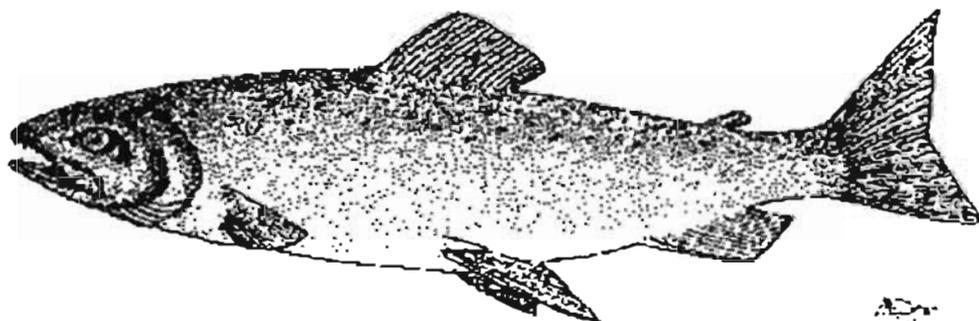


NORTON SOUND AND KOTZEBUE SOUND MANAGEMENT AREA

SALMON CATCH AND ESCAPEMENT REPORT, 1997



By

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ABSTRACT

The 1997 commercial and subsistence harvest and escapement information for the five species of Pacific salmon *Oncorhynchus* found in the Norton Sound/Port Clarence, and the Kotzebue Sound management areas are presented, along with age, sex, and length information where sampled. The 1997 Norton Sound District commercial harvest totaled 79,141 salmon and was composed of 12,573 chinook (*O. tshawytscha*), 34,103 chum (*O. keta*), 161 sockeye (*O. nerka*), 20 pink (*O. gorbuscha*) and 32,248 coho (*O. kisutch*) salmon. The commercial chinook salmon harvest was 93% above the 1992-96 average, chum salmon were 18% below the recent average, and coho salmon were 56% below the recent average. Only 20 pink salmon were commercially harvested. Sockeye salmon are only present in small numbers in this area. Seven counting tower projects and one weir project operated in Norton Sound in 1997 to provide more complete information on salmon spawning escapements, and those data are reported here. In the Kotzebue District, the commercial harvest totaled 142,720 chum salmon. An incidental harvest of 45 chinook salmon and 3,320 Dolly Varden was also reported. Subsistence catches of these species plus whitefish, sheefish, northern pike and burbot also occur in the Kotzebue District. The chum salmon commercial harvest in 1997 was well below the 1979-96 average of 265,000 fish.

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

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 commercial economic importance in 1997, 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 chum, coho, chinook, and sockeye salmon. In some years the coho salmon return is thought to be greater than the chum salmon return. In the Kotzebue Sound District, chum salmon are the predominant species.

Knowledge of the magnitude, distribution, timing, and age-sex-length composition of both the harvest and escapement by stock is fundamental to managing salmon fisheries and achieving full production. Age, sex, and length 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 1997.

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 1997 have been summarized in the Norton Sound - Port Clarence - Kotzebue Sound Annual Management Report (Elisabeth Brennan, personal communication). In addition, the results from escapement assessment projects are analyzed and reported annually. For the 1997 season these included test fishery projects on the Unalakleet River (Rob, 1998i) and the Kobuk River (Lingnau, 1997b), counting tower projects on the Kwiniuk River (Rob, 1998a), Shaktoolik River (Rob, 1998b), Niukluk River (Rob, 1998d), North River (Rob, 1998e), Eldorado River (Rob, 1998f), Snake River (1998g), and Pilgrim River (1998h) and a weir on the Nome River (Rob, 1998c).

Age, sex, and length 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; Blaney and Lingnau 1995; Lingnau 1992, 1994a, 1994b; Lingnau 1995, 1996, 1997a). This report presents catch, escapement and age-sex-length data for the Norton Sound and Kotzebue Sound management areas for 1997.

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 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 and Norton Sound Districts, and these surveys continued in 1997 (Georgette and Utermohle 1998). Villages surveyed in the Norton Sound and Port Clarence Areas were Brevig Mission, Elim, Golovin, Koyuk, Shaktoolik, St. Michael, Stebbins, Teller, Unalakleet, and White Mountain. At the request of the Alaska Board of Fisheries, two other villages on Saint Lawrence Island (Gambell and Savoonga) were surveyed in January of 1998. 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 a period of several months. In the Kotzebue Area, the villages of Ambler, Kiana, Kobuk, Noatak, Noorvik and Shungnak were surveyed. In Kotzebue, postcards 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 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 (Magdanz and Seitz 1993), Elim in 1992 and 1993 (Jim Magdanz, ADF&G, Nome, personal communication), the Nome Subdistrict in 1975-1991 (Magdanz 1992), and Brevig Mission, Golovin and Shishmaref in 1989 (Conger and Magdanz 1990).

Aerial surveys historically have been the primary method for monitoring salmon escapements to the Norton Sound and Kotzebue Sound drainages although a number of escapement projects are now operating in Norton Sound. Aerial surveys 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. Aerial surveys, commercial catch statistics and test fishing do not provide a total abundance estimate. Test fishery catch and catch per unit effort (CPUE) statistics are used as an index of relative abundance. Counting towers, weirs and sonar projects provide a better estimate of escapement. The following projects conducted during the 1997 season provided data on salmon escapement abundance and timing in Norton Sound: Nome River weir and Snake and Eldorado River towers in Subdistrict 1, Niukluk River tower in Subdistrict 2, Kwiniuk River tower in Subdistrict 3, Shaktoolik River tower in Subdistrict 5 and North River tower in Subdistrict 6 (Appendix C). A tower was also operated on

the Pilgrim River, located in the Port Clarence District. A test fishing project on the Unalakleet River in the Unalakleet Subdistrict was used to index escapement into that drainage. A test fishing project was conducted on the Kobuk River near the village of Kiana to index salmon escapements into the Kobuk River system. Due to a lack of technical resources, the sonar escapement project on the Noatak River did not operate in 1997. However, about once a week during the salmon migration into the Noatak River, drift test fishing was conducted to collect age, sex and length information.

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

Commercial fishery samples were collected from chinook, chum and coho salmon in Subdistrict 6. Sufficient commercial fishery samples were collected to estimate age and sex composition of the harvest for chum salmon 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 inch (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 escapement samples were collected from projects on the Niukluk, Kwiniuk, Nome and Snake Rivers using beach seines. Niukluk River coho samples were also collected using beach seines. In the Kotzebue District, chum salmon from drift 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. Temporal distribution of some samples may be of concern. Some samples are marginally adequate and may not have been collected proportionally to the catch or abundance.

Norton Sound

Commercial and Subsistence Harvest

The 1997 Norton Sound commercial harvest totaled 79,141 salmon and was composed of 12,573 chinook, 34,103 chum, 161 sockeye, 20 pink, and 32,284 coho salmon (Table 1; Appendix A). Subdistrict 6 accounted for 66% of the total commercial salmon harvest (in numbers of fish) in 1997, followed by Subdistrict 5 (16%).

Chinook salmon accounted for 62% of the total fishery value followed by coho salmon (33%) and chum salmon (8%). One buyer purchased fish during the chinook and coho seasons while the second buyer was mostly interested in chum salmon. Salmon were delivered to Unalakleet via tender and aircraft for processing. The salmon were headed and gutted, then shipped air freight to markets. A few fishermen sold their catch locally and to wholesale distributors, as permitted under catcher/seller regulations. The average price paid was \$1.00 per pound for chinook, \$0.47/lb for coho, \$0.06/lb for pink and \$0.11/lb for chum salmon. The total ex-vessel value of the raw fish was \$363,908, 22% below the previous 5 year (1992-1996) average.

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 were not monitored from 1983 through 1993, except in the Nome Subdistrict, due to lack of funding for such a project. 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 (Figure 2), subsistence permits require that fishermen document their harvest by species. There were 128 subsistence permits issued in 1997. A total of 67 permits were returned of which 34 reported having fished. The reported permit harvest of 3,404 salmon was composed of 11 chinook, 166

sockeye, 2,722 chum, 180 pink, and 325 coho salmon (Table 2). Funds were dedicated to do comprehensive subsistence surveys in Norton Sound and Kotzebue Sound in 1994, 1995, 1996 and 1997. The villages surveyed in 1997 were listed in the methods section.

Results of the survey for 1997 indicate an estimated 88,383 salmon were harvested for subsistence purposes in Norton Sound and Port Clarence (Table 3). This estimate includes the permit fishery in Northern Norton Sound. The largest percent of the harvest was chum salmon, followed by pink, coho, chinook salmon, and a small amount of sockeye salmon. The largest quantity of salmon was taken by the village of Unalakleet (23,213). Port Clarence villages harvested an estimated 7,019 salmon.. Sockeye and chum salmon were harvested in nearly equal proportions followed by coho, pink and chinook salmon.

Escapement Abundance

Aerial survey escapement information is only an indication of run strength. Because of the many factors under which aerial surveys are conducted, this methodology of assessing salmon does not provide total escapement abundance. Aerial survey escapement results in Norton Sound for all species range from record highs to well below average. Chinook salmon escapement information indicate that escapements into eastern and northeastern Norton Sound (including Pilgrim River drainage) were above average. One tributary, the Ungalik River, was a record high escapement. Chum salmon escapements, however, ranged from average to below average. Rivers in the Nome Subdistrict, with one exception, the Eldorado River, were below average. The Eldorado River met it's escapement goal. Eastern Norton Sound rivers were mixed concerning chum salmon escapements. The Unalakleet, Ungalik and Fish River drainages were above escapement goals, while Shaktoolik and Tubutulik Rivers were below escapement goal levels. Pink salmon, because of the odd year, were generally below average. Exceptions were the Tubutulik, Ungalik, Shaktoolik and Unalakleet Rivers. Those rivers were average to above average escapement levels. Coho salmon were typically below to well below average in strength except for a few of the Nome area rivers. The Snake, Nome, Flambeau and Solomon Rivers were thought to have had average escapement levels. The only location where sockeye salmon are prevalent is in the Pilgrim River drainage located in the Port Clarence District. Observed escapements of sockeye salmon into that drainage were record high levels.

There have been several new cooperative escapement projects implemented in the recent years. Those projects are listed under **METHODS, Harvests and Escapements**, and results for 1997 are provided in Appendix C. The only project with an escapement goal is the Kwiniuk River tower. That biological escapement goal of 19,500 is for chum salmon only, as it is the species with the longest historical escapement information. The Kwiniuk River had tower counts of 20,118 chum salmon, 9,536 pink salmon and 972 chinook salmon in 1997. The Nome River weir enumerated 5,131 chum salmon, 8,035 pink salmon, 22 chinook salmon, 321 coho salmon and 1,352 Dolly Varden. Counts past the Niukluk River tower were 57,304 chum salmon, 10,466 pink salmon, 259 chinook salmon, 3,994 coho salmon and 11,095 Dolly Varden. Snake River tower counts tallied 6,184 chum salmon, 6,742 pink salmon, 12 chinook salmon and 1,157 coho salmon. The Eldorado River tower project counted 14,302 chum salmon, 1,022 pink salmon, 98 chinook salmon and 194 coho salmon. The North River tower, a tributary of the Unalakleet River, counted 6,904 chum

salmon, 127,926 pink salmon, 4,185 chinook salmon and 5,768 coho salmon. The Shaktoolik River tower counted 43,870 chum salmon, 680,255 pink salmon, 4,524 chinook salmon, 5,267 coho salmon and 20,381 Dolly Varden.

At a new tower project on the Pilgrim River in the Port Clarence District species identification problems yielded 15,652 combined sockeye and chum salmon, 5,557 pink salmon, 356 chinook salmon and 452 coho salmon. Projects were not funded to enumerate entire runs of some salmon species, therefore some species counts should be considered as conservative estimates. Although species identification between sockeye and chum salmon was a problem, estimates of each species was attempted. Of the combined estimate, 14,418 were considered chum salmon and 1,234 were considered sockeye salmon (Appendix Table C.8.).

Age, Sex, and Length Composition

The chinook salmon commercial harvest sample in Subdistrict 6 was composed of 54% age-1.4, 31% age-1.2, 14% age-1.3 , and 1% age -1.5 fish. The sample was 52% male and 48% female. A sample of 110 chinook salmon from the Unalakleet River test fishery was similar to the commercial catch with 51% age 1.4, 36% age 1.2, 13% age 1.3 with a small amount of age 1.5, with 51% of the total being female. Mean lengths by age group from these samples ranged from 606 mm for age-1.2 females from the Unalakleet River test fishing sample to 920 mm for age-1.5 females from the Subdistrict 6 commercial catch (Tables 4 and 5).

The Subdistrict 6 chum salmon sample age composition was mostly age 0.4 (64%), followed by age 0.3 (31%). Males were dominant and made up 58% of the sample (Table 6). A sample of 283 chum salmon from the Unalakleet River test fishery were 68% age-0.4, 26% age-0.3, 5% age-0.5 and 1% age-0.6 (Table 7). The sex composition consisted of 62% males and 38% females. The chum salmon escapement sample from the Kwiniuk River had nearly equal proportions of age 0.3 and age 0.4 (53% and 46%) (Table 8). The Niukluk River chum salmon escapement sample was similar with 54% age-0.3, followed by age-0.4 (41%). There were also smaller amounts of age-0.2, age-0.5 and age-0.6. Males and females were equal in the Niukluk River sample, where as females (59%) were predominant in the Kwiniuk River. The Snake River had identical contributions of age-0.3 and age-0.4 with a sample of 92 chum salmon. Nome River chum salmon were 61% age-0.4 and 36% age-0.3, with smaller amounts of age-0.2 and age-0.5. Mean lengths by age group for all samples collected ranged from 545 mm for age-0.3 females from the Kwiniuk River escapement to 642 mm for age-0.5 males from the Niukluk River escapement.

Subdistrict 6 coho salmon samples were dominated by age-2.1 fish accounting for 85% of the sample, with 53% females (Table 9). There were 64 coho salmon sampled from the Unalakleet River test fishery and the age composition was 94% age-2.1 salmon (Table 10). Males made up 53% of this sample. Beach seined coho salmon from the Niukluk River were also dominated by age-2.1 (90%), with males comprising 58% of the sample (Table 11). Mean lengths by age group for all samples collected ranged from 535 mm for age-3.1 to 605 mm age-2.1. Both lengths were males from the Niukluk River.

Kotzebue Sound

Commercial Harvest

The commercial harvest in the Kotzebue District during 1997 consisted of 142,720 chum salmon, 45 chinook salmon and 3,320 Dolly Varden (Table 12). This commercial chum salmon harvest was below the projected harvest of 250,000-350,000 salmon due to poor market conditions. It was also well below the 17 year (1979-1996) average of 272,000. There were 68 permit holders that fished in 1997. The low fishing effort was attributed to low prices. It is thought that fishermen sought employment that provided a higher and more consistent income.

The buyer purchased a total of 1,141,741 pounds of chum salmon (average weight 8.0 lbs.) at \$.16 per pound, 649 pounds of chinook salmon (average weight 14.4 lbs.) at an average of \$1.02 per pound, and 23,203 pounds of Dolly Varden (average weight 7.0 lbs.) at an average of \$.20 per pound. The buyer began using an average weight for chum salmon during the second opening of 8 pounds, the average from the first opening, to reduce labor costs that would cut into the already marginal profits as allowed by Alaska Statute 16.10.270 (a). The total ex-vessel value was \$187,978 to Kotzebue area fishermen with an average of \$2,764 for each participating permit holder. The lone buyer packed the fish in ice and flew them out in the round to Anchorage for processing.

Limited commercial harvest of miscellaneous finfish has been allowed since statehood, normally under the auspices of a permit which delineates harvest levels, open areas, legal gear, etc. There was no reported commercial harvest of whitefish, pike, or burbot during the 1997 commercial season. Sheefish are caught and sold primarily between mid-November and late March. Although some permit holders annually renew their permits, none registered with the Kotzebue ADF&G Office and there were no reported sales of sheefish.

Sikusuilaq Springs Hatchery

The total predicted return of hatchery chum salmon was 90,000. Forty-seven percent of the commercial catch was sampled with a total of 35 adipose clipped chum salmon found. From the 35 heads sent in, 12 were lost and only 2 of the remaining heads had tags in them. Both of these tags were from the 1993 brood year. Due to a lack of tag information, no conclusions can be made of the hatchery contribution to the 1997 commercial catch.

Subsistence Harvest

Results from the Division of Subsistence survey indicate an estimated subsistence harvest of 60,926 salmon in the Kotzebue Sound area in 1997, with 95% of the harvest being chum salmon (Table 13). Smaller quantities of the other four species of salmon were reportedly harvested. The city of Kotzebue had the largest estimated harvest of 28,352 salmon, with the village of Kobuk taking the

smallest quantity (629 salmon). These are also the locations with the largest and smallest human populations of the communities surveyed in the district. There was an estimated subsistence harvest of 4,763 Dolly Varden from the village of Noatak. The subsistence harvest of sheefish from the Kobuk River villages was 9,806. The village of Noorvik reported a harvest of 5,048, more than three times that of the other villages. This is most likely because of their access to Kobuk Lake, an over-wintering location for sheefish.

Escapement Abundance

Poor aerial survey conditions were predominant this year. Only one consistently surveyed index area survey, the Upper Kobuk River, was completed, and that was under poor conditions, as were the other incomplete surveys. The escapement index for the upper Kobuk River was just under the goal by aerial survey. Because survey conditions were poor and the index was just under the goal, it is thought the escapement into that index area had been met (Table 14). The Kobuk River test fish index for 1997 was roughly one and a half times the 1993 level, the level felt necessary to achieve the escapement goals in the Kobuk River. Results from the Kobuk River test fishing project can be found in Lingnau (1997b).

Age, Sex, and Length Composition

Age groups 0.3 and 0.4 typically dominate the Kotzebue 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 1% age 0.2, 29% age 0.3, 58% age 0.4, 10% age 0.5, 10% and 1% age 0.6 (Table 15). Lengths from the commercial catch ranged from 663 mm for age-0.6 males to 560 mm for age-0.2 females (Table 16). Sufficient samples were collected to stratify the season by fishing period (Appendix D).

Age composition from the Kobuk and Noatak River chum salmon drift gillnet test fishing samples were similar, with age 0.3 at 24% and 34%, and age 0.4 at 59% and 56%, respectively (Table 16). Both samples had smaller amounts of age-0.2, age-0.5 and age-0.6. Fifty-six percent of the samples from the Kobuk River were male, whereas 67% of the samples from the Noatak River test fishery were male. Mean lengths from the Kobuk River drift test fish samples ranged from 647 mm for age-0.5 males to 550 mm for age-0.2 females. Sufficient test fishing catch samples from the Kobuk River were collected to stratify the season by fishing period (Appendix D).

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 was fairly consistent with age-0.4 fish predominating in all samples (58% to 69%) followed by age-0.3 fish (22% to 27%) (Table 17). Mean lengths by age group for all escapement samples ranged from 558 mm for age-0.3 females from the Salmon River to 674 mm for age-0.5 males from the Selby Slough vicinity.

LITERATURE CITED

- Bigler, B. S., and C. F. Lean. 1986. Age, sex, and size of Norton Sound and Kotzebue Sound salmon catch and escapement, 1984. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 172, Juneau.
- Blaney, A. C., and Lingnau, T. L. 1995. Norton Sound and Kotzebue Sound Salmon Catch and Escapement Statistics, 1990. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report No. 3A95-03, Anchorage.
- Bromaghin, J. F. 1993. Sample size determination for interval estimation of multinomial probabilities. *The American statistician*, 47: 203-206.
- Buklis, L. S. 1991a. Abundance, age, sex, and size of Norton Sound and Kotzebue Sound salmon catch and escapement, 1988. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fisheries Report 91-02, Juneau.
- Buklis, L. S. 1991b. Abundance, age, sex, and size of Norton Sound and Kotzebue Sound salmon catch and escapement, 1989. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fisheries Report 91-03, Juneau.
- Conger, A. O. and J. Magdanz. 1990. The Harvest of Fish and Wildlife in three Alaska Communities: Brevig Mission, Golovin and Shishmaref. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 188, Juneau.
- Georgette, S. and Loon, H. 1993. Subsistence use of fish and wildlife in Kotzebue, Northwest Alaska Regional Center. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 167, Juneau.
- Georgette, S and C. Utermohle. 1998. Subsistence Harvest Summary, Northwest Alaska 1997. Alaska department of Fish and Game, Division of Subsistence.. Nome.
- Goodman, L. A. 1965. On simultaneous confidence intervals for multinomial proportions. *Technometrics* 7, 247-254.
- Hamner, H. H. 1987. Abundance, age, sex, and size of Norton Sound and Kotzebue Sound salmon catch and escapement, 1985. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 193, Juneau.
- Hamner, H. H. 1989a. Abundance, age, sex, and size of Norton Sound and Kotzebue Sound salmon catch and escapement, 1986. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fisheries Report 89-08, Juneau.

- Hamner, H. H. 1989b. Abundance, age, sex, and size of Norton Sound and Kotzebue Sound salmon catch and escapement, 1987. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fisheries Report 89-09, Juneau.
- Lean C. F., B. B. Bigler, and L. K. Brannian. 1984. Age, sex, and size of Norton Sound and Kotzebue Sound salmon catch and escapement, 1983. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 130, Juneau.
- Lingnau, T. L. 1992. Norton Sound and Kotzebue Sound Management Area Salmon Catch and Escapement Report, 1991. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fisheries Report 92-13, Juneau.
- Lingnau, T. L. 1994a. Norton Sound and Kotzebue Sound Management Area Salmon Catch and Escapement Report, 1992. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Technical Fisheries Report 94-05, Juneau.
- Lingnau, T. L. 1994b. Norton Sound and Kotzebue Sound Management Area Salmon Catch and Escapement Report, 1993. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A-94-15.
- Lingnau, T. L. 1995. Norton Sound and Kotzebue Sound Management Area Salmon Catch and Escapement Report, 1994. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A95-07, Anchorage.
- Lingnau, T. L. 1996. Norton Sound and Kotzebue Sound Management Area Salmon Catch and Escapement Report, 1995. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A96-23, Anchorage.
- Lingnau, T. L. 1997a. Norton Sound and Kotzebue Sound Management Area Salmon Catch and Escapement Report, 1996. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A97-21, Anchorage.
- Lingnau, T. L. 1997b. Kobuk River Test Fishing Project, 1997. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A97-38, Anchorage.
- Magdanz, J. and J. Seitz 1993. The Unalakleet Subsistence Salmon Fishery in 1989-90. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 207, Juneau.
- Magdanz, J. 1992. Subsistence Salmon Fishing by Permit in the Nome Subdistrict and Portions of the Port Clarence District, 1975-91. Alaska Department of Fish and Game, Division of Subsistence, Technical Paper No. 220, Juneau.

- Rob, P. J. 1998a. Kwiniuk River Salmon Counting Tower Project Summary Report, 1997. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A98-04, Anchorage.
- Rob, P. J. 1998b. Shaktoolik River Salmon Counting Tower Project Summary Report, 1997. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A98-09, Anchorage.
- Rob, P. J. 1998c. Nome River Salmon Counting Tower Project Summary Report, 1997. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A98-02, Anchorage.
- Rob, P. J. 1998d. Niukluk River Salmon Counting Tower Project Summary Report, 1997. Alaska Department of Fish and Game Commercial Fisheries Management and Development Division, Regional Information Report 3A98-19, Anchorage.
- Rob, P. J. 1998e. North River Salmon Counting Tower Project Summary Report, 1997. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A98-08, Anchorage.
- Rob, P. J. 1998f. Eldorado River Salmon Counting Tower Project Summary Report, 1997. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A98-01, Anchorage.
- Rob, P. J. 1998g. Snake River Salmon Counting Tower Project Summary Report, 1997. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A98-03, Anchorage.
- Rob, P. J. 1998h. Pilgrim River Salmon Counting Tower Project Summary Report, 1997. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A98-10, Anchorage.
- Rob, P. J. 1998i. Unalakleet River Test Net Project, 1997. Alaska Department of Fish and Game, Commercial Fisheries Management and Development Division, Regional Information Report 3A98-18, Anchorage.
- Thompson, S. K. 1987. Sample size for estimating multinomial proportions. *The American Statistician*: 41 42-46.

Table 1. Norton Sound commercial salmon effort, catch and weight (pounds) by subdistrict, 1997.

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 ^b	0	0		0		0	0	0		0		0	
2	11	19	288	2	15	102	787	20	50	8,003	58,516	8,146	59,656
3	21	844	17,004	0		1,409	9,617	0		2,683	22,537	4,936	49,158
4	12	194	3,469	0		0		0		531	5,420	725	8,889
5	19	2,449	46,454	0		4,694	32,452	0		5,747	42,048	12,890	120,954
6	57	9,067	167,921	159	1,080	26,079	192,661	0		17,138	125,349	52,444	477,011
Total	102	12,573	225,136	161	1,095	32,284	235,517	20	50	34,103	253,870	79,141	715,668

^a Some fishermen fished in more than one subdistrict.

^b No commercial fishing occurred in Norton Sound Subdistrict 1.

Table 2. Subsistence permit harvests of salmon in northern Norton Sound and Port Clarence Area, 1997.

Location	Permits Issued ^a	Permits Returned	Permits Fished	Chinook	Sockeye	Chum	Pink	Coho	Total Salmon
Marine Waters	72	36	19	8	45	1,938	65	98	2,154
Nome River	6	3	2	1	4	126	5	38	174
Snake River	2	0							
Eldorado River	18	13	7	1	1	574	102	176	854
Flambeau River	5	4	2	0	0	57	0	10	67
Bonanza River	1	0	0						
Sinuk River	2	1	1	0	0	1	3	3	7
Fish River	1	0	0						
Niukluk River	4	1	1	1	98	18	3	0	120
Port Clarence	3	0							
Kuzitrin River	1	1	0	0	18	0	0	0	18
Pilgrim River	13	8	2	0	0	8	2	0	10
Total ^b	128	67	34	11	166	2,722	180	325	3,404

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

^b Preliminary information.

Table 3. Estimates of subsistence harvests of salmon in the Norton Sound and Port Clarence Area, 1997. ^a

Village	Chinook	Chum	Pink	Sockeye	Coho	Total Salmon
Nome ^b	19	4,996	287	99	534	5,935
Golovin	81	1,788	1,648	35	311	3,863
Niukluk River ^b	4	72	12	392	0	480
White Mountain	54	3,031	2,910	0	244	6,239
Elim	619	2,064	1,314	50	1,213	5,260
Koyuk	565	4,040	1,795	54	322	6,776
Shaktoolik	1,146	1,612	5,779	62	2,761	11,360
Unalakleet	4,191	1,603	10,477	196	6,746	23,213
Stebbins	1,164	3,230	243	116	1,826	6,579
St. Michael	970	2,816	84	41	547	4,458
Gambell	161	1,446	2,235	766	1,594	6,202
Savoonga	24	105	414	81	376	1,000
Brevig Mission	56	1,085	476	1,267	514	3,398
Pilgrim River ^b	0	13	3	29	0	45
Teller	102	1,000	276	1,881	316	3,575
Total	9,156	28,901	27,953	5,069	17,304	88,383

^a These numbers may differ slightly from the numbers in the text due to rounding.

^b Alaska Department of Fish & Game, Division of Commercial Fisheries permit returns, 1997.

Table 4. Norton Sound Subdistrict 6 chinook salmon commercial catch age and sex composition, and mean length, 1997.

		Brood Year and (Age Group)				
		1993 (1.2)	1992 (1.3)	1991 (1.4)	1990 (1.5)	Total
Stratum Dates:	6/12-8/23					
Sample Dates:	6/17-6/24					
Sample Size:	165					
Male	Number in Catch	2,376	813	1,563	0	4,751
	Percent in Catch	26.2	9.0	17.2	0.0	52.4
	Mean Length (mm) ^a	608	725	825		
Female	Number in Catch	438	438	3,377	63	4,316
	Percent in Catch	4.8	4.8	37.2	0.7	47.6
	Mean Length (mm) ^a	764	807	875	920	
Total	Number in Catch	2,814	1,251	4,939	63	9,067
	Percent in Catch	31.0	13.8	54.5	0.7	100.0

^a Mean length is from mid-eye to fork of tail.

Table 5. Unalakleet River chinook salmon test fishing sample age and sex composition, and mean length, 1997.

		Brood Year and (Age Group)				
		1993 (1.2)	1992 (1.3)	1991 (1.4)	1990 (1.5)	Total
Stratum Dates:	6/12-8/29					
Sample Dates:	6/12-7/18					
Male	Number in Sample	31	7	16	0	54
	Percent in Sample	28.2	6.4	14.5	0.0	49.1
	Mean Length (mm) ^a	621	735	839		
Female	Number in Sample	8	7	40	1	56
	Percent in Sample	7.3	6.3	36.4	0.9	50.9
	Mean Length (mm) ^a	606	808	873	895	
Total	Number in Sample	39	14	56	1	110
	Percent in Sample	35.5	12.7	50.9	0.9	100.0

^a Mean length is from mid-eye to fork of tail.

Table 6. Norton Sound Subdistrict 6 chum salmon commercial catch age and sex composition and mean length, 1997.

		Brood Year and (Age Group)			Total
		1993 (0.3)	1992 (0.4)	1991 (0.5)	
Stratum Dates:	6/12-8/23				
Sample Dates:	7/01-8/01				
Sample Size:	286				
Male	Number in Catch	3,166	6,401	413	9,980
	Percent in Catch	18.5	37.3	2.4	58.2
	Mean Length (mm) ^a	593	609	613	
Female	Number in Catch	2,203	4,543	413	7,159
	Percent in Catch	12.9	26.5	2.4	41.8
	Mean Length (mm) ^a	570	589	612	
Total	Number in Catch	5,369	10,944	826	17,139
	Percent in Catch	31.3	63.9	4.8	100.0

^a Mean length is from mid-eye to fork of tail.

Table 7. Unalakleet River chum salmon test fishing catch sample age and sex composition, and mean length, 1997.

		Brood Year and (Age Group)				Total
		1993 (0.3)	1992 (0.4)	1991 (0.5)	1990 (0.6)	
Stratum Dates:	6/15-7/30					
Sample Dates:	6/15-7/30					
Male	Number in Sample	50	115	11	0	176
	Percent in Sample	17.6	40.6	3.9	0.0	62.2
	Mean Length (mm) *	602	625	630		
Female	Number in Sample	24	76	4	3	107
	Percent in Sample	8.5	26.9	1.4	1.1	37.8
	Mean Length (mm) *	588	604	604	598	
Total	Number in Sample	74	191	15	3	283
	Percent in Sample	26.1	67.5	5.3	1.1	100.0

* Mean length is from mid-eye to fork of tail.

Table 8. Norton Sound District chum salmon escapement sample age and sex composition, and mean length, 1997. *

			Brood Year and (Age Group)					Total
			1994 (0.2)	1993 (0.3)	1992 (0.4)	1991 (0.5)	1990 (0.6)	
Kwinluk River Tower	Stratum Dates:	6/18-7/27						
	Sample Dates:	7/04-7/24						
	Sample Size:	468						
	Male	Number in Escapement	0	4,279	3,837	98	49	8,264
		Percent in Escapement	0.0	21.3	19.1	0.5	0.2	41.1
		Mean Length (mm) ^b		565	610	613	610	
	Female	Number in Escapement	0	6,394	5,362	98	0	11,854
		Percent in Escapement	0.0	31.8	26.7	0.5	0.0	58.9
		Mean Length (mm) ^b		545	572	585		
	Total	Number in Escapement	0	10,674	9,198	197	49	20,118
Percent in Escapement		0.0	53.1	45.7	1.0	0.2	100.0	
Niukluk River Tower	Stratum Dates:	6/28-9/09						
	Sample Dates:	8/27-9/07						
	Sample Size:	1,264						
	Male	Number in Escapement	458	14,383	12,951	458	172	28,423
		Percent in Escapement	0.8	25.1	22.6	0.8	0.3	49.6
		Mean Length (mm) ^b	528	588	616	642	603	
	Female	Number in Escapement	1,089	16,790	10,716	287	0	28,881
		Percent in Escapement	1.9	29.3	18.7	0.5	0.0	50.4
		Mean Length (mm) ^b	558	557	579	532		
	Total	Number in Escapement	1,547	31,173	23,667	745	172	57,304
Percent in Escapement		2.7	54.4	41.3	1.3	0.3	100.0	
Snake River Tower	Stratum Dates:	7/07-8/18						
	Sample Dates:	8/01						
	Sample Size:	114						
	Male	Number in Escapement	0	1,801	1,605	0	0	3,406
		Percent in Escapement	0.0	29.3	26.1	0.0	0.0	55.4
		Mean Length (mm) ^b		592	602			
	Female	Number in Escapement	0	1,273	1,489	0	0	2,742
		Percent in Escapement	0.0	20.7	23.9	0.0	0.0	44.6
		Mean Length (mm) ^b		561	586			
	Total	Number in Escapement	0	3,074	3,074	0	0	6,148
Percent in Escapement		0.0	50.0	50.0	0.0	0.0	100.0	
Nome River Weir	Stratum Dates:	7/27-8/27						
	Sample Dates:	7/27-7/31						
	Sample Size:	261						
	Male	Number in Escapement	31	862	1,398	118	0	2,406
		Percent in Escapement	0.6	16.8	27.2	2.3	0.0	46.9
		Mean Length (mm) ^b	555	590	613	620		
	Female	Number in Escapement	0	1,006	1,719	0	0	2,725
		Percent in Escapement	0.0	19.6	33.5	0.0	0.0	53.1
		Mean Length (mm) ^b		564	572			
	Total	Number in Escapement	31	1,868	3,115	118	0	5,131
Percent in Escapement		0.6	36.4	60.7	2.3	0.0	100.0	

* All samples were collected using beach seines.

^b Mean length was from mid-eye to fork of tail.

Table 9. Norton Sound Subdistrict 6 coho salmon commercial catch age and sex composition, and mean length, 1997.

		Brood Year and (Age Group)			
		1994	1993	1992	Total
		(1.1)	(2.1)	(3.1)	
Stratum Dates:	7/17-8/23				
Sample Dates:	8/05				
Sample Size:	160				
Male	Number in Catch	1,932	9,659	580	12,171
	Percent in Catch	7.4	37.0	2.2	46.7
	Mean Length (mm) ^a		589	578	
Female	Number in Catch	772	12,556	579	13,907
	Percent in Catch	3.0	48.1	2.2	53.3
	Mean Length (mm) ^a		595	565	
Total	Number in Catch	2,704	22,215	1,159	26,078
	Percent in Catch	10.4	85.2	4.4	100.0

^a Mean length is from mid-eye to fork of tail.

Table 10. Unalakleet River coho salmon test fishing sample age and sex composition, and mean length, 1997.

		Brood Year and (Age Group)		Total
		1993 (2.1)	1992 (3.1)	
Stratum Dates:	6/12-8/29			
Sample Dates:	8/04-8/29			
Male	Number in Sample	31	3	34
	Percent in Sample	48.5	4.7	53.1
	Mean Length (mm) ^a	589	578	
Female	Number in Sample	29	1	30
	Percent in Sample	45.3	1.6	46.9
	Mean Length (mm) ^a	595	565	
Total	Number in Sample	60	4	64
	Percent in Sample	93.8	6.3	100.0

^a Mean length was from mid-eye to fork of tail.

Table 11. Niukluk River coho salmon beach seine sample age and sex composition, and mean length, 1997.

		Brood Year and (Age Group)			Total
		1994 (1.1)	1993 (2.1)	1992 (3.1)	
Stratum Dates:		6/28-9/09			
Sample Dates:		7/19-8/29			
Male	Number in Catch	4	42	2	48
	Percent in Catch	4.8	50.6	2.4	57.8
	Mean Length (mm) ^a	559	605	535	
Female	Number in Catch	2	33	0	35
	Percent in Catch	2.4	39.8	0.0	42.2
	Mean Length (mm) ^a	555	597		
Total	Number in Catch	6	75	2	83
	Percent in Catch	7.2	90.4	2.4	100.0

^a Mean length was 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, 1997. ^a

Period	Date	Hours Fished	Number of Fishermen	Catch Rate (chum)	Chum ^a			Chinook			Dolly Varden		
					Number	Pounds	Avg. Wt.	Number	Pounds	Avg. Wt.	Number	Pounds	Avg. Wt.
1	10-Jul-97	12	6	13.4	967	7,736	8.0	1	13	13.0	1	10	10.0
2	11-Jul-97	12	1	5.8	70	560	8.0	0			0		
3	14-Jul-97	12	10	9.5	1,135	9,080	8.0	0			1	18	18.0
4	15-Jul-97	12	11	11.7	1,547	12,376	8.0	0			0		
5	17-Jul-97	12	18	21.3	4,095	32,760	8.0	2	23	11.5	29	188	6.5
6	18-Jul-97	12	18	15.4	3,337	26,696	8.0	0			33	261	7.9
7	21-Jul-97	12	24	18.2	5,245	41,960	8.0	4	29	7.3	58	349	6.0
8	22-Jul-97	12	24	12.8	3,684	29,472	8.0	2	24	12.0	31	229	7.4
9	24-Jul-97	12	11	21.7	2,853	22,904	8.0	1	15	15.0	4	31	7.8
10	25-Jul-97	12	20	18.1	4,332	34,656	8.0	2	29	14.5	30	200	6.7
11	28-Jul-97	12	32	21.1	8,106	64,848	8.0	3	41	13.7	76	544	7.2
12	29-Jul-97	12	21	20.8	5,242	41,936	8.0	1	10	10.0	37	263	7.1
13	31-Jul-97	12	31	23.6	8,790	70,320	8.0	2	38	18.0	159	1,146	7.2
14	1-Aug-97	12	36	28.6	12,375	99,000	8.0	3	39	13.0	274	1,939	7.1
15	4-Aug-97	12	10	9.2	1,108	8,864	8.0	0			45	318	7.1
16	5-Aug-97	12	22	15.8	4,178	33,424	8.0	2	30	15.0	204	1,434	7.0
17	6-Aug-97	12	26	22.4	7,003	56,005	8.0	3	66	22.0	191	1,333	7.0
18	7-Aug-97	12	32	18.8	7,234	57,872	8.0	4	69	17.3	100	702	7.0
19	8-Aug-97	12	32	22.5	8,621	68,968	8.0	2	25	12.5	177	1,239	7.0
20	11-Aug-97	12	25	16.2	4,870	38,960	8.0	1	28	28.0	351	2,517	7.2
21	12-Aug-97	12	35	15.7	6,800	52,800	8.0	4	34	8.5	468	3,361	7.2
22	14-Aug-97	12	27	15.1	4,886	39,088	8.0	0			346	2,125	6.1
23	15-Aug-97	12	25	15.7	4,658	37,584	8.0	0			239	1,670	7.0
24	18-Aug-97	12	20	18.7	4,477	35,816	8.0	1	26	26.0	221	1,566	7.1
25	19-Aug-97	12	17	18.6	3,788	30,304	8.0	0			92	662	7.2
26	20-Aug-97	12	22	18.8	4,976	39,808	8.0	1	5	5.0	71	483	6.8
27	21-Aug-97	12	19	16.2	3,699	29,592	8.0	1	8	8.0	26	195	7.5
28	22-Aug-97	12	24	19.5	5,618	44,944	8.0	1	25	25.0	36	242	6.7
29	25-Aug-97	12	17	17.2	3,504	28,032	8.0	0			16	130	8.1
30	26-Aug-97	12	15	10.8	1,957	15,656	8.0	1	19	19.0	2	21	10.5
31	27-Aug-97	12	10	13.4	1,603	12,824	8.0	1	29	29.0	2	27	13.5
32	28-Aug-97	12	11	12.1	1,593	12,744	8.0	1	16	16.0	0		
33	29-Aug-97	12	10	4.3	519	4,152	8.0	1	10	10.0	0		
Totals		396	68	5.3	142,720	1,141,741	8.0	45	649	14.4	3,320	23,200	7.0

^a Chum salmon were weighed during the first commercial opening only. Chum salmon for all other periods were considered to be 8 pounds.

Table 13. Estimates of subsistence harvests of salmon, sheefish and Dolly Varden in the Kotzebue Sound Area, 1997.

Village	Chinook	Chum	Pink	Sockeye	Coho	Total Salmon	Sheefish	Dolly Varden
Ambler	0	2,713	14	5	1	2,733	1,546	^a
Kiana	0	3,064	6	0	138	3,208	1,278	^a
Kobuk	0	629	0	0	0	629	814	^a
Kotzebue	449	26,355	1,083	443	22	28,352	^a	^a
Noatak	4	5,309	0	0	9	5,322	^a	4,763
Noorvik	9	14,323	78	80	677	15,167	5,048	^a
Shungnak	2	5,513	0	0	0	5,515	1,120	^a
Total	464	57,906	1,181	528	847	60,926	9,806	4,763

^a Not surveyed for this species.

Table 14. Kotzebue District chum salmon aerial survey escapement indices and for primary index streams, 1962-1997. Indices listed in this table are the peak survey observed for each tributary during the given year. Current escapement goals are shown in parentheses. ^a

Year	Noatak River (80,000)	Eli River (5,000)	Squirrel River (11,500)	Salmon River (7,000)	Tutuksuk River (2,000)	Upper Kobuk Mainstem (10,000)
1962	168,000	9,080	5,384	12,936	10,841	9,224
1963	1,970 ^b	35 ^b	2,200	1,535	670	4,535
1964	89,798		8,009	9,353	2,685	7,985
1965	6,152 ^b		7,230	1,500 ^b		2,750
1966	101,640	120	1,350	3,957	1,383	1,474
1967	29,120 ^b		3,332	2,116	169	2,495
1968	39,394	5,502	6,746	3,367	823	2,370
1969	33,945	68	6,714	2,561	159	7,500 ^c
1970	138,145		4,418	3,000 ^b	2,000 ^b	13,908
1971	41,056		6,628	5,453	1,384	17,202
1972	64,315 ^b	3,286 ^b	32,126	2,073 ^b		18,155
1973	32,144		12,345	6,891		2,470 ^b
1974	129,640	22,249	32,523	29,190	8,312	28,120
1975	96,509	1,302	32,256	9,721	1,344 ^b	10,702
1976	44,574	1,205	7,229	1,161	758	2,522 ^b
1977	11,221 ^b	742 ^b	1,964 ^b			
1978	37,817	5,525	1,863	814 ^b	368 ^b	1,981 ^b
1979	15,721 ^b	1,794 ^b	1,500 ^b	674 ^b	382 ^b	2,008
1980	164,474	10,277	13,563	8,456	1,165	11,472
1981	116,352		9,854	4,709	1,114	8,648
1982	20,682 ^b	189 ^b	7,690	1,821 ^c	1,322	14,674
1983	79,773	3,044	5,115	1,677	2,637	33,746
1984	67,873	5,027	5,473	1,471	1,132	10,621
1985	45,525 ^b	855 ^b	6,160	2,884	5,089	6,278
1986	37,227 ^b	4,308 ^b	4,982	1,971	4,257	6,015
1987	5,515 ^b	2,780 ^b	2,708 ^c	3,333	206	8,210
1988	45,930 ^b	8,639 ^b	4,848 ^b	6,208	3,122	11,895 ^b
1989						
1990	23,345 ^b	3,000	5,500	6,335	2,275	15,355
1991	82,750	2,940	4,606	5,845	744	24,525
1992	34,335 ^b	701 ^b	2,765	1,345	1,162	11,803
1993	25,415 ^b	4,795	4,463	13,880	1,196	12,158
1994						
1995	159,260	7,860	10,605	13,988	3,901	35,725
1996	306,900	30,040	21,795	21,740	8,200	74,770
1997	^d	^d	4,779 ^b	1,181 ^b	164 ^b	8,513 ^d

^a Three aerial surveys are typically 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.

Table 15. Kotzebue District chum salmon commercial catch age and sex composition, and mean length, 1997.

		Brood Year and (Age Group)					Total
		1994 (0.2)	1993 (0.3)	1992 (0.4)	1991 (0.5)	1990 (0.6)	
Stratum Dates:	7/10-8/29						
Sample Dates:	7/10-8/29						
Sample Size:	4,824						
Male	Number in Sample	1,580	24,175	46,670	8,661	1,152	82,239
	Percent in Sample	1.1	16.9	32.7	6.1	0.8	57.6
	Mean Length (mm) ^a	564.4	610.3	639.4	653.6	663.1	
Female	Number in Sample	467	16,837	36,524	5,863	790	60,481
	Percent in Sample	0.3	11.8	25.6	4.1	0.6	42.4
	Mean Length (mm) ^a	559.9	587.7	608.7	620.1	640.9	
Total	Number in Sample	2,047	41,012	83,195	14,524	1,942	142,720
	Percent in Sample	1.4	28.7	58.3	10.2	1.4	100.0

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

Table 16. Kobuk and Noatak River chum salmon drift gillnet test fishing catch sample age and sex composition, and mean length, 1997.

			Brood Year and (Age Group)					
			1994 (0.2)	1993 (0.3)	1992 (0.4)	1991 (0.5)	1990 (0.6)	Total
Kobuk River	Stratum Dates:	7/09-8/14						
Drift Test	Sample Dates:	7/09-8/14						
Fish								
	Male	Number in Sample	7	112	239	65	2	425
		Percent in Sample	0.9	14.8	31.6	8.6	0.3	56.2
		Mean Length (mm) ^a	562.0	619.4	637.4	646.5	612.5	
	Female	Number in Sample	3	69	209	50	0	331
		Percent in Sample	0.4	9.1	27.6	6.6	0.0	43.8
		Mean Length (mm) ^a	550.0	596.4	613.0	623.8		
	Total	Number in Sample	10	181	448	115	2	756
		Percent in Sample	1.3	23.9	59.3	15.2	0.3	100.0
Noatak River	Stratum Dates:	7/27-8/28						
Drift Test	Sample Dates:	7/27-8/28						
Fish								
	Male	Number in Sample	1	50	78	14	1	144
		Percent in Sample	0.5	23.4	36.4	6.5	0.5	67.3
		Mean Length (mm) ^a		565.0	613.0	635.9	653.2	
	Female	Number in Sample	0	23	42	5	0	70
		Percent in Sample	0.0	10.7	19.6	2.3	0.0	32.7
		Mean Length (mm) ^a		604.3	618.6	624.8		
	Total	Number in Sample	1	73	120	19	1	214
		Percent in Sample	0.5	34.1	56.1	8.9	0.5	100.0

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

Table 17. Kotzebue District chum salmon tributary escapement sample age and sex composition, and mean length, 1997. *

			Brood Year and (Age Group)				Total
			1993 (03)	1992 (04)	1991 (05)	1990 (06)	
Squirrel River Escapement	Stratum Dates:	8/24-8/26					
	Sample Dates:	8/24-8/26					
	Male	Number in Sample	18	45	16	0	79
		Percent in Sample	9.7	24.3	8.7	0.0	42.7
		Mean Length (mm) ^a	623	641	648		
	Female	Number in Sample	31	63	11	1	106
		Percent in Sample	16.8	34.1	5.9	0.5	57.3
		Mean Length (mm) ^a	566	584	565	630	
	Total	Number in Sample	49	108	27	1	185
		Percent in Sample	26.5	58.4	14.6	0.5	100.0
Salmon River Escapement	Stratum Dates:	8/19-8/21					
	Sample Dates:	8/19-8/21					
	Male	Number in Sample	15	46	16	0	77
		Percent in Sample	7.0	21.5	7.5	0.0	36.0
		Mean Length (mm) ^b	616	633	660		
	Female	Number in Sample	32	88	16	1	137
		Percent in Sample	15.0	41.1	7.5	0.5	64.0
		Mean Length (mm) ^b	558	581	595	620	
	Total	Number in Sample	47	134	32	1	214
		Percent in Sample	22.0	62.6	15.0	0.5	100.0
Selby River Escapement	Stratum Dates:	9/02-9/04					
	Sample Dates:	9/02-9/04					
	Male	Number in Sample	29	80	7	0	116
		Percent in Sample	13.2	36.5	3.2	0.0	53.0
		Mean Length (mm) ^a	622	648	674		
	Female	Number in Sample	30	70	3	0	103
		Percent in Sample	13.7	32.0	1.4	0.0	47.0
		Mean Length (mm) ^a	594	596	603		
	Total	Number in Sample	59	150	10	0.0	219
		Percent in Sample	26.9	68.5	4.6	0.0	100.0

^a All samples were collected from carcasses.

^b Mean length was from mid-eye to fork of tail.

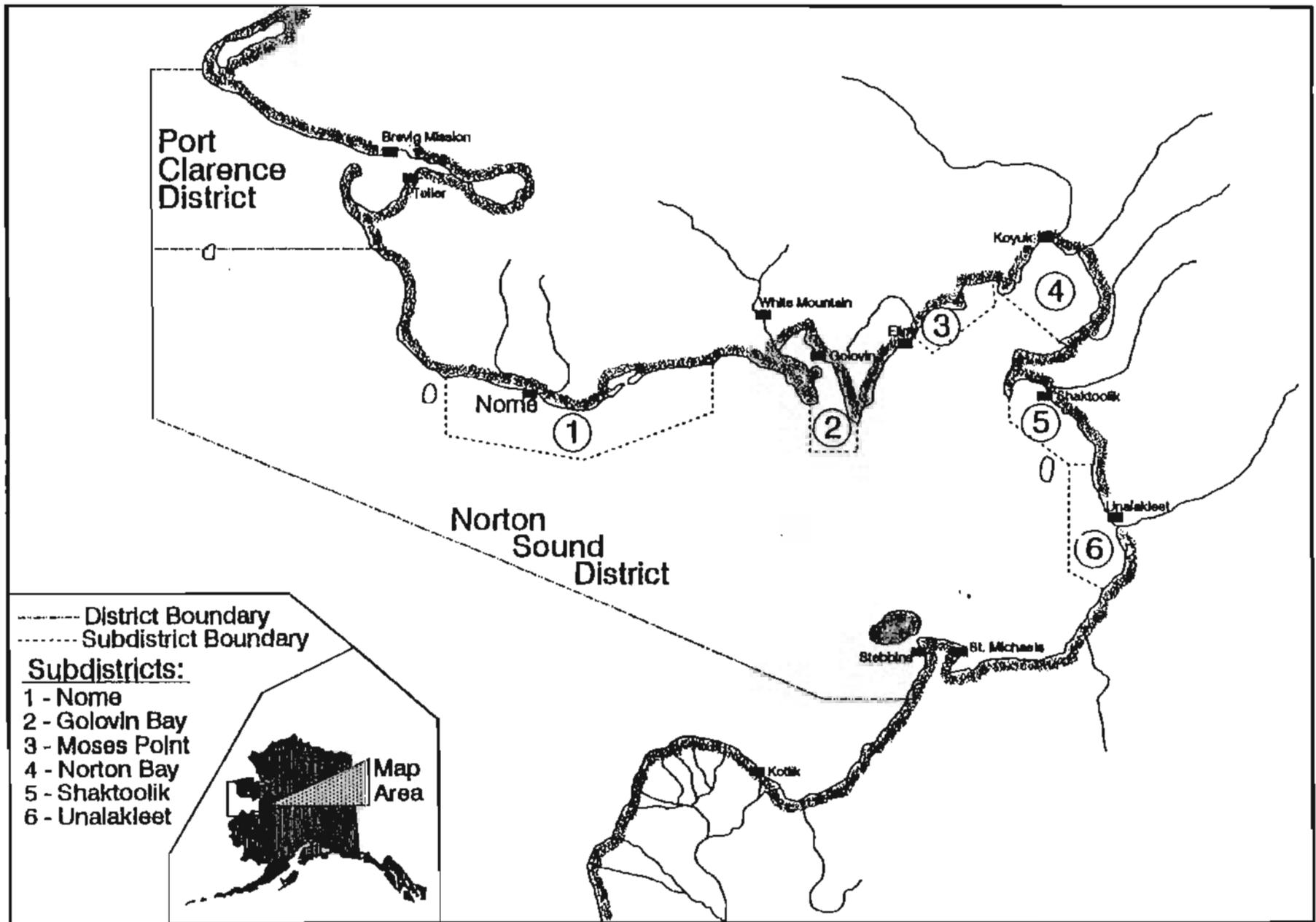
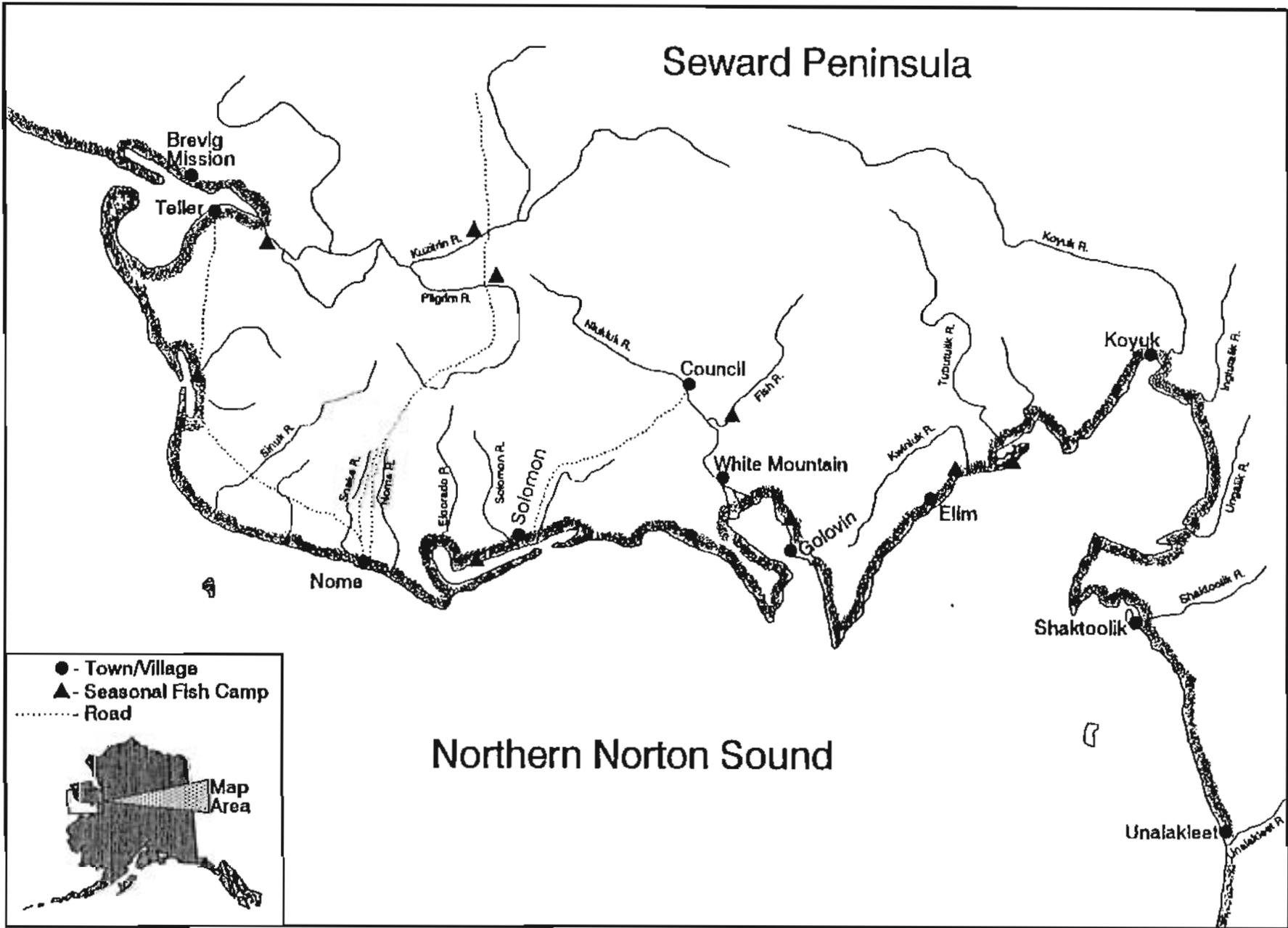


Figure 1. Norton Sound commercial salmon fishing districts.

Seward Peninsula



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Northern Norton Sound

Figure 2. Northern Norton Sound subsistence fishing areas.

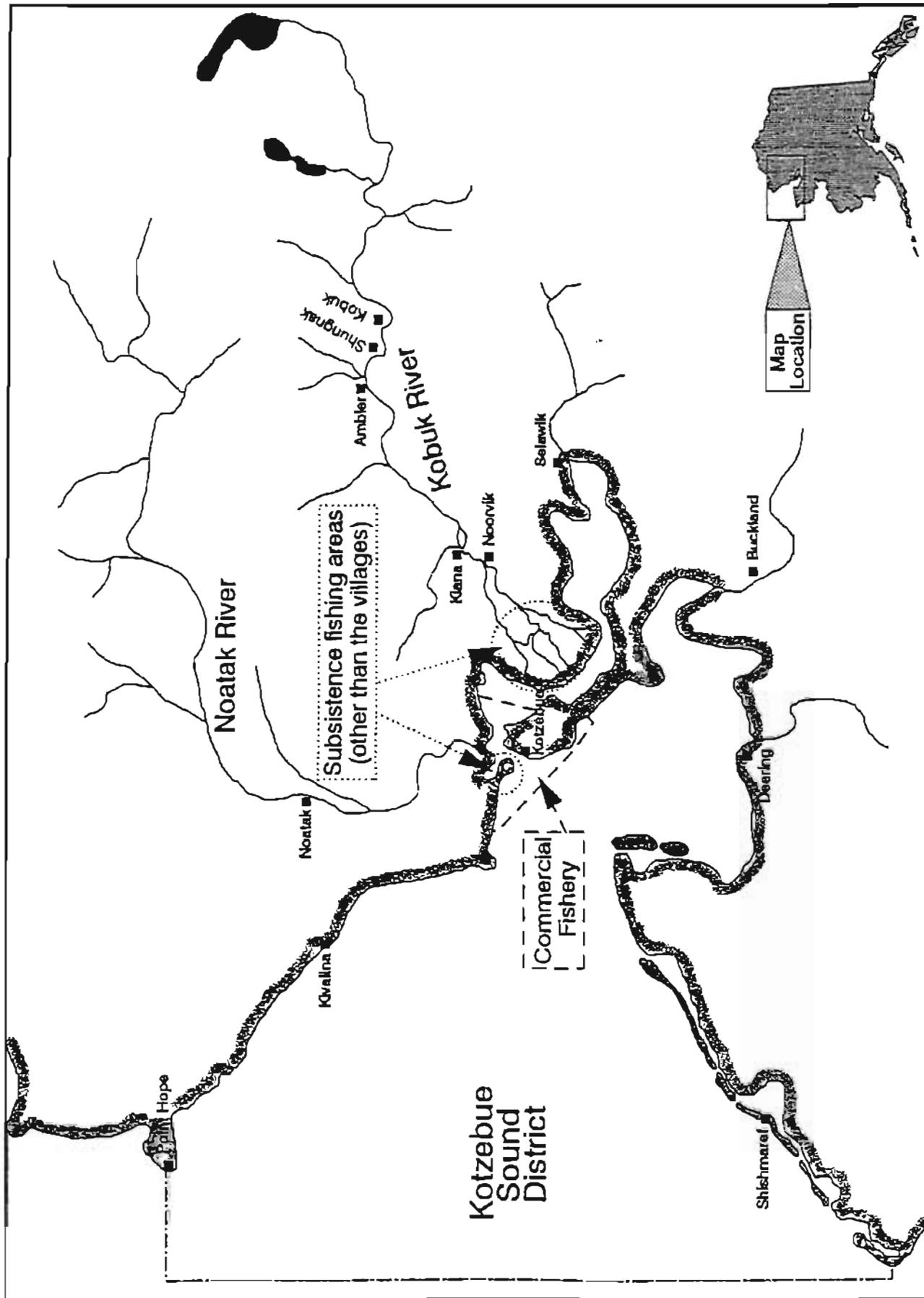


Figure 3. Kotzebue Sound commercial fishing district, villages and subsistence fishing areas.

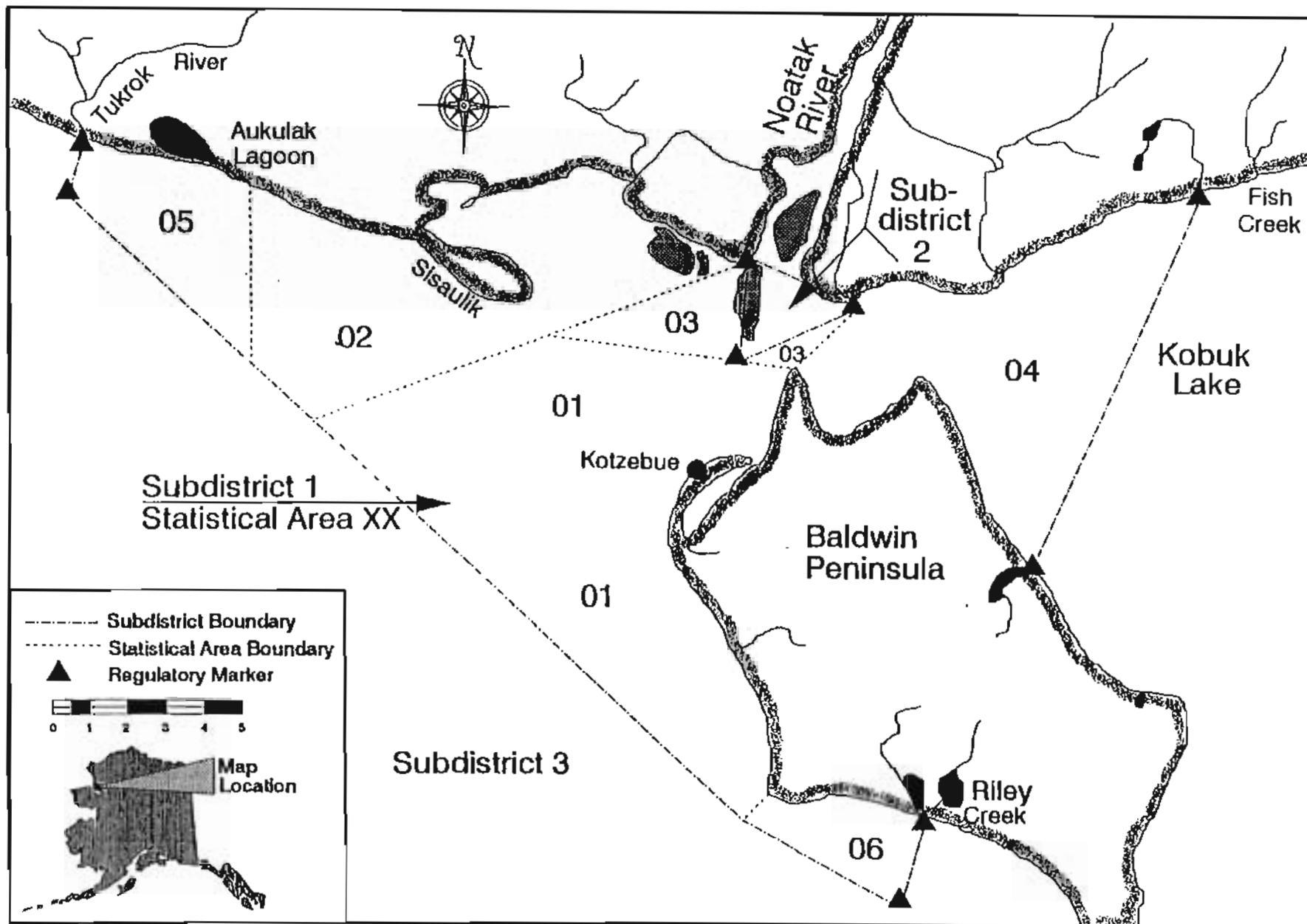


Figure 4. Kotzebue Sound commercial fishing subdistricts and statistical areas.

Appendix Table A.1. Norton Sound Subdistrict 2 commercial salmon catch and effort by period, 1997.

Period Number	Period Dates	Hours Open	Number of Fishermen	Number of Salmon					Total
				Chinook	Sockeye	Chum	Pink	Coho	
1	6/21-6/22	24	2	10	0	218	0	0	228
2	6/26-6/28	48	4	3	0	1,204	0	0	1,207
3	6/29-7/01	42	4	1	0	1,705	0	0	1,706
4	7/21-7/23	48	6	5	2	1,146	0	10	1,163
5	7/24-7/26	48	2	0	0	1,247	0	18	1,265
6	7/29-7/31	48	4	0	0	1,802	0	49	1,851
7	8/01-8/03	48	3	0	0	659	0	24	683
8	8/05-8/06	24	1	0	0	22	20	1	43
Total		330	11	19	2	8,003	20	102	8,146

Appendix Table A.2. Norton Sound Subdistrict 3 commercial salmon catch and effort by period, 1997.

Period Number	Period Dates	Hours Open	Number of Fishermen	Number of Salmon					Total
				Chinook	Sockeye	Chum	Pink	Coho	
1	6/18-6/19	24	16	844	0	166	0	0	1,010
2	8/04-8/06	48	9	0	0	1,042	0	431	1,473
3	8/07-8/08	30	9	0	0	948	0	361	1,309
4	8/11-8/13	48	10	0	0	527	0	617	1,144
Total		150	21	844	0	2,683	0	1,409	4,936

Appendix Table A.3. Norton Sound Subdistrict 4 commercial salmon catch and effort by period, 1997.

Period Number	Period Dates	Hours Fished	Number of Fishermen	Number of Salmon					Total
				Chinook	Sockeye	Chum	Pink	Coho	
1	6/25-6/26	24	9	194	0	531	0	0	725
Total		24	12	194	0	531	0	0	725

Appendix Table A.4. Norton Sound Subdistrict 5 commercial salmon catch and effort by period, 1997.

Period Number	Period Dates	Hours Open	Number of Fishermen	Number of Salmon					Total
				Chinook	Sockeye	Chum	Pink	Coho	
1	6/12-6/13	24	12	510	0	3	0	0	513
2	6/16-6/17	24	13	370	0	13	0	0	383
3	6/19-6/21	48	18	755	0	141	0	0	896
4	6/23-6/25	48	18	594	0	102	0	0	696
5	6/26-6/28	48	6	91	0	56	0	0	147
6	6/30-7/02	48	11	129	0	4,145	0	0	4,274
7	8/04-8/06	48	12	0	0	1,086	0	1,773	2,859
8	8/07-8/09	36	14	0	0	0	0	737	737
9	8/11-8/13	48	13	0	0	133	0	502	635
10	8/14-8/16	36	2	0	0	19	0	201	220
11	8/18-8/20	48	10	0	0	20	0	911	931
12	8/21-8/23	36	7	0	0	29	0	570	599
Total		492	19	2,449	0	5,747	0	4,694	12,890

Appendix Table A.5. Norton Sound Subdistrict 6 commercial salmon catch and effort by period, 1997.

Period Number	Period Dates	Hours Fished	Number of Fishermen	Number of Salmon					Total
				Chinook	Sockeye	Chum	Pink	Coho	
1	6/12-6/13	24	35	1,283	0	22	0	0	1,305
2	6/16-6/17	24	33	1,022	0	38	0	0	1,060
3	6/19-6/21	48	34	3,052	0	221	0	0	3,273
4	6/23-6/25	48	38	2,064	0	206	0	0	2,270
5	6/26-6/28	48	28	973	0	724	0	0	1,697
6	6/30-7/02	48	24	421	0	1,756	0	0	2,177
7	7/03-7/05	48	7	147	0	2,188	0	0	2,335
8	7/07-7/12	120	4	31	0	737	0	0	768
9	7/14-7/16	48	1	9	0	0	0	0	9
10	7/17-7/19	48	2	7	6	674	0	11	698
11	7/21-7/23	48	11	4	4	1,330	0	194	1,532
12	7/28-7/30	48	26	10	17	1,467	0	1,330	2,824
13	7/31-8/02	48	32	18	35	1,898	0	2,760	4,711
14	8/04-8/06	48	38	6	45	2,624	0	6,957	9,632
15	8/07-8/09	48	36	8	5	1,255	0	4,429	5,697
16	8/11-8/13	48	15	1	2	238	0	1,031	1,272
17	8/14-8/16	48	26	3	7	543	0	2,879	3,432
18	8/18-8/20	48	32	3	30	688	0	3,050	3,771
19	8/21-8/23	48	28	5	8	530	0	3,438	3,981
Total		936	57	9,067	159	17,139	0	26,079	52,444

Appendix Table B.1. Niukluk River chum salmon escapement age and sex composition, and mean length, 1997. *

		Brood Year and (Age Group)					Total
		1994 (0.2)	1993 (0.3)	1992 (0.4)	1991 (0.5)	1990 (0.6)	
Stratum Dates:		6/26-7/14		Stratum 1			
Sample Dates:		6/26-7/14					
Sample Size:		273					
Male	Number in Escapement	0	5,996	8,995	231	115	15,337
	Percent of Escapement	0.0	21.1	31.7	0.8	0.4	54.1
	Mean Length (mm) ^b		597	621	650	670	
Female	Number in Escapement	348	5,651	6,919	115	0	13,031
	Percent of Escapement	1.2	19.9	24.4	0.4	0.0	45.9
	Mean Length (mm) ^b	578	589	585	525		
Total	Number in Escapement	346	11,647	15,914	346	115	28,368
	Percent of Escapement	1.2	41.1	56.1	1.2	0.4	100.0
Stratum Dates:		7/17-7/31		Stratum 2			
Sample Dates:		7/17-7/31					
Sample Size:		518					
Male	Number in Escapement	166	6,310	4,850	249	83	11,458
	Percent of Escapement	0.7	27.0	19.9	1.1	0.4	49.1
	Mean Length (mm) ^b	543	588	614	637	535	
Female	Number in Escapement	498	7,472	3,902	0	0	11,872
	Percent of Escapement	2.1	32.0	16.7	0.0	0.0	50.9
	Mean Length (mm) ^b	566	556	575			
Total	Number in Escapement	664	13,782	8,552	249	83	23,330
	Percent of Escapement	2.8	59.1	36.7	1.1	0.4	100.0
Stratum Dates:		8/03-8/29		Stratum 3			
Sample Dates:		8/03-8/29					
Sample Size:		427					
Male	Number in Escapement	164	1,833	435	0	0	2,232
	Percent of Escapement	2.9	29.1	7.8	0.0	0.0	39.8
	Mean Length (mm) ^b	518	674	588			
Female	Number in Escapement	163	2,503	599	109	0	3,374
	Percent of Escapement	2.9	44.6	10.7	1.9	0.0	60.2
	Mean Length (mm) ^b	520	545	567	535		
Total	Number in Escapement	327	4,136	1,034	109	0	5,606
	Percent of Escapement	5.8	73.8	18.4	1.9	0.0	100.0
Stratum Dates:		6/26-8/29		Season Total			
Sample Dates:		6/26-8/29					
Sample Size:		1,258					
Male	Number in Escapement	330	13,939	14,080	480	198	29,027
	Percent of Escapement	0.6	24.3	24.6	0.8	0.3	50.7
	Mean Length (mm) ^b	528	588	616	642	603	
Female	Number in Escapement	1,007	15,626	11,420	224	0	28,277
	Percent of Escapement	1.8	27.3	19.9	0.4	0.0	49.3
	Mean Length (mm) ^b	558	557	579	532		
Total	Number in Escapement	1,337	29,565	25,500	704	198	67,304
	Percent of Escapement	2.3	51.6	44.5	1.2	0.3	100.0

* Escapements were estimated by tower counts.

^b Mean length was from mid-eye to fork of tail.

Appendix Table C.1. Expanded daily and cumulative migration of all salmon species past the Kwiniuk River counting tower, Norton Sound, 1997.

Date	Daily Chum Salmon	Cumulative Chum Salmon	Daily Pink Salmon	Cumulative Pink Salmon	Daily Chinook Salmon	Cumulative Chinook Salmon
18-Jun	0	0	0	0	2	2
19-Jun	140	140	0	0	2	4
20-Jun	80	220	0	0	2	6
21-Jun	50	270	0	0	4	10
22-Jun	146	416	0	0	0	10
23-Jun	373	789	0	0	13	23
24-Jun	600	1,389	0	0	26	49
25-Jun	404	1,793	0	0	8	57
26-Jun	500	2,293	0	0	46	103
27-Jun	199	2,492	0	0	13	116
28-Jun	536	3,028	0	0	53	169
29-Jun	415	3,443	0	0	34	203
30-Jun	814	4,257	3	3	42	245
1-Jul	1,214	5,471	6	9	50	295
2-Jul	644	6,115	46	55	103	398
3-Jul	739	6,854	74	129	126	524
4-Jul	1,864	8,718	64	193	71	595
5-Jul	717	9,435	53	246	79	674
6-Jul	914	10,349	50	296	16	690
7-Jul	1,083	11,432	60	356	35	724
8-Jul	1,252	12,684	70	426	54	778
9-Jul	379	13,062	53	478	5	783
10-Jul	123	13,185	63	542	5	787
11-Jul	103	13,288	0	542	9	796
12-Jul	38	13,327	117	659	0	796
13-Jul	862	14,189	138	797	10	806
14-Jul	639	14,828	75	872	5	811
15-Jul	416	15,244	12	884	0	811
16-Jul	279	15,523	9	893	14	825
17-Jul	1,586	17,109	222	1,115	50	875
18-Jul	330	17,438	294	1,409	14	889
19-Jul	893	18,331	1,251	2,660	22	911
20-Jul	552	18,884	503	3,163	14	925
21-Jul	382	19,266	701	3,864	7	932
22-Jul	212	19,478	898	4,762	0	932
23-Jul	318	19,796	3,136	7,899	8	940
24-Jul	257	20,053	1,354	9,252	24	964
25-Jul	29	20,081	68	9,320	0	964
26-Jul	6	20,087	89	9,409	4	968
27-Jul	31	20,118	126	9,536	4	972

Appendix Table C.2. Daily weir passage of all salmonid species at the Nome River weir, Norton Sound, 1937.

Date	Daily Chum Salmon	Cumulative Chum Salmon	Daily Pink Salmon	Cumulative Pink Salmon	Daily Chinook Salmon	Cumulative Chinook Salmon	Daily Coho Salmon	Cumulative Coho Salmon	Daily Dolly Varden	Cumulative Dolly Varden
27-Jun	10	10	0	0	1	1	0	0	1	1
28-Jun	6	0	3	3	0	1	0	0	0	1
29-Jun	15	15	0	3	0	1	0	0	4	5
30-Jun		15		3		1		0		5
1-Jul	15	30	0	3	0	1	0	0	1	6
2-Jul	8	38	0	3	0	1	0	0	1	7
3-Jul	68	106	0	3	0	1	0	0	3	10
4-Jul	313	419	13	16	0	1	0	0	1	11
5-Jul	3	422	0	16	2	3	0	0	0	11
6-Jul	73	495	9	25	1	4	0	0	0	11
7-Jul	180	675	4	29	0	4	0	0	3	14
8-Jul	48	723	0	29	2	8	1	1	1	15
9-Jul	1	724	0	29	0	6	0	1	0	15
10-Jul	60	784	16	45	0	6	0	1	4	19
11-Jul	70	854	1	46	0	6	0	1	0	19
12-Jul	341	1,195	5	51	1	7	0	1	1	20
13-Jul	10	1,205	0	51	0	7	0	1	2	22
14-Jul	163	1,368	6	57	0	7	0	1	3	25
15-Jul	395	1,763	14	71	0	7	2	3	1	26
16-Jul	274	2,037	126	197	0	7	0	3	13	39
17-Jul	352	2,389	306	503	2	9	0	3	5	44
18-Jul	95	2,484	169	672	4	13	0	3	6	50
19-Jul	64	2,548	12	684	0	13	0	3	0	50
20-Jul	473	3,021	329	1,013	2	15	2	5	2	52
21-Jul	477	3,498	1,520	2,533	1	16	0	5	2	54
22-Jul	262	3,760	801	3,334	0	16	1	6	2	56
23-Jul	4	3,764	1	3,335	1	17	0	6	0	56
24-Jul		3,764		3,335		17		6		56
25-Jul		3,764		3,335		17		6		56
26-Jul	6	3,770	0	3,335	0	17	0	6	0	56
27-Jul	7	3,777	8	3,343	0	17	0	6	0	56
28-Jul	144	3,921	330	3,673	0	17	2	8	1	57
29-Jul	228	4,149	1121	4,794	0	17	5	13	5	62
30-Jul	93	4,242	243	5,037	0	17	0	13	3	65
31-Jul	102	4,344	445	5,482	0	17	0	13	4	69
1-Aug	55	4,399	700	6,182	1	18	3	16	3	72
2-Aug	36	4,435	113	6,295	0	18	2	18	0	72
3-Aug	18	4,453	57	6,352	0	18	1	19	0	72
4-Aug		4,453		6,352		18		19		72
5-Aug	0	4,453	0	6,352	0	18	0	19	0	72
6-Aug	17	4,470	92	6,444	0	18	2	21	0	72
7-Aug	55	4,525	233	6,677	0	18	7	28	4	76
8-Aug	100	4,625	326	7,003	0	18	15	43	12	88
9-Aug	88	4,713	300	7,303	0	18	11	54	48	136
10-Aug	26	4,739	43	7,346	0	18	4	58	188	304
11-Aug	57	4,796	215	7,561	0	18	10	68	1	305
12-Aug	109	4,905	207	7,768	0	18	40	108	210	515
13-Aug	50	4,955	57	7,825	0	18	81	189	79	594
14-Aug	3	4,958	4	7,829	0	18	0	189	23	617
15-Aug	7	4,965	5	7,834	1	19	2	191	45	662
16-Aug	4	4,969	7	7,841	0	19	1	192	6	668
17-Aug	40	5,009	14	7,855	0	19	14	206	97	765
18-Aug	2	5,011	7	7,862	0	19	0	206	30	796
19-Aug	12	5,023	8	7,870	0	19	2	208	128	923
20-Aug	8	5,031	6	7,876	0	19	3	211	207	1,140
21-Aug	47	5,078	29	7,905	1	20	53	264	41	1,181
22-Aug	13	5,091	22	7,927	0	20	7	271	50	1,231
23-Aug	7	5,098	22	7,949	0	20	2	273	6	1,237
24-Aug	14	5,112	34	7,983	1	21	34	307	55	1,292
25-Aug	9	5,121	29	8,012	1	22	11	318	17	1,309
26-Aug	2	5,123	8	8,020	0	22	0	318	0	1,309
27-Aug	8	5,131	15	8,035	0	22	3	321	43	1,352

Shaded areas indicate days when the weir gate was removed due to high water

Appendix Table C.3. Expanded daily and cumulative migration of all salmonid species past the Niukluk River counting tower, Norton Sound, 1997.

Date	Daily Chum Salmon	Cumulative Chum Salmon	Daily Pink Salmon	Cumulative Pink Salmon	Daily Chinook Salmon	Cumulative Chinook Salmon	Daily Coho Salmon	Cumulative Coho Salmon	Daily Dolly Varden	Cumulative Dolly Varden
28-Jun	330	330	0	0	10	10	0	0	24	24
29-Jun	1,965	2,295	52	52	35	45	0	0	89	93
30-Jun	364	2,859	12	64	13	58	0	0	13	107
1-Jul	1,122	3,781	8	72	10	88	0	0	8	115
2-Jul	1,413	5,194	7	79	17	85	0	0	5	120
3-Jul	1,704	6,898	5	85	23	108	0	0	3	123
4-Jul	4,571	11,469	104	189	48	157	0	0	11	133
5-Jul	3,728	15,197	82	271	33	190	0	0	8	139
6-Jul	2,224	17,421	122	392	33	223	2	2	4	143
7-Jul	2,062	19,483	53	446	3	227	0	2	4	147
8-Jul	1,576	21,059	38	484	10	237	4	6	5	153
9-Jul	1,243	22,302	52	536	7	243	3	9	3	156
10-Jul	910	23,213	67	602	3	247	2	11	0	156
11-Jul	1,838	25,051	13	616	3	250	0	11	2	158
12-Jul	1,390	26,441	23	639	0	250	0	11	6	164
13-Jul	901	27,341	23	661	5	255	0	11	3	167
14-Jul	1,028	28,369	75	736	3	258	0	11	0	167
15-Jul	632	29,001	44	780	2	260	2	13	6	173
16-Jul	1,629	30,631	217	997	0	260	1	14	18	181
17-Jul	2,627	33,257	380	1,387	-2	258	0	14	30	221
18-Jul	813	34,070	339	1,726	1	259	2	16	6	227
19-Jul	2,356	36,426	290	2,017	4	263	8	24	6	233
20-Jul	2,904	39,329	669	2,686	2	265	16	40	36	269
21-Jul	1,414	40,744	495	3,180	0	265	8	48	24	293
22-Jul	1,638	42,382	420	3,600	-2	263	4	52	6	299
23-Jul	1,219	43,600	437	4,037	0	263	6	58	6	305
24-Jul	799	44,399	453	4,490	2	265	8	66	6	311
25-Jul	425	44,824	312	4,802	4	269	12	78	18	329
26-Jul	1,053	45,877	391	5,193	2	271	2	80	2	331
27-Jul	709	46,586	503	5,696	0	271	6	86	12	343
28-Jul	1,557	48,143	819	6,515	0	271	4	90	12	355
29-Jul	1,306	49,449	550	7,065	-4	267	8	98	10	365
30-Jul	1,185	50,634	486	7,551	0	267	8	106	24	389
31-Jul	1,064	51,698	656	8,106	0	267	6	112	36	425
1-Aug	208	51,905	154	8,260	-2	265	6	118	38	463
2-Aug	270	52,176	141	8,400	0	265	8	124	16	479
3-Aug	477	52,653	333	8,733	0	265	2	128	13	492
4-Aug	144	52,797	178	8,911	0	265	6	132	10	502
5-Aug	682	53,479	274	9,185	0	265	12	144	8	510
6-Aug	655	54,134	221	9,406	0	265	10	154	14	524
7-Aug	621	54,755	171	9,577	0	265	11	165	20	544
8-Aug	682	55,437	190	9,767	0	265	12	177	488	1,012
9-Aug	316	55,753	210	9,977	-4	261	-1	176	1,033	2,045
10-Aug	262	56,045	177	10,154	0	261	7	183	1,416	3,461
11-Aug	165	56,211	109	10,263	-2	259	15	198	1,477	4,938
12-Aug	102	56,313	120	10,383	0	259	26	224	1,256	6,194
13-Aug	118	56,431	74	10,457	0	259	16	239	1,093	6,994
14-Aug	134	56,564	27	10,484	0	259	5	245	343	7,335
15-Aug	328	56,892	71	10,555	0	259	22	266	196	7,532
16-Aug	43	56,935	23	10,578	0	259	97	363	94	7,626
17-Aug	31	56,967	45	10,623	0	259	69	432	43	7,669
18-Aug	22	56,989	23	10,647	0	259	171	603	66	7,736
19-Aug	-12	56,977	28	10,675	0	259	40	643	146	7,882
20-Aug	7	56,983	22	10,697	0	259	94	738	102	7,983
21-Aug	26	57,009	17	10,714	0	259	149	886	57	8,040
22-Aug	15	57,024	24	10,738	0	259	217	1,103	65	8,105

(continued)

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

Date	Daily Chum Salmon	Cumulative Chum Salmon	Daily Pink Salmon	Cumulative Pink Salmon	Daily Chinook Salmon	Cumulative Chinook Salmon	Daily Coho Salmon	Cumulative Coho Salmon	Daily Dolly Varden	Cumulative Dolly Varden
23-Aug	20	57,044	-46	10,692	0	259	187	1,290	291	6,396
24-Aug	19	57,062	-64	10,628	0	259	421	1,711	29	8,425
25-Aug	62	57,124	-96	10,532	0	259	125	1,836	57	8,482
26-Aug	36	57,160	-4	10,528	0	259	18	1,854	106	8,588
27-Aug	24	57,184	-6	10,522	0	259	183	2,037	284	8,852
28-Aug	13	57,197	-8	10,514	0	259	349	2,386	421	9,274
29-Aug	24	57,221	-10	10,504	0	259	309	2,696	353	9,627
30-Aug	11	57,232	-14	10,490	0	259	250	2,945	161	9,777
31-Aug	9	57,242	-14	10,476	0	259	182	3,127	149	9,927
1-Sep	15	57,257	0	10,478	0	259	179	3,306	213	10,140
2-Sep	15	57,272	0	10,476	0	259	179	3,485	213	10,352
3-Sep	15	57,287	0	10,476	0	259	179	3,664	213	10,565
4-Sep	1	57,288	0	10,476	0	259	98	3,782	18	10,583
5-Sep	10	57,298	0	10,478	0	259	64	3,828	80	10,663
6-Sep	6	57,304	0	10,476	0	259	29	3,854	54	10,717
7-Sep	0	57,304	-4	10,472	0	259	53	3,907	94	10,811
8-Sep	0	57,304	-8	10,464	0	259	58	3,964	195	11,007
9-Sep	0	57,304	2	10,466	0	259	30	3,994	88	11,095

Appendix Table C.4. Expanded daily and cumulative salmon migration past the Snake River counting tower, Norton Sound, 1997.

Date	Daily Chum Salmon	Cumulative Chum Salmon	Daily Pink Salmon	Cumulative Pink Salmon	Daily Chinook Salmon	Cumulative Chinook Salmon	Daily Coho Salmon	Cumulative Coho Salmon
7-Jul	38	38	16	16	0	0	0	0
8-Jul	104	142	10	26	0	0	0	0
9-Jul	178	320	4	30	2	2	0	0
10-Jul	6	326	0	30	0	2	0	0
11-Jul	10	336	0	30	0	2	0	0
12-Jul	1,034	1,370	16	46	6	8	0	0
13-Jul	50	1,420	0	46	0	8	0	0
14-Jul	8	1,428	0	46	0	8	0	0
15-Jul	40	1,468	14	60	0	8	0	0
16-Jul	101	1,569	43	103	0	8	0	0
17-Jul	37	1,606	6	109	0	8	0	0
18-Jul	357	1,963	46	155	2	10	0	0
19-Jul	385	2,349	118	273	0	10	0	0
20-Jul	46	2,395	23	296	0	10	0	0
21-Jul	274	2,669	55	351	0	10	0	0
22-Jul	341	3,010	243	594	0	10	0	0
23-Jul	360	3,370	417	1,011	0	10	0	0
24-Jul	342	3,712	174	1,185	0	10	0	0
25-Jul	341	4,053	343	1,528	0	10	0	0
26-Jul	387	4,440	640	2,168	0	10	0	0
27-Jul	510	4,950	885	3,053	0	10	0	0
28-Jul	314	5,264	696	3,749	0	10	0	0
29-Jul	83	5,347	86	3,835	0	10	0	0
30-Jul	178	5,525	442	4,277	0	10	38	38
31-Jul	52	5,577	84	4,361	0	10	4	42
1-Aug	76	5,653	146	4,507	0	10	0	42
2-Aug	138	5,791	232	4,739	0	10	0	42
3-Aug	59	5,850	212	4,951	0	10	0	42
4-Aug	84	5,934	200	5,151	0	10	0	42
5-Aug	54	5,988	228	5,379	0	10	34	76
6-Aug	54	6,042	228	5,607	0	10	34	110
7-Aug	84	6,106	264	5,871	0	10	34	144
8-Aug	12	6,118	223	6,094	0	10	68	212
9-Aug	20	6,138	166	6,260	0	10	56	268
10-Aug	34	6,172	138	6,398	0	10	133	401
11-Aug	4	6,176	56	6,454	0	10	95	496
12-Aug	4	6,180	62	6,516	2	12	77	573
13-Aug	2	6,182	82	6,598	0	12	221	794
14-Aug	2	6,184	32	6,630	0	12	165	959
15-Aug	0	6,184	30	6,660	0	12	60	1,019
16-Aug	0	6,184	20	6,680	0	12	42	1,061
17-Aug	0	6,184	38	6,718	0	12	60	1,121
18-Aug	0	6,184	24	6,742	0	12	36	1,157

Appendix Table C.5. Expanded daily and cumulative migration of all salmon species past the Eldorado River counting tower, Norton Sound, 1997.

Date	Daily Chum Salmon	Cumulative Chum Salmon	Daily Pink Salmon	Cumulative Pink Salmon	Daily Chinook Salmon	Cumulative Chinook Salmon	Daily Coho Salmon	Cumulative Coho Salmon
29-Jun	228	228	0	0	1	1	0	0
30-Jun	255	483	0	0	6	7	0	0
1-Jul	215	698	0	0	10	17	0	0
2-Jul	596	1,294	1	1	-1	16	0	0
3-Jul	546	1,840	3	4	1	17	0	0
4-Jul	593	2,433	3	7	1	18	0	0
5-Jul	944	3,377	4	11	1	19	0	0
6-Jul	173	3,550	4	15	3	22	0	0
7-Jul	520	4,070	4	19	16	38	0	0
8-Jul	822	4,892	0	19	0	38	0	0
9-Jul	79	4,971	0	19	0	38	0	0
10-Jul	550	5,521	0	19	2	40	0	0
11-Jul	984	6,505	0	19	3	43	0	0
12-Jul	115	6,620	0	19	-4	39	0	0
13-Jul	319	6,939	0	19	2	41	0	0
14-Jul	104	7,043	0	19	4	45	0	0
15-Jul	416	7,459	0	19	-2	43	0	0
16-Jul	941	8,400	0	19	10	53	0	0
17-Jul	335	8,735	0	19	0	53	0	0
18-Jul	816	9,551	7	26	1	54	0	0
19-Jul	880	10,431	11	37	7	61	0	0
20-Jul	1,391	11,822	12	49	8	69	0	0
21-Jul	279	12,101	12	61	9	78	0	0
22-Jul	256	12,357	14	75	8	86	0	0
23-Jul	162	12,519	6	81	3	89	0	0
24-Jul	131	12,650	6	87	4	93	0	0
25-Jul	483	13,133	21	108	1	94	0	0
26-Jul	181	13,314	15	123	1	95	0	0
27-Jul	119	13,433	9	132	1	96	0	0
28-Jul	99	13,532	-1	131	1	97	0	0
29-Jul	23	13,555	-1	130	1	98	0	0
30-Jul	-29	13,526	-2	128	1	99	0	0
31-Jul	24	13,550	-4	124	2	101	0	0
1-Aug	71	13,621	3	127	0	101	0	0
2-Aug	134	13,755	-4	123	-2	99	4	4
3-Aug	-31	13,724	-6	117	-1	98	2	6
4-Aug	58	13,782	0	117	0	98	3	9
5-Aug	59	13,841	36	153	0	98	14	23
6-Aug	59	13,900	36	189	0	98	14	37
7-Aug	57	13,987	47	236	0	98	10	47
8-Aug	112	14,099	94	330	0	98	30	77
9-Aug	164	14,263	582	912	0	98	23	100
10-Aug	13	14,276	40	952	0	98	19	119
11-Aug	2	14,278	-3	949	0	98	0	119
12-Aug	5	14,283	1	950	0	98	6	125
13-Aug	-3	14,280	19	969	0	98	11	136
14-Aug	-4	14,276	36	1,005	0	98	16	152
15-Aug	10	14,286	4	1,009	0	98	6	158
16-Aug	4	14,290	3	1,012	0	98	6	164
17-Aug	6	14,296	0	1,012	0	98	18	182
18-Aug	2	14,298	4	1,016	0	98	6	188
19-Aug	4	14,302	6	1,022	0	98	6	194

Appendix Table C 6. Expanded daily and cumulative migration of all salmon species past the North River counting tower, Norton Sound, 1997.

Date	Daily Chum Salmon	Cumulative Chum Salmon	Daily Pink Salmon	Cumulative Pink Salmon	Daily Chinook Salmon	Cumulative Chinook Salmon	Daily Coho Salmon	Cumulative Coho Salmon
16-Jun	0	0	0	0	2	2	0	0
17-Jun	0	0	0	0	3	5	0	0
18-Jun	0	0	0	0	20	25	0	0
19-Jun	0	0	0	0	0	25	0	0
20-Jun	0	0	0	0	0	25	0	0
21-Jun	2	2	0	0	2	27	0	0
22-Jun	1	3	0	0	4	31	0	0
23-Jun	2	5	0	0	14	45	0	0
24-Jun	2	7	0	0	25	70	0	0
25-Jun	12	19	0	0	80	150	0	0
26-Jun	39	58	0	0	101	251	0	0
27-Jun	49	107	0	0	116	367	0	0
28-Jun	115	222	4	4	326	693	0	0
29-Jun	113	335	20	24	398	1,091	0	0
30-Jun	236	571	123	147	639	1,730	0	0
1-Jul	130	701	208	355	388	2,118	0	0
2-Jul	36	737	131	486	170	2,288	0	0
3-Jul	72	809	206	692	255	2,543	0	0
4-Jul	89	898	314	1,006	213	2,756	0	0
5-Jul	89	987	314	1,320	213	2,969	0	0
6-Jul	131	1,118	520	1,840	181	3,150	0	0
7-Jul	114	1,232	1,228	3,068	70	3,220	0	0
8-Jul	107	1,339	1,580	4,648	84	3,304	0	0
9-Jul	142	1,481	861	5,509	20	3,324	0	0
10-Jul	67	1,548	805	6,114	34	3,358	0	0
11-Jul	50	1,598	316	6,430	21	3,379	0	0
12-Jul	82	1,680	426	6,856	37	3,416	0	0
13-Jul	123	1,803	639	7,495	44	3,460	0	0
14-Jul	70	1,873	471	7,966	48	3,508	0	0
15-Jul	296	2,169	1,044	9,010	76	3,584	0	0
16-Jul	565	2,734	7,694	16,704	106	3,690	3	3
17-Jul	324	3,058	6,626	23,330	140	3,830	6	9
18-Jul	232	3,290	7,088	30,418	49	3,879	9	18
19-Jul	292	3,582	9,965	40,383	60	3,939	17	35
20-Jul	298	3,880	10,540	50,923	59	3,998	19	54
21-Jul	430	4,310	13,976	64,899	50	4,048	26	80
22-Jul	154	4,464	4,750	69,649	30	4,078	20	100
23-Jul	183	4,647	12,273	81,922	38	4,116	40	140
24-Jul	72	4,719	4,992	86,914	15	4,131	18	158
25-Jul	98	4,817	3,608	90,522	19	4,150	34	192
26-Jul	126	4,943	2,982	93,504	8	4,158	22	214
27-Jul	101	5,044	2,455	95,959	2	4,160	32	246
28-Jul	131	5,175	2,404	98,363	9	4,169	55	301
29-Jul	207	5,382	4,343	102,706	11	4,180	94	395
30-Jul	388	5,770	6,182	108,888	6	4,186	174	569
31-Jul	188	5,958	2,334	111,202	0	4,186	156	725
1-Aug	118	6,076	2,516	113,718	0	4,186	266	991
2-Aug	74	6,150	2,772	116,490	-1	4,185	190	1,181
3-Aug	85	6,235	2,842	119,332	0	4,185	157	1,338
4-Aug	81	6,316	2,560	121,892	0	4,185	110	1,448
5-Aug	76	6,392	1,279	123,171	0	4,185	79	1,527
6-Aug	76	6,468	1,058	124,229	0	4,185	113	1,640
7-Aug	36	6,504	506	124,735	0	4,185	98	1,738
8-Aug	52	6,556	696	125,431	0	4,185	120	1,858
9-Aug	56	6,612	711	126,142	0	4,185	334	2,192
10-Aug	51	6,663	645	126,787	0	4,185	340	2,532

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Appendix Table C.6. (Page 2 of 2).

Date	Daily Chum Salmon	Cumulative Chum Salmon	Daily Pink Salmon	Cumulative Pink Salmon	Daily Chinook Salmon	Cumulative Chinook Salmon	Daily Coho Salmon	Cumulative Coho Salmon
11-Aug	44	6,707	564	127,351	0	4,185	333	2,865
12-Aug	33	6,740	423	127,774	0	4,185	344	3,209
13-Aug	38	6,778	172	127,946	0	4,185	290	3,499
14-Aug	15	6,793	43	127,989	0	4,185	195	3,694
15-Aug	15	6,808	43	128,032	0	4,185	195	3,889
16-Aug	15	6,823	43	128,075	0	4,185	195	4,084
17-Aug	15	6,838	43	128,118	0	4,185	195	4,279
18-Aug	15	6,853	43	128,161	0	4,185	195	4,474
19-Aug	15	6,868	43	128,204	0	4,185	195	4,669
20-Aug	9	6,877	-58	128,146	0	4,185	191	4,860
21-Aug	-16	6,861	-146	128,000	0	4,185	166	5,026
22-Aug	14	6,875	-32	127,968	0	4,185	182	5,208
23-Aug	2	6,877	-4	127,964	0	4,185	196	5,404
24-Aug	14	6,891	-20	127,944	0	4,185	225	5,629
25-Aug	13	6,904	-14	127,930	0	4,185	129	5,758
26-Aug	0	6,904	-4	127,926	0	4,185	10	5,768

Appendix Table C.7. Expanded daily and cumulative migration of all salmonid species past the Shaktoolik River counting tower, Norton Sound, 1997.

Date	Daily Chum Salmon	Cumulative Chum Salmon	Daily Pink Salmon	Cumulative Pink Salmon	Daily Chinook Salmon	Cumulative Chinook Salmon	Daily Coho Salmon	Cumulative Coho Salmon	Daily Dolly Varden	Cumulative Dolly Varden
12-Jun	0	0	0	0	0	0	0	0	12	12
13-Jun	0	0	0	0	0	0	0	0	4	16
14-Jun	0	0	0	0	9	9	0	0	38	52
15-Jun	0	0	0	0	55	64	0	0	24	76
16-Jun	0	0	0	0	55	119	0	0	24	100
17-Jun	0	0	0	0	86	215	0	0	12	112
18-Jun	0	0	0	0	38	253	0	0	16	128
19-Jun	20	20	0	0	48	301	0	0	10	138
20-Jun	36	56	0	0	54	355	0	0	4	142
21-Jun	9	65	0	0	3	358	0	0	7	149
22-Jun	372	437	0	0	35	393	0	0	5	154
23-Jun	729	1,166	0	0	63	456	0	0	3	157
24-Jun	120	1,286	0	0	13	469	0	0	28	185
25-Jun	354	1,640	9	9	107	576	0	0	31	216
26-Jun	379	2,019	30	39	86	672	0	0	17	233
27-Jun	422	2,441	48	87	90	762	0	0	0	233
28-Jun	89	2,530	30	117	0	762	0	0	7	240
29-Jun	289	2,799	276	393	125	887	0	0	20	260
30-Jun	444	3,243	516	909	240	1,127	0	0	33	293
1-Jul	527	3,770	305	1,214	143	1,270	0	0	-3	290
2-Jul	1,699	5,469	1,017	2,231	251	1,521	0	0	7	297
3-Jul	1,317	6,786	1,236	3,467	282	1,803	0	0	21	318
4-Jul	870	7,656	1,447	4,914	232	2,036	0	0	27	345
5-Jul	894	8,550	1,977	6,891	256	2,291	0	0	15	360
6-Jul	870	9,420	1,980	8,871	180	2,451	0	0	13	373
7-Jul	840	10,260	1,977	10,848	80	2,611	0	0	6	379
8-Jul	4,212	14,472	9,135	19,983	505	3,016	0	0	24	403
9-Jul	112	14,584	295	20,278	85	3,081	0	0	6	409
10-Jul	157	14,741	218	20,496	61	3,142	0	0	30	439
11-Jul	199	14,940	138	20,632	69	3,211	0	0	64	503
12-Jul	2,082	17,022	1,304	21,936	228	3,439	0	0	221	724
13-Jul	1,707	18,729	1,133	23,069	220	3,659	0	0	169	893
14-Jul	1,323	20,052	951	24,020	204	3,863	0	0	105	998
16-Jul	855	21,007	996	25,016	145	4,008	0	0	143	1,141
16-Jul	3,158	24,165	5,398	30,414	97	4,105	63	63	300	1,441
17-Jul	2,465	26,630	7,488	37,902	111	4,216	60	123	451	1,892
18-Jul	1,835	28,465	9,721	47,623	108	4,324	52	176	639	2,531
19-Jul	2,277	30,742	21,481	69,104	71	4,395	9	184	1,516	4,046
20-Jul	2,351	33,093	139,546	208,650	54	4,449	112	296	1,351	5,397
21-Jul	2,418	35,511	257,801	466,251	27	4,476	207	503	1,178	6,573
22-Jul	1,018	36,529	26,498	492,749	7	4,483	30	533	558	7,131
23-Jul	1,203	37,732	63,392	556,141	14	4,497	85	618	812	7,943
24-Jul	713	38,445	35,252	591,393	8	4,505	73	691	548	8,491
25-Jul	236	38,681	8,535	599,928	0	4,505	69	760	336	8,827
26-Jul	190	38,871	6,083	606,011	0	4,505	249	1,009	449	9,276
27-Jul	272	39,143	5,918	611,929	5	4,510	229	1,238	458	9,734
28-Jul	354	39,497	6,535	617,464	9	4,519	207	1,445	465	10,199
29-Jul	552	40,049	7,228	624,690	0	4,519	195	1,640	752	10,951
30-Jul	1,048	41,097	11,623	636,313	0	4,519	268	1,908	673	11,624
31-Jul	678	41,776	9,133	645,446	0	4,519	234	2,142	760	12,384
1-Aug	291	42,067	7,793	653,239	0	4,519	195	2,337	769	13,143
2-Aug	241	42,308	6,313	659,552	3	4,522	114	2,451	1,089	14,232
3-Aug	168	42,476	4,555	664,107	2	4,524	147	2,598	731	14,963
4-Aug	87	42,563	2,784	666,891	0	4,524	165	2,763	357	15,320
5-Aug	234	42,797	3,416	670,307	0	4,524	118	2,881	461	15,781
6-Aug	107	42,904	2,788	673,095	0	4,524	347	3,228	230	16,011
7-Aug	148	43,052	2,187	675,282	0	4,524	323	3,551	1,112	17,123
8-Aug	171	43,223	1,321	676,603	0	4,524	359	3,910	1,558	18,681
9-Aug	233	43,456	1,321	677,924	0	4,524	395	4,305	444	19,125
10-Aug	166	43,622	948	678,872	0	4,524	244	4,549	440	19,565
11-Aug	90	43,712	584	679,436	0	4,524	78	4,627	426	19,991
12-Aug	71	43,783	517	679,953	0	4,524	280	4,907	344	20,335
13-Aug	87	43,870	302	680,255	0	4,524	380	5,267	46	20,381

Appendix Table C.8. Expanded daily and cumulative salmon migration past the Pilgrim River counting tower, Norton Sound, 1997.

Date	Daily Chum Salmon	Cumulative Chum Salmon	Daily Pink Salmon	Cumulative Pink Salmon	Daily Sockeye Salmon	Cumulative Sockeye Salmon	Daily Chinook Salmon	Cumulative Chinook Salmon	Daily Coho Salmon	Cumulative Coho Salmon
12-Jul	692	692	110	110	0	0	0	0	0	0
13-Jul	632	1,324	132	242	39	39	0	0	0	0
14-Jul	500	1,824	184	426	41	80	53	53	0	0
15-Jul	441	2,265	258	684	56	136	8	61	0	0
16-Jul	481	2,746	266	950	56	192	72	133	0	0
17-Jul	859	3,605	306	1,256	33	225	40	173	0	0
18-Jul	990	4,595	261	1,517	27	252	36	209	0	0
19-Jul	1,273	5,868	587	2,104	154	406	24	233	0	0
20-Jul	734	6,602	288	2,392	49	455	0	233	0	0
21-Jul	533	7,135	288	2,680	15	470	4	237	0	0
22-Jul	523	7,658	261	2,941	79	549	8	245	0	0
23-Jul	448	8,106	222	3,163	37	586	20	265	0	0
24-Jul	585	8,691	247	3,410	40	626	47	312	0	0
25-Jul	443	9,134	154	3,564	14	640	25	337	6	6
26-Jul	799	9,933	198	3,762	19	659	2	339	12	18
27-Jul	106	10,039	47	3,809	12	671	4	343	49	67
28-Jul	118	10,157	61	3,870	126	797	4	347	15	82
29-Jul	146	10,303	76	3,946	29	826	0	347	10	92
30-Jul	664	10,967	392	4,338	140	966	4	351	114	206
31-Jul	459	11,426	284	4,622	78	1,042	3	354	59	265
1-Aug	359	11,785	244	4,866	67	1,109	2	356	42	307
2-Aug	226	12,011	123	4,989	19	1,128	2	358	2	309
3-Aug	236	12,247	60	5,049	-4	1,124	1	359	4	313
4-Aug	189	12,436	62	5,111	4	1,128	0	359	16	329
5-Aug	185	12,621	45	5,156	4	1,132	0	359	17	346
6-Aug	185	12,806	45	5,201	4	1,136	0	359	17	363
7-Aug	185	12,991	45	5,246	4	1,140	0	359	17	380
8-Aug	165	13,156	44	5,290	4	1,144	-1	358	16	396
9-Aug	254	13,410	47	5,337	29	1,173	0	358	36	432
10-Aug	144	13,554	26	5,363	6	1,179	2	360	0	432
11-Aug	46	13,600	28	5,391	0	1,179	-2	358	0	432
12-Aug	160	13,760	5	5,396	8	1,187	3	361	6	438
13-Aug	220	13,980	26	5,422	14	1,201	0	361	0	438
14-Aug	114	14,094	20	5,442	6	1,207	0	361	0	438
15-Aug	160	14,254	93	5,535	19	1,226	-4	357	0	438
16-Aug	103	14,357	21	5,556	0	1,226	-1	356	0	438
17-Aug	10	14,367	4	5,560	6	1,232	0	356	14	452
18-Aug	14	14,381	6	5,566	-2	1,230	0	356	0	452
19-Aug	-1	14,380	-9	5,557	0	1,230	0	356	0	452
20-Aug	38	14,418	0	5,557	4	1,234	0	356	0	452
21-Aug	0	14,418	0	5,557	0	1,234	0	356	0	452

Appendix Table D.1. Kotzebue District chum salmon commercial catch age and sex composition by fishing period, and season summary, 1997.

		Brood Year and (Age Group)					Total
		1994 (0.2)	1993 (0.3)	1992 (0.4)	1991 (0.5)	1990 (0.6)	
Stratum Dates: 07/10/97		Period 1					
Sampling Dates: 07/10/98							
Sample Size: 149							
Female	Percent of Catch	0.0	3.4	28.2	8.7	0.0	40.3
	Number in Catch	0	32	273	84	0	389
Male	Percent of Catch	0.0	4.0	43.0	12.1	0.7	59.7
	Number in Catch	0	39	415	117	6	578
Total	Percent of Catch	0.0	7.4	71.1	20.8	0.7	100.0
	Number in Catch	0	71	688	201	6	967
Stratum Dates: 07/10/97		Period 2 *					
Sampling Dates: 07/10/98							
Sample Size: 149							
Female	Percent of Catch	0.0	3.4	28.2	8.7	0.0	40.3
	Number in Catch	0	2	20	6	0	28
Male	Percent of Catch	0.0	4.0	43.0	12.1	0.7	59.7
	Number in Catch	0	3	30	8	0	42
Total	Percent of Catch	0.0	7.4	71.1	20.8	0.7	100.0
	Number in Catch	0	5	50	15	0	70
Stratum Dates: 7/14/97		Period 3					
Sampling Dates: 7/14/97							
Sample Size: 155							
Female	Percent of Catch	0.0	1.9	28.4	7.7	0.6	38.7
	Number in Catch	0	22	322	88	7	439
Male	Percent of Catch	0.0	9.7	32.9	18.1	0.6	61.3
	Number in Catch	0	110	373	205	7	696
Total	Percent of Catch	0.0	11.6	61.3	25.8	1.3	100.0
	Number in Catch	0	132	696	293	15	1,135
Stratum Dates: 7/15/97		Period 4					
Sampling Dates: 7/15/97							
Sample Size: 152							
Female	Percent of Catch	0.0	3.9	25.0	8.6	0.7	38.2
	Number in Catch	0	61	387	132	10	590
Male	Percent of Catch	0.0	10.5	37.5	13.8	0.0	61.8
	Number in Catch	0	163	580	214	0	957
Total	Percent of Catch	0.0	14.5	62.5	22.4	0.7	100.0
	Number in Catch	0	224	967	346	10	1,547

(continued)

Appendix Table D.1. (page 2 of 9)

		Brood Year and (Age Group)					
		1994	1993	1992	1991	1990	Total
		(0.2)	(0.3)	(04)	(0.5)	(0.6)	
Stratum Dates:	7/17/97						
Sampling Dates:	7/17/97	Period 5					
Sample Size:	151						
Female	Percent of Catch	0.0	3.3	27.8	7.3	0.0	38.4
	Number in Catch	0	136	1,139	298	0	1,573
Male	Percent of Catch	0.0	7.3	41.7	12.6	0.0	61.6
	Number in Catch	0	298	1,709	515	0	2,522
Total	Percent of Catch	0.0	10.6	69.5	19.9	0.0	100.0
	Number in Catch	0	434	2,848	814	0	4,095
Stratum Dates:	7/18/97						
Sampling Dates:	7/18/97	Period 6					
Sample Size:	149						
Female	Percent of Catch	0.0	2.0	33.6	10.1	0.7	46.3
	Number in Catch	0	67	1,120	336	22	1,545
Male	Percent of Catch	0.7	9.4	33.6	8.7	1.3	53.7
	Number in Catch	22	314	1,120	291	45	1,792
Total	Percent of Catch	0.7	11.4	67.1	18.8	2.0	100.0
	Number in Catch	22	381	2,240	627	67	3,337
Stratum Dates:	7/21/97						
Sampling Dates:	7/21/97	Period 7					
Sample Size:	148						
Female	Percent of Catch	0.0	4.7	31.8	3.4	0.0	39.9
	Number in Catch	0	248	1,666	177	0	2,091
Male	Percent of Catch	0.0	10.8	39.2	10.1	0.0	60.1
	Number in Catch	0	567	2,055	532	0	3,154
Total	Percent of Catch	0.0	15.5	70.9	13.5	0.0	100.0
	Number in Catch	0	815	3,721	709	0	5,245
Stratum Dates:	7/22/97						
Sampling Dates:	7/22/97	Period 8					
Sample Size:	153						
Female	Percent of Catch	0.0	10.5	32.0	0.0	6.5	49.0
	Number in Catch	0	385	1,180	0	241	1,806
Male	Percent of Catch	0.0	7.2	39.2	0.0	4.6	51.0
	Number in Catch	0	265	1,445	0	169	1,878
Total	Percent of Catch	0.0	17.6	71.2	0.0	11.1	100.0
	Number in Catch	0	650	2,625	0	409	3,684

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Appendix Table D.1. (page 3 of 9)

		Brood Year and (Age Group)					Total
		1994 (0.2)	1993 (0.3)	1992 (0.4)	1991 (0.5)	1990 (0.6)	
Stratum Dates: 7/24/97							
Sampling Dates: 7/24/97		Period 9					
Sample Size: 153							
Female	Percent of Catch	0.0	5.9	34.0	7.2	0.0	47.1
	Number in Catch	0	168	973	206	0	1,347
Male	Percent of Catch	0.0	11.1	34.0	7.8	0.0	52.9
	Number in Catch	0	318	973	225	0	1,516
Total	Percent of Catch	0.0	17.0	68.0	15.0	0.0	100.0
	Number in Catch	0	487	1,946	430	0	2,863
Stratum Dates: 7/24/97							
Sampling Dates: 7/24/97		Period 10					
Sample Size: 153							
Female	Percent of Catch	0.0	3.5	28.5	12.5	0.7	45.1
	Number in Catch	0	150	1,233	542	30	1,955
Male	Percent of Catch	0.0	6.3	41.0	6.9	0.7	54.9
	Number in Catch	0	271	1,775	301	30	2,376
Total	Percent of Catch	0.0	9.7	69.4	19.4	1.4	100.0
	Number in Catch	0	421	3,008	842	60	4,332
Stratum Dates: 7/28/97							
Sampling Dates: 7/28/97		Period 11					
Sample Size: 144							
Female	Percent of Catch	0.0	1.4	19.6	6.5	0.0	27.5
	Number in Catch	0	117	1,586	529	0	2,232
Male	Percent of Catch	1.4	4.3	55.1	11.6	0.0	72.5
	Number in Catch	117	352	4,464	940	0	5,874
Total	Percent of Catch	1.4	5.8	74.6	18.1	0.0	100.0
	Number in Catch	117	470	6,050	1,469	0	8,106
Stratum Dates: 7/29/97							
Sampling Dates: 7/29/97		Period 12					
Sample Size: 152							
Female	Percent of Catch	0.0	6.6	34.2	4.6	0.0	45.4
	Number in Catch	0	345	1,793	241	0	2,380
Male	Percent of Catch	0.0	10.5	35.5	7.9	0.7	54.6
	Number in Catch	0	552	1,862	414	34	2,852
Total	Percent of Catch	0.0	17.1	69.7	12.5	0.7	100.0
	Number in Catch	0	897	3,656	655	34	5,242

(continued)

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		Brood Year and (Age Group)					Total
		1994 (0.2)	1993 (0.3)	1992 (0.4)	1991 (0.5)	1990 (0.6)	
Stratum Dates: 7/31/97		Period 13					
Sampling Dates: 7/31/97							
Sample Size: 149							
Female	Percent of Catch	0.0	7.4	31.5	7.4	0.0	46.3
	Number in Catch	0	649	2,773	649	0	4,071
Male	Percent of Catch	0.0	7.4	35.6	10.1	0.7	53.7
	Number in Catch	0	649	3,127	885	59	4,719
Total	Percent of Catch	0.0	14.8	67.1	17.4	0.7	100.0
	Number in Catch	0	1,298	5,899	1,534	59	8,790
Stratum Dates: 8/1/97		Period 14					
Sampling Dates: 8/1/97							
Sample Size: 153							
Female	Percent of Catch	0.0	0.7	22.2	4.6	0.0	27.5
	Number in Catch	0	81	2,750	566	0	3,397
Male	Percent of Catch	0.7	20.3	40.5	10.5	0.7	72.5
	Number in Catch	81	2,507	5,015	1,294	81	8,978
Total	Percent of Catch	0.7	20.9	62.7	15.0	0.7	100.0
	Number in Catch	81	2,588	7,765	1,860	81	12,375
Stratum Dates: 8/4/97		Period 15					
Sampling Dates: 8/4/97							
Sample Size: 153							
Female	Percent of Catch	2.6	9.2	29.0	8.5	0.0	49.4
	Number in Catch	29	102	322	95	0	548
Male	Percent of Catch	0.0	20.3	27.8	2.6	0.0	50.6
	Number in Catch	0	225	306	29	0	560
Total	Percent of Catch	2.6	29.5	56.7	11.2	0.0	100.0
	Number in Catch	29	327	628	124	0	1,108
Stratum Dates: 8/5/97		Period 16					
Sampling Dates: 8/5/97							
Sample Size: 141							
Female	Percent of Catch	0.7	14.9	25.5	0.0	2.8	44.0
	Number in Catch	30	622	1,067	0	119	1,837
Male	Percent of Catch	0.0	18.4	30.5	0.0	7.1	56.0
	Number in Catch	0	770	1,274	0	296	2,341
Total	Percent of Catch	0.7	33.3	56.0	0.0	9.9	100.0
	Number in Catch	30	1,393	2,341	0	415	4,178

(continued)

Appendix Table D.1. (page 5 of 9)

		Brood Year and (Age Group)					
		1994	1993	1992	1991	1990	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Stratum Dates:	8/6/97						
Sampling Dates:	8/6/97	Period 17					
Sample Size:	152						
Female	Percent of Catch	0.7	13.2	27.6	0.0	3.3	44.7
	Number in Catch	46	921	1,935	0	230	3,133
Male	Percent of Catch	1.3	21.1	30.3	0.0	2.6	55.3
	Number in Catch	92	1,474	2,119	0	184	3,870
Total	Percent of Catch	2.0	34.2	57.9	0.0	5.9	100.0
	Number in Catch	138	2,396	4,054	0	415	7,003
Stratum Dates:	8/7/97						
Sampling Dates:	8/7/97	Period 18					
Sample Size:	157						
Female	Percent of Catch	0.0	8.3	26.1	4.5	0.6	39.5
	Number in Catch	0	599	1,889	323	46	2,857
Male	Percent of Catch	1.3	19.1	33.1	6.4	0.6	60.5
	Number in Catch	92	1,382	2,396	461	46	4,377
Total	Percent of Catch	1.3	27.4	59.2	10.8	1.3	100.0
	Number in Catch	92	1,981	4,285	783	92	7,234
Stratum Dates:	8/8/97						
Sampling Dates:	8/8/97	Period 19					
Sample Size:	141						
Female	Percent of Catch	0.0	5.7	19.9	2.1	0.0	27.7
	Number in Catch	0	489	1,712	183	0	2,385
Male	Percent of Catch	0.7	26.2	38.3	6.4	0.7	72.3
	Number in Catch	61	2,262	3,302	550	61	6,236
Total	Percent of Catch	0.7	31.9	58.2	8.5	0.7	100.0
	Number in Catch	61	2,751	5,014	734	61	8,621
Stratum Dates:	8/11/97						
Sampling Dates:	8/11/97	Period 20					
Sample Size:	147						
Female	Percent of Catch	0.0	12.2	23.8	2.0	0.0	38.1
	Number in Catch	0	596	1,160	99	0	1,855
Male	Percent of Catch	0.7	21.1	33.3	6.1	0.7	61.9
	Number in Catch	33	1,027	1,623	298	33	3,015
Total	Percent of Catch	0.7	33.3	57.1	8.2	0.7	100.0
	Number in Catch	33	1,623	2,783	398	33	4,870

(continued)

Appendix Table D.1. (page 6 of 9)

		Brood Year and (Age Group)					Total
		1994 (0.2)	1993 (0.3)	1992 (0.4)	1991 (0.5)	1990 (0.6)	
Stratum Dates: 8/12/97		Period 21					
Sampling Dates: 8/12/97							
Sample Size: 148							
Female	Percent of Catch	1.4	25.0	18.2	4.1	0.0	48.6
	Number in Catch	89	1,650	1,204	268	0	3,211
Male	Percent of Catch	0.7	13.5	31.8	5.4	0.0	51.4
	Number in Catch	45	892	2,096	357	0	3,389
Total	Percent of Catch	2.0	38.5	50.0	9.5	0.0	100.0
	Number in Catch	134	2,542	3,300	624	0	6,600
Stratum Dates: 8/14/97		Period 22					
Sampling Dates: 8/14/97							
Sample Size: 151							
Female	Percent of Catch	2.0	22.5	27.2	3.3	0.0	55.0
	Number in Catch	97	1,100	1,327	162	0	2,686
Male	Percent of Catch	4.6	21.2	15.9	3.3	0.0	45.0
	Number in Catch	227	1,035	777	162	0	2,200
Total	Percent of Catch	6.6	43.7	43.0	6.6	0.0	100.0
	Number in Catch	324	2,136	2,103	324	0	4,886
Stratum Dates: 8/15/97		Period 23					
Sampling Dates: 8/15/97							
Sample Size: 152							
Female	Percent of Catch	0.0	22.4	25.0	2.6	0.0	50.0
	Number in Catch	0	1,051	1,175	124	0	2,349
Male	Percent of Catch	2.0	21.7	23.7	2.6	0.0	50.0
	Number in Catch	93	1,020	1,113	124	0	2,349
Total	Percent of Catch	2.0	44.1	48.7	5.3	0.0	100.0
	Number in Catch	93	2,071	2,287	247	0	4,698
Stratum Dates: 8/18/97		Period 24					
Sampling Dates: 8/18/97							
Sample Size: 157							
Female	Percent of Catch	0.0	23.6	27.4	4.5	0.6	56.1
	Number in Catch	0	1,055	1,226	200	29	2,509
Male	Percent of Catch	2.5	18.5	21.7	1.3	0.0	43.9
	Number in Catch	114	827	970	57	0	1,968
Total	Percent of Catch	2.5	42.0	49.0	5.7	0.6	100.0
	Number in Catch	114	1,882	2,196	257	29	4,477

(continued)

Appendix Table D.1. (page 7 of 9)

		Brood Year and (Age Group)					
		1994	1993	1992	1991	1990	Total
		(0.2)	(0.3)	(04)	(0.5)	(0.6)	
Stratum Dates:	8/19/97						
Sampling Dates:	8/19/97	Period 25					
Sample Size:	141						
Female	Percent of Catch	0.7	23.4	18.4	0.7	0.0	43.3
	Number in Catch	27	887	698	27	0	1,639
Male	Percent of Catch	2.1	28.4	23.4	2.1	0.7	56.7
	Number in Catch	81	1,075	887	81	27	2,149
Total	Percent of Catch	2.8	51.8	41.8	2.8	0.7	100.0
	Number in Catch	107	1,961	1,585	107	27	3,788
Stratum Dates:	8/20/97						
Sampling Dates:	8/20/97	Period 26					
Sample Size:	153						
Female	Percent of Catch	0.0	26.8	30.7	0.7	0.7	58.8
	Number in Catch	0	1,333	1,529	33	33	2,927
Male	Percent of Catch	0.7	23.5	16.3	0.7	0.0	41.2
	Number in Catch	33	1,171	813	33	0	2,049
Total	Percent of Catch	0.7	50.3	47.1	1.3	0.7	100.0
	Number in Catch	33	2,504	2,342	65	33	4,976
Stratum Dates:	8/21/97						
Sampling Dates:	8/21/97	Period 27					
Sample Size:	110						
Female	Percent of Catch	0.0	21.8	21.8	4.5	0.0	48.2
	Number in Catch	0	807	807	168	0	1,782
Male	Percent of Catch	5.5	16.4	24.5	4.5	0.9	51.8
	Number in Catch	202	605	908	168	34	1,917
Total	Percent of Catch	5.5	38.2	46.4	9.1	0.9	100.0
	Number in Catch	202	1,412	1,715	336	34	3,699
Stratum Dates:	8/22/97						
Sampling Dates:	8/22/97	Period 28					
Sample Size:	145						
Female	Percent of Catch	1.4	21.4	19.3	0.7	0.0	42.8
	Number in Catch	77	1,201	1,085	39	0	2,402
Male	Percent of Catch	2.8	26.9	24.1	2.8	0.7	57.2
	Number in Catch	155	1,511	1,356	155	39	3,216
Total	Percent of Catch	4.1	48.3	43.4	3.4	0.7	100.0
	Number in Catch	232	2,712	2,441	194	39	5,618

(continued)

Appendix Table D.1. (page 8 of 9)

		Brood Year and (Age Group)					
		1994	1993	1992	1991	1990	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Stratum Dates: 8/25/97							
Sampling Dates: 8/25/97		Period 29					
Sample Size: 150							
Female	Percent of Catch	0.0	24.0	20.0	2.7	0.7	47.3
	Number in Catch	0	841	701	93	23	1,659
Male	Percent of Catch	0.0	29.3	21.3	2.0	0.0	52.7
	Number in Catch	0	1,028	748	70	0	1,845
Total	Percent of Catch	0.0	53.3	41.3	4.7	0.7	100.0
	Number in Catch	0	1,869	1,448	164	23	3,504
Stratum Dates: 8/26/97							
Sampling Dates: 8/26/97		Period 30					
Sample Size: 150							
Female	Percent of Catch	0.7	13.3	29.3	5.3	0.0	48.7
	Number in Catch	13	261	574	104	0	952
Male	Percent of Catch	2.7	20.7	24.7	3.3	0.0	51.3
	Number in Catch	52	404	483	65	0	1,005
Total	Percent of Catch	3.3	34.0	54.0	8.7	0.0	100.0
	Number in Catch	65	665	1,057	170	0	1,957
Stratum Dates: 8/27/97							
Sampling Dates: 8/27/98		Period 31					
Sample Size: 108							
Female	Percent of Catch	2.8	22.2	22.2	3.7	0.0	50.9
	Number in Catch	45	356	356	59	0	816
Male	Percent of Catch	3.7	24.1	17.6	3.7	0.0	49.1
	Number in Catch	59	386	282	59	0	787
Total	Percent of Catch	6.5	46.3	39.8	7.4	0.0	100.0
	Number in Catch	104	742	638	119	0	1,603
Stratum Dates: 8/28/97							
Sampling Dates: 8/28/97		Period 32					
Sample Size: 113							
Female	Percent of Catch	0.0	21.2	26.5	0.0	0.0	47.8
	Number in Catch	0	338	423	0	0	761
Male	Percent of Catch	0.9	35.4	13.3	2.7	0.0	52.2
	Number in Catch	14	564	211	42	0	832
Total	Percent of Catch	0.9	56.6	39.8	2.7	0.0	100.0
	Number in Catch	14	902	634	42	0	1,593

(continued)

Appendix Table D.1. (page 9 of 9)

		Brood Year and (Age Group)					
		1994	1993	1992	1991	1990	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Stratum Dates:	8/29/97						
Sampling Dates:	8/29/97	Period 33					
Sample Size:	145						
Female	Percent of Catch	2.8	31.0	23.4	6.2	0.0	63.4
	Number in Catch	14	161	122	32	0	329
Male	Percent of Catch	1.4	20.7	12.4	2.1	0.0	36.6
	Number in Catch	7	107	64	11	0	190
Total	Percent of Catch	4.1	51.7	35.9	8.3	0.0	100.0
	Number in Catch	21	268	186	43	0	519
Stratum Dates:	7/10/97						
Sampling Dates:	8/29/97	Season Summary					
Sample Size:	4,824						
Female	Percent of Catch	0.3	11.8	25.6	4.1	0.6	42.4
	Number in Catch	467	16,837	36,524	5,863	790	60,481
Male	Percent of Catch	1.1	16.9	32.7	6.1	0.8	57.6
	Number in Catch	1,580	24,175	46,670	8,661	1,152	82,239
Total	Percent of Catch	1.4	28.7	58.3	10.2	1.4	100.0
	Number in Catch	2,047	41,011	83,195	14,524	1,942	142,720

^a Period 2 age and sex composition was based on Period 1 data, due to a lack of commercial samples.

Appendix Table D.2. Kobuk River drift gillnet test fishing chum salmon catch age and sex composition by time period, and season total, 1997.

		Brood Year and (Age Group)					
		1994	1993	1992	1991	1990	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Sampling Dates:	7/09-7/18						
Stratum Dates:	7/09-7/18						
Female	Percent of Sample	0.0	2.5	35.0	12.5	0.0	50.0
	Number in Catch	0	2	28	10	0	40
Male	Percent of Sample	0.0	6.3	31.3	12.5	0.0	50.0
	Number in Catch	0	5	25	10	0	40
Total	Percent of Sample	0.0	8.8	66.3	25.0	0.0	100.0
	Number in Catch	0	7	53	20	0	80
Sampling Dates:	7/19-7/25						
Stratum Dates:	7/19-7/25						
Female	Percent of Sample	0.0	4.8	26.9	8.7	0.0	40.4
	Number in Catch	0	5	28	9	0	42
Male	Percent of Sample	0.0	10.6	33.7	15.4	0.0	59.6
	Number in Catch	0	11	35	16	0	62
Total	Percent of Sample	0.0	15.4	60.6	24.0	0.0	100.0
	Number in Catch	0	16	63	25	0	104
Sampling Dates:	7/26-8/01						
Stratum Dates:	7/26-8/01						
Female	Percent of Sample	0.0	6.5	31.5	8.7	0.0	46.7
	Number in Catch	0	12	58	16	0	86
Male	Percent of Sample	0.0	11.4	34.8	6.0	1.1	53.3
	Number in Catch	0	21	64	11	2	98
Total	Percent of Sample	0.0	17.9	66.3	14.7	1.1	100.0
	Number in Catch	0	33	122	27	2	184
Sampling Dates:	8/02-8/08						
Stratum Dates:	8/02-8/08						
Female	Percent of Sample	0.9	11.3	23.5	5.9	0.0	41.6
	Number in Catch	2	25	52	13	0	92
Male	Percent of Sample	1.4	18.1	29.0	10.0	0.0	58.4
	Number in Catch	3	40	64	22	0	129
Total	Percent of Sample	2.3	29.4	52.5	15.8	0.0	100.0
	Number in Catch	5	65	116	35	0	221

(continued)

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

		Brood Year and (Age Group)					
		1994	1993	1992	1991	1990	Total
		(0.2)	(0.3)	(0.4)	(0.5)	(0.6)	
Sampling Dates:	8/09-8/14						
Stratum Dates:	8/09-8/14						
Female	Percent of Sample	0.6	15.0	25.7	1.2	0.0	42.5
	Number in Catch	1	25	43	2	0	71
Male	Percent of Sample	2.4	21.0	30.5	3.6	0.0	57.5
	Number in Catch	4	35	51	6	0	96
Total	Percent of Sample	3.0	35.9	56.3	4.8	0.0	100.0
	Number in Catch	5	60	94	8	0	167
Sampling Dates:	7/09-8/14						
Stratum Dates:	7/09-8/14						
		Season Total					
Female	Percent of Sample	0.4	9.1	27.6	6.6	0.0	43.8
	Number in Catch	3	69	209	50	0	331
Male	Percent of Sample	0.9	14.8	31.6	8.6	0.3	56.2
	Number in Catch	7	112	239	65	2	425
Total	Percent of Sample	1.3	23.9	59.3	15.2	0.3	100.0
	Number in Catch	10	181	448	115	2	756