

NORTON SOUND AND KOTZEBUE SOUND MANAGEMENT AREA

SALMON CATCH AND ESCAPEMENT REPORT, 1995

By

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Regional Information Report¹ No. 3A96-23

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333 Raspberry Road
Anchorage, Alaska 99518-1599

May 1996

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ABSTRACT

The 1995 commercial and subsistence harvest and escapement information for the five species of Pacific salmon *Oncorhynchus* found in the Norton Sound Management Area and the one species of *Oncorhynchus* found in the Kotzebue Sound Management Area in significant abundance are presented by age, sex, and length. The 1995 Norton Sound District commercial harvest totaled 181,392 salmon and was composed of 8,860 chinook (*O. tshawytscha*), 42,898 chum (*O. keta*), 128 sockeye (*O. nerka*), 81,644 pink (*O. gorbuscha*) and 47,862 coho (*O. kisutch*) salmon. The commercial harvest was 31% above the 1990-94 average for chinook salmon, 30% below for chum salmon and 36% below for coho salmon. Because of a weak pink salmon run, the pink salmon harvest in 1995 was well below expectations. Sockeye salmon are only present in small numbers in this area. Surveys for chum salmon in northern Norton Sound indicated escapements ranged from just below the escapement goal to above the goals. Escapements for chinook, chum and coho salmon in Southern Norton Sound were average or better. The predominant age composition for the chinook salmon harvest in Subdistrict 6 was age 1.4 (70.4%) with smaller contributions from other age groups. Subdistrict 6 chum salmon age composition was 57.8% age 0.4 and 30.7% age 0.3. The coho salmon harvest in Subdistrict 6 was predominantly age 2.1 (76.1%). In the Kotzebue District, the commercial harvest totaled 290,730 chum salmon. An incidental catch of 5 chinook salmon and 2,090 Dolly Varden was also reported. Subsistence catches of these species plus whitefish, sheefish and northern pike also occur in the Kotzebue District. The chum salmon commercial harvest in 1995 was just above the 1979-94 average of 282,000 fish. Aerial escapement surveys indicated the chum salmon escapement was strong in all index areas. Record catch rates and high catches at the Kobuk River test fishery also indicated escapement was well above average. Aerial surveys indicated strong escapement into the Noatak River drainage as well. The age composition of the chum salmon harvest in the Kotzebue District commercial fishery was 2.2% age 0.2, 58.9% age 0.3, 36.9% age 0.4, 1.9% age 0.5, with a very small percent of age 0.6 (0.03%).

KEY WORDS: Norton Sound, Kotzebue Sound, harvest, escapement, *Oncorhynchus tshawytscha*, *O. nerka*, *O. keta*, *O. kisutch*, *O. gorbuscha*, age-size-sex composition, fishery synopsis

INTRODUCTION

The Norton Sound, Port Clarence, and Kotzebue Sound commercial salmon management districts include all waters of Alaska from Canal Point Light, south of Stebbins, to Point Hope, north of Kotzebue. The Port Clarence District has been closed to commercial salmon fishing since 1966. The Norton Sound District includes all waters of Alaska from Canal Point Light north to Cape Douglas (Figure 1) and consists of six subdistricts: 1 (Nome), 2 (Golovin), 3 (Moses Point), 4 (Norton Bay), 5 (Shaktoolik), and 6 (Unalakleet). These subdistricts are intended to concentrate commercial harvests on stocks which spawn in the watersheds flowing into the respective subdistricts. The Kotzebue Sound District includes all waters of Alaska from Point Hope to Cape Prince of Wales, but commercial salmon fishing is restricted to Subdistricts 1 and 2, consisting of ocean waters north of the Baldwin Peninsula (Figures 2, 3). Subdistrict 2, Noatak River mouth, normally remains closed unless the chum salmon return is substantially above average.

Five species of Pacific salmon are found in the Norton Sound and Kotzebue Sound areas. In descending order of economic importance in 1995, they are coho salmon (*Oncorhynchus kisutch*), pink salmon (*O. gorbuscha*), chinook salmon (*O. tshawytscha*), chum salmon (*O. keta*) and sockeye salmon (*O. nerka*). In Norton Sound the returns of pink salmon are the largest of the five species, followed by coho, chum, chinook, and sockeye salmon. In some years the coho salmon return is greater than the chum salmon return. Concern for chum salmon escapements required a conservative management strategy for that species in 1995. In the Kotzebue Sound District, chum salmon are the predominant species.

Knowledge of the magnitude, distribution, timing, and age-sex-size composition of both the harvest and escapement by stock is fundamental to managing salmon fisheries and achieving full production. Age, sex, and size composition of samples from selected salmon harvests and escapements in the Norton Sound and Kotzebue Sound areas have been reported since 1962 and are presented in this report for 1995.

Fishery statistics for the Norton Sound and Kotzebue Sound areas are available from several additional sources. Commercial and subsistence harvest and spawning escapement data from 1961 to 1995 have been summarized in the Norton Sound - Port Clarence - Kotzebue Sound Annual Management Report (Lean et al. *in Press*). In addition, the results from escapement assessment projects are analyzed and reported annually. For the 1995 season these included test fishery projects on the Unalakleet River (Rob, 1996), Kobuk River (Lingnau, 1995b) and Noatak River (Lingnau, 1995c). Counting tower projects on the Kwiniuk River (Rob, 1995a), Niukluk River (Rob, 1995b), Nome River (Rob, 1995c), Snake River (Peter Rob, ADF&G, personal communication) and on the Eldorado River (Peter Rob, ADF&G, personal communication).

Age, sex, and size data for Norton Sound and Kotzebue Sound salmon from 1962 to 1982 are summarized in an unpublished report series entitled ADF&G Arctic-Yukon-Kuskokwim Region Age-Sex-Size Composition of Salmon. Beginning with the 1983 season these data have been published in an annual report (Lean et al. 1984; Bigler and Lean 1986; Hamner 1987, 1989a, 1989b; Buklis 1991a, 1991b; Lingnau 1992, 1994a, 1994b; Blaney and Lingnau 1995; Lingnau 1995a).

METHODS

Harvest and Escapement

Commercial catch data presented in this report were compiled from harvest receipts, i.e., *fish tickets*, which document each sale by a licensed fisherman. These data were summarized by microcomputer in the Nome and Kotzebue offices during the fishing season.

Funds were dedicated in 1994 to conduct in-depth subsistence harvest surveys for most villages in the Kotzebue, Port Clarence the Norton Sound Districts. These surveys continued in 1995 as well. Villages surveyed in the Norton Sound and Port Clarence Areas were Brevig Mission, Elim, Golovin, Koyuk, Shaktoolik, St. Michaels, Stebbins, Teller, Unalakleet, and White Mountain. In the Kotzebue Area, the villages of Ambler, Kiana, Kobuk, Noatak, Noorvik and Shungnak were surveyed. In the City of Kotzebue, mailers to be filled out and returned were sent to households to assess harvests of salmon. A subsistence permit is required to subsistence fish in the Nome Subdistrict, and catch limits are set by permit for each river and species. The members of each household were asked how many salmon were caught for subsistence use. During these surveys it was assumed that fishermen could accurately recall their harvests, which may have occurred over several months.

The Division of Subsistence has conducted other in-depth subsistence harvest interviews in the region. These studies include the city of Kotzebue in 1986 (Georgette and Loon 1993), the village of Unalakleet in 1989-90 (Jim Magdanz and Jody Seitz 1993), Elim in 1992 and 1993 (Jim Magdanz, ADF&G, personal communication), the Nome Subdistrict in 1975-1991 (Magdanz 1992), and Brevig Mission, Golovin and Shishmaref in 1989 (Conger and Magdanz 1990).

Aerial surveys have been the primary method for monitoring salmon escapements to the Norton Sound and Kotzebue Sound drainages. They do not provide a total estimate of salmon spawning abundance. Aerial survey escapement counts are, at best, an index of relative abundance for the surveyed streams. To compare aerial surveys across years, surveys are attempted in approximately the same time frame each year for the same index areas. Weather conditions, pilots and surveyors are also variables in aerial survey counts. Comparing commercial catch statistics to previous years provides an index of run strength and timing. Test fishing provides an index of escapement and species composition for turbid or large drainages that are difficult to monitor visually. Test fishery catch and catch per unit effort (CPUE) statistics are used as an index of relative abundance. Counting towers and sonar projects provide a better estimate of escapement. The following counting tower projects conducted during the 1995 season provided data on salmon escapement abundance and timing in Norton Sound. The Nome, Snake and Eldorado Rivers in the Nome Subdistrict, the Kwiniuk River in the Moses Point Subdistrict, and the Niukluk River in the Golovin Subdistrict (Appendix C). A test fishing project on the Unalakleet River in the Unalakleet Subdistrict was used to index escapement. Due to a lack of resources, the sonar escapement project on the Noatak River did not operate in 1995. However, test fishing was conducted in an effort to index escapements into the Noatak River. For the third year, a test fish project was conducted on the Kobuk River near the village of Kiana to index

salmon escapements into the Kobuk River system.

Age, Sex, and Length Data Collection

Age was determined from scales removed from the left side of the fish in an area above the lateral line crossed by a diagonal from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin. Scales were mounted on gum cards and impressions made in cellulose acetate. Ages were reported in European notation (the first digit refers to the freshwater age and does not include the year spent in the gravel; the second digit refers to the ocean age). Sex was determined by examining external characteristics, such as; snout, vent, body symmetry, extruded eggs, ovipositor or milt of live fish. The sex of dead fish was determined by examining the gonads, if necessary. Fish length to the nearest millimeter was measured from mid-eye to fork-of-tail.

In some cases sex and length data but no ageable scales were obtained from fish, and in other cases ageable scales were collected without corresponding sex or length data. Therefore, numbers of fish in a length-by-age summary table may differ from numbers of fish in a sex-by-age summary table for a given fishery or escapement sample.

Sample Size

Minimum sample size goals were established for temporal strata based upon simultaneous interval estimation of age class composition. Two methods of determining sample size goals, based on different methods of constructing simultaneous confidence intervals, have been employed. For most purposes, sample size goals were developed using the method of Thompson (1987). Sample size goals were established such that 95% simultaneous confidence intervals would be of width 0.2. This objective is satisfied with a sample size of 128 scales per strata, although the goal was increased to account for the expected number of unreadable scales in any particular instance. In the Kotzebue commercial fishery, where age composition is an important index of run strength, a sample size goal was developed using more stringent standards based on the method of Bromaghin (1993). The ages of chum salmon were categorized into three age classes; age 4, age 5, and age 3 or age 6. The sample size goal was chosen such that the width of 95% simultaneous confidence intervals (Goodman 1965) would not exceed 0.15. A sample of 249 fish per stratum satisfied this objective. The sample size goal was increased to 280 fish per stratum to account for the expected number of unreadable scales.

RESULTS

Sufficient commercial fishery samples were collected to estimate age and sex composition of the harvest for chinook, chum and coho salmon in Norton Sound Subdistrict 6 and for the chum salmon harvest in the Kotzebue District. Chinook, chum, and coho salmon were sampled from the Unalakleet River set gillnet test fishing catch. Because of the selectivity of the 5-7/8 in (149 mm) stretched-mesh gillnets used on the test net project, the samples are not an unbiased estimate of spawning escapement age, sex, and size composition. Chum salmon samples were collected from tower projects on the Nome, Snake, Niukluk and Kwiniuk Rivers using beach seines. Brood stock samples were collected from the Solomon River. In the Kotzebue District, chum salmon test fishing catches were sampled on both the Kobuk and Noatak Rivers. Age-Sex-Length data were collected from chum salmon carcasses from the Salmon River, Squirrel River and Selby Slough vicinity in the Kobuk River drainage. Comparisons of age, sex, and size composition between samples in this report are non-statistical comparisons.

Norton Sound

Commercial and Subsistence Harvest

The 1995 Norton Sound commercial harvest totaled 181,392 salmon and was composed of 8,860 chinook, 42,898 chum, 128 sockeye, 81,644 pink, and 47,862 coho salmon (Table 1; Appendix A). Subdistrict 6 accounted for 55.6% of the total commercial salmon harvest in 1995, followed by Subdistrict 5 (35.4%). With low expectations for chum salmon fisheries and low prices, effort was 24% below the previous 10 year average.

Although chum and coho salmon contributed nearly equal numbers of fish to the catch, because of the price differences, coho salmon was 43% of the total fishery value while chum salmon was only 15%. Chinook salmon contributed 5% of the catch but its value to the district was 32%. A weak pink salmon return resulted in a harvest that was less than 20% of the expectation. Pink salmon only contributed to 10% of the total value. Two primary salmon buyers operated in Norton Sound during the 1995 season. One buyer purchased fish during the chinook and coho seasons while the second buyer was mostly interested in pink salmon. Chinook, chum and coho salmon were delivered to Nome and Unalakleet via tender and aircraft. The salmon were headed and gutted, then shipped air freight to markets. The second buyer purchased pink salmon and tendered fish throughout Norton Sound to their floating processor vessel located along the eastern coast. Pink salmon were processed with pollock filet equipment. Product was then packaged, frozen and held on board. A few fishermen sold their catch locally and to wholesale distributors, as permitted under catcher/seller regulations. The average price paid for chinook was \$.66 per pound, \$.50/lb for sockeye, \$.43/lb for coho, \$.18/lb for pink and \$.18/lb for chum salmon. The total ex-vessel value of the raw fish \$356,912 was 30% below the previous 5 year (1990-1994) average.

The Norton Sound commercial salmon fishing season opened in the eastern subdistricts on June 12 by emergency order and ended by emergency order on August 25. Due to chum salmon

conservation concerns, chinook salmon were targeted early in the season using minimum mesh size restrictions, thereby reducing chum salmon catches. As the season progressed, chinook salmon returns were above average and early indications were that the mesh size restriction was allowing chum salmon to escape. The chum salmon return developed stronger than expected with a harvestable surplus in eastern Norton Sound. However, the chum salmon market was very limited and buyers had to choose between buying early, good quality chum or purchasing a lesser quality chum during the pink and coho directed fisheries as an incidental species. The second choice would allow buyers and fishermen to maximize pink and coho salmon harvests. Mesh restrictions were briefly relaxed so that some chum salmon could be harvested in the southern subdistricts before the market demand switched to pink salmon. Maximum mesh size restrictions and special harvest areas were used to target the pink salmon which returned much weaker than expected. Commercial fishing was closed for several periods between the end of the pink salmon fishery and prior to the coho salmon fishery. The chum salmon were still migrating but their quality was declining. Commercial fishing resumed once the coho salmon return began to build and dominate the commercial catches. At this time, chum salmon escapements in these subdistricts had been met and the buyers had relatively few water marked chum salmon to accept. The commercial salmon season closed early as it became apparent that the coho return was below average. A reduction in the commercial harvest was necessary to achieve desired coho salmon escapement levels.

Although many of the residents of Norton Sound are dependent to some extent on the fish and game resources of the area, subsistence salmon catches generally have not been monitored from 1983 through 1993, except in the Nome Subdistrict. Prior to 1983 the Department conducted annual household surveys in many of the villages. For the last 5 years in which these surveys were conducted, 1978-1982, the average annual subsistence catch in the Norton Sound area was 73,000 salmon for all species combined. Because not all households were contacted, this should be considered a minimum estimate. In the Nome Subdistrict, subsistence permits require that fishermen document their harvest by species (Figure 2). There were 123 subsistence permits issued in 1995. A total of 88 permits were returned of which 58 reported having fished. The reported permit harvest of 5,822 salmon was composed of 30 chinook, 247 sockeye, 3,800 chum, 336 pink, and 1,409 coho salmon (Table 2). Funds were dedicated to do comprehensive subsistence surveys in Norton Sound and Kotzebue Sound in 1994 and 1995. The villages surveyed in 1995 were listed in the methods section.

Results of the survey for 1995 indicate an estimated 113,612 salmon were harvested for subsistence purposes in Norton Sound (Susan Georgette, ADF&G, personal communication). This estimate includes the permit fishery in Northern Norton Sound. The largest percent of the harvest was chum salmon (38%), followed by pink salmon (34%), coho salmon (20%), chinook salmon (7%), and a small amount of sockeye salmon (1%). The largest quantity of salmon was taken from the village of Unalakleet which also had the largest number of households that fished. The average number of salmon (species combined) taken by each household in Norton Sound was 139. The highest average number of salmon taken per household was in Shaktoolik (255) and the lowest was in Nome (75).

Port Clarence villages harvested an estimated 15,600 salmon with an average number of salmon per household of 109. The largest percent of the salmon was again chum salmon (38%). Unlike Norton Sound, the second largest contributor was sockeye salmon (28%), with smaller

proportions of other species.

Escapement Abundance

Subdistricts 5 and 6 support the largest chinook salmon returns in Norton Sound. Escapement surveys, commercial, subsistence and test net catches indicated slightly above average numbers of chinook salmon in Subdistrict 6 and slightly below average in Subdistrict 5.

Chum salmon escapements were above average throughout Norton Sound except for Subdistrict 1. In Subdistrict 1, results were mixed (Table 3). Some drainages (Eldorado and Flambeau) had nearly twice their escapement goals while other rivers were very near the escapement goals. The Kwiniuk River, in Subdistrict 2, had 42,161 chum salmon pass the tower site, 116% above the goal of 19,500. The Tubutulik had the highest aerial survey count since 1984. One river (Ungalik) in Subdistrict 3 exceeded its goal by 5 times the objective, a new record. Chum salmon escapements into Subdistricts 5 and 6 indicate that escapement objectives were achieved there as well. The test fish project in Unalakleet had the highest cumulative catch rate since 1981.

Overall, coho escapements appeared to be average to below average. Subdistrict 1 had below average escapements while Subdistricts 3, 4, 5 and 6 all had average coho salmon escapements. Subdistrict 2 was not surveyed but since no commercial fishery occurred and with a limited subsistence harvest, it is likely that escapement was adequate.

Pink salmon returning to Norton Sound have exhibited an odd/even year cycle in recent years. The even year normally has a much larger return than the odd year. In 1995, the return throughout Norton Sound was far less than expected, even for an odd year. This was indicated by low counts and indices from aerial surveys as well as tower projects, commercial, subsistence and test fish catches.

Age, Sex, and Length Composition

The chinook salmon commercial harvest in Subdistrict 6 was composed of an estimated 70.4% age-1.4, 13.9% age-1.2 and 13.0% age-1.3 with smaller amounts of age-1.1, age-2.2 and age-1.5 fish. The sample was nearly 50% each male and female. A sample of 74 chinook salmon from the Unalakleet River test fishery was 43.2% age 1.2, 41.9% age 1.4, and smaller amounts of ages 1.3 and 1.5, with 70.3% of the total being male. Mean lengths by age group for all samples collected ranged from 513 mm for age-1.2 males to 905 mm for age-1.5 males, both from the Subdistrict 6 commercial fishery sample (Tables 4, 5).

Subdistrict 6 chum salmon age composition was mostly age 0.4 (57.8%), followed by age 0.3 (30.7%). The male and female sex ratio was nearly equal components. A sample of 502 chum salmon from the Unalakleet River test fishery was 63.8% age 0.4 and 24.2% age 0.3, with 33.0% of the sample being female. Samples from Norton Sound tributaries (Kwiniuk, Snake, Nome, Niukluk and Solomon Rivers) varied with age 0.3 dominating in the Kwiniuk (56.0%),

Niukluk (51.3%) and Snake (55.0%) River samples while age 0.4 dominated the Solomon (57.9%) and Nome (70.8%) River samples. Females were dominant in 3 of 5 tributaries, with males dominant in the Kwiniuk and Niukluk Rivers. Mean lengths by age group for all samples collected ranged from 500 mm for age-0.2 females from the Niukluk River to 655 mm for an age-0.5 female from the Snake River (Tables 6, 7, 8). Samples through time from the Unalakleet River test fishery and the Kwiniuk River tower project are found in Appendix B.

Subdistrict 6 coho salmon samples were dominated by age-2.1 fish accounting for 76.1%, with 46.0% females. There were 77 coho salmon sampled from the Unalakleet River test fishery and the age composition was similar to the Subdistrict 6 catch with 76.3% age-2.1 salmon. A sample of sport fish caught coho salmon from the Niukluk River had a higher percentage of age 2.1 fish (83.8%) with a near equal sex ratio. Mean lengths by age group for all samples collected ranged from 574 mm for age-1.1 males from the Subdistrict 6 commercial catch and age-2.1 females in the Niukluk River to 593 mm for age-1.1 and age-3.1 males from the Unalakleet River test fishery and age-1.1 males from the Niukluk River (Tables 9, 10, 11).

Kotzebue Sound

Commercial Harvest

The commercial harvest in the Kotzebue District (Figure 3 and 4) during 1995 consisted of 290,730 chum salmon, 5 chinook salmon, and 2,090 Dolly Varden (Table 12). This commercial chum harvest was near the mid-range of the preseason outlook for 250,000-350,000 salmon. This catch was slightly above the 16 year (1979-1994) average of 282,000. There were 92 permits that were fished this year. This is the lowest number of participants since 1971, and since the fishery became fully developed. The low fishing effort is attributed to construction opportunities available in the region and the lowest salmon price (\$.13/lb) in 1995 since 1967 (\$0.11/lb).

From July 10 to July 17 the season began normally with bi-weekly 24 hour fishing periods. After period 3, the hours were reduced at the buyers' request. Because of a poor chum salmon market, processors held the buyers to a limited poundage for each commercial period. For the remainder of the season, openings were coordinated with buyers so that fish in excess of their limitations would not be taken and the harvest could be shipped for processing in a timely manner. This procedure kept salmon at a high quality which enabled processors to market Kotzebue chum salmon. Both processors indicated that they were working with a thin margin of profit and a delivery of poor quality fish could end the commercial fishery. A total of thirty openings were fished in 1995 for a total of 232 hours. Since the development of the fishery beginning in 1962, only in 1993 (168) were there fewer hours fished. Number of hours fished in 1995 was about half of the recent 16 year (1979-1994) average of 433 hours. Commercial fishing period lengths varied from 2 hours to 24 hours in length during the 1995 season.

Two buyers purchased a total of 2,329,898 pounds of chum salmon (average weight 8.0) at \$.13 per pound, 93 pounds of chinook salmon (average weight 18.6) at an average of \$1.00 per

pound, and 13,195 pounds of Dolly Varden (average weight 6.3) at an average of \$.20 per pound. The total commercial fishery ex-vessel value was \$316,031 to Kotzebue area fishermen with an average of \$3,435 for each participating permit holder. Both buyers ice packed their fish and flew them to Anchorage in the round for processing.

Sikusuilag Springs Hatchery

The total predicted return of hatchery chum salmon was 82,000. There was an estimated commercial harvest of 57,000 chum salmon from the hatchery production. With the exception of two periods after August 15, the hatchery contributed between 20% - 35% to the individual commercial period harvests following that date. Aerial surveys indicated there were large amounts of salmon in the vicinity of the hatchery. Because of the poor market conditions, there was no interest in harvesting those excess salmon. The 1995 spring release of fry may be the last from Sikusuilag Hatchery as the department has ceased operations due to budget cuts.

Subsistence Harvest

Results from the Division of Subsistence survey indicate an estimated subsistence harvest of 108,662 salmon in the Kotzebue Sound area, with 95% of the harvest being chum salmon (Susan Georgette, ADF&G, personal communication). Smaller quantities of the other four species of salmon were reportedly harvested. The city of Kotzebue had the largest estimated harvest of 53,518 salmon, with the village of Kobuk taking the smallest quantity with 2,960 salmon. These are also the locations with the largest and smallest populations of the communities surveyed in the district. The village of Noorvik had the highest catch of salmon (species combined) per household (124) with Kiana the least (59). The other Kobuk River villages (Ambler, Shungnak and Kobuk) were very similar to each other in catch per household (110-120). Harvest for Shishmaref, the only village surveyed that is not on or near a major tributary, averaged 50 chum salmon per household.

Escapement Abundance

A test fishing project located in Kiana indexed chum salmon run strength and timing in the Kobuk River. Even though a sonar project did not operate this year on the Noatak River, a reduced crew conducted test fishing with the intended purpose of indexing chum salmon run strength and timing in the Noatak River.

The test fish index from the Kobuk River was similar to the strong run of 1994, although the project did not operate as long in 1995. Even with the clear water conditions in 1995, catch rates did not seem to be significantly affected. Most likely, catch rates would have been even higher if the water had been more turbid. However, effects of clear water net avoidance was significantly buffered because of the tannic stained water of the Kobuk River.

As mentioned previously, only test fishing was conducted on the Noatak River in 1995. The 1995 test fishing data was compared to test fishing data from the previous two years (1993 and 1994) on the right bank collecting in conjunction with the sonar project in these years for species

for species apportionment purposes. The results were that the 1995 cumulative CPUE was the lowest of the three years. This is attributed to net avoidance due to extreme water clarity in 1995. Only a few days of high catch rates occurred and those were during periods of higher turbidity. The poor performance of the test fishing as an index of run strength in 1995 is identical to what occurred in 1991, when a test fishing project indicated a poor chum salmon run while aerial surveys indicated that the escapement goal was met.

Aerial survey conditions in 1995 were some of the best in recent history. Aerial escapement goals on all tributaries, with the exception of the Squirrel River, were achieved by roughly twofold (Table 13). The Squirrel River escapement goal was essentially met. Run timing, by aerial survey, was normal with two exceptions, the Salmon River and the Upper Kobuk area. Surveys of these two index areas indicated an earlier than normal run.

Age, Sex, and Length Composition

Age groups 0.3 and 0.4 typically dominate the commercial chum salmon catch, with smaller percentages of age-0.2 and age-0.5 fish. The chum salmon commercial harvest for the season was composed of an estimated 2.2% age 0.2, 58.9% age 0.3, 36.9% age 0.4, 1.9% age 0.5, and a trace of age 0.6 (0.03%) (Table 14).

Both the Noatak and Kobuk River chum salmon stocks were dominated by age 0.3, based on samples from the test fisheries. The Noatak River test fishing samples indicated 56.1% were age 0.3 while the Kobuk test fishing sample was 61.5% age 0.3 (Table 14). Age 0.4 fish were 39.9% for the Noatak River and 34.0% for the Kobuk River sample. Both samples had smaller quantities of age 0.2 and 0.5 fish. Just over half (50.4%) of the samples from the Noatak River were female, whereas 36.7% were female from the Kobuk River test fishery (Table 15). These discrepancies may be attributed to the difference in mesh size sampling. The Kobuk River testing fish project uses only 5-7/8 in mesh size gillnets, which parallels the commercial fishery. The Noatak River sonar project has used a range of mesh size gillnets from 2-3/4 in (70 mm) mesh to 6 in (152 mm) mesh size for the purpose of species apportionment, and that suite of mesh size gillnets was used in 1995 as a test fishery in the absence of the sonar project.

Spawning ground samples were collected for chum salmon from the Salmon River, Squirrel River, and in the vicinity of Selby Slough in the Kobuk River drainage. Age composition ranged from 58.3% to 73.9% for age 0.3 and from 21.6% to 33.3% for age 0.4 (Table 16). Mean lengths by age group for all samples ranged from 492 mm for age-0.3 females to 638 mm for age-0.5 males, both from the Kotzebue commercial catch. Sufficient commercial fishery samples and test fish catch samples from the Noatak and Kobuk Rivers, were collected to stratify the season by fishing period (Appendix D).

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Table 1. Norton Sound commercial salmon effort, catch and weight (pounds) by subdistrict, 1995.

Subdistrict	Number of Fishermen ^a	Chinook		Sockeye		Coho		Pink		Chum		Total	
		No. Fish	Weight	No. Fish	Weight	No. Fish	Weight	No. Fish	Weight	No. Fish	Weight	No. Fish	Weight
1	2	0	0	1	7	369	2,695	0	0	122	791	492	3,493
2	7	0	0	0	0	1,616	11,317	4,296	10,096	1,987	13,310	7,899	34,723
3	12	4	51	44	316	3,742	27,001	2,962	7,429	1,171	7,409	7,923	42,206
4	0												
5	26	1,239	26,021	5	33	10,855	83,628	37,377	93,194	14,775	99,140	64,251	302,016
6	58	7,617	148,699	78	564	31,280	231,549	37,009	87,402	24,843	169,795	100,827	638,009
District Totals	105	8,860	174,771	128	920	47,862	356,190	81,644	198,121	42,898	290,445	181,392	1,020,447

^a Some fishermen fished more than one subdistrict.

Table 2. Estimates of subsistence harvests of chum salmon in Norton Sound Area villages, 1995. ^b

Location	Permits Issued ^b	Permits Returned	Permits Fished	Chinook	Sockeye	Chum	Pink	Coho	Total
Marine Waters	77	53	37	22	145	3,042	293	911	4,413
Nome River	8	8	5	1	2	31	9	97	140
Snake River	2	1	1	0	0	2	3	6	11
Eldorado	10	7	6	2	1	500	0	304	807
Flambeau	5	5	4	1	0	199	1	47	248
Bonanza River	4	3	1	0	0	20	30	0	50
Sinuk River	1	1	0	0	0	0	0	0	0
Fish River	1	0	0	0	0	0	0	0	0
Niukluk River	1	1	1	0	0	0	0	38	38
Port Clarence	4	2	1	4	69	6	0	0	79
Kutitir river	1	0	0	0	0	0	0	0	0
Pilgrim River	9	7	2	0	30	0	0	6	36
Totals ^b	123	88	58	30	247	3,800	336	1,409	5,822

^a Preliminary data.

^b Permits issued by Alaska Department of Fish and Game, Division of Commercial Fisheries, in Nome.

Table 3. Salmon survey counts of Norton Sound streams and associated chum salmon escapement goals, 1995.

Stream Name	Chinook	Coho	Sockeye	Pink	Chum	
					Count	Goal
Salmon L.			5,433			
Grand Central R.			628 ^b			
Pilgrim R.		586			1,410	
Glacial L.			733			
Sinuk R.		290 ^b		1,250	3,110	4,500
Cripple R.		100 ^b		150 ^b		
Penny R.					15 ^b	
Snake R.		132 ^b			14 ^b	1,000
Nome R.		517		182	1,855	2,000
Flambeau R.		68		350	6,455	3,250
Eldorado R.		247		50	9,025	5,250
Bonanza R.		510		619		1,500
Solomon R.		105		350	315	550
Fish R.	40	1,829		780	13,433	17,500
Boston C.	78	230			4,221	2,500
Niukluk R.	48	2,136		200	25,358	8,000
Ophir C.		15				
Kwiniuk R.	468 ^d	1,625		17,573 ^d	42,161 ^d	19,500 ^e
Tubutulik R.	377	930		4,020	16,518	12,000
Inglutalik R.						8,500
Ungalik R.	32			19,700	13,475	2,500
Shaktoolik R.	270	1,665		29,680	9,060	11,000
Unalakleet R.	532	1,784 ^a		1,950	5,610	
North R.	622	690 ^a		18,300	1,370	2,000
Old Woman R.	424	818			470	100
Kogok R.	5	11 ^a		20 ^a	777 ^a	
Pikmiktalik R.	23	876 ^a		183	717	

Note: A multitude of factors affect escapement estimates. The numbers above are strict values that are instantaneous counts which may not truly represent the strength of the return. Refer to text for an evaluation of the return.

^a Counts should be considered minimums due to counting conditions.

^b Early count.

^c Late count, chum goal is for the tower count.

^d Preliminary expanded tower counts.

^e Chum goal for tower count.

Table 4. Norton Sound Subdistrict 6 chinook salmon commercial catch age and sex composition, and mean length, 1995.

		Brood Year and Age Group						
		1992	1991	1990	1989	1988	Total	
		(1.1)	(1.2)	(1.3)	(2.2)	(1.4)	(1.5)	
Stratum Dates:	6/12–8/26							
Sampling Dates:	6/13–6/30							
Sample Size:	231							
Female	Percent of Sample	0.0	0.4	3.9	0.0	43.0	0.9	48.3
	Number in Catch	0	33	298	0	3,279	66	3,676
	Mean Length (mm) ^a			813.3		884.8	905.0	
Male	Percent of Sample	0.9	13.5	9.1	0.4	27.4	0.4	51.7
	Number in Catch	66	1,027	695	33	2,086	33	3,941
	Mean Length (mm) ^a	512.5	562.4	730.7	570.0	855.6	835.0	
Total	Percent of Sample	0.9	13.9	13.0	0.4	70.4	1.3	100.0
	Number in Catch	66	1,060	994	33	5,365	99	7,617
	Standard Error	47	174	169	33	229	57	

^a Length was measured from mid-eye to fork-of-tail.

Table 5. Unalakleet River chinook salmon test fish age and sex composition, and mean length, 1995.

		Brood Year and Age Group				
		1991 (1.2)	1990 (1.3)	1989 (1.4)	1988 (1.5)	Total
Stratum Dates:		6/05–7/11				
Sampling Dates:		6/05–7/11				
Female	Percent of Sample	5.4	4.1	18.9	1.4	29.7
	Number in Catch	4	3	14	1	22
	Mean Length (mm) ^a	535.0	743.3	902.5	830.0	
Male	Percent of Sample	37.8	9.5	23.0	0.0	70.3
	Number in Catch	28	7	17	0	52
	Mean Length (mm) ^a	580.3	720.7	850.3		
Total	Percent of Sample	43.2	13.5	41.9	1.4	100.0
	Number in Catch	32	10	31	1	74
	Standard Error	6	4	6	1	

^a Length was measured from mid–eye to fork–of–tail.

Table 6. Norton Sound Subdistrict 6 chum salmon commercial catch age and sex composition, and mean length, 1995.

		Brood Year and Age Group				
		1992	1991	1990	1989	Total
		(0.2)	(0.3)	(0.4)	(0.5)	
Stratum Dates:	6/12–8/26					
Sampling Dates:	7/04–8/02					
Sample Size:	199					
Female	Percent of Sample	0.0	11.1	33.2	5.0	49.2
	Number in Catch	0	2,746	8,239	1,248	12,234
	Mean Length (mm) ^a		578.9	575.2	593.0	
Male	Percent of Sample	0.5	19.6	24.6	6.0	50.8
	Number in Catch	125	4,869	6,117	1,498	12,609
	Mean Length (mm) ^a	590.0	588.8	602.0	617.1	
Total	Percent of Sample	0.5	30.7	57.8	11.1	100.0
	Number in Catch	125	7,615	14,357	2,746	24,843
	Standard Error	125	814	872	554	

^a Length was measured from mid-eye to fork-of-tail.

Table 7. Unalakleet River chum salmon test fish catch age and sex composition, and mean length, 1995.

		Brood Year and Age Group			Total
		1991 (0.3)	1990 (0.4)	1989 (0.5)	
Stratum Dates:		6/5–8/30			
Sampling Dates:		6/5–8/30			
Sample Size:		502			
Female	Percent of Sample	6.0	23.0	4.0	33.0
	Number in Catch	30	115	20	166
	Mean Length (mm) ^a	580.2	593.2	612.0	
Male	Percent of Sample	18.2	40.8	8.0	67.0
	Number in Catch	91	205	40	336
	Mean Length (mm) ^a	603.2	614.5	612.0	
Total	Percent of Sample	24.2	63.8	12.0	100.0
	Number in Catch	121	320	60	502
	Standard Error	10	11	7	

^a Length was measured from mid–eye to fork–of–tail.

Table 8. Norton Sound District chum salmon drainage escapement age and sex composition, and mean length, 1995.

		Brood Year and Age Group				
		1992 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	Total
Stratum Dates: 6/30–7/25		Kwiniuk River ^b				
Sampling Dates: 6/30–7/25						
Sample Size: 341						
Female	Percent of Sample	0.3	28.2	17.3	2.1	47.8
	Number in Escapement	124	11,869	7,295	865	20,153
	Mean Length (mm) ^a	530.0	558.9	563.2	573.6	
Male	Percent of Sample	0.0	27.9	22.3	2.1	52.2
	Number in Escapement	0	11,746	9,397	865	22,008
	Mean Length (mm) ^a		583.1	598.1	601.4	
Total	Percent of Sample	0.3	56.0	39.6	4.1	100.0
	Number in Escapement	124	23,615	16,691	1,731	42,161
	Standard Error	253	2,324	2,289	454	
Stratum Dates: 7/5–8/10		Niukluk River ^b				
Sampling Dates: 7/5–8/10						
Sample Size: 772						
Female	Percent of Sample	0.3	21.6	18.0	2.0	41.8
	Number in Escapement	225	18,657	15,510	1,686	36,079
	Mean Length (mm) ^a	500.0	555.5	562.3	530.2	
Male	Percent of Sample	0.1	29.7	24.3	4.0	58.2
	Number in Escapement	112	25,626	21,018	3,484	50,240
	Mean Length (mm) ^a	515.0	581.6	593.1	597.5	
Total	Percent of Sample	0.4	51.3	42.3	6.0	100.0
	Number in Escapement	337	44,283	36,528	5,170	86,319
	Standard Error	194	1,554	1,536	738	
Stratum Dates: 7/24		Nome River				
Sampling Dates: 7/24						
Female	Percent of Sample	0.0	25.0	60.4	0.0	85.4
	Number in Sample	0	12	29	0	41
	Mean Length (mm) ^a		573.2	573.0		
Male	Percent of Sample	0.0	4.2	10.4	0.0	14.6
	Number in Sample	0	2	5	0	7
	Mean Length (mm) ^a		597.5	595.4		
Total	Percent of Sample	0.0	29.2	70.8	0.0	100.0
	Number in Sample	0	14	34	0	48
	Standard Error		7	7		

(continued)

Table 8. (page 2 of 2)

		Brood Year and Age Group				
		1992 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	Total
Stratum Dates:		7/25–7/28		Snake River		
Sampling Dates:		7/25–7/28				
Female	Percent of Sample	0.0	46.7	35.0	1.7	83.3
	Number in Sample	0	28	21	1	50
	Mean Length (mm) ^a		568.6	585.0	655.0	
Male	Percent of Sample	0.0	8.3	8.3	0.0	16.7
	Number in Sample	0	5	5	0	10
	Mean Length (mm) ^a		583.6	606.0		
Total	Percent of Sample	0.0	55.0	43.3	1.7	100.0
	Number in Sample	0	33	26	1	60
	Standard Error		6	6	1	
Stratum Dates:		7/31		Solomon River		
Sampling Dates:		7/31				
Female	Percent of Sample	0.0	28.1	28.1	0.0	56.1
	Number in Sample	0	16	16	0	32
	Mean Length (mm) ^a		555.2	550.4		
Male	Percent of Sample	0.0	14.0	29.8	0.0	43.9
	Number in Sample	0	8	17	0	25
	Mean Length (mm) ^a		576.0	588.6		
Total	Percent of Sample	0.0	42.1	57.9	0.0	100.0
	Number in Sample	0	24	33	0	57
	Standard Error		7	7		

^a Length was measured from mid-eye to fork-of-tail.

^b Number in escapement based on expanded tower counts.

Table 9. Norton Sound Subdistrict 6 coho salmon commercial catch age and sex composition, and mean length, 1995.

		Brood Year and Age Group			Total
		1992 (1.1)	1991 (2.1)	1990 (3.1)	
Stratum Dates:		7/10–8/26			
Sampling Dates:		8/02–8/09			
Sample Size:		176			
Female	Percent of Sample	1.1	34.1	10.8	46.0
	Number in Catch	355	10,664	3,377	14,396
	Mean Length (mm) ^a	590.0	568.1	558.4	
Male	Percent of Sample	2.8	42.0	9.1	54.0
	Number in Catch	889	13,152	2,844	16,884
	Mean Length (mm) ^a	574.0	577.7	564.7	
Total	Percent of Sample	4.0	76.1	19.9	100.0
	Number in Catch	1,244	23,815	6,220	31,280
	Standard Error	462	1,008	944	

^a Length was measured from mid–eye to fork–of–tail.

Table 10. Unalakleet River coho salmon test fish age and sex composition, and mean length, 1995.

		Brood Year and Age Group			
		1992	1991	1990	Total
		1.1	2.1	3.1	
Stratum Dates:	7/24–9/11				
Sampling Dates:	7/24–9/11				
Female	Percent of Sample	6.6	40.8	5.3	52.6
	Number in Catch	5	31	4	41
	Mean Length (mm) ^a	583.0	576.1	548.8	
Male	Percent of Sample	7.9	35.5	3.9	47.4
	Number in Catch	6	27	3	36
	Mean Length (mm) ^a	593.3	592.2	593.3	
Total	Percent of Sample	14.5	76.3	9.2	100.0
	Number in Catch	11	59	7	77
	Standard Error	4	5	3	

^a Length was measured from mid–eye to fork–of–tail.

Table 11. Niukluk River coho salmon sport fish catch age and sex composition, and mean length, 1995.

		Brood Year and Age Group			
		1992	1991	1990	Total
		1.1	2.1	3.1	
Stratum Dates:	7/26–9/07				
Sampling Dates:	7/26–9/07				
Female	Percent of Sample	5.0	45.0	1.3	51.3
	Number in Catch	4	36	1	41
	Mean Length (mm) ^a	583.0	573.7	585.0	
Male	Percent of Sample	8.8	38.8	1.3	48.8
	Number in Catch	7	31	1	39
	Mean Length (mm) ^a	592.7	577.7	585.0	
Total	Percent of Sample	13.8	83.8	2.5	100.0
	Number in Sample	11	67	2	80
	Standard Error	4	4	2	

^a Length was measured from mid–eye to fork–of–tail.

Table 12. Kotzebue District commercial catch, weight and average weight of chum salmon, chinook salmon and Dolly Varden by period, 1995.

Period	Date	Hours Fished	Number of Fishermen	Chum ^a			Chinook			Dolly Varden		
				Number	Pounds	Avg. Wt.	Number	Pounds	Avg. Wt.	Number	Pounds	Avg. Wt.
1	July 10-11	24	9	2,483	20,075	8.1	1	31	31.0	1	4	4.0
2	July 13-14	24	19	8,834	70,089	7.9						
3	July 17-18	24	34	17,239	138,259	8.0						
4	July 19-20	12	36	10,329	82,703	8.0				5	26	5.2
5	July 20-21	12	42	11,193	91,394	8.2	1	21	21.0	4	26	6.5
6	July 21-22	4	13	3,002	23,844	7.9						
7	July 24	4	30	7,625	59,945	7.9						
8	July 25	6	33	12,017	96,214	8.0						
9	July 26	3	29	7,827	62,158	7.9						
10	July 28	4	44	18,281	147,103	8.0				5	43	8.6
11	July 31	3	48	11,207	89,901	8.0				34	25	0.7
12	August 1	3	47	7,967	65,609	8.2						
13	August 2	2	41	10,313	83,350	8.1						
14	August 4	2	37	6,322	50,212	7.9						
15	August 7	2	41	10,970	87,469	8.0						
16	August 8	3	44	12,972	103,779	8.0 ^b						
17	August 9	3	40	11,290	90,320	8.0 ^b						
18	August 10	3	48	13,723	109,784	8.0 ^b				3	45	15.0
19	August 11	3	37	13,083	104,664	8.0 ^b						
20	August 14	2	19	3,212	25,696	8.0 ^b				10	70	7.0
21	August 15	4	29	5,726	45,768	8.0 ^b	1	6	6.0	183	1,078	5.9
22	August 16	6	36	11,824	94,592	8.0 ^b				238	1,483	6.2
23	August 17	8	39	19,223	153,784	8.0 ^b				259	1,469	5.7
24	August 18	4	23	4,899	39,192	8.0 ^b				157	931	5.9
25	August 21	7	33	6,775	54,235	8.0 ^b				298	1,954	6.6
26	August 22	12	37	8,676	69,488	8.0 ^b				304	1,993	6.6
27	August 23	12	27	8,366	66,928	8.0 ^b				191	1,290	6.8
28	August 24	12	28	9,717	78,216	8.0 ^b				241	1,701	7.1
29	August 25	12	28	8,226	65,808	8.0 ^b				101	631	6.2
30	August 28	12	22	7,409	59,319	8.0 ^b	2	35	17.5	56	426	7.6
Totals		232	92	290,730	2,329,898	8.0	5	93	18.6	2,090	13,195	6.3

^a Does not include 125 chum salmon weighing 1,005 pounds from test fish sales.

^b Commercial fishermen and the lone buyer agreed to average the weight of the fish so each individual catch does not need to be weighed. The average weight is based on the previous commercial catches, an average of 8.0 pounds.

Table 13. Kotzebue District chum salmon aerial survey escapement estimates for primary index streams, 1962–1995. Indices listed in this table are the peak survey observed for each tributary during the given year. ^a

Year	Noatak Mainstem (80,000)	Ely River (4,000)	Kelly R. and Lake ^c	Noatak River Primary Index Area Total	Squirrel River (11,500)	Salmon River (7,000)	Tutuksuk River (2,000)	Upper Kobuk Mainstem (10,000)	Kobuk River Primary Index Area Total
1962	168,000	9,080	1,818	178,898	5,384	12,936	10,841	9,224	38,385
1963	1,970 ^b	35 ^b	600 ^b	2,605 ^b	2,200	1,535	670	4,535	8,940
1964	89,798			89,798	8,009	9,353	2,685	7,985	28,032
1965	6,152 ^b		3,155	9,307	7,230	1,500 ^b		2,750	11,480
1966	101,640	120	570	102,330	1,350	3,957	1,383	1,474	8,164
1967	29,120 ^b		225 ^b	29,345 ^b	3,332	2,116	169	2,495	8,112
1968	39,394	5,502	375	45,271	6,746	3,367	823	2,370	13,306
1969	33,945	68	150	34,163	6,714	2,561	159	7,500 ^c	16,934
1970	138,145			138,145	4,418	3,000 ^b	2,000 ^b	13,908	23,326
1971	41,056			41,056	6,628	5,453	1,384	17,202	30,667
1972	64,315 ^b	3,286 ^b		67,601 ^b	32,126	2,073 ^b		18,155	52,354
1973	32,144		2,590	34,734	12,345	6,891		2,470 ^b	21,706
1974	129,640	22,249	1,381	153,270	32,523	29,190	8,312	28,120	98,145
1975	96,509	1,302	3,937	101,748	32,256	9,721	1,344 ^b	10,702	54,023
1976	44,574	1,205	217 ^b	45,996	7,229	1,161	758	2,522 ^b	11,670
1977	11,221 ^b	742 ^b	290 ^b	12,253 ^b	1,964 ^b				1,964
1978	37,817	5,525	168 ^b	43,510	1,863	814 ^b	368 ^b	1,981 ^b	5,026
1979	15,721 ^b	1,794 ^b	3,200 ^b	20,715 ^b	1,500 ^b	674 ^b	382 ^b	2,008	4,564
1980	164,474	10,277	7,416	182,167	13,563	8,456	1,165	11,472	34,656
1981	116,352		13,770	130,122	9,854	4,709	1,114	8,648	24,325
1982	20,682 ^b	189 ^b	11,604 ^b	32,475 ^b	7,690	1,821 ^c	1,322	14,674	25,507
1983	79,773	3,044	12,137	94,954	5,115	1,677	2,637	33,746	43,175
1984	67,873	5,027	3,499	76,399	5,473	1,471	1,132	10,621	18,697
1985	45,525 ^b	855 ^b	1,200 ^b	47,580 ^b	6,160	2,884	5,089	6,278	20,411
1986	37,227 ^b	4,308 ^b	839 ^b	42,374 ^b	4,982	1,971	4,257	6,015	17,225
1987	5,515 ^b	2,780 ^b	950 ^b	9,245 ^b	2,708 ^c	3,333	206	8,210	14,457
1988	45,930 ^b	8,639 ^b	1,460 ^b	56,029 ^b	4,848 ^b	6,208	3,122	11,895 ^b	26,073
1989 ^d									
1990	23,345 ^b	3,000	325	26,670	5,500	6,335	2,275	15,355	29,465
1991	82,750	2,940	654	86,344	4,606	5,845	744	24,525	35,720
1992	34,335 ^b	701 ^b	726 ^b	35,762 ^b	2,765	1,345	1,162	11,803	17,075
1993	25,415 ^b	4,795	9 ^b	30,219 ^b	4,463	13,880	1,196	12,158	31,697
1994 ^d									
1995	147,260	7,860	8,384	163,504	10,605	13,988	3,901	32,361	60,855

^a Three aerial surveys are attempted yearly at different intervals for each tributary to assess escapements prior to the peak, at the peak and after the peak of the run. Indices listed in this table are the largest survey observed for each tributary during the given year.

^b Poor survey conditions or incomplete, early or late survey.

^c Survey by foot or boat.

^d Unacceptable conditions.

^e No aerial escapement goal has been determined because of the lack of historical data.

Table 14. Kotzebue District chum salmon commercial catch age and sex composition, and mean length, 1995.

		Brood Year and Age Group					
		1992	1991	1990	1989	1988	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Stratum Dates:	7/10–8/28						
Sampling Dates:	7/11–8/28						
Sample Size:	4,621						
Female	Percent of Sample	0.9	28.2	18.4	1.1	0.0	48.6
	Number in Catch	2,593	82,051	53,428	3,133	0	141,205
	Mean Length (mm) ^a	574.0	591.7	602.1	614.4		
Male	Percent of Sample	1.4	30.7	18.5	0.8	0.0	51.4
	Number in Catch	3,946	89,222	53,811	2,457	88	149,524
	Mean Length (mm) ^a	577.4	613.5	625.4	637.7	637.0	
Total	Percent of Sample	2.2	58.9	36.9	1.9	0.0	100.0
	Number in Catch	6,539	171,273	107,239	5,590	88	290,730
	Standard Error	634	2,104	2,064	587	74	

^a Length was measured from mid–eye to fork–of–tail.

Table 15. Kobuk River and Noatak River chum salmon drift test fish catch age and sex composition, and mean length, 1995.

		Brood Year and Age Group					Total
		1992 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	1988 (0.6)	
Stratum Dates:		Kobuk River					
Sampling Dates:		7/13–8/16					
Female	Percent of Sample	0.6	22.6	12.7	0.8	0.0	36.7
	Number in Catch	6	232	130	8	0	376
	Mean Length (mm) ^a	552.5	587.7	595.0	598.8		
Male	Percent of Sample	1.7	38.8	21.4	1.5	0.0	63.3
	Number in Catch	17	398	219	15	0	649
	Mean Length (mm) ^a	577.1	603.8	618.1	626.7		
Total	Percent of Sample	2.2	61.5	34.0	2.2	0.0	100.0
	Number in Catch	23	630	349	23	0	1,025
	Standard Error	0	2	1	0		
Stratum Dates:		Noatak River					
Sampling Dates:		7/20–8/29					
Female	Percent of Sample	1.1	27.8	20.2	1.2	0.1	50.4
	Number in Sample	15	352	256	15	1	638
	Mean Length (mm) ^a	546.7	569.0	576.0	589.3	600.0	
Male	Percent of Sample	0.8	28.4	19.7	0.7	0.1	49.6
	Number in Sample	10	359	250	9	1	628
	Mean Length (mm) ^a	575.5	597.2	609.3	621.7	620.0	
Total	Percent of Sample	1.9	56.1	39.9	1.8	0.2	100.0
	Number in Sample	24	711	506	23	2	1,266
	Standard Error	0	1	1	0	0	

^a Length was measured from mid–eye to fork–of–tail.

Table 16. Kotzebue District chum salmon tributary escapement age and sex composition, and mean length, 1995.

		Brood Year and Age Group				Total
		1992 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	
Stratum Dates: 8/27–8/28		Squirrel River				
Sampling Dates: 8/27–8/28						
Female	Percent of Sample	4.2	40.9	18.9	1.5	65.5
	Number in Sample	11	108	50	4	173
	Mean Length (mm) ^a	533.6	553.6	558.3	561.3	
Male	Percent of Sample	1.5	17.4	14.4	1.1	34.5
	Number in Sample	4	46	38	3	91
	Mean Length (mm) ^a	598.8	600.1	612.4	616.7	
Total	Percent of Sample	5.7	58.3	33.3	2.7	100.0
	Number in Sample	15	154	88	7	264
	Standard Error	1	3	3	1	
Stratum Dates: 8/23–8/24		Salmon River				
Sampling Dates: 8/23–8/24						
Female	Percent of Sample	1.6	25.0	15.6	0.4	42.6
	Number in Sample	4	61	38	1	104
	Mean Length (mm) ^a	530.0	550.7	568.0	560.0	
Male	Percent of Sample	0.8	40.6	14.8	1.2	57.4
	Number in Sample	2	99	36	3	140
	Mean Length (mm) ^a	525.0	596.6	611.6	600.0	
Total	Percent of Sample	2.5	65.6	30.3	1.6	100.0
	Number in Sample	6	160	74	4	244
	Standard Error	1	3	3	1	
Stratum Dates: 9/07–9/08		Selby Slough				
Sampling Dates: 9/07–9/08						
Female	Percent of Sample	1.1	40.9	11.0	0.8	53.8
	Number in Sample	3	108	29	2	142
	Mean Length (mm) ^a	521.7	552.8	574.1	592.5	
Male	Percent of Sample	1.5	31.1	8.0	1.1	41.7
	Number in Sample	4	82	21	3	110
	Mean Length (mm) ^a	561.3	596.1	599.8	608.3	
Total	Percent of Sample	2.7	73.9	21.6	1.9	100.0
	Number in Sample	7	195	57	5	264
	Standard Error	1	3	3	1	

^a Length was measured from mid-eye to fork-of-tail.

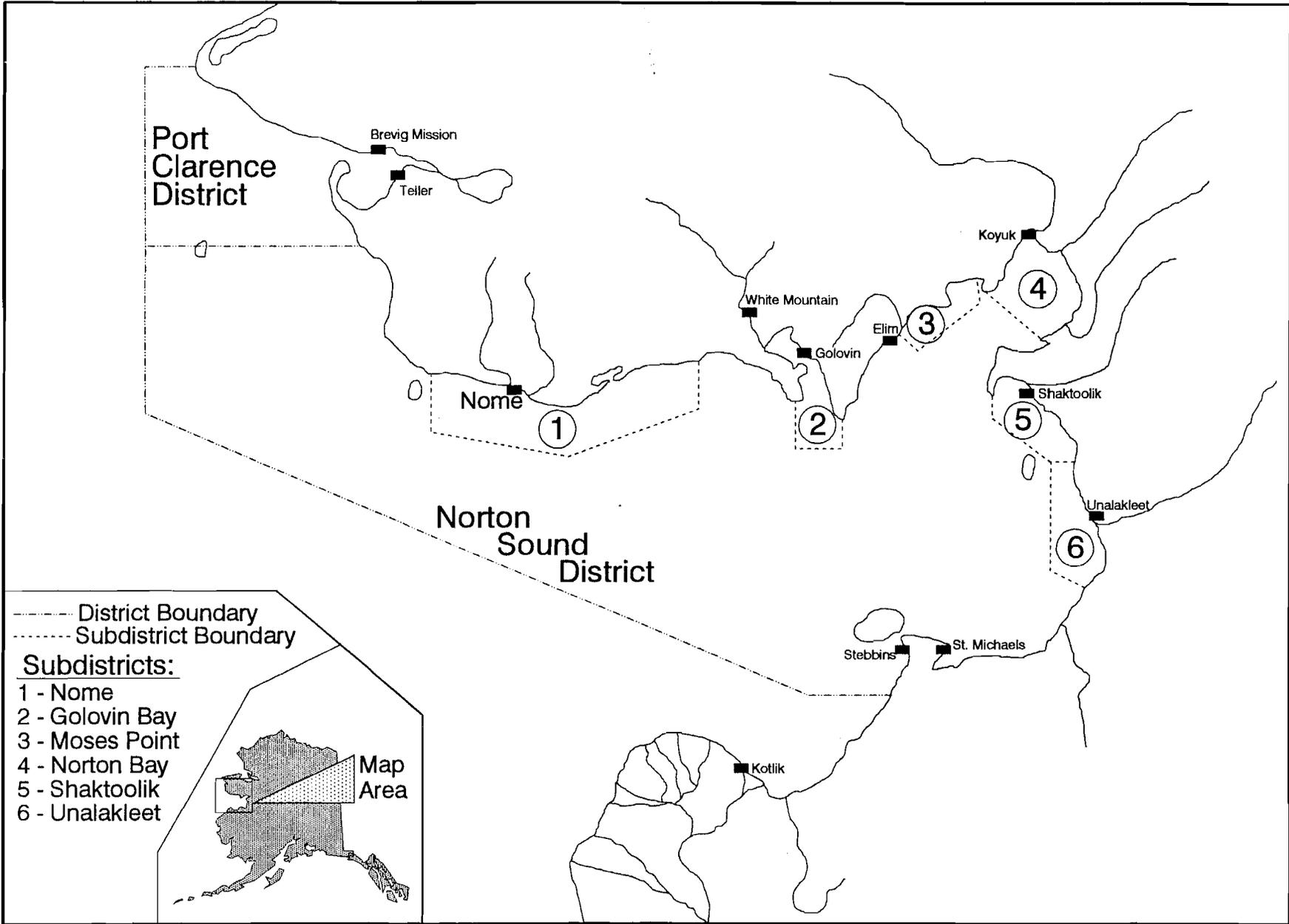


Figure 1. Norton Sound commercial salmon fishing subdistricts.

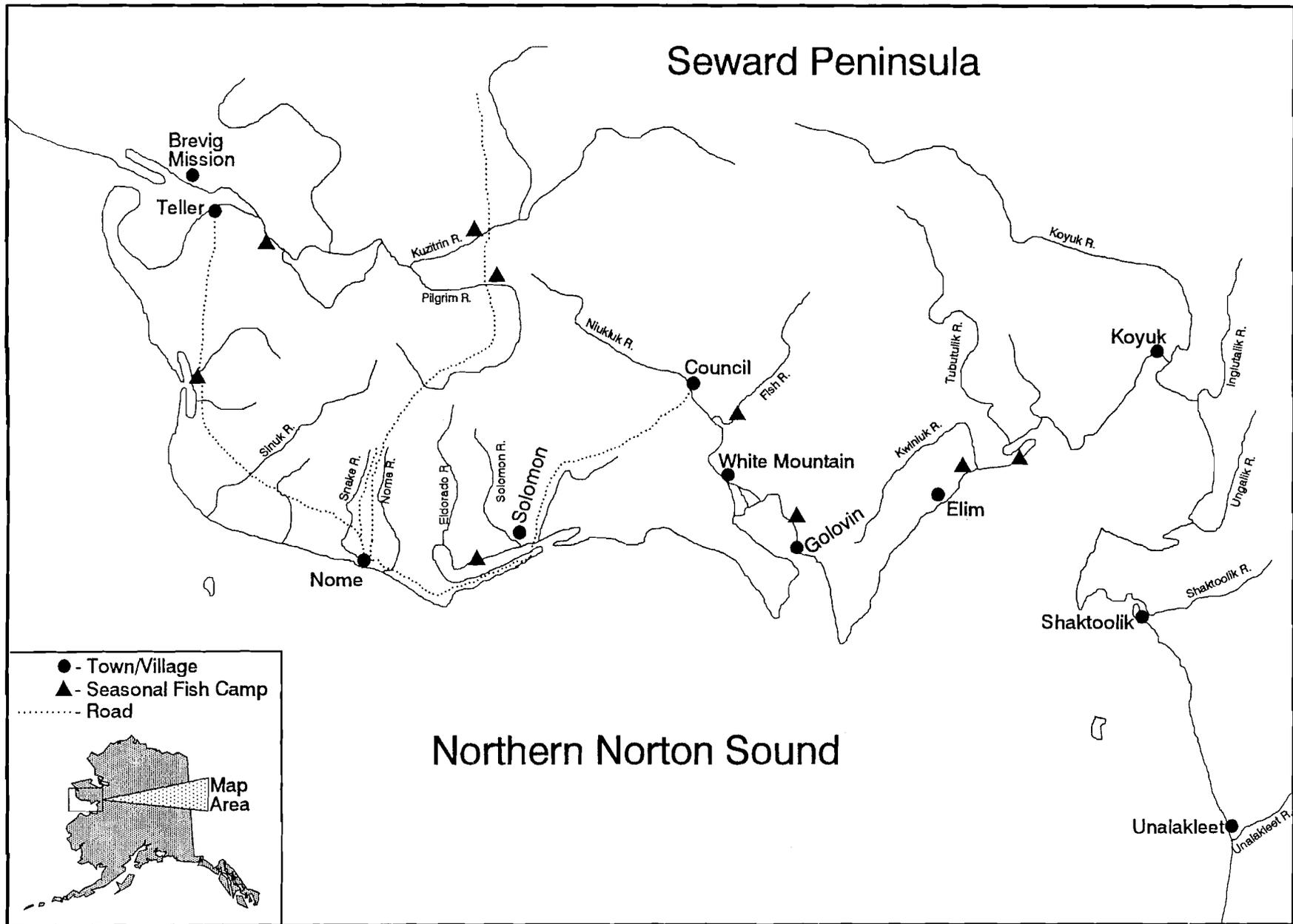


Figure 2. Northern Norton Sound subsistence fishing areas.

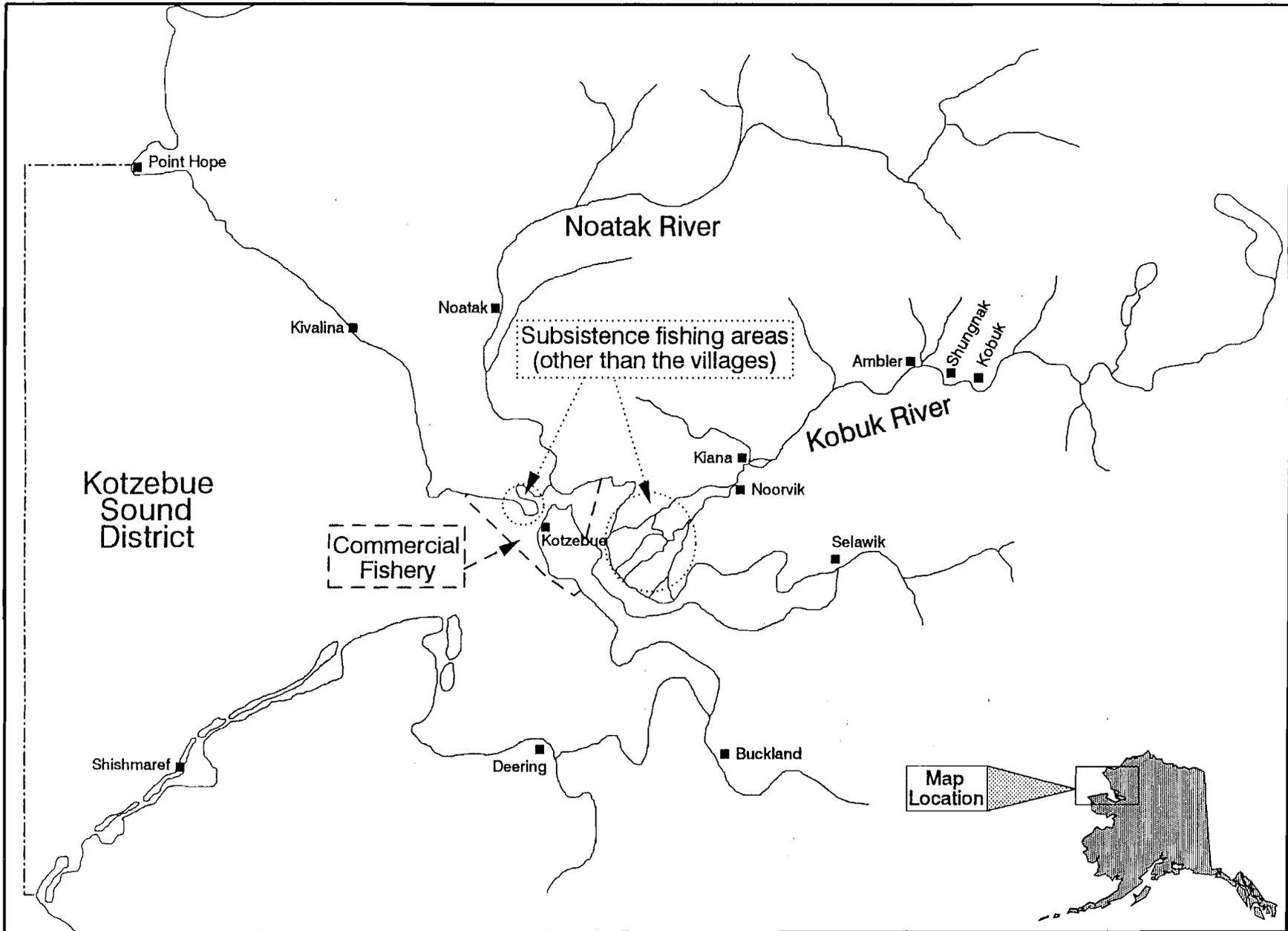


Figure 3. Kotzebue Sound commercial fishing district, villages and subsistence fishing areas.

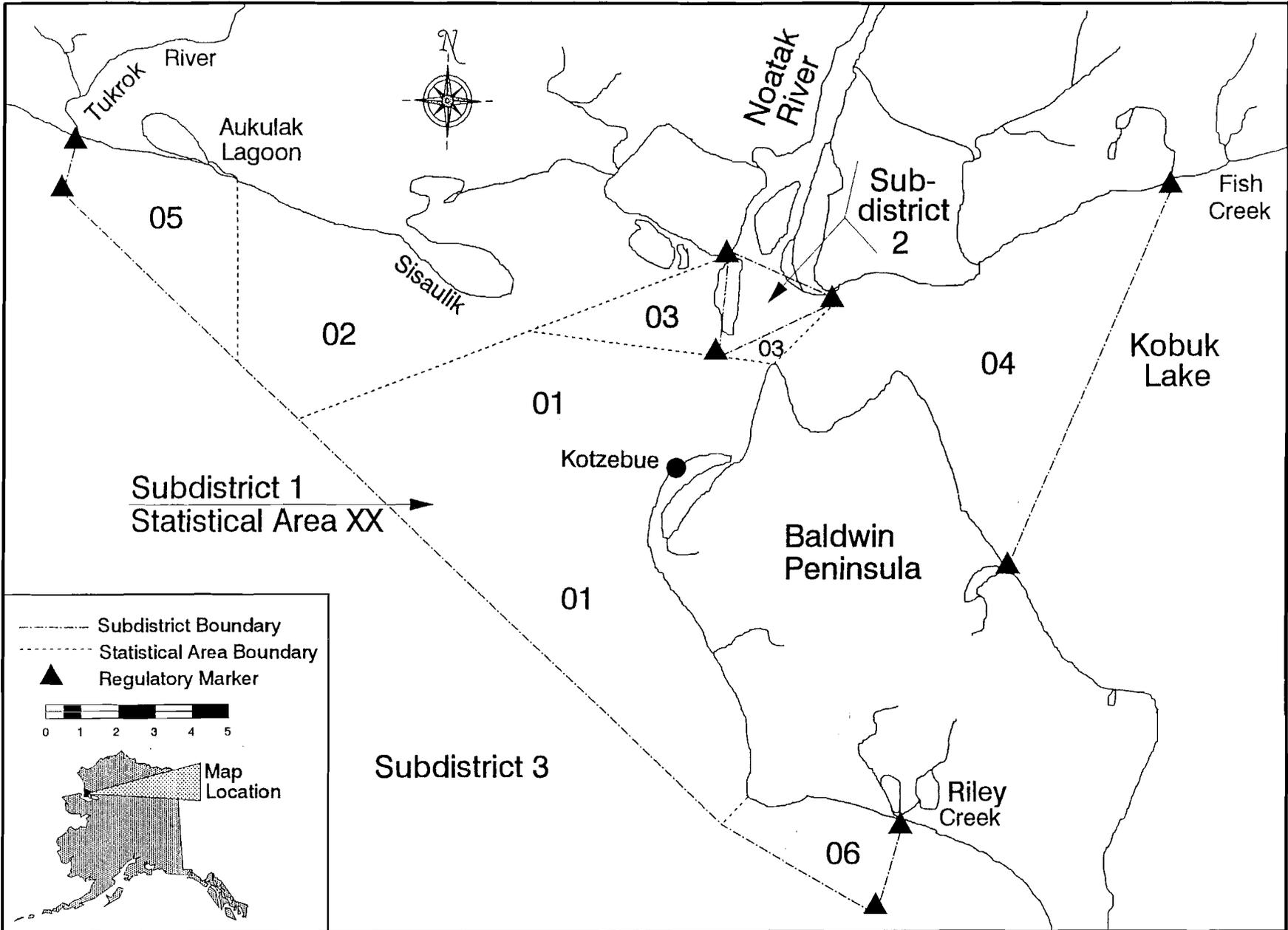


Figure 4. Kotzebue Sound commercial fishing subdistricts and statistical areas.

Appendix Table A.1. Norton Sound Subdistrict 1 commercial salmon catch and effort by period, 1995.

Period Number	Target Species	Period Dates	Hours Fished	Number of Fishermen	Number of Salmon			
					Chinook	Sockeye	Chum	Coho
1	Coho	8/03-8/04	24	0	No Deliveries			
2	Coho	8/07-8/08	24	1	0	0	97	113
3	Coho	8/10-8/11	24	1	0	1	0	75
4	Coho	8/14-8/15	24	2	0	0	25	181
5	Coho	8/17-8/18	24	0	No Deliveries			
6	Coho	8/21-8/22	24	0	No Deliveries			
Season Total			144	2	0	1	122	369

Appendix Table A.2. Norton Sound Subdistrict 2 commercial salmon catch and effort by period, 1995.

Period Number	Target Species	Period Dates	Hours Fished	Number of Fishermen	Number of Salmon		
					Chum	Pink	Coho
1	Pink	7/17-7/18	24	4	294	1,463	0
2	Pink	7/19-7/20	24	5	290	1,243	4
3	Pink	7/21-7/22	24	5	570	1,590	3
4	Coho	7/31-8/01	24	7	271	0	204
5	Coho	8/02-8/03	24	6	236	0	266
6	Coho	8/04-8/05	24	4	192	0	290
7	Coho	8/07-8/08	24	5	94	0	267
8	Coho	8/09-8/10	24	3	6	0	183
9	Coho	8/11-8/12	24	2	28	0	348
10	Coho	8/14-8/16	48	1	6	0	51
11	Coho	8/17-8/19	48	No Deliveries			
12	Coho	8/21-8/23	48	No Deliveries			
13	Coho	8/24-8/26	48	No Deliveries			
Season Total			408	7	1,987	4,296	1,616

Appendix Table A.3. Norton Sound Subdistrict 3 commercial salmon catch and effort by period, 1995.

Period Number	Target Species	Period Dates	Hours Fished	Number of Fishermen	Number of Salmon				
					Chinook	Chum	Sockeye	Pink	Coho
1	Pink	7/17-7/18	24	5	0	59	0	941	1
2	Pink	7/19-7/20	24	6	0	215	0	1,443	1
3	Pink	7/21-7/22	24	4	0	226	0	578	3
4	Coho	7/31-8/01	24	5	1	87	0	0	153
5	Coho	8/02-8/03	24	4	0	41	0	0	91
6	Coho	8/04-8/05	24	5	0	86	0	0	183
7	Coho	8/07-8/08	24	5	0	106	0	0	465
8	Coho	8/09-8/10	24	5	0	15	0	0	340
9	Coho	8/11-8/12	24	4	0	57	0	0	314
10	Coho	8/14-8/16	48	10	0	173	0	0	866
11	Coho	8/17-8/19	48	5	2	22	11	0	544
12	Coho	8/21-8/23	48	6	1	32	11	0	595
13	Coho	8/24-8/26	48	7	0	52	22	0	186
Season Total			408	12	4	1,171	44	2,962	3,742

Appendix Table A.4. Norton Sound Subdistrict 5 commercial salmon catch and effort by period, 1995.

Period Number	Target Species	Period Dates	Hours Fished	Number of Fishermen	Number of Salmon				
					Chinook	Chum	Sockeye	Pink	Coho
1	Chinook	6/12-6/13	24	7	98	11	0	0	0
2	Chinook	6/15-6/16	24	10	91	5	0	0	0
3	Chinook	6/19-6/21	48	12	344	73	0	0	0
4	Chinook	6/22-6/24	48	11	206	167	0	0	0
5	Chinook	6/26-6/28	48	12	347	418	0	5	0
6	Chum	6/29-7/01	48	8	70	39	0	0	0
7	Chum	7/03-7/05	48	8	47	3,426	0	120	0
8	Chum	7/06-7/08	48	13	27	2,487	2	945	0
9	Pink	7/10-7/11	24	13	6	278	2	8,995	0
10	Pink	7/12-7/13	24	16	1	746	0	16,082	0
11	Pink	7/14-7/15	36	15	0	717	0	11,230	0
12	Coho	7/24-7/26	48	16	1	2,448	1	0	319
13	Coho	7/31-8/02	48	20	1	1,746	0	0	1,441
14	Coho	8/03-8/05	48	6	0	216	0	0	211
15	Coho	8/07-8/09	48	16	0	577	0	0	1,817
16	Coho	8/10-8/12	48	15	0	509	0	0	2,366
17	Coho	8/14-8/16	48	15	0	534	0	0	2,185
18	Coho	8/17-8/19	48	8	0	164	0	0	815
19	Coho	8/21-8/23	48	8	0	78	0	0	531
20	Coho	8/24-8/26	48	12	0	136	0	0	1,170
Season Total			852	26	1,239	14,775	5	37,377	10,855

Appendix Table A.5. Norton Sound Subdistrict 6 commercial salmon catch and effort by period, 1995.

Period Number	Target Species	Period Dates	Hours Fished	Number of Fishermen	Number of Salmon				
					Chinook	Chum	Sockeye	Pink	Coho
1	Chinook	6/12-6/13	24	38	812	11	0	0	0
2	Chinook	6/15-6/16	24	33	477	22	0	0	0
3	Chinook	6/19-6/21	48	46	2,555	293	3	0	0
4	Chinook	6/22-6/24	48	32	1,838	496	0	0	0
5	Chinook	6/26-6/28	48	44	988	940	0	0	0
6	Chum	6/29-7/01	48	28	405	1,197	0	0	0
7	Chum	7/03-7/05	48	23	326	5,318	1	0	0
8	Chum	7/06-7/08	48	28	125	4,697	5	500	0
9	Pink	7/10-7/11	24	12	5	146	0	8,307	1
10	Pink	7/12-7/13	24	14	27	410	0	11,459	8
11	Pink	7/14-7/15	36	16	14	484	1	15,718	13
12	Coho	7/24-7/26	48	24	5	3,894	1	1,025	907
13	Coho	7/31-8/02	48	32	7	2,667	10	0	3,002
14	Coho	8/03-8/05	48	12	1	761	1	0	2,016
15	Coho	8/07-8/09	48	34	6	961	13	0	4,640
16	Coho	8/10-8/12	48	34	2	784	6	0	5,624
17	Coho	8/14-8/16	48	33	2	540	4	0	6,355
18	Coho	8/17-8/19	48	24	8	401	0	0	2,618
19	Coho	8/21-8/23	48	28	10	469	11	0	3,144
20	Coho	8/24-8/26	48	27	4	352	22	0	2,952
Season Total			852	58	7,617	24,843	78	37,009	31,280

Appendix Table B.1. Unalakleet River chum salmon test fish age and sex composition by time period, 1995.

		Brood Year and Age Group			Total
		1991 (0.3)	1990 (0.4)	1989 (0.5)	
Stratum Dates:		6/05–6/24			
Sampling Dates:		6/05–6/24			
Female	Percent of Sample	2.7	19.5	6.2	28.3
	Number in Catch	3	22	7	32
Male	Percent of Sample	6.2	53.1	12.4	71.7
	Number in Catch	7	61	14	82
Total	Percent of Sample	8.8	72.6	18.6	100.0
	Number in Catch	10	83	21	114
	Standard Error	3	4	4	
Stratum Dates:		6/24–7/08			
Sampling Dates:		6/24–7/08			
Female	Percent of Sample	4.2	23.9	4.9	33.1
	Number in Catch	6	34	7	47
Male	Percent of Sample	24.6	34.5	7.7	66.9
	Number in Catch	35	49	11	95
Total	Percent of Sample	28.9	58.5	12.7	100.0
	Number in Catch	41	83	18	142
	Standard Error	4	4	3	
Stratum Dates:		7/09–7/22			
Sampling Dates:		7/09–7/22			
Female	Percent of Sample	6.6	21.3	1.6	29.5
	Number in Catch	8	26	2	36
Male	Percent of Sample	23.8	38.5	8.2	70.5
	Number in Catch	29	47	10	86
Total	Percent of Sample	30.3	59.8	9.8	100.0
	Number in Catch	37	73	12	122
	Standard Error	4	4	3	

(continued)

Appendix Table B.1. (page 2 of 2)

		Brood Year and Age Group			Total
		1991 0.3	1990 0.4	1989 0.5	
Stratum Dates:		7/23–8/05			
Sampling Dates:		7/23–8/05			
Female	Percent of Sample	8.2	30.6	2.4	41.2
	Number in Catch	7	26	2	35
Male	Percent of Sample	17.6	37.6	3.5	58.8
	Number in Catch	15	32	3	51
Total	Percent of Sample	25.9	68.2	5.9	100.0
	Number in Catch	22	59	5	86
	Standard Error	5	5	3	
Stratum Dates:		8/06–8/30			
Sampling Dates:		8/06–8/30			
Female	Percent of Sample	15.8	18.4	5.3	39.5
	Number in Catch	6	7	2	15
Male	Percent of Sample	13.2	42.1	5.3	60.5
	Number in Catch	5	16	2	23
Total	Percent of Sample	28.9	60.5	10.5	100.0
	Number in Catch	11	23	4	38
	Standard Error	7	8	4	
Stratum Dates:		6/05–8/30		Season Total	
Sampling Dates:		6/05–8/30			
Female	Percent of Sample	6.0	23.0	4.0	33.0
	Number in Catch	30	116	20	166
Male	Percent of Sample	18.2	40.8	8.0	67.0
	Number in Catch	91	205	40	336
Total	Percent of Sample	24.2	63.8	12.0	100.0
	Number in Catch	121	320	60	502
	Standard Error	2	2	1	

Appendix Table B.2. Kwiniuk River chum salmon beach seine age and sex composition by time period, 1995.

		Brood Year and Age Group				Total
		1992 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	
Stratum Dates: 6/21–7/10						
Sampling Dates: 6/30–7/10						
Sample Size: 107						
Female	Percent of Sample	0.0	15.0	16.8	1.9	33.6
	Number in Escapement	0	4,619	5,197	577	10,394
Male	Percent of Sample	0.0	29.0	33.6	3.7	66.4
	Number in Escapement	0	8,950	10,394	1,155	20,498
Total	Percent of Sample	0.0	43.9	50.5	5.6	100.0
	Number in Escapement	0	13,569	15,590	1,732	30,892
	Standard Error	0	1,489	1,500	690	
Stratum Dates: 7/11–7/18						
Sampling Dates: 7/11–7/18						
Sample Size: 141						
Female	Percent of Sample	0.7	30.5	15.6	2.1	48.9
	Number in Escapement	68	2,913	1,490	203	4,674
Male	Percent of Sample	0.0	29.1	20.6	1.4	51.1
	Number in Escapement	0	2,778	1,965	135	4,878
Total	Percent of Sample	0.7	59.6	36.2	3.5	100.0
	Number in Escapement	68	5,691	3,455	339	9,552
	Standard Error	68	396	388	149	
Stratum Dates: 7/15–7/26						
Sampling Dates: 7/15–7/25						
Sample Size: 93						
Female	Percent of Sample	0.0	39.8	20.4	2.2	62.4
	Number in Escapement	0	683	351	37	1,071
Male	Percent of Sample	0.0	24.7	11.8	1.1	37.6
	Number in Escapement	0	425	203	18	646
Total	Percent of Sample	0.0	64.5	32.3	3.2	100.0
	Number in Escapement	0	1,108	554	55	1,717
	Standard Error	0	86	84	32	
Stratum Dates: 6/21–7/26		Season Total				
Sampling Dates: 6/30–7/25						
Sample Size: 341						
Female	Percent of Sample	0.2	19.5	16.7	1.9	38.3
	Number in Escapement	68	8,215	7,038	818	16,139
Male	Percent of Sample	0.0	28.8	29.8	3.1	61.7
	Number in Escapement	0	12,152	12,561	1,309	26,022
Total	Percent of Sample	0.2	48.3	46.5	5.0	100.0
	Number in Escapement	68	20,368	19,599	2,126	42,161
	Standard Error	68	1,143	1,140	500	

Appendix Table C.1. Kwiniuk River tower expanded daily and cumulative counts of chinook, pink, chum and coho salmon, 1995.

Date	Chinook Salmon		Pink Salmon		Chum Salmon		Coho Salmon	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
21-Jun	9	9	0	0	18	18	0	0
22-Jun	0	9	0	0	6	24	0	0
23-Jun	0	9	0	0	(97)	(79)	0	0
24-Jun	24	33	0	0	1,065	992	0	0
25-Jun	13	46	0	0	429	1,421	0	0
26-Jun	2	48	8	8	(208)	1,213	0	0
27-Jun	2	50	4	12	2	1,215	0	0
28-Jun	24	74	0	12	2,374	3,589	0	0
29-Jun	28	102	8	20	3,210	6,799	0	0
30-Jun	12	114	10	30	2,895	9,694	0	0
01-Jul	28	142	2	32	5,548	15,242	0	0
02-Jul	10	152	(1)	31	2,698	17,940	0	0
03-Jul	(8)	144	(4)	27	(152)	17,788	0	0
04-Jul	0	144	94	121	826	18,614	0	0
05-Jul	6	150	26	147	891	19,505	0	0
06-Jul	46	196	324	471	4,937	24,442	0	0
07-Jul	56	252	308	779	3,150	27,592	0	0
08-Jul	18	270	267	1,046	1,402	28,994	0	0
09-Jul	19	289	221	1,267	1,100	30,094	0	0
10-Jul	20	309	174	1,441	798	30,892	0	0
11-Jul	10	319	140	1,581	1,718	32,610	0	0
12-Jul	38	357	403	1,984	2,268	34,878	0	0
13-Jul	40	397	241	2,225	1,498	36,376	0	0
14-Jul	40	437	544	2,769	2,003	38,379	0	0
15-Jul	8	445	902	3,671	1,025	39,404	0	0
16-Jul	4	449	2,028	5,699	648	40,052	0	0
17-Jul	0	449	3,012	8,711	272	40,324	0	0
18-Jul	0	449	764	9,475	120	40,444	0	0
19-Jul	2	451	509	9,984	285	40,729	0	0
20-Jul	2	453	863	10,847	323	41,052	0	0
21-Jul	2	455	1,116	11,963	342	41,394	0	0
22-Jul	4	459	1,470	13,433	298	41,692	14	14
23-Jul	3	462	1,034	14,467	144	41,836	16	30
24-Jul	2	464	598	15,065	200	42,036	18	48
25-Jul	4	468	1,272	16,337	125	42,161	10	58
26-Jul	0	468	1,237	17,574	0	42,161	66	124

Appendix Table C.2. Nome River tower expanded daily and cumulative counts of chinook, pink, chum and coho salmon, and Dolly Varden, 1995.

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Date	Chinook Salmon		Pink Salmon		Chum Salmon		Coho Salmon		Dolly Varden	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
22-Jun	0	0	0	0	0	0	0	0	10	10
23-Jun	0	0	0	0	0	0	0	0	(10)	0
24-Jun	0	0	0	0	0	0	0	0	73	73
25-Jun	0	0	0	0	0	0	0	0	53	126
26-Jun	0	0	0	0	0	0	0	0	10	136
27-Jun	0	0	0	0	4	4	0	0	140	276
28-Jun	0	0	0	0	(4)	0	0	0	(60)	216
29-Jun	0	0	0	0	0	0	0	0	90	306
30-Jun	0	0	0	0	16	16	0	0	(75)	231
01-Jul	0	0	0	0	25	41	0	0	(1)	230
02-Jul	0	0	0	0	0	41	0	0	1	231
03-Jul	0	0	0	0	(40)	1	0	0	20	251
04-Jul	0	0	0	0	11	12	0	0	25	276
05-Jul	0	0	0	0	5	17	0	0	30	306
06-Jul	0	0	36	36	331	348	0	0	10	316
07-Jul	0	0	2	38	256	604	0	0	8	324
08-Jul	2	2	31	69	67	671	0	0	0	324
09-Jul	1	3	18	87	36	707	0	0	2	326
10-Jul	0	3	22	109	128	835	0	0	4	330
11-Jul	0	3	32	141	116	951	0	0	24	354
12-Jul	0	3	38	179	314	1,265	0	0	36	390
13-Jul	0	3	54	233	420	1,685	0	0	2	392
14-Jul	0	3	46	279	190	1,875	0	0	24	416
15-Jul	0	3	25	304	121	1,996	0	0	32	448
16-Jul	0	3	96	400	216	2,212	0	0	0	448
17-Jul	0	3	(31)	369	(5)	2,207	0	0	3	451
18-Jul	0	3	(32)	337	7	2,214	0	0	7	458
19-Jul	0	3	16	353	40	2,254	0	0	0	458
20-Jul	0	3	91	444	292	2,546	0	0	4	462
21-Jul	2	5	290	734	459	3,005	0	0	4	466
22-Jul	0	5	160	894	111	3,116	0	0	(4)	462
23-Jul	0	5	705	1,599	328	3,444	0	0	10	472
24-Jul	0	5	319	1,918	155	3,599	0	0	8	480
25-Jul	0	5	278	2,196	128	3,727	2	2	13	493
26-Jul	0	5	380	2,576	220	3,947	1	3	14	507
27-Jul	0	5	988	3,564	212	4,159	0	3	22	529
28-Jul	0	5	980	4,544	82	4,241	0	3	14	543
29-Jul	0	5	1,792	6,336	104	4,345	0	3	12	555
30-Jul	0	5	1,307	7,643	186	4,531	4	7	32	587
31-Jul	0	5	886	8,529	55	4,586	0	7	17	604
01-Aug	0	5	661	9,190	45	4,631	0	7	15	619
02-Aug	0	5	643	9,833	46	4,677	0	7	12	631
03-Aug	0	5	520	10,353	44	4,721	0	7	7	638
04-Aug	0	5	414	10,767	49	4,770	7	14	7	645
05-Aug	0	5	312	11,079	53	4,823	15	29	8	653
06-Aug	0	5	263	11,342	37	4,860	15	44	6	659
07-Aug	0	5	182	11,524	23	4,883	14	58	4	663
08-Aug	0	5	219	11,743	33	4,916	40	98	38	701
09-Aug	0	5	299	12,042	43	4,959	65	163	72	773
10-Aug	0	5	266	12,308	25	4,984	48	211	43	816
11-Aug	0	5	247	12,555	15	4,999	32	243	38	854
12-Aug	0	5	221	12,776	15	5,014	34	277	30	884
13-Aug	0	5	207	12,983	17	5,031	38	315	22	906
14-Aug	0	5	182	13,165	15	5,046	50	365	34	940
15-Aug	0	5	149	13,314	11	5,057	58	423	46	986
16-Aug	0	5	120	13,434	7	5,064	47	470	39	1,025
17-Aug	0	5	93	13,527	4	5,068	38	508	31	1,056
18-Aug	0	5	64	13,591	1	5,069	42	550	17	1,073
19-Aug	0	5	80	13,671	4	5,073	59	609	8	1,081
20-Aug	0	5	42	13,713	0	5,073	49	658	4	1,085
21-Aug	0	5	19	13,732	0	5,073	55	713	6	1,091
22-Aug	0	5	19	13,751	2	5,075	194	907	(4)	1,087
23-Aug	0	5	32	13,783	0	5,075	82	989	16	1,103
24-Aug	0	5	14	13,797	(1)	5,074	159	1,148	5	1,108
25-Aug	0	5	10	13,807	1	5,075	101	1,249	27	1,135
26-Aug	0	5	12	13,819	2	5,077	78	1,327	(9)	1,126
27-Aug	0	5	15	13,834	1	5,078	49	1,376	(12)	1,114
28-Aug	0	5	23	13,857	5	5,083	55	1,431	19	1,133
29-Aug	0	5	11	13,868	5	5,088	13	1,444	41	1,174
30-Aug	0	5	3	13,871	3	5,091	55	1,499	3	1,177
31-Aug	0	5	18	13,889	6	5,097	123	1,622	32	1,209
01-Sep	0	5	6	13,895	(1)	5,096	(1)	1,621	52	1,261
02-Sep	0	5	(2)	13,893	(1)	5,095	24	1,645	77	1,338
03-Sep	0	5	(2)	13,891	(4)	5,091	(1)	1,644	9	1,347
04-Sep	0	5	2	13,893	0	5,091	4	1,648	26	1,373
05-Sep	0	5	0	13,893	0	5,091	(12)	1,636	12	1,385
06-Sep	0	5	0	13,893	2	5,093	14	1,650	(4)	1,381

Appendix Table C.3. Niukluk River tower expanded daily and cumulative counts of chinook, pink, chum and coho salmon, and Dolly Varden, 1995.

Date	Chinook Salmon		Pink Salmon		Chum Salmon		Coho Salmon		Dolly Varden	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
29-Jun	2	2	0	0	180	180	0	0	50	50
30-Jun	0	2	0	0	228	408	0	0	44	94
01-Jul	2	4	0	0	201	609	0	0	25	119
02-Jul	2	6	2	2	304	913	0	0	11	130
03-Jul	0	6	0	2	310	1,223	0	0	11	141
04-Jul	0	6	2	4	730	1,953	0	0	12	153
05-Jul	20	26	22	26	1,736	3,689	0	0	27	180
06-Jul	15	41	73	99	2,979	6,668	0	0	23	203
07-Jul	10	51	124	223	4,222	10,890	0	0	18	221
08-Jul	0	51	89	312	1,884	12,774	0	0	9	230
09-Jul	6	57	57	369	1,903	14,677	0	0	3	233
10-Jul	2	59	81	450	3,527	18,204	0	0	12	245
11-Jul	(1)	58	166	616	5,184	23,388	0	0	4	249
12-Jul	9	67	499	1,115	7,303	30,691	0	0	6	255
13-Jul	9	76	431	1,546	5,764	36,455	0	0	10	265
14-Jul	8	84	362	1,908	4,224	40,679	0	0	14	279
15-Jul	3	87	600	2,508	4,262	44,941	0	0	10	289
16-Jul	5	92	1,272	3,780	5,927	50,868	0	0	22	311
17-Jul	0	92	267	4,047	1,247	52,115	0	0	10	321
18-Jul	0	92	194	4,241	1,029	53,144	0	0	4	325
19-Jul	(2)	90	207	4,448	1,907	55,051	0	0	4	329
20-Jul	6	96	956	5,404	3,805	58,856	0	0	6	335
21-Jul	14	110	1,704	7,108	5,702	64,558	0	0	8	343
22-Jul	(2)	108	2,217	9,325	4,239	68,797	0	0	4	347
23-Jul	2	110	1,078	10,403	1,883	70,680	0	0	8	355
24-Jul	9	119	1,810	12,213	1,987	72,667	0	0	8	363
25-Jul	2	121	1,246	13,459	1,583	74,250	0	0	3	366
26-Jul	0	121	1,173	14,632	2,032	76,282	5	5	8	374
27-Jul	0	121	794	15,426	1,431	77,713	17	22	9	383
28-Jul	0	121	414	15,840	830	78,543	30	52	10	393
29-Jul	2	123	899	16,739	1,492	80,035	18	70	18	411
30-Jul	0	123	154	16,893	355	80,390	16	86	13	424
31-Jul	0	123	309	17,202	878	81,268	21	107	3	427
01-Aug	0	123	146	17,348	728	81,996	14	121	14	441
02-Aug	0	123	55	17,403	573	82,569	20	141	8	449
03-Aug	0	123	(14)	17,389	545	83,114	23	164	2	451
04-Aug	0	123	(16)	17,373	482	83,596	20	184	3	454
05-Aug	0	123	(73)	17,300	280	83,876	19	203	4	458
06-Aug	0	123	(116)	17,184	99	83,975	33	236	6	464
07-Aug	0	123	(88)	17,096	63	84,038	45	281	10	474
08-Aug	0	123	(28)	17,068	211	84,249	46	327	30	504
09-Aug	0	123	(19)	17,049	277	84,526	49	376	47	551
10-Aug	0	123	(22)	17,027	257	84,783	51	427	39	590
11-Aug	0	123	(2)	17,025	246	85,029	56	483	30	620
12-Aug	0	123	11	17,036	276	85,305	109	592	16	636
13-Aug	0	123	9	17,045	293	85,598	153	745	3	639
14-Aug	0	123	4	17,049	221	85,819	123	868	3	642
15-Aug	0	123	3	17,052	141	85,960	100	968	2	644
16-Aug	0	123	(1)	17,051	40	86,000	103	1,071	4	648
17-Aug	0	123	(2)	17,049	(12)	85,988	104	1,175	8	656
18-Aug	0	123	2	17,051	8	85,996	141	1,316	0	656
19-Aug	0	123	7	17,058	45	86,041	175	1,491	(25)	631
20-Aug	0	123	(3)	17,055	75	86,116	252	1,743	(6)	625
21-Aug	0	123	2	17,057	22	86,138	295	2,038	16	641
22-Aug	0	123	11	17,068	55	86,193	365	2,403	(26)	615
23-Aug	0	123	2	17,070	28	86,221	255	2,658	(47)	568
24-Aug	0	123	7	17,077	34	86,255	217	2,875	(53)	515
25-Aug	0	123	1	17,078	7	86,262	138	3,013	(38)	477
26-Aug	0	123	3	17,081	18	86,280	188	3,201	34	511
27-Aug	0	123	4	17,085	15	86,295	186	3,387	(107)	324
28-Aug	0	123	1	17,086	1	86,296	98	3,485	(111)	213
29-Aug	0	123	1	17,087	4	86,300	82	3,567	(52)	161
30-Aug	0	123	1	17,088	2	86,302	146	3,713	(104)	57
31-Aug	0	123	0	17,088	10	86,312	154	3,867	36	93
01-Sep	0	123	0	17,088	1	86,313	94	3,961	(20)	73
02-Sep	0	123	0	17,088	0	86,313	94	4,055	(20)	53
03-Sep	0	123	0	17,088	(1)	86,312	102	4,157	(58)	(5)
04-Sep	0	123	0	17,088	5	86,317	71	4,228	(118)	(123)
05-Sep	0	123	0	17,088	1	86,318	71	4,299	(72)	(195)
06-Sep	0	123	0	17,088	6	86,324	28	4,327	(122)	(317)
07-Sep	0	123	0	17,088	2	86,326	141	4,468	(54)	(371)
08-Sep	0	123	0	17,088	2	86,328	86	4,554	(31)	(402)
09-Sep	0	123	0	17,088	2	86,330	59	4,613	29	(373)
10-Sep	0	123	0	17,088	0	86,330	56	4,669	8	(365)
11-Sep	0	123	0	17,088	0	86,330	58	4,727	18	(347)
12-Sep	0	123	0	17,088	2	86,332	(14)	4,713	2	(345)

Appendix Table C.4. Snake River tower expanded daily and cumulative counts of pink, chum and coho salmon, 1995.

Date	Pink Salmon		Chum Salmon		Coho Salmon	
	Daily	Cum.	Daily	Cum.	Daily	Cum.
01-Jul	0	0	0	0	0	0
02-Jul	0	0	0	0	0	0
03-Jul	0	0	0	0	0	0
04-Jul	0	0	4	4	0	0
05-Jul	0	0	5	9	0	0
06-Jul	(5)	(5)	(6)	3	0	0
07-Jul	5	0	17	20	0	0
08-Jul	0	0	30	50	0	0
09-Jul	(8)	(8)	4	54	0	0
10-Jul	(10)	(18)	40	94	0	0
11-Jul	4	(14)	402	496	0	0
12-Jul	8	(6)	202	698	0	0
13-Jul	10	4	82	780	0	0
14-Jul	(2)	2	73	853	0	0
15-Jul	(5)	(3)	67	920	0	0
16-Jul	(5)	(8)	103	1,023	0	0
17-Jul	(12)	(20)	(14)	1,009	0	0
18-Jul	(2)	(22)	10	1,019	0	0
19-Jul	(2)	(24)	422	1,441	0	0
20-Jul	8	(16)	195	1,636	0	0
21-Jul	30	14	257	1,893	0	0
22-Jul	33	47	285	2,178	0	0
23-Jul	28	75	246	2,424	0	0
24-Jul	81	156	467	2,891	0	0
25-Jul	61	217	309	3,200	0	0
26-Jul	50	267	266	3,466	0	0
27-Jul	24	291	105	3,571	0	0
28-Jul	68	359	164	3,735	2	2
29-Jul	66	425	122	3,857	1	3
30-Jul	58	483	110	3,967	1	4
31-Jul	98	581	157	4,124	0	4
01-Aug	66	647	42	4,166	0	4
02-Aug	6	653	46	4,212	0	4
03-Aug	2	655	72	4,284	2	6
04-Aug	9	664	44	4,328	19	25
05-Aug	15	679	30	4,358	15	40
06-Aug	15	694	31	4,389	15	55
07-Aug	18	712	6	4,395	(10)	45
08-Aug	22	734	0	4,395	53	98
09-Aug	10	744	0	4,395	46	144
10-Aug	0	744	0	4,395	126	270
11-Aug	5	749	0	4,395	42	312
12-Aug	15	764	0	4,395	93	405
13-Aug	20	784	0	4,395	116	521
14-Aug	29	813	0	4,395	101	622
15-Aug	52	865	0	4,395	98	720
16-Aug	33	898	0	4,395	48	768
17-Aug	9	907	0	4,395	68	836
18-Aug	12	919	0	4,395	21	857

Appendix Table C.5. Eldorado River tower expanded daily and cumulative counts of chinook, pink, chum, and coho salmon, 1995.

Date	Chinook Salmon		Pink Salmon		Chum Salmon		Coho Salmon	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
07-Jul	0	0	0	0	728	728	0	0
08-Jul	0	0	0	0	1,495	2,223	0	0
09-Jul	0	0	0	0	2,111	4,334	0	0
10-Jul	0	0	0	0	2,745	7,079	0	0
11-Jul	0	0	0	0	3,780	10,859	0	0
12-Jul	12	12	80	80	7,502	18,361	0	0
13-Jul	4	16	32	112	2,109	20,470	0	0
14-Jul	0	16	1,566	1,678	1,956	22,426	0	0
15-Jul	2	18	22	1,700	3,003	25,429	0	0
16-Jul	0	18	12	1,712	1,661	27,090	0	0
17-Jul	0	18	23	1,735	1,016	28,106	0	0
18-Jul	0	18	14	1,749	747	28,853	0	0
19-Jul	0	18	18	1,767	1,250	30,103	0	0
20-Jul	0	18	36	1,803	2,723	32,826	0	0
21-Jul	2	20	188	1,991	2,117	34,943	0	0
22-Jul	0	20	342	2,333	1,308	36,251	0	0
23-Jul	0	20	228	2,561	375	36,626	0	0
24-Jul	0	20	83	2,644	128	36,754	0	0
25-Jul	0	20	91	2,735	153	36,907	0	0
26-Jul	0	20	262	2,997	460	37,367	0	0
27-Jul	0	20	179	3,176	299	37,666	0	0
28-Jul	0	20	274	3,450	308	37,974	0	0
29-Jul	0	20	99	3,549	220	38,194	0	0
30-Jul	0	20	150	3,699	302	38,496	0	0
31-Jul	0	20	189	3,888	415	38,911	0	0
01-Aug	0	20	152	4,040	303	39,214	0	0
02-Aug	0	20	52	4,092	88	39,302	0	0
03-Aug	2	22	53	4,145	170	39,472	9	9
04-Aug	0	22	31	4,176	140	39,612	2	11
05-Aug	0	22	27	4,203	82	39,694	6	17
06-Aug	0	22	8	4,211	104	39,798	0	17
07-Aug	0	22	14	4,225	55	39,853	7	24
08-Aug	0	22	10	4,235	5	39,858	7	31
09-Aug	0	22	8	4,243	10	39,868	4	35

Appendix Table D.1. Kotzebue District chum salmon commercial catch age and sex composition by fishing period, and season summary, 1995.

		Brood Year and (Age Group)					Total
		1990 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	1988 (0.6)	
Stratum Dates: 7/10–7/11		Period 1					
Sampling Dates: 7/11							
Sample Size: 248							
Female	Percent of Sample	0.0	8.5	25.1	2.0	0.0	35.6
	Number in Catch	0	211	623	50	0	885
Male	Percent of Sample	0.0	20.2	39.7	4.5	0.0	64.4
	Number in Catch	0	503	985	111	0	1,598
Total	Percent of Sample	0.0	28.7	64.8	6.5	0.0	100.0
	Number in Catch	0	714	1,608	161	0	2,483
	Standard Error	0	72	75	39	0	
Stratum Dates: 7/13–7/14		Period 2					
Sampling Dates: 7/14							
Sample Size: 272							
Female	Percent of Sample	0.0	8.9	20.7	1.5	0.0	31.0
	Number in Catch	0	782	1,825	130	0	2,738
Male	Percent of Sample	0.4	22.1	44.3	2.2	0.0	69.0
	Number in Catch	33	1,956	3,912	196	0	6,096
Total	Percent of Sample	0.4	31.0	64.9	3.7	0.0	100.0
	Number in Catch	33	2,738	5,737	326	0	8,834
	Standard Error	33	248	256	101	0	
Stratum Dates: 7/17–7/18		Period 3					
Sampling Dates: 7/18							
Sample Size: 255							
Female	Percent of Sample	0.8	22.4	25.6	2.4	0.0	51.2
	Number in Catch	136	3,869	4,412	407	0	8,823
Male	Percent of Sample	1.2	25.2	22.0	0.4	0.0	48.8
	Number in Catch	204	4,344	3,801	68	0	8,416
Total	Percent of Sample	2.0	47.6	47.6	2.8	0.0	100.0
	Number in Catch	339	8,212	8,212	475	0	17,239
	Standard Error	150	540	540	177	0	
Stratum Dates: 7/19–7/20		Period 4					
Sampling Dates: 7/20							
Sample Size: 99							
Female	Percent of Sample	1.0	22.2	17.2	2.0	0.0	42.4
	Number in Catch	104	2,295	1,774	209	0	4,382
Male	Percent of Sample	0.0	35.4	22.2	0.0	0.0	57.6
	Number in Catch	0	3,652	2,295	0	0	5,947
Total	Percent of Sample	1.0	57.6	39.4	2.0	0.0	100.0
	Number in Catch	104	5,947	4,069	209	0	10,329
	Standard Error	104	516	510	147	0	

(continued)

Appendix Table D.1. (page 2 of 8)

		Brood Year and (Age Group)					
		1992	1991	1990	1989	1988	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Stratum Dates:		7/20–7/21		Period 5			
Sampling Dates:		7/20					
Sample Size:		94					
Female	Percent of Sample	0.0	18.1	27.7	0.0	0.0	45.7
	Number in Catch	0	2,024	3,096	0	0	5,120
Male	Percent of Sample	0.0	34.0	20.2	0.0	0.0	54.3
	Number in Catch	0	3,810	2,262	0	0	6,073
Total	Percent of Sample	0.0	52.1	47.9	0.0	0.0	100.0
	Number in Catch	0	5,835	5,358	0	0	11,193
	Standard Error	0	580	580	0	0	
Stratum Dates:		7/21		Period 6			
Sampling Dates:		7/21					
Sample Size:		77					
Female	Percent of Sample	0.0	23.4	16.9	1.3	0.0	41.6
	Number in Catch	0	702	507	39	0	1,248
Male	Percent of Sample	0.0	31.2	23.4	3.9	0.0	58.4
	Number in Catch	0	936	702	117	0	1,754
Total	Percent of Sample	0.0	54.5	40.3	5.2	0.0	100.0
	Number in Catch	0	1,637	1,209	156	0	3,002
	Standard Error	0	171	169	76	0	
Stratum Dates:		7/24		Period 7			
Sampling Dates:		7/24					
Sample Size:		117					
Female	Percent of Sample	0.0	23.9	14.5	1.7	0.0	40.2
	Number in Catch	0	1,825	1,108	130	0	3,063
Male	Percent of Sample	1.7	35.0	21.4	1.7	0.0	59.8
	Number in Catch	130	2,672	1,629	130	0	4,562
Total	Percent of Sample	1.7	59.0	35.9	3.4	0.0	100.0
	Number in Catch	130	4,497	2,737	261	0	7,625
	Standard Error	92	348	340	129	0	
Stratum Dates:		7/25		Period 8			
Sampling Dates:		7/25					
Sample Size:		114					
Female	Percent of Sample	0.9	23.9	21.2	2.7	0.0	48.7
	Number in Catch	106	2,871	2,552	319	0	5,849
Male	Percent of Sample	1.8	32.7	15.9	0.9	0.0	51.3
	Number in Catch	213	3,935	1,914	106	0	6,168
Total	Percent of Sample	2.7	56.6	37.2	3.5	0.0	100.0
	Number in Catch	319	6,806	4,466	425	0	12,017
	Standard Error	182	560	546	209	0	

(continued)

Appendix Table D.1. (page 3 of 8)

		Brood Year and Age Group					
		1992	1991	1990	1989	1988	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Stratum Dates: 7/26		Period 9					
Sampling Dates: 7/26							
Sample Size: 117							
Female	Percent of Sample	0.9	24.1	20.7	0.9	0.0	46.6
	Number in Catch	67	1,889	1,619	67	0	3,644
Male	Percent of Sample	0.9	30.2	21.6	0.9	0.0	53.4
	Number in Catch	67	2,362	1,687	67	0	4,183
Total	Percent of Sample	1.7	54.3	42.2	1.7	0.0	100.0
	Number in Catch	135	4,251	3,306	135	0	7,827
	Standard Error	95	362	359	95	0	
Stratum Dates: 7/28		Period 10					
Sampling Dates: 7/28							
Sample Size: 234							
Female	Percent of Sample	0.4	25.1	15.2	0.4	0.0	41.1
	Number in Catch	79	4,590	2,770	79	0	7,518
Male	Percent of Sample	1.3	35.1	21.2	1.3	0.0	58.9
	Number in Catch	237	6,410	3,878	237	0	10,763
Total	Percent of Sample	1.7	60.2	36.4	1.7	0.0	100.0
	Number in Catch	317	11,000	6,648	317	0	18,281
	Standard Error	156	586	576	156	0	
Stratum Dates: 7/31		Period 11					
Sampling Dates: 7/31							
Sample Size: 117							
Female	Percent of Sample	0.9	23.9	12.0	1.7	0.0	38.5
	Number in Catch	96	2,682	1,341	192	0	4,310
Male	Percent of Sample	0.0	40.2	18.8	2.6	0.0	61.5
	Number in Catch	0	4,502	2,107	287	0	6,897
Total	Percent of Sample	0.9	64.1	30.8	4.3	0.0	100.0
	Number in Catch	96	7,184	3,448	479	0	11,207
	Standard Error	96	499	480	210	0	
Stratum Dates: 8/01		Period 12					
Sampling Dates: 8/01							
Sample Size: 118							
Female	Percent of Sample	0.0	20.3	9.3	0.0	0.0	29.7
	Number in Catch	0	1,620	743	0	0	2,363
Male	Percent of Sample	0.8	53.4	16.1	0.0	0.0	70.3
	Number in Catch	68	4,254	1,283	0	0	5,604
Total	Percent of Sample	0.8	73.7	25.4	0.0	0.0	100.0
	Number in Catch	68	5,874	2,026	0	0	7,967
	Standard Error	68	324	321	0	0	

(continued)

Appendix Table D.1. (page 4 of 8)

		Brood Year and Age Group					
		1992	1991	1990	1989	1988	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Stratum Dates:		8/02		Period 13			
Sampling Dates:		8/02					
Sample Size:		118					
Female	Percent of Sample	0.0	24.8	21.4	0.0	0.0	46.2
	Number in Catch	0	2,556	2,204	0	0	4,760
Male	Percent of Sample	1.7	35.0	16.2	0.0	0.9	53.8
	Number in Catch	176	3,614	1,675	0	88	5,553
Total	Percent of Sample	1.7	59.8	37.6	0.0	0.9	100.0
	Number in Catch	176	6,170	3,878	0	88	10,313
	Standard Error	124	467	462	0	88	
Stratum Dates:		8/04		Period 14			
Sampling Dates:		8/04					
Sample Size:		230					
Female	Percent of Sample	1.3	35.8	27.1	2.2	0.0	66.4
	Number in Catch	83	2,264	1,712	138	0	4,196
Male	Percent of Sample	1.7	19.7	12.2	0.0	0.0	33.6
	Number in Catch	110	1,242	773	0	0	2,126
Total	Percent of Sample	3.1	55.5	39.3	2.2	0.0	100.0
	Number in Catch	193	3,506	2,485	138	0	6,322
	Standard Error	72	208	204	61	0	
Stratum Dates:		8/07		Period 15			
Sampling Dates:		8/07					
Sample Size:		152					
Female	Percent of Sample	0.0	28.9	13.8	0.7	0.0	43.4
	Number in Catch	0	3,176	1,516	72	0	4,763
Male	Percent of Sample	1.3	36.2	17.1	2.0	0.0	56.6
	Number in Catch	144	3,969	1,876	217	0	6,207
Total	Percent of Sample	1.3	65.1	30.9	2.6	0.0	100.0
	Number in Catch	144	7,145	3,392	289	0	10,970
	Standard Error	102	425	413	143	0	
Stratum Dates:		8/08		Period 16			
Sampling Dates:		8/08					
Sample Size:		159					
Female	Percent of Sample	0.6	27.0	11.9	0.0	0.0	39.6
	Number in Catch	82	3,508	1,550	0	0	5,140
Male	Percent of Sample	1.3	37.1	22.0	0.0	0.0	60.4
	Number in Catch	163	4,814	2,855	0	0	7,832
Total	Percent of Sample	1.9	64.2	34.0	0.0	0.0	100.0
	Number in Catch	245	8,322	4,406	0	0	12,972
	Standard Error	140	495	489	0	0	

(continued)

Appendix Table D.1. (page 5 of 8)

		Brood Year and Age Group					
		1992	1991	1990	1989	1988	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Stratum Dates: 8/09		Period 17					
Sampling Dates: 8/09							
Sample Size: 118							
Female	Percent of Sample	0.9	27.4	12.8	0.0	0.0	41.0
	Number in Catch	96	3,088	1,447	0	0	4,632
Male	Percent of Sample	0.0	36.8	20.5	1.7	0.0	59.0
	Number in Catch	0	4,149	2,316	193	0	6,658
Total	Percent of Sample	0.9	64.1	33.3	1.7	0.0	100.0
	Number in Catch	96	7,237	3,763	193	0	11,290
	Standard Error	96	501	492	135	0	
Stratum Dates: 8/10		Period 18					
Sampling Dates: 8/10							
Sample Size: 144							
Female	Percent of Sample	1.4	32.6	24.3	0.0	0.0	58.3
	Number in Catch	191	4,479	3,335	0	0	8,005
Male	Percent of Sample	1.4	25.0	13.9	1.4	0.0	41.7
	Number in Catch	191	3,431	1,906	191	0	5,718
Total	Percent of Sample	2.8	57.6	38.2	1.4	0.0	100.0
	Number in Catch	381	7,910	5,241	191	0	13,723
	Standard Error	189	567	558	134	0	
Stratum Dates: 8/11		Period 19					
Sampling Dates: 8/11							
Sample Size: 153							
Female	Percent of Sample	1.3	34.0	11.8	1.3	0.0	48.4
	Number in Catch	171	4,447	1,539	171	0	6,328
Male	Percent of Sample	2.6	24.8	23.5	0.7	0.0	51.6
	Number in Catch	342	3,249	3,078	86	0	6,755
Total	Percent of Sample	3.9	58.8	35.3	2.0	0.0	100.0
	Number in Catch	513	7,696	4,618	257	0	13,083
	Standard Error	206	522	507	147	0	
Stratum Dates: 8/14		Period 20					
Sampling Dates: 8/14							
Sample Size: 154							
Female	Percent of Sample	2.0	34.6	19.6	1.3	0.0	57.5
	Number in Catch	63	1,113	630	42	0	1,847
Male	Percent of Sample	2.6	29.4	7.8	2.6	0.0	42.5
	Number in Catch	84	945	252	84	0	1,365
Total	Percent of Sample	4.6	64.1	27.5	3.9	0.0	100.0
	Number in Catch	147	2,057	882	126	0	3,212
	Standard Error	54	125	116	50	0	

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Appendix Table D.1. (page 6 of 8)

		Brood Year and Age Group					Total
		1992 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	1988 (0.6)	
Stratum Dates:		8/15		Period 21			
Sampling Dates:		8/15					
Sample Size:		154					
Female	Percent of Sample	2.0	34.9	7.9	0.7	0.0	45.4
	Number in Catch	113	1,997	452	38	0	2,599
Male	Percent of Sample	2.6	40.8	11.2	0.0	0.0	54.6
	Number in Catch	151	2,336	640	0	0	3,127
Total	Percent of Sample	4.6	75.7	19.1	0.7	0.0	100.0
	Number in Catch	264	4,332	1,092	38	0	5,726
	Standard Error	97	199	182	37	0	
Stratum Dates:		8/16		Period 22			
Sampling Dates:		8/16					
Sample Size:		115					
Female	Percent of Sample	0.9	37.7	14.0	0.9	0.0	53.5
	Number in Catch	104	4,460	1,660	104	0	6,327
Male	Percent of Sample	4.4	28.9	13.2	0.0	0.0	46.5
	Number in Catch	519	3,423	1,556	0	0	5,497
Total	Percent of Sample	5.3	66.7	27.2	0.9	0.0	100.0
	Number in Catch	622	7,883	3,215	104	0	11,824
	Standard Error	247	522	493	103	0	
Stratum Dates:		8/17		Period 23			
Sampling Dates:		8/17					
Sample Size:		153					
Female	Percent of Sample	1.3	38.0	17.3	1.3	0.0	58.0
	Number in Catch	256	7,305	3,332	256	0	11,149
Male	Percent of Sample	1.3	25.3	15.3	0.0	0.0	42.0
	Number in Catch	256	4,870	2,948	0	0	8,074
Total	Percent of Sample	2.7	63.3	32.7	1.3	0.0	100.0
	Number in Catch	513	12,175	6,280	256	0	19,223
	Standard Error	251	751	731	179	0	
Stratum Dates:		8/18		Period 24			
Sampling Dates:		8/18					
Sample Size:		114					
Female	Percent of Sample	1.8	39.5	17.5	1.8	0.0	60.5
	Number in Catch	86	1,934	859	86	0	2,965
Male	Percent of Sample	5.3	21.1	11.4	1.8	0.0	39.5
	Number in Catch	258	1,031	559	86	0	1,934
Total	Percent of Sample	7.0	60.5	28.9	3.5	0.0	100.0
	Number in Catch	344	2,965	1,418	172	0	4,899
	Standard Error	118	225	209	85	0	

(continued)

Appendix Table D.1. (page 7 of 8)

		Brood Year and Age Group					
		1992	1991	1990	1989	1988	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Stratum Dates:		8/21		Period 25			
Sampling Dates:		8/21					
Sample Size:		147					
Female	Percent of Sample	1.4	28.1	24.0	1.4	0.0	54.8
	Number in Catch	93	1,903	1,624	93	0	3,712
Male	Percent of Sample	1.4	25.3	17.8	0.7	0.0	45.2
	Number in Catch	93	1,717	1,207	46	0	3,063
Total	Percent of Sample	2.7	53.4	41.8	2.1	0.0	100.0
	Number in Catch	186	3,620	2,831	139	0	6,775
	Standard Error	92	280	277	80	0	
Stratum Dates:		8/22		Period 26			
Sampling Dates:		8/22					
Sample Size:		155					
Female	Percent of Sample	0.6	27.3	18.8	0.6	0.0	47.4
	Number in Catch	56	2,366	1,634	56	0	4,113
Male	Percent of Sample	2.6	37.0	13.0	0.0	0.0	52.6
	Number in Catch	225	3,211	1,127	0	0	4,563
Total	Percent of Sample	3.2	64.3	31.8	0.6	0.0	100.0
	Number in Catch	282	5,577	2,761	56	0	8,676
	Standard Error	124	335	326	56	0	
Stratum Dates:		8/23		Period 27			
Sampling Dates:		8/23					
Sample Size:		112					
Female	Percent of Sample	1.8	36.0	23.4	0.9	0.0	62.2
	Number in Catch	151	3,015	1,960	75	0	5,200
Male	Percent of Sample	0.9	23.4	13.5	0.0	0.0	37.8
	Number in Catch	75	1,960	1,131	0	0	3,166
Total	Percent of Sample	2.7	59.5	36.9	0.9	0.0	100.0
	Number in Catch	226	4,974	3,090	75	0	8,366
	Standard Error	129	390	383	75	0	
Stratum Dates:		8/24		Period 28			
Sampling Dates:		8/24					
Sample Size:		156					
Female	Percent of Sample	1.3	35.7	23.4	1.9	0.0	62.3
	Number in Catch	126	3,470	2,272	189	0	6,057
Male	Percent of Sample	1.3	22.1	13.0	1.3	0.0	37.7
	Number in Catch	126	2,145	1,262	126	0	3,660
Total	Percent of Sample	2.6	57.8	36.4	3.2	0.0	100.0
	Number in Catch	252	5,616	3,533	315	0	9,717
	Standard Error	124	385	375	138	0	

(continued)

Appendix Table D.1. (page 8 of 8)

		Brood Year and Age Group					
		1992	1991	1990	1989	1988	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Stratum Dates:		8/25		Period 29			
Sampling Dates:		8/25					
Sample Size:		156					
Female	Percent of Sample	0.6	32.1	22.4	1.3	0.0	56.4
	Number in Catch	53	2,637	1,846	105	0	4,640
Male	Percent of Sample	0.6	22.4	19.9	0.6	0.0	43.6
	Number in Catch	53	1,846	1,635	53	0	3,586
Total	Percent of Sample	1.3	54.5	42.3	1.9	0.0	100.0
	Number in Catch	105	4,482	3,480	158	0	8,226
	Standard Error	74	329	326	91	0	
Stratum Dates:		8/28		Period 30			
Sampling Dates:		8/28					
Sample Size:		269					
Female	Percent of Sample	3.8	40.2	20.1	1.1	0.0	65.2
	Number in Catch	281	2,975	1,487	84	0	4,827
Male	Percent of Sample	0.4	26.1	7.6	0.8	0.0	34.8
	Number in Catch	28	1,936	561	56	0	2,582
Total	Percent of Sample	4.2	66.3	27.7	1.9	0.0	100.0
	Number in Catch	309	4,911	2,049	140	0	7,409
	Standard Error	90	214	202	62	0	
Stratum Dates:		7/10-8/28		All Periods (weighted)			
Sampling Dates:		7/11-8/28					
Sample Size:		4,621					
Female	Percent of Sample	0.9	28.2	18.4	1.1	0.0	48.6
	Number in Catch	2,593	82,051	53,428	3,133	0	141,205
Male	Percent of Sample	1.4	30.7	18.5	0.8	0.0	51.4
	Number in Catch	3,946	89,222	53,811	2,457	88	149,524
Total	Percent of Sample	2.2	58.9	36.9	1.9	0.0	100.0
	Number in Catch	6,539	171,273	107,239	5,590	88	290,730
	Standard Error	634	2,104	2,064	587	74	

Appendix Table D.2. Kobuk River chum salmon drift test fish catch age and sex composition by time period, and season total, 1995.

		Brood Year and Age Group				Total
		1992 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	
Stratum Dates:		7/13–7/22				
Sampling Dates:		7/13–7/22				
Female	Percent of Sample	0.0	10.1	19.2	0.0	29.3
	Number in Catch	0	10	19	0	29
Male	Percent of Sample	2.0	33.3	32.3	3.0	70.7
	Number in Catch	2	33	32	3	70
Total	Percent of Sample	2.0	43.4	51.5	3.0	100.0
	Number in Catch	2	43	51	3	99
	Standard Error	1	5	5	2	
Stratum Dates:		7/23–7/29				
Sampling Dates:		7/23–7/29				
Female	Percent of Sample	0.3	16.3	9.4	1.0	27.1
	Number in Catch	1	47	27	3	78
Male	Percent of Sample	1.0	41.3	28.8	1.7	72.9
	Number in Catch	3	119	83	5	210
Total	Percent of Sample	1.4	57.6	38.2	2.8	100.0
	Number in Catch	4	166	110	8	288
	Standard Error	1	3	3	1	
Stratum Dates:		7/30–8/05				
Sampling Dates:		7/30–8/05				
Female	Percent of Sample	0.3	20.1	15.7	0.9	37.0
	Number in Catch	1	65	51	3	120
Male	Percent of Sample	2.2	38.9	20.1	1.9	63.0
	Number in Catch	7	126	65	6	204
Total	Percent of Sample	2.5	59.0	35.8	2.8	100.0
	Number in Catch	8	191	116	9	324
	Standard Error	1	3	3	1	

(continued)

Appendix Table D.2. (Page 2 of 2)

		Brood Year and Age Group				Total
		1992 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	
Stratum Dates: 8/06–8/12						
Sampling Dates: 8/06–8/12						
Female	Percent of Sample	1.2	31.3	9.5	0.4	42.4
	Number in Catch	3	76	23	1	103
Male	Percent of Sample	1.6	41.2	14.4	0.4	57.6
	Number in Catch	4	100	35	1	140
Total	Percent of Sample	2.9	72.4	23.9	0.8	100.0
	Number in Catch	7	176	58	2	243
	Standard Error	1	3	3	1	
Stratum Dates: 8/13–8/16						
Sampling Dates: 8/13–8/16						
Female	Percent of Sample	1.4	47.9	14.1	1.4	64.8
	Number in Catch	1	34	10	1	46
Male	Percent of Sample	1.4	28.2	5.6	0.0	35.2
	Number in Catch	1	20	4	0	25
Total	Percent of Sample	2.8	76.1	19.7	1.4	100.0
	Number in Catch	2	54	14	1	71
	Standard Error	2	5	5	1	
Stratum Dates: 7/13–8/16		Season Total				
Sampling Dates: 7/13–8/16						
Female	Percent of Sample	0.6	22.6	12.7	0.8	36.7
	Number in Catch	6	232	130	8	376
Male	Percent of Sample	1.7	38.8	21.4	1.5	63.3
	Number in Catch	17	398	219	15	649
Total	Percent of Sample	2.2	61.5	34.0	2.2	100.0
	Number in Catch	23	630	349	23	1,025
	Standard Error	0	2	1	0	

Appendix Table D.3. Noatak River chum salmon drift test fish catch age and sex composition by time period, and season total, 1995.

		Brood Year and Age Group					Total
		1992 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	1988 (0.6)	
Stratum Dates: 7/20-7/28							
Sampling Dates: 7/20-7/28							
Female	Percent of Sample	0.4	19.0	25.9	2.3	0.0	47.5
	Number in Catch	1	50	69	6	0	126
Male	Percent of Sample	0.0	30.0	20.5	1.5	0.4	52.5
	Number in Catch	0	80	54	4	1	139
Total	Percent of Sample	0.4	49.0	46.4	3.8	0.4	100.0
	Number in Catch	1	130	123	10	1	265
	Standard Error	0	3	3	1	0	
Stratum Dates: 7/29-8/05							
Sampling Dates: 7/29-8/05							
Female	Percent of Sample	0.0	21.4	13.0	2.3	0.0	36.6
	Number in Catch	0	28	17	3	0	49
Male	Percent of Sample	0.0	39.7	22.9	0.8	0.0	63.4
	Number in Catch	0	53	30	1	0	84
Total	Percent of Sample	0.0	61.1	35.9	3.1	0.0	100.0
	Number in Catch	0	81	48	4	0	133
	Standard Error	0	4	4	1	0	
Stratum Dates: 8/06-8/12							
Sampling Dates: 8/06-8/12							
Female	Percent of Sample	0.9	22.6	21.7	0.9	0.0	46.1
	Number in Catch	2	49	47	2	0	100
Male	Percent of Sample	0.9	27.6	24.4	0.9	0.0	53.9
	Number in Catch	2	60	53	2	0	117
Total	Percent of Sample	1.8	50.2	46.1	1.8	0.0	100.0
	Number in Catch	4	109	100	4	0	217
	Standard Error	1	3	3	1	0	
Stratum Dates: 8/13-8/19							
Sampling Dates: 8/13-8/19							
Female	Percent of Sample	0.3	34.0	18.3	0.6	0.3	53.4
	Number in Catch	1	119	64	2	1	187
Male	Percent of Sample	0.9	26.9	18.3	0.6	0.0	46.6
	Number in Catch	3	94	64	2	0	163
Total	Percent of Sample	1.1	60.9	36.6	1.1	0.3	100.0
	Number in Catch	4	213	128	4	1	350
	Standard Error	1	5	5	1	1	

(continued)

Appendix Table D.3. (Page 2 of 2)

		Brood Year and Age Group					Total
		1992 (0.2)	1991 (0.3)	1990 (0.4)	1989 (0.5)	1988 (0.6)	
Stratum Dates: 8/20–8/25							
Sampling Dates: 8/20–8/25							
Female	Percent of Sample	1.5	33.2	22.6	0.0	0.0	57.3
	Number in Catch	3	66	45	0	0	114
Male	Percent of Sample	1.5	26.6	14.6	0.0	0.0	42.7
	Number in Catch	3	53	29	0	0	85
Total	Percent of Sample	3.0	59.8	37.2	0.0	0.0	100.0
	Number in Catch	6	119	74	0	0	199
	Standard Error	2	5	5	0	0	
Stratum Dates: 8/26–8/29							
Sampling Dates: 8/26–8/29							
Female	Percent of Sample	5.6	35.2	15.5	1.4	0.0	57.7
	Number in Catch	8	50	22	2	0	82
Male	Percent of Sample	1.4	21.8	19.0	0.0	0.0	42.3
	Number in Catch	2	31	27	0	0	60
Total	Percent of Sample	7.0	57.0	34.5	1.4	0.0	100.0
	Number in Catch	10	81	49	2	0	142
	Standard Error	2	4	4	1	0	
Stratum Dates: 7/20–8/29		Season Total					
Sampling Dates: 7/20–8/29							
Female	Percent of Sample	1.1	27.8	20.2	1.2	0.1	50.4
	Number in Catch	15	363	264	15	1	658
Male	Percent of Sample	0.8	28.4	19.7	0.7	0.1	49.6
	Number in Catch	10	370	258	9	1	648
Total	Percent of Sample	1.9	56.1	39.9	1.8	0.2	100.0
	Number in Catch	25	733	522	24	2	1,306
	Standard Error	0	1	1	0	0	

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