,110	296	4,883	197	1,588	0	0	0	63	0	7,567
26-Jul	2,517	72,627	167	5,050	168	1,756	0	0	0	63	0	7,567
27-Jul	1,522	74,149	0	5,050	338	2,094	0	0	0	63	0	7,567
28-Jul	691	74,840	0	5,050	173	2,267	0	0	173	236	173	7,740
29-Jul	1,046	75,886	0	5,050	174	2,441	0	0	0	236	0	7,740
30-Jul	834	76,720	59	5,109	60	2,501	0	0	0	236	119	7,859
31-Jul	773	77,493	130	5,239	128	2,629	0	0	0	236	129	7,988
1-Aug	589	78,082	0	5,239	393	3,022	0	0	0	236	0	7,988

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Table 19. Cumulative proportion by date of sockeye salmon counts recorded in the Crescent River 1984 - 2001.

	Cumulative Proportion[a]																	
Date	1984	1985	1986[b]	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
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											0.001					
23-Jun	0.017	0.001											0.006					
24-Jun	0.020	0.001											0.008	0.004				
25-Jun	0.024	0.001	0.000							0.010			0.011	0.014				
26-Jun	0.027	0.001	0.000				0.003	0.002		0.019			0.012	0.020				
27-Jun	0.036	0.002	0.000				0.007	0.004		0.022			0.013	0.029	0.009	0.001		
28-Jun	0.041	0.002	0.001				0.013	0.006		0.031	0.001	0.000	0.015	0.037	0.016	0.002		0.006
29-Jun	0.049	0.005	0.005				0.021	0.010		0.034	0.002	0.000	0.018	0.049	0.022	0.007	0.001	0.008
30-Jun	0.069	0.007	0.008				0.025	0.013		0.038	0.008	0.002	0.036	0.058	0.031	0.038	0.002	0.016
01-Jul	0.081	0.008	0.017	0.012	0.008	0.008	0.034	0.017	0.045	0.056	0.012	0.002	0.060	0.067	0.034	0.086	0.006	0.036
02-Jul	0.100	0.012	0.031	0.016	0.038	0.020	0.055	0.031	0.072	0.061	0.015	0.003	0.074	0.091	0.038	0.115	0.008	0.074
03-Jul	0.118	0.016	0.054	0.020	0.149	0.043	0.065	0.033	0.096	0.077	0.017	0.006	0.087	0.153	0.040	0.137	0.011	0.136
04-Jul	0.140	0.057	0.077	0.023	0.223	0.096	0.077	0.040	0.115	0.183	0.028	0.010	0.105	0.188	0.043	0.161	0.028	0.199
05-Jul	0.156	0.138	0.084	0.027	0.269	0.129	0.098	0.061	0.138	0.239	0.035	0.012	0.129	0.214	0.044	0.184	0.093	0.253
06-Jul	0.170	0.188	0.084	0.058	0.338	0.181	0.128	0.063	0.153	0.246	0.044	0.022	0.148	0.239	0.045	0.204	0.178	0.307
07-Jul	0.184	0.196	0.110	0.084	0.404	0.231	0.141	0.064	0.159	0.258	0.061	0.029	0.161	0.267	0.056	0.215	0.292	0.338
08-Jul	0.225	0.226	0.126	0.112	0.488	0.293	0.155	0.079	0.173	0.273	0.086	0.052	0.174	0.300	0.084	0.247	0.365	0.356
09-Jul	0.268	0.251	0.134	0.160	0.554	0.334	0.184	0.090	0.192	0.297	0.092	0.082	0.181	0.348	0.142	0.267	0.399	0.383
10-Jul	0.322	0.274	0.144	0.193	0.581	0.369	0.207	0.092	0.212	0.314	0.103	0.106	0.189	0.429	0.196	0.278	0.410	0.399
11-Jul	0.360	0.293	0.154	0.243	0.598	0.412	0.264	0.100	0.243	0.353	0.132	0.132	0.197	0.500	0.237	0.284	0.418	0.449
12-Jul	0.387	0.319	0.165	0.269	0.625	0.463	0.286	0.131	0.292	0.386	0.170	0.169	0.202	0.550	0.272	0.328	0.422	0.471
13-Jul	0.409	0.364	0.184	0.305	0.655	0.502	0.299	0.143	0.335	0.423	0.214	0.204	0.262	0.581	0.294	0.375	0.426	0.505
14-Jul	0.425	0.388	0.197	0.333	0.688	0.502	0.321	0.188	0.379	0.501	0.251	0.250	0.391	0.606	0.320	0.403	0.433	0.557
15-Jul	0.454	0.415	0.204	0.370	0.692	0.518	0.345	0.245	0.424	0.580	0.276	0.281	0.471	0.625	0.348	0.410	0.444	0.595

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Table 19. (p. 2 of 2)

	Cumulative Proportion[a]																	
Date	1984	1985	1986[b]	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
16-Jul	0.499	0.445	0.213	0.386	0.697	0.611	0.393	0.292	0.463	0.642	0.295	0.317	0.513	0.654	0.389	0.458	0.494	0.638
17-Jul	0.548	0.480		0.406	0.717	0.674	0.472	0.355	0.512	0.685	0.368	0.364	0.551	0.691	0.434	0.548	0.658	0.677
18-Jul	0.599	0.506		0.448	0.748	0.691	0.540	0.425	0.539	0.723	0.395	0.400	0.595	0.719	0.487	0.600	0.795	0.697
19-Jul	0.639	0.525		0.513	0.771	0.710	0.574	0.461	0.573	0.752	0.425	0.417	0.653	0.734	0.546	0.645	0.863	0.706
20-Jul	0.684	0.546		0.548	0.781	0.750	0.610	0.497	0.610	0.772	0.453	0.440	0.692	0.747	0.590	0.703	0.882	0.727
21-Jul	0.721	0.573		0.593	0.808	0.776	0.653	0.524	0.653	0.797	0.460	0.494	0.729	0.759	0.606	0.729	0.924	0.765
22-Jul	0.743	0.596		0.671	0.828	0.804	0.705	0.582	0.701	0.821	0.487	0.598	0.746	0.774	0.622	0.780	0.940	0.803
23-Jul	0.783	0.632		0.773	0.853	0.829	0.742	0.649	0.772	0.845	0.542	0.660	0.757	0.793	0.680	0.815	0.942	0.845
24-Jul	0.802	0.665		0.819	0.885	0.855	0.762	0.688	0.831	0.865	0.581	0.692	0.775	0.814	0.714	0.841	0.948	0.871
25-Jul	0.813	0.698		0.856	0.917	0.884	0.801	0.718	0.877	0.883	0.602	0.725	0.812	0.833	0.726	0.860	0.954	0.898
26-Jul	0.824	0.729		0.877	0.941	0.907	0.839	0.753	0.898	0.908	0.624	0.756	0.864	0.847	0.742	0.881	0.960	0.930
27-Jul	0.838	0.756		0.893	0.959	0.930	0.864	0.801	0.912	0.925	0.665	0.778	0.893	0.865	0.769	0.904	0.968	0.950
28-Jul	0.852	0.775		0.905	0.965	0.958	0.880	0.836	0.928	0.942	0.696	0.803	0.910	0.885	0.785	0.933	0.969	0.958
29-Jul	0.870	0.794		0.915	0.976	0.968	0.896	0.866	0.948	0.953	0.727	0.834	0.924	0.901	0.819	0.960	0.982	0.972
30-Jul	0.882	0.821		0.920	0.989	0.978	0.933	0.885	0.960	0.969	0.766	0.883	0.948	0.926	0.853	0.969	0.985	0.983
31-Jul	0.893	1.000		0.938	1.000	0.994	0.956	0.916	0.974	0.981	0.827	0.897	0.965	0.944	0.890	0.974	0.993	0.992
01-Aug	1.000			0.960		1.000	0.973	0.966	0.987	0.990	0.875	0.907	0.985	0.959	0.919	0.979	1.000	1.000
02-Aug				0.975			0.986	0.978	1.000	1.000	0.914	0.915	1.000	0.972	0.934	0.988		
03-Aug				0.985			0.993	0.984			0.928	0.939		0.983	0.949	0.992		
04-Aug				0.994			1.000	0.987			0.949	0.964		0.991	0.962	1.000		
05-Aug				0.996				0.992			0.975	0.980		1.000	0.977			
06-Aug				1.000				0.996			0.983	0.987			0.990			
07-Aug								1.000			0.989	0.993			1.000			
08-Aug											1.000	1.000						
Midpoint	17-Jul	18-Jul		19-Jul	09-Jul	15-Jul	18-Jul	21-Jul	17-Jul	14-Jul	23-Jul	22-Jul	16-Jun	11-Jul	19-Jul	27-Jul	17-Jul	13-Jul
No. days for 80%[c]	31+	26+		21	23	22	25	21	23	23	24	23	22	27	24	26	16	24

[a] Proportion accrued on last day (1984-1986, 1988) represents that portion of the escapement estimated to have entered the river after termination of counting operations.
[b] Enumeration activities terminated on 16 July 1986. Estimated proportions from King and Tarbox (1988).
[c] Inclusive dates: date proportion of escapement reached 10% through date proportion of escapement reached 90%.

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Table 20. Daily fish wheel catch by species for the Crescent River, 28 June through 1 August 2001.

		Sockeye		Pink		Chum		Coho		Chinook		Dolly Varden	
Date	Hours open	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
28-Jun	24.0	2	2	0	0	0	0	0	0	0	0	0	0
29-Jun	24.0	2	2	0	0	0	0	0	0	0	0	0	0
30-Jun	24.0	5	7	0	0	0	0	0	0	0	0	0	0
1-Jul	24.0	18	25	1	1	0	0	0	0	0	0	0	0
2-Jul	12.0	48	73	4	5	0	0	0	0	1	1	0	0
3-Jul	12.0	12	85	0	5	0	0	0	0	0	1	2	2
4-Jul	24.0	26	111	2	7	0	0	0	0	0	1	1	3
5-Jul	20.0	48	159	1	8	0	0	0	0	0	1	1	4
6-Jul	24.0	22	181	3	11	1	1	0	0	0	1	1	5
7-Jul	24.0	14	195	3	14	0	1	0	0	0	1	2	7
6-Jul	24.0	22	22	3	3	1	1	0	0	0	0	1	0
7-Jul	24.0	14	36	3	0	0	0	0	0	0	0	2	0
8-Jul	24.0	10	46	3	1	0	0	0	0	0	0	2	0
9-Jul	24.0	11	57	2	3	0	0	0	0	0	0	4	0
10-Jul	24.0	2	59	0	3	1	0	0	0	0	0	0	0
11-Jul	24.0	1	60	0	3	0	0	0	0	1	0	0	2
12-Jul	24.0	13	73	0	3	0	1	0	0	0	1	2	4
13-Jul	24.0	19	92	2	5	0	1	0	0	0	1	7	11
14-Jul	24.0	21	113	1	6	0	1	0	0	0	1	2	13
15-Jul	24.0	10	123	0	6	0	1	0	0	0	1	4	17
16-Jul	24.0	25	148	2	8	0	1	0	0	0	1	4	21
17-Jul	24.0	38	186	7	15	1	2	0	0	0	1	6	27
18-Jul	24.0	21	207	1	16	0	2	0	0	0	1	6	33
19-Jul	24.0	24	231	0	16	0	2	0	0	0	1	9	42
20-Jul	24.0	12	243	1	17	1	3	0	0	0	1	0	42
21-Jul	24.0	46	289	1	18	0	3	0	0	0	1	2	44
22-Jul	24.0	53	342	2	20	2	5	0	0	0	1	2	46
23-Jul	24.0	58	400	2	22	4	9	0	0	0	1	2	48
24-Jul	24.0	40	440	2	24	0	9	0	0	0	1	0	48
25-Jul	24.0	21	461	3	27	2	11	0	0	0	1	0	48
26-Jul	24.0	15	476	1	28	1	12	0	0	0	1	0	48
27-Jul	24.0	9	485	0	28	2	14	0	0	0	1	0	48
28-Jul	24.0	4	489	0	28	1	15	0	0	1	2	1	49
29-Jul	24.0	12	501	0	28	2	17	0	0	0	2	0	49
30-Jul	24.0	14	515	1	29	1	18	0	0	0	2	2	51
31-Jul	24.0	6	521	1	30	1	19	0	0	0	2	1	52
1-Aug	24.0	6	527	0	30	4	23	0	0	0	2	0	52

Table 21. Age composition of sockeye salmon collected in the Crescent River 1979-2001.

	Percentage Compostion by Age Class [a, b, c]								
Year	1.1	1.2	1.3	1.4	2.1	2.2	2.3	Other	Sample Size
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	1,117
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
1991	0.0	14.9	50.4	0.3	0.0	16.8	16.5	1.1	357
1992	0.0	2.6	21.7	0.0	0.0	12.4	61.9	1.6	194
1993	0.2	8.8	37.2	0.0	0.9	5.8	46.9	0.2	465
1994	0.2	6.6	49.6	0.4	0.4	12.3	30.5	0.2	547
1995	0.4	9.2	18.4	0.6	0.2	9.4	61.7	0.2	543
1996	0.0	15.2	25.4	0.0	0.0	22.9	35.0	0.5	394
1997	0.0	10.6	56.0	0.0	0.2	6.6	26.6	0.0	640
1998	0.0	9.9	44.5	0.4	0.0	10.1	35.2	0.0	577
1999	0.0	21.4	39.4	0.4	0.1	9.2	29.3	0.2	912
2000	0.0	2.5	72.8	0.0	0.0	2.2	22.4	0.0	357
2001	0.0	15.7	21.0	0.9	0.5	22.7	38.8	0.4	572

[a] Percentages weighted by total numbers in the escapement: 1979-1981, 1986-2001.

[b] 1979-1997 from Waltemyer, ADF&G, Soldotna.

[c] 1998-2001 from Tobias, ADF&G, Soldotna.

Table 22. Length composition of the major age classes of sockeye salmon collected in the Crescent River 1980-2001. Length measured from mid-eye to fork-of-tail.[a, b]

		Male			Female			
Year	Age Class	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ratio Male-Female
1997	0.3	569	4	51	544	5	31	1.7:1
1980	1.2	472	6	47	471	7	31	1.5:1
1981		522	9	59	491	9	33	1.8:1
1982		467	6	47	487	7	25	1.9:1
1991		517	6	36	490	8	17	2.1:1
1996		477	6	41	510	7	19	2.2:1
1997		511	3	81	495	3	82	1.0:1
1999		468	4	136	478	8	59	2.3:1
2001		462	4	61	486	4	29	2.1:1
1980	1.3	568	2	167	549	2	223	0.7:1
1981		576	3	121	555	3	172	0.7:1
1982		586	1	303	556	1	259	1.2:1
1983		570	2	111	542	2	169	0.7:1
1984		574	5	60	552	2	72	0.8:1
1985		565	4	75	551	2	111	0.7:1
1987		601	3	54	573	3	37	1.5:1
1988		581	2	195	550	2	138	1.4:1
1989		593	1	320	561	2	271	1.2:1
1990		592	3	184	571	0	120	1.5:1
1991		560	3	105	543	3	75	1.4:1
1992		555	9	24	535	5	18	1.3:1
1993		578	3	81	559	2	92	0.9:1
1994		563	2	124	547	2	147	0.8:1
1995		581	4	40	555	2	60	0.7:1
1996		607	5	50	586	4	50	1.0:1
1997		574	2	142	547	2	119	1.2:1
1998		583	2	114	556	2	143	0.8:1
1999		575	3	164	545	2	195	0.8:1
2000		598	3	99	565	2	161	1.1:1
2001		580	4	45	561	2	75	0.6:1

-Continued-

Table 22 (p. 2 of 2)

		Male			Female			
Year	Age Class	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ratio Male-Female
1981	2.2	487	6	40	519	5	57	0.7:1
1983		494	4	93	488	3	89	1.0:1
1984		499	4	81	507	4	75	1.1:1
1985		496	5	75	490	4	47	1.6:1
1988		487	5	72	496	4	60	1.2:1
1991		515	5	42	498	6	18	2.3:1
1992		486	12	10	492	5	14	0.7:1
1994		466	4	54	481	6	13	4.2:1
1996		497	5	65	525	5	29	2.2:1
1998		497	7	27	515	3	31	0.9:1
2001		481	3	87	494	4	43	2.0:1
1980	2.3	584	2	158	554	2	237	0.7:1
1983		569	4	43	550	2	80	0.5:1
1984		581	2	261	553	2	202	1.3:1
1985		568	4	94	551	2	161	0.6:1
1986		573	5	44	556	3	45	1.0:1
1987		595	4	49	573	3	37	1.3:1
1988		585	3	110	556	2	83	1.3:1
1989		594	3	72	568	3	37	1.9:1
1990		601	0	165	571	0	72	2.3:1
1991		558	4	36	537	4	23	1.6:1
1992		572	4	58	547	3	62	0.9:1
1993		585	2	104	558	2	114	0.9:1
1994		570	2	86	549	3	81	1.1:1
1995		581	2	154	553	2	181	0.9:1
1996		604	4	222	577	3	72	3.1:1
1997		590	3	84	569	2	86	1.0:1
1998		584	3	85	563	2	118	0.7:1
1999		575	3	138	545	2	129	1.1:1
2000		599	2	132	564	1	225	1.1:1
2001		578	3	91	559	2	131	0.7:1

[a] 1980-1997 from Waltemyer, ADF&G, Soldotna.
[b] 1998-2001 from Tobias, ADF&G, Soldotna.

Table 23. Estimated salmon escapment into the Yentna River, 7 July through 5August 2001. 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
7-Jul	436	436	50	50	0	0	0	0	0	0
8-Jul	389	825	132	182	16	16	0	0	17	17
9-Jul	399	1,224	99	281	0	16	31	31	50	67
10-Jul	660	1,884	297	578	52	68	65	96	0	67
11-Jul	533	2,417	438	1,016	154	222	20	116	95	162
12-Jul	1,049	3,466	319	1,335	134	356	0	116	0	162
13-Jul	736	4,202	672	2,007	161	517	105	221	29	191
14-Jul	620	4,822	926	2,933	104	621	119	340	0	191
15-Jul	834	5,656	1,626	4,559	132	753	73	413	0	191
16-Jul	2,542	8,198	4,272	8,831	964	1,717	273	686	65	256
17-Jul	7,196	15,394	4,656	13,487	337	2,054	1,126	1,812	53	309
18-Jul	7,143	22,537	6,277	19,764	694	2,748	2,238	4,050	0	309
19-Jul	7,450	29,987	8,878	28,642	889	3,637	1,349	5,399	118	427
20-Jul	4,559	34,546	6,595	35,237	987	4,624	796	6,195	0	427
21-Jul	809	35,355	1,260	36,497	65	4,689	107	6,302	10	437
22-Jul	497	35,852	399	36,896	47	4,736	26	6,328	0	437
23-Jul	4,218	40,070	1,302	38,198	175	4,911	112	6,440	0	437
24-Jul	6,991	47,061	5,757	43,955	602	5,513	515	6,955	0	437
25-Jul	5,565	52,626	8,596	52,551	635	6,148	291	7,246	59	496
26-Jul	6,181	58,807	16,023	68,574	1,490	7,638	2,063	9,309	48	544
27-Jul	8,241	67,048	19,948	88,522	2,010	9,648	2,275	11,584	0	544
28-Jul	6,492	73,540	19,655	108,177	1,960	11,608	2,251	13,835	37	581
29-Jul	3,409	76,949	22,957	131,134	1,410	13,018	3,503	17,338	22	603
30-Jul	1,892	78,841	15,792	146,926	1,245	14,263	4,554	21,892	20	623
31-Jul	871	79,712	12,985	159,911	966	15,229	3,766	25,658	12	635
1-Aug	1,304	81,016	11,853	171,764	1,268	16,497	3,301	28,959	42	677
2-Aug	1,236	82,252	12,307	184,071	1,916	18,413	4,010	32,969	0	677
3-Aug	492	82,744	11,847	195,918	1,640	20,053	3,138	36,107	0	677
4-Aug	296	83,040	11,687	207,605	1,693	21,746	4,464	40,571	42	719
5-Aug	492	83,532	9,518	217,123	1,822	23,568	6,506	47,077	30	749

Table 24. Estimated salmon escapement into the Yentna River 1981-2001.

Date	Sockeye	Pink	Chum	Coho	Chinook	Total
1981	139,401	36,054	19,765	17,017	9	212,246
1982	113,847	447,167	27,830	34,089		622,933
1983	104,414	60,661	10,802	8,867		184,744
1984	149,375	369,299	26,508	18,172		563,354
1985	107,124	120,990	12,092	9,181	404	249,791
1986	92,076	673,901	56,656	23,457	1,112	847,202
1987	66,054	84,099	17,859	6,279	407	174,698
1988	52,330	137,027	49,074	12,173	444	251,048
1989	96,269	173,698	63,379	25,695	393	359,434
1990	140,290	244,569	33,566	21,346	607	440,378
1991	109,632	75,377	21,655	57,275	204	264,143
1992	66,083	239,378	30,062	29,073	107	364,703
1993	141,694	227,171	28,021	37,752	363	435,001
1994	128,032	79,178	18,971	25,173	226	251,580
1995	121,220	103,990	31,473	74,406	346	331,435
1996	90,660	98,236	21,056	35,420	345	245,717
1997	157,822	28,960	12,671	13,670	297	213,420
1998	119,623	155,193	10,212	24,769	505	310,302
1999	99,029	62,394	7,913	37,933	1,053	208,322
2000	133,094	246,116	7,023	40,787	667	427,687
2001	83,532	217,123	23,568	47,077	749	372,049

Table 25. Salmon ecapement observations in selected Susitna River tributaries 2001.

	Number of Fish Observed or Estimated				
	Sockeye	Pink	Chum	Coho	Chinook
Chelatna Lake[a]	no weir				
Deception Creek[b]					1,975
Rabideux Creek[b]				656	
Birch Creek[b]				1,470	
Question Creek[b]				450	
Answer Creek[b]				371	
Goose Creek[b]					no count
Little Willow Creek[b]					2,084
Montana Creek[b]					1,930
Prairie Creek[b]					5,191
Sheep Creek[b]					no count
Willow Creek[b]					3,188
Alexander Creek[b]					2,282
Deshka River Weir[b]				29,927	28,704
Peters Creek[b]					4,226
Lake Creek[b]					4,661
Cache Creek[b]					624
Talachulitna River[b]					3,309

[a] Fandrei, G., Cook Inlet Aquaculture Association, personal communication.

[b] Rutz, D. R. And D. E. Sweet, 2001.

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Table 26. Cumulative proportion by date of sockeye salmon counts recorded in the Yentna River 1981-2001.

	Cumulative Proportion[a]																				
Date	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
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										0.002				
07-Jul	0.021	0.002	0.004	0.005	0.003	0.006	0.003	0.004	0.003	0.002	0.000	0.002	0.001	0.002	0.001	0.001	0.004	0.003	0.000	0.007	0.005
08-Jul	0.023	0.002	0.004	0.005	0.003	0.006	0.004	0.008	0.006	0.005	0.001	0.003	0.002	0.004	0.001	0.003	0.006	0.006	0.001	0.013	0.010
09-Jul	0.026	0.002	0.005	0.006	0.004	0.007	0.004	0.012	0.009	0.008	0.001	0.005	0.004	0.008	0.002	0.005	0.009	0.010	0.002	0.020	0.015
10-Jul	0.056	0.002	0.005	0.007	0.005	0.008	0.005	0.016	0.012	0.010	0.002	0.007	0.005	0.010	0.003	0.007	0.011	0.017	0.005	0.024	0.023
11-Jul	0.092	0.003	0.006	0.009	0.006	0.009	0.005	0.019	0.014	0.013	0.002	0.008	0.006	0.013	0.004	0.007	0.013	0.030	0.010	0.033	0.029
12-Jul	0.155	0.003	0.008	0.011	0.007	0.010	0.005	0.022	0.015	0.014	0.002	0.010	0.007	0.016	0.005	0.009	0.016	0.043	0.017	0.046	0.041
13-Jul	0.230	0.003	0.011	0.012	0.008	0.011	0.006	0.025	0.016	0.016	0.003	0.012	0.008	0.020	0.006	0.011	0.030	0.051	0.024	0.075	0.050
14-Jul	0.344	0.003	0.034	0.015	0.009	0.011	0.007	0.029	0.019	0.017	0.003	0.016	0.009	0.022	0.006	0.013	0.087	0.056	0.031	0.124	0.058
15-Jul	0.454	0.004	0.059	0.017	0.010	0.014	0.008	0.034	0.023	0.019	0.004	0.022	0.014	0.024	0.007	0.022	0.149	0.059	0.044	0.263	0.068
16-Jul	0.521	0.005	0.096	0.023	0.010	0.022	0.010	0.039	0.026	0.020	0.005	0.035	0.134	0.026	0.007	0.131	0.197	0.064	0.057	0.407	0.098
17-Jul	0.563	0.016	0.131	0.142	0.011	0.027	0.014	0.043	0.051	0.022	0.005	0.062	0.284	0.029	0.012	0.348	0.229	0.072	0.068	0.490	0.184
18-Jul	0.599	0.043	0.179	0.232	0.012	0.036	0.020	0.046	0.103	0.025	0.009	0.086	0.360	0.056	0.022	0.519	0.254	0.094	0.081	0.600	0.270
19-Jul	0.638	0.155	0.351	0.345	0.013	0.041	0.027	0.090	0.161	0.105	0.028	0.120	0.382	0.115	0.068	0.614	0.280	0.159	0.108	0.730	0.359
20-Jul	0.681	0.329	0.567	0.458	0.014	0.042	0.034	0.197	0.202	0.217	0.100	0.148	0.420	0.167	0.160	0.671	0.316	0.239	0.160	0.849	0.414
21-Jul	0.732	0.527	0.693	0.554	0.014	0.043	0.047	0.269	0.234	0.284	0.193	0.184	0.464	0.250	0.251	0.702	0.367	0.304	0.222	0.910	0.423
22-Jul	0.801	0.627	0.722	0.626	0.016	0.052	0.059	0.303	0.280	0.327	0.302	0.229	0.513	0.297	0.335	0.745	0.434	0.327	0.319	0.950	0.429
23-Jul	0.846	0.665	0.758	0.681	0.019	0.162	0.107	0.375	0.359	0.383	0.378	0.296	0.574	0.333	0.378	0.784	0.492	0.338	0.433	0.969	0.480
24-Jul	0.882	0.711	0.786	0.755	0.145	0.193	0.218	0.484	0.453	0.452	0.425	0.373	0.647	0.397	0.426	0.822	0.544	0.357	0.510	0.978	0.563
25-Jul	0.905	0.734	0.824	0.785	0.359	0.253	0.331	0.630	0.532	0.505	0.451	0.447	0.709	0.426	0.496	0.856	0.606	0.378	0.567	0.984	0.630
26-Jul	0.925	0.780	0.867	0.808	0.507	0.371	0.442	0.771	0.646	0.573	0.505	0.519	0.763	0.517	0.580	0.880	0.668	0.403	0.605	0.989	0.704
27-Jul	0.940	0.811	0.894	0.836	0.636	0.491	0.528	0.821	0.749	0.667	0.575	0.606	0.810	0.557	0.678	0.899	0.697	0.426	0.653	0.994	0.803
28-Jul	0.950	0.831	0.905	0.855	0.782	0.606	0.587	0.858	0.799	0.734	0.637	0.674	0.831	0.599	0.743	0.913	0.722	0.454	0.702	0.996	0.880
29-Jul	0.958	0.847	0.913	0.866	0.903	0.752	0.625	0.886	0.854	0.769	0.674	0.734	0.857	0.662	0.796	0.928	0.743	0.493	0.767	0.996	0.921
30-Jul	0.969	0.859	0.921	0.874	0.942	0.831	0.655	0.916	0.864	0.796	0.720	0.794	0.893	0.712	0.832	0.941	0.767	0.560	0.804	0.997	0.944
31-Jul	0.976	0.890	0.925	0.885	0.960	0.861	0.686	0.937	0.868	0.825	0.754	0.825	0.927	0.750	0.852	0.943	0.795	0.622	0.848	0.999	0.954
01-Aug	0.980	0.933	0.929	0.893	0.970	0.882	0.709	0.946	0.873	0.859	0.779	0.858	0.938	0.788	0.875	0.948	0.826	0.684	0.878	1.000	0.970
02-Aug	0.986	0.948	0.937	0.901	0.978	0.908	0.750	0.960	0.879	0.907	0.806	0.881	0.950	0.830	0.897	0.954	0.852	0.762	0.895		0.985
03-Aug	0.988	0.955	0.941	0.909	0.983	0.917	0.789	0.969	0.889	0.947	0.850	0.896	0.967	0.862	0.915	0.965	0.870	0.830	0.914		0.991
04-Aug	0.990	0.962	0.945	0.920	0.987	0.924	0.825	0.975	0.907	0.962	0.891	0.910	0.985	0.889	0.928	0.981	0.893	0.876	0.934		0.994
05-Aug	0.991	0.965	0.949	0.926	0.990	0.935	0.857	0.981	0.923	0.971	0.930	0.915	0.992	0.919	0.944	0.991	0.911	0.907	0.947		1.000
06-Aug	0.992	0.967	0.953	0.934	0.994	0.940	0.875	0.984	0.936	0.978	0.942	0.922	0.996	0.942	0.975	0.996	0.923	0.927	0.955		

- Continued -

Table 26. (p. 2 of 3)

	Cumulative Proportion[a]																				
Date	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
07-Aug	0.992	0.970	0.955	0.939	0.997	1.000	0.889	0.989	0.944	0.985	0.959	0.929	1.000	0.962	0.990	1.000	0.931	0.938	0.963		
08-Aug	0.992	0.972	0.958	0.944	1.000		0.900	0.992	0.949	0.990	0.975	0.941		0.974	0.992		0.945	0.947	0.971		
09-Aug	0.993	0.975	0.959	0.949			0.932	0.994	0.954	0.994	0.986	0.966		0.984	0.996		0.961	0.953	0.978		
10-Aug	0.994	0.977	0.959	0.954			0.962	0.996	0.958	0.995	0.994	0.984		0.992	1.000		0.982	0.959	0.988		
11-Aug	0.995	0.979	0.962	0.958			0.986	1.000	0.962	0.998	0.999	1.000		0.996			0.992	0.966	0.994		
12-Aug	0.996	0.981	0.968	0.962			0.996		0.966	1.000	1.000			1.000			1.000	0.973	0.997		
13-Aug	0.997	0.982	0.974	0.965			1.000		0.975									0.979	0.999		
14-Aug	0.997	0.984	0.977	0.968					0.985									0.984	1.000		
15-Aug	0.998	0.985	0.979	0.970					0.992									0.986			
16-Aug	0.998	0.986	0.982	0.973					0.995									0.988			
17-Aug	0.998	0.987	0.985	0.975					0.997									0.991			
18-Aug	0.998	0.988	0.987	0.977					0.998									0.993			
19-Aug	0.998	0.989	0.988	0.979					0.999									0.996			
20-Aug	0.999	0.990	0.990	0.980					1.000									0.998			
21-Aug	0.999	0.990	0.991	0.981														1.000			
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		0.993	0.994	0.992																	
26-Aug		0.994	0.995	0.994																	
27-Aug		0.994	0.996	0.996																	
28-Aug		0.995	0.997	0.996																	
29-Aug		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																		
03-Sep		0.999	0.999																		
04-Sep		1.000	1.000																		
Midpoint	16-Jul	21-Jul	20-Jul	21-Jul	26-Jul	28-Jul	27-Jul	25-Jul	25-Jul	25-Jul	26-Jul	26-Jul	22-Jul	26-Jul	26-Jul	18-Jul	24-Jul	30-Jul	24-Jul	18-Jul	24-Jul
No. days for 80%[b]	14	14	12	17	6	11+	17	11	18	15	17	17	16	19	15	13	22	18	16	8	13

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

[b] Inclusive dates: date proportion of escapement reached 10% through date proportion of escapement reached 90%.

FN: 01YECUM*.XLS

Table 27. Daily adjusted fish wheel catch by species for the north bank of the Yentna River, 7 July through 5 August 2001.

		Sockeye		Pink		Chum		Coho		Chinook	
Date	Hours open[a]	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
07-Jul	5.7	3	3	0	0	0	0	0	0	0	0
08-Jul	4.2	5	8	2	2	0	0	0	0	0	0
09-Jul	7.7	9	17	4	6	0	0	0	0	2	2
10-Jul	4.6	3	20	3	9	0	0	1	1	0	2
11-Jul	8.2	4	24	15	24	6	6	1	2	3	5
12-Jul	3.3	3	27	1	25	1	7	0	2	0	5
13-Jul	6.7	13	40	12	37	2	9	2	4	1	6
14-Jul	4.6	10	50	14	51	1	10	1	5	0	6
15-Jul	5.7	12	62	31	82	3	13	1	6	0	6
16-Jul	6.1	19	81	58	140	13	26	2	8	1	7
17-Jul	5.0	75	156	61	201	4	30	6	14	0	7
18-Jul	6.2	64	220	99	300	16	46	10	24	0	7
19-Jul	6.3	62	282	155	455	8	54	14	38	1	8
20-Jul	3.8	26	308	83	538	13	67	5	43	0	8
21-Jul	0.0	0	308	0	538	0	67	0	43	0	8
22-Jul	0.0	0	308	0	538	0	67	0	43	0	8
23-Jul	6.1	83	391	30	568	4	71	2	45	0	8
24-Jul	5.1	81	472	139	707	16	87	8	53	0	8
25-Jul	5.9	88	560	224	931	15	102	9	62	0	8
26-Jul	4.8	73	633	388	1,319	49	151	29	91	2	10
27-Jul	3.8	47	680	233	1,552	21	172	10	101	0	10
28-Jul	4.8	84	764	300	1,852	36	208	17	118	1	11
29-Jul	4.9	36	800	539	2,391	33	241	25	143	0	11
30-Jul	4.6	20	820	398	2,789	26	267	35	178	0	11
31-Jul	5.7	17	837	506	3,295	43	310	117	295	0	11
01-Aug	3.9	19	856	349	3,644	36	346	40	335	1	12
02-Aug	4.1	23	879	289	3,933	45	391	40	375	0	12
03-Aug	4.7	11	890	362	4,295	42	433	40	415	0	12
04-Aug	4.8	4	894	286	4,581	44	477	34	449	1	13
05-Aug	3.8	4	898	124	4,705	24	501	28	477	0	13

[a] Fish wheel included 33 whitefish and 1 long-nosed sucker.

FN: 01YE1FWR.XLS

Table 28. Daily adjusted fish wheel catch by species for the south bank of the Yentna River, 7 July through 5 August 2001.

		Sockeye		Pink		Chum		Coho		Chinook	
Date	Hours open[a]	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
07-Jul	5.8	7	7	2	2	0	0	0	0	0	0
08-Jul	10.4	17	24	4	4	2	2	0	0	2	2
09-Jul	7.1	16	40	2	6	0	2	2	2	1	3
10-Jul	4.2	9	49	2	8	1	3	0	2	0	3
11-Jul	6.5	26	75	8	16	2	5	0	2	2	5
12-Jul	4.7	7	82	2	18	0	5	0	2	0	5
13-Jul	7.7	31	113	28	46	9	14	4	6	0	5
14-Jul	7.4	20	133	32	78	5	19	6	12	0	5
15-Jul	5.9	33	166	49	127	3	22	3	15	0	5
16-Jul	6.4	74	240	79	206	18	40	8	23	1	6
17-Jul	6.3	127	367	58	264	5	45	31	54	2	8
18-Jul	5.9	155	522	79	343	2	47	62	116	0	8
19-Jul	6.1	191	713	122	465	22	69	31	147	3	11
20-Jul	3.7	147	860	146	611	21	90	25	172	0	11
21-Jul	4.0	91	951	11	622	1	91	1	173	0	11
22-Jul	0.0	0	951	0	622	0	91	0	173	0	11
23-Jul	6.3	228	1,179	29	651	4	95	8	181	0	11
24-Jul	4.4	211	1,390	84	735	7	102	13	194	0	11
25-Jul	5.1	187	1,577	194	929	16	118	5	199	3	14
26-Jul	5.3	207	1,784	316	1,245	15	133	64	263	0	14
27-Jul	3.6	211	1,995	280	1,525	33	166	64	327	0	14
28-Jul	3.9	170	2,165	432	1,957	32	198	81	408	0	14
29-Jul	4.1	118	2,283	503	2,460	31	229	133	541	1	15
30-Jul	5.1	73	2,356	375	2,835	35	264	189	730	1	16
31-Jul	4.8	51	2,407	409	3,244	23	287	160	890	1	17
01-Aug	4.0	47	2,454	189	3,433	22	309	130	1,020	1	18
02-Aug	5.1	30	2,484	199	3,632	31	340	155	1,175	0	18
03-Aug	5.1	20	2,504	325	3,957	58	398	176	1,351	0	18
04-Aug	4.6	12	2,516	264	4,221	34	432	224	1,575	1	19
05-Aug	4.0	11	2,527	148	4,369	28	460	180	1,755	1	20

[a] Fish wheel catch included 19 whitefish.

Table 29. Age composition of sockeye salmon collected in the Yentna River 1986-2001.

	Percentage Compostion by Age Class[a, b, c]											
Year	0.2	0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	3.2	Sample Size
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
1991	2.0	10.1	0.1	25.2	44.1	0.1	0.1	7.0	11.1	0.1		1,509
1992	1.6	0.6	1.0	31.1	29.6	0.1	0.4	16.9	18.3	0.1	0.4	1,451
1993	1.0	4.6	0.1	32.1	35.5	0.0	0.4	11.7	14.5	0.1	0.0	1,390
1994	1.3	3.9	0.6	23.2	43.2	0.2	0.0	9.7	17.6	0.0	0.0	637
1995	2.2	5.1	0.8	19.7	51.3	0.4	0.2	8.5	11.6	0.0	0.2	507
1996	3.2	3.2	0.4	25.5	43.8	0.0	0.4	9.4	14.0	0.0	0.0	466
1997	1.1	10.5	0.1	32.4	43.7	0.1	0.1	4.7	7.2	0.0	0.0	534
1998	0.7	5.7	0.3	15.7	62.7	0.3	0.0	4.0	10.5	0.0	0.0	1,500
1999	3.6	3.4	0.0	23.4	52.0	0.9	0.0	8.6	8.1	0.0	0.0	444
2000	0.0	5.9	0.0	8.6	61.5	0.2	0.0	3.3	20.2	0.2	0.0	546
2001	0.0	3.4	0.8	21.3	47.8	0.0	0.4	8.4	17.7	0.0	0.0	475

[a] Percentages weighted by total numbers in the escapement: 1979-1981, 1986-2001.

[b] 1986-1997 from Waltemyer, ADF&G, Soldotna.

[c] 1998-2001 from Tobias, ADF&G, Soldotna.

FN: YEAGCOMP.XLS

Table 30. Length composition of the major age classes of sockeye salmon collected in the Yentna River 1986-2001. Length measured from mid-eye to fork-of-tail.[a]

		Male			Female			
Year	Age Class	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ratio Male-Female
1991	0.3	572	5	59	550	2	100	0.6:1
1997		598	5	41	559	4	38	1.1:1
1986	1.2	455	3	104	472	5	52	2.0:1
1987		484	3	158	477	2	156	1.0:1
1988		461	2	408	486	3	170	2.4:1
1989		463	4	246	485	4	122	2.0:1
1990		446	0	305	446	0	238	1.3:1
1991		460	3	253	484	2	130	2.0:1
1992		443	2	360	469	3	115	3.1:1
1993		465	2	279	494	2	167	1.7:1
1994		468	3	107	484	5	41	2.6:1
1995		460	4	58	472	6	42	1.4:1
1996		463	5	78	469	7	41	1.9:0
1997		479	4	110	479	3	133	0.8:1
1998		485	4	104	486	2	132	0.8:1
1999		469	5	56	484	4	48	1.2:1
2001		477	7	53	490	5	48	1.1:1
1986	1.3	579	3	172	563	2	216	0.8:1
1987		591	2	246	565	2	222	1.1:1
1988		580	2	365	552	1	359	1.0:1
1989		575	3	390	553	1	474	0.8:1
1990		573	0	400	552	0	526	0.7:1
1991		562	2	301	542	1	356	0.9:1
1992		546	4	188	543	2	242	0.8:1
1993		561	2	288	549	1	266	0.9:1
1994		596	3	133	561	2	142	0.9:1
1995		568	3	124	545	2	136	0.9:1
1996		589	3	107	568	2	97	1.1:1
1997		585	2	155	555	2	173	0.9:1
1998		562	1	453	538	1	487	0.9:1
1999		581	3	135	553	2	96	1.4:1
2000		600	2	180	568	2	156	1.2:1
2001		586	3	111	555	2	116	1.0:1
1992	2.2	451	3	181	471	6	53	3.4:1
1993		476	4	93	487	3	69	1.3:1

-Continued-

Table 30. (p. 2 of 2)

		Male			Female			
Year	Age Class	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ave Length[a] (mm)	Stndrd Error	Sample Size	Ratio Male-Female
1986	2.3	588	5	25	555	4	44	0.6:1
1987		583	4	62	566	3	52	1.2:1
1988		585	4	92	554	3	87	1.1:1
1990		574	0	73	542	0	96	0.8:1
1991		561	4	78	536	3	86	0.9:1
1992		564	3	123	538	4	126	1.0:1
1993		562	3	74	544	2	128	0.6:1
1994		600	5	56	561	2	56	1.0:1
1995		578	4	25	544	3	34	0.7:1
1996		585	5	31	558	4	34	0.9:1
1998		558	3	82	534	4	76	1.1:1
2000		597	4	55	563	3	55	1.0:1
2001		575	6	34	552	4	50	0.7:1

[a] 1986-1997 from Waltemyer, ADF&G, Soldotna.
[b] 1998-2001from Tobias, ADF&G, Soldotna.

Table 31. Cumulative proportion by date of pink salmon counts recorded in the Yentna River 1981-2001.

	Cumulative Proportion																				
Date	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
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										0.004				
07-Jul	0.015	0.000	0.003	0.000	0.011	0.001	0.022	0.000	0.003	0.000	0.002	0.000	0.001	0.000	0.002	0.000	0.008	0.000	0.000	0.001	0.000
08-Jul	0.021	0.000	0.003	0.000	0.012	0.001	0.025	0.000	0.008	0.000	0.005	0.000	0.002	0.001	0.003	0.000	0.012	0.000	0.000	0.001	0.001
09-Jul	0.025	0.000	0.004	0.000	0.015	0.001	0.029	0.000	0.013	0.000	0.006	0.001	0.004	0.002	0.005	0.000	0.017	0.000	0.000	0.001	0.001
10-Jul	0.037	0.000	0.004	0.000	0.018	0.001	0.031	0.000	0.018	0.000	0.007	0.001	0.005	0.002	0.008	0.000	0.023	0.001	0.001	0.001	0.003
11-Jul	0.039	0.000	0.005	0.001	0.021	0.001	0.035	0.000	0.026	0.000	0.009	0.001	0.006	0.003	0.010	0.000	0.028	0.001	0.001	0.001	0.005
12-Jul	0.039	0.000	0.006	0.001	0.025	0.001	0.041	0.000	0.034	0.000	0.010	0.001	0.007	0.004	0.013	0.000	0.033	0.001	0.001	0.001	0.006
13-Jul	0.042	0.000	0.009	0.001	0.030	0.001	0.047	0.000	0.043	0.001	0.012	0.001	0.008	0.006	0.015	0.000	0.037	0.002	0.002	0.002	0.009
14-Jul	0.050	0.000	0.030	0.001	0.033	0.002	0.051	0.000	0.052	0.001	0.014	0.002	0.009	0.007	0.018	0.000	0.048	0.002	0.002	0.003	0.014
15-Jul	0.057	0.000	0.039	0.001	0.038	0.003	0.056	0.001	0.058	0.001	0.016	0.002	0.014	0.008	0.021	0.000	0.058	0.003	0.005	0.003	0.021
16-Jul	0.061	0.000	0.056	0.001	0.042	0.007	0.065	0.001	0.060	0.001	0.018	0.003	0.134	0.011	0.025	0.002	0.070	0.006	0.005	0.006	0.041
17-Jul	0.062	0.001	0.098	0.003	0.046	0.011	0.075	0.001	0.071	0.002	0.019	0.005	0.284	0.018	0.044	0.006	0.079	0.008	0.006	0.007	0.062
18-Jul	0.072	0.002	0.171	0.008	0.050	0.014	0.088	0.001	0.105	0.002	0.027	0.009	0.360	0.049	0.075	0.009	0.092	0.018	0.008	0.008	0.091
19-Jul	0.082	0.010	0.288	0.023	0.053	0.015	0.099	0.002	0.158	0.014	0.063	0.017	0.382	0.095	0.120	0.015	0.113	0.053	0.014	0.012	0.132
20-Jul	0.105	0.021	0.400	0.067	0.056	0.016	0.110	0.005	0.196	0.030	0.092	0.028	0.420	0.139	0.159	0.023	0.125	0.105	0.030	0.027	0.162
21-Jul	0.132	0.040	0.511	0.126	0.060	0.017	0.135	0.013	0.224	0.050	0.120	0.050	0.464	0.210	0.206	0.035	0.141	0.150	0.040	0.061	0.168
22-Jul	0.158	0.056	0.565	0.190	0.064	0.021	0.156	0.019	0.255	0.084	0.151	0.078	0.513	0.293	0.248	0.061	0.186	0.180	0.067	0.124	0.170
23-Jul	0.236	0.078	0.638	0.277	0.078	0.059	0.180	0.032	0.287	0.132	0.180	0.126	0.574	0.354	0.301	0.111	0.220	0.202	0.092	0.167	0.176
24-Jul	0.311	0.126	0.704	0.365	0.135	0.125	0.222	0.061	0.349	0.190	0.216	0.212	0.647	0.467	0.377	0.174	0.257	0.244	0.126	0.230	0.202
25-Jul	0.398	0.162	0.743	0.420	0.226	0.222	0.307	0.129	0.420	0.263	0.257	0.322	0.709	0.548	0.460	0.256	0.301	0.298	0.159	0.301	0.242
26-Jul	0.464	0.192	0.791	0.466	0.329	0.369	0.407	0.231	0.493	0.342	0.308	0.459	0.763	0.628	0.533	0.319	0.348	0.360	0.183	0.428	0.316
27-Jul	0.512	0.237	0.820	0.510	0.475	0.535	0.537	0.338	0.570	0.433	0.361	0.561	0.810	0.693	0.596	0.404	0.391	0.435	0.213	0.580	0.408
28-Jul	0.580	0.330	0.843	0.578	0.636	0.695	0.624	0.459	0.638	0.514	0.441	0.668	0.831	0.741	0.671	0.514	0.433	0.509	0.252	0.684	0.498
29-Jul	0.639	0.447	0.855	0.669	0.763	0.830	0.668	0.589	0.691	0.580	0.499	0.751	0.857	0.796	0.732	0.631	0.523	0.600	0.310	0.752	0.604
30-Jul	0.705	0.562	0.864	0.728	0.833	0.894	0.701	0.662	0.730	0.640	0.567	0.815	0.893	0.854	0.781	0.727	0.603	0.671	0.371	0.805	0.677
31-Jul	0.752	0.654	0.871	0.784	0.877	0.924	0.729	0.722	0.748	0.722	0.640	0.862	0.927	0.906	0.812	0.737	0.654	0.740	0.394	0.884	0.736
01-Aug	0.795	0.735	0.879	0.837	0.903	0.957	0.741	0.768	0.759	0.815	0.677	0.899	0.938	0.937	0.847	0.757	0.702	0.796	0.434	0.943	0.791
02-Aug	0.819	0.824	0.903	0.873	0.926	0.979	0.767	0.826	0.770	0.884	0.703	0.924	0.950	0.958	0.886	0.792	0.738	0.850	0.475	1.000	0.848
03-Aug	0.834	0.896	0.908	0.903	0.942	0.991	0.799	0.878	0.781	0.927	0.751	0.941	0.967	0.970	0.921	0.856	0.788	0.898	0.552		0.902
04-Aug	0.849	0.934	0.912	0.925	0.956	0.996	0.838	0.909	0.812	0.947	0.804	0.954	0.985	0.978	0.955	0.923	0.836	0.926	0.629		0.956
05-Aug	0.865	0.953	0.918	0.943	0.966	0.999	0.870	0.931	0.850	0.964	0.870	0.961	0.992	0.985	0.970	0.968	0.877	0.945	0.696		1.000
06-Aug	0.883	0.962	0.924	0.956	0.978	1.000	0.887	0.951	0.883	0.976	0.911	0.967	0.996	0.991	0.979	0.987	0.904	0.956	0.733		
07-Aug	0.897	0.969	0.931	0.962	0.991		0.895	0.969	0.912	0.984	0.951	0.971	1.000	0.995	0.986	1.000	0.925	0.966	0.769		

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Table 31. (p. 2 of 2)

	Cumulative Proportion																				
Date	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
08-Aug	0.905	0.978	0.936	0.969	1.000		0.901	0.982	0.924	0.990	0.971	0.979		0.997	0.990		0.937	0.976	0.814		
09-Aug	0.913	0.984	0.937	0.975			0.921	0.990	0.938	0.994	0.985	0.990		0.998	0.995		0.951	0.981	0.863		
10-Aug	0.918	0.989	0.938	0.982			0.950	0.995	0.943	0.997	0.995	0.997		1.000	1.000		0.974	0.988	0.917		
11-Aug	0.924	0.991	0.943	0.986			0.975	1.000	0.948	0.998	0.999	1.000					0.997	0.991	0.962		
12-Aug	0.929	0.994	0.951	0.988			0.989		0.952	1.000	1.000						1.000	0.994	0.982		
13-Aug	0.930	0.996	0.958	0.991			0.996		0.963									0.996	0.994		
14-Aug	0.931	0.997	0.966	0.992			1.000		0.974									0.998	1.000		
15-Aug	0.935	0.998	0.971	0.994					0.989									0.998			
16-Aug	0.942	0.998	0.978	0.994					0.994									0.999			
17-Aug	0.949	0.999	0.984	0.995					0.997									0.999			
18-Aug	0.958	0.999	0.988	0.996					0.998									0.999			
19-Aug	0.967	0.999	0.990	0.997					0.999									1.000			
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		0.994	0.998																	
24-Aug	0.995		0.995	0.998																	
25-Aug	0.997		0.996	0.999																	
26-Aug	0.999		0.996	0.999																	
27-Aug	1.000		0.997	0.999																	
28-Aug	1.000		0.998	0.999																	
29-Aug			0.998	0.999																	
30-Aug			0.999	1.000																	
31-Aug			0.999																		
01-Sep			0.999																		
02-Sep			0.999																		
03-Sep			1.000																		
Midpoint	27-Jul	30-Jul	21-Jul	27-Jul	28-Jul	27-Jul	27-Jul	29-Jul	27-Jul	28-Jul	30-Jul	27-Jul	22-Jul	25-Jul	26-Jul	28-Jul	29-Jul	28-Jul	3-Aug	27-Jul	29-Jul
No. days for 80%[a]	20	12	16	14	9	8+	20	11	21	12	17	11	16	12	16	13	19	16	18	11	16

[a] Inclusive dates: date proportion of escapement reached 10% through date proportion of escapement reached 90%.

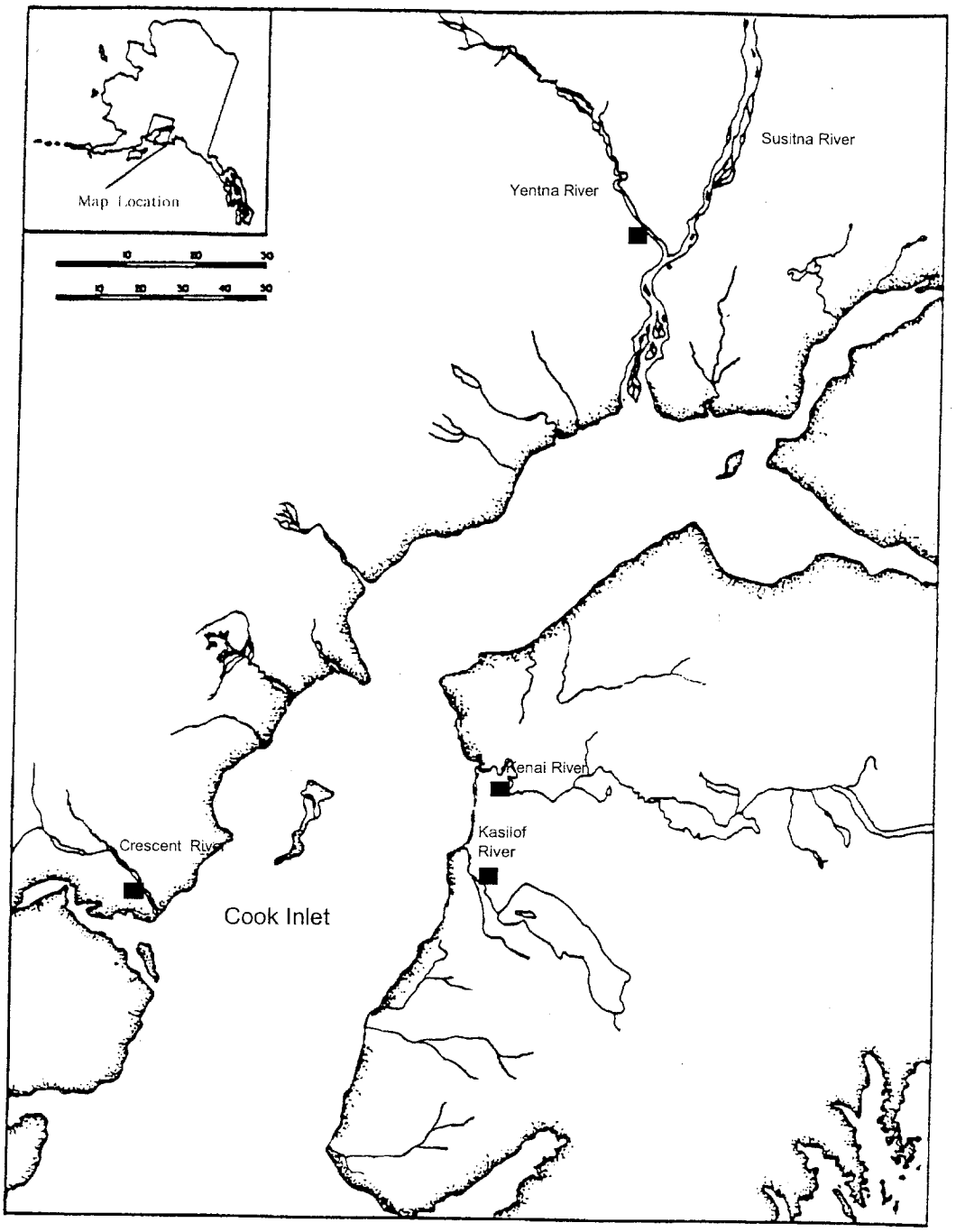

Figure 1. Upper Cook Inlet, Alaska, and sites where salmon escapement was monitored with side-scanning sonar.

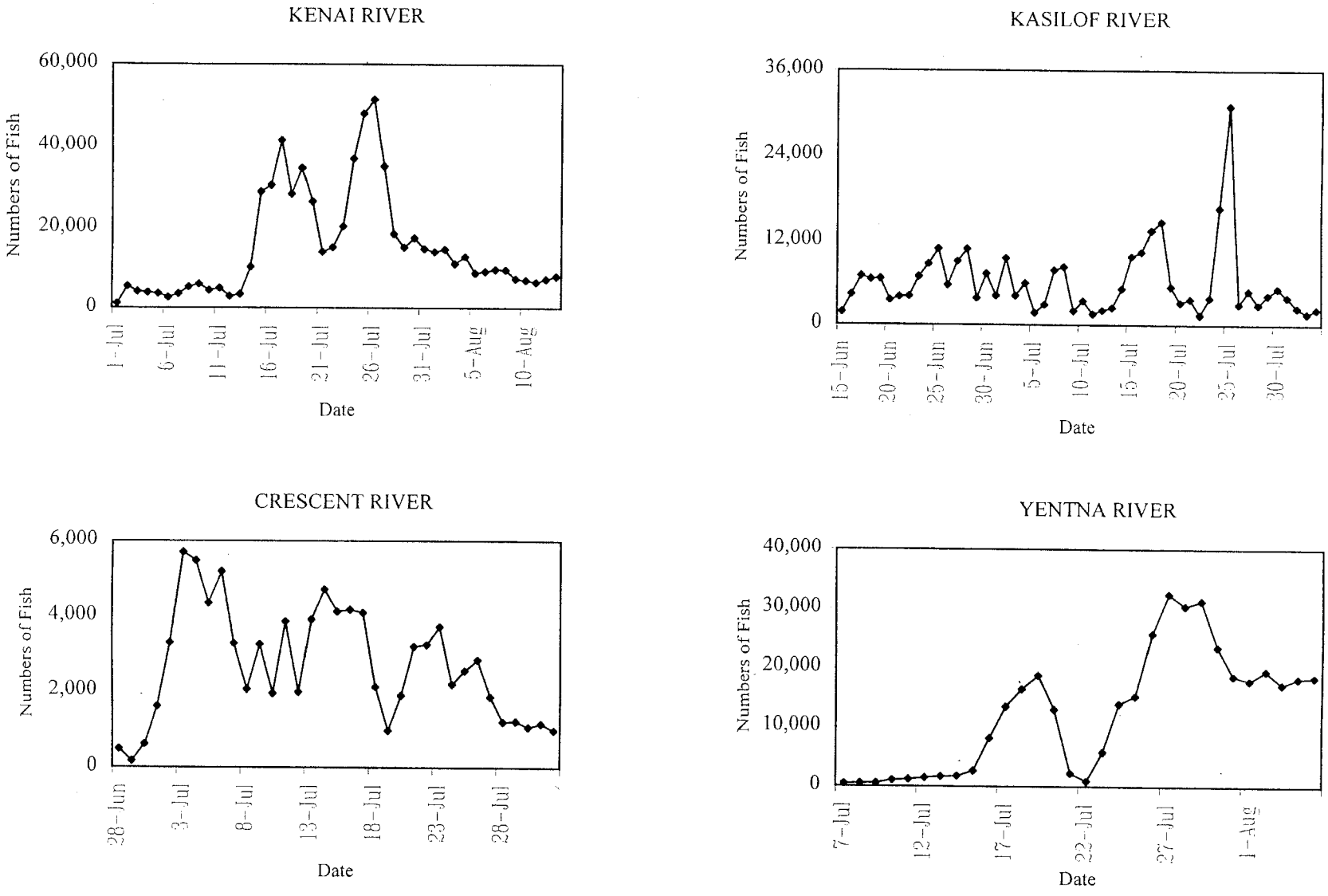

Figure 2. Daily escapement of sockeye salmon into the Kenai, Kasilof, Crescent and Yentna Rivers 2001.

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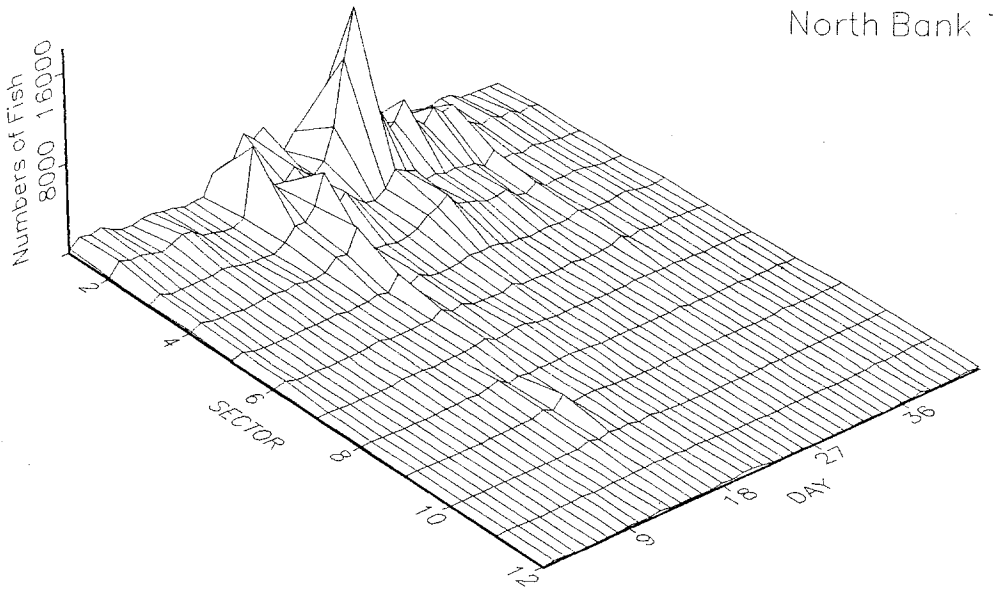


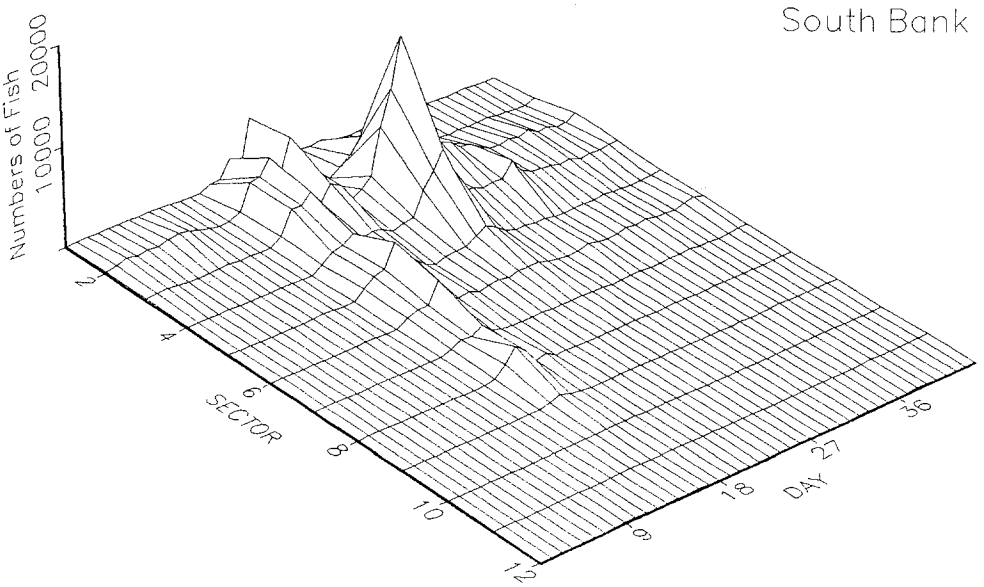


Figure 3. Distribution of salmon sonar counts by sector in the Kenai River 2001.

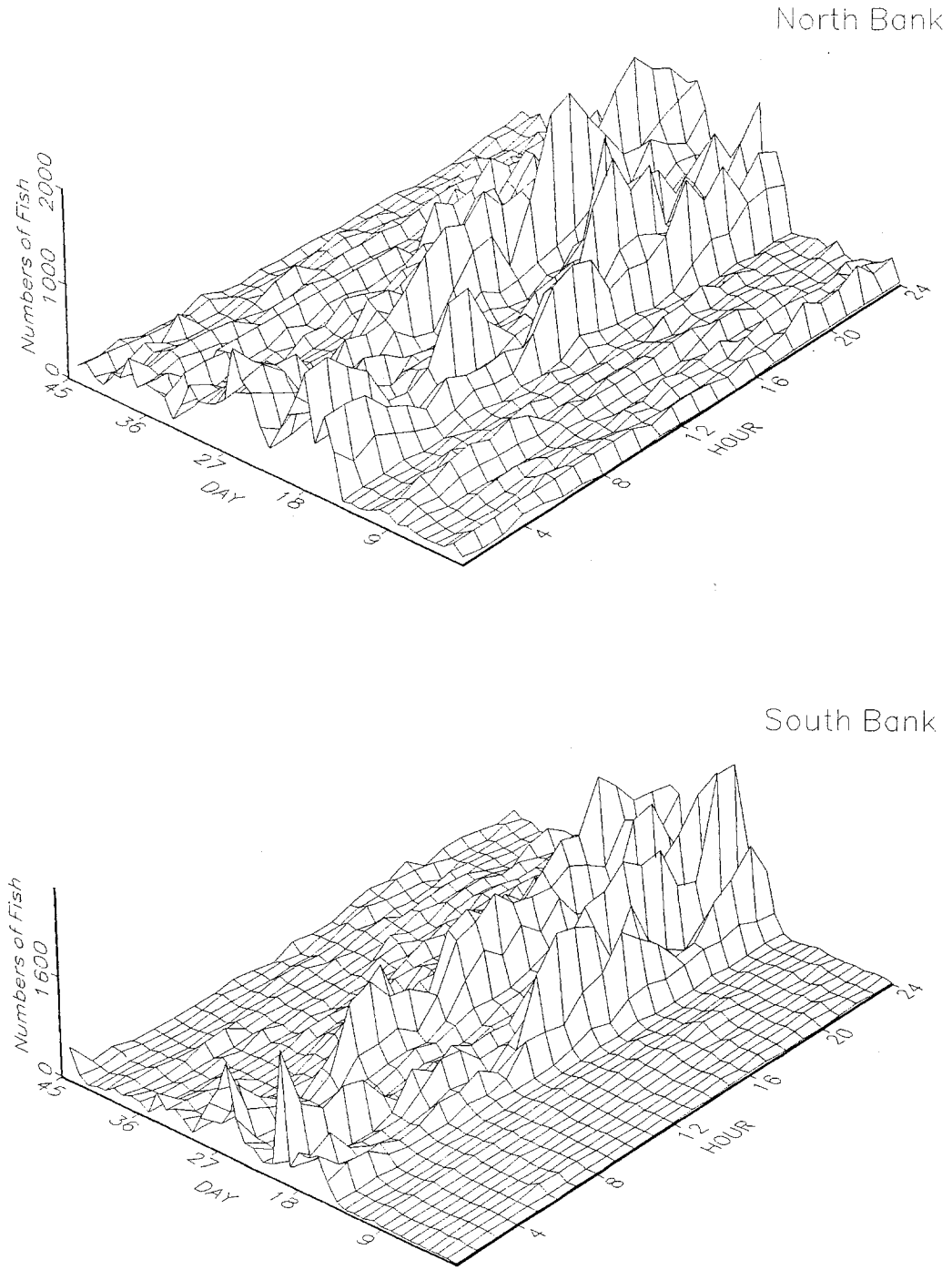


Figure 4. Hourly distribution of salmon migrating past the Kenai River sonar counters 2001.

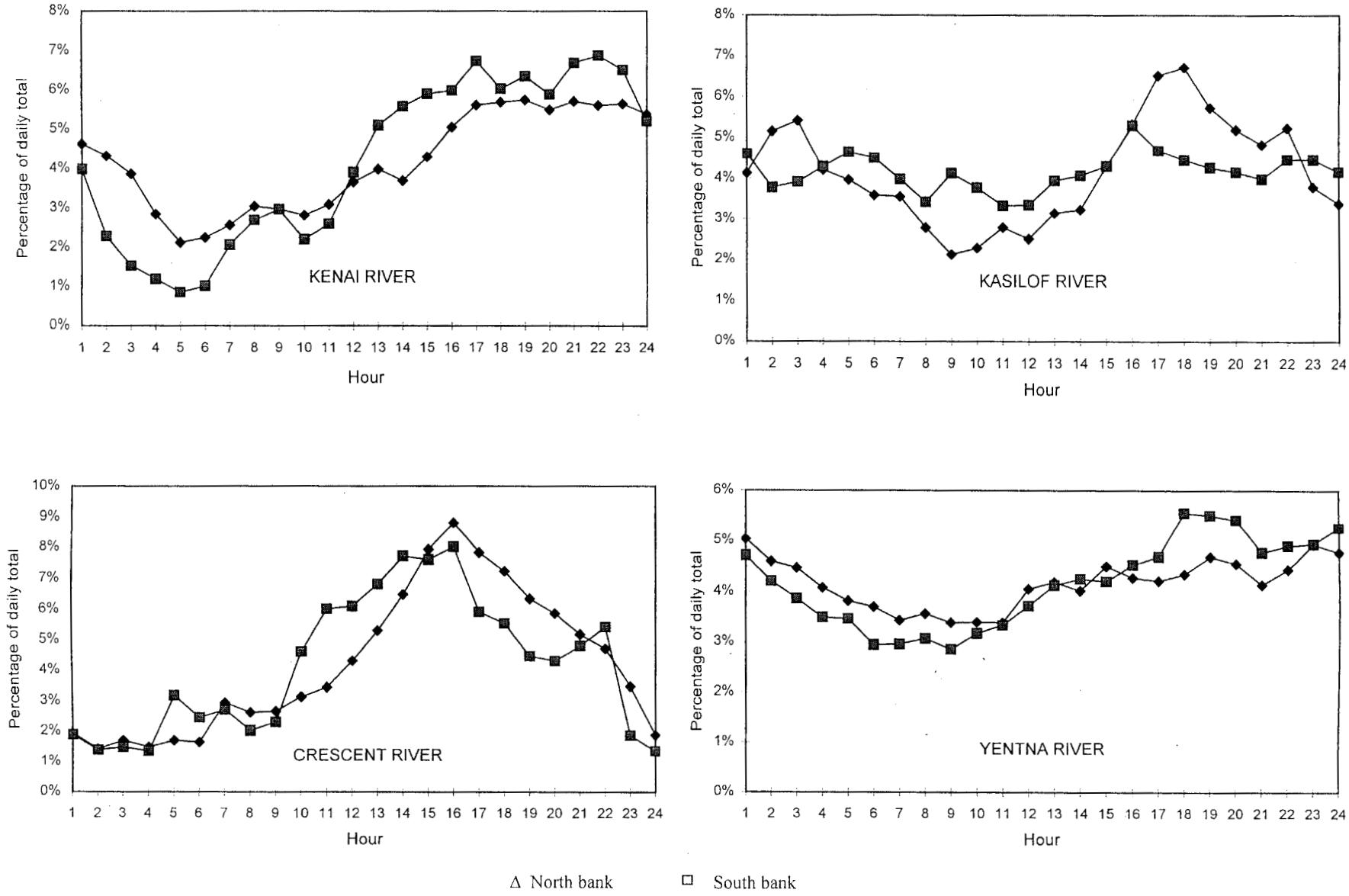


Figure 5. Mean hourly passage rates of salmon migrating past the Kenai, Kasilof, Crescent and Yentna River sonar counters 2001.

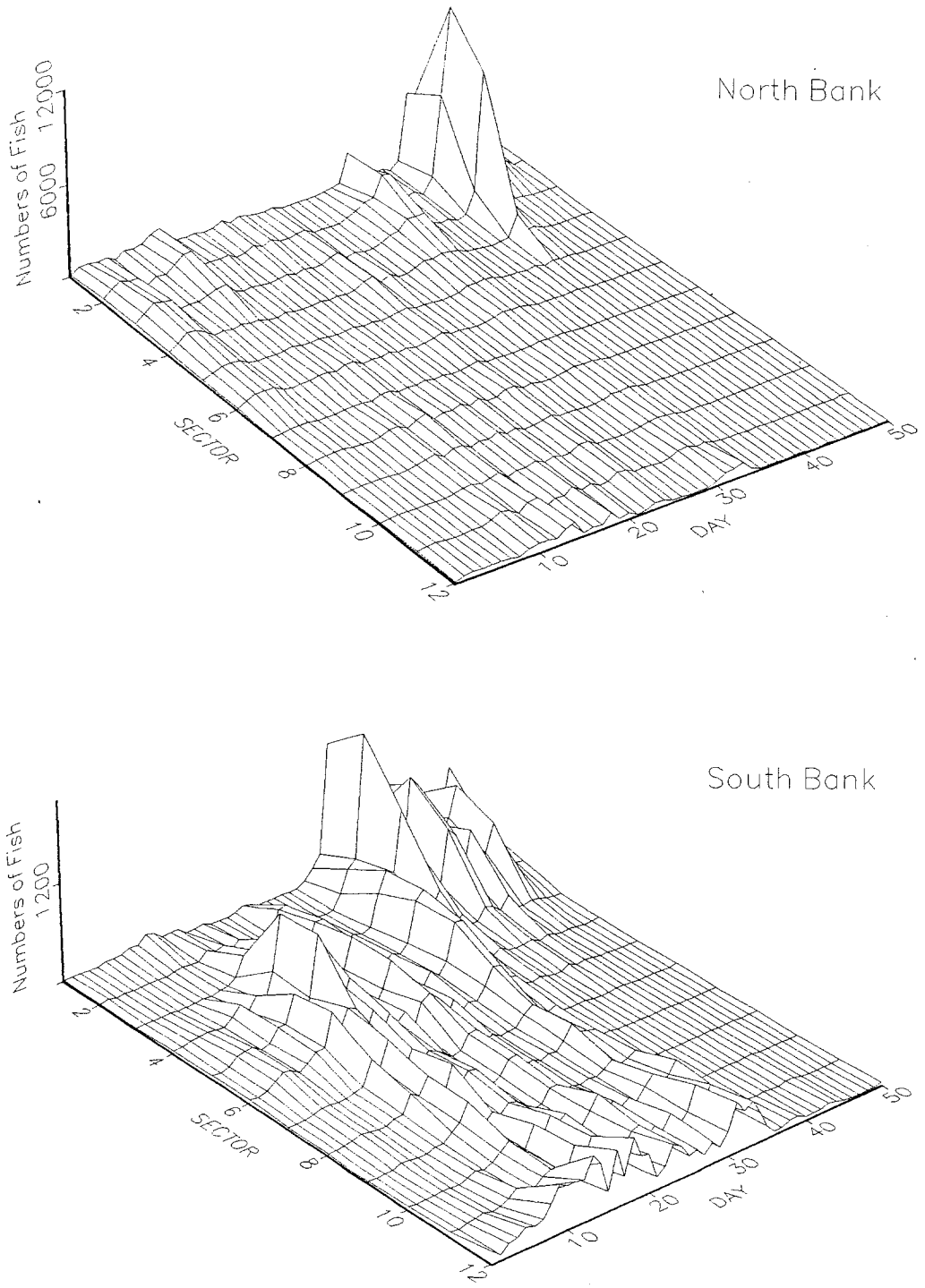


Figure 6. Distribution of salmon sonar counts by sector in the Kasilof River 2001.

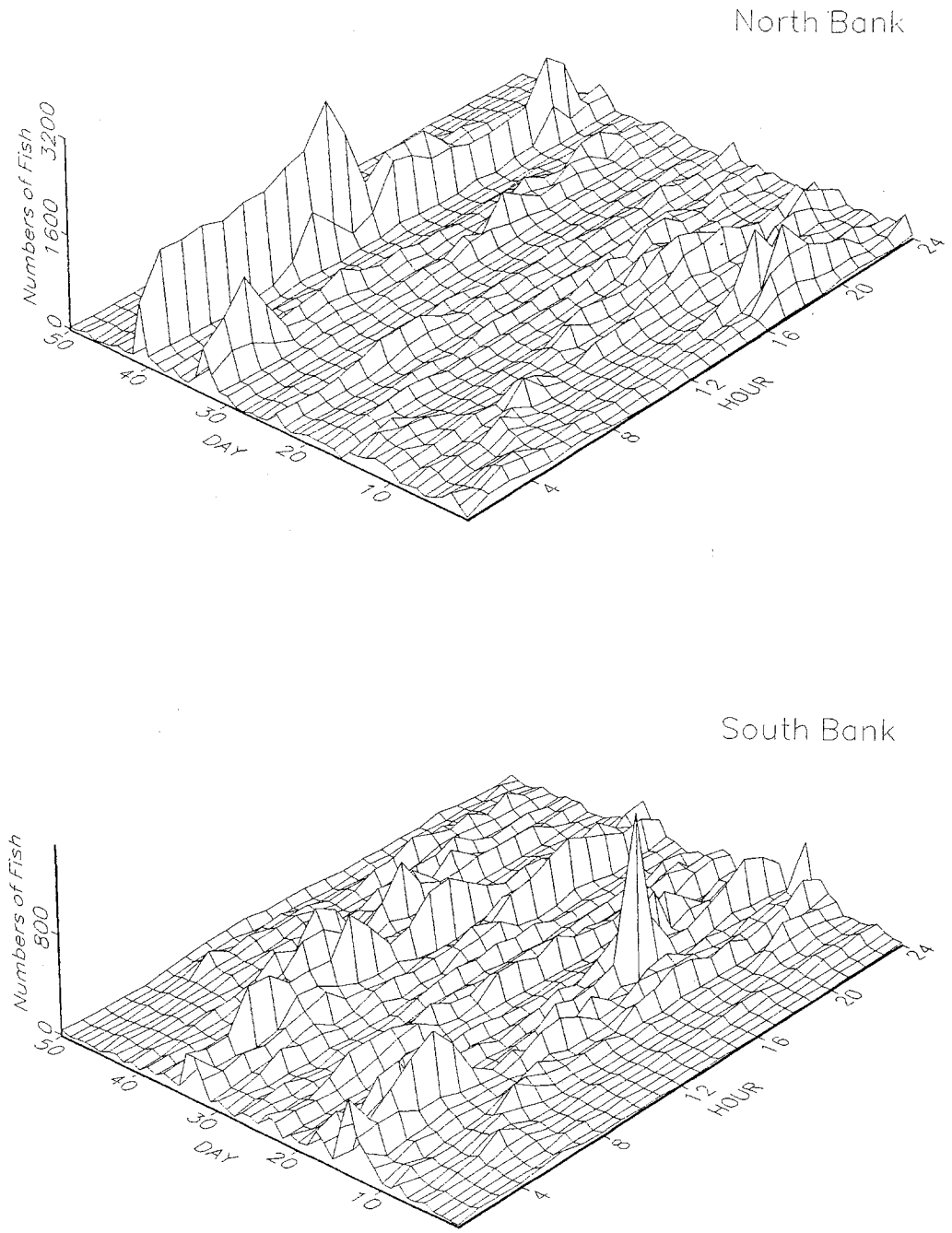


Figure 7. Hourly distribution of salmon migrating past the Kasilof River sonar counters 2001.

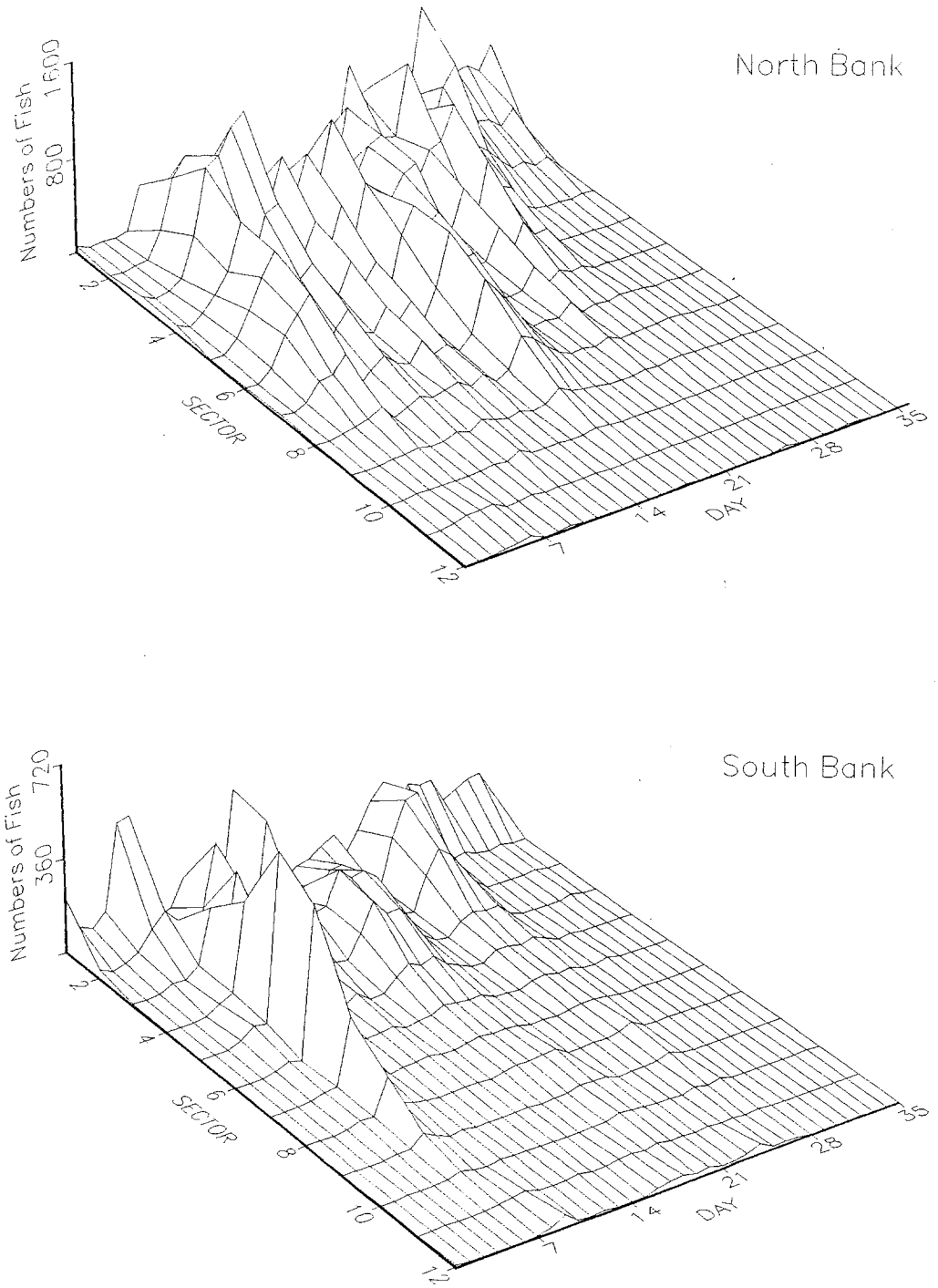


Figure 8. Distribution of salmon sonar counts by sector in the Crescent River 2001.

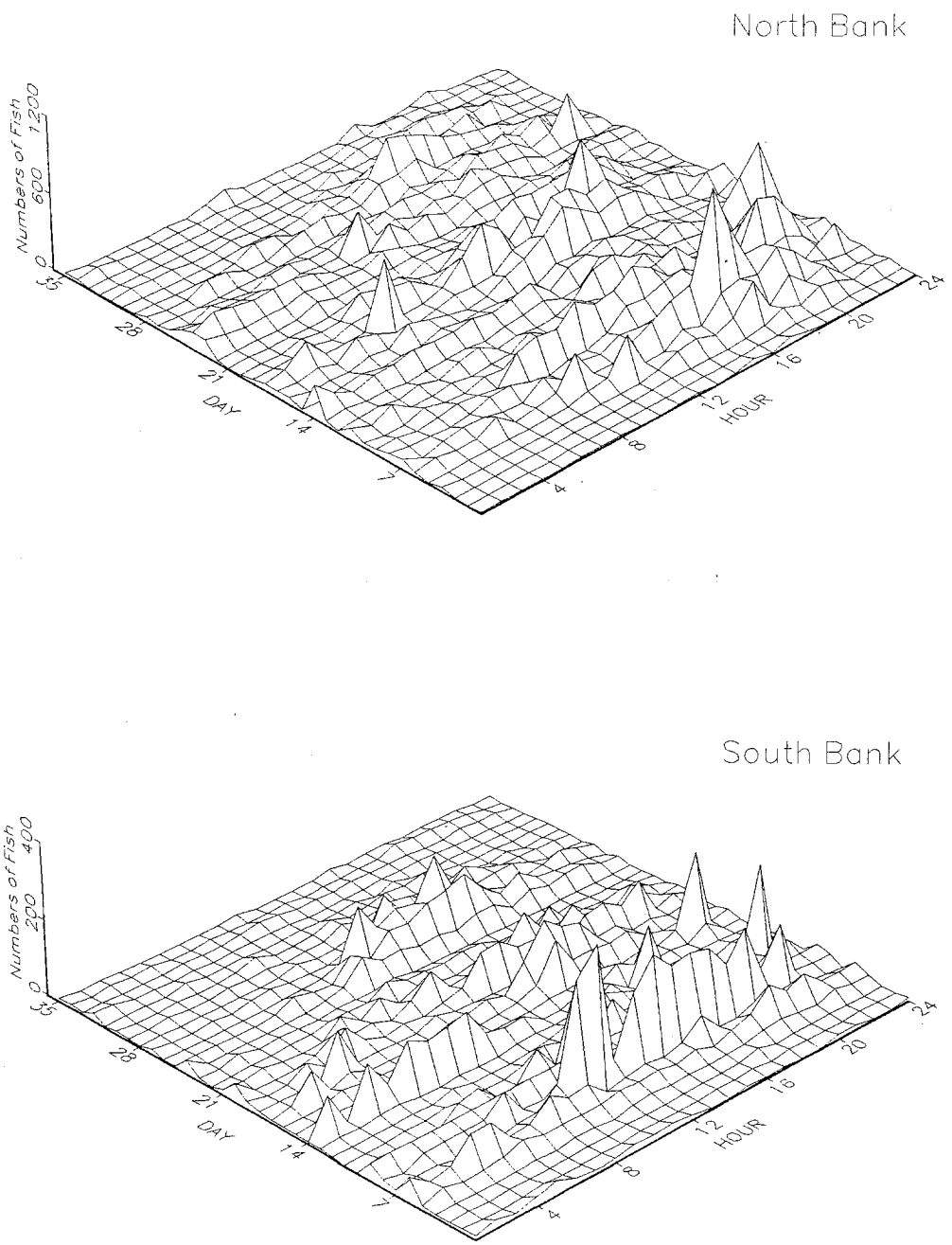


Figure 9. Hourly distribution of salmon migrating past the Crescent River sonar counters 2001.

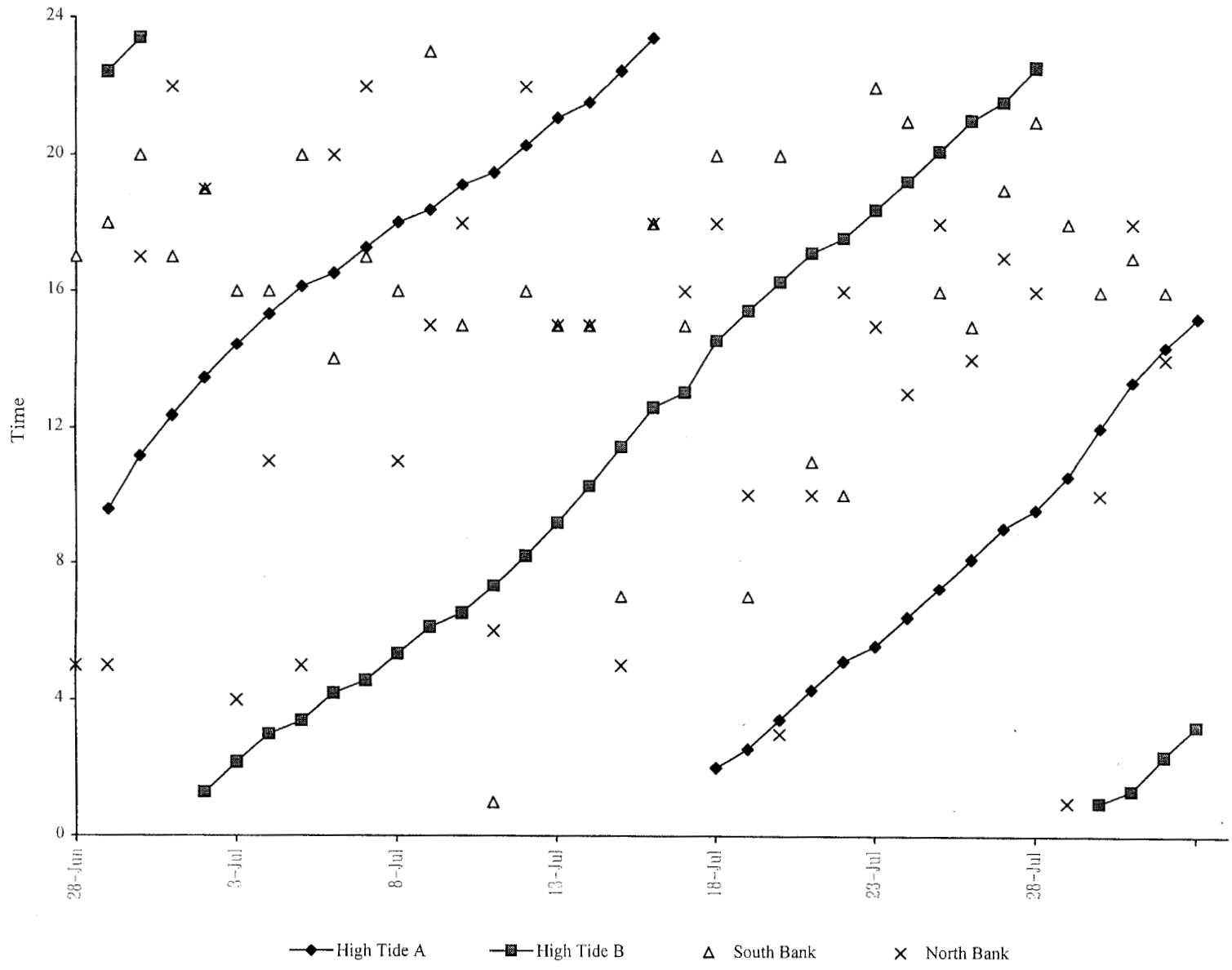
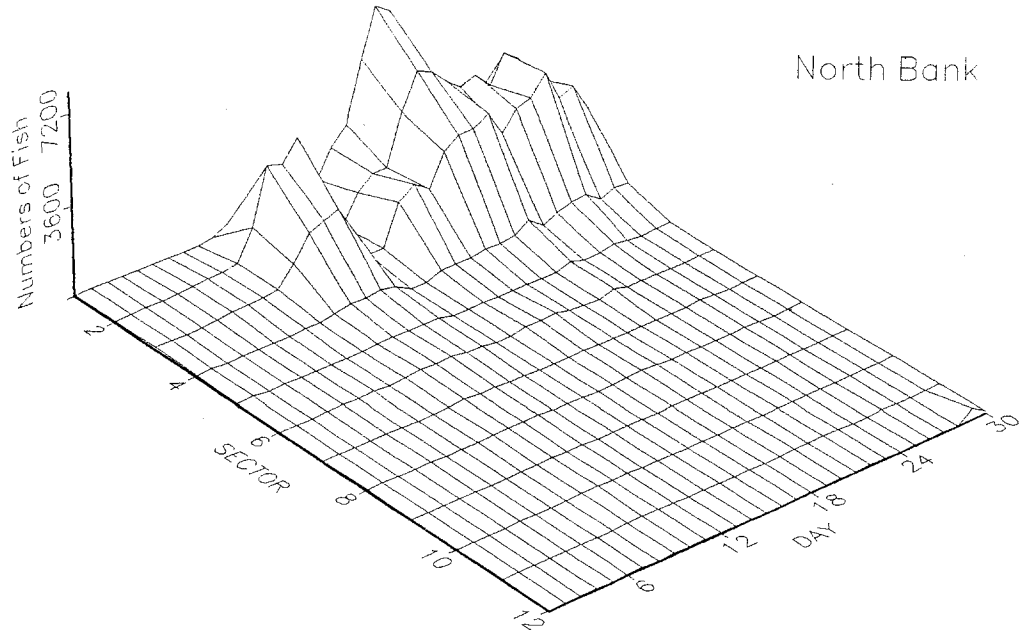


Figure 10. Time of peak daily sonar counts and daily high tides at Crescent River 2001,



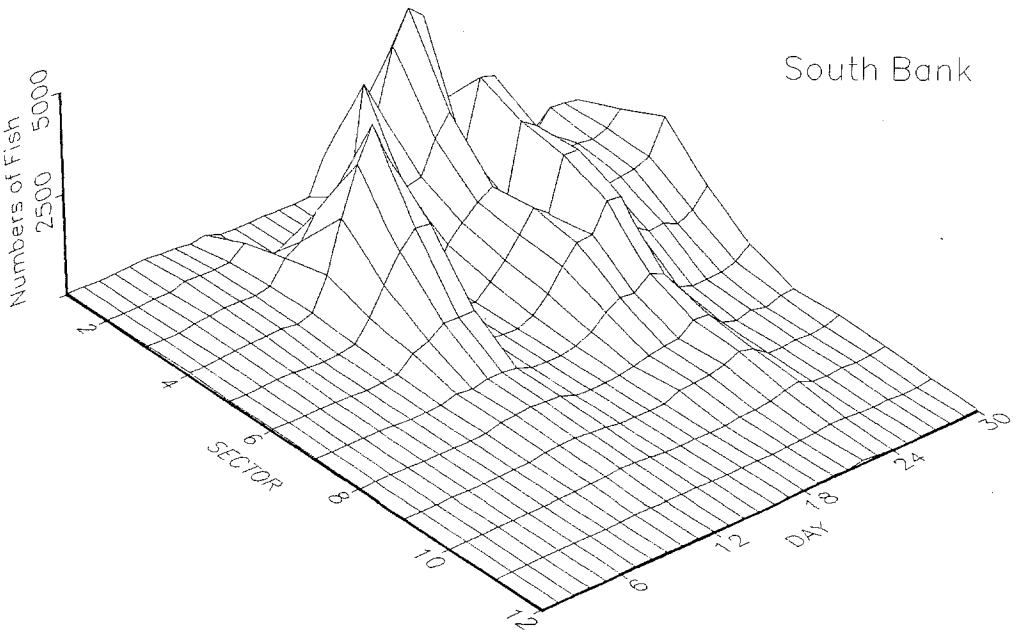
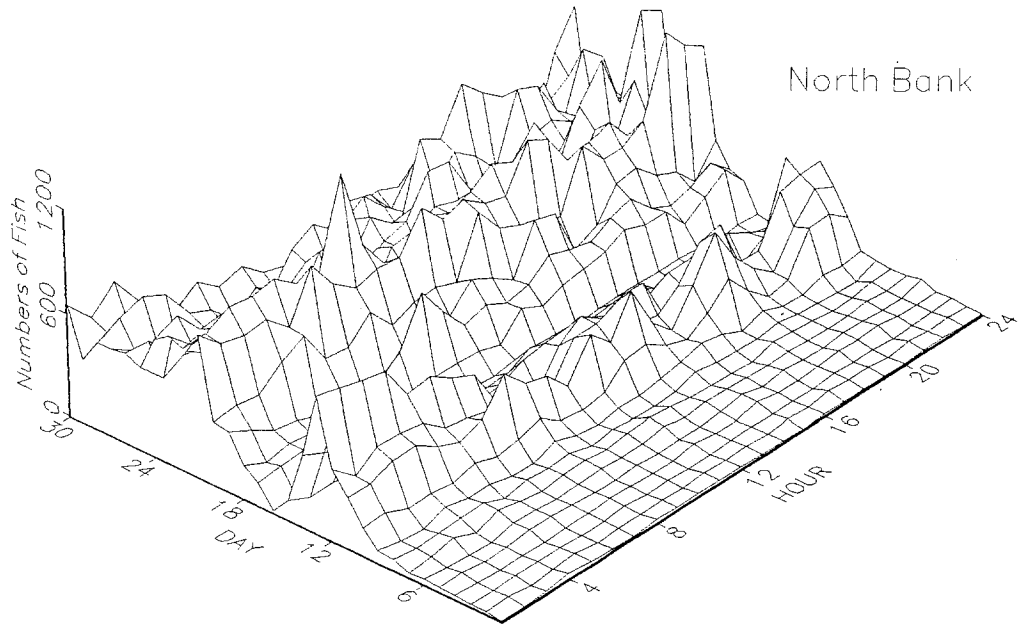


Figure 11. Distribution of salmon sonar counts by sector in the Yentna River 2001.



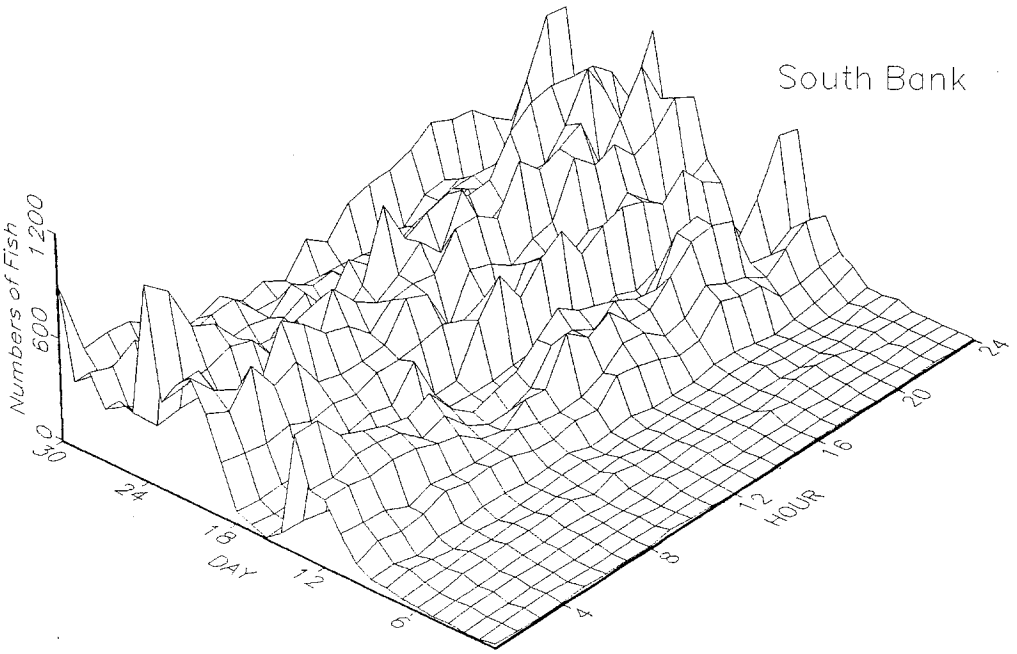


Figure 12. Hourly distribution of salmon migrating past the Yentna River sonar counters 2001.

Appendix A.1. Estimated salmon escapement adjacent to the north bank of the Kenai River, 1 July through 13 August 2001.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
1-Jul	756	756	0	0	0	0	0	0
2-Jul	4,651	5,407	0	0	0	0	0	0
3-Jul	2,774	8,181	0	0	0	0	0	0
4-Jul	2,941	11,122	0	0	0	0	0	0
5-Jul	2,344	13,466	0	0	0	0	0	0
6-Jul	1,550	15,016	0	0	0	0	0	0
7-Jul	2,042	17,058	0	0	0	0	0	0
8-Jul	3,446	20,504	0	0	0	0	0	0
9-Jul	4,074	24,578	0	0	0	0	0	0
10-Jul	2,803	27,381	0	0	0	0	0	0
11-Jul	3,471	30,852	0	0	0	0	0	0
12-Jul	2,119	32,971	0	0	0	0	0	0
13-Jul	2,397	35,368	0	0	0	0	0	0
14-Jul	4,965	40,333	0	0	0	0	0	0
15-Jul	14,148	54,481	0	0	0	0	0	0
16-Jul	13,337	67,818	0	0	0	0	0	0
17-Jul	15,733	83,551	0	0	0	0	0	0
18-Jul	16,064	99,615	0	0	0	0	0	0
19-Jul	12,491	112,106	0	0	0	0	0	0
20-Jul	13,627	125,733	0	0	0	0	0	0
21-Jul	8,737	134,470	0	0	0	0	0	0
22-Jul	8,294	142,764	0	0	0	0	0	0
23-Jul	12,077	154,841	0	0	0	0	0	0
24-Jul	20,780	175,621	0	0	0	0	0	0
25-Jul	25,528	201,149	0	0	0	0	0	0
26-Jul	20,135	221,284	0	0	0	0	0	0
27-Jul	14,232	235,516	0	0	0	0	0	0
28-Jul	9,001	244,517	0	0	0	0	0	0
29-Jul	8,936	253,453	0	0	0	0	0	0
30-Jul	9,778	263,231	0	0	0	0	0	0
31-Jul	7,361	270,592	0	0	0	0	0	0
1-Aug	7,025	277,617	0	0	0	0	0	0
2-Aug	7,152	284,769	0	0	0	0	0	0
3-Aug	5,825	290,594	0	0	0	0	0	0
4-Aug	8,599	299,193	0	0	0	0	0	0
5-Aug	3,753	302,946	0	0	0	0	0	0
6-Aug	4,415	307,361	0	0	0	0	0	0

-Continued-

Appendix A.1. (p2 of2)

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
7-Aug	4,255	311,616	0	0	0	0	0	0
8-Aug	4,378	315,994	243	243	0	0	0	0
9-Aug	2,240	318,234	0	243	408	408	1,018	1,018
10-Aug	2,317	320,551	178	421	178	586	535	1,553
11-Aug	911	321,462	547	968	1,002	1,588	365	1,918
12-Aug	2,155	323,617	0	968	107	1,695	539	2,457
13-Aug	527	324,144	0	968	1,581	3,276	527	2,984

*Species apportionment began on 8 August.

Appendix A.2. Estimated salmon escapement adjacent to the south bank of the Kenai River, 1 July through 13 August 2001.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
1-Jul	453	453	0	0	0	0	0	0
2-Jul	820	1,273	0	0	0	0	0	0
3-Jul	1,431	2,704	0	0	0	0	0	0
4-Jul	971	3,675	0	0	0	0	0	0
5-Jul	1,354	5,029	0	0	0	0	0	0
6-Jul	1,147	6,176	0	0	0	0	0	0
7-Jul	1,585	7,761	0	0	0	0	0	0
8-Jul	1,860	9,621	0	0	0	0	0	0
9-Jul	1,921	11,542	0	0	0	0	0	0
10-Jul	1,721	13,263	0	0	0	0	0	0
11-Jul	1,515	14,778	0	0	0	0	0	0
12-Jul	892	15,670	0	0	0	0	0	0
13-Jul	1,175	16,845	0	0	0	0	0	0
14-Jul	5,298	22,143	0	0	0	0	0	0
15-Jul	14,732	36,875	0	0	0	0	0	0
16-Jul	17,165	54,040	0	0	0	0	0	0
17-Jul	25,818	79,858	0	0	0	0	0	0
18-Jul	12,321	92,179	0	0	0	0	0	0
19-Jul	22,056	114,235	0	0	0	0	0	0
20-Jul	12,907	127,142	0	0	0	0	0	0
21-Jul	5,429	132,571	0	0	0	0	0	0
22-Jul	7,063	139,634	0	0	0	0	0	0
23-Jul	8,478	148,112	0	0	0	0	0	0
24-Jul	16,025	164,137	0	0	0	0	0	0
25-Jul	22,628	186,765	0	0	0	0	0	0
26-Jul	31,435	218,200	0	0	0	0	0	0
27-Jul	20,767	238,967	0	0	0	0	0	0
28-Jul	9,667	248,634	0	0	0	0	0	0
29-Jul	6,389	255,023	0	0	0	0	0	0
30-Jul	7,913	262,936	0	0	0	0	0	0
31-Jul	7,582	270,518	0	0	0	0	0	0
1-Aug	7,178	277,696	0	0	0	0	0	0
2-Aug	7,669	285,365	0	0	0	0	0	0
3-Aug	5,286	290,651	0	0	0	0	0	0
4-Aug	4,315	294,966	0	0	0	0	0	0
5-Aug	5,036	300,002	0	0	0	0	0	0
6-Aug	4,791	304,793	0	0	0	0	0	0

-Continued-

Appendix A.2. (p2 of2)

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
7-Aug	5,459	310,252	0	0	0	0	0	0
8-Aug	4,708	314,960	262	262	0	0	0	0
9-Aug	2,309	317,269	0	262	420	420	1,049	1,049
10-Aug	2,801	320,070	216	478	215	635	647	1,696
11-Aug	1,221	321,291	733	1,211	1,343	1,978	488	2,184
12-Aug	3,516	324,807	0	1,211	176	2,154	879	3,063
13-Aug	1,085	325,892	0	1,211	3,253	5,407	1,085	4,148

*Species apportionment began on 2 August.

Appendix A.3. Kenai River north bank sonar counts by hour, 1 July through 13 August 2001.

	Counts by Hour																									
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total	Cum Total
1-Jul	85	35	38	122	100	43	41	0	0	0	17	19	9	4	1	2	30	30	30	30	30	30	30	30	756	756
2-Jul	180	180	180	180	180	180	180	180	180	180	89	159	172	145	76	154	103	179	379	254	274	412	202	253	4651	5,407
3-Jul	98	108	24	23	27	190	136	120	168	117	75	59	70	64	81	73	114	123	100	172	189	217	258	168	2774	8,181
4-Jul	85	45	51	29	52	105	56	163	99	53	127	57	142	119	86	62	182	246	268	242	205	236	102	129	2941	11,122
5-Jul	86	56	35	42	39	57	132	107	61	63	117	83	192	124	145	215	79	60	64	79	98	94	203	113	2344	13,466
6-Jul	101	76	67	108	132	141	88	55	67	86	18	12	6	26	100	52	44	46	21	35	92	58	66	53	1550	15,016
7-Jul	131	118	60	61	50	26	20	29	96	63	56	51	50	8	32	144	241	221	98	119	103	71	111	83	2042	17,058
8-Jul	97	157	114	188	185	151	148	106	116	151	156	136	132	151	195	219	143	168	126	130	66	94	130	187	3446	20,504
9-Jul	163	191	202	320	369	277	361	272	92	155	54	148	137	130	152	125	157	124	157	125	136	83	64	80	4074	24,578
10-Jul	163	143	255	214	173	207	111	131	62	61	58	56	64	50	114	61	162	101	127	102	85	106	66	131	2803	27,381
11-Jul	104	86	123	87	216	111	151	164	191	114	131	116	108	114	71	226	234	311	171	203	113	142	83	101	3471	30,852
12-Jul	71	81	83	69	97	125	120	115	78	106	106	49	36	95	50	56	43	43	87	139	94	148	134	94	2119	32,971
13-Jul	89	111	93	67	78	138	66	106	128	90	169	94	176	91	123	133	99	79	61	73	105	56	93	79	2397	35,368
14-Jul	64	83	88	110	63	71	139	132	69	108	85	112	267	189	133	121	63	115	293	450	396	604	640	570	4965	40,333
15-Jul	543	315	451	344	237	155	199	282	221	192	498	875	980	913	475	565	524	685	1171	832	1084	712	1000	895	14148	54,481
16-Jul	866	868	824	579	470	299	486	391	362	393	305	766	831	459	449	728	780	661	567	455	269	519	679	331	13337	67,818
17-Jul	540	556	552	262	263	234	374	265	272	278	389	410	418	464	1266	1675	1220	1366	601	648	664	654	1012	1350	15733	83,551
18-Jul	1222	1265	1038	861	427	386	507	1073	1105	633	394	459	192	288	429	436	411	370	269	462	769	1204	823	1041	16064	99,615
19-Jul	941	701	563	236	145	214	446	345	378	310	382	352	527	573	601	563	593	602	521	375	812	1013	641	657	12491	112,106
20-Jul	709	602	602	555	500	369	417	420	293	392	234	139	209	299	510	681	1656	989	1009	951	588	554	558	391	13627	125,733
21-Jul	498	659	581	263	198	200	327	310	223	187	308	218	232	232	338	573	552	488	262	289	507	635	411	246	8737	134,470
22-Jul	266	277	327	278	169	206	126	342	291	292	342	335	237	191	337	294	226	335	429	439	553	726	689	587	8294	142,764
23-Jul	446	294	301	215	341	529	433	271	201	209	345	486	351	362	428	493	554	706	660	698	1050	889	780	1035	12077	154,841
24-Jul	761	635	506	421	479	382	302	520	324	261	588	876	923	467	1064	1863	1971	1622	1302	971	937	1096	1201	1308	20780	175,621
25-Jul	843	882	681	285	288	636	567	592	795	1045	1220	1129	1364	1086	1127	1190	1197	1444	1291	1623	1858	1624	1514	1247	25528	201,149
26-Jul	1134	872	708	694	322	492	459	650	457	683	660	931	1237	1236	783	739	1156	961	958	1040	1182	1029	888	864	20135	221,284
27-Jul	563	589	712	415	313	315	390	732	705	514	424	388	401	512	582	543	433	543	1228	1332	823	402	563	810	14232	235,516
28-Jul	476	664	504	362	159	121	88	286	237	89	268	168	363	483	216	285	513	789	626	712	497	362	315	418	9001	244,517
29-Jul	427	500	371	203	163	221	212	170	233	191	183	308	345	368	360	358	543	603	674	406	383	404	730	580	8936	253,453
30-Jul	412	411	242	101	169	187	178	186	194	322	388	505	437	409	640	386	576	431	669	697	788	629	498	323	9778	263,231
31-Jul	540	420	222	266	107	111	154	184	280	256	261	209	243	317	327	662	501	288	281	292	315	349	483	293	7361	270,592
1-Aug	282	245	281	93	140	119	258	224	395	323	241	345	308	372	213	353	243	503	771	292	225	221	366	212	7025	277,617
2-Aug	89	91	160	225	132	157	95	151	187	151	115	83	92	88	249	159	353	560	771	782	733	648	640	441	7152	284,769
3-Aug	282	401	405	377	151	161	255	148	264	235	170	195	194	299	201	200	227	213	251	247	199	210	177	363	5825	290,594
4-Aug	313	76	71	348	348	348	348	348	348	348	348	348	349	130	596	453	499	723	532	494	420	299	269	243	8599	299,193

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	Counts by Hour																									
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total	Cum Total
5-Aug	337	317	130	93	59	167	140	106	113	97	84	96	74	101	79	91	136	150	133	199	221	178	341	311	3753	302,946
6-Aug	248	246	303	248	205	89	159	56	61	127	120	47	81	71	100	154	430	208	188	185	165	246	288	390	4415	307,361
7-Aug	514	291	348	333	312	279	127	187	187	188	141	112	112	81	60	105	92	122	92	140	80	102	113	137	4255	311,616
8-Aug	264	195	292	206	164	195	141	89	76	128	172	226	207	233	188	233	291	286	251	170	235	111	127	141	4621	316,237
9-Aug	275	118	236	179	87	51	72	132	254	306	135	130	103	167	195	135	108	202	131	73	113	104	238	122	3666	319,903
10-Aug	104	185	295	162	85	66	80	140	67	198	92	182	196	141	111	56	97	74	173	254	128	113	130	79	3208	323,111
11-Aug	143	71	99	57	317	86	73	124	97	106	74	133	217	125	170	75	83	104	81	91	78	60	119	242	2825	325,936
12-Aug	243	235	201	172	147	132	176	76	71	79	34	29	70	83	82	61	89	86	78	123	78	154	140	162	2801	328,737
13-Aug	182	157	208	106	106	87	187	89	60	89	80	89	88	64	76	91	94	50	60	64	113	153	149	193	2635	331,372
Total	15,980	14,608	13,627	10,559	8,764	8,816	9,525	10,569	10,158	9,969	10,253	11,720	12,942	11,924	13,611	15,843	17,842	18,010	18,012	17,489	17,853	17,751	18,064	17,483	331,372	

Appendix A.4. Kenai River south bank sonar counts by hour, 1 July through 13 August 2001.

	Counts by Hour																									
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total	Cum Total
1-Jul	15	14	7	6	13	3	9	15	6	4	9	10	34	23	29	40	36	30	29	22	27	38	14	20	453	453
2-Jul	29	22	31	11	14	9	5	7	5	14	14	19	30	41	73	30	77	52	77	87	57	51	20	45	820	1,273
3-Jul	40	56	40	26	21	100	86	59	34	25	15	37	30	49	78	71	85	87	103	134	122	45	44	44	1,431	2,704
4-Jul	19	29	44	32	22	17	39	45	22	34	23	19	43	52	49	44	66	74	76	88	62	36	14	22	971	3,675
5-Jul	50	56	31	20	28	17	29	43	33	18	26	57	25	47	65	113	130	97	90	94	111	92	39	43	1,354	5,029
6-Jul	31	26	19	12	13	20	20	30	47	34	31	29	46	73	94	91	62	76	108	70	70	50	59	36	1,147	6,176
7-Jul	33	33	20	18	29	14	55	16	39	21	43	51	91	98	146	137	131	123	120	87	85	44	115	36	1,585	7,761
8-Jul	51	28	23	20	27	32	26	34	46	30	56	55	63	95	158	117	229	209	140	106	87	108	74	46	1,860	9,621
9-Jul	36	34	39	35	26	29	27	26	37	60	56	57	107	124	109	148	164	167	187	111	108	88	57	89	1,921	11,542
10-Jul	72	72	72	72	72	72	72	58	28	57	47	66	69	58	92	62	62	82	103	94	112	96	72	59	1,721	13,263
11-Jul	34	42	17	23	29	28	41	36	34	67	101	85	71	74	140	59	77	80	123	83	114	65	54	38	1,515	14,778
12-Jul	41	31	8	13	8	32	35	44	32	39	26	40	68	32	25	40	38	20	60	53	44	74	60	29	892	15,670
13-Jul	30	48	25	14	10	41	12	30	13	32	17	24	34	73	58	120	41	44	69	123	63	76	95	83	1,175	16,845
14-Jul	90	61	87	33	40	33	45	63	89	53	69	83	173	297	204	406	459	371	407	487	433	541	407	367	5,298	22,143
15-Jul	329	439	406	161	79	79	58	175	116	183	597	563	491	825	948	1,441	1,153	869	488	530	1,003	1,206	1,596	997	14,732	36,875
16-Jul	665	332	247	268	121	167	333	294	446	227	395	1,414	1,908	1,819	1,640	922	1,632	874	544	350	665	752	531	619	17,165	54,040
17-Jul	556	767	337	157	81	115	168	276	206	155	420	676	792	1,427	1,908	1,970	2,272	2,031	2,102	1,350	1,240	2,815	2,817	1,180	25,818	79,858
18-Jul	582	313	222	158	149	145	381	706	656	320	314	281	628	777	712	642	736	432	615	689	914	784	563	602	12,321	92,179
19-Jul	281	180	84	54	52	161	674	440	659	470	494	440	788	1,099	1,121	1,223	830	718	1,735	1,597	1,904	2,385	2,561	2,106	22,056	114,235
20-Jul	2,052	1,018	759	906	811	365	80	170	277	274	157	163	175	334	292	645	743	645	791	626	569	458	397	200	12,907	127,142
21-Jul	197	62	38	32	38	79	138	145	267	148	170	272	251	256	530	534	403	248	580	233	253	280	183	92	5,429	132,571
22-Jul	159	102	29	30	24	30	35	91	181	119	134	216	369	368	502	403	620	708	559	483	645	496	417	343	7,063	139,634
23-Jul	313	107	110	49	68	87	133	217	359	254	342	443	396	402	511	672	789	553	400	492	583	428	345	425	8,478	148,112
24-Jul	324	122	80	52	46	66	186	230	244	186	363	831	1,133	859	1,179	896	1,263	813	732	793	1,841	1,934	1,222	630	16,025	164,137
25-Jul	655	151	109	50	69	120	485	486	557	312	703	1,410	1,530	1,813	1,472	1,401	1,369	1,542	1,381	1,180	1,782	1,091	1,263	1,697	22,628	186,765
26-Jul	1,456	544	364	232	86	310	1,248	1,432	1,009	941	690	1,527	1,684	1,402	1,555	1,264	1,571	1,902	1,811	2,608	2,277	1,878	1,851	1,793	31,435	218,200
27-Jul	974	858	474	237	63	350	658	1,180	1,453	592	817	794	1,251	743	741	893	984	1,028	1,200	1,075	1,016	1,025	1,284	1,077	20,767	238,967
28-Jul	700	361	262	230	155	125	189	495	337	201	230	429	389	689	315	403	569	382	536	755	656	522	343	394	9,667	248,634
29-Jul	390	107	80	49	42	131	172	146	143	228	226	175	286	316	242	259	292	332	384	448	463	726	461	291	6,389	255,023
30-Jul	96	79	30	17	35	41	195	326	501	561	266	178	439	369	718	754	438	711	444	526	381	414	193	201	7,913	262,936
31-Jul	235	112	104	32	40	60	105	277	255	293	132	214	451	309	591	531	819	478	814	515	202	214	333	466	7,582	270,518
1-Aug	340	111	72	241	30	51	64	132	183	165	202	361	347	327	271	275	400	444	366	466	805	627	678	220	7,178	277,696
2-Aug	258	218	176	75	60	60	107	231	251	212	195	256	420	561	473	481	515	390	563	551	440	361	351	464	7,669	285,365
3-Aug	456	165	96	147	49	62	104	73	74	117	141	215	187	199	270	323	458	452	417	209	317	287	324	144	5,286	290,651
4-Aug	81	80	33	33	23	42	47	32	112	32	108	92	224	177	235	367	296	488	465	369	390	169	212	208	4,315	294,966

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Appendix A.4. (p.2 of 2)

	Counts by Hour																									
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total	Cum Total
5-Aug	192	113	108	53	134	52	213	88	141	122	114	141	271	327	183	219	345	387	351	248	208	302	360	364	5,036	300,002
6-Aug	213	111	39	39	48	36	67	66	101	89	119	102	136	406	255	242	401	457	453	321	355	260	189	286	4,791	304,793
7-Aug	168	87	77	122	243	283	91	131	111	140	126	135	172	191	268	380	316	320	358	288	187	432	528	305	5,459	310,252
8-Aug	216	163	157	109	88	85	137	128	178	153	163	242	174	219	309	341	396	419	403	266	176	139	129	180	4,970	315,222
9-Aug	108	149	81	54	23	76	36	104	94	151	206	112	159	281	317	165	177	290	195	279	241	174	173	133	3,778	319,000
10-Aug	104	106	90	79	40	43	66	66	117	202	200	175	199	244	178	231	185	220	322	280	258	189	161	124	3,879	322,879
11-Aug	57	57	59	47	45	31	89	95	72	78	104	87	162	292	400	315	276	258	121	244	227	234	212	223	3,785	326,664
12-Aug	146	97	154	81	58	43	72	144	103	104	133	75	188	183	309	314	417	396	350	246	243	196	299	220	4,571	331,235
13-Aug	545	134	176	77	74	69	78	88	149	101	49	218	168	189	286	384	328	484	236	352	372	316	240	310	5,423	336,658
Total	13,419	7,797	5,516	4,206	3,226	3,811	6,910	8,970	9,817	7,618	8,843	12,869	16,652	18,539	20,051	20,368	22,650	20,783	21,408	20,008	22,108	22,498	21,340	17,251	336,658	

Appendix A.5. Kenai River north bank sonar counts by hour, 1 July through 13 August 2001. Counts expressed as percentage of daily total.

	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
1-Jul	11.2	4.6	5.0	16.1	13.2	5.7	5.4	0.0	0.0	0.0	2.2	2.5	1.2	0.5	0.1	0.3	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	100.0
2-Jul	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	1.9	3.4	3.7	3.1	1.6	3.3	2.2	3.8	8.1	5.5	5.9	8.9	4.3	5.4	100.0
3-Jul	3.5	3.9	0.9	0.8	1.0	6.8	4.9	4.3	6.1	4.2	2.7	2.1	2.5	2.3	2.9	2.6	4.1	4.4	3.6	6.2	6.8	7.8	9.3	6.1	100.0
4-Jul	2.9	1.5	1.7	1.0	1.8	3.6	1.9	5.5	3.4	1.8	4.3	1.9	4.8	4.0	2.9	2.1	6.2	8.4	9.1	8.2	7.0	8.0	3.5	4.4	100.0
5-Jul	3.7	2.4	1.5	1.8	1.7	2.4	5.6	4.6	2.6	2.7	5.0	3.5	8.2	5.3	6.2	9.2	3.4	2.6	2.7	3.4	4.2	4.0	8.7	4.8	100.0
6-Jul	6.5	4.9	4.3	7.0	8.5	9.1	5.7	3.5	4.3	5.5	1.2	0.8	0.4	1.7	6.5	3.4	2.8	3.0	1.4	2.3	5.9	3.7	4.3	3.4	100.0
7-Jul	6.4	5.8	2.9	3.0	2.4	1.3	1.0	1.4	4.7	3.1	2.7	2.5	2.4	0.4	1.6	7.1	11.8	10.8	4.8	5.8	5.0	3.5	5.4	4.1	100.0
8-Jul	2.8	4.6	3.3	5.5	5.4	4.4	4.3	3.1	3.4	4.4	4.5	3.9	3.8	4.4	5.7	6.4	4.1	4.9	3.7	3.8	1.9	2.7	3.8	5.4	100.0
9-Jul	4.0	4.7	5.0	7.9	9.1	6.8	8.9	6.7	2.3	3.8	1.3	3.6	3.4	3.2	3.7	3.1	3.9	3.0	3.9	3.1	3.3	2.0	1.6	2.0	100.0
10-Jul	5.8	5.1	9.1	7.6	6.2	7.4	4.0	4.7	2.2	2.2	2.1	2.0	2.3	1.8	4.1	2.2	5.8	3.6	4.5	3.6	3.0	3.8	2.4	4.7	100.0
11-Jul	3.0	2.5	3.5	2.5	6.2	3.2	4.4	4.7	5.5	3.3	3.8	3.3	3.1	3.3	2.0	6.5	6.7	9.0	4.9	5.8	3.3	4.1	2.4	2.9	100.0
12-Jul	3.4	3.8	3.9	3.3	4.6	5.9	5.7	5.4	3.7	5.0	5.0	2.3	1.7	4.5	2.4	2.6	2.0	2.0	4.1	6.6	4.4	7.0	6.3	4.4	100.0
13-Jul	3.7	4.6	3.9	2.8	3.3	5.8	2.8	4.4	5.3	3.8	7.1	3.9	7.3	3.8	5.1	5.5	4.1	3.3	2.5	3.0	4.4	2.3	3.9	3.3	100.0
14-Jul	1.3	1.7	1.8	2.2	1.3	1.4	2.8	2.7	1.4	2.2	1.7	2.3	5.4	3.8	2.7	2.4	1.3	2.3	5.9	9.1	8.0	12.2	12.9	11.5	100.0
15-Jul	3.8	2.2	3.2	2.4	1.7	1.1	1.4	2.0	1.6	1.4	3.5	6.2	6.9	6.5	3.4	4.0	3.7	4.8	8.3	5.9	7.7	5.0	7.1	6.3	100.0
16-Jul	6.5	6.5	6.2	4.3	3.5	2.2	3.6	2.9	2.7	2.9	2.3	5.7	6.2	3.4	3.4	5.5	5.8	5.0	4.3	3.4	2.0	3.9	5.1	2.5	100.0
17-Jul	3.4	3.5	3.5	1.7	1.7	1.5	2.4	1.7	1.7	1.8	2.5	2.6	2.7	2.9	8.0	10.6	7.8	8.7	3.8	4.1	4.2	4.2	6.4	8.6	100.0
18-Jul	7.6	7.9	6.5	5.4	2.7	2.4	3.2	6.7	6.9	3.9	2.5	2.9	1.2	1.8	2.7	2.7	2.6	2.3	1.7	2.9	4.8	7.5	5.1	6.5	100.0
19-Jul	7.5	5.6	4.5	1.9	1.2	1.7	3.6	2.8	3.0	2.5	3.1	2.8	4.2	4.6	4.8	4.5	4.7	4.8	4.2	3.0	6.5	8.1	5.1	5.3	100.0
20-Jul	5.2	4.4	4.4	4.1	3.7	2.7	3.1	3.1	2.2	2.9	1.7	1.0	1.5	2.2	3.7	5.0	12.2	7.3	7.4	7.0	4.3	4.1	4.1	2.9	100.0
21-Jul	5.7	7.5	6.6	3.0	2.3	2.3	3.7	3.5	2.6	2.1	3.5	2.5	2.7	2.7	3.9	6.6	6.3	5.6	3.0	3.3	5.8	7.3	4.7	2.8	100.0
22-Jul	3.2	3.3	3.9	3.4	2.0	2.5	1.5	4.1	3.5	3.5	4.1	4.0	2.9	2.3	4.1	3.5	2.7	4.0	5.2	5.3	6.7	8.8	8.3	7.1	100.0
23-Jul	3.7	2.4	2.5	1.8	2.8	4.4	3.6	2.2	1.7	1.7	2.9	4.0	2.9	3.0	3.5	4.1	4.6	5.8	5.5	5.8	8.7	7.4	6.5	8.6	100.0
24-Jul	3.7	3.1	2.4	2.0	2.3	1.8	1.5	2.5	1.6	1.3	2.8	4.2	4.4	2.2	5.1	9.0	9.5	7.8	6.3	4.7	4.5	5.3	5.8	6.3	100.0
25-Jul	3.3	3.5	2.7	1.1	1.1	2.5	2.2	2.3	3.1	4.1	4.8	4.4	5.3	4.3	4.4	4.7	4.7	5.7	5.1	6.4	7.3	6.4	5.9	4.9	100.0
26-Jul	5.6	4.3	3.5	3.4	1.6	2.4	2.3	3.2	2.3	3.4	3.3	4.6	6.1	6.1	3.9	3.7	5.7	4.8	4.8	5.2	5.9	5.1	4.4	4.3	100.0
27-Jul	4.0	4.1	5.0	2.9	2.2	2.2	2.7	5.1	5.0	3.6	3.0	2.7	2.8	3.6	4.1	3.8	3.0	3.8	8.6	9.4	5.8	2.8	4.0	5.7	100.0
28-Jul	5.3	7.4	5.6	4.0	1.8	1.3	1.0	3.2	2.6	1.0	3.0	1.9	4.0	5.4	2.4	3.2	5.7	8.8	7.0	7.9	5.5	4.0	3.5	4.6	100.0
29-Jul	4.8	5.6	4.2	2.3	1.8	2.5	2.4	1.9	2.6	2.1	2.0	3.4	3.9	4.1	4.0	4.0	6.1	6.7	7.5	4.5	4.3	4.5	8.2	6.5	100.0
30-Jul	4.2	4.2	2.5	1.0	1.7	1.9	1.8	1.9	2.0	3.3	4.0	5.2	4.5	4.2	6.5	3.9	5.9	4.4	6.8	7.1	8.1	6.4	5.1	3.3	100.0
31-Jul	7.3	5.7	3.0	3.6	1.5	1.5	2.1	2.5	3.8	3.5	3.5	2.8	3.3	4.3	4.4	9.0	6.8	3.9	3.8	4.0	4.3	4.7	6.6	4.0	100.0
1-Aug	4.0	3.5	4.0	1.3	2.0	1.7	3.7	3.2	5.6	4.6	3.4	4.9	4.4	5.3	3.0	5.0	3.5	7.2	11.0	4.2	3.2	3.1	5.2	3.0	100.0
2-Aug	1.2	1.3	2.2	3.1	1.8	2.2	1.3	2.1	2.6	2.1	1.6	1.2	1.3	1.2	3.5	2.2	4.9	7.8	10.8	10.9	10.2	9.1	8.9	6.2	100.0
3-Aug	4.8	6.9	7.0	6.5	2.6	2.8	4.4	2.5	4.5	4.0	2.9	3.3	3.3	5.1	3.5	3.4	3.9	3.7	4.3	4.2	3.4	3.6	3.0	6.2	100.0
4-Aug	3.6	0.9	0.8	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.1	1.5	6.9	5.3	5.8	8.4	6.2	5.7	4.9	3.5	3.1	2.8	100.0

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	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
5-Aug	9.0	8.4	3.5	2.5	1.6	4.4	3.7	2.8	3.0	2.6	2.2	2.6	2.0	2.7	2.1	2.4	3.6	4.0	3.5	5.3	5.9	4.7	9.1	8.3	100.0
6-Aug	5.6	5.6	6.9	5.6	4.6	2.0	3.6	1.3	1.4	2.9	2.7	1.1	1.8	1.6	2.3	3.5	9.7	4.7	4.3	4.2	3.7	5.6	6.5	8.8	100.0
7-Aug	12.1	6.8	8.2	7.8	7.3	6.6	3.0	4.4	4.4	4.4	3.3	2.6	2.6	1.9	1.4	2.5	2.2	2.9	2.2	3.3	1.9	2.4	2.7	3.2	100.0
8-Aug	5.7	4.2	6.3	4.5	3.5	4.2	3.1	1.9	1.6	2.8	3.7	4.9	4.5	5.0	4.1	5.0	6.3	6.2	5.4	3.7	5.1	2.4	2.7	3.1	100.0
9-Aug	7.5	3.2	6.4	4.9	2.4	1.4	2.0	3.6	6.9	8.3	3.7	3.5	2.8	4.6	5.3	3.7	2.9	5.5	3.6	2.0	3.1	2.8	6.5	3.3	100.0
10-Aug	3.2	5.8	9.2	5.0	2.6	2.1	2.5	4.4	2.1	6.2	2.9	5.7	6.1	4.4	3.5	1.7	3.0	2.3	5.4	7.9	4.0	3.5	4.1	2.5	100.0
11-Aug	5.1	2.5	3.5	2.0	11.2	3.0	2.6	4.4	3.4	3.8	2.6	4.7	7.7	4.4	6.0	2.7	2.9	3.7	2.9	3.2	2.8	2.1	4.2	8.6	100.0
12-Aug	8.7	8.4	7.2	6.1	5.2	4.7	6.3	2.7	2.5	2.8	1.2	1.0	2.5	3.0	2.9	2.2	3.2	3.1	2.8	4.4	2.8	5.5	5.0	5.8	100.0
13-Aug	6.9	6.0	7.9	4.0	4.0	3.3	7.1	3.4	2.3	3.4	3.0	3.4	3.3	2.4	2.9	3.5	3.6	1.9	2.3	2.4	4.3	5.8	5.7	7.3	100.0
Total	4.8	4.4	4.1	3.2	2.6	2.7	2.9	3.2	3.1	3.0	3.1	3.5	3.9	3.6	4.1	4.8	5.4	5.4	5.4	5.3	5.4	5.4	5.5	5.3	100.0

Appendix A.6. Kenai River south bank sonar counts by hour, 1 July through 13 August 2001. Counts expressed as percentage of daily total.

	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
1-Jul	3.3	3.1	1.5	1.3	2.9	0.7	2.0	3.3	1.3	0.9	2.0	2.2	7.5	5.1	6.4	8.8	7.9	6.6	6.4	4.9	6.0	8.4	3.1	4.4	100.0
2-Jul	3.5	2.7	3.8	1.3	1.7	1.1	0.6	0.9	0.6	1.7	1.7	2.3	3.7	5.0	8.9	3.7	9.4	6.3	9.4	10.6	7.0	6.2	2.4	5.5	100.0
3-Jul	2.8	3.9	2.8	1.8	1.5	7.0	6.0	4.1	2.4	1.7	1.0	2.6	2.1	3.4	5.5	5.0	5.9	6.1	7.2	9.4	8.5	3.1	3.1	3.1	100.0
4-Jul	2.0	3.0	4.5	3.3	2.3	1.8	4.0	4.6	2.3	3.5	2.4	2.0	4.4	5.4	5.0	4.5	6.8	7.6	7.8	9.1	6.4	3.7	1.4	2.3	100.0
5-Jul	3.7	4.1	2.3	1.5	2.1	1.3	2.1	3.2	2.4	1.3	1.9	4.2	1.8	3.5	4.8	8.3	9.6	7.2	6.6	6.9	8.2	6.8	2.9	3.2	100.0
6-Jul	2.7	2.3	1.7	1.0	1.1	1.7	1.7	2.6	4.1	3.0	2.7	2.5	4.0	6.4	8.2	7.9	5.4	6.6	9.4	6.1	6.1	4.4	5.1	3.1	100.0
7-Jul	2.1	2.1	1.3	1.1	1.8	0.9	3.5	1.0	2.5	1.3	2.7	3.2	5.7	6.2	9.2	8.6	8.3	7.8	7.6	5.5	5.4	2.8	7.3	2.3	100.0
8-Jul	2.7	1.5	1.2	1.1	1.5	1.7	1.4	1.8	2.5	1.6	3.0	3.0	3.4	5.1	8.5	6.3	12.3	11.2	7.5	5.7	4.7	5.8	4.0	2.5	100.0
9-Jul	1.9	1.8	2.0	1.8	1.4	1.5	1.4	1.4	1.9	3.1	2.9	3.0	5.6	6.5	5.7	7.7	8.5	8.7	9.7	5.8	5.6	4.6	3.0	4.6	100.0
10-Jul	4.2	4.2	4.2	4.2	4.2	4.2	4.2	3.4	1.6	3.3	2.7	3.8	4.0	3.4	5.3	3.6	3.6	4.8	6.0	5.5	6.5	5.6	4.2	3.4	100.0
11-Jul	2.2	2.8	1.1	1.5	1.9	1.8	2.7	2.4	2.2	4.4	6.7	5.6	4.7	4.9	9.2	3.9	5.1	5.3	8.1	5.5	7.5	4.3	3.6	2.5	100.0
12-Jul	4.6	3.5	0.9	1.5	0.9	3.6	3.9	4.9	3.6	4.4	2.9	4.5	7.6	3.6	2.8	4.5	4.3	2.2	6.7	5.9	4.9	8.3	6.7	3.3	100.0
13-Jul	2.6	4.1	2.1	1.2	0.9	3.5	1.0	2.6	1.1	2.7	1.4	2.0	2.9	6.2	4.9	10.2	3.5	3.7	5.9	10.5	5.4	6.5	8.1	7.1	100.0
14-Jul	1.7	1.2	1.6	0.6	0.8	0.6	0.8	1.2	1.7	1.0	1.3	1.6	3.3	5.6	3.9	7.7	8.7	7.0	7.7	9.2	8.2	10.2	7.7	6.9	100.0
15-Jul	2.2	3.0	2.8	1.1	0.5	0.5	0.4	1.2	0.8	1.2	4.1	3.8	3.3	5.6	6.4	9.8	7.8	5.9	3.3	3.6	6.8	8.2	10.8	6.8	100.0
16-Jul	3.9	1.9	1.4	1.6	0.7	1.0	1.9	1.7	2.6	1.3	2.3	8.2	11.1	10.6	9.6	5.4	9.5	5.1	3.2	2.0	3.9	4.4	3.1	3.6	100.0
17-Jul	2.2	3.0	1.3	0.6	0.3	0.4	0.7	1.1	0.8	0.6	1.6	2.6	3.1	5.5	7.4	7.6	8.8	7.9	8.1	5.2	4.8	10.9	10.9	4.6	100.0
18-Jul	4.7	2.5	1.8	1.3	1.2	1.2	3.1	5.7	5.3	2.6	2.5	2.3	5.1	6.3	5.8	5.2	6.0	3.5	5.0	5.6	7.4	6.4	4.6	4.9	100.0
19-Jul	1.3	0.8	0.4	0.2	0.2	0.7	3.1	2.0	3.0	2.1	2.2	2.0	3.6	5.0	5.1	5.5	3.8	3.3	7.9	7.2	8.6	10.8	11.6	9.5	100.0
20-Jul	15.9	7.9	5.9	7.0	6.3	2.8	0.6	1.3	2.1	2.1	1.2	1.3	1.4	2.6	2.3	5.0	5.8	5.0	6.1	4.9	4.4	3.5	3.1	1.5	100.0
21-Jul	3.6	1.1	0.7	0.6	0.7	1.5	2.5	2.7	4.9	2.7	3.1	5.0	4.6	4.7	9.8	9.8	7.4	4.6	10.7	4.3	4.7	5.2	3.4	1.7	100.0
22-Jul	2.3	1.4	0.4	0.4	0.3	0.4	0.5	1.3	2.6	1.7	1.9	3.1	5.2	5.2	7.1	5.7	8.8	10.0	7.9	6.8	9.1	7.0	5.9	4.9	100.0
23-Jul	3.7	1.3	1.3	0.6	0.8	1.0	1.6	2.6	4.2	3.0	4.0	5.2	4.7	4.7	6.0	7.9	9.3	6.5	4.7	5.8	6.9	5.0	4.1	5.0	100.0
24-Jul	2.0	0.8	0.5	0.3	0.3	0.4	1.2	1.4	1.5	1.2	2.3	5.2	7.1	5.4	7.4	5.6	7.9	5.1	4.6	4.9	11.5	12.1	7.6	3.9	100.0
25-Jul	2.9	0.7	0.5	0.2	0.3	0.5	2.1	2.1	2.5	1.4	3.1	6.2	6.8	8.0	6.5	6.2	6.1	6.8	6.1	5.2	7.9	4.8	5.6	7.5	100.0
26-Jul	4.6	1.7	1.2	0.7	0.3	1.0	4.0	4.6	3.2	3.0	2.2	4.9	5.4	4.5	4.9	4.0	5.0	6.1	5.8	8.3	7.2	6.0	5.9	5.7	100.0
27-Jul	4.7	4.1	2.3	1.1	0.3	1.7	3.2	5.7	7.0	2.9	3.9	3.8	6.0	3.6	3.6	4.3	4.7	5.0	5.8	5.2	4.9	4.9	6.2	5.2	100.0
28-Jul	7.2	3.7	2.7	2.4	1.6	1.3	2.0	5.1	3.5	2.1	2.4	4.4	4.0	7.1	3.3	4.2	5.9	4.0	5.5	7.8	6.8	5.4	3.5	4.1	100.0
29-Jul	6.1	1.7	1.3	0.8	0.7	2.1	2.7	2.3	2.2	3.6	3.5	2.7	4.5	4.9	3.8	4.1	4.6	5.2	6.0	7.0	7.2	11.4	7.2	4.6	100.0
30-Jul	1.2	1.0	0.4	0.2	0.4	0.5	2.5	4.1	6.3	7.1	3.4	2.2	5.5	4.7	9.1	9.5	5.5	9.0	5.6	6.6	4.8	5.2	2.4	2.5	100.0
31-Jul	3.1	1.5	1.4	0.4	0.5	0.8	1.4	3.7	3.4	3.9	1.7	2.8	5.9	4.1	7.8	7.0	10.8	6.3	10.7	6.8	2.7	2.8	4.4	6.1	100.0
1-Aug	4.7	1.5	1.0	3.4	0.4	0.7	0.9	1.8	2.5	2.3	2.8	5.0	4.8	4.6	3.8	3.8	5.6	6.2	5.1	6.5	11.2	8.7	9.4	3.1	100.0
2-Aug	3.4	2.8	2.3	1.0	0.8	0.8	1.4	3.0	3.3	2.8	2.5	3.3	5.5	7.3	6.2	6.3	6.7	5.1	7.3	7.2	5.7	4.7	4.6	6.1	100.0
3-Aug	8.6	3.1	1.8	2.8	0.9	1.2	2.0	1.4	1.4	2.2	2.7	4.1	3.5	3.8	5.1	6.1	8.7	8.6	7.9	4.0	6.0	5.4	6.1	2.7	100.0
4-Aug	1.9	1.9	0.8	0.8	0.5	1.0	1.1	0.7	2.6	0.7	2.5	2.1	5.2	4.1	5.4	8.5	6.9	11.3	10.8	8.6	9.0	3.9	4.9	4.8	100.0

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Appendix A.6. (p.2 of 2)

	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
5-Aug	3.8	2.2	2.1	1.1	2.7	1.0	4.2	1.7	2.8	2.4	2.3	2.8	5.4	6.5	3.6	4.3	6.9	7.7	7.0	4.9	4.1	6.0	7.1	7.2	100.0
6-Aug	4.4	2.3	0.8	0.8	1.0	0.8	1.4	1.4	2.1	1.9	2.5	2.1	2.8	8.5	5.3	5.1	8.4	9.5	9.5	6.7	7.4	5.4	3.9	6.0	100.0
7-Aug	3.1	1.6	1.4	2.2	4.5	5.2	1.7	2.4	2.0	2.6	2.3	2.5	3.2	3.5	4.9	7.0	5.8	5.9	6.6	5.3	3.4	7.9	9.7	5.6	100.0
8-Aug	4.3	3.3	3.2	2.2	1.8	1.7	2.8	2.6	3.6	3.1	3.3	4.9	3.5	4.4	6.2	6.9	8.0	8.4	8.1	5.4	3.5	2.8	2.6	3.6	100.0
9-Aug	2.9	3.9	2.1	1.4	0.6	2.0	1.0	2.8	2.5	4.0	5.5	3.0	4.2	7.4	8.4	4.4	4.7	7.7	5.2	7.4	6.4	4.6	4.6	3.5	100.0
10-Aug	2.7	2.7	2.3	2.0	1.0	1.1	1.7	1.7	3.0	5.2	5.2	4.5	5.1	6.3	4.6	6.0	4.8	5.7	8.3	7.2	6.7	4.9	4.2	3.2	100.0
11-Aug	1.5	1.5	1.6	1.2	1.2	0.8	2.4	2.5	1.9	2.1	2.7	2.3	4.3	7.7	10.6	8.3	7.3	6.8	3.2	6.4	6.0	6.2	5.6	5.9	100.0
12-Aug	3.2	2.1	3.4	1.8	1.3	0.9	1.6	3.2	2.3	2.3	2.9	1.6	4.1	4.0	6.8	6.9	9.1	8.7	7.7	5.4	5.3	4.3	6.5	4.8	100.0
13-Aug	10.0	2.5	3.2	1.4	1.4	1.3	1.4	1.6	2.7	1.9	0.9	4.0	3.1	3.5	5.3	7.1	6.0	8.9	4.4	6.5	6.9	5.8	4.4	5.7	100.0
Total	4.0	2.3	1.6	1.2	1.0	1.1	2.1	2.7	2.9	2.3	2.6	3.8	4.9	5.5	6.0	6.1	6.7	6.2	6.4	5.9	6.6	6.7	6.3	5.1	100.0

Appendix A.7. Kenai River north bank sonar counts by sector. 1 July through 13 August 2001.

	Counts by Sector													
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total	Cum Total
1-Jul	334	153	57	99	60	45	1	1	1	3	2	0	756	756
2-Jul	1,060	1,226	701	556	373	368	52	69	25	19	95	107	4,651	5,407
3-Jul	841	950	310	351	73	62	31	29	40	11	32	44	2,774	8,181
4-Jul	1,176	1,048	345	264	35	38	4	1	6	5	4	15	2,941	11,122
5-Jul	627	793	396	292	63	89	2	6	17	17	7	35	2,344	13,466
6-Jul	281	534	417	140	36	22	12	19	13	31	26	19	1,550	15,016
7-Jul	223	925	417	216	82	27	13	8	22	34	30	45	2,042	17,058
8-Jul	497	1,417	701	401	149	52	48	34	43	30	32	42	3,446	20,504
9-Jul	548	1,345	588	517	125	98	261	156	111	62	155	108	4,074	24,578
10-Jul	370	648	327	361	180	169	282	124	72	26	104	140	2,803	27,381
11-Jul	359	493	283	639	361	386	281	285	160	28	74	122	3,471	30,852
12-Jul	61	201	194	391	126	143	163	179	167	85	165	244	2,119	32,971
13-Jul	205	174	148	260	216	226	250	433	194	59	93	139	2,397	35,368
14-Jul	266	722	783	471	280	173	285	646	609	418	179	133	4,965	40,333
15-Jul	2,125	6,781	1,911	1,500	503	286	315	77	169	167	179	135	14,148	54,481
16-Jul	2,475	4,305	1,902	1,354	325	239	491	288	1,188	400	275	95	13,337	67,818
17-Jul	2,629	2,615	3,029	3,417	1,605	862	715	125	162	253	180	141	15,733	83,551
18-Jul	4,615	2,484	5,670	975	319	331	281	266	322	339	247	215	16,064	99,615
19-Jul	3,772	3,532	1,852	752	811	630	285	207	346	88	85	131	12,491	112,106
20-Jul	4,498	2,618	3,239	783	318	259	575	204	266	274	250	343	13,627	125,733
21-Jul	2,073	2,064	2,256	528	139	200	487	246	100	134	176	334	8,737	134,470
22-Jul	1,629	2,908	1,520	800	242	153	213	219	116	100	155	239	8,294	142,764
23-Jul	3,019	5,717	1,287	1,067	385	109	143	139	26	22	48	115	12,077	154,841
24-Jul	3,889	11,418	2,043	1,931	760	542	58	61	16	5	13	44	20,780	175,621
25-Jul	3,099	15,723	3,444	2,378	617	103	68	53	9	10	4	20	25,528	201,149
26-Jul	3,477	9,483	2,976	3,094	696	163	121	84	7	1	23	10	20,135	221,284
27-Jul	2,020	6,746	2,584	1,961	601	116	79	82	19	3	7	14	14,232	235,516
28-Jul	2,363	2,966	1,380	1,672	345	70	87	46	12	12	27	21	9,001	244,517
29-Jul	1,042	4,055	1,580	1,481	365	65	82	138	19	14	40	55	8,936	253,453
30-Jul	1,034	5,702	1,275	1,048	155	189	86	149	43	32	42	23	9,778	263,231
31-Jul	434	3,597	1,437	1,165	287	80	116	101	27	31	49	37	7,361	270,592
1-Aug	280	2,730	1,167	1,389	416	110	266	240	110	130	81	106	7,025	277,617
2-Aug	580	3,983	1,108	543	269	150	205	55	34	53	69	103	7,152	284,769
3-Aug	835	3,158	448	290	254	230	274	136	58	40	57	45	5,825	290,594
4-Aug	710	3,525	1,645	966	762	733	152	36	15	10	17	28	8,599	299,193
5-Aug	326	1,349	486	317	414	242	283	48	56	65	57	110	3,753	302,946
6-Aug	451	1,126	562	459	514	540	174	145	118	127	108	91	4,415	307,361
7-Aug	778	581	276	420	426	376	250	224	264	158	228	274	4,255	311,616
8-Aug	686	1,036	715	582	562	321	180	75	147	133	92	92	4,621	316,237
9-Aug	156	564	480	522	663	447	233	115	168	104	100	114	3,666	319,903
10-Aug	133	834	364	353	417	306	183	125	149	86	138	120	3,208	323,111
11-Aug	136	294	183	149	319	335	296	268	260	210	207	168	2,825	325,936
12-Aug	113	618	212	266	235	311	184	104	208	164	193	193	2,801	328,737
13-Aug	44	282	202	174	415	280	136	185	339	238	191	149	2,635	331,372
Total	56,269	123,423	52,900	37,294	16,298	10,676	8,703	6,231	6,253	4,231	4,336	4,758	331,372	

FN: 01KE1SC.XLS

Appendix A.8. Kenai River south bank sonar counts by sector, 1 July through 13 August 2001.

	Counts by Sector													
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total	Cum Total
1-Jul	10	151	130	16	15	35	34	8	8	16	13	17	453	453
2-Jul	25	386	218	47	40	38	19	11	9	9	8	10	820	1,273
3-Jul	176	686	301	36	51	60	41	19	17	14	20	10	1,431	2,704
4-Jul	73	505	218	30	24	41	35	20	12	7	2	4	971	3,675
5-Jul	240	661	134	79	52	37	39	25	26	9	27	25	1,354	5,029
6-Jul	202	591	84	38	66	47	17	25	20	11	19	27	1,147	6,176
7-Jul	192	873	170	59	90	52	28	31	28	11	30	21	1,585	7,761
8-Jul	149	1,147	204	70	75	67	35	25	21	13	22	32	1,860	9,621
9-Jul	258	922	283	52	144	76	61	14	26	15	48	22	1,921	11,542
10-Jul	235	589	191	101	183	140	49	50	37	36	58	52	1,721	13,263
11-Jul	190	369	277	121	173	141	82	48	32	15	25	42	1,515	14,778
12-Jul	116	167	160	78	78	86	55	35	19	17	25	56	892	15,670
13-Jul	129	263	202	113	150	102	78	54	35	16	21	12	1,175	16,845
14-Jul	156	804	949	693	997	764	484	244	91	39	45	32	5,298	22,143
15-Jul	645	3,431	3,334	1,621	1,811	1,210	962	1,265	309	42	64	38	14,732	36,875
16-Jul	745	3,601	3,193	1,892	2,113	1,227	869	2,637	714	45	42	87	17,165	54,040
17-Jul	2,391	5,102	4,254	2,634	4,379	3,282	1,513	1,807	275	65	60	56	25,818	79,858
18-Jul	689	2,626	2,760	1,786	1,818	1,196	672	448	185	45	50	46	12,321	92,179
19-Jul	5,754	6,343	4,284	2,068	1,845	710	279	645	38	20	31	39	22,056	114,235
20-Jul	1,588	3,625	3,669	1,825	964	879	223	60	33	11	21	9	12,907	127,142
21-Jul	407	487	1,915	1,216	573	485	190	67	42	19	15	13	5,429	132,571
22-Jul	394	545	2,508	1,651	906	724	228	54	33	7	9	4	7,063	139,634
23-Jul	298	629	3,365	1,822	1,045	866	329	68	36	8	7	5	8,478	148,112
24-Jul	530	1,404	7,956	4,123	1,071	597	201	70	31	12	23	7	16,025	164,137
25-Jul	470	2,131	11,393	5,721	1,703	878	225	59	21	7	17	3	22,628	186,765
26-Jul	679	3,684	16,329	7,396	2,344	794	144	34	5	7	3	16	31,435	218,200
27-Jul	365	1,990	10,278	5,050	1,787	950	244	49	30	10	6	8	20,767	238,967
28-Jul	111	678	4,458	2,451	1,103	557	171	62	37	15	18	6	9,667	248,634
29-Jul	105	371	2,128	2,391	693	420	173	66	22	7	8	5	6,389	255,023
30-Jul	130	616	3,999	1,995	753	272	74	27	22	8	11	6	7,913	262,936
31-Jul	167	486	3,644	2,125	607	345	104	36	31	13	13	11	7,582	270,518
1-Aug	155	598	2,705	2,086	650	671	185	68	23	10	15	12	7,178	277,696
2-Aug	70	366	2,598	3,451	429	426	165	70	31	21	26	16	7,669	285,365
3-Aug	105	379	1,916	2,142	265	253	88	52	32	11	32	11	5,286	290,651
4-Aug	99	208	1,349	1,584	373	412	137	65	43	18	22	5	4,315	294,966
5-Aug	167	355	1,293	1,542	482	633	253	99	80	52	56	24	5,036	300,002
6-Aug	127	359	1,561	1,382	448	456	137	79	91	50	72	29	4,791	304,793
7-Aug	207	324	1,314	1,070	669	751	346	150	160	102	207	159	5,459	310,252
8-Aug	90	404	1,699	1,246	476	504	204	89	76	69	79	34	4,970	315,222
9-Aug	180	248	1,112	857	397	460	194	87	84	60	79	20	3,778	319,000
10-Aug	231	294	1,240	1,005	339	407	146	44	64	25	57	27	3,879	322,879
11-Aug	111	133	841	942	459	678	240	120	83	63	95	20	3,785	326,664
12-Aug	75	164	856	1,145	504	983	376	184	110	52	89	33	4,571	331,235
13-Aug	155	502	1,423	1,122	731	647	344	163	121	64	105	46	5,423	336,658
Total	19,391	50,197	112,895	68,874	33,875	24,359	10,473	9,333	3,243	1,166	1,695	1,157	336,658	

FN: 01KE2SC.XLS

Appendix A.9. Kenai River north bank sonar counts by sector, 1 July through 13 August 2001. Counts expressed as percentage of daily total.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
1-Jul	44.2	20.2	7.5	13.1	7.9	6.0	0.1	0.1	0.1	0.4	0.3	0.0	100.0
2-Jul	22.8	26.4	15.1	12.0	8.0	7.9	1.1	1.5	0.5	0.4	2.0	2.3	100.0
3-Jul	30.3	34.2	11.2	12.7	2.6	2.2	1.1	1.0	1.4	0.4	1.2	1.6	100.0
4-Jul	40.0	35.6	11.7	9.0	1.2	1.3	0.1	0.0	0.2	0.2	0.1	0.5	100.0
5-Jul	26.7	33.8	16.9	12.5	2.7	3.8	0.1	0.3	0.7	0.7	0.3	1.5	100.0
6-Jul	18.1	34.5	26.9	9.0	2.3	1.4	0.8	1.2	0.8	2.0	1.7	1.2	100.0
7-Jul	10.9	45.3	20.4	10.6	4.0	1.3	0.6	0.4	1.1	1.7	1.5	2.2	100.0
8-Jul	14.4	41.1	20.3	11.6	4.3	1.5	1.4	1.0	1.2	0.9	0.9	1.2	100.0
9-Jul	13.5	33.0	14.4	12.7	3.1	2.4	6.4	3.8	2.7	1.5	3.8	2.7	100.0
10-Jul	13.2	23.1	11.7	12.9	6.4	6.0	10.1	4.4	2.6	0.9	3.7	5.0	100.0
11-Jul	10.3	14.2	8.2	18.4	10.4	11.1	8.1	8.2	4.6	0.8	2.1	3.5	100.0
12-Jul	2.9	9.5	9.2	18.5	5.9	6.7	7.7	8.4	7.9	4.0	7.8	11.5	100.0
13-Jul	8.6	7.3	6.2	10.8	9.0	9.4	10.4	18.1	8.1	2.5	3.9	5.8	100.0
14-Jul	5.4	14.5	15.8	9.5	5.6	3.5	5.7	13.0	12.3	8.4	3.6	2.7	100.0
15-Jul	15.0	47.9	13.5	10.6	3.6	2.0	2.2	0.5	1.2	1.2	1.3	1.0	100.0
16-Jul	18.6	32.3	14.3	10.2	2.4	1.8	3.7	2.2	8.9	3.0	2.1	0.7	100.0
17-Jul	16.7	16.6	19.3	21.7	10.2	5.5	4.5	0.8	1.0	1.6	1.1	0.9	100.0
18-Jul	28.7	15.5	35.3	6.1	2.0	2.1	1.7	1.7	2.0	2.1	1.5	1.3	100.0
19-Jul	30.2	28.3	14.8	6.0	6.5	5.0	2.3	1.7	2.8	0.7	0.7	1.0	100.0
20-Jul	33.0	19.2	23.8	5.7	2.3	1.9	4.2	1.5	2.0	2.0	1.8	2.5	100.0
21-Jul	23.7	23.6	25.8	6.0	1.6	2.3	5.6	2.8	1.1	1.5	2.0	3.8	100.0
22-Jul	19.6	35.1	18.3	9.6	2.9	1.8	2.6	2.6	1.4	1.2	1.9	2.9	100.0
23-Jul	25.0	47.3	10.7	8.8	3.2	0.9	1.2	1.2	0.2	0.2	0.4	1.0	100.0
24-Jul	18.7	54.9	9.8	9.3	3.7	2.6	0.3	0.3	0.1	0.0	0.1	0.2	100.0
25-Jul	12.1	61.6	13.5	9.3	2.4	0.4	0.3	0.2	0.0	0.0	0.0	0.1	100.0
26-Jul	17.3	47.1	14.8	15.4	3.5	0.8	0.6	0.4	0.0	0.0	0.1	0.0	100.0
27-Jul	14.2	47.4	18.2	13.8	4.2	0.8	0.6	0.6	0.1	0.0	0:0	0.1	100.0
28-Jul	26.3	33.0	15.3	18.6	3.8	0.8	1.0	0.5	0.1	0.1	0.3	0.2	100.0
29-Jul	11.7	45.4	17.7	16.6	4.1	0.7	0.9	1.5	0.2	0.2	0.4	0.6	100.0
30-Jul	10.6	58.3	13.0	10.7	1.6	1.9	0.9	1.5	0.4	0.3	0.4	0.2	100.0
31-Jul	5.9	48.9	19.5	15.8	3.9	1.1	1.6	1.4	0.4	0.4	0.7	0.5	100.0
1-Aug	4.0	38.9	16.6	19.8	5.9	1.6	3.8	3.4	1.6	1.9	1.2	1.5	100.0
2-Aug	8.1	55.7	15.5	7.6	3.8	2.1	2.9	0.8	0.5	0.7	1.0	1.4	100.0
3-Aug	14.3	54.2	7.7	5.0	4.4	3.9	4.7	2.3	1.0	0.7	1.0	0.8	100.0
4-Aug	8.3	41.0	19.1	11.2	8.9	8.5	1.8	0.4	0.2	0.1	0.2	0.3	100.0
5-Aug	8.7	35.9	12.9	8.4	11.0	6.4	7.5	1.3	1.5	1.7	1.5	2.9	100.0
6-Aug	10.2	25.5	12.7	10.4	11.6	12.2	3.9	3.3	2.7	2.9	2.4	2.1	100.0
7-Aug	18.3	13.7	6.5	9.9	10.0	8.8	5.9	5.3	6.2	3.7	5.4	6.4	100.0
8-Aug	14.8	22.4	15.5	12.6	12.2	6.9	3.9	1.6	3.2	2.9	2.0	2.0	100.0
9-Aug	4.3	15.4	13.1	14.2	18.1	12.2	6.4	3.1	4.6	2.8	2.7	3.1	100.0
10-Aug	4.1	26.0	11.3	11.0	13.0	9.5	5.7	3.9	4.6	2.7	4.3	3.7	100.0
11-Aug	4.8	10.4	6.5	5.3	11.3	11.9	10.5	9.5	9.2	7.4	7.3	5.9	100.0
12-Aug	4.0	22.1	7.6	9.5	8.4	11.1	6.6	3.7	7.4	5.9	6.9	6.9	100.0
13-Aug	1.7	10.7	7.7	6.6	15.7	10.6	5.2	7.0	12.9	9.0	7.2	5.7	100.0
Total	17.0	37.2	16.0	11.3	4.9	3.2	2.6	1.9	1.9	1.3	1.3	1.4	100.0

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Appendix A10. Kenai River south bank sonar counts by sector, 1 July through 13 August 2001. Counts expressed as percentage of daily total.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
1-Jul	2.2	33.3	28.7	3.5	3.3	7.7	7.5	1.8	1.8	3.5	2.9	3.8	100.0
2-Jul	3.0	47.1	26.6	5.7	4.9	4.6	2.3	1.3	1.1	1.1	1.0	1.2	100.0
3-Jul	12.3	47.9	21.0	2.5	3.6	4.2	2.9	1.3	1.2	1.0	1.4	0.7	100.0
4-Jul	7.5	52.0	22.5	3.1	2.5	4.2	3.6	2.1	1.2	0.7	0.2	0.4	100.0
5-Jul	17.7	48.8	9.9	5.8	3.8	2.7	2.9	1.8	1.9	0.7	2.0	1.8	100.0
6-Jul	17.6	51.5	7.3	3.3	5.8	4.1	1.5	2.2	1.7	1.0	1.7	2.4	100.0
7-Jul	12.1	55.1	10.7	3.7	5.7	3.3	1.8	2.0	1.8	0.7	1.9	1.3	100.0
8-Jul	8.0	61.7	11.0	3.8	4.0	3.6	1.9	1.3	1.1	0.7	1.2	1.7	100.0
9-Jul	13.4	48.0	14.7	2.7	7.5	4.0	3.2	0.7	1.4	0.8	2.5	1.1	100.0
10-Jul	13.7	34.2	11.1	5.9	10.6	8.1	2.8	2.9	2.1	2.1	3.4	3.0	100.0
11-Jul	12.5	24.4	18.3	8.0	11.4	9.3	5.4	3.2	2.1	1.0	1.7	2.8	100.0
12-Jul	13.0	18.7	17.9	8.7	8.7	9.6	6.2	3.9	2.1	1.9	2.8	6.3	100.0
13-Jul	11.0	22.4	17.2	9.6	12.8	8.7	6.6	4.6	3.0	1.4	1.8	1.0	100.0
14-Jul	2.9	15.2	17.9	13.1	18.8	14.4	9.1	4.6	1.7	0.7	0.8	0.6	100.0
15-Jul	4.4	23.3	22.6	11.0	12.3	8.2	6.5	8.6	2.1	0.3	0.4	0.3	100.0
16-Jul	4.3	21.0	18.6	11.0	12.3	7.1	5.1	15.4	4.2	0.3	0.2	0.5	100.0
17-Jul	9.3	19.8	16.5	10.2	17.0	12.7	5.9	7.0	1.1	0.3	0.2	0.2	100.0
18-Jul	5.6	21.3	22.4	14.5	14.8	9.7	5.5	3.6	1.5	0.4	0.4	0.4	100.0
19-Jul	26.1	28.8	19.4	9.4	8.4	3.2	1.3	2.9	0.2	0.1	0.1	0.2	100.0
20-Jul	12.3	28.1	28.4	14.1	7.5	6.8	1.7	0.5	0.3	0.1	0.2	0.1	100.0
21-Jul	7.5	9.0	35.3	22.4	10.6	8.9	3.5	1.2	0.8	0.3	0.3	0.2	100.0
22-Jul	5.6	7.7	35.5	23.4	12.8	10.3	3.2	0.8	0.5	0.1	0.1	0.1	100.0
23-Jul	3.5	7.4	39.7	21.5	12.3	10.2	3.9	0.8	0.4	0.1	0.1	0.1	100.0
24-Jul	3.3	8.8	49.6	25.7	6.7	3.7	1.3	0.4	0.2	0.1	0.1	0.0	100.0
25-Jul	2.1	9.4	50.3	25.3	7.5	3.9	1.0	0.3	0.1	0.0	0.1	0.0	100.0
26-Jul	2.2	11.7	51.9	23.5	7.5	2.5	0.5	0.1	0.0	0.0	0.0	0.1	100.0
27-Jul	1.8	9.6	49.5	24.3	8.6	4.6	1.2	0.2	0.1	0.0	0.0	0.0	100.0
28-Jul	1.1	7.0	46.1	25.4	11.4	5.8	1.8	0.6	0.4	0.2	0.2	0.1	100.0
29-Jul	1.6	5.8	33.3	37.4	10.8	6.6	2.7	1.0	0.3	0.1	0.1	0.1	100.0
30-Jul	1.6	7.8	50.5	25.2	9.5	3.4	0.9	0.3	0.3	0.1	0.1	0.1	100.0
31-Jul	2.2	6.4	48.1	28.0	8.0	4.6	1.4	0.5	0.4	0.2	0.2	0.1	100.0
1-Aug	2.2	8.3	37.7	29.1	9.1	9.3	2.6	0.9	0.3	0.1	0.2	0.2	100.0
2-Aug	0.9	4.8	33.9	45.0	5.6	5.6	2.2	0.9	0.4	0.3	0.3	0.2	100.0
3-Aug	2.0	7.2	36.2	40.5	5.0	4.8	1.7	1.0	0.6	0.2	0.6	0.2	100.0
4-Aug	2.3	4.8	31.3	36.7	8.6	9.5	3.2	1.5	1.0	0.4	0.5	0.1	100.0
5-Aug	3.3	7.0	25.7	30.6	9.6	12.6	5.0	2.0	1.6	1.0	1.1	0.5	100.0
6-Aug	2.7	7.5	32.6	28.8	9.4	9.5	2.9	1.6	1.9	1.0	1.5	0.6	100.0
7-Aug	3.8	5.9	24.1	19.6	12.3	13.8	6.3	2.7	2.9	1.9	3.8	2.9	100.0
8-Aug	1.8	8.1	34.2	25.1	9.6	10.1	4.1	1.8	1.5	1.4	1.6	0.7	100.0
9-Aug	4.8	6.6	29.4	22.7	10.5	12.2	5.1	2.3	2.2	1.6	2.1	0.5	100.0
10-Aug	6.0	7.6	32.0	25.9	8.7	10.5	3.8	1.1	1.6	0.6	1.5	0.7	100.0
11-Aug	2.9	3.5	22.2	24.9	12.1	17.9	6.3	3.2	2.2	1.7	2.5	0.5	100.0
12-Aug	1.6	3.6	18.7	25.0	11.0	21.5	8.2	4.0	2.4	1.1	1.9	0.7	100.0
13-Aug	2.9	9.3	26.2	20.7	13.5	11.9	6.3	3.0	2.2	1.2	1.9	0.8	100.0
Total	5.8	14.9	33.5	20.5	10.1	7.2	3.1	2.8	1.0	0.3	0.5	0.3	100.0

fn:01KE2SP.xls

Appendix A.11. Estimated salmon escapement adjacent to the north bank of the Kasilof River, 15 June through 3 August 2001.

Date	Daily	Cum	Date	Daily	Cum
15-Jun	1,377	1,377	10-Jul	1,725	94,031
16-Jun	4,115	5,492	11-Jul	714	94,745
17-Jun	6,426	11,918	12-Jul	524	95,269
18-Jun	5,740	17,658	13-Jul	1,532	96,801
19-Jun	5,503	23,161	14-Jul	3,239	100,040
20-Jun	2,604	25,765	15-Jul	5,118	105,158
21-Jun	3,172	28,937	16-Jul	5,914	111,072
22-Jun	2,796	31,733	17-Jul	9,453	120,525
23-Jun	4,766	36,499	18-Jul	6,878	127,403
24-Jun	6,853	43,352	19-Jul	2,786	130,189
25-Jun	7,401	50,753	20-Jul	1,780	131,969
26-Jun	2,951	53,704	21-Jul	1,866	133,835
27-Jun	4,472	58,176	22-Jul	669	134,504
28-Jun	5,474	63,650	23-Jul	2,804	137,308
29-Jun	1,757	65,407	24-Jul	13,401	150,709
30-Jun	2,260	67,667	25-Jul	27,688	178,397
1-Jul	2,074	69,741	26-Jul	1,970	180,367
2-Jul	5,015	74,756	27-Jul	2,641	183,008
3-Jul	1,719	76,475	28-Jul	1,401	184,409
4-Jul	3,599	80,074	29-Jul	2,643	187,052
5-Jul	1,145	81,219	30-Jul	2,572	189,624
6-Jul	1,357	82,576	31-Jul	2,050	191,674
7-Jul	3,905	86,481	1-Aug	1,256	192,930
8-Jul	4,755	91,236	2-Aug	636	193,566
9-Jul	1,070	92,306	3-Aug	748	194,314

FN: 00KA1C.XLS

Appendix A.12. Estimated salmon escapement adjacent to the south bank of the Kasilof River, 15 June through 3 August 2001.

Date	Daily	Cum	Date	Daily	Cum
15-Jun	425	425	10-Jul	1,710	57,741
16-Jun	265	690	11-Jul	809	58,550
17-Jun	533	1,223	12-Jul	1,536	60,086
18-Jun	791	2,014	13-Jul	905	60,991
19-Jun	1,116	3,130	14-Jul	1,985	62,976
20-Jun	991	4,121	15-Jul	4,750	67,726
21-Jun	865	4,986	16-Jul	4,584	72,310
22-Jun	1,315	6,301	17-Jul	4,119	76,429
23-Jun	2,145	8,446	18-Jul	7,902	84,331
24-Jun	1,857	10,303	19-Jul	2,701	87,032
25-Jun	3,571	13,874	20-Jul	1,405	88,437
26-Jun	2,790	16,664	21-Jul	1,811	90,248
27-Jun	4,647	21,311	22-Jul	723	90,971
28-Jun	5,495	26,806	23-Jul	1,054	92,025
29-Jun	2,124	28,930	24-Jul	3,350	95,375
30-Jun	5,052	33,982	25-Jul	3,460	98,835
1-Jul	2,131	36,113	26-Jul	943	99,778
2-Jul	4,597	40,710	27-Jul	2,265	102,043
3-Jul	2,497	43,207	28-Jul	1,447	103,490
4-Jul	2,385	45,592	29-Jul	1,623	105,113
5-Jul	583	46,175	30-Jul	2,648	107,761
6-Jul	1,529	47,704	31-Jul	1,940	109,701
7-Jul	3,899	51,603	1-Aug	1,167	110,868
8-Jul	3,543	55,146	2-Aug	935	111,803
9-Jul	885	56,031	3-Aug	1,453	113,256

FN: 01KA2C.XLS

Appendix A.13. Kasilof River north bank sonar counts by hour, 15 June through 3 August 2001.

	Counts by Hour																									
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total	Cum Total
15-Jun	39	203	207	133	89	122	121	60	14	4	4	1	12	3	9	16	22	27	24	75	68	42	23	59	1,377	1,377
16-Jun	157	214	392	314	248	145	95	43	48	52	28	96	84	109	96	108	339	371	229	172	181	100	145	349	4,115	5,492
17-Jun	303	175	335	335	175	161	194	147	113	121	75	72	120	133	158	131	651	775	765	576	463	166	126	156	6,426	11,918
18-Jun	174	141	227	226	175	187	88	122	62	63	48	63	68	75	80	102	315	1,233	810	345	341	398	211	186	5,740	17,658
19-Jun	96	89	107	107	259	186	106	47	46	71	84	104	149	163	290	466	1,288	787	343	114	203	234	122	42	5,503	23,161
20-Jun	47	71	129	161	310	149	140	78	113	95	83	62	73	84	47	51	41	116	204	181	100	63	86	120	2,604	25,765
21-Jun	113	159	227	220	454	223	88	51	45	68	55	21	29	30	43	47	38	31	375	190	288	136	108	133	3,172	28,937
22-Jun	99	198	145	170	197	321	118	70	46	40	38	38	38	41	75	55	56	81	65	318	189	222	101	75	2,796	31,733
23-Jun	63	99	97	110	167	194	566	196	73	41	66	76	116	123	126	226	247	242	143	508	556	434	187	110	4,766	36,499
24-Jun	201	196	221	247	309	249	436	324	88	83	263	260	256	248	302	378	254	236	230	192	375	687	510	308	6,853	43,352
25-Jun	258	281	139	192	230	127	134	95	110	54	50	61	129	331	392	664	680	764	559	440	534	735	176	266	7,401	50,753
26-Jun	285	264	223	136	146	113	82	134	110	187	50	29	47	44	41	74	86	103	151	111	76	104	227	128	2,951	53,704
27-Jun	214	302	353	269	124	134	127	141	130	194	362	151	86	77	160	215	172	218	195	185	127	151	112	273	4,472	58,176
28-Jun	173	376	230	200	103	76	87	156	86	100	279	370	305	246	265	544	622	496	288	135	65	106	81	85	5,474	63,650
29-Jun	178	244	334	125	32	51	22	21	22	9	21	31	54	52	25	42	47	88	69	53	72	60	56	49	1,757	65,407
30-Jun	19	28	32	65	59	46	58	13	12	37	27	24	44	40	65	368	320	225	226	168	118	98	90	78	2,260	67,667
1-Jul	96	133	143	83	101	65	36	15	13	24	6	11	45	49	69	162	296	111	66	116	152	152	62	68	2,074	69,741
2-Jul	122	165	204	219	256	206	95	121	90	103	86	123	105	213	361	212	468	497	230	201	322	215	266	135	5,015	74,756
3-Jul	111	124	112	74	100	39	23	21	20	18	6	19	7	16	33	39	69	122	263	180	72	94	81	76	1,719	76,475
4-Jul	133	121	94	88	102	149	131	52	126	198	143	123	203	171	129	157	172	252	283	127	107	217	163	158	3,599	80,074
5-Jul	100	119	85	75	33	35	39	23	29	15	25	29	35	47	38	20	26	25	38	47	27	25	145	65	1,145	81,219
6-Jul	43	53	16	17	21	15	58	26	27	31	37	21	44	40	28	52	57	80	78	123	92	160	124	114	1,357	82,576
7-Jul	71	71	95	69	62	106	207	222	151	121	185	82	150	97	86	168	225	197	151	354	197	193	262	383	3,905	86,481
8-Jul	248	221	185	225	299	453	433	445	225	89	158	193	165	157	231	160	122	150	103	175	192	68	28	30	4,755	91,236
9-Jul	62	52	55	36	42	25	28	41	58	58	48	53	90	42	42	22	35	48	52	25	25	54	41	36	1,070	92,306
10-Jul	37	85	44	34	42	23	24	22	80	166	112	45	79	72	99	62	78	53	119	106	96	141	60	46	1,725	94,031
11-Jul	61	63	89	51	34	29	24	28	19	21	15	30	14	29	51	42	22	17	16	15	16	12	11	5	714	94,745
12-Jul	14	13	8	14	8	11	14	7	23	42	56	41	25	33	33	31	30	32	16	20	13	8	20	12	524	95,269
13-Jul	27	36	18	9	20	9	10	22	43	11	51	80	70	77	83	105	106	126	109	83	101	119	114	103	1,532	96,801
14-Jul	145	127	115	97	108	141	95	84	104	93	158	176	335	354	254	205	117	102	86	76	56	54	59	98	3,239	100,040
15-Jul	153	119	110	83	83	115	86	74	137	190	210	187	371	210	737	498	283	336	299	198	107	199	154	179	5,118	105,158
16-Jul	381	589	502	290	138	204	214	141	92	101	94	91	110	176	335	375	311	221	414	345	116	260	207	207	5,914	111,072
17-Jul	763	1,065	1,541	880	291	220	294	235	130	168	221	141	177	179	154	244	497	305	242	519	521	293	263	110	9,453	120,525
18-Jul	219	277	554	850	335	397	452	613	381	271	365	255	293	201	192	207	246	261	123	85	113	87	63	38	6,878	127,403
19-Jul	55	74	128	341	213	88	65	106	134	127	143	118	129	129	123	156	151	182	105	47	26	55	37	54	2,786	130,189

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Appendix A.13. (p.2 of 2)

Date	Counts by Hour																								Daily Total	Cum Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
20-Jul	75	95	133	105	100	147	81	41	38	68	82	31	68	23	42	48	38	70	107	58	32	122	107	69	1,780	131,969
21-Jul	176	179	176	232	162	147	130	66	56	77	84	58	24	27	39	34	34	14	14	30	19	26	31	31	1,866	133,835
22-Jul	45	47	35	38	27	22	46	27	16	24	33	14	26	17	12	10	10	12	18	43	27	20	45	55	669	134,504
23-Jul	105	93	86	75	55	20	33	79	60	25	48	46	114	72	46	38	105	38	114	114	640	225	301	272	2,804	137,308
24-Jul	182	166	133	104	74	78	152	360	1,011	626	259	421	1,133	1,043	805	797	665	666	705	762	1,422	1,120	315	402	13,401	150,709
25-Jul	1,027	1,709	1,677	1,721	1,598	1,707	1,703	1,911	2,011	2,650	1,903	884	1,224	1,213	1,222	839	531	476	410	270	242	216	365	179	27,688	178,397
26-Jul	87	54	99	74	54	36	43	43	48	45	60	255	220	75	77	94	64	60	66	56	92	66	62	140	1,970	180,367
27-Jul	72	45	60	55	47	55	56	64	36	40	59	100	304	111	32	178	423	270	184	109	111	72	79	79	2,641	183,008
28-Jul	104	81	51	38	45	51	72	109	95	28	35	65	41	26	48	48	56	48	53	46	92	48	83	38	1,401	184,409
29-Jul	53	77	34	31	23	56	63	43	65	85	108	84	125	109	156	308	263	171	205	185	173	124	48	54	2,643	187,052
30-Jul	39	22	39	42	42	59	91	147	131	110	95	122	123	137	107	134	145	206	240	146	140	133	86	36	2,572	189,624
31-Jul	17	41	39	38	39	52	101	132	78	103	117	111	110	84	106	75	91	181	93	119	109	84	71	59	2,050	191,674
1-Aug	94	41	51	48	44	43	56	52	44	43	38	31	29	42	36	51	50	48	61	67	86	65	83	53	1,256	192,930
2-Aug	52	13	26	9	22	21	14	31	36	28	28	18	15	15	16	29	30	14	48	44	28	36	31	32	636	193,566
3-Aug	44	25	26	19	22	42	34	29	39	42	35	41	42	37	20	32	14	27	50	35	30	17	16	30	748	194,314
Total	7,432	9,235	10,161	9,174	7,719	7,350	7,465	7,130	6,764	7,060	6,636	5,558	7,655	7,122	8,016	9,119	11,008	11,211	9,837	8,689	9,350	8,516	6,244	5,863	194,314	

Appendix A.14. Kasilof River south bank sonar counts by hour, 15 June through 3 August 2001.

	Counts by Hour																									
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total	Cum Total
15-Jun	13	41	35	29	56	74	31	27	21	12	11	2	9	16	7	2	1	1	0	2	9	5	6	15	425	425
16-Jun	11	15	16	22	9	18	16	8	11	9	11	8	9	2	7	9	7	8	8	1	20	15	10	15	265	690
17-Jun	21	21	22	27	25	19	57	44	19	31	9	13	9	18	17	13	16	12	15	21	23	17	28	36	533	1,223
18-Jun	23	21	28	50	45	64	23	18	14	22	24	13	16	18	5	8	15	42	21	20	65	65	91	80	791	2,014
19-Jun	59	45	41	45	89	83	33	29	22	24	16	15	42	20	45	52	70	62	31	54	77	69	51	42	1,116	3,130
20-Jun	40	26	57	88	194	95	49	19	32	52	31	15	20	17	16	16	10	21	42	28	27	35	27	34	991	4,121
21-Jun	34	32	56	56	120	97	24	20	22	15	10	5	8	20	15	20	12	14	35	44	33	69	58	46	865	4,986
22-Jun	108	61	50	50	104	155	98	45	22	17	14	16	8	14	16	11	21	28	16	108	112	125	86	30	1,315	6,301
23-Jun	48	116	81	70	96	111	258	145	54	44	21	32	29	59	25	45	61	35	35	87	226	193	151	123	2,145	8,446
24-Jun	53	102	44	67	74	87	156	184	113	76	81	92	30	39	29	50	38	39	31	34	51	94	124	169	1,857	10,303
25-Jun	142	90	148	118	134	112	92	110	178	86	31	43	25	146	180	260	239	157	200	119	161	211	336	253	3,571	13,874
26-Jun	230	110	131	137	165	127	120	107	57	114	46	40	42	91	71	48	71	104	113	137	156	196	164	213	2,790	16,664
27-Jun	311	326	318	220	225	161	133	110	155	259	274	185	68	85	188	167	134	133	97	82	153	176	188	499	4,647	21,311
28-Jun	583	325	460	600	714	521	231	123	178	75	111	98	227	99	64	170	199	94	143	104	94	63	63	156	5,495	26,806
29-Jun	328	275	350	151	48	21	18	32	22	9	19	9	19	33	84	31	74	71	57	88	135	100	90	60	2,124	28,930
30-Jun	51	26	63	42	42	67	25	33	37	64	76	204	142	165	235	1,353	431	170	164	252	331	452	386	241	5,052	33,982
1-Jul	148	131	77	61	44	28	34	15	24	7	25	32	64	105	137	83	169	142	106	55	82	153	163	246	2,131	36,113
2-Jul	211	262	132	339	364	42	80	124	113	35	80	109	169	110	216	328	391	501	109	178	153	216	195	140	4,597	40,710
3-Jul	68	49	54	36	85	40	29	21	61	37	33	29	42	42	78	109	177	241	384	253	115	205	204	105	2,497	43,207
4-Jul	60	91	85	71	113	234	230	89	131	129	81	62	57	70	56	57	66	166	113	122	48	63	139	52	2,385	45,592
5-Jul	92	33	47	26	24	14	22	12	14	11	10	27	28	46	36	11	11	15	4	10	24	8	38	20	583	46,175
6-Jul	31	27	21	26	17	43	111	60	65	68	47	46	32	29	22	6	18	27	48	155	100	179	204	147	1,529	47,704
7-Jul	121	114	94	78	102	143	198	219	108	72	96	250	248	180	268	169	138	120	172	215	239	189	204	162	3,899	51,603
8-Jul	147	90	76	147	254	254	254	186	254	164	137	200	200	122	77	83	120	88	95	92	185	210	67	41	3,543	55,146
9-Jul	50	38	48	9	23	24	17	30	86	48	29	29	33	36	33	38	32	29	37	20	45	46	65	40	885	56,031
10-Jul	75	70	45	55	27	28	24	43	66	75	96	65	46	67	76	64	64	80	96	111	80	161	132	64	1,710	57,741
11-Jul	73	86	114	48	30	30	30	30	10	36	36	29	49	21	26	12	36	15	26	17	17	14	10	14	809	58,550
12-Jul	18	51	23	33	5	50	33	19	35	91	130	153	113	159	110	136	69	56	56	36	59	30	31	40	1,536	60,086
13-Jul	43	62	24	31	15	41	13	24	16	41	34	59	75	45	46	17	15	13	23	34	31	71	64	68	905	60,991
14-Jul	77	55	95	197	129	124	69	61	96	30	54	35	135	148	188	60	33	44	89	68	32	35	49	82	1,985	62,976
15-Jul	40	48	73	86	126	174	68	81	151	171	119	132	136	212	150	295	323	414	479	401	334	258	287	192	4,750	67,726
16-Jul	186	156	200	164	204	243	302	150	140	102	75	114	115	40	144	242	239	153	226	344	406	278	196	165	4,584	72,310
17-Jul	337	153	143	119	155	335	320	224	154	134	142	71	46	50	82	97	153	163	162	207	131	174	271	296	4,119	76,429
18-Jul	329	271	277	573	562	409	414	407	681	479	262	308	503	521	397	285	211	261	238	122	87	129	100	76	7,902	84,331
19-Jul	48	97	91	193	260	139	73	111	167	115	154	153	159	106	111	110	117	118	81	58	39	79	65	57	2,701	87,032

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

	Counts by Hour																									
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total	Cum Total
20-Jul	64	69	59	49	64	147	89	94	97	102	68	34	21	31	27	34	34	25	59	45	23	38	50	82	1,405	88,437
21-Jul	86	91	82	101	66	278	271	71	48	31	77	139	63	39	48	30	24	13	54	80	19	11	34	55	1,811	90,248
22-Jul	44	31	24	21	13	14	31	35	32	17	51	49	53	40	28	17	22	18	27	47	41	21	30	17	723	90,971
23-Jul	76	78	56	28	32	35	28	45	56	56	37	53	116	57	38	36	23	22	27	18	26	44	47	20	1,054	92,025
24-Jul	21	27	60	34	40	76	98	124	290	294	175	101	243	488	225	146	146	174	167	168	159	64	13	17	3,350	95,375
25-Jul	52	66	42	60	91	99	140	264	188	439	340	65	144	144	305	151	286	166	97	66	22	74	89	70	3,460	98,835
26-Jul	23	31	40	28	34	23	26	18	39	33	30	51	116	25	50	24	43	35	33	37	43	41	55	65	943	99,778
27-Jul	58	37	45	54	53	49	34	69	32	35	81	97	92	188	156	198	189	258	134	75	89	107	67	68	2,265	102,043
28-Jul	48	55	42	51	52	49	87	89	111	106	45	22	49	40	117	100	111	47	70	38	31	40	16	31	1,447	103,490
29-Jul	21	54	26	24	51	57	83	77	61	82	122	82	37	40	43	59	74	125	129	106	80	76	71	43	1,623	105,113
30-Jul	26	28	35	24	40	64	98	100	128	139	153	97	54	85	167	175	256	198	147	187	96	194	87	70	2,648	107,761
31-Jul	38	28	17	43	47	53	196	104	146	105	119	117	56	68	73	57	58	114	149	73	97	81	69	32	1,940	109,701
1-Aug	30	21	17	27	24	53	96	85	44	88	109	47	29	32	27	30	27	16	50	74	72	77	67	25	1,167	110,868
2-Aug	23	14	17	21	20	34	56	58	69	29	24	32	21	16	27	50	26	48	57	48	64	41	94	46	935	111,803
3-Aug	43	31	31	28	23	51	68	93	100	109	78	83	82	68	50	57	47	56	50	94	58	46	44	63	1,453	113,256
Total	4,862	4,177	4,212	4,657	5,329	5,289	5,086	4,286	4,770	4,419	3,934	3,762	4,129	4,312	4,638	5,621	5,147	4,952	4,802	4,835	4,800	5,338	5,176	4,723	113,256	

Appendix A.15. Kasilof River north bank sonar counts by hour, 15 June through 3 August 2001. Counts expressed as percentage of daily total.

	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
15-Jun	2.8	14.7	15.0	9.7	6.5	8.9	8.8	4.4	1.0	0.3	0.3	0.1	0.9	0.2	0.7	1.2	1.6	2.0	1.7	5.4	4.9	3.1	1.7	4.3	100.0
16-Jun	3.8	5.2	9.5	7.6	6.0	3.5	2.3	1.0	1.2	1.3	0.7	2.3	2.0	2.6	2.3	2.6	8.2	9.0	5.6	4.2	4.4	2.4	3.5	8.5	100.0
17-Jun	4.7	2.7	5.2	5.2	2.7	2.5	3.0	2.3	1.8	1.9	1.2	1.1	1.9	2.1	2.5	2.0	10.1	12.1	11.9	9.0	7.2	2.6	2.0	2.4	100.0
18-Jun	3.0	2.5	4.0	3.9	3.0	3.3	1.5	2.1	1.1	1.1	0.8	1.1	1.2	1.3	1.4	1.8	5.5	21.5	14.1	6.0	5.9	6.9	3.7	3.2	100.0
19-Jun	1.7	1.6	1.9	1.9	4.7	3.4	1.9	0.9	0.8	1.3	1.5	1.9	2.7	3.0	5.3	8.5	23.4	14.3	6.2	2.1	3.7	4.3	2.2	0.8	100.0
20-Jun	1.8	2.7	5.0	6.2	11.9	5.7	5.4	3.0	4.3	3.6	3.2	2.4	2.8	3.2	1.8	2.0	1.6	4.5	7.8	7.0	3.8	2.4	3.3	4.6	100.0
21-Jun	3.6	5.0	7.2	6.9	14.3	7.0	2.8	1.6	1.4	2.1	1.7	0.7	0.9	0.9	1.4	1.5	1.2	1.0	11.8	6.0	9.1	4.3	3.4	4.2	100.0
22-Jun	3.5	7.1	5.2	6.1	7.0	11.5	4.2	2.5	1.6	1.4	1.4	1.4	1.4	1.5	2.7	2.0	2.0	2.9	2.3	11.4	6.8	7.9	3.6	2.7	100.0
23-Jun	1.3	2.1	2.0	2.3	3.5	4.1	11.9	4.1	1.5	0.9	1.4	1.6	2.4	2.6	2.6	4.7	5.2	5.1	3.0	10.7	11.7	9.1	3.9	2.3	100.0
24-Jun	2.9	2.9	3.2	3.6	4.5	3.6	6.4	4.7	1.3	1.2	3.8	3.8	3.7	3.6	4.4	5.5	3.7	3.4	3.4	2.8	5.5	10.0	7.4	4.5	100.0
25-Jun	3.5	3.8	1.9	2.6	3.1	1.7	1.8	1.3	1.5	0.7	0.7	0.8	1.7	4.5	5.3	9.0	9.2	10.3	7.6	5.9	7.2	9.9	2.4	3.6	100.0
26-Jun	9.7	8.9	7.6	4.6	4.9	3.8	2.8	4.5	3.7	6.3	1.7	1.0	1.6	1.5	1.4	2.5	2.9	3.5	5.1	3.8	2.6	3.5	7.7	4.3	100.0
27-Jun	4.8	6.8	7.9	6.0	2.8	3.0	2.8	3.2	2.9	4.3	8.1	3.4	1.9	1.7	3.6	4.8	3.8	4.9	4.4	4.1	2.8	3.4	2.5	6.1	100.0
28-Jun	3.2	6.9	4.2	3.7	1.9	1.4	1.6	2.8	1.6	1.8	5.1	6.8	5.6	4.5	4.8	9.9	11.4	9.1	5.3	2.5	1.2	1.9	1.5	1.6	100.0
29-Jun	10.1	13.9	19.0	7.1	1.8	2.9	1.3	1.2	1.3	0.5	1.2	1.8	3.1	3.0	1.4	2.4	2.7	5.0	3.9	3.0	4.1	3.4	3.2	2.8	100.0
30-Jun	0.8	1.2	1.4	2.9	2.6	2.0	2.6	0.6	0.5	1.6	1.2	1.1	1.9	1.8	2.9	16.3	14.2	10.0	10.0	7.4	5.2	4.3	4.0	3.5	100.0
1-Jul	4.6	6.4	6.9	4.0	4.9	3.1	1.7	0.7	0.6	1.2	0.3	0.5	2.2	2.4	3.3	7.8	14.3	5.4	3.2	5.6	7.3	7.3	3.0	3.3	100.0
2-Jul	2.4	3.3	4.1	4.4	5.1	4.1	1.9	2.4	1.8	2.1	1.7	2.5	2.1	4.2	7.2	4.2	9.3	9.9	4.6	4.0	6.4	4.3	5.3	2.7	100.0
3-Jul	6.5	7.2	6.5	4.3	5.8	2.3	1.3	1.2	1.2	1.0	0.3	1.1	0.4	0.9	1.9	2.3	4.0	7.1	15.3	10.5	4.2	5.5	4.7	4.4	100.0
4-Jul	3.7	3.4	2.6	2.4	2.8	4.1	3.6	1.4	3.5	5.5	4.0	3.4	5.6	4.8	3.6	4.4	4.8	7.0	7.9	3.5	3.0	6.0	4.5	4.4	100.0
5-Jul	8.7	10.4	7.4	6.6	2.9	3.1	3.4	2.0	2.5	1.3	2.2	2.5	3.1	4.1	3.3	1.7	2.3	2.2	3.3	4.1	2.4	2.2	12.7	5.7	100.0
6-Jul	3.2	3.9	1.2	1.3	1.5	1.1	4.3	1.9	2.0	2.3	2.7	1.5	3.2	2.9	2.1	3.8	4.2	5.9	5.7	9.1	6.8	11.8	9.1	8.4	100.0
7-Jul	1.8	1.8	2.4	1.8	1.6	2.7	5.3	5.7	3.9	3.1	4.7	2.1	3.8	2.5	2.2	4.3	5.8	5.0	3.9	9.1	5.0	4.9	6.7	9.8	100.0
8-Jul	5.2	4.6	3.9	4.7	6.3	9.5	9.1	9.4	4.7	1.9	3.3	4.1	3.5	3.3	4.9	3.4	2.6	3.2	2.2	3.7	4.0	1.4	0.6	0.6	100.0
9-Jul	5.8	4.9	5.1	3.4	3.9	2.3	2.6	3.8	5.4	5.4	4.5	5.0	8.4	3.9	3.9	2.1	3.3	4.5	4.9	2.3	2.3	5.0	3.8	3.4	100.0
10-Jul	2.1	4.9	2.6	2.0	2.4	1.3	1.4	1.3	4.6	9.6	6.5	2.6	4.6	4.2	5.7	3.6	4.5	3.1	6.9	6.1	5.6	8.2	3.5	2.7	100.0
11-Jul	8.5	8.8	12.5	7.1	4.8	4.1	3.4	3.9	2.7	2.9	2.1	4.2	2.0	4.1	7.1	5.9	3.1	2.4	2.2	2.1	2.2	1.7	1.5	0.7	100.0
12-Jul	2.7	2.5	1.5	2.7	1.5	2.1	2.7	1.3	4.4	8.0	10.7	7.8	4.8	6.3	6.3	5.9	5.7	6.1	3.1	3.8	2.5	1.5	3.8	2.3	100.0
13-Jul	1.8	2.3	1.2	0.6	1.3	0.6	0.7	1.4	2.8	0.7	3.3	5.2	4.6	5.0	5.4	6.9	6.9	8.2	7.1	5.4	6.6	7.8	7.4	6.7	100.0
14-Jul	4.5	3.9	3.6	3.0	3.3	4.4	2.9	2.6	3.2	2.9	4.9	5.4	10.3	10.9	7.8	6.3	3.6	3.1	2.7	2.3	1.7	1.7	1.8	3.0	100.0

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Date	Counts by Hour																								Daily Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
15-Jul	3.0	2.3	2.1	1.6	1.6	2.2	1.7	1.4	2.7	3.7	4.1	3.7	7.2	4.1	14.4	9.7	5.5	6.6	5.8	3.9	2.1	3.9	3.0	3.5	100.0
16-Jul	6.4	10.0	8.5	4.9	2.3	3.4	3.6	2.4	1.6	1.7	1.6	1.5	1.9	3.0	5.7	6.3	5.3	3.7	7.0	5.8	2.0	4.4	3.5	3.5	100.0
17-Jul	8.1	11.3	16.3	9.3	3.1	2.3	3.1	2.5	1.4	1.8	2.3	1.5	1.9	1.9	1.6	2.6	5.3	3.2	2.6	5.5	5.5	3.1	2.8	1.2	100.0
18-Jul	3.2	4.0	8.1	12.4	4.9	5.8	6.6	8.9	5.5	3.9	5.3	3.7	4.3	2.9	2.8	3.0	3.6	3.8	1.8	1.2	1.6	1.3	0.9	0.6	100.0
19-Jul	2.0	2.7	4.6	12.2	7.6	3.2	2.3	3.8	4.8	4.6	5.1	4.2	4.6	4.6	4.4	5.6	5.4	6.5	3.8	1.7	0.9	2.0	1.3	1.9	100.0
20-Jul	4.2	5.3	7.5	5.9	5.6	8.3	4.6	2.3	2.1	3.8	4.6	1.7	3.8	1.3	2.4	2.7	2.1	3.9	6.0	3.3	1.8	6.9	6.0	3.9	100.0
21-Jul	9.4	9.6	9.4	12.4	8.7	7.9	7.0	3.5	3.0	4.1	4.5	3.1	1.3	1.4	2.1	1.8	1.8	0.8	0.8	1.6	1.0	1.4	1.7	1.7	100.0
22-Jul	6.7	7.0	5.2	5.7	4.0	3.3	6.9	4.0	2.4	3.6	4.9	2.1	3.9	2.5	1.8	1.5	1.5	1.8	2.7	6.4	4.0	3.0	6.7	8.2	100.0
23-Jul	3.7	3.3	3.1	2.7	2.0	0.7	1.2	2.8	2.1	0.9	1.7	1.6	4.1	2.6	1.6	1.4	3.7	1.4	4.1	4.1	22.8	8.0	10.7	9.7	100.0
24-Jul	1.4	1.2	1.0	0.8	0.6	0.6	1.1	2.7	7.5	4.7	1.9	3.1	8.5	7.8	6.0	5.9	5.0	5.0	5.3	5.7	10.6	8.4	2.4	3.0	100.0
25-Jul	3.7	6.2	6.1	6.2	5.8	6.2	6.2	6.9	7.3	9.6	6.9	3.2	4.4	4.4	4.4	3.0	1.9	1.7	1.5	1.0	0.9	0.8	1.3	0.6	100.0
26-Jul	4.4	2.7	5.0	3.8	2.7	1.8	2.2	2.2	2.4	2.3	3.0	12.9	11.2	3.8	3.9	4.8	3.2	3.0	3.4	2.8	4.7	3.4	3.1	7.1	100.0
27-Jul	2.7	1.7	2.3	2.1	1.8	2.1	2.1	2.4	1.4	1.5	2.2	3.8	11.5	4.2	1.2	6.7	16.0	10.2	7.0	4.1	4.2	2.7	3.0	3.0	100.0
28-Jul	7.4	5.8	3.6	2.7	3.2	3.6	5.1	7.8	6.8	2.0	2.5	4.6	2.9	1.9	3.4	3.4	4.0	3.4	3.8	3.3	6.6	3.4	5.9	2.7	100.0
29-Jul	2.0	2.9	1.3	1.2	0.9	2.1	2.4	1.6	2.5	3.2	4.1	3.2	4.7	4.1	5.9	11.7	10.0	6.5	7.8	7.0	6.5	4.7	1.8	2.0	100.0
30-Jul	1.5	0.9	1.5	1.6	1.6	2.3	3.5	5.7	5.1	4.3	3.7	4.7	4.8	5.3	4.2	5.2	5.6	8.0	9.3	5.7	5.4	5.2	3.3	1.4	100.0
31-Jul	0.8	2.0	1.9	1.9	1.9	2.5	4.9	6.4	3.8	5.0	5.7	5.4	5.4	4.1	5.2	3.7	4.4	8.8	4.5	5.8	5.3	4.1	3.5	2.9	100.0
1-Aug	7.5	3.3	4.1	3.8	3.5	3.4	4.5	4.1	3.5	3.4	3.0	2.5	2.3	3.3	2.9	4.1	4.0	3.8	4.9	5.3	6.8	5.2	6.6	4.2	100.0
2-Aug	8.2	2.0	4.1	1.4	3.5	3.3	2.2	4.9	5.7	4.4	4.4	2.8	2.4	2.4	2.5	4.6	4.7	2.2	7.5	6.9	4.4	5.7	4.9	5.0	100.0
3-Aug	5.9	3.3	3.5	2.5	2.9	5.6	4.5	3.9	5.2	5.6	4.7	5.5	5.6	4.9	2.7	4.3	1.9	3.6	6.7	4.7	4.0	2.3	2.1	4.0	100.0
Total	3.8	4.8	5.2	4.7	4.0	3.8	3.8	3.7	3.5	3.6	3.4	2.9	3.9	3.7	4.1	4.7	5.7	5.8	5.1	4.5	4.8	4.4	3.2	3.0	100.0

Appendix A.16. Kasilof River south bank sonar counts by hour, 15 June through 3 August 2001. Counts expressed as percentage of daily total.

	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
15-Jun	3.1	9.6	8.2	6.8	13.2	17.4	7.3	6.4	4.9	2.8	2.6	0.5	2.1	3.8	1.6	0.5	0.2	0.2	0.0	0.5	2.1	1.2	1.4	3.5	100.0
16-Jun	4.2	5.7	6.0	8.3	3.4	6.8	6.0	3.0	4.2	3.4	4.2	3.0	3.4	0.8	2.6	3.4	2.6	3.0	3.0	0.4	7.5	5.7	3.8	5.7	100.0
17-Jun	3.9	3.9	4.1	5.1	4.7	3.6	10.7	8.3	3.6	5.8	1.7	2.4	1.7	3.4	3.2	2.4	3.0	2.3	2.8	3.9	4.3	3.2	5.3	6.8	100.0
18-Jun	2.9	2.7	3.5	6.3	5.7	8.1	2.9	2.3	1.8	2.8	3.0	1.6	2.0	2.3	0.6	1.0	1.9	5.3	2.7	2.5	8.2	8.2	11.5	10.1	100.0
19-Jun	5.3	4.0	3.7	4.0	8.0	7.4	3.0	2.6	2.0	2.2	1.4	1.3	3.8	1.8	4.0	4.7	6.3	5.6	2.8	4.8	6.9	6.2	4.6	3.8	100.0
20-Jun	4.0	2.6	5.8	8.9	19.6	9.6	4.9	1.9	3.2	5.2	3.1	1.5	2.0	1.7	1.6	1.6	1.0	2.1	4.2	2.8	2.7	3.5	2.7	3.4	100.0
21-Jun	3.9	3.7	6.5	6.5	13.9	11.2	2.8	2.3	2.5	1.7	1.2	0.6	0.9	2.3	1.7	2.3	1.4	1.6	4.0	5.1	3.8	8.0	6.7	5.3	100.0
22-Jun	8.2	4.6	3.8	3.8	7.9	11.8	7.5	3.4	1.7	1.3	1.1	1.2	0.6	1.1	1.2	0.8	1.6	2.1	1.2	8.2	8.5	9.5	6.5	2.3	100.0
23-Jun	2.2	5.4	3.8	3.3	4.5	5.2	12.0	6.8	2.5	2.1	1.0	1.5	1.4	2.8	1.2	2.1	2.8	1.6	1.6	4.1	10.5	9.0	7.0	5.7	100.0
24-Jun	2.9	5.5	2.4	3.6	4.0	4.7	8.4	9.9	6.1	4.1	4.4	5.0	1.6	2.1	1.6	2.7	2.0	2.1	1.7	1.8	2.7	5.1	6.7	9.1	100.0
25-Jun	4.0	2.5	4.1	3.3	3.8	3.1	2.6	3.1	5.0	2.4	0.9	1.2	0.7	4.1	5.0	7.3	6.7	4.4	5.6	3.3	4.5	5.9	9.4	7.1	100.0
26-Jun	8.2	3.9	4.7	4.9	5.9	4.6	4.3	3.8	2.0	4.1	1.6	1.4	1.5	3.3	2.5	1.7	2.5	3.7	4.1	4.9	5.6	7.0	5.9	7.6	100.0
27-Jun	6.7	7.0	6.8	4.7	4.8	3.5	2.9	2.4	3.3	5.6	5.9	4.0	1.5	1.8	4.0	3.6	2.9	2.9	2.1	1.8	3.3	3.8	4.0	10.7	100.0
28-Jun	10.6	5.9	8.4	10.9	13.0	9.5	4.2	2.2	3.2	1.4	2.0	1.8	4.1	1.8	1.2	3.1	3.6	1.7	2.6	1.9	1.7	1.1	1.1	2.8	100.0
29-Jun	15.4	12.9	16.5	7.1	2.3	1.0	0.8	1.5	1.0	0.4	0.9	0.4	0.9	1.6	4.0	1.5	3.5	3.3	2.7	4.1	6.4	4.7	4.2	2.8	100.0
30-Jun	1.0	0.5	1.2	0.8	0.8	1.3	0.5	0.7	0.7	1.3	1.5	4.0	2.8	3.3	4.7	26.8	8.5	3.4	3.2	5.0	6.6	8.9	7.6	4.8	100.0
1-Jul	6.9	6.1	3.6	2.9	2.1	1.3	1.6	0.7	1.1	0.3	1.2	1.5	3.0	4.9	6.4	3.9	7.9	6.7	5.0	2.6	3.8	7.2	7.6	11.5	100.0
2-Jul	4.6	5.7	2.9	7.4	7.9	0.9	1.7	2.7	2.5	0.8	1.7	2.4	3.7	2.4	4.7	7.1	8.5	10.9	2.4	3.9	3.3	4.7	4.2	3.0	100.0
3-Jul	2.7	2.0	2.2	1.4	3.4	1.6	1.2	0.8	2.4	1.5	1.3	1.2	1.7	1.7	3.1	4.4	7.1	9.7	15.4	10.1	4.6	8.2	8.2	4.2	100.0
4-Jul	2.5	3.8	3.6	3.0	4.7	9.8	9.6	3.7	5.5	5.4	3.4	2.6	2.4	2.9	2.3	2.4	2.8	7.0	4.7	5.1	2.0	2.6	5.8	2.2	100.0
5-Jul	15.8	5.7	8.1	4.5	4.1	2.4	3.8	2.1	2.4	1.9	1.7	4.6	4.8	7.9	6.2	1.9	1.9	2.6	0.7	1.7	4.1	1.4	6.5	3.4	100.0
6-Jul	2.0	1.8	1.4	1.7	1.1	2.8	7.3	3.9	4.3	4.4	3.1	3.0	2.1	1.9	1.4	0.4	1.2	1.8	3.1	10.1	6.5	11.7	13.3	9.6	100.0
7-Jul	3.1	2.9	2.4	2.0	2.6	3.7	5.1	5.6	2.8	1.8	2.5	6.4	6.4	4.6	6.9	4.3	3.5	3.1	4.4	5.5	6.1	4.8	5.2	4.2	100.0
8-Jul	4.1	2.5	2.1	4.1	7.2	7.2	7.2	5.2	7.2	4.6	3.9	5.6	5.6	3.4	2.2	2.3	3.4	2.5	2.7	2.6	5.2	5.9	1.9	1.2	100.0
9-Jul	5.6	4.3	5.4	1.0	2.6	2.7	1.9	3.4	9.7	5.4	3.3	3.3	3.7	4.1	3.7	4.3	3.6	3.3	4.2	2.3	5.1	5.2	7.3	4.5	100.0
10-Jul	4.4	4.1	2.6	3.2	1.6	1.6	1.4	2.5	3.9	4.4	5.6	3.8	2.7	3.9	4.4	3.7	3.7	4.7	5.6	6.5	4.7	9.4	7.7	3.7	100.0
11-Jul	9.0	10.6	14.1	5.9	3.7	3.7	3.7	3.7	1.2	4.4	4.4	3.6	6.1	2.6	3.2	1.5	4.4	1.9	3.2	2.1	2.1	1.7	1.2	1.7	100.0
12-Jul	1.2	3.3	1.5	2.1	0.3	3.3	2.1	1.2	2.3	5.9	8.5	10.0	7.4	10.4	7.2	8.9	4.5	3.6	3.6	2.3	3.8	2.0	2.0	2.6	100.0
13-Jul	4.8	6.9	2.7	3.4	1.7	4.5	1.4	2.7	1.8	4.5	3.8	6.5	8.3	5.0	5.1	1.9	1.7	1.4	2.5	3.8	3.4	7.8	7.1	7.5	100.0
14-Jul	3.9	2.8	4.8	9.9	6.5	6.2	3.5	3.1	4.8	1.5	2.7	1.8	6.8	7.5	9.5	3.0	1.7	2.2	4.5	3.4	1.6	1.8	2.5	4.1	100.0

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	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
15-Jul	0.8	1.0	1.5	1.8	2.7	3.7	1.4	1.7	3.2	3.6	2.5	2.8	2.9	4.5	3.2	6.2	6.8	8.7	10.1	8.4	7.0	5.4	6.0	4.0	100.0
16-Jul	4.1	3.4	4.4	3.6	4.5	5.3	6.6	3.3	3.1	2.2	1.6	2.5	2.5	0.9	3.1	5.3	5.2	3.3	4.9	7.5	8.9	6.1	4.3	3.6	100.0
17-Jul	8.2	3.7	3.5	2.9	3.8	8.1	7.8	5.4	3.7	3.3	3.4	1.7	1.1	1.2	2.0	2.4	3.7	4.0	3.9	5.0	3.2	4.2	6.6	7.2	100.0
18-Jul	4.2	3.4	3.5	7.3	7.1	5.2	5.2	5.2	8.6	6.1	3.3	3.9	6.4	6.6	5.0	3.6	2.7	3.3	3.0	1.5	1.1	1.6	1.3	1.0	100.0
19-Jul	1.8	3.6	3.4	7.1	9.6	5.1	2.7	4.1	6.2	4.3	5.7	5.7	5.9	3.9	4.1	4.1	4.3	4.4	3.0	2.1	1.4	2.9	2.4	2.1	100.0
20-Jul	4.6	4.9	4.2	3.5	4.6	10.5	6.3	6.7	6.9	7.3	4.8	2.4	1.5	2.2	1.9	2.4	2.4	1.8	4.2	3.2	1.6	2.7	3.6	5.8	100.0
21-Jul	4.7	5.0	4.5	5.6	3.6	15.4	15.0	3.9	2.7	1.7	4.3	7.7	3.5	2.2	2.7	1.7	1.3	0.7	3.0	4.4	1.0	0.6	1.9	3.0	100.0
22-Jul	6.1	4.3	3.3	2.9	1.8	1.9	4.3	4.8	4.4	2.4	7.1	6.8	7.3	5.5	3.9	2.4	3.0	2.5	3.7	6.5	5.7	2.9	4.1	2.4	100.0
23-Jul	7.2	7.1	5.3	2.7	3.0	3.3	2.7	4.3	5.3	5.3	3.5	5.0	11.0	5.4	3.6	3.4	2.2	2.1	2.6	1.7	2.5	4.2	4.5	1.9	100.0
24-Jul	0.6	0.3	1.8	1.0	1.2	2.3	2.9	3.7	8.7	8.8	5.2	3.0	7.3	14.6	6.7	4.4	4.4	5.2	5.0	5.0	4.7	1.9	0.4	0.5	100.0
25-Jul	1.5	1.9	1.2	1.7	2.6	2.9	4.0	7.6	5.4	12.7	9.8	1.9	4.2	4.2	8.8	4.4	8.3	4.8	2.8	1.9	0.6	2.1	2.6	2.0	100.0
26-Jul	2.4	3.3	4.2	3.0	3.6	2.4	2.8	1.9	4.1	3.5	3.2	5.4	12.3	2.7	5.3	2.5	4.6	3.7	3.5	3.9	4.6	4.3	5.8	6.9	100.0
27-Jul	2.6	1.6	2.0	2.4	2.3	2.2	1.5	3.0	1.4	1.5	3.6	4.3	4.1	8.3	6.9	8.7	8.3	11.4	5.9	3.3	3.9	4.7	3.0	3.0	100.0
28-Jul	3.3	3.8	2.9	3.5	3.6	3.4	6.0	6.2	7.7	7.3	3.1	1.5	3.4	2.8	8.1	6.9	7.7	3.2	4.8	2.6	2.1	2.8	1.1	2.1	100.0
29-Jul	1.3	3.3	1.6	1.5	3.1	3.5	5.1	4.7	3.8	5.1	7.5	5.1	2.3	2.5	2.6	3.6	4.6	7.7	7.9	6.5	4.9	4.7	4.4	2.6	100.0
30-Jul	1.0	1.1	1.3	0.9	1.5	2.4	3.7	3.8	4.8	5.2	5.8	3.7	2.0	3.2	6.3	6.6	9.7	7.5	5.6	7.1	3.6	7.3	3.3	2.6	100.0
31-Jul	2.0	1.4	0.9	2.2	2.4	2.7	10.1	5.4	7.5	5.4	6.1	6.0	2.9	3.5	3.8	2.9	3.0	5.9	7.7	3.8	5.0	4.2	3.6	1.6	100.0
1-Aug	2.6	1.8	1.5	2.3	2.1	4.5	8.2	7.3	3.8	7.5	9.3	4.0	2.5	2.7	2.3	2.6	2.3	1.4	4.3	6.3	6.2	6.6	5.7	2.1	100.0
2-Aug	2.5	1.5	1.8	2.2	2.1	3.6	6.0	6.2	7.4	3.1	2.6	3.4	2.2	1.7	2.9	5.3	2.8	5.1	6.1	5.1	6.8	4.4	10.1	4.9	100.0
3-Aug	3.0	2.1	2.1	1.9	1.6	3.5	4.7	6.4	6.9	7.5	5.4	5.7	5.6	4.7	3.4	3.9	3.2	3.9	3.4	6.5	4.0	3.2	3.0	4.3	100.0
Total	4.3	3.7	3.7	4.1	4.7	4.7	4.5	3.8	4.2	3.9	3.5	3.3	3.6	3.8	4.1	5.0	4.5	4.4	4.2	4.3	4.2	4.7	4.6	4.2	100.0

Appendix A.17. Kasilof River north bank sonar counts by sector, 15 June through 3 August 2001.

	Counts by Sector													
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total	Cum Total
15-Jun	109	244	339	211	134	91	20	29	11	21	105	63	1,377	1,377
16-Jun	445	660	765	550	387	392	93	146	61	112	231	273	4,115	5,492
17-Jun	477	996	1,284	1,084	602	643	166	246	154	172	276	326	6,426	11,918
18-Jun	401	786	1,144	1,030	617	606	146	240	136	161	188	285	5,740	17,658
19-Jun	487	831	1,057	754	577	606	160	261	169	140	142	319	5,503	23,161
20-Jun	172	169	361	320	280	292	106	158	112	158	167	309	2,604	25,765
21-Jun	578	562	416	382	186	158	80	127	81	123	215	264	3,172	28,937
22-Jun	522	449	403	292	175	221	57	103	103	122	196	153	2,796	31,733
23-Jun	645	930	645	424	179	252	145	257	217	207	405	460	4,766	36,499
24-Jun	1,083	1,423	845	324	215	350	168	446	343	340	720	596	6,853	43,352
25-Jun	1,295	1,464	939	338	339	396	167	473	464	385	584	557	7,401	50,753
26-Jun	488	377	311	154	159	204	102	159	146	199	206	446	2,951	53,704
27-Jun	192	348	123	100	165	485	328	459	430	363	655	824	4,472	58,176
28-Jun	179	370	210	193	223	493	313	698	453	529	764	1,049	5,474	63,650
29-Jun	237	410	121	84	115	133	76	154	118	62	66	181	1,757	65,407
30-Jun	114	74	77	60	74	200	149	338	312	261	283	318	2,260	67,667
1-Jul	172	175	124	77	93	140	111	282	218	197	234	251	2,074	69,741
2-Jul	508	500	257	173	181	315	242	510	489	428	607	805	5,015	74,756
3-Jul	198	234	73	35	46	117	72	197	167	162	215	203	1,719	76,475
4-Jul	450	510	248	121	137	155	153	470	324	311	384	336	3,599	80,074
5-Jul	276	252	86	41	44	32	42	106	48	75	74	69	1,145	81,219
6-Jul	180	202	127	100	77	80	42	137	89	82	120	121	1,357	82,576
7-Jul	156	322	399	499	207	248	160	373	219	463	477	382	3,905	86,481
8-Jul	236	367	535	656	313	383	283	420	334	465	425	338	4,755	91,236
9-Jul	65	27	34	82	102	150	64	94	103	94	129	126	1,070	92,306
10-Jul	51	62	198	399	100	168	72	182	88	86	181	138	1,725	94,031
11-Jul	66	38	43	82	49	61	18	59	69	60	92	77	714	94,745
12-Jul	60	36	58	69	22	33	8	45	34	36	55	68	524	95,269
13-Jul	74	232	278	292	54	87	23	77	60	70	176	109	1,532	96,801
14-Jul	183	513	539	541	139	190	54	154	110	163	390	263	3,239	100,040
15-Jul	233	917	689	448	381	388	180	279	276	277	454	596	5,118	105,158
16-Jul	397	1,070	1,280	696	402	287	150	221	197	306	262	646	5,914	111,072
17-Jul	2,223	2,355	1,251	604	445	352	167	249	318	265	353	871	9,453	120,525
18-Jul	1,192	2,264	1,294	467	384	226	122	142	156	183	156	292	6,878	127,403
19-Jul	517	912	536	253	173	106	39	25	43	48	54	80	2,786	130,189
20-Jul	269	426	261	175	134	127	47	64	73	54	53	97	1,780	131,969
21-Jul	394	520	328	145	119	106	43	31	32	57	37	54	1,866	133,835
22-Jul	146	178	84	52	36	46	23	23	10	27	19	25	669	134,504
23-Jul	637	1,167	291	128	185	98	31	27	18	44	77	101	2,804	137,308
24-Jul	4,896	6,310	1,717	186	12	107	28	13	12	9	37	74	13,401	150,709

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	Counts by Sector													
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total	Cum Total
25-Jul	4,680	11,935	9,260	1,574	154	29	8	6	1	4	3	34	27,688	178,397
26-Jul	182	568	834	286	49	14	3	1	4	5	1	23	1,970	180,367
27-Jul	235	707	1,172	364	70	18	4	7	5	0	3	56	2,641	183,008
28-Jul	195	521	421	151	31	18	8	9	5	5	9	28	1,401	184,409
29-Jul	529	1,622	297	28	12	12	11	25	18	38	24	27	2,643	187,052
30-Jul	893	1,269	199	9	2	10	12	11	37	33	31	66	2,572	189,624
31-Jul	692	1,061	146	11	8	13	15	22	20	23	18	21	2,050	191,674
1-Aug	392	582	122	14	8	11	9	27	28	21	17	25	1,256	192,930
2-Aug	163	197	148	29	2	4	7	9	11	21	29	16	636	193,566
3-Aug	276	274	73	6	8	7	6	12	19	25	17	25	748	194,314
Total	29,240	48,418	32,442	15,093	8,606	9,660	4,533	8,603	6,945	7,492	10,416	12,866	194,314	

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Appendix A.18. Kasilof River south bank sonar counts by sector, 15 June through 3 August 2001.

	Counts by Sector													
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total	Cum Total
15-Jun	16	10	11	30	35	39	14	17	15	36	57	145	425	425
16-Jun	8	24	13	35	20	27	13	10	5	15	39	56	265	690
17-Jun	8	7	19	66	59	65	21	25	12	28	73	150	533	1,223
18-Jun	8	18	19	86	136	141	41	40	16	36	74	176	791	2,014
19-Jun	14	12	38	100	164	203	76	77	50	45	94	243	1,116	3,130
20-Jun	44	16	18	79	168	187	73	61	38	30	64	213	991	4,121
21-Jun	38	25	27	64	95	126	59	46	21	24	84	256	865	4,986
22-Jun	51	30	34	151	134	186	68	46	33	57	135	390	1,315	6,301
23-Jun	93	22	48	265	285	284	95	94	70	103	213	573	2,145	8,446
24-Jun	88	46	33	145	281	294	126	107	62	68	94	513	1,857	10,303
25-Jun	192	71	73	298	613	684	421	311	155	106	130	517	3,571	13,874
26-Jun	164	56	81	192	246	407	283	241	226	183	216	495	2,790	16,664
27-Jun	79	54	148	508	481	660	572	444	430	284	259	728	4,647	21,311
28-Jun	95	159	375	1,179	1,213	608	345	313	219	173	218	598	5,495	26,806
29-Jun	97	107	200	374	352	207	122	136	91	95	113	230	2,124	28,930
30-Jun	19	139	360	993	613	510	342	452	193	353	411	667	5,052	33,982
1-Jul	20	57	156	356	241	222	120	181	118	156	185	319	2,131	36,113
2-Jul	43	133	435	791	529	390	240	295	213	372	431	725	4,597	40,710
3-Jul	5	41	71	187	269	249	186	269	184	244	320	472	2,497	43,207
4-Jul	11	56	153	241	251	331	128	91	92	309	272	450	2,385	45,592
5-Jul	8	17	45	53	69	75	41	12	15	52	53	143	583	46,175
6-Jul	31	35	150	188	229	365	73	55	26	72	82	223	1,529	47,704
7-Jul	77	316	448	541	539	434	227	224	175	212	275	431	3,899	51,603
8-Jul	47	328	441	419	270	339	240	239	175	370	306	369	3,543	55,146
9-Jul	12	35	64	55	49	50	33	49	38	129	155	216	885	56,031
10-Jul	16	68	105	157	179	231	108	95	88	202	214	247	1,710	57,741
11-Jul	14	55	53	74	67	64	43	39	54	95	114	137	809	58,550
12-Jul	21	29	96	143	202	120	56	90	90	155	285	249	1,536	60,086
13-Jul	13	20	59	98	118	90	57	62	64	78	97	149	905	60,991
14-Jul	14	34	106	188	252	238	178	158	108	207	218	284	1,985	62,976
15-Jul	82	197	478	674	700	441	263	328	187	315	500	585	4,750	67,726
16-Jul	198	468	730	775	684	407	163	194	89	154	266	456	4,584	72,310
17-Jul	347	558	668	503	279	215	97	161	124	230	416	521	4,119	76,429
18-Jul	1,692	2,074	1,404	687	348	210	143	141	178	362	322	341	7,902	84,331
19-Jul	306	577	669	444	193	84	41	39	44	66	101	137	2,701	87,032
20-Jul	195	297	385	195	89	49	22	37	20	20	58	38	1,405	88,437
21-Jul	107	400	667	278	141	76	31	16	11	8	35	41	1,811	90,248
22-Jul	48	113	136	106	80	44	28	24	14	15	32	83	723	90,971
23-Jul	145	255	287	114	60	27	12	15	6	15	26	92	1,054	92,025
24-Jul	626	1,324	940	250	65	21	9	17	9	13	37	39	3,350	95,375

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	Counts by Sector													
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total	Cum Total
25-Jul	924	1,197	839	212	91	73	8	11	16	20	21	48	3,460	98,835
26-Jul	86	180	344	141	40	25	24	15	19	8	16	45	943	99,778
27-Jul	213	632	820	278	81	48	23	22	14	23	31	80	2,265	102,043
28-Jul	208	507	384	98	50	38	15	12	19	18	39	59	1,447	103,490
29-Jul	368	622	460	75	16	19	7	7	5	8	8	28	1,623	105,113
30-Jul	634	999	802	106	29	17	3	14	9	7	11	17	2,648	107,761
31-Jul	449	782	547	90	16	13	4	10	8	9	2	10	1,940	109,701
1-Aug	316	428	301	55	10	6	4	7	4	9	3	24	1,167	110,868
2-Aug	299	348	191	39	9	10	1	7	4	3	3	21	935	111,803
3-Aug	820	304	174	35	23	9	14	9	14	8	7	36	1,453	113,256
Total	9,409	14,282	15,105	13,211	11,163	9,658	5,313	5,365	3,870	5,600	7,215	13,065	113,256	

FN: 01KA2SC.XLS

Appendix A.19. Kasilof River north bank sonar counts by sector, 15 June through 3 August 2001. Counts expressed as percentage of daily total.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
15-Jun	7.9	17.7	24.6	15.3	9.7	6.6	1.5	2.1	0.8	1.5	7.6	4.6	100.0
16-Jun	10.8	16.0	18.6	13.4	9.4	9.5	2.3	3.5	1.5	2.7	5.6	6.6	100.0
17-Jun	7.4	15.5	20.0	16.9	9.4	10.0	2.6	3.8	2.4	2.7	4.3	5.1	100.0
18-Jun	7.0	13.7	19.9	17.9	10.7	10.6	2.5	4.2	2.4	2.8	3.3	5.0	100.0
19-Jun	8.8	15.1	19.2	13.7	10.5	11.0	2.9	4.7	3.1	2.5	2.6	5.8	100.0
20-Jun	6.6	6.5	13.9	12.3	10.8	11.2	4.1	6.1	4.3	6.1	6.4	11.9	100.0
21-Jun	18.2	17.7	13.1	12.0	5.9	5.0	2.5	4.0	2.6	3.9	6.8	8.3	100.0
22-Jun	18.7	16.1	14.4	10.4	6.3	7.9	2.0	3.7	3.7	4.4	7.0	5.5	100.0
23-Jun	13.5	19.5	13.5	8.9	3.8	5.3	3.0	5.4	4.6	4.3	8.5	9.7	100.0
24-Jun	15.8	20.8	12.3	4.7	3.1	5.1	2.5	6.5	5.0	5.0	10.5	8.7	100.0
25-Jun	17.5	19.8	12.7	4.6	4.6	5.4	2.3	6.4	6.3	5.2	7.9	7.5	100.0
26-Jun	16.5	12.8	10.5	5.2	5.4	6.9	3.5	5.4	4.9	6.7	7.0	15.1	100.0
27-Jun	4.3	7.8	2.8	2.2	3.7	10.8	7.3	10.3	9.6	8.1	14.6	18.4	100.0
28-Jun	3.3	6.8	3.8	3.5	4.1	9.0	5.7	12.8	8.3	9.7	14.0	19.2	100.0
29-Jun	13.5	23.3	6.9	4.8	6.5	7.6	4.3	8.8	6.7	3.5	3.8	10.3	100.0
30-Jun	5.0	3.3	3.4	2.7	3.3	8.8	6.6	15.0	13.8	11.5	12.5	14.1	100.0
1-Jul	8.3	8.4	6.0	3.7	4.5	6.8	5.4	13.6	10.5	9.5	11.3	12.1	100.0
2-Jul	10.1	10.0	5.1	3.4	3.6	6.3	4.8	10.2	9.8	8.5	12.1	16.1	100.0
3-Jul	11.5	13.6	4.2	2.0	2.7	6.8	4.2	11.5	9.7	9.4	12.5	11.8	100.0
4-Jul	12.5	14.2	6.9	3.4	3.8	4.3	4.3	13.1	9.0	8.6	10.7	9.3	100.0
5-Jul	24.1	22.0	7.5	3.6	3.8	2.8	3.7	9.3	4.2	6.6	6.5	6.0	100.0
6-Jul	13.3	14.9	9.4	7.4	5.7	5.9	3.1	10.1	6.6	6.0	8.8	8.9	100.0
7-Jul	4.0	8.2	10.2	12.8	5.3	6.4	4.1	9.6	5.6	11.9	12.2	9.8	100.0
8-Jul	5.0	7.7	11.3	13.8	6.6	8.1	6.0	8.8	7.0	9.8	8.9	7.1	100.0
9-Jul	6.1	2.5	3.2	7.7	9.5	14.0	6.0	8.8	9.6	8.8	12.1	11.8	100.0
10-Jul	3.0	3.6	11.5	23.1	5.8	9.7	4.2	10.6	5.1	5.0	10.5	8.0	100.0
11-Jul	9.2	5.3	6.0	11.5	6.9	8.5	2.5	8.3	9.7	8.4	12.9	10.8	100.0
12-Jul	11.5	6.9	11.1	13.2	4.2	6.3	1.5	8.6	6.5	6.9	10.5	13.0	100.0
13-Jul	4.8	15.1	18.1	19.1	3.5	5.7	1.5	5.0	3.9	4.6	11.5	7.1	100.0
14-Jul	5.6	15.8	16.6	16.7	4.3	5.9	1.7	4.8	3.4	5.0	12.0	8.1	100.0
15-Jul	4.6	17.9	13.5	8.8	7.4	7.6	3.5	5.5	5.4	5.4	8.9	11.6	100.0
16-Jul	6.7	18.1	21.6	11.8	6.8	4.9	2.5	3.7	3.3	5.2	4.4	10.9	100.0
17-Jul	23.5	24.9	13.2	6.4	4.7	3.7	1.8	2.6	3.4	2.8	3.7	9.2	100.0
18-Jul	17.3	32.9	18.8	6.8	5.6	3.3	1.8	2.1	2.3	2.7	2.3	4.2	100.0
19-Jul	18.6	32.7	19.2	9.1	6.2	3.8	1.4	0.9	1.5	1.7	1.9	2.9	100.0
20-Jul	15.1	23.9	14.7	9.8	7.5	7.1	2.6	3.6	4.1	3.0	3.0	5.4	100.0
21-Jul	21.1	27.9	17.6	7.8	6.4	5.7	2.3	1.7	1.7	3.1	2.0	2.9	100.0
22-Jul	21.8	26.6	12.6	7.8	5.4	6.9	3.4	3.4	1.5	4.0	2.8	3.7	100.0
23-Jul	22.7	41.6	10.4	4.6	6.6	3.5	1.1	1.0	0.6	1.6	2.7	3.6	100.0
24-Jul	36.5	47.1	12.8	1.4	0.1	0.8	0.2	0.1	0.1	0.1	0.3	0.6	100.0

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Appendix A.19. (p. 2 of 2)

Date	Counts by Sector												Daily Total
	1	2	3	4	5	6	7	8	9	10	11	12	
25-Jul	16.9	43.1	33.4	5.7	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.1	100.0
26-Jul	9.2	28.8	42.3	14.5	2.5	0.7	0.2	0.1	0.2	0.3	0.1	1.2	100.0
27-Jul	8.9	26.8	44.4	13.8	2.7	0.7	0.2	0.3	0.2	0.0	0.1	2.1	100.0
28-Jul	13.9	37.2	30.0	10.8	2.2	1.3	0.6	0.6	0.4	0.4	0.6	2.0	100.0
29-Jul	20.0	61.4	11.2	1.1	0.5	0.5	0.4	0.9	0.7	1.4	0.9	1.0	100.0
30-Jul	34.7	49.3	7.7	0.3	0.1	0.4	0.5	0.4	1.4	1.3	1.2	2.6	100.0
31-Jul	33.8	51.8	7.1	0.5	0.4	0.6	0.7	1.1	1.0	1.1	0.9	1.0	100.0
1-Aug	31.2	46.3	9.7	1.1	0.6	0.9	0.7	2.1	2.2	1.7	1.4	2.0	100.0
2-Aug	25.6	31.0	23.3	4.6	0.3	0.6	1.1	1.4	1.7	3.3	4.6	2.5	100.0
3-Aug	36.9	36.6	9.8	0.8	1.1	0.9	0.8	1.6	2.5	3.3	2.3	3.3	100.0
Total	15.0	24.9	16.7	7.8	4.4	5.0	2.3	4.4	3.6	3.9	5.4	6.6	100.0

Appendix A.20. Kasilof River south bank sonar counts by sector, 15 June through 3 August 2001. Counts expressed as percentage of daily total.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
15-Jun	3.8	2.4	2.6	7.1	8.2	9.2	3.3	4.0	3.5	8.5	13.4	34.1	100.0
16-Jun	3.0	9.1	4.9	13.2	7.5	10.2	4.9	3.8	1.9	5.7	14.7	21.1	100.0
17-Jun	1.5	1.3	3.6	12.4	11.1	12.2	3.9	4.7	2.3	5.3	13.7	28.1	100.0
18-Jun	1.0	2.3	2.4	10.9	17.2	17.8	5.2	5.1	2.0	4.6	9.4	22.3	100.0
19-Jun	1.3	1.1	3.4	9.0	14.7	18.2	6.8	6.9	4.5	4.0	8.4	21.8	100.0
20-Jun	4.4	1.6	1.8	8.0	17.0	18.9	7.4	6.2	3.8	3.0	6.5	21.5	100.0
21-Jun	4.4	2.9	3.1	7.4	11.0	14.6	6.8	5.3	2.4	2.8	9.7	29.6	100.0
22-Jun	3.9	2.3	2.6	11.5	10.2	14.1	5.2	3.5	2.5	4.3	10.3	29.7	100.0
23-Jun	4.3	1.0	2.2	12.4	13.3	13.2	4.4	4.4	3.3	4.8	9.9	26.7	100.0
24-Jun	4.7	2.5	1.8	7.8	15.1	15.8	6.8	5.8	3.3	3.7	5.1	27.6	100.0
25-Jun	5.4	2.0	2.0	8.3	17.2	19.2	11.8	8.7	4.3	3.0	3.6	14.5	100.0
26-Jun	5.9	2.0	2.9	6.9	8.8	14.6	10.1	8.6	8.1	6.6	7.7	17.7	100.0
27-Jun	1.7	1.2	3.2	10.9	10.4	14.2	12.3	9.6	9.3	6.1	5.6	15.7	100.0
28-Jun	1.7	2.9	6.8	21.5	22.1	11.1	6.3	5.7	4.0	3.1	4.0	10.9	100.0
29-Jun	4.6	5.0	9.4	17.6	16.6	9.7	5.7	6.4	4.3	4.5	5.3	10.8	100.0
30-Jun	0.4	2.8	7.1	19.7	12.1	10.1	6.8	8.9	3.8	7.0	8.1	13.2	100.0
1-Jul	0.9	2.7	7.3	16.7	11.3	10.4	5.6	8.5	5.5	7.3	8.7	15.0	100.0
2-Jul	0.9	2.9	9.5	17.2	11.5	8.5	5.2	6.4	4.6	8.1	9.4	15.8	100.0
3-Jul	0.2	1.6	2.8	7.5	10.8	10.0	7.4	10.8	7.4	9.8	12.8	18.9	100.0
4-Jul	0.5	2.3	6.4	10.1	10.5	13.9	5.4	3.8	3.9	13.0	11.4	18.9	100.0
5-Jul	1.4	2.9	7.7	9.1	11.8	12.9	7.0	2.1	2.6	8.9	9.1	24.5	100.0
6-Jul	2.0	2.3	9.8	12.3	15.0	23.9	4.8	3.6	1.7	4.7	5.4	14.6	100.0
7-Jul	2.0	8.1	11.5	13.9	13.8	11.1	5.8	5.7	4.5	5.4	7.1	11.1	100.0
8-Jul	1.3	9.3	12.4	11.8	7.6	9.6	6.8	6.7	4.9	10.4	8.6	10.4	100.0
9-Jul	1.4	4.0	7.2	6.2	5.5	5.6	3.7	5.5	4.3	14.6	17.5	24.4	100.0
10-Jul	0.9	4.0	6.1	9.2	10.5	13.5	6.3	5.6	5.1	11.8	12.5	14.4	100.0
11-Jul	1.7	6.8	6.6	9.1	8.3	7.9	5.3	4.8	6.7	11.7	14.1	16.9	100.0
12-Jul	1.4	1.9	6.2	9.3	13.2	7.8	3.6	5.9	5.9	10.1	18.6	16.2	100.0
13-Jul	1.4	2.2	6.5	10.8	13.0	9.9	6.3	6.9	7.1	8.6	10.7	16.5	100.0
14-Jul	0.7	1.7	5.3	9.5	12.7	12.0	9.0	8.0	5.4	10.4	11.0	14.3	100.0
15-Jul	1.7	4.1	10.1	14.2	14.7	9.3	5.5	6.9	3.9	6.6	10.5	12.3	100.0
16-Jul	4.3	10.2	15.9	16.9	14.9	8.9	3.6	4.2	1.9	3.4	5.8	9.9	100.0
17-Jul	8.4	13.5	16.2	12.2	6.8	5.2	2.4	3.9	3.0	5.6	10.1	12.6	100.0
18-Jul	21.4	26.2	17.8	8.7	4.4	2.7	1.8	1.8	2.3	4.6	4.1	4.3	100.0
19-Jul	11.3	21.4	24.8	16.4	7.1	3.1	1.5	1.4	1.6	2.4	3.7	5.1	100.0
20-Jul	13.9	21.1	27.4	13.9	6.3	3.5	1.6	2.6	1.4	1.4	4.1	2.7	100.0
21-Jul	5.9	22.1	36.8	15.4	7.8	4.2	1.7	0.9	0.6	0.4	1.9	2.3	100.0
22-Jul	6.6	15.6	18.8	14.7	11.1	6.1	3.9	3.3	1.9	2.1	4.4	11.5	100.0
23-Jul	13.8	24.2	27.2	10.8	5.7	2.6	1.1	1.4	0.6	1.4	2.5	8.7	100.0
24-Jul	18.7	39.5	28.1	7.5	1.9	0.6	0.3	0.5	0.3	0.4	1.1	1.2	100.0

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Appendix A.20. (p. 2 of 2)

Date	Counts by Sector												Daily Total
	1	2	3	4	5	6	7	8	9	10	11	12	
25-Jul	26.7	34.6	24.2	6.1	2.6	2.1	0.2	0.3	0.5	0.6	0.6	1.4	100.0
26-Jul	9.1	19.1	36.5	15.0	4.2	2.7	2.5	1.6	2.0	0.8	1.7	4.8	100.0
27-Jul	9.4	27.9	36.2	12.3	3.6	2.1	1.0	1.0	0.6	1.0	1.4	3.5	100.0
28-Jul	14.4	35.0	26.5	6.8	3.5	2.6	1.0	0.8	1.3	1.2	2.7	4.1	100.0
29-Jul	22.7	38.3	28.3	4.6	1.0	1.2	0.4	0.4	0.3	0.5	0.5	1.7	100.0
30-Jul	23.9	37.7	30.3	4.0	1.1	0.6	0.1	0.5	0.3	0.3	0.4	0.6	100.0
31-Jul	23.1	40.3	28.2	4.6	0.8	0.7	0.2	0.5	0.4	0.5	0.1	0.5	100.0
1-Aug	27.1	36.7	25.8	4.7	0.9	0.5	0.3	0.6	0.3	0.8	0.3	2.1	100.0
2-Aug	32.0	37.2	20.4	4.2	1.0	1.1	0.1	0.7	0.4	0.3	0.3	2.2	100.0
3-Aug	56.4	20.9	12.0	2.4	1.6	0.6	1.0	0.6	1.0	0.6	0.5	2.5	100.0
Total	8.3	12.6	13.3	11.7	9.9	8.5	4.7	4.7	3.4	4.9	6.4	11.5	100.0

Appendix A.21. Estimated salmon escapement adjacent to the north bank of the Crescent River, 28 June through 1 August 2001. Species composition of daily sonar catches based on fish wheel catches.[a]

	Sockeye		Pink		Chum		Coho		Dolly Varden Char	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
28-Jun	240	240	0	0	0	0	0	0	0	0
29-Jun	71	311	0	0	0	0	0	0	0	0
30-Jun	506	817	0	0	0	0	0	0	0	0
1-Jul	1,281	2,098	71	71	0	0	0	0	0	0
2-Jul	2,291	4,389	191	262	0	0	0	0	48	48
3-Jul	4,117	8,506	0	262	0	0	0	0	686	734
4-Jul	2,489	10,995	191	453	0	0	0	0	96	830
5-Jul	3,471	14,466	73	526	0	0	0	0	72	902
6-Jul	3,437	17,903	469	995	156	156	0	0	156	1,058
7-Jul	1,700	19,603	364	1,359	0	156	0	0	243	1,301
8-Jul	1,170	20,773	351	1,710	0	156	0	0	234	1,535
9-Jul	1,926	22,699	350	2,060	0	156	0	0	700	2,235
10-Jul	1,078	23,777	0	2,060	539	695	0	0	0	2,235
11-Jul	2,802	26,579	0	2,060	0	695	0	0	0	2,235
12-Jul	1,315	27,894	0	2,060	0	695	0	0	202	2,437
13-Jul	2,294	30,188	242	2,302	0	695	0	0	845	3,282
14-Jul	3,356	33,544	160	2,462	0	695	0	0	320	3,602
15-Jul	2,464	36,008	0	2,462	0	695	0	0	985	4,587
16-Jul	2,689	38,697	215	2,677	0	695	0	0	430	5,017
17-Jul	2,482	41,179	458	3,135	65	760	0	0	392	5,409
18-Jul	1,309	42,488	62	3,197	0	760	0	0	374	5,783
19-Jul	532	43,020	0	3,197	0	760	0	0	200	5,983
20-Jul	1,547	44,567	129	3,326	129	889	0	0	0	5,983
21-Jul	2,450	47,017	53	3,379	0	889	0	0	107	6,090
22-Jul	2,063	49,080	77	3,456	78	967	0	0	78	6,168
23-Jul	2,415	51,495	83	3,539	167	1,134	0	0	83	6,251
24-Jul	1,563	53,058	78	3,617	0	1,134	0	0	0	6,251
25-Jul	1,736	54,794	248	3,865	165	1,299	0	0	0	6,251
26-Jul	2,303	57,097	153	4,018	154	1,453	0	0	0	6,251
27-Jul	1,294	58,391	0	4,018	287	1,740	0	0	0	6,251
28-Jul	613	59,004	0	4,018	153	1,893	0	0	307	6,558
29-Jul	906	59,910	0	4,018	151	2,044	0	0	0	6,558
30-Jul	667	60,577	47	4,065	48	2,092	0	0	95	6,653
31-Jul	643	61,220	108	4,173	107	2,199	0	0	107	6,760
1-Aug	521	61,741	0	4,173	348	2,547	0	0	0	6,760

[a] One chinook salmon captured in the fish wheel on 11 July was not included in the apportionment process. Two chinook salmon captured in the fish wheel on 2 July and 28 July were combined with Dolly Varden char catch for the apportioment process.

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Appendix A.22. Estimated salmon escapement adjacent to the south bank of the Crescent River, 28 June through 1 August 2001. Species composition of daily sonar counts based on fish wheel catches.[a]

	Sockeye		Pink		Chum		Coho		Dolly Varden/ Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
28-Jun	248	248	0	0	0	0	0	0	0	0
29-Jun	103	351	0	0	0	0	0	0	0	0
30-Jun	100	451	0	0	0	0	0	0	0	0
1-Jul	239	690	13	13	0	0	0	0	0	0
2-Jul	701	1,391	58	71	0	0	0	0	15	15
3-Jul	761	2,152	0	71	0	0	0	0	127	142
4-Jul	2,416	4,568	186	257	0	0	0	0	93	235
5-Jul	708	5,276	14	271	0	0	0	0	15	250
6-Jul	793	6,069	108	379	36	36	0	0	36	286
7-Jul	715	6,784	153	532	0	36	0	0	102	388
8-Jul	203	6,987	60	592	0	36	0	0	41	429
9-Jul	182	7,169	34	626	0	36	0	0	66	495
10-Jul	219	7,388	0	626	110	146	0	0	0	495
11-Jul	1,061	8,449	0	626	0	146	0	0	0	495
12-Jul	406	8,855	0	626	0	146	0	0	62	557
13-Jul	363	9,218	38	664	0	146	0	0	134	691
14-Jul	767	9,985	37	701	0	146	0	0	73	764
15-Jul	483	10,468	0	701	0	146	0	0	193	957
16-Jul	681	11,149	54	755	0	146	0	0	109	1,066
17-Jul	507	11,656	94	849	13	159	0	0	80	1,146
18-Jul	278	11,934	13	862	0	159	0	0	80	1,226
19-Jul	178	12,112	0	862	0	159	0	0	67	1,293
20-Jul	75	12,187	7	869	6	165	0	0	0	1,293
21-Jul	553	12,740	12	881	0	165	0	0	24	1,317
22-Jul	855	13,595	32	913	33	198	0	0	32	1,349
23-Jul	856	14,451	29	942	59	257	0	0	30	1,379
24-Jul	528	14,979	26	968	0	257	0	0	0	1,379
25-Jul	336	15,315	48	1,016	32	289	0	0	0	1,379
26-Jul	214	15,529	14	1,030	14	303	0	0	0	1,379
27-Jul	228	15,757	0	1,030	51	354	0	0	0	1,379
28-Jul	78	15,835	0	1,030	20	374	0	0	39	1,418
29-Jul	140	15,975	0	1,030	23	397	0	0	0	1,418
30-Jul	167	16,142	12	1,042	12	409	0	0	24	1,442
31-Jul	130	16,272	22	1,064	21	430	0	0	22	1,464
1-Aug	68	16,340	0	1,064	45	475	0	0	0	1,464

[a]Counts in Dolly Varden/Chinook column are combined Dolly Varden char and chinook salmon counts.

Appendix A.23. Crescent River north bank sonar counts by hour, 28 June through 1 August 2001.

	Counts by Hour																									
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total	Cum Total
28-Jun	10	10	10	10	10	10	10	10	3	0	8	12	0	7	40	7	55	19	6	3	0	0	0	0	240	240
29-Jun	1	3	3	0	0	5	1	1	0	2	0	1	5	3	5	7	3	18	6	0	4	0	0	3	71	311
30-Jun	2	0	0	4	2	2	2	2	2	0	5	22	9	12	2	7	29	96	34	112	76	11	47	28	506	817
1-Jul	29	1	2	0	0	0	2	1	5	0	3	28	94	111	64	121	328	58	226	97	148	17	11	6	1,352	2,169
2-Jul	3	0	11	8	3	0	11	12	50	73	322	32	38	130	78	260	297	254	400	287	127	65	37	32	2,530	4,699
3-Jul	27	57	28	32	126	6	30	64	288	56	51	139	214	303	343	1,028	653	363	366	233	11	128	234	23	4,803	9,502
4-Jul	72	0	45	67	66	22	9	133	30	102	73	140	116	118	169	280	263	226	227	199	228	154	10	27	2,776	12,278
5-Jul	60	31	28	13	35	83	94	37	9	50	46	97	237	214	268	293	205	134	126	550	502	291	105	108	3,616	15,894
6-Jul	36	42	11	30	59	44	11	214	262	233	371	273	303	418	327	186	135	132	116	306	291	262	111	45	4,218	20,112
7-Jul	26	3	2	54	11	3	52	35	66	98	77	35	146	224	217	227	291	132	70	58	225	115	119	21	2,307	22,419
8-Jul	83	24	104	4	6	28	0	16	16	100	17	40	111	63	142	268	158	71	53	82	72	188	95	14	1,755	24,174
9-Jul	9	26	38	9	42	0	60	94	3	26	10	20	75	241	277	183	210	120	98	71	196	382	584	202	2,976	27,150
10-Jul	31	49	21	24	0	19	28	27	5	42	57	94	28	43	211	124	191	133	182	111	52	21	86	38	1,617	28,767
11-Jul	256	113	39	87	94	127	106	103	135	99	124	179	44	148	178	231	180	157	150	85	74	72	10	11	2,802	31,569
12-Jul	12	0	15	43	12	23	19	78	50	56	44	36	37	131	111	158	115	121	142	95	65	47	21	86	1,517	33,086
13-Jul	51	14	18	0	46	21	139	93	52	20	47	129	190	297	455	361	259	313	290	179	71	32	151	153	3,381	36,467
14-Jul	45	26	67	14	133	88	18	2	47	82	71	89	211	237	488	478	355	411	264	207	226	172	62	43	3,836	40,303
15-Jul	51	77	209	42	35	45	543	27	40	93	249	445	326	75	36	57	82	144	221	188	186	139	103	36	3,449	43,752
16-Jul	28	30	36	51	8	58	75	193	163	61	130	171	222	87	226	110	253	629	364	218	90	68	45	18	3,334	47,086
17-Jul	7	13	4	46	18	28	169	126	140	57	28	145	247	228	320	288	309	319	327	300	164	56	39	19	3,397	50,483
18-Jul	7	18	3	3	0	5	23	8	22	3	64	65	60	110	68	212	168	231	191	251	108	60	17	48	1,745	52,228
19-Jul	11	9	14	1	8	75	26	34	40	37	53	47	26	71	33	4	19	49	29	29	11	24	52	30	732	52,960
20-Jul	119	84	57	68	57	100	75	65	51	121	74	21	6	10	75	83	67	99	65	118	114	109	86	81	1,805	54,765
21-Jul	125	206	165	140	152	153	122	49	28	52	214	87	146	76	128	171	165	73	22	21	46	101	100	68	2,610	57,375
22-Jul	91	64	102	86	88	20	69	50	45	334	69	132	65	129	101	240	163	149	121	49	45	48	13	23	2,296	59,671
23-Jul	36	4	71	41	14	81	95	53	63	109	89	139	165	144	167	102	235	209	182	74	132	384	113	46	2,748	62,419
24-Jul	19	11	1	5	4	3	11	21	26	27	67	51	36	143	97	137	197	128	216	126	225	29	25	36	1,641	64,060
25-Jul	34	6	14	91	77	10	10	67	108	139	88	86	190	195	253	106	108	110	86	80	133	107	33	18	2,149	66,209
26-Jul	8	5	1	2	0	17	105	93	16	12	93	104	188	442	393	325	239	186	152	127	48	30	13	11	2,610	68,819
27-Jul	7	2	0	0	1	6	20	23	12	30	98	64	119	185	181	157	126	180	238	57	32	19	12	12	1,581	70,400
28-Jul	4	26	16	24	0	9	25	9	10	7	27	63	30	53	93	98	85	67	95	126	154	34	11	7	1,073	71,473
29-Jul	1	0	2	0	3	0	3	11	6	6	12	9	88	40	55	43	150	174	142	132	63	74	28	15	1,057	72,530
30-Jul	4	1	0	1	8	6	9	20	22	3	19	28	39	39	85	106	75	90	99	53	40	44	37	29	857	73,387
31-Jul	19	43	15	1	0	14	13	22	5	11	36	14	37	32	74	71	116	97	92	62	56	61	32	42	965	74,352
1-Aug	25	2	0	0	2	13	3	36	97	31	33	37	21	35	33	118	40	38	58	114	48	34	36	15	869	75,221
Total	1,349	1,000	1,152	1,001	1,120	1,124	1,988	1,829	1,917	2,172	2,769	3,074	3,869	4,794	5,793	6,647	6,324	5,730	5,456	4,800	4,063	3,378	2,478	1,394	75,221	

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Appendix A.24. Crescent River south bank sonar counts by hour, 28 June through 1 August 2001.

	Counts by Hour																									
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total	Cum Total
28-Jun	9	22	8	23	36	15	8	11	18	16	18	11	3	1	5	3	4	0	0	12	12	2	2	9	248	248
29-Jun	8	3	1	2	9	4	3	5	2	7	4	3	3	7	4	7	0	7	4	4	3	6	5	2	103	351
30-Jun	5	5	0	4	3	3	0	3	2	7	2	3	3	5	5	4	17	3	5	6	6	2	3	4	100	451
1-Jul	6	5	4	1	3	4	1	8	5	0	10	15	8	10	9	10	10	23	27	17	12	29	18	17	252	703
2-Jul	9	29	13	16	21	39	23	21	20	21	31	25	30	18	31	12	29	48	99	57	79	35	35	33	774	1,477
3-Jul	63	23	35	89	89	29	30	78	45	54	10	18	28	20	31	78	23	19	39	25	34	14	11	3	888	2,365
4-Jul	13	20	20	4	15	1	12	17	62	302	371	49	196	268	215	224	210	145	217	83	177	28	24	22	2,695	5,060
5-Jul	20	8	30	33	32	32	79	7	3	6	20	42	37	35	48	13	30	37	5	49	75	32	32	32	737	5,797
6-Jul	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	41	15	82	62	20	53	3	973	6,770
7-Jul	0	9	2	3	2	41	53	2	8	74	8	182	29	104	30	112	14	1	13	2	11	259	11	0	970	7,740
8-Jul	0	1	1	4	4	11	3	5	2	15	42	22	13	28	22	17	22	7	7	21	4	37	9	7	304	8,044
9-Jul	2	0	2	0	3	0	16	3	2	0	5	13	25	18	59	36	16	9	14	14	1	20	17	7	282	8,326
10-Jul	4	5	1	9	12	3	1	6	2	3	8	11	8	11	15	41	5	145	11	7	10	8	2	1	329	8,655
11-Jul	3	95	2	123	44	130	104	114	127	47	36	38	6	4	19	22	52	25	8	13	6	39	2	2	1,061	9,716
12-Jul	4	8	5	2	6	8	8	6	11	9	9	10	8	19	14	18	26	11	19	9	27	213	5	13	468	10,184
13-Jul	5	2	6	19	10	7	3	1	3	5	7	11	14	34	132	54	56	49	57	22	9	12	14	3	535	10,719
14-Jul	4	12	78	3	23	0	0	0	2	18	18	32	17	81	169	127	112	49	55	18	27	11	16	5	877	11,596
15-Jul	8	8	4	0	115	2	5	2	1	24	9	6	4	3	3	11	43	91	101	69	112	14	32	9	676	12,272
16-Jul	17	4	6	36	1	78	21	0	10	3	14	28	97	101	63	62	54	103	34	35	13	42	10	12	844	13,116
17-Jul	46	2	1	1	14	41	15	21	0	28	80	15	19	42	45	116	47	39	25	26	6	43	19	3	694	13,810
18-Jul	11	7	16	4	0	4	45	10	43	4	25	10	3	13	15	36	5	66	8	10	5	14	12	5	371	14,181
19-Jul	2	1	3	3	4	6	16	15	14	45	23	24	18	26	23	4	0	5	1	6	2	1	0	3	245	14,426
20-Jul	6	4	17	3	7	3	2	5	6	3	12	3	1	1	1	4	0	2	0	3	1	1	1	2	88	14,514
21-Jul	35	0	0	0	0	0	1	10	19	76	42	47	31	36	24	47	46	15	39	24	33	37	15	12	589	15,103
22-Jul	3	5	4	0	0	6	30	17	9	62	30	80	75	107	117	135	74	37	68	33	27	20	13	0	952	16,055
23-Jul	1	1	0	0	0	0	3	5	9	23	154	74	100	89	193	87	66	32	12	16	27	44	26	12	974	17,029
24-Jul	11	2	0	7	0	11	15	7	6	4	12	13	119	49	26	74	59	31	36	39	18	4	7	4	554	17,583
25-Jul	2	4	1	2	1	0	1	3	16	4	6	15	30	62	52	24	25	61	33	19	17	16	14	8	416	17,999
26-Jul	4	1	9	2	2	9	5	10	2	8	8	32	13	25	20	19	11	15	13	5	15	1	7	6	242	18,241
27-Jul	7	0	2	7	2	3	8	25	4	5	11	29	10	18	31	22	33	15	9	7	9	5	8	9	279	18,520
28-Jul	1	4	4	2	14	5	6	6	2	3	8	6	6	11	1	18	4	1	7	5	6	7	4	6	137	18,657
29-Jul	20	17	5	5	3	7	3	6	7	7	7	1	3	2	4	8	7	11	10	7	6	7	5	5	163	18,820
30-Jul	5	4	1	2	2	8	4	5	12	22	18	7	10	6	11	10	11	12	7	9	17	13	14	5	215	19,035
31-Jul	8	2	8	5	11	0	1	6	3	2	4	7	0	4	2	6	7	26	23	21	21	18	7	3	195	19,230
1-Aug	9	2	3	0	0	0	0	2	3	9	0	0	0	2	12	2	8	10	4	9	12	12	6	8	113	19,343
Total	392	356	333	455	529	551	566	483	521	957	1,103	923	1,008	1,301	1,492	1,504	1,167	1,191	1,025	784	902	1,066	459	275	19,343	

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Appendix A.25. Crescent River north bank sonar counts by hour, 28 June through 1 August 2001. Counts expressed as percentage of daily total.

	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
28-Jun	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	1.2	0.0	3.3	5.0	0.0	2.9	16.7	2.9	22.9	7.9	2.5	1.2	0.0	0.0	0.0	0.0	100.0
29-Jun	1.4	4.2	4.2	0.0	0.0	7.0	1.4	1.4	0.0	2.8	0.0	1.4	7.0	4.2	7.0	9.9	4.2	25.4	8.5	0.0	5.6	0.0	0.0	4.2	100.0
30-Jun	0.4	0.0	0.0	0.8	0.4	0.4	0.4	0.4	0.4	0.0	1.0	4.3	1.8	2.4	0.4	1.4	5.7	19.0	6.7	22.1	15.0	2.2	9.3	5.5	100.0
1-Jul	2.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.4	0.0	0.2	2.1	7.0	8.2	4.7	8.9	24.3	4.3	16.7	7.2	10.9	1.3	0.8	0.4	100.0
2-Jul	0.1	0.0	0.4	0.3	0.1	0.0	0.4	0.5	2.0	2.9	12.7	1.3	1.5	5.1	3.1	10.3	11.7	10.0	15.8	11.3	5.0	2.6	1.5	1.3	100.0
3-Jul	0.6	1.2	0.6	0.7	2.6	0.1	0.6	1.3	6.0	1.2	1.1	2.9	4.5	6.3	7.1	21.4	13.6	7.6	7.6	4.9	0.2	2.7	4.9	0.5	100.0
4-Jul	2.6	0.0	1.6	2.4	2.4	0.8	0.3	4.8	1.1	3.7	2.6	5.0	4.2	4.3	6.1	10.1	9.5	8.1	8.2	7.2	8.2	5.5	0.4	1.0	100.0
5-Jul	1.7	0.9	0.8	0.4	1.0	2.3	2.6	1.0	0.2	1.4	1.3	2.7	6.6	5.9	7.4	8.1	5.7	3.7	3.5	15.2	13.9	8.0	2.9	3.0	100.0
6-Jul	0.9	1.0	0.3	0.7	1.4	1.0	0.3	5.1	6.2	5.5	8.8	6.5	7.2	9.9	7.8	4.4	3.2	3.1	2.8	7.3	6.9	6.2	2.6	1.1	100.0
7-Jul	1.1	0.1	0.1	2.3	0.5	0.1	2.3	1.5	2.9	4.2	3.3	1.5	6.3	9.7	9.4	9.8	12.6	5.7	3.0	2.5	9.8	5.0	5.2	0.9	100.0
8-Jul	4.7	1.4	5.9	0.2	0.3	1.6	0.0	0.9	0.9	5.7	1.0	2.3	6.3	3.6	8.1	15.3	9.0	4.0	3.0	4.7	4.1	10.7	5.4	0.8	100.0
9-Jul	0.3	0.9	1.3	0.3	1.4	0.0	2.0	3.2	0.1	0.9	0.3	0.7	2.5	8.1	9.3	6.1	7.1	4.0	3.3	2.4	6.6	12.8	19.6	6.8	100.0
10-Jul	1.9	3.0	1.3	1.5	0.0	1.2	1.7	1.7	0.3	2.6	3.5	5.8	1.7	2.7	13.0	7.7	11.8	8.2	11.3	6.9	3.2	1.3	5.3	2.4	100.0
11-Jul	9.1	4.0	1.4	3.1	3.4	4.5	3.8	3.7	4.8	3.5	4.4	6.4	1.6	5.3	6.4	8.2	6.4	5.6	5.4	3.0	2.6	2.6	0.4	0.4	100.0
12-Jul	0.8	0.0	1.0	2.8	0.8	1.5	1.3	5.1	3.3	3.7	2.9	2.4	2.4	8.6	7.3	10.4	7.6	8.0	9.4	6.3	4.3	3.1	1.4	5.7	100.0
13-Jul	1.5	0.4	0.5	0.0	1.4	0.6	4.1	2.8	1.5	0.6	1.4	3.8	5.6	8.8	13.5	10.7	7.7	9.3	8.6	5.3	2.1	0.9	4.5	4.5	100.0
14-Jul	1.2	0.7	1.7	0.4	3.5	2.3	0.5	0.1	1.2	2.1	1.9	2.3	5.5	6.2	12.7	12.5	9.3	10.7	6.9	5.4	5.9	4.5	1.6	1.1	100.0
15-Jul	1.5	2.2	6.1	1.2	1.0	1.3	15.7	0.8	1.2	2.7	7.2	12.9	9.5	2.2	1.0	1.7	2.4	4.2	6.4	5.5	5.4	4.0	3.0	1.0	100.0
16-Jul	0.8	0.9	1.1	1.5	0.2	1.7	2.2	5.8	4.9	1.8	3.9	5.1	6.7	2.6	6.8	3.3	7.6	18.9	10.9	6.5	2.7	2.0	1.3	0.5	100.0
17-Jul	0.2	0.4	0.1	1.4	0.5	0.8	5.0	3.7	4.1	1.7	0.8	4.3	7.3	6.7	9.4	8.5	9.1	9.4	9.6	8.8	4.8	1.6	1.1	0.6	100.0
18-Jul	0.4	1.0	0.2	0.2	0.0	0.3	1.3	0.5	1.3	0.2	3.7	3.7	3.4	6.3	3.9	12.1	9.6	13.2	10.9	14.4	6.2	3.4	1.0	2.8	100.0
19-Jul	1.5	1.2	1.9	0.1	1.1	10.2	3.6	4.6	5.5	5.1	7.2	6.4	3.6	9.7	4.5	0.5	2.6	6.7	4.0	4.0	1.5	3.3	7.1	4.1	100.0
20-Jul	6.6	4.7	3.2	3.8	3.2	5.5	4.2	3.6	2.8	6.7	4.1	1.2	0.3	0.6	4.2	4.6	3.7	5.5	3.6	6.5	6.3	6.0	4.8	4.5	100.0
21-Jul	4.8	7.9	6.3	5.4	5.8	5.9	4.7	1.9	1.1	2.0	8.2	3.3	5.6	2.9	4.9	6.6	6.3	2.8	0.8	0.8	1.8	3.9	3.8	2.6	100.0
22-Jul	4.0	2.8	4.4	3.7	3.8	0.9	3.0	2.2	2.0	14.5	3.0	5.7	2.8	5.6	4.4	10.5	7.1	6.5	5.3	2.1	2.0	2.1	0.6	1.0	100.0
23-Jul	1.3	0.1	2.6	1.5	0.5	2.9	3.5	1.9	2.3	4.0	3.2	5.1	6.0	5.2	6.1	3.7	8.6	7.6	6.6	2.7	4.8	14.0	4.1	1.7	100.0
24-Jul	1.2	0.7	0.1	0.3	0.2	0.2	0.7	1.3	1.6	1.6	4.1	3.1	2.2	8.7	5.9	8.3	12.0	7.8	13.2	7.7	13.7	1.8	1.5	2.2	100.0
25-Jul	1.6	0.3	0.7	4.2	3.6	0.5	0.5	3.1	5.0	6.5	4.1	4.0	8.8	9.1	11.8	4.9	5.0	5.1	4.0	3.7	6.2	5.0	1.5	0.8	100.0
26-Jul	0.3	0.2	0.0	0.1	0.0	0.7	4.0	3.6	0.6	0.5	3.6	4.0	7.2	16.9	15.1	12.5	9.2	7.1	5.8	4.9	1.8	1.1	0.5	0.4	100.0
27-Jul	0.4	0.1	0.0	0.0	0.1	0.4	1.3	1.5	0.8	1.9	6.2	4.0	7.5	11.7	11.4	9.9	8.0	11.4	15.1	3.6	2.0	1.2	0.8	0.8	100.0
28-Jul	0.4	2.4	1.5	2.2	0.0	0.8	2.3	0.8	0.9	0.7	2.5	5.9	2.8	4.9	8.7	9.1	7.9	6.2	8.9	11.7	14.4	3.2	1.0	0.7	100.0
29-Jul	0.1	0.0	0.2	0.0	0.3	0.0	0.3	1.0	0.6	0.6	1.1	0.9	8.3	3.8	5.2	4.1	14.2	16.5	13.4	12.5	6.0	7.0	2.6	1.4	100.0
30-Jul	0.5	0.1	0.0	0.1	0.9	0.7	1.1	2.3	2.6	0.4	2.2	3.3	4.6	4.6	9.9	12.4	8.8	10.5	11.6	6.2	4.7	5.1	4.3	3.4	100.0
31-Jul	2.0	4.5	1.6	0.1	0.0	1.5	1.3	2.3	0.5	1.1	3.7	1.5	3.8	3.3	7.7	7.4	12.0	10.1	9.5	6.4	5.8	6.3	3.3	4.4	100.0
1-Aug	2.9	0.2	0.0	0.0	0.2	1.5	0.3	4.1	11.2	3.6	3.8	4.3	2.4	4.0	3.8	13.6	4.6	4.4	6.7	13.1	5.5	3.9	4.1	1.7	100.0
Total	1.8	1.3	1.5	1.3	1.5	1.5	2.6	2.4	2.5	2.9	3.7	4.1	5.1	6.4	7.7	8.8	8.4	7.6	7.3	6.4	5.4	4.5	3.3	1.9	100.0

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Appendix A.26. Crescent River south bank sonar counts by hour, 28 June through 1 August 2001. Counts expressed as percentage of daily total.

	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
28-Jun	3.6	8.9	3.2	9.3	14.5	6.0	3.2	4.4	7.3	6.5	7.3	4.4	1.2	0.4	2.0	1.2	1.6	0.0	0.0	4.8	4.8	0.8	0.8	3.6	100.0
29-Jun	7.8	2.9	1.0	1.9	8.7	3.9	2.9	4.9	1.9	6.8	3.9	2.9	2.9	6.8	3.9	6.8	0.0	6.8	3.9	3.9	2.9	5.8	4.9	1.9	100.0
30-Jun	5.0	5.0	0.0	4.0	3.0	3.0	0.0	3.0	2.0	7.0	2.0	3.0	3.0	5.0	5.0	4.0	17.0	3.0	5.0	6.0	6.0	2.0	3.0	4.0	100.0
1-Jul	2.4	2.0	1.6	0.4	1.2	1.6	0.4	3.2	2.0	0.0	4.0	6.0	3.2	4.0	3.6	4.0	4.0	9.1	10.7	6.7	4.8	11.5	7.1	6.7	100.0
2-Jul	1.2	3.7	1.7	2.1	2.7	5.0	3.0	2.7	2.6	2.7	4.0	3.2	3.9	2.3	4.0	1.6	3.7	6.2	12.8	7.4	10.2	4.5	4.5	4.3	100.0
3-Jul	7.1	2.6	3.9	10.0	10.0	3.3	3.4	8.8	5.1	6.1	1.1	2.0	3.2	2.3	3.5	8.8	2.6	2.1	4.4	2.8	3.8	1.6	1.2	0.3	100.0
4-Jul	0.5	0.7	0.7	0.1	0.6	0.0	0.4	0.6	2.3	11.2	13.8	1.8	7.3	9.9	8.0	8.3	7.8	5.4	8.1	3.1	6.6	1.0	0.9	0.8	100.0
5-Jul	2.7	1.1	4.1	4.5	4.3	4.3	10.7	0.9	0.4	0.8	2.7	5.7	5.0	4.7	6.5	1.8	4.1	5.0	0.7	6.6	10.2	4.3	4.3	4.3	100.0
6-Jul	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	1.5	8.4	6.4	2.1	5.4	0.3	100.0
7-Jul	0.0	0.9	0.2	0.3	0.2	4.2	5.5	0.2	0.8	7.6	0.8	18.8	3.0	10.7	3.1	11.5	1.4	0.1	1.3	0.2	1.1	26.7	1.1	0.0	100.0
8-Jul	0.0	0.3	0.3	1.3	1.3	3.6	1.0	1.6	0.7	4.9	13.8	7.2	4.3	9.2	7.2	5.6	7.2	2.3	2.3	6.9	1.3	12.2	3.0	2.3	100.0
9-Jul	0.7	0.0	0.7	0.0	1.1	0.0	5.7	1.1	0.7	0.0	1.8	4.6	8.9	6.4	20.9	12.8	5.7	3.2	5.0	5.0	0.4	7.1	6.0	2.5	100.0
10-Jul	1.2	1.5	0.3	2.7	3.6	0.9	0.3	1.8	0.6	0.9	2.4	3.3	2.4	3.3	4.6	12.5	1.5	44.1	3.3	2.1	3.0	2.4	0.6	0.3	100.0
11-Jul	0.3	9.0	0.2	11.6	4.1	12.3	9.8	10.7	12.0	4.4	3.4	3.6	0.6	0.4	1.8	2.1	4.9	2.4	0.8	1.2	0.6	3.7	0.2	0.2	100.0
12-Jul	0.9	1.7	1.1	0.4	1.3	1.7	1.7	1.3	2.4	1.9	1.9	2.1	1.7	4.1	3.0	3.8	5.6	2.4	4.1	1.9	5.8	45.5	1.1	2.8	100.0
13-Jul	0.9	0.4	1.1	3.6	1.9	1.3	0.6	0.2	0.6	0.9	1.3	2.1	2.6	6.4	24.7	10.1	10.5	9.2	10.7	4.1	1.7	2.2	2.6	0.6	100.0
14-Jul	0.5	1.4	8.9	0.3	2.6	0.0	0.0	0.0	0.2	2.1	2.1	3.6	1.9	9.2	19.3	14.5	12.8	5.6	6.3	2.1	3.1	1.3	1.8	0.6	100.0
15-Jul	1.2	1.2	0.6	0.0	17.0	0.3	0.7	0.3	0.1	3.6	1.3	0.9	0.6	0.4	0.4	1.6	6.4	13.5	14.9	10.2	16.6	2.1	4.7	1.3	100.0
16-Jul	2.0	0.5	0.7	4.3	0.1	9.2	2.5	0.0	1.2	0.4	1.7	3.3	11.5	12.0	7.5	7.3	6.4	12.2	4.0	4.1	1.5	5.0	1.2	1.4	100.0
17-Jul	6.6	0.3	0.1	0.1	2.0	5.9	2.2	3.0	0.0	4.0	11.5	2.2	2.7	6.1	6.5	16.7	6.8	5.6	3.6	3.7	0.9	6.2	2.7	0.4	100.0
18-Jul	3.0	1.9	4.3	1.1	0.0	1.1	12.1	2.7	11.6	1.1	6.7	2.7	0.8	3.5	4.0	9.7	1.3	17.8	2.2	2.7	1.3	3.8	3.2	1.3	100.0
19-Jul	0.8	0.4	1.2	1.2	1.6	2.4	6.5	6.1	5.7	18.4	9.4	9.8	7.3	10.6	9.4	1.6	0.0	2.0	0.4	2.4	0.8	0.4	0.0	1.2	100.0
20-Jul	6.8	4.5	19.3	3.4	8.0	3.4	2.3	5.7	6.8	3.4	13.6	3.4	1.1	1.1	1.1	4.5	0.0	2.3	0.0	3.4	1.1	1.1	1.1	2.3	100.0
21-Jul	5.9	0.0	0.0	0.0	0.0	0.0	0.2	1.7	3.2	12.9	7.1	8.0	5.3	6.1	4.1	8.0	7.8	2.5	6.6	4.1	5.6	6.3	2.5	2.0	100.0
22-Jul	0.3	0.5	0.4	0.0	0.0	0.6	3.2	1.8	0.9	6.5	3.2	8.4	7.9	11.2	12.3	14.2	7.8	3.9	7.1	3.5	2.8	2.1	1.4	0.0	100.0
23-Jul	0.1	0.1	0.0	0.0	0.0	0.0	0.3	0.5	0.9	2.4	15.8	7.6	10.3	9.1	19.8	8.9	6.8	3.3	1.2	1.6	2.8	4.5	2.7	1.2	100.0
24-Jul	2.0	0.4	0.0	1.3	0.0	2.0	2.7	1.3	1.1	0.7	2.2	2.3	21.5	8.8	4.7	13.4	10.6	5.6	6.5	7.0	3.2	0.7	1.3	0.7	100.0
25-Jul	0.5	1.0	0.2	0.5	0.2	0.0	0.2	0.7	3.8	1.0	1.4	3.6	7.2	14.9	12.5	5.8	6.0	14.7	7.9	4.6	4.1	3.8	3.4	1.9	100.0
26-Jul	1.7	0.4	3.7	0.8	0.8	3.7	2.1	4.1	0.8	3.3	3.3	13.2	5.4	10.3	8.3	7.9	4.5	6.2	5.4	2.1	6.2	0.4	2.9	2.5	100.0
27-Jul	2.5	0.0	0.7	2.5	0.7	1.1	2.9	9.0	1.4	1.8	3.9	10.4	3.6	6.5	11.1	7.9	11.8	5.4	3.2	2.5	3.2	1.8	2.9	3.2	100.0
28-Jul	0.7	2.9	2.9	1.5	10.2	3.6	4.4	4.4	1.5	2.2	5.8	4.4	4.4	8.0	0.7	13.1	2.9	0.7	5.1	3.6	4.4	5.1	2.9	4.4	100.0
29-Jul	12.3	10.4	3.1	3.1	1.8	4.3	1.8	3.7	4.3	4.3	4.3	0.6	1.8	1.2	2.5	4.9	4.3	6.7	6.1	4.3	3.7	4.3	3.1	3.1	100.0
30-Jul	2.3	1.9	0.5	0.9	0.9	3.7	1.9	2.3	5.6	10.2	8.4	3.3	4.7	2.8	5.1	4.7	5.1	5.6	3.3	4.2	7.9	6.0	6.5	2.3	100.0
31-Jul	4.1	1.0	4.1	2.6	5.6	0.0	0.5	3.1	1.5	1.0	2.1	3.6	0.0	2.1	1.0	3.1	3.6	13.3	11.8	10.8	10.8	9.2	3.6	1.5	100.0
1-Aug	8.0	1.8	2.7	0.0	0.0	0.0	0.0	1.8	2.7	8.0	0.0	0.0	0.0	1.8	10.6	1.8	7.1	8.8	3.5	8.0	10.6	10.6	5.3	7.1	100.0
Total	2.0	1.8	1.7	2.4	2.7	2.8	2.9	2.5	2.7	4.9	5.7	4.8	5.2	6.7	7.7	7.8	6.0	6.2	5.3	4.1	4.7	5.5	2.4	1.4	100.0

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Appendix A.27. Crescent River north bank sonar counts by sector, 28 June through 1 August 2000.

	Counts by Sector													
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total	Cum Total
28-Jun	48	26	74	64	6	5	16	1	0	0	0	0	240	240
29-Jun	9	12	24	7	8	3	1	0	0	1	0	6	71	311
30-Jun	20	38	49	89	107	92	42	24	3	18	17	7	506	817
1-Jul	17	48	114	207	308	333	183	46	17	10	46	23	1,352	2,169
2-Jul	40	271	445	374	549	471	202	76	17	6	50	29	2,530	4,699
3-Jul	404	683	991	757	733	605	335	137	37	8	63	50	4,803	9,502
4-Jul	243	837	1,056	394	145	61	20	10	5	3	2	0	2,776	12,278
5-Jul	150	574	1,258	749	428	241	126	58	15	8	5	4	3,616	15,894
6-Jul	177	526	1,362	806	526	369	209	113	59	31	22	18	4,218	20,112
7-Jul	71	414	865	414	198	139	110	65	16	13	1	1	2,307	22,419
8-Jul	73	266	506	298	188	98	68	88	81	70	13	6	1,755	24,174
9-Jul	95	329	879	550	434	280	229	118	43	11	3	5	2,976	27,150
10-Jul	38	289	525	275	203	131	81	48	17	7	2	1	1,617	28,767
11-Jul	66	360	832	618	364	256	127	112	40	14	7	6	2,802	31,569
12-Jul	145	401	556	230	75	50	30	14	6	4	2	4	1,517	33,086
13-Jul	126	408	1,056	738	519	300	140	66	23	4	0	1	3,381	36,467
14-Jul	41	158	498	632	733	730	564	321	121	29	7	2	3,836	40,303
15-Jul	117	520	500	548	518	456	435	260	62	18	3	12	3,449	43,752
16-Jul	79	227	732	710	605	486	293	160	38	3	0	1	3,334	47,086
17-Jul	240	810	790	766	371	177	124	72	27	10	6	4	3,397	50,483
18-Jul	306	625	528	150	50	29	23	22	7	3	2	0	1,745	52,228
19-Jul	296	172	119	56	16	9	31	30	2	1	0	0	732	52,960
20-Jul	860	451	294	106	45	23	18	6	1	1	0	0	1,805	54,765
21-Jul	569	428	520	415	302	189	117	51	11	5	2	1	2,610	57,375
22-Jul	626	1,015	570	75	8	0	0	2	0	0	0	0	2,296	59,671
23-Jul	283	580	843	577	281	93	30	11	21	4	1	24	2,748	62,419
24-Jul	194	327	527	338	137	44	20	21	22	5	2	4	1,641	64,060
25-Jul	414	717	435	282	153	54	37	20	17	10	7	3	2,149	66,209
26-Jul	1,161	874	349	104	15	6	36	36	16	4	5	4	2,610	68,819
27-Jul	766	444	233	43	8	12	27	24	11	6	6	1	1,581	70,400
28-Jul	549	327	135	17	4	4	7	10	6	1	2	11	1,073	71,473
29-Jul	509	297	155	26	3	11	18	14	11	0	2	11	1,057	72,530
30-Jul	526	214	87	16	2	4	2	2	1	2	0	1	857	73,387
31-Jul	449	338	128	31	5	6	4	3	1	0	0	0	965	74,352
1-Aug	645	160	16	22	8	5	7	2	3	0	0	1	869	75,221
Total	10,352	14,166	18,051	11,484	8,055	5,772	3,712	2,043	757	310	278	241	75,221	

FN: 01CRISC.XLS

Appendix A.28. Crescent River south bank sonar counts by sector, 28 June through 1 August 2000.

	Counts by Sector													
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total	Cum Total
28-Jun	205	31	3	1	0	0	0	0	0	0	0	8	248	248
29-Jun	82	10	4	2	2	0	0	0	0	0	0	3	103	351
30-Jun	58	24	9	0	1	0	0	0	0	4	3	1	100	451
1-Jul	111	52	34	8	21	11	6	5	2	0	0	2	252	703
2-Jul	436	124	31	41	61	29	20	23	6	2	0	1	774	1,477
3-Jul	449	178	68	67	53	16	25	18	9	5	0	0	888	2,365
4-Jul	119	129	276	399	683	587	272	153	49	19	7	2	2,695	5,060
5-Jul	24	15	63	169	197	117	54	40	22	6	15	15	737	5,797
6-Jul	46	145	383	189	48	25	48	22	0	1	21	45	973	6,770
7-Jul	145	377	258	101	32	12	5	11	10	7	5	7	970	7,740
8-Jul	69	52	81	32	22	17	14	4	0	5	5	3	304	8,044
9-Jul	20	26	116	38	21	19	17	7	2	3	5	8	282	8,326
10-Jul	30	34	91	50	50	27	22	7	1	3	11	3	329	8,655
11-Jul	426	399	135	53	13	5	10	8	4	3	2	3	1,061	9,716
12-Jul	212	30	124	42	16	14	9	5	7	1	5	3	468	10,184
13-Jul	56	64	138	130	63	21	19	14	1	2	12	15	535	10,719
14-Jul	34	100	263	240	99	44	28	24	4	3	15	23	877	11,596
15-Jul	10	64	214	178	76	37	22	23	8	6	8	30	676	12,272
16-Jul	48	131	228	181	97	30	24	29	19	22	19	16	844	13,116
17-Jul	59	135	187	118	51	31	17	32	17	16	9	22	694	13,810
18-Jul	94	42	97	42	29	9	4	3	19	13	10	9	371	14,181
19-Jul	123	61	13	10	5	5	7	3	1	6	4	7	245	14,426
20-Jul	34	5	3	1	2	0	2	6	3	7	9	16	88	14,514
21-Jul	113	181	126	51	39	19	11	5	4	2	4	34	589	15,103
22-Jul	213	310	217	73	38	29	19	15	9	16	6	7	952	16,055
23-Jul	274	328	176	59	25	17	19	36	25	5	0	10	974	17,029
24-Jul	104	162	111	63	40	21	12	7	8	15	5	6	554	17,583
25-Jul	234	91	45	16	18	5	4	2	1	0	0	0	416	17,999
26-Jul	215	17	3	0	0	0	2	5	0	0	0	0	242	18,241
27-Jul	219	27	3	0	7	14	4	5	0	0	0	0	279	18,520
28-Jul	125	8	2	0	0	0	0	1	1	0	0	0	137	18,657
29-Jul	153	1	2	3	1	0	1	1	0	1	0	0	163	18,820
30-Jul	179	15	10	10	0	0	1	0	0	0	0	0	215	19,035
31-Jul	187	2	0	0	1	0	1	1	1	2	0	0	195	19,230
1-Aug	103	4	2	0	0	0	2	1	1	0	0	0	113	19,343
Total	5,009	3,374	3,516	2,367	1,811	1,161	701	516	234	175	180	299	19,343	

FN: 01CR2SC.XLS

Appendix A.29. Crescent River north bank sonar counts by sector, 28 June through 1 August 2001. Counts expressed as percentage of daily total.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
28-Jun	20.0	10.8	30.8	26.7	2.5	2.1	6.7	0.4	0.0	0.0	0.0	0.0	100.0
29-Jun	12.7	16.9	33.8	9.9	11.3	4.2	1.4	0.0	0.0	1.4	0.0	8.5	100.0
30-Jun	4.0	7.5	9.7	17.6	21.1	18.2	8.3	4.7	0.6	3.6	3.4	1.4	100.0
1-Jul	1.3	3.6	8.4	15.3	22.8	24.6	13.5	3.4	1.3	0.7	3.4	1.7	100.0
2-Jul	1.6	10.7	17.6	14.8	21.7	18.6	8.0	3.0	0.7	0.2	2.0	1.1	100.0
3-Jul	8.4	14.2	20.6	15.8	15.3	12.6	7.0	2.9	0.8	0.2	1.3	1.0	100.0
4-Jul	8.8	30.2	38.0	14.2	5.2	2.2	0.7	0.4	0.2	0.1	0.1	0.0	100.0
5-Jul	4.1	15.9	34.8	20.7	11.8	6.7	3.5	1.6	0.4	0.2	0.1	0.1	100.0
6-Jul	4.2	12.5	32.3	19.1	12.5	8.7	5.0	2.7	1.4	0.7	0.5	0.4	100.0
7-Jul	3.1	17.9	37.5	17.9	8.6	6.0	4.8	2.8	0.7	0.6	0.0	0.0	100.0
8-Jul	4.2	15.2	28.8	17.0	10.7	5.6	3.9	5.0	4.6	4.0	0.7	0.3	100.0
9-Jul	3.2	11.1	29.5	18.5	14.6	9.4	7.7	4.0	1.4	0.4	0.1	0.2	100.0
10-Jul	2.4	17.9	32.5	17.0	12.6	8.1	5.0	3.0	1.1	0.4	0.1	0.1	100.0
11-Jul	2.4	12.8	29.7	22.1	13.0	9.1	4.5	4.0	1.4	0.5	0.2	0.2	100.0
12-Jul	9.6	26.4	36.7	15.2	4.9	3.3	2.0	0.9	0.4	0.3	0.1	0.3	100.0
13-Jul	3.7	12.1	31.2	21.8	15.4	8.9	4.1	2.0	0.7	0.1	0.0	0.0	100.0
14-Jul	1.1	4.1	13.0	16.5	19.1	19.0	14.7	8.4	3.2	0.8	0.2	0.1	100.0
15-Jul	3.4	15.1	14.5	15.9	15.0	13.2	12.6	7.5	1.8	0.5	0.1	0.3	100.0
16-Jul	2.4	6.8	22.0	21.3	18.1	14.6	8.8	4.8	1.1	0.1	0.0	0.0	100.0
17-Jul	7.1	23.8	23.3	22.5	10.9	5.2	3.7	2.1	0.8	0.3	0.2	0.1	100.0
18-Jul	17.5	35.8	30.3	8.6	2.9	1.7	1.3	1.3	0.4	0.2	0.1	0.0	100.0
19-Jul	40.4	23.5	16.3	7.7	2.2	1.2	4.2	4.1	0.3	0.1	0.0	0.0	100.0
20-Jul	47.6	25.0	16.3	5.9	2.5	1.3	1.0	0.3	0.1	0.1	0.0	0.0	100.0
21-Jul	21.8	16.4	19.9	15.9	11.6	7.2	4.5	2.0	0.4	0.2	0.1	0.0	100.0
22-Jul	27.3	44.2	24.8	3.3	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	100.0
23-Jul	10.3	21.1	30.7	21.0	10.2	3.4	1.1	0.4	0.8	0.1	0.0	0.9	100.0
24-Jul	11.8	19.9	32.1	20.6	8.3	2.7	1.2	1.3	1.3	0.3	0.1	0.2	100.0
25-Jul	19.3	33.4	20.2	13.1	7.1	2.5	1.7	0.9	0.8	0.5	0.3	0.1	100.0
26-Jul	44.5	33.5	13.4	4.0	0.6	0.2	1.4	1.4	0.6	0.2	0.2	0.2	100.0
27-Jul	48.5	28.1	14.7	2.7	0.5	0.8	1.7	1.5	0.7	0.4	0.4	0.1	100.0
28-Jul	51.2	30.5	12.6	1.6	0.4	0.4	0.7	0.9	0.6	0.1	0.2	1.0	100.0
29-Jul	48.2	28.1	14.7	2.5	0.3	1.0	1.7	1.3	1.0	0.0	0.2	1.0	100.0
30-Jul	61.4	25.0	10.2	1.9	0.2	0.5	0.2	0.2	0.1	0.2	0.0	0.1	100.0
31-Jul	46.5	35.0	13.3	3.2	0.5	0.6	0.4	0.3	0.1	0.0	0.0	0.0	100.0
1-Aug	74.2	18.4	1.8	2.5	0.9	0.6	0.8	0.2	0.3	0.0	0.0	0.1	100.0
Total	13.8	18.8	24.0	15.3	10.7	7.7	4.9	2.7	1.0	0.4	0.4	0.3	100.0

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Appendix A.30. Crescent River south bank sonar counts by sector, 28 June through 1 August 2001. Counts expressed as percentage of daily total.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
28-Jun	82.7	12.5	1.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	100.0
29-Jun	79.6	9.7	3.9	1.9	1.9	0.0	0.0	0.0	0.0	0.0	0.0	2.9	100.0
30-Jun	58.0	24.0	9.0	0.0	1.0	0.0	0.0	0.0	0.0	4.0	3.0	1.0	100.0
1-Jul	44.0	20.6	13.5	3.2	8.3	4.4	2.4	2.0	0.8	0.0	0.0	0.8	100.0
2-Jul	56.3	16.0	4.0	5.3	7.9	3.7	2.6	3.0	0.8	0.3	0.0	0.1	100.0
3-Jul	50.6	20.0	7.7	7.5	6.0	1.8	2.8	2.0	1.0	0.6	0.0	0.0	100.0
4-Jul	4.4	4.8	10.2	14.8	25.3	21.8	10.1	5.7	1.8	0.7	0.3	0.1	100.0
5-Jul	3.3	2.0	8.5	22.9	26.7	15.9	7.3	5.4	3.0	0.8	2.0	2.0	100.0
6-Jul	4.7	14.9	39.4	19.4	4.9	2.6	4.9	2.3	0.0	0.1	2.2	4.6	100.0
7-Jul	14.9	38.9	26.6	10.4	3.3	1.2	0.5	1.1	1.0	0.7	0.5	0.7	100.0
8-Jul	22.7	17.1	26.6	10.5	7.2	5.6	4.6	1.3	0.0	1.6	1.6	1.0	100.0
9-Jul	7.1	9.2	41.1	13.5	7.4	6.7	6.0	2.5	0.7	1.1	1.8	2.8	100.0
10-Jul	9.1	10.3	27.7	15.2	15.2	8.2	6.7	2.1	0.3	0.9	3.3	0.9	100.0
11-Jul	40.2	37.6	12.7	5.0	1.2	0.5	0.9	0.8	0.4	0.3	0.2	0.3	100.0
12-Jul	45.3	6.4	26.5	9.0	3.4	3.0	1.9	1.1	1.5	0.2	1.1	0.6	100.0
13-Jul	10.5	12.0	25.8	24.3	11.8	3.9	3.6	2.6	0.2	0.4	2.2	2.8	100.0
14-Jul	3.9	11.4	30.0	27.4	11.3	5.0	3.2	2.7	0.5	0.3	1.7	2.6	100.0
15-Jul	1.5	9.5	31.7	26.3	11.2	5.5	3.3	3.4	1.2	0.9	1.2	4.4	100.0
16-Jul	5.7	15.5	27.0	21.4	11.5	3.6	2.8	3.4	2.3	2.6	2.3	1.9	100.0
17-Jul	8.5	19.5	26.9	17.0	7.3	4.5	2.4	4.6	2.4	2.3	1.3	3.2	100.0
18-Jul	25.3	11.3	26.1	11.3	7.8	2.4	1.1	0.8	5.1	3.5	2.7	2.4	100.0
19-Jul	50.2	24.9	5.3	4.1	2.0	2.0	2.9	1.2	0.4	2.4	1.6	2.9	100.0
20-Jul	38.6	5.7	3.4	1.1	2.3	0.0	2.3	6.8	3.4	8.0	10.2	18.2	100.0
21-Jul	19.2	30.7	21.4	8.7	6.6	3.2	1.9	0.8	0.7	0.3	0.7	5.8	100.0
22-Jul	22.4	32.6	22.8	7.7	4.0	3.0	2.0	1.6	0.9	1.7	0.6	0.7	100.0
23-Jul	28.1	33.7	18.1	6.1	2.6	1.7	2.0	3.7	2.6	0.5	0.0	1.0	100.0
24-Jul	18.8	29.2	20.0	11.4	7.2	3.8	2.2	1.3	1.4	2.7	0.9	1.1	100.0
25-Jul	56.2	21.9	10.8	3.8	4.3	1.2	1.0	0.5	0.2	0.0	0.0	0.0	100.0
26-Jul	88.8	7.0	1.2	0.0	0.0	0.0	0.8	2.1	0.0	0.0	0.0	0.0	100.0
27-Jul	78.5	9.7	1.1	0.0	2.5	5.0	1.4	1.8	0.0	0.0	0.0	0.0	100.0
28-Jul	91.2	5.8	1.5	0.0	0.0	0.0	0.0	0.7	0.7	0.0	0.0	0.0	100.0
29-Jul	93.9	0.6	1.2	1.8	0.6	0.0	0.6	0.6	0.0	0.6	0.0	0.0	100.0
30-Jul	83.3	7.0	4.7	4.7	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	100.0
31-Jul	95.9	1.0	0.0	0.0	0.5	0.0	0.5	0.5	0.5	1.0	0.0	0.0	100.0
1-Aug	91.2	3.5	1.8	0.0	0.0	0.0	1.8	0.9	0.9	0.0	0.0	0.0	100.0
Total	25.9	17.4	18.2	12.2	9.4	6.0	3.6	2.7	1.2	0.9	0.9	1.5	100.0

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Appendix A.31. Estimated salmon escapement adjacent to the north bank of the Yentna River, 7 July through 5 August 2001. 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
7-Jul	262	262	0	0	0	0	0	0	0	0
8-Jul	248	510	99	99	0	0	0	0	0	0
9-Jul	156	666	69	168	0	0	0	0	35	35
10-Jul	194	860	193	361	0	0	65	65	0	35
11-Jul	80	940	299	660	119	119	20	85	60	95
12-Jul	401	1,341	134	794	134	253	0	85	0	95
13-Jul	375	1,716	346	1,140	57	310	58	143	29	124
14-Jul	337	2,053	472	1,612	33	343	34	177	0	124
15-Jul	352	2,405	911	2,523	88	431	29	206	0	124
16-Jul	785	3,190	2,395	4,918	537	968	83	289	41	165
17-Jul	3,840	7,030	3,124	8,042	205	1,173	307	596	0	165
18-Jul	2,541	9,571	3,931	11,973	635	1,808	397	993	0	165
19-Jul	2,213	11,784	5,533	17,506	286	2,094	499	1,492	36	201
20-Jul	941	12,725	3,002	20,508	470	2,564	181	1,673	0	201
21-Jul	450	13,175	1,217	21,725	61	2,625	103	1,776	10	211
22-Jul	368	13,543	382	22,107	45	2,670	22	1,798	0	211
23-Jul	3,273	16,816	1,182	23,289	158	2,828	79	1,877	0	211
24-Jul	2,255	19,071	3,871	27,160	445	3,273	223	2,100	0	211
25-Jul	1,873	20,944	4,766	31,926	319	3,592	192	2,292	0	211
26-Jul	1,739	22,683	9,241	41,167	1,168	4,760	690	2,982	48	259
27-Jul	2,482	25,165	12,306	53,473	1,109	5,869	528	3,510	0	259
28-Jul	3,068	28,233	10,955	64,428	1,315	7,184	620	4,130	37	296
29-Jul	786	29,019	11,773	76,201	721	7,905	546	4,676	0	296
30-Jul	411	29,430	8,187	84,388	535	8,440	720	5,396	0	296
31-Jul	276	29,706	8,209	92,597	698	9,138	1,898	7,294	0	296
1-Aug	461	30,167	8,464	101,061	874	10,012	970	8,264	24	320
2-Aug	693	30,860	8,706	109,767	1,356	11,368	1,205	9,469	0	320
3-Aug	231	31,091	7,603	117,370	882	12,250	840	10,309	0	320
4-Aug	104	31,195	7,472	124,842	1,150	13,400	888	11,197	26	346
5-Aug	165	31,360	5,119	129,961	990	14,390	1,156	12,353	0	346

Appendix A.32. Estimated salmon escapement adjacent to the south bank of the Yentna River, 7 July through 5 August 2001. 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
7-Jul	174	174	50	50	0	0	0	0	0	0
8-Jul	141	315	33	83	16	16	0	0	17	17
9-Jul	243	558	30	113	0	16	31	31	15	32
10-Jul	466	1,024	104	217	52	68	0	31	0	32
11-Jul	453	1,477	139	356	35	103	0	31	35	67
12-Jul	648	2,125	185	541	0	103	0	31	0	67
13-Jul	361	2,486	326	867	104	207	47	78	0	67
14-Jul	283	2,769	454	1,321	71	278	85	163	0	67
15-Jul	482	3,251	715	2,036	44	322	44	207	0	67
16-Jul	1,757	5,008	1,877	3,913	427	749	190	397	24	91
17-Jul	3,356	8,364	1,532	5,445	132	881	819	1,216	53	144
18-Jul	4,602	12,966	2,346	7,791	59	940	1,841	3,057	0	144
19-Jul	5,237	18,203	3,345	11,136	603	1,543	850	3,907	82	226
20-Jul	3,618	21,821	3,593	14,729	517	2,060	615	4,522	0	226
21-Jul	359	22,180	43	14,772	4	2,064	4	4,526	0	226
22-Jul	129	22,309	17	14,789	2	2,066	4	4,530	0	226
23-Jul	945	23,254	120	14,909	17	2,083	33	4,563	0	226
24-Jul	4,736	27,990	1,886	16,795	157	2,240	292	4,855	0	226
25-Jul	3,692	31,682	3,830	20,625	316	2,556	99	4,954	59	285
26-Jul	4,442	36,124	6,782	27,407	322	2,878	1,373	6,327	0	285
27-Jul	5,759	41,883	7,642	35,049	901	3,779	1,747	8,074	0	285
28-Jul	3,424	45,307	8,700	43,749	645	4,424	1,631	9,705	0	285
29-Jul	2,623	47,930	11,184	54,933	689	5,113	2,957	12,662	22	307
30-Jul	1,481	49,411	7,605	62,538	710	5,823	3,834	16,496	20	327
31-Jul	595	50,006	4,776	67,314	268	6,091	1,868	18,364	12	339
1-Aug	843	50,849	3,389	70,703	394	6,485	2,331	20,695	18	357
2-Aug	543	51,392	3,601	74,304	560	7,045	2,805	23,500	0	357
3-Aug	261	51,653	4,244	78,548	758	7,803	2,298	25,798	0	357
4-Aug	192	51,845	4,215	82,763	543	8,346	3,576	29,374	16	373
5-Aug	327	52,172	4,399	87,162	832	9,178	5,350	34,724	30	403

Appendix A.33. Yentna River north bank sonar counts by hour, 7 July through 5 August 2001.

	Counts by Hour																									
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total	Cum Total
7-Jul	3	4	13	30	20	9	3	24	13	13	15	15	11	9	1	14	7	6	8	5	13	12	9	5	262	262
8-Jul	15	20	1	15	21	6	6	11	15	4	14	12	15	8	20	14	35	22	22	6	28	8	18	11	347	609
9-Jul	13	11	18	17	18	3	8	16	3	9	1	4	10	9	10	10	3	24	10	12	4	7	16	24	260	869
10-Jul	25	14	6	9	4	6	16	23	14	8	5	28	11	7	43	20	14	23	41	30	45	22	18	20	452	1,321
11-Jul	26	31	14	15	39	33	22	14	6	18	6	9	8	19	44	15	40	24	21	36	33	20	22	63	578	1,899
12-Jul	34	18	10	2	35	32	14	18	36	19	25	51	23	41	39	29	26	34	24	25	22	40	25	47	669	2,568
13-Jul	26	38	67	15	71	38	21	36	47	31	47	61	49	24	21	15	7	54	42	29	16	20	43	47	865	3,433
14-Jul	60	47	53	63	69	16	46	37	40	8	28	11	11	21	62	40	35	31	56	29	22	16	10	65	876	4,309
15-Jul	72	44	33	84	56	57	25	22	76	28	17	36	34	55	81	120	95	40	89	42	36	81	71	86	1,380	5,689
16-Jul	160	169	114	124	101	142	99	123	168	77	60	87	198	222	144	103	180	317	171	63	90	332	345	252	3,841	9,530
17-Jul	295	293	349	357	276	221	275	461	331	296	164	387	268	495	238	114	310	559	336	193	98	305	459	396	7,476	17,006
18-Jul	415	300	391	388	369	266	243	204	100	163	137	332	342	395	192	164	268	455	493	193	191	477	510	516	7,504	24,510
19-Jul	792	761	727	699	495	523	433	377	149	120	56	245	345	258	322	324	71	149	321	213	81	164	573	369	8,567	33,077
20-Jul	417	355	285	245	177	128	193	154	108	133	197	221	231	192	159	121	136	202	208	154	222	156	95	105	4,594	37,671
21-Jul	113	54	58	44	68	38	64	40	76	75	85	153	144	137	116	124	127	70	43	55	50	41	43	23	1,841	39,512
22-Jul	14	21	8	11	5	8	10	7	26	30	23	48	48	46	34	51	55	57	59	64	53	28	59	52	817	40,329
23-Jul	133	157	170	134	90	138	124	93	137	139	134	96	239	180	230	255	285	345	304	313	164	259	356	217	4,692	45,021
24-Jul	195	134	168	148	155	198	196	317	590	405	248	296	235	271	375	329	309	379	424	295	239	279	358	251	6,794	51,815
25-Jul	350	284	203	184	139	192	115	157	167	203	265	407	344	258	545	509	223	300	476	500	385	341	209	394	7,150	58,965
26-Jul	368	388	369	484	558	348	339	471	321	382	393	353	696	533	476	391	384	737	587	587	676	1,132	992	921	12,886	71,851
27-Jul	822	697	672	687	566	851	669	575	613	610	824	689	730	639	613	869	807	615	652	699	553	575	712	686	16,425	88,276
28-Jul	708	718	797	785	809	710	701	1,198	715	537	403	664	615	669	764	706	868	601	345	622	466	776	294	524	15,995	104,271
29-Jul	739	615	636	412	551	475	502	304	226	265	525	545	617	576	576	385	519	513	455	727	932	607	1,096	1,028	13,826	118,097
30-Jul	683	744	590	607	429	473	430	266	244	420	477	411	281	316	402	335	192	171	350	485	383	349	278	537	9,853	127,950
31-Jul	482	344	424	338	462	496	413	353	566	527	317	408	458	678	667	442	338	359	542	570	493	476	516	412	11,081	139,031
1-Aug	526	521	397	319	296	276	362	365	463	409	324	514	410	432	492	618	525	380	784	737	525	420	269	429	10,793	149,824
2-Aug	509	430	384	240	340	265	301	302	505	581	479	470	236	261	730	661	914	796	703	525	655	333	725	615	11,960	161,784
3-Aug	508	580	627	563	381	328	199	316	212	238	335	405	497	361	261	318	479	578	501	293	318	441	526	291	9,556	171,340
4-Aug	373	455	417	348	360	452	354	399	289	256	259	341	431	399	241	438	366	473	470	559	224	245	639	852	9,640	180,980
5-Aug	648	505	639	460	297	228	186	263	254	165	101	321	197	282	313	264	254	245	284	401	287	381	220	235	7,430	188,410
Total	9,524	8,752	8,640	7,827	7,257	6,956	6,369	6,946	6,510	6,169	5,964	7,620	7,734	7,793	8,211	7,798	7,872	8,559	8,821	8,462	7,304	8,343	9,506	9,473	188,410	

Appendix A.34. Yentna River south bank sonar counts by hour, 7 July through 5 August 2001.

	Counts by Hour																									
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total	Cum Total
7-Jul	22	11	4	6	22	10	10	8	25	12	5	2	3	7	6	9	10	11	3	5	6	13	7	7	224	224
8-Jul	5	12	20	18	5	5	5	6	3	7	6	8	12	12	5	4	6	6	11	11	13	11	10	6	207	431
9-Jul	4	9	5	15	14	6	18	10	13	2	12	14	9	8	18	11	27	16	28	21	7	25	19	8	319	750
10-Jul	12	24	27	31	23	33	28	21	10	8	39	20	35	26	31	55	30	35	34	28	26	10	19	17	622	1,372
11-Jul	7	16	19	24	32	29	31	27	11	23	19	21	36	36	28	11	31	54	63	49	12	37	29	17	662	2,034
12-Jul	17	22	50	47	57	49	56	69	23	68	41	41	27	22	29	16	23	22	12	20	17	30	24	51	833	2,867
13-Jul	24	39	38	56	41	50	38	48	34	35	46	18	35	33	27	30	28	57	26	27	6	15	46	41	838	3,705
14-Jul	47	71	50	28	47	31	39	46	57	64	23	32	20	28	22	24	42	42	42	31	17	14	25	51	893	4,598
15-Jul	54	59	30	54	54	71	69	49	60	69	29	38	54	25	27	30	65	61	36	19	38	64	91	139	1,285	5,883
16-Jul	103	155	123	144	198	167	182	162	119	109	140	130	257	238	202	148	164	327	283	278	134	146	174	192	4,275	10,158
17-Jul	230	216	204	148	194	174	165	170	209	168	151	167	234	334	321	230	262	387	326	290	216	314	408	374	5,892	16,050
18-Jul	380	385	360	379	362	312	282	188	160	263	244	501	405	479	352	348	474	602	632	584	268	246	329	313	8,848	24,898
19-Jul	395	390	444	435	413	303	354	228	155	156	216	394	408	336	433	369	354	620	649	492	350	543	854	826	10,117	35,015
20-Jul	670	675	513	465	414	386	452	283	185	236	272	390	500	413	381	284	235	402	304	242	194	200	152	95	8,343	43,358
21-Jul	65	63	29	8	22	27	21	18	21	9	12	32	25	11	12	7	9	1	1	10	5	0	1	1	410	43,768
22-Jul	1	5	1	2	2	1	0	1	0	4	4	3	9	6	6	6	6	6	6	7	3	25	19	29	152	43,920
23-Jul	34	14	24	17	9	23	37	35	18	27	24	27	48	55	91	68	51	97	50	109	63	55	58	81	1,115	45,035
24-Jul	69	60	69	57	65	145	175	145	328	56	65	348	542	338	501	589	385	481	521	483	399	536	395	319	7,071	52,106
25-Jul	311	292	267	300	243	272	250	299	302	326	362	313	374	195	437	416	305	412	370	502	383	280	352	433	7,996	60,102
26-Jul	549	489	677	488	548	356	326	328	349	550	496	235	503	466	386	470	502	817	704	757	617	698	835	773	12,919	73,021
27-Jul	719	573	499	446	752	653	530	497	379	502	526	512	706	714	625	896	777	833	916	596	807	1,056	798	737	16,049	89,070
28-Jul	637	646	402	341	341	287	331	674	528	450	544	663	533	829	524	612	722	706	865	1,142	932	621	462	608	14,400	103,470
29-Jul	497	518	543	597	559	379	530	573	396	518	914	646	726	767	691	713	929	1,039	1,076	1,056	1,059	953	722	1,074	17,475	120,945
30-Jul	1,137	1,023	750	691	529	424	416	424	412	633	527	542	523	606	596	553	619	590	578	654	587	395	288	153	13,650	134,595
31-Jul	363	209	234	234	227	181	121	209	385	223	203	226	328	488	473	489	380	496	485	366	310	233	294	362	7,519	142,114
1-Aug	390	213	209	170	169	180	126	192	193	145	192	301	336	273	235	416	482	413	474	429	392	374	254	417	6,975	149,089
2-Aug	302	245	152	143	184	134	139	125	247	318	155	225	173	278	361	405	444	456	457	545	497	352	536	636	7,509	156,598
3-Aug	481	436	519	359	285	267	220	236	207	337	254	272	120	227	307	248	336	397	323	311	269	416	364	370	7,561	164,159
4-Aug	384	356	364	334	293	284	332	354	212	205	210	200	201	183	171	214	340	359	234	218	351	695	1,029	1,019	8,542	172,701
5-Aug	895	462	488	477	388	254	272	332	234	281	209	383	298	459	504	520	575	671	622	613	502	417	518	564	10,938	183,639
Total	8,804	7,688	7,114	6,514	6,492	5,493	5,555	5,757	5,275	5,804	5,940	6,704	7,480	7,892	7,802	8,191	8,613	10,416	10,131	9,895	8,480	8,774	9,112	9,713	183,639	

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Appendix A.35. Yentna River north bank sonar counts by hour, 7 July through 5 August 2001. Counts expressed as percentage of daily total.

	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
7-Jul	1.1	1.5	5.0	11.5	7.6	3.4	1.1	9.2	5.0	5.0	5.7	5.7	4.2	3.4	0.4	5.3	2.7	2.3	3.1	1.9	5.0	4.6	3.4	1.9	100.0
8-Jul	4.3	5.8	0.3	4.3	6.1	1.7	1.7	3.2	4.3	1.2	4.0	3.5	4.3	2.3	5.8	4.0	10.1	6.3	6.3	1.7	8.1	2.3	5.2	3.2	100.0
9-Jul	5.0	4.2	6.9	6.5	6.9	1.2	3.1	6.2	1.2	3.5	0.4	1.5	3.8	3.5	3.8	3.8	1.2	9.2	3.8	4.6	1.5	2.7	6.2	9.2	100.0
10-Jul	5.5	3.1	1.3	2.0	0.9	1.3	3.5	5.1	3.1	1.8	1.1	6.2	2.4	1.5	9.5	4.4	3.1	5.1	9.1	6.6	10.0	4.9	4.0	4.4	100.0
11-Jul	4.5	5.4	2.4	2.6	6.7	5.7	3.8	2.4	1.0	3.1	1.0	1.6	1.4	3.3	7.6	2.6	6.9	4.2	3.6	6.2	5.7	3.5	3.8	10.9	100.0
12-Jul	5.1	2.7	1.5	0.3	5.2	4.8	2.1	2.7	5.4	2.8	3.7	7.6	3.4	6.1	5.8	4.3	3.9	5.1	3.6	3.7	3.3	6.0	3.7	7.0	100.0
13-Jul	3.0	4.4	7.7	1.7	8.2	4.4	2.4	4.2	5.4	3.6	5.4	7.1	5.7	2.8	2.4	1.7	0.8	6.2	4.9	3.4	1.8	2.3	5.0	5.4	100.0
14-Jul	6.8	5.4	6.1	7.2	7.9	1.8	5.3	4.2	4.6	0.9	3.2	1.3	1.3	2.4	7.1	4.6	4.0	3.5	6.4	3.3	2.5	1.8	1.1	7.4	100.0
15-Jul	5.2	3.2	2.4	6.1	4.1	4.1	1.8	1.6	5.5	2.0	1.2	2.6	2.5	4.0	5.9	8.7	6.9	2.9	6.4	3.0	2.6	5.9	5.1	6.2	100.0
16-Jul	4.2	4.4	3.0	3.2	2.6	3.7	2.6	3.2	4.4	2.0	1.6	2.3	5.2	5.8	3.7	2.7	4.7	8.3	4.5	1.6	2.3	8.6	9.0	6.6	100.0
17-Jul	3.9	3.9	4.7	4.8	3.7	3.0	3.7	6.2	4.4	4.0	2.2	5.2	3.6	6.6	3.2	1.5	4.1	7.5	4.5	2.6	1.3	4.1	6.1	5.3	100.0
18-Jul	5.5	4.0	5.2	5.2	4.9	3.5	3.2	2.7	1.3	2.2	1.8	4.4	4.6	5.3	2.6	2.2	3.6	6.1	6.6	2.6	2.5	6.4	6.8	6.9	100.0
19-Jul	9.2	8.9	8.5	8.2	5.8	6.1	5.1	4.4	1.7	1.4	0.7	2.9	4.0	3.0	3.8	3.8	0.8	1.7	3.7	2.5	0.9	1.9	6.7	4.3	100.0
20-Jul	9.1	7.7	6.2	5.3	3.9	2.8	4.2	3.4	2.4	2.9	4.3	4.8	5.0	4.2	3.5	2.6	3.0	4.4	4.5	3.4	4.8	3.4	2.1	2.3	100.0
21-Jul	6.1	2.9	3.2	2.4	3.7	2.1	3.5	2.2	4.1	4.1	4.6	8.3	7.8	7.4	6.3	6.7	6.9	3.8	2.3	3.0	2.7	2.2	2.3	1.2	100.0
22-Jul	1.7	2.6	1.0	1.3	0.6	1.0	1.2	0.9	3.2	3.7	2.8	5.9	5.9	5.6	4.2	6.2	6.7	7.0	7.2	7.8	6.5	3.4	7.2	6.4	100.0
23-Jul	2.8	3.3	3.6	2.9	1.9	2.9	2.6	2.0	2.9	3.0	2.9	2.0	5.1	3.8	4.9	5.4	6.1	7.4	6.5	6.7	3.5	5.5	7.6	4.6	100.0
24-Jul	2.9	2.0	2.5	2.2	2.3	2.9	2.9	4.7	8.7	6.0	3.7	4.4	3.5	4.0	5.5	4.8	4.5	5.6	6.2	4.3	3.5	4.1	5.3	3.7	100.0
25-Jul	4.9	4.0	2.8	2.6	1.9	2.7	1.6	2.2	2.3	2.8	3.7	5.7	4.8	3.6	7.6	7.1	3.1	4.2	6.7	7.0	5.4	4.8	2.9	5.5	100.0
26-Jul	2.9	3.0	2.9	3.8	4.3	2.7	2.6	3.7	2.5	3.0	3.0	2.7	5.4	4.1	3.7	3.0	3.0	5.7	4.6	4.6	5.2	8.8	7.7	7.1	100.0
27-Jul	5.0	4.2	4.1	4.2	3.4	5.2	4.1	3.5	3.7	3.7	5.0	4.2	4.4	3.9	3.7	5.3	4.9	3.7	4.0	4.3	3.4	3.5	4.3	4.2	100.0
28-Jul	4.4	4.5	5.0	4.9	5.1	4.4	4.4	7.5	4.5	3.4	2.5	4.2	3.8	4.2	4.8	4.4	5.4	3.8	2.2	3.9	2.9	4.9	1.8	3.3	100.0
29-Jul	5.3	4.4	4.6	3.0	4.0	3.4	3.6	2.2	1.6	1.9	3.8	3.9	4.5	4.2	4.2	2.8	3.8	3.7	3.3	5.3	6.7	4.4	7.9	7.4	100.0
30-Jul	6.9	7.6	6.0	6.2	4.4	4.8	4.4	2.7	2.5	4.3	4.8	4.2	2.9	3.2	4.1	3.4	1.9	1.7	3.6	4.9	3.9	3.5	2.8	5.5	100.0
31-Jul	4.3	3.1	3.8	3.1	4.2	4.5	3.7	3.2	5.1	4.8	2.9	3.7	4.1	6.1	6.0	4.0	3.1	3.2	4.9	5.1	4.4	4.3	4.7	3.7	100.0
1-Aug	4.9	4.8	3.7	3.0	2.7	2.6	3.4	3.4	4.3	3.8	3.0	4.8	3.8	4.0	4.6	5.7	4.9	3.5	7.3	6.8	4.9	3.9	2.5	4.0	100.0
2-Aug	4.3	3.6	3.2	2.0	2.8	2.2	2.5	2.5	4.2	4.9	4.0	3.9	2.0	2.2	6.1	5.5	7.6	6.7	5.9	4.4	5.5	2.8	6.1	5.1	100.0
3-Aug	5.3	6.1	6.6	5.9	4.0	3.4	2.1	3.3	2.2	2.5	3.5	4.2	5.2	3.8	2.7	3.3	5.0	6.0	5.2	3.1	3.3	4.6	5.5	3.0	100.0
4-Aug	3.9	4.7	4.3	3.6	3.7	4.7	3.7	4.1	3.0	2.7	2.7	3.5	4.5	4.1	2.5	4.5	3.8	4.9	4.9	5.8	2.3	2.5	6.6	8.8	100.0
5-Aug	8.7	6.8	8.6	6.2	4.0	3.1	2.5	3.5	3.4	2.2	1.4	4.3	2.7	3.8	4.2	3.6	3.4	3.3	3.8	5.4	3.9	5.1	3.0	3.2	100.0
Total	5.1	4.6	4.6	4.2	3.9	3.7	3.4	3.7	3.5	3.3	3.2	4.0	4.1	4.1	4.4	4.1	4.2	4.5	4.7	4.5	3.9	4.4	5.0	5.0	100.0

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Appendix A.36. Yentna River south bank sonar counts by hour, 7 July through 5 August 2001. Counts expressed as percentage of daily total.

	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Daily Total
7-Jul	9.8	4.9	1.8	2.7	9.8	4.5	4.5	3.6	11.2	5.4	2.2	0.9	1.3	3.1	2.7	4.0	4.5	4.9	1.3	2.2	2.7	5.8	3.1	3.1	100.0
8-Jul	2.4	5.8	9.7	8.7	2.4	2.4	2.4	2.9	1.4	3.4	2.9	3.9	5.8	5.8	2.4	1.9	2.9	2.9	5.3	5.3	6.3	5.3	4.8	2.9	100.0
9-Jul	1.3	2.8	1.6	4.7	4.4	1.9	5.6	3.1	4.1	0.6	3.8	4.4	2.8	2.5	5.6	3.4	8.5	5.0	8.8	6.6	2.2	7.8	6.0	2.5	100.0
10-Jul	1.9	3.9	4.3	5.0	3.7	5.3	4.5	3.4	1.6	1.3	6.3	3.2	5.6	4.2	5.0	8.8	4.8	5.6	5.5	4.5	4.2	1.6	3.1	2.7	100.0
11-Jul	1.1	2.4	2.9	3.6	4.8	4.4	4.7	4.1	1.7	3.5	2.9	3.2	5.4	5.4	4.2	1.7	4.7	8.2	9.5	7.4	1.8	5.6	4.4	2.6	100.0
12-Jul	2.0	2.6	6.0	5.6	6.8	5.9	6.7	8.3	2.8	8.2	4.9	4.9	3.2	2.6	3.5	1.9	2.8	2.6	1.4	2.4	2.0	3.6	2.9	6.1	100.0
13-Jul	2.9	4.7	4.5	6.7	4.9	6.0	4.5	5.7	4.1	4.2	5.5	2.1	4.2	3.9	3.2	3.6	3.3	6.8	3.1	3.2	0.7	1.8	5.5	4.9	100.0
14-Jul	5.3	8.0	5.6	3.1	5.3	3.5	4.4	5.2	6.4	7.2	2.6	3.6	2.2	3.1	2.5	2.7	4.7	4.7	4.7	3.5	1.9	1.6	2.8	5.7	100.0
15-Jul	4.2	4.6	2.3	4.2	4.2	5.5	5.4	3.8	4.7	5.4	2.3	3.0	4.2	1.9	2.1	2.3	5.1	4.7	2.8	1.5	3.0	5.0	7.1	10.8	100.0
16-Jul	2.4	3.6	2.9	3.4	4.6	3.9	4.3	3.8	2.8	2.5	3.3	3.0	6.0	5.6	4.7	3.5	3.8	7.6	6.6	6.5	3.1	3.4	4.1	4.5	100.0
17-Jul	3.9	3.7	3.5	2.5	3.3	3.0	2.8	2.9	3.5	2.9	2.6	2.8	4.0	5.7	5.4	3.9	4.4	6.6	5.5	4.9	3.7	5.3	6.9	6.3	100.0
18-Jul	4.3	4.4	4.1	4.3	4.1	3.5	3.2	2.1	1.8	3.0	2.8	5.7	4.6	5.4	4.0	3.9	5.4	6.8	7.1	6.6	3.0	2.8	3.7	3.5	100.0
19-Jul	3.9	3.9	4.4	4.3	4.1	3.0	3.5	2.3	1.5	1.5	2.1	3.9	4.0	3.3	4.3	3.6	3.5	6.1	6.4	4.9	3.5	5.4	8.4	8.2	100.0
20-Jul	8.0	8.1	6.1	5.6	5.0	4.6	5.4	3.4	2.2	2.8	3.3	4.7	6.0	5.0	4.6	3.4	2.8	4.8	3.6	2.9	2.3	2.4	1.8	1.1	100.0
21-Jul	15.9	15.4	7.1	2.0	5.4	6.6	5.1	4.4	5.1	2.2	2.9	7.8	6.1	2.7	2.9	1.7	2.2	0.2	0.2	2.4	1.2	0.0	0.2	0.2	100.0
22-Jul	0.7	3.3	0.7	1.3	1.3	0.7	0.0	0.7	0.0	2.6	2.6	2.0	5.9	3.9	3.9	3.9	3.9	3.9	3.9	4.6	2.0	16.4	12.5	19.1	100.0
23-Jul	3.0	1.3	2.2	1.5	0.8	2.1	3.3	3.1	1.6	2.4	2.2	2.4	4.3	4.9	8.2	6.1	4.6	8.7	4.5	9.8	5.7	4.9	5.2	7.3	100.0
24-Jul	1.0	0.8	1.0	0.8	0.9	2.1	2.5	2.1	4.6	0.8	0.9	4.9	7.7	4.8	7.1	8.3	5.4	6.8	7.4	6.8	5.6	7.6	5.6	4.5	100.0
25-Jul	3.9	3.7	3.3	3.8	3.0	3.4	3.1	3.7	3.8	4.1	4.5	3.9	4.7	2.4	5.5	5.2	3.8	5.2	4.6	6.3	4.8	3.5	4.4	5.4	100.0
26-Jul	4.2	3.8	5.2	3.8	4.2	2.8	2.5	2.5	2.7	4.3	3.8	1.8	3.9	3.6	3.0	3.6	3.9	6.3	5.4	5.9	4.8	5.4	6.5	6.0	100.0
27-Jul	4.5	3.6	3.1	2.8	4.7	4.1	3.3	3.1	2.4	3.1	3.3	3.2	4.4	4.4	3.9	5.6	4.8	5.2	5.7	3.7	5.0	6.6	5.0	4.6	100.0
28-Jul	4.4	4.5	2.8	2.4	2.4	2.0	2.3	4.7	3.7	3.1	3.8	4.6	3.7	5.8	3.6	4.2	5.0	4.9	6.0	7.9	6.5	4.3	3.2	4.2	100.0
29-Jul	2.8	3.0	3.1	3.4	3.2	2.2	3.0	3.3	2.3	3.0	5.2	3.7	4.2	4.4	4.0	4.1	5.3	5.9	6.2	6.0	6.1	5.5	4.1	6.1	100.0
30-Jul	8.3	7.5	5.5	5.1	3.9	3.1	3.0	3.1	3.0	4.6	3.9	4.0	3.8	4.4	4.4	4.1	4.5	4.3	4.2	4.8	4.3	2.9	2.1	1.1	100.0
31-Jul	4.8	2.8	3.1	3.1	3.0	2.4	1.6	2.8	5.1	3.0	2.7	3.0	4.4	6.5	6.3	6.5	5.1	6.6	6.5	4.9	4.1	3.1	3.9	4.8	100.0
1-Aug	5.6	3.1	3.0	2.4	2.4	2.6	1.8	2.8	2.8	2.1	2.8	4.3	4.8	3.9	3.4	6.0	6.9	5.9	6.8	6.2	5.6	5.4	3.6	6.0	100.0
2-Aug	4.0	3.3	2.0	1.9	2.5	1.8	1.9	1.7	3.3	4.2	2.1	3.0	2.3	3.7	4.8	5.4	5.9	6.1	6.1	7.3	6.6	4.7	7.1	8.5	100.0
3-Aug	6.4	5.8	6.9	4.7	3.8	3.5	2.9	3.1	2.7	4.5	3.4	3.6	1.6	3.0	4.1	3.3	4.4	5.3	4.3	4.1	3.6	5.5	4.8	4.9	100.0
4-Aug	4.5	4.2	4.3	3.9	3.4	3.3	3.9	4.1	2.5	2.4	2.5	2.3	2.4	2.1	2.0	2.5	4.0	4.2	2.7	2.6	4.1	8.1	12.0	11.9	100.0
5-Aug	8.2	4.2	4.5	4.4	3.5	2.3	2.5	3.0	2.1	2.6	1.9	3.5	2.7	4.2	4.6	4.8	5.3	6.1	5.7	5.6	4.6	3.8	4.7	5.2	100.0
Total	4.8	4.2	3.9	3.5	3.5	3.0	3.0	3.1	2.9	3.2	3.2	3.7	4.1	4.3	4.2	4.5	4.7	5.7	5.5	5.4	4.6	4.8	5.0	5.3	100.0

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Appendix A.37. Yentna River north bank sonar counts by sector, 7 July through 5 August 2001.

	Counts by Sector													
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total	Cum Total
7-Jul	22	40	83	37	30	10	11	13	0	3	8	5	262	262
8-Jul	37	61	84	49	49	18	15	17	3	4	6	4	347	609
9-Jul	32	84	72	22	7	4	2	4	5	8	8	12	260	869
10-Jul	53	86	105	52	24	59	11	22	13	12	5	10	452	1,321
11-Jul	35	135	158	50	26	57	24	34	15	27	7	10	578	1,899
12-Jul	54	206	248	62	27	30	7	14	10	4	3	4	669	2,568
13-Jul	46	259	279	75	36	91	17	27	6	8	8	13	865	3,433
14-Jul	38	269	287	132	32	24	24	29	11	19	7	4	876	4,309
15-Jul	63	390	400	137	53	97	45	78	28	37	23	29	1,380	5,689
16-Jul	158	1,601	1,175	228	123	182	101	107	50	69	27	20	3,841	9,530
17-Jul	479	3,837	2,188	386	142	156	67	88	38	47	23	25	7,476	17,006
18-Jul	345	3,643	2,429	387	145	209	88	121	34	45	20	38	7,504	24,510
19-Jul	607	4,477	2,658	463	135	112	30	35	18	17	6	9	8,567	33,077
20-Jul	557	1,850	1,530	351	130	91	21	21	21	10	6	6	4,594	37,671
21-Jul	608	867	346	19	1	0	0	0	0	0	0	0	1,841	39,512
22-Jul	228	206	356	22	2	0	0	0	0	0	0	3	817	40,329
23-Jul	879	1,346	1,992	273	47	153	2	0	0	0	0	0	4,692	45,021
24-Jul	1,927	1,873	2,495	290	44	142	2	19	0	0	1	1	6,794	51,815
25-Jul	2,608	1,892	2,032	292	33	200	3	63	7	4	6	10	7,150	58,965
26-Jul	5,018	3,887	3,323	435	43	55	8	53	6	3	32	23	12,886	71,851
27-Jul	6,905	5,301	3,740	404	32	7	2	4	4	5	9	12	16,425	88,276
28-Jul	6,484	5,049	3,781	536	51	12	3	9	4	7	33	26	15,995	104,271
29-Jul	3,870	4,435	4,142	890	244	197	2	3	2	3	14	24	13,826	118,097
30-Jul	2,186	3,967	3,152	451	47	10	8	6	1	2	5	18	9,853	127,950
31-Jul	2,005	4,235	3,892	727	128	34	8	11	5	7	5	24	11,081	139,031
1-Aug	1,687	3,621	4,091	899	250	50	68	43	22	9	37	16	10,793	149,824
2-Aug	1,153	4,681	4,887	973	137	30	23	12	7	11	7	39	11,960	161,784
3-Aug	970	4,246	3,654	562	75	19	7	3	4	4	5	7	9,556	171,340
4-Aug	934	3,269	3,899	786	163	52	33	38	22	25	10	409	9,640	180,980
5-Aug	870	2,431	2,826	735	151	88	67	59	50	56	46	51	7,430	188,410
Total	40,858	68,244	60,304	10,725	2,407	2,189	699	933	386	446	367	852	188,410	

Appendix A.38. Yentna River south bank sonar counts by sector, 7 July through 5 August 2001.

	Counts by Sector													
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total	Cum Total
7-Jul	33	20	34	52	25	26	12	10	3	1	1	7	224	224
8-Jul	32	18	32	38	27	34	11	4	7	3	0	1	207	431
9-Jul	17	22	52	81	69	39	12	12	4	5	0	6	319	750
10-Jul	65	81	122	112	90	58	30	22	12	13	5	12	622	1,372
11-Jul	80	81	150	148	92	45	22	12	7	6	9	10	662	2,034
12-Jul	129	213	221	158	63	33	8	1	1	1	2	3	833	2,867
13-Jul	106	220	207	191	46	20	15	10	0	4	1	18	838	3,705
14-Jul	91	206	204	156	94	59	21	15	9	14	8	16	893	4,598
15-Jul	63	248	290	275	182	97	31	35	18	18	8	20	1,285	5,883
16-Jul	134	585	852	1,078	673	465	160	140	108	53	16	11	4,275	10,158
17-Jul	3	2	1,113	2,343	1,331	618	125	168	110	52	14	13	5,892	16,050
18-Jul	2	1	1,701	3,530	2,014	917	213	200	133	92	19	26	8,848	24,898
19-Jul	11	10	1,819	4,375	2,457	891	208	170	89	58	21	8	10,117	35,015
20-Jul	35	23	1,089	3,429	2,412	918	152	143	80	35	15	12	8,343	43,358
21-Jul	20	26	70	159	87	38	7	3	0	0	0	0	410	43,768
22-Jul	15	79	31	15	6	6	0	0	0	0	0	0	152	43,920
23-Jul	57	699	344	15	0	0	0	0	0	0	0	0	1,115	45,035
24-Jul	941	3,409	1,419	653	362	169	79	26	8	1	4	0	7,071	52,106
25-Jul	824	2,678	1,564	1,051	748	566	268	94	187	4	0	12	7,996	60,102
26-Jul	1,505	4,088	2,380	1,414	1,257	1,109	621	214	200	69	26	36	12,919	73,021
27-Jul	1,764	4,933	2,906	1,667	1,767	1,547	825	281	254	80	20	5	16,049	89,070
28-Jul	2,006	4,591	1,823	1,208	1,481	1,595	781	326	353	133	39	64	14,400	103,470
29-Jul	1,002	2,222	3,507	3,021	2,789	2,289	1,125	619	531	244	93	33	17,475	120,945
30-Jul	26	24	3,420	2,776	2,787	2,245	942	613	419	288	96	14	13,650	134,595
31-Jul	20	8	1,633	1,798	1,603	1,352	485	259	169	125	58	9	7,519	142,114
1-Aug	7	12	1,571	1,844	1,623	1,083	350	151	152	130	37	15	6,975	149,089
2-Aug	66	58	1,610	1,883	1,669	1,139	369	274	195	170	52	24	7,509	156,598
3-Aug	22	31	2,046	1,846	1,713	977	396	185	162	135	35	13	7,561	164,159
4-Aug	92	81	2,015	1,987	1,887	1,171	520	319	212	170	56	32	8,542	172,701
5-Aug	85	331	1,952	2,323	2,743	1,629	818	329	342	238	103	45	10,938	183,639
Total	9,253	25,000	36,177	39,626	32,097	21,135	8,606	4,635	3,765	2,142	738	465	183,639	

Appendix A.39. Yentna River north bank sonar counts by sector, 7 July through 5 August 2001. Counts expressed as percentage of daily total.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
7-Jul	8.4	15.3	31.7	14.1	11.5	3.8	4.2	5.0	0.0	1.1	3.1	1.9	100.0
8-Jul	10.7	17.6	24.2	14.1	14.1	5.2	4.3	4.9	0.9	1.2	1.7	1.2	100.0
9-Jul	12.3	32.3	27.7	8.5	2.7	1.5	0.8	1.5	1.9	3.1	3.1	4.6	100.0
10-Jul	11.7	19.0	23.2	11.5	5.3	13.1	2.4	4.9	2.9	2.7	1.1	2.2	100.0
11-Jul	6.1	23.4	27.3	8.7	4.5	9.9	4.2	5.9	2.6	4.7	1.2	1.7	100.0
12-Jul	8.1	30.8	37.1	9.3	4.0	4.5	1.0	2.1	1.5	0.6	0.4	0.6	100.0
13-Jul	5.3	29.9	32.3	8.7	4.2	10.5	2.0	3.1	0.7	0.9	0.9	1.5	100.0
14-Jul	4.3	30.7	32.8	15.1	3.7	2.7	2.7	3.3	1.3	2.2	0.8	0.5	100.0
15-Jul	4.6	28.3	29.0	9.9	3.8	7.0	3.3	5.7	2.0	2.7	1.7	2.1	100.0
16-Jul	4.1	41.7	30.6	5.9	3.2	4.7	2.6	2.8	1.3	1.8	0.7	0.5	100.0
17-Jul	6.4	51.3	29.3	5.2	1.9	2.1	0.9	1.2	0.5	0.6	0.3	0.3	100.0
18-Jul	4.6	48.5	32.4	5.2	1.9	2.8	1.2	1.6	0.5	0.6	0.3	0.5	100.0
19-Jul	7.1	52.3	31.0	5.4	1.6	1.3	0.4	0.4	0.2	0.2	0.1	0.1	100.0
20-Jul	12.1	40.3	33.3	7.6	2.8	2.0	0.5	0.5	0.5	0.2	0.1	0.1	100.0
21-Jul	33.0	47.1	18.8	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
22-Jul	27.9	25.2	43.6	2.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.4	100.0
23-Jul	18.7	28.7	42.5	5.8	1.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0	100.0
24-Jul	28.4	27.6	36.7	4.3	0.6	2.1	0.0	0.3	0.0	0.0	0.0	0.0	100.0
25-Jul	36.5	26.5	28.4	4.1	0.5	2.8	0.0	0.9	0.1	0.1	0.1	0.1	100.0
26-Jul	38.9	30.2	25.8	3.4	0.3	0.4	0.1	0.4	0.0	0.0	0.2	0.2	100.0
27-Jul	42.0	32.3	22.8	2.5	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.1	100.0
28-Jul	40.5	31.6	23.6	3.4	0.3	0.1	0.0	0.1	0.0	0.0	0.2	0.2	100.0
29-Jul	28.0	32.1	30.0	6.4	1.8	1.4	0.0	0.0	0.0	0.0	0.1	0.2	100.0
30-Jul	22.2	40.3	32.0	4.6	0.5	0.1	0.1	0.1	0.0	0.0	0.1	0.2	100.0
31-Jul	18.1	38.2	35.1	6.6	1.2	0.3	0.1	0.1	0.0	0.1	0.0	0.2	100.0
1-Aug	15.6	33.5	37.9	8.3	2.3	0.5	0.6	0.4	0.2	0.1	0.3	0.1	100.0
2-Aug	9.6	39.1	40.9	8.1	1.1	0.3	0.2	0.1	0.1	0.1	0.1	0.3	100.0
3-Aug	10.2	44.4	38.2	5.9	0.8	0.2	0.1	0.0	0.0	0.0	0.1	0.1	100.0
4-Aug	9.7	33.9	40.4	8.2	1.7	0.5	0.3	0.4	0.2	0.3	0.1	4.2	100.0
5-Aug	11.7	32.7	38.0	9.9	2.0	1.2	0.9	0.8	0.7	0.8	0.6	0.7	100.0
Total	21.7	36.2	32.0	5.7	1.3	1.2	0.4	0.5	0.2	0.2	0.2	0.5	100.0

Appendix A.40. Yentna River south bank sonar counts by sector, 7 July through 5 August 2001. Counts expressed as percentage of daily total.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Daily Total
7-Jul	14.7	8.9	15.2	23.2	11.2	11.6	5.4	4.5	1.3	0.4	0.4	3.1	100.0
8-Jul	15.5	8.7	15.5	18.4	13.0	16.4	5.3	1.9	3.4	1.4	0.0	0.5	100.0
9-Jul	5.3	6.9	16.3	25.4	21.6	12.2	3.8	3.8	1.3	1.6	0.0	1.9	100.0
10-Jul	10.5	13.0	19.6	18.0	14.5	9.3	4.8	3.5	1.9	2.1	0.8	1.9	100.0
11-Jul	12.1	12.2	22.7	22.4	13.9	6.8	3.3	1.8	1.1	0.9	1.4	1.5	100.0
12-Jul	15.5	25.6	26.5	19.0	7.6	4.0	1.0	0.1	0.1	0.1	0.2	0.4	100.0
13-Jul	12.6	26.3	24.7	22.8	5.5	2.4	1.8	1.2	0.0	0.5	0.1	2.1	100.0
14-Jul	10.2	23.1	22.8	17.5	10.5	6.6	2.4	1.7	1.0	1.6	0.9	1.8	100.0
15-Jul	4.9	19.3	22.6	21.4	14.2	7.5	2.4	2.7	1.4	1.4	0.6	1.6	100.0
16-Jul	3.1	13.7	19.9	25.2	15.7	10.9	3.7	3.3	2.5	1.2	0.4	0.3	100.0
17-Jul	0.1	0.0	18.9	39.8	22.6	10.5	2.1	2.9	1.9	0.9	0.2	0.2	100.0
18-Jul	0.0	0.0	19.2	39.9	22.8	10.4	2.4	2.3	1.5	1.0	0.2	0.3	100.0
19-Jul	0.1	0.1	18.0	43.2	24.3	8.8	2.1	1.7	0.9	0.6	0.2	0.1	100.0
20-Jul	0.4	0.3	13.1	41.1	28.9	11.0	1.8	1.7	1.0	0.4	0.2	0.1	100.0
21-Jul	4.9	6.3	17.1	38.8	21.2	9.3	1.7	0.7	0.0	0.0	0.0	0.0	100.0
22-Jul	9.9	52.0	20.4	9.9	3.9	3.9	0.0	0.0	0.0	0.0	0.0	0.0	100.0
23-Jul	5.1	62.7	30.9	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
24-Jul	13.3	48.2	20.1	9.2	5.1	2.4	1.1	0.4	0.1	0.0	0.1	0.0	100.0
25-Jul	10.3	33.5	19.6	13.1	9.4	7.1	3.4	1.2	2.3	0.1	0.0	0.2	100.0
26-Jul	11.6	31.6	18.4	10.9	9.7	8.6	4.8	1.7	1.5	0.5	0.2	0.3	100.0
27-Jul	11.0	30.7	18.1	10.4	11.0	9.6	5.1	1.8	1.6	0.5	0.1	0.0	100.0
28-Jul	13.9	31.9	12.7	8.4	10.3	11.1	5.4	2.3	2.5	0.9	0.3	0.4	100.0
29-Jul	5.7	12.7	20.1	17.3	16.0	13.1	6.4	3.5	3.0	1.4	0.5	0.2	100.0
30-Jul	0.2	0.2	25.1	20.3	20.4	16.4	6.9	4.5	3.1	2.1	0.7	0.1	100.0
31-Jul	0.3	0.1	21.7	23.9	21.3	18.0	6.5	3.4	2.2	1.7	0.8	0.1	100.0
1-Aug	0.1	0.2	22.5	26.4	23.3	15.5	5.0	2.2	2.2	1.9	0.5	0.2	100.0
2-Aug	0.9	0.8	21.4	25.1	22.2	15.2	4.9	3.6	2.6	2.3	0.7	0.3	100.0
3-Aug	0.3	0.4	27.1	24.4	22.7	12.9	5.2	2.4	2.1	1.8	0.5	0.2	100.0
4-Aug	1.1	0.9	23.6	23.3	22.1	13.7	6.1	3.7	2.5	2.0	0.7	0.4	100.0
5-Aug	0.8	3.0	17.8	21.2	25.1	14.9	7.5	3.0	3.1	2.2	0.9	0.4	100.0
Total	5.0	13.6	19.7	21.6	17.5	11.5	4.7	2.5	2.1	1.2	0.4	0.3	100.0

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