

ABUNDANCE, AGE, SEX, AND SIZE STATISTICS FOR
PACIFIC SALMON IN BRISTOL BAY, 1998



By

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ABSTRACT

Abundance, age, sex, and size data are summarized for 1998 Bristol Bay commercial catches and spawning escapements of Pacific salmon *Oncorhynchus* as part of an ongoing project to collect baseline biological information. These data have been used to determine spawner-recruit relationships, establish spawning escapement goals, and forecast the abundance of future returns. Age, sex, and size of sockeye salmon (*O. nerka*) in the commercial catch and escapement were estimated with systematic stratified sampling programs. Sockeye salmon harvests were assigned to river of origin using age and sex composition data combined with escapement information. Total return to each river was estimated by combining river-specific harvests and escapement. Sampling efforts for other salmon species were limited. Escapement of chinook salmon (*O. tshawytscha*), chum salmon (*O. keta*), and coho salmon (*O. kisutch*) was sampled in the Nushagak River. Catches of chinook salmon and chum salmon were sampled in Nushagak and Togiak Districts. In 1998 the total number of sockeye salmon commercially harvested in Bristol Bay was 10.0 million fish and the total escapement to all rivers combined was 8.4 million. A total of 13 age classes were present in the 1998 sockeye salmon return, with age-1.2 (32%), age-1.3 (30%), age-2.2 (13%) and age-2.3 (23%) fish making up 98% of the total return.

KEY WORDS: Bristol Bay, Pacific salmon, *Oncorhynchus*, catch, escapement, age composition, sex composition, size composition

INTRODUCTION

The Bristol Bay Management Area encompasses all waters east of a line from Cape Newenham to Cape Mensehikof (Figure 1). Bristol Bay supports harvests of five species of Pacific salmon including the largest sockeye salmon (*Oncorhynchus nerka*) fishery in the world.

The management area is divided into five fishing districts for the regulation of commercial salmon fisheries: Naknek-Kvichak, Egegik, Ugashik, Nushagak, and Togiak Districts (Figure 1). Naknek-Kvichak, Egegik, and Ugashik Districts are referred to as the Eastside fishery, and Nushagak and Togiak Districts are referred to as the Westside fishery. Rivers that produce major salmon runs include Kvichak, Naknek, Branch, Egegik, Ugashik, Wood, Igushik, Nushagak, and Togiak Rivers. Bristol Bay sockeye salmon are intercepted in the North Alaska Peninsula fishery (Geiger 1989, Swanton and Murphy 1992), and the South Alaska Peninsula June fishery (Gilbert 1924, Gilbert and Rich 1926, Eggers et al. 1988). At this time the magnitude of interceptions of Bristol Bay salmon in other fisheries are unknown.

The Alaska Department of Fish and Game (ADF&G) conducts a variety of programs that supply the information used to manage Bristol Bay salmon fisheries. These programs include (1) compiling catch statistics, (2) sampling catches for age, sex, and size composition, (3) counting major spawning escapements, and (4) sampling escapement for age, sex, and size composition. Data generated from these programs are used to manage fisheries in season, establish optimum escapement goals, and forecast the abundance of future returns. This report summarizes 1998 commercial catch, escapement, age, sex, and size data for Bristol Bay salmon. Such data for Bristol Bay salmon have been summarized annually since 1972 (McCurdy and Paulus 1972; Paulus and Nelson 1972a, 1972b; McCurdy and Schroeder 1972; Krasnowski and Randall 1975a, 1975b, 1976; Randall and Yuen 1978; Meacham and Randall 1979; Meacham and Nelson 1980; Yuen et al. 1981; Yuen and Nelson 1983, 1984a, 1984b, 1985, 1987; Yuen and Meacham 1983; Yuen et al. 1984; Yuen 1984; Yuen et al. 1986; Cross and Stratton 1988; Yuen and Bill 1989a, 1989b, 1990; Stratton 1990, 1991; Stratton and Cross 1990; Stratton and Crawford 1992, 1994, Menard 1997, Gray 1998a, 1998b). Preliminary 1999 data are included in some of the tables in this report.

METHODS

Catch Estimation

Commercial catches in numbers of salmon by Bristol Bay districts were taken from summaries of fish tickets (sales receipts given to fishers by buyers at the time of delivery). The final catch numbers used for this report were from final fish ticket reports compiled by Keith Weiland, Egegik/Ugashik Area

Management Biologist. The number of Bristol Bay sockeye salmon caught in the North Alaska Peninsula fishery is unknown. All sockeye caught during the South Alaska Peninsula fishery around Unimak and Shumagin Islands in June were assumed to be of Bristol Bay origin. A 1987 tagging study (Eggers et al. 1988) indicated that sockeye stocks other than Bristol Bay composed a small percentage of the South Alaska Peninsula harvest at this time of the year.

Escapement Enumeration

Escapements of salmon in Bristol Bay in 1998 were estimated with various methods by staff from the Division of Commercial Fisheries (ADF&G 1999). Sockeye salmon escapement estimates were based on visual counts made from counting towers on the banks of the Kvichak, Naknek, Egegik, Ugashik, Wood, Igushik, and Togiak rivers. In addition, in 1998 there was a counting tower on the Nuyakuk River operated by ADF&G with assistance from University of Washington personnel. The counting tower on the Kulukak River, previously operated by the United States Fish and Wildlife Service, was not operated in 1998. At all tower projects, counts were made for 10 min every hour on each river bank. Counting began on one bank at the start of each hour, followed by counting on the opposite bank. Each 10-min count was expanded into an hourly estimate (x6) and these were added together to arrive at a total daily escapement. Escapement to several river systems and areas below the counting towers was estimated from aerial surveys (Branch and Snake rivers, as well as areas in Egegik, Ugashik, and Togiak Districts; Weiland et al. 1999). Side-scanning sonar located in the lower Nushagak River near Portage Creek was used to estimate salmon escapements for the entire Nushagak River drainage (Miller 1999).

Age, Sex, and Size Estimation

Ages for all 1998 Bristol Bay salmon runs were determined by examining scales (Mosher 1968), except ages of sockeye salmon spawning in Branch River, which were determined from otoliths (Bilton and Jenkinson 1968). European notation (e.g., 2.2; Koo 1962) was used to record ages: numerals preceding the decimal refer to number of freshwater annuli, numerals following the decimal refer to number of marine annuli. Total age of the fish from time of egg deposition is the sum of these numbers plus one.

Scales were collected from the left side of the fish approximately two rows above the lateral line in the area crossed by a diagonal from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin (INPFC 1963). Scales were mounted on gum cards and impressions made on cellulose acetate cards with a heated hydraulic press (Clutter and Whitesel 1956). Salmon were measured to the nearest mm from the middle-of-the-eye to the fork-of-the-tail. Weights were taken to the nearest 0.1 kg using a Pesola spring scale. Sex was determined from visually examining external morphology of the fish.

Catch sampling was stratified spatially by district; escapement sampling was stratified by major drainage. The number of time strata sampled differed among fisheries and rivers. District catches of sockeye salmon were usually sampled each fishing period during the emergency order period for 1998 (1 June to 17 July). For dates not sampled, the age composition of sockeye salmon harvested was assumed to be the same as that estimated for the most recent catch date. Chinook and chum salmon catches were sampled less frequently than sockeye salmon. Coho salmon catches were not sampled.

Sample size goals for sockeye and chinook salmon catches were set at 500 fish per species per time and area stratum. Chum salmon catch sample goals were set at 400 individuals per stratum. Sample size goals for each tower project are 400 – 500 per time stratum. These may be adjusted annually to account for high numbers of unreadable scales encountered in an area the previous year. These sample sizes were selected to ensure that sufficient samples would be collected, such that with repeated sampling, each major age group in each stratum would be estimated within 5% of its true value 90% of the time, based on Thompson's (1987) work on the "worst-case" parameter value for the multinomial distribution.

For the escapement, three time strata were desired for sockeye salmon, making the season goal 1200 – 1500 depending on the incidence of unreadable scales encountered the previous year. In general, the first strata represents the early part of the run and encompasses about 10 days, the middle strata represents the peak of the run and encompasses about 5 days, and the final strata represents the end of the run and encompasses about 10 days. Samples from successive dates were combined into the same time stratum when significant ($\alpha = 0.05$) differences in age composition among consecutive dates were not found.

Estimation of Sockeye Salmon Catch Composition

Sockeye salmon harvested in Egegik and Ugashik Districts were assumed to be destined for Egegik and Ugashik Rivers, respectively. Similarly, sockeye salmon caught in Togiak River Section of Togiak District were assumed to be destined for Togiak River. Sockeye salmon harvested in other sections of Togiak District were assumed to be returning to systems not monitored for escapement or age composition and were not assigned to Togiak River. All sockeye salmon caught in set gillnets fished from Igushik Beach were included in total run estimates for Igushik River. Sockeye salmon harvested in Naknek-Kvichak District were assumed to be returning to Kvichak, Branch, and Naknek Rivers with the exception of the Naknek River Special Harvest Area catch (i.e., inside the Naknek River), which was apportioned entirely to the Naknek River. Sockeye harvested in Nushagak District were assumed to be returning to Wood, Igushik and Nushagak rivers with the exception of the Wood River Special Harvest Area catch (i.e., inside the Wood River), which was apportioned entirely to the Wood River. Sockeye salmon caught in Naknek-Kvichak and Nushagak Districts were assigned to a natal river under the assumption that age and sex proportion within the district catch was the same as within the combined escapement:

$$\hat{C}_{ijk} = \hat{C}_{jk} \frac{\hat{E}_{ijk}}{\sum_{i=1}^n \hat{E}_{ijk}} \quad 1$$

where:

\hat{C}_{ijk} = estimated catch of sockeye salmon from river i age j and sex k

\hat{C}_{jk} = estimated district catch sockeye salmon age j and sex k , and

\hat{E}_{ijk} = estimated escapement to river i of sockeye salmon age j and sex k , and

n = number of rivers contributing to the mixed stock catch.

This has been referred to as the standard method (STD) and has been used to construct all brood tables in this report.

RESULTS

Bristol Bay Sockeye Run

Bay-Wide Summary

An estimated 19,662,531 Bristol Bay sockeye salmon returned from sea in 1998 (inshore and offshore harvests and escapement); 11,259,152 were caught and 8,403,379 escaped the fishery to spawn (Table 1). An estimated 1,301,020 Bristol Bay sockeye salmon were harvested in the South Peninsula fishery in June 1998, leaving a total inshore return of 18,361,511 sockeye salmon. Of this total inshore return, 9,958,132 sockeye salmon were caught (does not include Matogak, Osviak, Kulukak, and Cape Pierce section harvests of the Togiak District which accounted for 77,434 sockeye salmon in 1998), representing an inshore harvest rate of 54%. Ninety-nine percent of the harvest (9,958,132 fish) was assigned to a river of origin based on 21,517 fish sampled and using the methods described above (Table 2). The 1998 inshore return was 55% smaller than the recent 10-year average return and the 1998 harvest was 65% smaller than the recent 10-year average harvest (Table 3).

The mean length of all sockeye salmon returning to Bristol Bay (catch plus escapement) in 1998 was 531 mm and the mean weight was 2.5 kg (Table 2). The mean length and weight of the 1998 return were virtually identical to the recent 10-year average (Table 4). Size-at-age information for the most common ages of Bristol Bay sockeye salmon is summarized in Table 4.

Results from catch and escapement sampling for each district and river system are described below. Appendices A.1 – A.23 summarize sampling results by sample period and apportion catch and escapement to ages. Brood year tables summarize the total sockeye salmon return from escapement by brood year for nine Bristol Bay river systems (Appendices B.1 – B.9). These return-per-spawner data are used to forecast future returns of Bristol Bay sockeye salmon.

The South Alaska Peninsula harvest is composed of fish caught during June fisheries around Unimak and Shumagin Islands. In 1998, the total number of sockeye salmon commercially harvested in the South Alaska Peninsula fisheries was 1,301,020 fish. The South Peninsula harvest was composed of age-1.3 (38.8%), age-2.3 (35.8%), age-1.2 (15.8%), and age-2.2 (9.6%) fish (Table 1). This harvest is incorporated into the Bristol Bay brood tables according to the proportion of the specific age groups in the inshore returns to individual districts relative to the total inshore return to Bristol Bay.

Naknek-Kvichak District Sockeye Run (Naknek, Kvichak and Branch rivers)

An estimated 6,345,885 sockeye salmon returned to the Naknek-Kvichak District in 1998; 2,595,439 were caught and 3,750,446 escaped the fishery to spawn (Table 5). The estimated total return (catch plus escapement) to the district in 1998 was 48% smaller than the recent 10-year average and the total harvest was 75% smaller than the recent 10-year average (Table 6). The commercial harvest rate in the district was 41%, which was lower than the last 10 year average of 60%. Age composition of the total return of Naknek-Kvichak stocks (based on catch and escapement) were dominated by age-1.2 fish (38%), followed by age-1.3 (35%), age 2.2 (18%) and age 2.3 (8%) fish (Table 7). The district commercial catch was composed of age-1.3 (49%), age-1.2 (23%), age-2.2 (17%), and age-2.3 (11%) fish. Mean length of sockeye salmon harvested in the district was 546 mm and mean weight was 2.7 kg (Appendix A.1). Weighted mean length of sockeye salmon in the combined escapements was 517 mm (Appendices A.2 and A.3).

Kvichak River. An estimated 3,365,368 Kvichak River sockeye salmon returned to Bristol Bay in 1998; 1,069,294 were caught and 2,296,074 escaped the fishery to spawn (Table 5). This represented a harvest rate of 32%. Age composition of the Kvichak return was dominated by age-1.2 fish (52%), followed by age-1.3 (24%), age-2.2 (18%), and age-2.3 (5%) fish (Table 7). The Kvichak River escapement was made up of primarily age-1.2 fish (61%), followed by age-2.2 (17%), age-1.3 (49%), and age-2.3 (4%) fish. Mean length of sockeye salmon in the Kvichak escapement was 519 mm (Appendix A.2).

Branch River. An estimated 396,977 Branch River sockeye salmon returned to Bristol Bay in 1998; 144,777 were caught and 252,200 escaped the fishery to spawn (Table 5). This represented a harvest rate of 37%. Age composition of the Branch River return was primarily age-1.2 (39%) and age-1.3 fish (37%), followed by age-2.2 fish (20%; Table 7). Branch River escapement was not sampled for length.

Naknek River. An estimated 2,583,540 Naknek River sockeye salmon returned to Bristol Bay in 1998; 1,381,368 were harvested and 1,202,172 escaped the fishery to spawn (Table 5). This represented a harvest rate of 54%. Age composition of the Naknek return (catch plus escapement) was dominated by age-1.3 fish (49%), followed by age-2.2 fish (20%), and age-1.2 fish (19%; Table 7). Age composition of the Naknek River escapement was primarily age-1.3 fish (42%), followed by age-1.2 fish (24%), and age-2.2 fish (19%). Mean length of sockeye salmon in the Naknek River escapement was 512 mm (Appendix A.3).

Egegik District Sockeye Run

An estimated 4,639,783 sockeye salmon returned to the Egegik District in 1998; 3,528,845 were caught and 1,110,938 escaped the fishery to spawn (Table 5). The estimated total return to the district (catch plus escapement) in 1998 was the smallest since 1982 as was the total harvest (Table 6). The commercial harvest rate in the district was 76%, the second lowest harvest rate in the last 10 years. Age composition of the return to the district (based on catch and escapement) was dominated by age-2.3 fish (60%), followed by age-2.2 (18%), and age-1.3 (11%) fish (Table 7). The district commercial catch was composed of age-2.3 (62%), age-2.2 (16%), age-1.3 (13%), and age-1.2 (7%) fish. Mean length of sockeye salmon harvested in the district was 557 mm and mean weight was 2.6 kg (Appendix A.4). The age composition of the escapement was dominated by age-2.3 (54%) fish, followed by age-2.2 (25%), and age 1.2 (9%) fish (Table 7). Mean length of sockeye salmon in the escapement was 529 mm (Appendix A.5).

Ugashik District Sockeye Run

An estimated 1,655,092 sockeye salmon returned to the Ugashik District in 1998; 730,239 were caught and 924,853 escaped the fishery to spawn (Table 5). The estimated total return to the district (catch plus escapement) in 1998 was or the smallest since 1978 and the total harvest was the smallest since 1979 (Table 6). The commercial harvest rate in the district was 44%, the lowest harvest rate since 1980. Age composition of the return to the district (based on catch and escapement) was dominated by age-2.3 fish (45%), followed by age-1.2 (20%), and age-1.3 (19%) fish (Table 7). The district commercial catch was composed of age-2.3 (63%), age-1.3 (18%), age-2.2 (10%), and age-1.2 (8%) fish. Mean length of sockeye

salmon harvested in the district was 566 mm and mean weight was 2.9 kg (Appendix A.6). The age composition of the escapement was dominated by age-2.3 (30%) fish, followed by age-1.2 (29%), and age 1.3 (20%) fish (Table 7). Mean length of sockeye salmon in the escapement was 525 mm (Appendix A.7).

Nushagak District Sockeye Run (Wood, Igushik, and Nushagak rivers)

An estimated 5,421,143 sockeye salmon returned to the Nushagak District in 1998; 2,990,597 were caught and 2,430,546 escaped the fishery to spawn (Table 5). The estimated total return (catch plus escapement) to the district in 1998 was 17% smaller than the recent 10-year average and the total harvest was 29% smaller than the recent 10-year average (Table 6). The commercial harvest rate in the district was 55%, which was lower than the last 10 year average of 64%. Age composition of the return to the district (based on catch and escapement) was dominated by age-1.2 fish (55%), followed by age-1.3 (39%), age 2.2 (3%) and age 2.3 (1%) fish (Table 7). The district commercial catch was composed of age-1.2 (56%), age-1.3 (36%), age-2.2 (3%), and age-2.3 (2%) fish. Mean length of sockeye salmon harvested in the district was 510 mm and mean weight was 2.2 kg (Appendix A.8). Weighted mean length of sockeye salmon in the combined escapements was 512 mm (Appendix A.10 – A.12).

Wood River. An estimated 3,901,040 Wood River sockeye salmon returned to Bristol Bay in 1998; 2,145,272 were caught and 1,755,768 escaped the fishery to spawn (Table 5). This represented an inshore harvest rate of 55%. Age composition of the Wood River return (based on catch and escapement) was dominated by age-1.2 fish (68%), followed by age-1.3 (27%), age-2.2 (3%), and age-2.3 (1%) fish (Table 7). The Wood River escapement was made up of primarily age-1.2 fish (67%), followed by age-1.3 (29%), age-2.2 (3%), and age-2.3 (<1%) fish. Mean length of sockeye salmon in the Wood escapement was 503 mm (Appendix A.10).

Igushik River. An estimated 571,145 Igushik River sockeye salmon returned to Bristol Bay in 1998; 355,241 were harvested and 215,904 escaped the fishery to spawn (Table 5). This represented an inshore harvest rate of 62%. Age composition of the Igushik return (based on catch and escapement) was dominated by age-1.3 fish (51%), followed by age-1.2 fish (41%; Table 7). Age composition of the Igushik River escapement was primarily age-1.3 fish (57%), followed by age-1.2 fish (38%). Mean length of sockeye salmon in the Igushik River escapement was 521 mm (Appendix A.11).

Nushagak River. An estimated 948,958 Nushagak River sockeye salmon returned to Bristol Bay in 1998; 490,084 were harvested and 458,874 escaped the fishery to spawn (Table 5). This represented an inshore harvest rate of 52%. Age composition of the Nushagak return (based on catch and escapement) was dominated by age-1.3 fish (77%), followed by age-1.2 fish (8%; Table 7). Age composition of the Nushagak River escapement was primarily age-1.3 fish (82%), followed by age-1.2 fish (8%). Mean length of sockeye salmon in the Nushagak River escapement was 541 mm (Appendix A.12).

An estimated 146,250 sockeye salmon passed the Nuyakuk counting tower in 1998. Age composition of the Nuyakuk River escapement was predominantly age-1.3 (85%) and age-1.2 (8%) fish and the mean length was 563 mm (Appendix A.13).

Togiak and Kulukak Section Sockeye Run

An estimated 288,488 sockeye salmon returned to the Togiak River Section, Togiak District in 1998; 113,012 were caught and 175,476 escaped the fishery to spawn (Table 5). The estimated total return to the section (catch plus escapement) in 1998 was 47% smaller than the recent 10-year average and the total harvest was 32% smaller than the recent 10-year average (Table 6). The commercial harvest rate in the district was only 39%, second to 1997 as the lowest since 1959. Age composition of the return to the district (based on catch and escapement) was dominated by age-1.3 fish (73%), followed by age-1.2 (15%), and age-2.3 (9%) fish (Table 7). The district commercial catch was composed of age-1.3 (83%), age-1.2 (8%), and age-2.3 (6%) fish. Mean length of sockeye salmon harvested in the district was 550 mm and mean weight was 3.0 kg (Appendix A.14). The age composition of the escapement was dominated by age-1.3 (66%) fish, followed by age-1.2 (19%), and age 2.3 (12%) fish (Table 7). Mean length of sockeye salmon in the escapement was 551 mm (Appendix A.16).

Age, sex, and size composition data for the sockeye salmon commercial harvest, Kulukak Section, Togiak District is presented in Appendix A.15.

Bristol Bay Chinook Run

In 1998, a total of 134,760 chinook salmon were harvested commercially in Bristol Bay (ADF&G 1999). Most (131,210) were caught in the Nushagak and Togiak Districts. The age and size composition for Nushagak District and Togiak River Section catches and escapement to the Nushagak River were estimated.

Nushagak District Chinook Run

An estimated 117,079 chinook salmon were caught in Nushagak District with age 1.4 (43%), age 1.3 (51%), and age 1.2 (4%) accounting for most of the catch sample (Appendix A.17). Mean length of the chinook salmon in the catch was 785 mm; mean weight was 8.7 kg. An estimated 117,495 chinook salmon passed the Nushagak River sonar site (Appendix A.18; Miller 1999). The escapement sample was composed of 55% age-1.3, 30% age-1.4 and 13% age-1.2 fish. Mean length of chinook salmon in the escapement was 757 mm.

Togiak District Chinook Run

Of the 14,131 chinook salmon caught in Togiak District, most (12,867) were harvested in Togiak River Section (Appendix A.19). Age-1.2 (43%), age-1.3 (37%), and age-1.4 (17%) chinook salmon dominated the Togiak River Section catch. Mean length of chinook salmon in the catch was 656 mm; mean weight was 6.8 kg.

Bristol Bay Chum Run

In 1998 the total number of chum salmon commercially harvested in Bristol Bay was 395,733 fish (ADF&G 1999). Most (275,959) were caught in the Nushagak and Togiak Districts.

Nushagak District Chum Run

An estimated 208,551 chum salmon were caught in Nushagak District. Age-0.3 (86%) and age-0.4 (12%) chum salmon dominated the catch (Appendix A.20). Mean length of the chum salmon in the catch was 571 mm; mean weight was 2.9 kg. An estimated 299,215 chum salmon passed the Nushagak River sonar site (Appendix A.21). The limited escapement sample (n=168) was composed of 82% age-0.3 and 17% age-0.4 fish. Mean length of chum salmon in the escapement sample was 572 mm.

Togiak District Chum Run

Of the 67,408 chum salmon caught in Togiak District, most (51,118) were harvested in Togiak River Section (Appendix A.22). The Togiak River Section chum salmon catch was composed primarily of age-0.3 (67%), and age-0.4 (32%) fish. Mean length of chum salmon commercially harvested was 582 mm; mean weight was 3.4 kg

Bristol Bay Coho Run

The total number of coho salmon commercially harvested in Bristol Bay was 125,354 fish (ADF&G 1999). Most (58,451) were caught in Togiak District. No coho salmon catches were sampled.

Nushagak District Coho Run

An estimated 22,703 coho salmon were harvested in Nushagak District. An estimated 104,948 coho salmon passed the Nushagak River sonar site (Appendix A.23). The escapement sample (n=416) was composed of 93% age-2.1 and 4% age-1.1 fish. Mean length of coho salmon in the escapement was 562 mm. Mean length of age-2.1 fish was 562 mm and the mean length of age-1.1 fish was 553 mm.

LITERATURE CITED

- ADF&G (Alaska Department of Fish and Game). 1999. Bristol Bay Area annual management report, 1998. Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development, Regional Information Report 2A99-18, Anchorage.
- Bilton, H., and D. Jenkinson. 1968. Comparison of the otolith and scale methods for aging sockeye (*Oncorhynchus nerka*) and chum (*O. keta*) salmon. Journal of the Fisheries Research Board of Canada 25 (5).
- Clutter, R., and L. Whitesel. 1956. Collection and interpretation of sockeye salmon scales. International Pacific Salmon Fisheries Commission Bulletin 9.
- Cross, B., and B. Stratton. 1988. Abundance, age, sex, and size statistics for Pacific salmon in Bristol Bay, 1987. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 88-18, Juneau.
- Eggers, D., K. Rowell, and B. Barrett. 1988. The stock composition of the catches of sockeye and chum in the 1987 South Peninsula June fishery based on tagging. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J88-03, Juneau.
- Geiger, H. 1989. A stock identification study in the Northern Alaska Peninsula sockeye salmon fishery, from Harbor Point to Strogonof Point. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 5J89-11, Juneau.
- Gilbert, C. 1924. Experiment in tagging adult red salmon, Alaska Peninsula fisheries reservation, summer of 1922. Bulletin of the United States Bureau of Fisheries, Volume 39.
- Gilbert, C., and W. Rich. 1926. Second experiment in tagging adult red salmon in the Alaska Peninsula fisheries reservation, summer of 1923. Bulletin of the United States Bureau of Fisheries, Volume 42.
- Gray, D. 1998. Abundance, age, sex, and size statistics for Pacific salmon in Bristol Bay, 1996. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2A98-28, Anchorage.
- Gray, D. 1998. Abundance, age, sex, and size statistics for Pacific salmon in Bristol Bay, 1997. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 2A98-33, Anchorage.

LITERATURE CITED (Continued)

- INPFC (International North Pacific Fisheries Commission). 1963. Annual Report 1961, Vancouver, British Columbia.
- Koo, T. S. Y. 1962. Age designation in salmon. Pages 37–48 in T. S. Y. Koo, editor. Studies of Alaska red salmon. University of Washington Publications in Fisheries, New Series, Volume I, Seattle.
- Krasnowski, P., and R. Randall. 1975a. Bristol Bay sockeye salmon (*Oncorhynchus nerka*) 1972 — a compilation of catch and escapement data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 19, Juneau.
- Krasnowski, P., and R. Randall. 1975b. Bristol Bay sockeye salmon (*Oncorhynchus nerka*) 1973 — a compilation of catch and escapement data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 22, Juneau.
- Krasnowski, P., and R. Randall. 1976. Bristol Bay sockeye salmon (*Oncorhynchus nerka*) 1974 — a compilation of catch and escapement data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 24, Juneau.
- McCurdy, M., and R. Paulus. 1972. Bristol Bay sockeye salmon (*Oncorhynchus nerka*) 1968 — a compilation of catch and escapement data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 1, Juneau.
- McCurdy, M., and T. Schroeder. 1972. Bristol Bay sockeye salmon (*Oncorhynchus nerka*) 1971 — a compilation of catch and escapement data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 7, Juneau.
- Meacham, C., and M. Nelson. 1980. Bristol Bay sockeye salmon (*Oncorhynchus nerka*) 1977 — a compilation of catch and escapement data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 47, Juneau.
- Meacham, C., and R. Randall. 1979. Bristol Bay sockeye salmon (*Oncorhynchus nerka*) 1976 — a compilation of catch and escapement data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 43, Juneau.

LITERATURE CITED (Continued)

- Menard, J. 1997. Abundance, age, sex, and size statistics for Pacific salmon in Bristol Bay, 1993 – 1995. Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development, Regional Information Report 2A97-13, Anchorage.
- Menard, J., and J. D. Miller. 1997. Report to the Alaska Board of Fisheries on the stock composition of sockeye salmon catches within east side Bristol Bay fishing districts 1983 – 1995. Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development, Regional Information Report 2A95-25, Anchorage.
- Miller, J. D. 1999. Sonar enumeration of Pacific salmon escapement into Nushagak River, 1998. Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development, Regional Information Report 2A99-05, Anchorage.
- Mosher, K. 1968. Photographic atlas of sockeye salmon scales. Fishery Bulletin 67:243–280.
- Paulus, R., and M. Nelson. 1972a. Bristol Bay sockeye salmon (*Oncorhynchus nerka*) 1969 — a compilation of catch and escapement data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 5, Juneau.
- Paulus, R., and M. Nelson. 1972b. Bristol Bay sockeye salmon (*Oncorhynchus nerka*) 1970 — a compilation of catch and escapement data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 6, Juneau.
- Randall, R., and H. Yuen. 1978. Bristol Bay sockeye salmon (*Oncorhynchus nerka*) 1975 — a compilation of catch and escapement data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 40, Juneau.
- Stratton, B. 1990. Abundance, age, sex, and size statistics for Pacific salmon in Bristol Bay, 1989. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 90-09, Juneau.
- Stratton, B. 1991. Abundance, age, sex, and size statistics for Pacific salmon in Bristol Bay, 1990. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 91-15, Juneau.

LITERATURE CITED (Continued)

- Stratton, B., and D. L. Crawford. 1992. Abundance, age, sex, and size statistics for Pacific salmon in Bristol Bay, 1991. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 92-17, Juneau.
- Stratton, B.L., and D. L. Crawford. 1994. Abundance, age, sex, and size statistics for Pacific salmon in Bristol Bay, 1992. Alaska Department of Fish and Game, Division of Commercial Fisheries Management and Development, Technical Fishery Report 94-16, Juneau.
- Stratton, B., and B. Cross. 1990. Abundance, age, sex, and size statistics for Pacific salmon in Bristol Bay, 1988. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 90-06, Juneau.
- Swanton, C. O., and R. L. Murphy. 1992. Origins of sockeye salmon caught within the Harbor Point to Strogonof Point reach of the Alaska Peninsula Management Area, 8 July through 21 July, 1990. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 92-04, Juneau.
- Thompson, S. 1987. Sample size for estimating multinomial proportions. *The American Statistician* 41:42-46.
- Weiland, K. A., J. B. Browning, C. Anderson, and B. Glick, 1999. Salmon spawning ground surveys in the Bristol Bay area, Alaska, 1998. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 2A99-01.
- Yuen, H. 1984. Bristol Bay salmon (*Oncorhynchus* sp.) 1981 — a compilation of catch, escapement, and biological data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 129, Juneau.
- Yuen, H., and D. Bill. 1989a. Abundance, age, sex, and size statistics for Pacific salmon (*Oncorhynchus* sp.) in Bristol Bay, 1984. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 89-06, Juneau.
- Yuen, H., and D. Bill. 1989b. Abundance, age, sex, and size statistics for Pacific salmon (*Oncorhynchus* sp.) in Bristol Bay, 1985. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 89-07, Juneau.
- Yuen, H., and D. Bill. 1990. Abundance, age, sex, and size statistics for Pacific salmon (*Oncorhynchus* sp.) in Bristol Bay, 1986. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Fishery Report 90-14, Juneau.

LITERATURE CITED (Continued)

- Yuen, H., and C. Meacham. 1983. Bristol Bay salmon (*Oncorhynchus* sp.) 1979 — a compilation of catch, escapement, and biological data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 94, Juneau.
- Yuen, H., and M. Nelson. 1983. Bristol Bay salmon (*Oncorhynchus* sp.) 1978 — a compilation of catch and escapement data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 88, Juneau.
- Yuen, H., and M. Nelson. 1984a. Bristol Bay chinook salmon (*Oncorhynchus tshawytscha*) sex, age, weight, and length statistics, 1966–1977. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 120, Juneau.
- Yuen, H., and M. Nelson. 1984b. Bristol Bay chum salmon (*Oncorhynchus keta*) sex, age, weight, and length statistics, 1960 to 1977. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 127, Juneau.
- Yuen, H., and M. Nelson. 1985. Bristol Bay pink (*Oncorhynchus gorbuscha*) and coho salmon (*O. kisutch*) sex, age, weight, and length statistics, 1961–1976. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 156, Juneau.
- Yuen, H., and M. Nelson. 1987. 1983 Bristol Bay salmon (*Oncorhynchus* sp.) — a compilation of catch, escapement, and biological data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 191, Juneau.
- Yuen, H., B. Bue, and C. Meacham. 1981. Bristol Bay sockeye salmon (*Oncorhynchus nerka*) age, weight, and length statistics, 1957–1977. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 67, Juneau.
- Yuen, H., M. Nelson, and R. Minard. 1986. Bristol Bay salmon (*Oncorhynchus* sp.) 1982 — a compilation of catch, escapement, and biological data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 175, Juneau.
- Yuen, H., and four co-authors. 1984. Bristol Bay salmon (*Oncorhynchus* sp.) 1980 — a compilation of catch, escapement, and biological data. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 128, Juneau.

Table 1. Number of sockeye salmon by age class and river system for catch and escapement to 11 river systems in Bristol Bay, 1998.

System ^a		Age Group														Total	
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3		3.4
Kvichak	C	0	0	430	356,478	1,079	0	431,779	204,873	0	0	74,655	0	0	0	0	1,069,294
	E	0	16,953	0	1,395,173	28,335	4,301	381,255	387,250	0	0	82,807	0	0	0	0	2,296,074
	I	0	16,953	430	1,751,651	29,414	4,301	813,034	592,123	0	0	157,462	0	0	0	0	3,365,368
	S	0	0	0	59,478	0	0	76,982	31,663	0	0	17,656	0	0	0	0	185,779
	%	0.0	0.5	0.0	51.0	0.8	0.1	25.1	17.6	0.0	0.0	4.9	0.0	0.0	0.0	0.0	100.0
Branch	C	0	0	58	32,943	43	0	79,225	28,303	0	0	4,205	0	0	0	0	144,777
	E	0	3,764	0	123,474	2,020	0	67,400	50,872	0	0	4,670	0	0	0	0	252,200
	I	0	3,764	58	156,417	2,063	0	146,625	79,175	0	0	8,875	0	0	0	0	396,977
	S	0	0	0	5,338	0	0	13,936	4,256	0	0	1,000	0	0	0	0	24,529
	%	0.0	0.9	0.0	38.4	0.5	0.0	38.1	19.8	0.0	0.0	2.3	0.0	0.0	0.0	0.0	100.0
Naknek	C	0	0	362	194,246	578	0	770,233	216,503	0	1,706	195,190	2,550	0	0	0	1,381,368
	E	0	8,553	0	292,311	14,248	0	499,347	231,920	0	7,842	145,157	1,976	818	0	0	1,202,172
	I	0	8,553	362	486,557	14,826	0	1,269,580	448,423	0	9,548	340,347	4,526	818	0	0	2,583,540
	S	0	0	0	16,605	0	0	120,664	24,103	0	0	38,356	0	0	0	0	199,727
	%	0.0	0.3	0.0	18.1	0.5	0.0	50.0	17.0	0.0	0.3	13.6	0.2	0.0	0.0	0.0	100.0
Egegik	C	0	0	0	261,060	0	0	470,812	560,802	0	4,402	2,182,452	39,890	1,688	7,739	0	3,528,845
	E	0	6,988	0	95,168	65,227	0	52,786	274,095	0	0	603,035	12,873	0	765	0	1,110,938
	I	0	6,988	0	356,228	65,227	0	523,598	834,897	0	4,402	2,785,487	52,763	1,688	8,504	0	4,639,783
	S	0	0	0	12,157	0	0	49,764	44,876	0	0	313,915	0	0	0	0	420,712
	%	0.0	0.1	0.0	7.3	1.3	0.0	11.3	17.4	0.0	0.1	61.2	1.0	0.0	0.2	0.0	100.0
Ugashik	C	0	0	0	55,425	0	0	133,275	76,032	0	370	462,347	0	2,790	0	0	730,239
	E	2,692	17,541	3,572	266,755	11,585	0	188,472	152,620	0	376	280,491	0	750	0	0	924,853
	I	2,692	17,541	3,572	322,180	11,585	0	321,747	228,652	0	746	742,838	0	3,540	0	0	1,655,092
	S	0	0	0	10,995	0	0	30,580	12,290	0	0	83,715	0	0	0	0	137,580
	%	0.2	1.0	0.2	18.6	0.6	0.0	19.7	13.4	0.0	0.0	46.1	0.0	0.2	0.0	0.0	100.0
Wood	C	1,461	1,665	416	1,478,676	731	9,496	545,053	69,553	0	496	36,824	170	731	0	0	2,145,272
	E	0	3,245	0	1,177,436	0	0	514,861	52,846	0	0	7,380	0	0	0	0	1,755,768
	I	1,461	4,910	416	2,656,112	731	9,496	1,059,914	122,399	0	496	44,204	170	731	0	0	3,901,040
	S	0	0	0	90,645	0	0	100,737	6,579	0	0	4,982	0	0	0	0	202,942
	%	0.0	0.1	0.0	66.9	0.0	0.2	28.3	3.1	0.0	0.0	1.2	0.0	0.0	0.0	0.0	100.0
Igushik	C	263	0	0	148,756	132	1,715	170,858	12,666	0	140	20,579	0	132	0	0	355,241
	E	0	0	0	82,848	0	0	122,809	6,108	0	260	3,879	0	0	0	0	215,904
	I	263	0	0	231,604	132	1,715	293,667	18,774	0	400	24,458	0	132	0	0	571,145
	S	0	0	0	6,241	0	0	22,590	786	0	0	1,996	0	0	0	0	31,613
	%	0.0	0.0	0.0	39.5	0.0	0.3	52.5	3.2	0.0	0.1	4.4	0.0	0.0	0.0	0.0	100.0
Nuyakuk	E	0	0	7,988	11,060	0	0	124,131	614	0	1,843	614	0	0	0	0	146,250
Snake	E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11,120
Nush-Mul	C	3,400	435	42,315	40,755	188	2,449	358,036	383	0	34,162	7,773	0	188	0	0	490,084
	E	1,315	658	12,908	37,636	0	0	375,066	535	0	28,905	1,851	0	0	0	0	458,874
	I	4,715	1,093	55,223	78,391	188	2,449	733,102	918	0	63,067	9,624	0	188	0	0	948,958
	S	0	0	0	2,675	0	0	69,676	49	0	0	1,085	0	0	0	0	73,485
	%	0.5	0.1	5.4	7.9	0.0	0.2	78.5	0.1	0.0	6.2	1.0	0.0	0.0	0.0	0.0	100.0
Togiak	C	0	0	1,882	9,274	0	0	93,899	995	0	776	6,186	0	0	0	0	113,012
	E	0	646	1,291	32,580	0	0	115,156	4,515	0	321	20,967	0	0	0	0	175,476
	I	0	646	3,173	41,854	0	0	209,055	5,510	0	1,097	27,153	0	0	0	0	288,488
	S	0	0	0	1,428	0	0	19,869	296	0	0	3,060	0	0	0	0	24,654
	%	0.0	0.2	1.0	13.8	0.0	0.0	73.1	1.9	0.0	0.4	9.6	0.0	0.0	0.0	0.0	100.0
Summary	C	5,124	2,100	45,463	2,577,613	2,751	13,660	3,053,170	1,170,110	0	42,052	2,990,211	42,610	5,529	7,739	0	9,958,132
	E	4,007	58,348	17,771	3,503,381	121,415	4,301	2,317,152	1,160,761	0	37,704	1,150,237	14,849	1,568	765	0	8,403,379
	I	9,131	60,448	63,234	6,080,994	124,166	17,961	5,370,322	2,330,871	0	79,756	4,140,448	57,459	7,097	8,504	0	18,361,511
	S	0	0	0	205,561	0	0	504,796	124,898	0	0	465,765	0	0	0	0	1,301,020
	%	0.0	0.3	0.3	32.0	0.6	0.1	29.9	12.5	0.0	0.4	23.4	0.3	0.0	0.0	0.0	100.0

^a C = Catch, E = Escapement, I = Inshore Return, S = South Peninsula Catch, and % = Percent of Total Inshore Return. Egegik escapement includes King Salmon River; Ugashik escapement includes King Salmon and Dog Salmon Rivers; Nush-Mul = Nushagak and Mulchatna rivers combined; Togiak catch is Togiak River Section only and Togiak escapement includes the tower counts, and lower river and tributaries aerial survey estimate. Nuyakuk escapement is not totaled because it is a tributary of Nushagak.

Table 2. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch and escapement, Bristol Bay, 1998.

	Age Group													Total
	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3	3.2	2.4	3.3	
Males														
Percent	0.04	0.27	0.16	16.8	0.64	0.05	14.67	6.65	0.22	11.51	0.18	0.01	0.01	51.23
Sample Size	8	51	49	3,051	133	9	3,878	1,413	70	2,509	34	4	2	11,211
Mean Length	458	348	557	501	372	600	567	518	592	577	525	589	567	538
Std. Error	7	7	4	1	8	7	1	1	3	1	4			0
Sample Size	8	50	48	3,015	133	9	3,799	1,392	68	2,503	34	4	2	11,065
Mean Weight	1.74	0.71	3.44	2.04		4.2	2.92	2.41	3.97	2.9	2.38	4.62		2.56
Std. Error			0.14	0.02		0.04	0.03	0.05	0.2	0.03	0.08			0.01
Sample Size	2	1	8	351		2	539	122	11	274	2	1		1,313
Females														
Percent	0.01	0.04	0.13	16.88	0.03	0.03	14.17	5.97	0.15	11.18	0.13	0.02	0.04	48.77
Sample Size	2	4	39	2,867	6	5	3,850	1,166	42	2,527	24	4	7	10,543
Mean Length	416	380	530	488	405	541	546	507	562	558	508	561	569	523
Std. Error			4	1	3	17	1	1	4	1	4			0
Sample Size	2	4	39	2,851	6	5	3,794	1,154	42	2,520	24	4	7	10,452
Mean Weight			2.41	1.9			2.63	2.32	3.58	2.6	1.84			2.33
Std. Error			0.01	0.01			0.02	0.05		0.02				0.01
Sample Size			5	310			520	86	4	263	2		1	1,191
Both Sexes														
Percent	0.04	0.31	0.29	33.69	0.67	0.08	28.84	12.62	0.37	22.69	0.31	0.03	0.05	100
Sample Size	10	55	88	5,918	139	14	7,728	2,579	112	5,036	58	8	9	21,754
Mean Length	451	352	545	494	374	578	556	513	580	568	518	572	569	531
Std. Error	7	7	3	0	8	12	0	1	3	0	3		16	0
Sample Size	10	54	87	5,866	139	14	7,593	2,546	110	5,023	58	8	9	21,517
Mean Weight	1.74	0.71	3.08	1.97		4.2	2.78	2.37	3.9	2.75	2.01	4.62	2.47	2.45
Std. Error			0.14	0.01		0.04	0.02	0.03	0.2	0.02	0.08			0.01
Sample Size	2	1	13	661		2	1,059	208	15	537	4	1	1	2,504

Table 3. Annual total returns, harvests, escapement and harvest rates for Bristol Bay sockeye salmon, 1956-99.

Year	Total Run	Harvests			Total	Escapement	Inshore Return	Harvest Rate (%)	
		Inshore	S. Pen. ^a	Other ^b				Total	Inshore
1956	24,178,393	8,921,467	330,349		9,251,816	14,966,577	23,888,044	38	37
1957	18,522,510	6,225,502	164,222	7,349,000	13,738,724	4,733,786	10,959,288	74	57
1958	6,281,052	2,985,666	135,000	377,000	3,497,666	2,783,386	5,769,052	56	52
1959	13,534,132	4,608,119	78,463	598,000	5,284,582	8,280,450	12,888,569	39	36
1960	40,225,936	13,705,002	156,000	3,727,000	17,588,002	22,637,934	36,342,936	44	38
1961	24,416,100	11,854,073	254,000	6,129,000	18,237,073	6,179,027	18,033,100	75	66
1962	11,665,502	4,702,364	326,000	960,000	5,988,364	5,677,138	10,379,502	51	45
1963	8,013,969	2,850,639	149,000	1,001,000	4,000,639	4,013,330	6,863,969	50	42
1964	11,438,331	5,558,683	244,000	314,000	6,116,683	5,321,648	10,880,331	56	51
1965	60,822,808	24,249,092	775,000	6,943,000	31,967,092	28,855,716	53,104,808	53	46
1966	20,032,492	9,305,921	582,000	1,935,000	11,822,921	8,209,571	17,515,492	59	53
1967	11,485,059	4,301,109	255,000	922,000	5,478,109	6,006,950	10,308,059	48	42
1968	9,455,405	2,784,739	575,000	885,000	4,244,739	5,210,666	7,995,405	45	35
1969	21,918,143	6,617,061	857,000	2,031,000	9,505,061	12,413,082	19,030,143	43	35
1970	45,039,815	20,720,137	1,683,000	3,968,000	26,371,137	18,668,678	39,388,815	59	53
1971	18,462,272	9,575,434	610,000	2,049,000	12,234,434	6,227,838	15,803,272	66	61
1972	7,194,044	2,392,326	519,000	1,302,000	4,213,326	2,980,718	5,373,044	59	45
1973	3,516,869	741,292	262,000	839,000	1,842,292	1,674,577	2,415,869	52	31
1974	11,502,364	1,334,070	60,000	510,000	1,904,070	9,598,294	10,932,364	17	12
1975	25,811,149	4,894,757	239,000	1,353,000	6,486,757	19,324,392	24,219,149	25	20
1976	12,827,413	5,610,425	307,000	1,001,000	6,918,425	5,908,988	11,519,413	54	49
1977	10,671,057	4,860,433	239,000	768,000	5,867,433	4,803,624	9,664,057	55	50
1978	20,798,730	9,898,223	487,000	452,000	10,837,223	9,961,507	19,859,730	52	50
1979	40,974,911	21,360,960	862,000	304,000	22,526,960	18,447,951	39,808,911	55	54
1980	66,292,853	23,718,655	3,303,000	590,000	27,611,655	38,681,198	62,399,853	42	38
1981	37,039,596	25,583,662	1,825,000	818,000	28,226,662	8,812,934	34,396,596	76	74
1982	24,705,700	15,090,413	2,121,000	443,000	17,654,413	7,051,287	22,141,700	71	68
1983	48,107,873	37,313,599	1,961,000	324,000	39,598,599	8,509,274	45,822,873	82	81
1984	42,630,124	24,601,393	1,388,000	291,200	26,280,593	16,349,531	40,950,924	62	60
1985	38,714,171	23,626,380	1,709,000	259,900	25,595,280	13,118,891	36,745,271	66	64
1986	24,313,787	15,658,526	466,000	298,000	16,422,526	7,891,261	23,549,787	68	66
1987	28,377,096	16,000,656	794,859	165,000	16,960,515	11,416,581	27,417,237	60	58
1988	23,996,394	13,841,078	756,687		14,597,765	9,398,629	23,239,707	61	60
1989	45,754,092	28,714,749	1,744,505		30,459,254	15,294,838	44,009,587	67	65
1990	49,323,010	33,493,550	1,346,295		34,839,845	14,483,165	47,976,715	71	70
1991	43,364,381	25,794,049	1,548,930		27,342,979	16,021,402	41,815,451	63	62
1992	47,415,171	31,763,805	2,457,856		34,221,661	13,193,510	44,957,315	72	71
1993	54,696,386	40,397,990	2,973,744		43,371,734	11,324,652	51,722,642	79	78
1994	51,752,387	35,125,526	1,461,263		36,586,789	15,165,598	50,291,124	71	70
1995	62,692,143	44,185,372	2,105,321		46,290,693	16,401,450	60,586,822	74	73
1996	37,892,861	29,510,279	1,037,360		30,547,639	7,345,222	36,855,501	81	80
1997	20,349,687	12,107,847	1,568,326		13,676,173	6,673,514	18,781,361	67	64
1998	19,662,531	9,958,132	1,301,020		11,259,152	8,403,379	18,361,511	57	54
1999	40,778,000	25,242,754	1,406,478		26,649,232	14,128,768	39,371,522	65	64
Averages									
1956-60	20,548,405	7,289,151	172,807	3,012,750	9,872,158	10,680,427	17,969,578	48	41
1961-70	22,428,762	9,294,382	570,000	2,508,800	12,373,182	10,055,581	19,349,962	55	48
1971-80	21,805,166	8,438,658	688,800	916,800	10,044,258	11,760,909	20,199,566	46	42
1981-90	36,296,184	23,392,401	1,411,235	371,300	25,063,545	11,232,639	34,625,040	69	68
1990-99	42,792,656	28,757,930	1,720,659		30,478,590	12,314,066	41,071,996	71	70

^a The south Alaska Peninsula harvest refers to all sockeye salmon caught during June fisheries around Unimak and Shumagin Islands.

^b Other harvest refers to estimated high seas interception of Bristol Bay sockeye salmon.

Table 4. Size at age for sockeye salmon commercial catch and escapement, Bristol Bay, return years 1978 - 1999 (length in mm, weight in kg, SE=standard error; Standard error is taken directly from annual reports. The number of significant digits used varies among years).

Return Year	Age 1.2				Age 1.3				Age 2.2				2.3				Bay Wide ^a			
	Length		Weight		Length		Weight		Length		Weight		Length		Weight		Length		Weight	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
1957	524	6.8			564	1.0			518	1.6			572	1.4			554	1.3		
1958	510	4.9			571	5.5			531	3.6			578	1.7			551	3.4		
1959	506	2.4			571	3.5			520	0.7			581	1.2			526	1.2		
1960	489	3.8			561	19.4			505	12.6			570	6.6			498	7.7		
1961	515	14.8			571	5.8			519	2.4			576	11.0			554	6.2		
1962	515	17.3			575	9.8			524	1.4			574	2.4			536	5.4		
1963	514	2.9	2.3	0.1	577	3.9	3.1	0.1	531	2.7	2.5	0.1	584	2.0	3.2	0.1	547	2.4	2.8	0.1
1964	501	0.9			571	1.7			517	1.4			578	2.3			517	1.1		
1965	507	1.8			560	1.5			497	2.3			567	2.2			502	1.9		
1966	496	2.0			565	1.2			516	2.0			571	1.1			555	1.3		
1967	505	1.5			576	1.6			531	1.1			584	1.7			544	1.4		
1968	508	1.5			578	1.5			523	1.4			589	1.9			535	1.5		
1969	515	0	2.3	0	577	0	3.1	0	524	0	2.4	0	585	0	3.1	0	520	0	2.5	0
1970	497	0	2.1	0	557	0	2.8	0	507	0	2.2	0	567	0	2.8	0	511	0	2.3	0
1971	513	0	2.1	0	572	0	3.1	0	526	0	2.3	0	574	0	3.0	0	552	0	2.7	0
1972	501	24.2	4.9	0.7	574	22.6	6.9	0.9	520	24.2	5.1	0.6	577	21.8	6.8	0.8	544	17.2	6.2	0.3
1973	511	4.3	2.5	0.2	583	2.3	3.5	0.5	529	4.9	2.6	0.3	592	2.4	3.4	0.2	573	2.3	3.3	0.2
1974	515	2.7	2.2	0.1	569	4.2	3.2	0.2	519	2.0	2.5	0.1	583	5.8	3.4	0.3	528	2.2	2.6	0.1
1975	512	3.3	2.4	0.2	573	1.9	3.2	0.2	509	2.0	2.3	0.1	575	2.8	3.1	0.3	523	2.0	2.4	0.1
1976	519	2.5	2.5	0.1	580	1.7	3.4	0.1	524	1.7	2.5	0.0	576	3.5	3.1	0.1	544	1.8	2.8	0.1
1977	511	3.5	2.3	0.1	586	2.0	3.7	0.1	534	2.4	2.6	0.1	586	2.5	3.5	0.1	558	2.1	3.0	0.1
1978	511	2.0	2.3	0.0	580	2.2	3.3	0.1	524	3.4	2.4	0.1	591	2.3	3.5	0.0	537	2.1	2.8	0.1
1979	525	0.89	2.64	0.05	575	1.02	3.44	0.03	538	1.39	2.70	0.15	525	5.65	3.16	0.13	537	0.03	2.82	0.00
1980	500	0.34	2.31	0.02	551	0.26	3.23	0.03	514	0.28	2.35	0.02	561	0.82	2.88	0.06	520	0.16	2.57	0.01
1981	520	0.34	2.40	0.02	570	0.21	3.22	0.02	534	0.26	2.44	0.02	577	0.39	3.25	0.03	552	0.14	2.85	0.01
1982	506	1.43	2.25	0.00	566	0.71	3.22	0.06	531	12.28	2.46	0.00	582	1.58	3.33	0.20	554	0.04	3.03	0.00
1983	518	0.91	2.38	0.03	563	1.38	3.10	0.05	534	1.61	2.54	0.05	579	8.44	3.16	0.23	530	0.03	2.55	0.00
1984	486	1	2.10	0.09	560	1	2.99	0.06	514	0	2.34	0.05	571	1	3.07	0.05	524	0	2.54	0.03
1985	508	1	2.18	0.04	567	1	2.93	0.03	523	0	2.27	0.02	580	1	2.96	0.04	541	0	2.54	0.01
1986	497	1	2.23	0.05	567	0	2.95	0.10	531	0	2.36	0.05	575	1	3.07	0.06	548	0	2.69	0.02
1987	501	0	2.06	0.03	563	0	2.99	0.02	518	1	2.32	0.13	574	1	2.93	0.03	530	0	2.47	0.01
1988	501	0	2.06	0.02	577	0	3.07	0.02	528	0	2.29	0.03	587	0	3.18	0.02	549	0	2.70	0.01

Table 4. Size at age for sockeye salmon commercial catch and escapement, Bristol Bay, return years 1978 - 1999 (length in mm, weight in kg, SE=standard error; Standard error is taken directly from annual reports. The number of significant digits used varies among years).

Return Year	Age 1.2				Age 1.3				Age 2.2				2.3				Bay Wide ^a			
	Length		Weight		Length		Weight		Length		Weight		Length		Weight		Length		Weight	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
1989	489	0	2.07	0.02	572	0	2.98	0.03	518	0	2.18	0.01	578	1	3.05	0.04	529	0	2.38	0.01
1990	481	0	1.95	0.02	563	0	2.96	0.02	503	0	2.10	0.02	573	0	2.98	0.02	528	0	2.45	0.01
1991	490	0	1.91	0.03	558	0	2.80	0.02	501	0	2.12	0.02	565	1	2.78	0.04	533	0	2.49	0.01
1992	487	0	1.77	0.03	553	0	2.73	0.02	507	0	2.01	0.02	562	0	2.85	0.03	530	0	2.40	0.01
1993	498	0	2.10	0.02	566	0	2.94	0.02	526	0	2.28	0.02	572	0	3.00	0.02	545	0	2.62	0.01
1994	472	1	2.09	0.03	554	0	2.74	0.02	507	0	2.05	0.03	567	0	2.74	0.04	522	0	2.29	0.01
1995	502	0	2.17	0.01	560	0	2.90	0.09	513	0	2.21	0.01	573	0	2.92	0.02	526	0	2.37	0.01
1996	494	1	2.03	0.02	565	0	3.05	0.01	512	1	2.29	0.03	573	0	2.97	0.03	552	0	2.83	0.01
1997	494	1	1.99	0.02	561	0	2.95	0.02	517	0	2.18	0.02	582	1	3.18	0.03	536	0	2.54	0.01
1998	494	0	1.97	0.01	556	0	2.78	0.02	513	1	2.37	0.03	568	0	2.75	0.02	531	0	2.45	0.01
1999 ^b	507	0	1.72	0.02	564	1	2.77	0.03	519	0	1.90	0.02	574	1	3.01	0.06	525	0	2.02	0.01
Averages																				
56-60	507				567				519				575				532			
61-70	507		2.23		571		3.00		519		2.37		577		3.03		532		2.53	
71-80	512		2.62		574		3.70		524		2.74		574		3.58		541		3.12	
81-90	501		2.17		567		3.04		523		2.33		578		3.10		538		2.62	
91-99	493		1.97		560		2.85		513		2.16		571		2.91		533		2.45	
56-99	504		2.26		568		3.19		520		2.41		575		3.19		536		2.72	

^a Weighted average for all age classes combined.

^b Estimate from 1999 preliminary return numbers.

Table 5. Total returns, harvests, escapement and harvest rates for Bristol Bay fishing districts and river systems, 1998.

District	River System	Total Run	Harvests			Escapement	Inshore Return	Harvest Rate (%)	
			Inshore	S. Pen. ^a	Total			Total	Inshore
Naknek-Kvichak									
	Kvichak	3,551,147	1,069,294	185,779	1,255,073	2,296,074	3,365,368	35	32
	Branch	421,506	144,777	24,529	169,306	252,200	396,977	40	36
	Naknek	2,783,267	1,381,368	199,727	1,581,095	1,202,172	2,583,540	57	53
	All combined	6,755,920	2,595,439	410,035	3,005,474	3,750,446	6,345,885	44	41
Egegik		5,060,495	3,528,845	420,712	3,949,557	1,110,938	4,639,783	78	76
Ugashik		1,792,672	730,239	137,580	867,819	924,853	1,655,092	48	44
Nushagak									
	Wood	4,103,982	2,145,272	202,942	2,348,214	1,755,768	3,901,040	57	55
	Igushik	602,758	355,241	31,613	386,854	215,904	571,145	64	62
	Nush-Mul	1,022,443	490,084	73,485	563,569	458,874	948,958	55	52
	All combined	5,729,183	2,990,597	308,040	3,298,637	2,430,546	5,421,143	58	55
Togiak		313,142	113,012	24,654	137,666	175,476	288,488	44	39
Bay-wide totals		19,662,531	9,958,132	1,301,020	11,259,152	8,403,379	18,361,511	57	54

^a The South Alaska Peninsula harvest refers to all sockeye salmon caught during June fisheries around Unimak and Shumagin Islands.

Table 6. Annual inshore harvests, escapement and harvest rates for Bristol Bay sockeye salmon, by district, 1956-1999.

Year	Inshore Catch					Escapement								Inshore Harvest Rate(%)						
	Nak-Kvichak	Egegik	Ugashik	Nushagak	Togiak	Kvichak	Branch	Naknek	Egegik	Ugashik	Wood	Igushik	Snake	Nushagak	Togiak	Nak-Kvi	Egegik	Ugashik	Nushagak	Togiak
1956	5,987,750	1,187,099	341,499	1,303,186	101,933	9,443,318	784,000	1,772,595	1,104,268	425,295	773,101	400,000	4,000	35,000	225,000	33	52	45	52	31
1957	4,578,643	814,459	350,858	441,498	40,044	2,842,810	126,595	634,645	391,207	214,802	288,727	130,000	3,000	77,000	25,000	56	68	62	47	62
1958	922,611	500,684	433,813	1,092,156	36,402	534,785	94,650	278,118	246,354	279,546	960,455	107,478	9,000	201,000	72,000	50	67	61	46	34
1959	1,689,425	662,391	423,414	1,719,687	113,202	680,000	825,431	2,231,807	1,072,459	219,228	2,209,266	643,808	139,950	48,861	209,640	31	38	66	36	35
1960	9,847,848	1,446,884	752,634	1,517,988	139,648	14,630,000	1,240,530	828,381	1,798,764	2,304,200	1,016,073	495,087	16,589	145,500	162,810	37	45	25	48	46
1961	8,166,983	2,686,076	357,223	455,003	188,788	3,705,849	90,036	351,078	701,538	348,639	460,737	294,252	4,856	99,788	122,254	66	79	51	35	61
1962	2,281,284	638,862	243,159	1,446,786	92,273	2,580,884	90,630	723,066	1,027,482	255,426	873,888	15,660	1,760	46,390	61,952	40	38	49	61	60
1963	957,902	695,582	188,695	822,954	185,506	338,760	203,304	905,358	997,602	388,254	721,404	92,184	37,960	212,308	116,196	40	41	33	44	61
1964	2,243,701	1,103,935	576,768	1,391,790	242,489	957,120	248,700	1,349,604	849,576	472,770	1,076,112	128,532	12,436	121,924	104,874	47	57	55	51	70
1965	19,139,567	3,179,559	925,690	793,323	210,953	24,325,926	175,020	717,798	1,444,608	996,612	675,156	180,840	12,000	231,270	96,486	43	69	48	42	69
1966	5,397,538	2,101,174	445,458	1,170,272	191,479	3,775,184	174,336	1,016,445	804,246	704,436	1,208,682	206,360	4,500	211,184	104,198	52	72	39	42	65
1967	2,337,200	1,070,942	163,744	657,711	71,512	3,216,208	202,626	755,640	636,864	238,830	515,772	281,772	11,000	66,908	81,330	36	63	41	43	47
1968	1,216,858	671,554	82,457	749,281	64,589	2,557,440	193,872	1,023,222	338,654	70,896	649,344	194,508	4,100	128,712	49,918	24	66	54	43	56
1969	4,655,072	889,322	169,845	773,207	129,615	8,394,204	182,490	1,331,202	1,015,554	160,380	604,338	512,328	9,300	86,620	116,666	32	47	51	39	53
1970	17,803,805	1,403,509	171,541	1,188,534	152,748	13,935,306	177,060	732,502	919,734	735,024	1,161,964	370,920	23,800	409,472	202,896	55	60	19	38	43
1971	5,857,378	1,306,682	954,068	1,256,799	200,507	2,387,392	187,302	935,754	634,014	529,752	851,202	210,960	6,500	282,720	200,242	63	67	64	48	50
1972	1,102,365	839,820	17,440	381,347	51,354	1,009,962	151,188	586,518	546,402	79,428	430,602	60,018	2,000	36,030	78,570	39	61	18	42	40
1973	168,249	221,337	3,920	272,092	75,694	226,554	35,280	356,676	328,842	38,988	330,474	59,508	915	190,410	106,930	21	40	9	32	41
1974	538,163	172,253	2,151	510,571	110,932	4,433,844	214,848	1,241,058	1,275,630	61,854	1,708,836	358,752	15,266	184,614	103,592	8	12	3	18	52
1975	3,085,416	964,024	14,558	645,903	184,856	13,140,450	100,480	2,026,666	1,173,840	429,336	1,270,116	241,086	9,518	752,318	180,562	17	45	3	22	51
1976	2,547,276	1,329,788	174,923	1,265,422	293,016	1,965,282	81,822	1,320,750	509,160	356,308	817,008	186,120	12,728	470,420	189,390	43	72	33	46	61
1977	2,167,214	1,780,567	92,623	619,025	201,004	1,341,144	100,000	1,085,856	692,514	201,520	561,828	95,970	9,304	552,954	162,534	46	72	31	34	55
1978	5,123,668	1,207,294	7,995	3,137,166	422,100	4,149,288	229,400	813,378	895,698	82,435	2,267,238	536,154	18,074	663,666	306,176	50	57	9	47	58
1979	14,991,826	2,257,332	391,118	3,327,347	393,337	11,218,434	294,200	925,362	1,032,042	1,706,904	1,706,352	859,560	8,439	498,420	198,238	55	69	19	52	66
1980	15,120,457	2,623,066	885,875	4,497,787	591,470	22,505,268	297,900	2,644,698	1,060,860	3,335,284	2,969,040	1,987,530	36,500	3,317,368	526,750	37	71	21	35	53
1981	10,992,809	4,361,406	2,116,066	7,493,093	620,288	1,754,358	82,210	1,796,220	694,680	1,327,699	1,233,318	591,144	14,571	1,008,604	307,130	75	86	61	72	67
1982	5,005,802	2,447,514	1,139,192	5,916,187	581,718	1,134,840	239,300	1,155,552	1,034,628	1,185,551	976,470	423,768	11,640	600,864	288,674	65	70	49	75	67
1983	21,559,372	6,755,256	3,349,451	5,119,744	529,776	3,569,982	96,220	888,294	792,282	1,001,364	1,360,968	180,438	3,080	404,006	212,640	83	90	77	72	71
1984	14,546,710	5,190,413	2,658,376	1,992,681	213,213	10,490,670	215,370	1,242,474	1,165,345	1,270,318	1,002,792	184,872	33,840	592,872	150,978	55	82	68	52	59
1985	8,179,093	7,537,273	6,468,862	1,307,889	133,263	7,211,046	118,030	1,849,938	1,095,192	1,006,407	939,000	212,454	34,880	498,462	153,482	47	87	87	44	46
1986	2,892,171	4,852,935	5,002,949	2,719,313	191,158	1,179,322	230,180	1,977,645	1,151,750	1,015,582	818,652	307,728	16,780	990,238	203,384	46	81	83	56	48
1987	4,986,002	5,356,669	2,128,652	3,254,720	274,613	6,065,880	154,210	1,061,806	1,273,553	686,894	1,337,172	169,236	1,520	388,034	278,276	41	81	76	63	50
1988	3,480,836	6,456,598	1,523,520	1,706,716	673,408	4,065,216	194,630	1,037,862	1,612,745	654,412	866,778	170,454	4,320	483,200	309,012	40	80	70	53	69
1989	13,809,956	8,901,994	3,146,239	2,788,185	68,375	8,317,500	196,760	1,161,984	1,611,566	1,713,287	1,186,410	461,610	28,060	513,421	104,240	59	85	65	56	40
1990	17,272,224	10,371,762	2,149,009	3,532,543	168,012	6,970,020	168,760	2,092,578	2,191,582	749,478	1,069,440	365,802	28,840	680,368	166,297	65	83	74	62	50
1991	10,475,206	6,797,166	2,945,742	5,053,845	522,090	4,222,788	277,589	3,578,508	2,786,925	2,482,016	1,159,920	756,126	10,920	492,522	254,088	56	71	54	68	67
1992	9,395,948	15,646,575	3,320,966	2,789,741	610,575	4,725,864	224,643	1,606,650	1,945,632	2,194,927	1,286,250	304,924		695,108	209,516	59	89	60	55	74
1993	8,907,876	21,600,858	4,176,900	5,236,557	475,799	4,025,166	347,975	1,535,658	1,517,000	1,413,454	1,176,126	405,564		715,099	188,610	60	93	75	70	72
1994	16,327,858	10,750,213	4,352,797	3,393,143	321,121	8,337,840	242,595	990,810	1,897,977	1,095,068	1,471,890	445,920	22,480	509,326	174,172	63	85	80	58	65
1995	20,279,581	14,425,979	4,509,446	4,445,900	527,142	10,038,720	215,713	1,111,140	1,266,692	1,321,108	1,482,162	473,382	17,380	281,307	211,226	64	92	77	66	71
1996	8,211,983	10,809,115	4,411,055	5,693,523	384,603	1,450,578	306,750	1,078,098	1,076,460	692,167	1,649,598	400,746		503,651	187,174	74	91	86	69	67
1997	589,311	7,517,389	1,402,690	2,506,818	91,639	1,503,732	218,115	1,025,664	1,104,004	656,641	1,512,396	127,704	8,394	373,035	152,223	18	87	68	55	38
1998	2,595,439	3,528,845	730,239	2,990,597	113,012	2,296,074	252,000	1,202,172	1,110,938	924,853	1,755,768	215,904	11,120	458,874	175,476	41	76	44	56	39
1999	8,941,964	7,422,701	2,269,716	6,263,681	344,692	6,196,914	463,500	1,625,364	1,728,397	1,657,506	1,512,426	436,626		311,899	196,136	52	81	58	73	64
Averages																				
1956-60	4,605,255	922,303	460,444	1,214,903	86,246	5,626,183	614,241	1,149,109	922,610	688,614	1,049,524	355,275	34,508	101,472	138,890	38	50	40	44	38
1961-70	6,419,991	1,444,052	332,458	944,886	152,995	6,378,688	173,807	890,592	873,586	437,127	794,740	227,736	12,171	161,458	105,677	46	62	43	44	59
1971-80	5,070,201	1,270,216	254,467	1,591,346	252,427	6,237,762	169,242	1,193,674	814,900	682,181	1,291,270	459,566	12,124	694,892	205,298	40	61	27	39	55
1981-90	10,272,498	6,223,182	2,968,232	3,583,107	345,382	5,075,883	169,567	1,426,435	1,262,332	1,061,099	1,079,100	306,751	17,753	616,007	217,411	61	83	74	64	61
1990-99	10,299,739	10,887,060	3,026,856	4,190,635	355,869	4,976,770	271,784	1,584,664	1,662,561	1,318,722	1,407,598	393,269	16,522	502,119	191,492	60	87	70	64	65

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Table 7. Summary of age composition in the catch and escapement by district and river system for major age classes for Bristol Bay sockeye salmon, 1998.

District	River System	Percent of Total by Age Class											
		1.2			2.2			1.3			2.3		
		Catch	Esc.	Total ^a	Catch	Esc.	Total ^a	Catch	Esc.	Total ^a	Catch	Esc.	Total ^a
Naknek-Kvichak													
	Kvichak	33.3	60.8	52.0	19.2	16.9	17.6	40.4	16.6	24.2	7.0	3.6	4.7
	Branch	22.8	49.0	39.4	19.5	20.2	19.9	54.7	26.7	36.9	2.9	1.9	2.2
	Naknek	14.1	24.3	18.8	15.7	19.3	17.4	55.8	41.5	49.1	14.1	12.1	13.2
	All combined	22.5	48.3	37.7	17.3	17.9	17.6	49.4	25.3	35.1	10.6	6.2	8.0
Egegik		7.4	8.6	7.7	15.9	24.7	18.0	13.3	4.8	11.3	61.8	54.3	60.0
Ugashik		7.6	28.8	19.5	10.4	16.5	13.8	18.3	20.4	19.4	63.3	30.3	44.9
Nushagak													
	Wood	68.9	67.1	68.1	3.2	3.0	3.1	25.4	29.3	27.2	1.7	0.4	1.1
	Igushik	41.9	38.4	40.6	3.6	2.8	3.3	48.1	56.9	51.4	5.8	1.8	4.3
	Nushagak	8.3	8.2	8.3	0.1	0.1	0.1	73.1	81.7	77.3	1.6	0.4	1.0
	All combined	55.8	53.4	54.7	2.8	2.4	2.6	35.9	41.7	38.5	2.2	0.5	1.1
Togiak		8.2	18.6	14.5	0.9	2.6	1.9	83.1	65.6	72.5	5.5	11.9	9.4
Bay-wide totals		25.9	41.7	33.1	11.8	13.8	12.7	30.7	27.6	29.2	30.0	13.7	22.5

^a The total column represents the age composition of the total inshore return (catch and escapement).

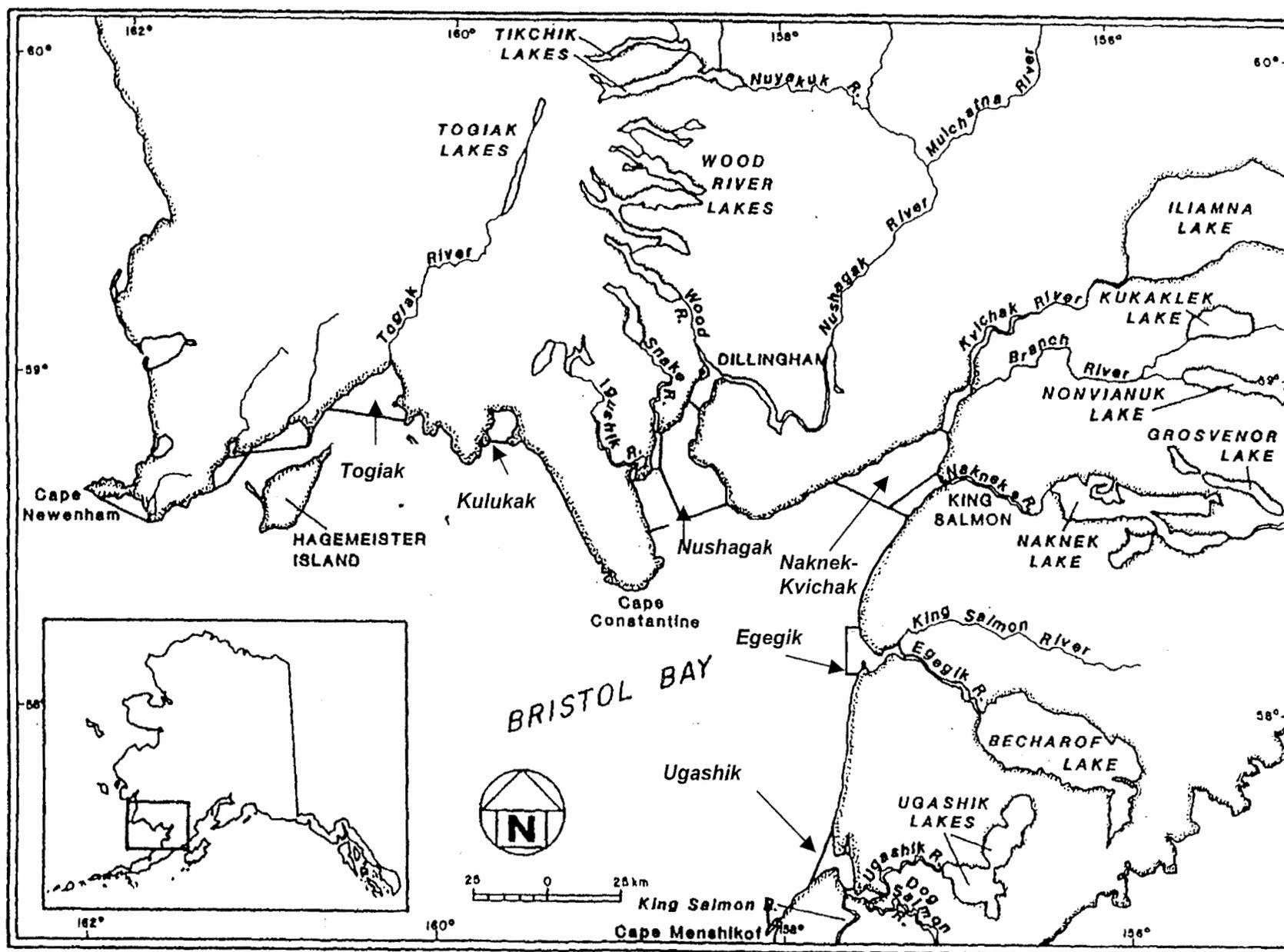


Figure 1. Bristol Bay major river systems and commercial fishing districts.

APPENDIX

Appendix A.1. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Naknek-Kvichak District, 1998.

	Age Group						Total		
	0.3	1.2	2.1	1.3	2.2	1.4		2.3	3.2
<u>Sample Period 1: June 10 - July 6</u>									
Males	33,521		18,566		8,251		9,283		69,621
Percent	33.33		18.46		8.2		9.23		69.23
Sample Size	65		36		16		18		135
Mean Length	511		559		509		572		532
Std. Error	3		5		5		8		2
Sample Size	65		36		16		18		135
Mean Weight	2.07		2.71		2		2.43		2.28
Std. Error	0.1		0.17				0.42		0.09
Sample Size	14		10		1		2		27
Females	7,736		14,440		2,063		6,704		30,943
Percent	7.69		14.36		2.05		6.67		30.77
Sample Size	15		28		4		13		60
Mean Length	514		551		483		548		537
Std. Error	6		3		22		4		3
Sample Size	15		28		4		13		60
Mean Weight	1.95		2.79		1.5		2.5		2.43
Std. Error			0.13						0.06
Sample Size	1		6		1		1		9
Both Sexes	41,257		33,006		10,314		15,987		100,564
Percent	41.03		32.82		10.26		15.9		100
Sample Size	80		64		20		31		195
Mean Length	512		555		504		562		533
Std. Error	3		3		6		5		2
Sample Size	80		64		20		31		195
Mean Weight	2.05		2.74		1.9		2.46		2.33
Std. Error	0.1		0.11				0.42		0.06
Sample Size	15		16		2		3		36
<u>Sample Period 2: July 7</u>									
Males	32,952		64,936		24,876		969		20,999
Percent	12.58		24.78		9.49		0.37		8.01
Sample Size	102		201		77		3		65
Mean Length	500		566		510		588		561
Std. Error	4		2		4		13		4
Sample Size	102		201		77		3		65
Mean Weight	2.62		4.37		2.79				3.96
Std. Error	0.2		0.34		0.4				0.54
Sample Size	18		27		12				10
Females	26,168		57,829		20,999				12,276
Percent	9.99		22.07		8.01				4.69
Sample Size	81		179		65				38
Mean Length	490		549		499				545
Std. Error	3		2		4				4
Sample Size	81		179		65				38
Mean Weight	2.51		3.27		2.59				3.94
Std. Error	0.25		0.23		0.38				0.76
Sample Size	16		38		12				6
Both Sexes	59,120		122,765		45,875		969		33,275
Percent	22.56		46.86		17.51		0.37		12.7
Sample Size	183		380		142		3		103
Mean Length	495		558		505		588		555
Std. Error	2		1		3		13		3
Sample Size	183		380		142		3		103
Mean Weight	2.57		3.85		2.7				3.95
Std. Error	0.16		0.21		0.28				0.44
Sample Size	34		65		24				16

Appendix A.1. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Naknek-Kvichak District, 1998.

	Age Group								Total
	0.3	1.2	2.1	1.3	2.2	1.4	2.3	3.2	
<u>Sample Period 3: July 8 - July 10</u>									
Males	56,948		66,299	34,849			26,349		184,445
Percent	15.44		17.97	9.45			7.14		50
Sample Size	67		78	41			31		217
Mean Length	506		567	512			566		538
Std. Error	3		3	4			5		2
Sample Size	67		78	41			31		217
Mean Weight	2.02		2.54	2.49			2.55		2.37
Std. Error	0.09			0.23			0.35		0.07
Sample Size	11		1	2			2		16
Females	37,399		96,898	24,649			25,499		184,445
Percent	10.14		26.27	6.68			6.91		50
Sample Size	44		114	29			30		217
Mean Length	493		549	508			552		533
Std. Error	4		2	4			5		2
Sample Size	44		114	29			30		217
Mean Weight	1.86		2.57	2.26			2.36		2.36
Std. Error	0.07		0.07	0.29			0.13		0.06
Sample Size	12		9	5			4		30
Both Sexes	94,347		163,197	59,498			51,848		368,890
Percent	25.58		44.24	16.13			14.06		100
Sample Size	111		192	70			61		434
Mean Length	501		556	510			559		535
Std. Error	3		2	3			3		1
Sample Size	111		192	70			61		434
Mean Weight	1.96		2.56	2.39			2.46		2.36
Std. Error	0.06		0.07	0.18			0.19		0.05
Sample Size	23		10	7			6		46
<u>Sample Period 4: July 11</u>									
Males	16,505	532	39,398	20,764			27,153	1,065	105,417
Percent	8.71	0.28	20.79	10.96			14.33	0.56	55.62
Sample Size	31	1	74	39			51	2	198
Mean Length	521	580	578	526			581	549	559
Std. Error	6		2	5			3	1	2
Sample Size	31	1	74	39			51	2	198
Mean Weight	2.52		3.13	2.44			3.03		2.87
Std. Error	0.12		0.1	0.14			0.16		0.07
Sample Size	6		19	3			6		34
Females	7,454		31,945	20,764			23,426	532	84,121
Percent	3.93		16.85	10.96			12.36	0.28	44.38
Sample Size	14		60	39			44	1	158
Mean Length	510		555	513			559	530	542
Std. Error	6		2	4			3		2
Sample Size	14		60	39			44	1	158
Mean Weight	2.4		2.69	2.76			2.79		2.71
Std. Error	0.12		0.07	0.49			0.11		0.13
Sample Size	3		18	2			9		32
Both Sexes	23,959	532	71,343	41,528			50,579	1,597	189,538
Percent	12.64	0.28	37.64	21.91			26.69	0.84	100
Sample Size	45	1	134	78			95	3	356
Mean Length	517	580	568	519			571	543	551
Std. Error	4		2	3			2	1	1
Sample Size	45	1	134	78			95	3	356
Mean Weight	2.48		2.93	2.6			2.92		2.8
Std. Error	0.09		0.06	0.25			0.1		0.07
Sample Size	9		37	5			15		66

Appendix A.1. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Naknek-Kvichak District, 1998.

	Age Group						Total	
	0.3	1.2	2.1	1.3	2.2	1.4		2.3
<u>Sample Period 5: July 12</u>								
Males	20,790		40,121	15,684		4,012		80,607
Percent	12.72		24.55	9.6		2.46		49.33
Sample Size	57		110	43		11		221
Mean Length	526		570	529		585		551
Std. Error	3		2	3		9		2
Sample Size	57		110	43		11		221
Mean Weight	2.29		2.96	2.42		3.33		2.7
Std. Error	0.1		0.08	0.06		0.26		0.05
Sample Size	14		22	8		2		46
Females	17,143		45,227	12,766		7,659		82,795
Percent	10.49		27.68	7.81		4.69		50.67
Sample Size	47		124	35		21		227
Mean Length	511		553	523		558		540
Std. Error	3		2	4		5		1
Sample Size	47		124	35		21		227
Mean Weight	2.03		2.74	2.22		2.74		2.51
Std. Error	0.08		0.07	0.16		0.11		0.05
Sample Size	12		22	3		5		42
Both Sexes	37,933		85,348	28,450		11,671		163,402
Percent	23.21		52.23	17.41		7.14		100
Sample Size	104		234	78		32		448
Mean Length	519		561	526		567		546
Std. Error	2		1	3		5		1
Sample Size	104		234	78		32		448
Mean Weight	2.17		2.84	2.33		2.94		2.61
Std. Error	0.07		0.05	0.08		0.12		0.03
Sample Size	26		44	11		7		88
<u>Sample Period 6: July 13 - July 15</u>								
Males	118,979		249,976	78,118		14,422		461,495
Percent	14.54		30.54	9.54		1.76		56.39
Sample Size	99		208	65		12		384
Mean Length	529		577	544		572		559
Std. Error	3		2	4		6		2
Sample Size	65		129	46		10		250
Mean Weight	2.41		3.2	2.47				2.86
Std. Error	0.13		0.08	0.21				0.07
Sample Size	18		39	11				68
Females	63,696		205,510	57,687		30,045		356,938
Percent	7.78		25.11	7.05		3.67		43.61
Sample Size	53		171	48		25		297
Mean Length	508		559	522		559		544
Std. Error	4		2	4		3		1
Sample Size	43		120	36		21		220
Mean Weight	1.86		2.64	2.16		2.85		2.44
Std. Error	0.07		0.06	0.13		0.17		0.04
Sample Size	5		39	6		4		54
Both Sexes	182,675		455,486	135,805		44,467		818,433
Percent	22.32		55.65	16.59		5.43		100
Sample Size	152		379	113		37		681
Mean Length	522		569	535		563		552
Std. Error	2		1	3		3		1
Sample Size	108		249	82		31		470
Mean Weight	2.22		2.95	2.34		2.85		2.68
Std. Error	0.09		0.05	0.13		0.17		0.04
Sample Size	23		78	17		4		122

Appendix A.1. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Naknek-Kvichak District, 1998.

	Age Group							Total	
	0.3	1.2	2.1	1.3	2.2	1.4	2.3		3.2
<u>Sample Period 5: July 16 - July 17</u>									
Males	46,900		938	140,701	42,210		8,442		239,191
Percent	10.92		0.22	32.75	9.83		1.97		55.68
Sample Size	50		1	150	45		9		255
Mean Length	522		365	580	531		566		559
Std. Error	4			2	4		10		2
Sample Size	50		1	150	45		9		255
Mean Weight	2.19			3.3	2.29		2.57		2.88
Std. Error	0.19			0.09	0.19				0.07
Sample Size	11			33	8		1		53
Females	49,714			98,490	36,582		5,628		190,414
Percent	11.57			22.93	8.52		1.31		44.32
Sample Size	53			105	39		6		203
Mean Length	509			555	521		573		537
Std. Error	3			2	4		7		2
Sample Size	53			105	39		6		203
Mean Weight	1.91			2.65	1.9		2.49		2.31
Std. Error	0.09			0.09	0.16				0.06
Sample Size	9			25	4		1		39
Both Sexes	96,614		938	239,191	78,792		14,070		429,605
Percent	22.49		0.22	55.68	18.34		3.28		100
Sample Size	103		1	255	84		15		458
Mean Length	515		365	569	526		569		549
Std. Error	2			1	3		6		1
Sample Size	103		1	255	84		15		458
Mean Weight	2.05			3.03	2.11		2.54		2.62
Std. Error	0.1			0.06	0.12				0.05
Sample Size	20			58	12		2		92
<u>Sample Period 6: July 18 - August 27</u>									
Males	43,202			87,163	28,802	758	12,885		172,810
Percent	16.43			33.14	10.95	0.29	4.9		65.71
Sample Size	57			115	38	1	17		228
Mean Length	528			578	533	542	576		558
Std. Error	4			3	5		6		2
Sample Size	57			115	38	1	17		228
Mean Weight	2.45			3.1	2.59		2.66		2.82
Std. Error	0.19			0.08	0.25				0.08
Sample Size	10			28	6		1		45
Females	758	8,337		56,845	14,401		9,853		90,194
Percent	0.29	3.17		21.61	5.48		3.75		34.29
Sample Size	1	11		75	19		13		119
Mean Length	493	509		552	523		555		543
Std. Error		6		3	6		8		2
Sample Size	1	11		75	19		13		119
Mean Weight		2.03		2.68	2.83		2.55		2.63
Std. Error		0.07		0.08					0.05
Sample Size		4		23	1		1		29
Both Sexes	758	51,539		144,008	43,203	758	22,738		263,004
Percent	0.29	19.6		54.76	16.43	0.29	8.65		100
Sample Size	1	68		190	57	1	30		347
Mean Length	493	525		568	530	542	567		553
Std. Error		4		2	4		5		2
Sample Size	1	68		190	57	1	30		347
Mean Weight		2.38		2.93	2.67		2.61		2.75
Std. Error		0.16		0.06	0.25				0.05
Sample Size		14		51	7		2		74

Appendix A.1. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Naknek-Kvichak District, 1998.

	Age Group							Total	
	0.3	1.2	2.1	1.3	2.2	1.4	2.3		3.2
<u>All Periods Combined:</u>									
Males	369,797		1,470	707,160	253,554	1,727	123,545	1,065	1,458,318
Percent	14.25		0.06	27.25	9.77	0.07	4.76	0.04	56.19
Sample Size	528		2	972	364	4	214	2	2,086
Mean Length	520		443	575	529	568	571	549	553
Std. Error	1			1	2	13	2	1	1
Sample Size	494		2	893	345	4	212	2	1,952
Mean Weight	2.31			3.22	2.47		2.97		2.84
Std. Error	0.06			0.05	0.1		0.18		0.03
Sample Size	102			179	51		24		356
Females	758	217,647		607,184	189,911		121,090	532	1,137,122
Percent	0.03	8.39		23.39	7.32		4.67	0.02	43.81
Sample Size	1	318		856	278		190	1	1,644
Mean Length	493	504		554	516		556	530	538
Std. Error		1		1	2		2		1
Sample Size	1	308		805	266		186	1	1,567
Mean Weight		1.99		2.71	2.28		2.78		2.51
Std. Error		0.05		0.04	0.1		0.12		0.03
Sample Size		62		180	34		31		307
Both Sexes	758	587,444	1,470	1,314,344	443,465	1,727	244,635	1,597	2,595,440
Percent	0.03	22.63	0.06	50.64	17.09	0.07	9.43	0.06	100
Sample Size	1	846	2	1,828	642	4	404	3	3,730
Mean Length	493	514	443	565	524	568	564	543	546
Std. Error		1		1	1	13	1	1	0
Sample Size	1	802	2	1,698	611	4	398	3	3,519
Mean Weight		2.19		2.98	2.39		2.87		2.69
Std. Error		0.04		0.03	0.07		0.1		0.02
Sample Size		164		359	85		55		663

Appendix A.2. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Kvichak River, 1998.

	Age Group							Total
	1.1	1.2	2.1	0.4	1.3	2.2	2.3	
<u>Sample Period 1: June 24 - July 5</u>								
Males	1,006	147,846	5,029		21,121	22,127	1,006	198,135
Percent	0.24	35.42	1.2		5.06	5.3	0.24	47.47
Sample Size	1	147	5		21	22	1	197
Mean Length	353	506	399		578	527	596	513
Std. Error		3	11		8	6		2
Sample Size	1	147	5		21	22	1	197
Females	1,006	143,822	1,006		31,179	39,225	3,017	219,255
Percent	0.24	34.46	0.24		7.47	9.4	0.72	52.53
Sample Size	1	143	1		31	39	3	218
Mean Length	398	495	399		566	520	553	510
Std. Error		2			5	5	7	2
Sample Size	1	143	1		31	39	3	218
Both Sexes	2,012	291,668	6,035		52,300	61,352	4,023	417,390
Percent	0.48	69.88	1.45		12.53	14.7	0.96	100
Sample Size	2	290	6		52	61	4	415
Mean Length	376	501	399		571	522	564	511
Std. Error		2	11		4	4	7	1
Sample Size	2	290	6		52	61	4	415
<u>Sample Period 2: July 6 - 9</u>								
Males	2,038	182,414	3,057		27,515	34,649	9,172	258,845
Percent	0.36	32.43	0.54		4.89	6.16	1.63	46.01
Sample Size	2	179	3		27	34	9	254
Mean Length	345	514	408		577	523	587	522
Std. Error	25	2	2		6	5	12	2
Sample Size	2	178	3		27	34	8	252
Females		202,797	2,038		51,973	41,782	5,095	303,685
Percent		36.05	0.36		9.24	7.43	0.91	53.99
Sample Size		199	2		51	41	5	298
Mean Length		499	413		565	514	543	513
Std. Error		2	3		5	5	16	2
Sample Size		193	2		50	41	5	291
Both Sexes	2,038	385,211	5,095		79,488	76,431	14,267	562,530
Percent	0.36	68.48	0.91		14.13	13.59	2.54	100
Sample Size	2	378	5		78	75	14	552
Mean Length	345	506	410		569	518	571	517
Std. Error	25	2	2		4	4	10	1
Sample Size	2	371	5		77	75	13	543

Appendix A.2. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Kvichak River, 1998.

	Age Group							Total
	1.1	1.2	2.1	0.4	1.3	2.2	2.3	
<u>Sample Period 3: July 10 - 21</u>								
Males	8,602	296,780	17,205	4,301	120,432	98,927	34,409	580,656
Percent	0.65	22.55	1.31	0.33	9.15	7.52	2.61	44.12
Sample Size	2	69	4	1	28	23	8	135
Mean Length	346	516	410	613	589	529	573	532
Std. Error	15	4	52		9	6	13	3
Sample Size	2	69	4	1	28	23	8	135
Females	4,301	421,514			129,035	150,540	30,108	735,498
Percent	0.33	32.03			9.8	11.44	2.29	55.88
Sample Size	1	98			30	35	7	171
Mean Length	372	499			563	513	554	514
Std. Error		3			10	4	18	3
Sample Size	1	98			30	35	7	171
Both Sexes	12,903	718,294	17,205	4,301	249,467	249,467	64,517	1,316,154
Percent	0.98	54.58	1.31	0.33	18.95	18.95	4.9	100
Sample Size	3	167	4	1	58	58	15	306
Mean Length	354	506	410	613	576	519	565	522
Std. Error	15	2	52		7	4	11	2
Sample Size	3	167	4	1	58	58	15	306
<u>All Periods Combined:</u>								
Males	11,646	627,040	25,291	4,301	169,068	155,703	44,587	1,037,636
Percent	0.51	27.31	1.1	0.19	7.36	6.78	1.94	45.19
Sample Size	5	395	12	1	76	79	18	586
Mean Length	346	513	408	613	586	527	577	526
Std. Error	13	2	36		7	4	11	2
Sample Size	5	394	12	1	76	79	17	584
Females	5,307	768,133	3,044		212,187	231,547	38,220	1,258,438
Percent	0.23	33.45	0.13		9.24	10.08	1.66	54.81
Sample Size	2	440	3		112	115	15	687
Mean Length	377	498	408		564	514	553	513
Std. Error		2	3		6	3	14	2
Sample Size	2	434	3		111	115	15	680
Both Sexes	16,953	1,395,173	28,335	4,301	381,255	387,250	82,807	2,296,074
Percent	0.74	60.76	1.23	0.19	16.6	16.87	3.61	100
Sample Size	7	835	15	1	188	194	33	1,273
Mean Length	356	505	408	613	574	519	566	519
Std. Error	13	1	33		5	3	9	1
Sample Size	7	828	15	1	187	194	32	1,264

Appendix A.3. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Naknek River, 1998.

	Age Group								Total	
	1.1	1.2	2.1	1.3	2.2	1.4	2.3	3.2		2.4
<u>Sample Period 1: June 23 - July 3</u>										
Males		40,084	6,544	42,538	38,447	4,090	19,633			151,336
Percent		12.66	2.07	13.44	12.14	1.29	6.2			47.8
Sample Size		49	8	52	47	5	24			185
Mean Length		458	360	561	478	607	553			504
Std. Error		4	12	4	6	6	9			3
Sample Size		49	8	52	47	5	24			185
Females		25,359	818	76,077	26,995	818	34,357		818	165,242
Percent		8.01	0.26	24.03	8.53	0.26	10.85		0.26	52.2
Sample Size		31	1	93	33	1	42		1	202
Mean Length		457	421	551	483	585	554		608	526
Std. Error		6		2	5		3			2
Sample Size		31	1	93	33	1	42		1	202
Both Sexes		65,443	7,362	118,615	65,442	4,908	53,990		818	316,578
Percent		20.67	2.33	37.47	20.67	1.55	17.05		0.26	100
Sample Size		80	9	145	80	6	66		1	387
Mean Length		458	366	555	480	604	554		608	516
Std. Error		3	12	2	4	6	4			1
Sample Size		80	9	145	80	6	66		1	387
<u>Sample Period 2: July 4 - 5</u>										
Males	649	25,947	1,946	48,652	28,542	1,297	13,622			120,655
Percent	0.23	9.3	0.7	17.44	10.23	0.46	4.88			43.26
Sample Size	1	40	3	75	44	2	21			186
Mean Length	336	469	345	567	466	565	574			518
Std. Error		6	7	3	10	22	5			3
Sample Size	1	40	3	75	44	2	21			186
Females		20,109		79,139	25,299	649	33,083			158,279
Percent		7.21		28.37	9.07	0.23	11.86			56.74
Sample Size		31		122	39	1	51			244
Mean Length		471		546	490	523	548			528
Std. Error		4		2	5		4			2
Sample Size		31		122	39	1	51			244
Both Sexes	649	46,056	1,946	127,791	53,841	1,946	46,705			278,934
Percent	0.23	16.51	0.7	45.81	19.3	0.7	16.74			100
Sample Size	1	71	3	197	83	3	72			430
Mean Length	336	469	345	554	478	551	555			523
Std. Error		4	7	2	6	22	3			2
Sample Size	1	71	3	197	83	3	72			430

Appendix A.3. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Naknek River, 1998.

	Age Group								Total	
	1.1	1.2	2.1	1.3	2.2	1.4	2.3	3.2		2.4
<u>Sample Period 3: July 6 - 19</u>										
Males	7,904	89,912	4,940	107,698	63,235	988	17,785	988		293,450
Percent	1.3	14.82	0.81	17.75	10.42	0.16	2.93	0.16		48.37
Sample Size	8	91	5	109	64	1	18	1		297
Mean Length	332	463	346	557	477	615	558	427		501
Std. Error	24	4	9	3	5		5			2
Sample Size	8	91	5	109	64	1	18	1		297
Females		90,900		145,243	49,402		26,677	988		313,210
Percent		14.98		23.94	8.14		4.4	0.16		51.63
Sample Size		92		147	50		27	1		317
Mean Length		467		538	483		536	471		508
Std. Error		3		2	4		6			2
Sample Size		92		146	50		27	1		316
Both Sexes	7,904	180,812	4,940	252,941	112,637	988	44,462	1,976		606,660
Percent	1.3	29.8	0.81	41.69	18.57	0.16	7.33	0.33		100
Sample Size	8	183	5	256	114	1	45	2		614
Mean Length	332	465	346	546	479	615	545	449		505
Std. Error	24	3	9	2	3		4			1
Sample Size	8	183	5	255	114	1	45	2		613
<u>All Periods Combined:</u>										
Males	8,553	155,943	13,430	198,888	130,224	6,375	51,040	988		565,441
Percent	0.71	12.97	1.12	16.54	10.83	0.53	4.25	0.08		47.03
Sample Size	9	180	16	236	155	8	63	1		668
Mean Length	332	463	353	560	475	600	560	427		506
Std. Error	24	3	7	2	4	7	4			1
Sample Size	9	180	16	236	155	8	63	1		668
Females		136,368	818	300,459	101,696	1,467	94,117	988	818	636,731
Percent		11.34	0.07	24.99	8.46	0.12	7.83	0.08	0.07	52.97
Sample Size		154	1	362	122	2	120	1	1	763
Mean Length		466	421	543	485	558	547	471	608	518
Std. Error		2		1	3		2			1
Sample Size		154	1	361	122	2	120	1	1	762
Both Sexes	8,553	292,311	14,248	499,347	231,920	7,842	145,157	1,976	818	1,202,172
Percent	0.71	24.32	1.19	41.54	19.29	0.65	12.07	0.16	0.07	100
Sample Size	9	334	17	598	277	10	183	2	1	1,431
Mean Length	332	464	357	550	479	592	551	449	608	512
Std. Error	24	2	7	1	2	7	2			1
Sample Size	9	334	17	597	277	10	183	2	1	1,430

Appendix A.4. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Egegik District, 1998.

	Age Group							Total	
	1.2	1.3	2.2	1.4	2.3	3.2	2.4		3.3
<u>Sample Period 1: June 9 - June 23</u>									
Males	15,104	8,770	24,361		50,673	974	487		100,369
Percent	6.54	3.8	10.55		21.94	0.42	0.21		43.46
Sample Size	31	18	50		104	2	1		206
Mean Length	504	557	523		573	558	575		549
Std. Error	5	6	4		2	49			2
Sample Size	31	18	48		101	2	1		201
Mean Weight	2	2.86	2.33		2.7				2.52
Std. Error	0.2	0.41	0.12		0.12				0.08
Sample Size	6	2	5		8				21
Females	8,283	9,257	18,515		94,035	487			130,577
Percent	3.59	4.01	8.02		40.72	0.21			56.54
Sample Size	17	19	38		193	1			268
Mean Length	500	552	515		561	537			550
Std. Error	4	4	5		2				1
Sample Size	17	19	38		190	1			265
Mean Weight	1.86	2.88	1.88		2.54				2.43
Std. Error	0.29	0.15	0.03		0.06				0.05
Sample Size	2	2	3		19				26
Both Sexes	23,387	18,027	42,876		144,708	1,461	487		230,946
Percent	10.13	7.81	18.57		62.66	0.63	0.21		100
Sample Size	48	37	88		297	3	1		474
Mean Length	502	554	519		565	551	575		549
Std. Error	3	3	3		1	49			1
Sample Size	48	37	86		291	3	1		466
Mean Weight	1.95	2.87	2.14		2.6				2.47
Std. Error	0.16	0.21	0.07		0.06				0.05
Sample Size	8	4	8		27				47
<u>Sample Period 2: June 24 - June 25</u>									
Males	11,354	5,430	17,278		55,785	1,481			91,328
Percent	6.44	3.08	9.8		31.65	0.84			51.82
Sample Size	23	11	35		113	3			185
Mean Length	506	553	515		576	523			553
Std. Error	4	11	5		2	11			2
Sample Size	23	11	35		113	3			185
Mean Weight	1.84		2.08		2.98				2.64
Std. Error	0.07		0.14		0.1				0.07
Sample Size	6		3		19				28
Females	3,456	8,392	7,405		65,164		494		84,911
Percent	1.96	4.76	4.2		36.97		0.28		48.18
Sample Size	7	17	15		132		1		172
Mean Length	507	548	511		560		564		552
Std. Error	10	4	4		2				2
Sample Size	7	17	15		132		1		172
Mean Weight	1.48	2.24			2.68		2.47		2.58
Std. Error					0.07				0.06
Sample Size	1	1			14		1		17
Both Sexes	14,810	13,822	24,683		120,949	1,481	494		176,239
Percent	8.4	7.84	14.01		68.63	0.84	0.28		100
Sample Size	30	28	50		245	3	1		357
Mean Length	506	550	514		567	523	564		553
Std. Error	4	5	4		1	11			1
Sample Size	30	28	50		245	3	1		357
Mean Weight	1.76	2.24	2.08		2.82		2.47		2.61
Std. Error	0.07		0.14		0.06				0.05
Sample Size	7	1	3		33		1		45

Appendix A.4. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Egegik District, 1998.

	Age Group							Total	
	1.2	1.3	2.2	1.4	2.3	3.2	2.4		3.3
<u>Sample Period 3: June 26 - June 28</u>									
Males	15,005	11,504	24,508		68,521	500			120,038
Percent	7.03	5.39	11.48		32.08	0.23			56.21
Sample Size	30	23	49		137	1			240
Mean Length	511	576	537		580	541			562
Std. Error	6	6	4		3				2
Sample Size	30	23	49		137	1			240
Mean Weight	2.01	2.84	2.29		3.03				2.73
Std. Error	0.11	0.28	0.06		0.13				0.08
Sample Size	2	2	2		10				16
Females	5,502	8,003	13,004		65,020	1,500		500	93,529
Percent	2.58	3.75	6.09		30.44	0.7		0.23	43.79
Sample Size	11	16	26		130	3		1	187
Mean Length	518	557	524		568	529		531	557
Std. Error	11	4	4		2	15			2
Sample Size	11	16	26		130	3		1	187
Mean Weight	1.9	2.46	2.05		2.67				2.52
Std. Error	0.12	0.11	0.03		0.08				0.06
Sample Size	4	2	2		19				27
Both Sexes	20,507	19,507	37,512		133,541	2,000		500	213,567
Percent	9.6	9.13	17.56		62.53	0.94		0.23	100
Sample Size	41	39	75		267	4		1	427
Mean Length	513	569	532		574	532		531	560
Std. Error	5	4	3		2	15			1
Sample Size	41	39	75		267	4		1	427
Mean Weight	1.98	2.68	2.21		2.85				2.64
Std. Error	0.09	0.17	0.04		0.08				0.05
Sample Size	6	4	4		29				43
<u>Sample Period 4: June 29 - July 1</u>									
Males	25,228	36,040	36,040		199,421	2,403		1,201	300,333
Percent	4.61	6.58	6.58		36.4	0.44		0.22	54.82
Sample Size	21	30	30		166	2		1	250
Mean Length	523	581	543		588	512		606	576
Std. Error	7	5	5		2	18			2
Sample Size	21	30	30		166	2		1	250
Mean Weight	2.13	2.89	1.86		2.85				2.67
Std. Error	0.13	0.2			0.06				0.05
Sample Size	4	4	1		38				47
Females	14,416	36,040	13,215		180,201	1,201	1,201	1,201	247,475
Percent	2.63	6.58	2.41		32.89	0.22	0.22	0.22	45.18
Sample Size	12	30	11		150	1	1	1	206
Mean Length	519	566	526		572	533	542	559	565
Std. Error	4	4	5		2				1
Sample Size	12	30	11		150	1	1	1	206
Mean Weight	2.6	2.53	1.9		2.5	1.9			2.48
Std. Error	0.25	0.08	0.07		0.05				0.04
Sample Size	2	10	2		27	1			42
Both Sexes	39,644	72,080	49,255		379,622	3,604	1,201	2,402	547,808
Percent	7.24	13.16	8.99		69.3	0.66	0.22	0.44	100
Sample Size	33	60	41		316	3	1	2	456
Mean Length	522	573	538		581	519	542	583	571
Std. Error	5	3	4		1	18			1
Sample Size	33	60	41		316	3	1	2	456
Mean Weight	2.3	2.71	1.87		2.68	1.9			2.58
Std. Error	0.12	0.11	0.07		0.04				0.03
Sample Size	6	14	3		65	1			89

Appendix A.4. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Egegik District, 1998.

	Age Group							Total	
	1.2	1.3	2.2	1.4	2.3	3.2	2.4		3.3
<u>Sample Period 5: July 2 - July 3</u>									
Males	28,397	25,815	47,758		171,669	6,454			280,093
Percent	4.93	4.48	8.3		29.82	1.12			48.65
Sample Size	22	20	37		133	5			217
Mean Length	516	578	527		586	528			567
Std. Error	5	5	4		2	11			2
Sample Size	22	20	37		133	5			217
Mean Weight	2.15	2.47	2.23		3.03				2.75
Std. Error	0.11		0.11		0.09				0.06
Sample Size	2	1	5		20				28
Females	12,908	36,141	37,432	1,291	206,519			1,291	295,582
Percent	2.24	6.28	6.5	0.22	35.87			0.22	51.35
Sample Size	10	28	29	1	160			1	229
Mean Length	512	560	514	578	560			574	552
Std. Error	9	5	5		2				2
Sample Size	10	28	29	1	160			1	229
Mean Weight		2.94	1.62		2.6				2.51
Std. Error			0.13		0.09				0.06
Sample Size		1	3		16				20
Both Sexes	41,305	61,956	85,190	1,291	378,188	6,454		1,291	575,675
Percent	7.18	10.76	14.8	0.22	65.69	1.12		0.22	100
Sample Size	32	48	66	1	293	5		1	446
Mean Length	515	568	521	578	572	528		574	559
Std. Error	5	3	3		2	11			1
Sample Size	32	48	66	1	293	5		1	446
Mean Weight	2.15	2.74	1.96		2.8				2.63
Std. Error	0.11		0.08		0.06				0.04
Sample Size	2	2	8		36				48
<u>Sample Period 6: July 4 - July 6</u>									
Males	11,754	14,820	24,019		58,771				109,364
Percent	5.81	7.32	11.87		29.04				54.04
Sample Size	23	29	47		115				214
Mean Length	511	575	537		578				562
Std. Error	4	5	4		3				2
Sample Size	23	29	47		115				214
Mean Weight	1.96	3.14	2.24		3				2.74
Std. Error	0.18	0.14	0.09		0.15				0.09
Sample Size	4	5	2		12				23
Females	4,599	15,842	7,666	511	64,392				93,010
Percent	2.27	7.83	3.79	0.25	31.82				45.96
Sample Size	9	31	15	1	126				182
Mean Length	509	556	521	573	558				552
Std. Error	6	4	6		2				2
Sample Size	9	31	15	1	126				182
Mean Weight		2.57	2.23		2.56				2.53
Std. Error		0.14			0.08				0.06
Sample Size		4	1		16				21
Both Sexes	16,353	30,662	31,685	511	123,163				202,374
Percent	8.08	15.15	15.66	0.25	60.86				100
Sample Size	32	60	62	1	241				396
Mean Length	510	565	533	573	568				557
Std. Error	4	3	3		2				1
Sample Size	32	60	62	1	241				396
Mean Weight	1.96	2.85	2.24		2.77				2.65
Std. Error	0.18	0.1	0.09		0.08				0.06
Sample Size	4	9	3		28				44

Appendix A.4. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Egegik District, 1998.

	Age Group							Total	
	1.2	1.3	2.2	1.4	2.3	3.2	2.4		3.3
<u>Sample Period 7: July 7 - July 8</u>									
Males	19,328	47,441	45,684		205,581	3,514			321,548
Percent	3.13	7.67	7.39		33.24	0.57			51.99
Sample Size	11	27	26		117	2			183
Mean Length	514	565	530		576	505			563
Std. Error	11	6	5		3	1			2
Sample Size	11	27	26		117	2			183
Mean Weight		2.99	2.58		3.21				3.08
Std. Error			0.22		0.08				0.07
Sample Size		1	4		18				23
Females	10,543	52,713	43,927	1,757	182,737	5,271			296,948
Percent	1.7	8.52	7.1	0.28	29.55	0.85			48.01
Sample Size	6	30	25	1	104	3			169
Mean Length	512	548	512	560	556	489			545
Std. Error	15	5	4		2	11			2
Sample Size	6	30	25	1	104	3			169
Mean Weight		2.87	2.25		2.74				2.69
Std. Error		0.05			0.09				0.06
Sample Size		7	1		14				22
Both Sexes	29,871	100,154	89,611	1,757	388,318	8,785			618,496
Percent	4.83	16.19	14.49	0.28	62.78	1.42			100
Sample Size	17	57	51	1	221	5			352
Mean Length	513	556	521	560	567	495			555
Std. Error	9	4	3		2	6			1
Sample Size	17	57	51	1	221	5			352
Mean Weight		2.93	2.42		2.99				2.89
Std. Error		0.05	0.22		0.06				0.04
Sample Size		8	5		32				45
<u>Sample Period 8: July 9 - July 12</u>									
Males	20,243	32,895	53,139		126,520	5,061			237,858
Percent	4.79	7.78	12.57		29.94	1.2			56.29
Sample Size	24	39	63		150	6			282
Mean Length	522	574	530		577	519			560
Std. Error	5	4	3		2	13			1
Sample Size	24	39	63		150	6			282
Mean Weight	2.15	3.03	2.26		2.99	2.57			2.75
Std. Error	0.18	0.24	0.1		0.11	0.08			0.07
Sample Size	4	5	12		24	2			47
Females	15,182	27,834	28,678	843	111,340		843		184,720
Percent	3.59	6.59	6.79	0.2	26.35		0.2		43.71
Sample Size	18	33	34	1	132		1		219
Mean Length	500	555	512	556	555		565		544
Std. Error	6	4	3		2				1
Sample Size	18	33	34	1	132		1		219
Mean Weight	1.97	2.75	1.88		2.57				2.44
Std. Error	0.16	0.1	0.12		0.08				0.05
Sample Size	2	8	6		20				36
Both Sexes	35,425	60,729	81,817	843	237,860	5,061	843		422,578
Percent	8.38	14.37	19.36	0.2	56.29	1.2	0.2		100
Sample Size	42	72	97	1	282	6	1		501
Mean Length	512	565	523	556	567	519	565		553
Std. Error	4	3	2		1	13			1
Sample Size	42	72	97	1	282	6	1		501
Mean Weight	2.07	2.9	2.13		2.79	2.57			2.62
Std. Error	0.12	0.14	0.08		0.07	0.08			0.05
Sample Size	6	13	18		44	2			83

Appendix A.4. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Egegik District, 1998.

	Age Group							Total	
	1.2	1.3	2.2	1.4	2.3	3.2	2.4		3.3
<u>Sample Period 9: July 13 - September 3</u>									
Males	33,132	45,281	68,474		161,244	8,835			316,966
Percent	6.12	8.37	12.65		29.8	1.63			58.57
Sample Size	30	41	62		146	8			287
Mean Length	517	570	527		575	541			557
Std. Error	3	3	3		2	6			1
Sample Size	30	41	62		146	8			287
Mean Weight	1.97	3.11	2.24		2.95				2.71
Std. Error	0.06	0.17	0.08		0.1				0.06
Sample Size	7	6	15		21				49
Females	6,626	48,594	49,699		114,859	2,209		2,209	224,196
Percent	1.22	8.98	9.18		21.22	0.41		0.41	41.43
Sample Size	6	44	45		104	2		2	203
Mean Length	512	548	513		555	499		583	543
Std. Error	14	3	2		2	3		16	2
Sample Size	6	44	45		104	2		2	203
Mean Weight	2.58	2.43	1.95		2.52	1.83			2.37
Std. Error		0.13	0.11		0.07				0.05
Sample Size	1	8	10		25	1			45
Both Sexes	39,758	93,875	118,173		276,103	11,044		2,209	541,162
Percent	7.35	17.35	21.84		51.02	2.04		0.41	100
Sample Size	36	85	107		250	10		2	490
Mean Length	516	559	521		567	532		583	551
Std. Error	4	2	2		1	5		16	1
Sample Size	36	85	107		250	10		2	490
Mean Weight	2.07	2.76	2.12		2.77	1.83			2.57
Std. Error	0.06	0.1	0.07		0.07				0.04
Sample Size	8	14	25		46	1			94
<u>All Periods Combined:</u>									
Males	179,545	227,996	341,261		1,098,185	29,222	487	1,201	1,877,897
Percent	5.09	6.46	9.67		31.12	0.83	0.01	0.03	53.22
Sample Size	215	238	399		1,181	29	1	1	2,064
Mean Length	515	572	530		580	527	575	606	563
Std. Error	2	2	1		1	5			1
Sample Size	215	238	397		1,178	29	1	1	2,059
Mean Weight	2.05	2.94	2.25		3	2.57			2.76
Std. Error	0.05	0.09	0.05		0.03	0.08			0.02
Sample Size	35	26	49		170	2			282
Females	81,515	242,816	219,541	4,402	1,084,267	10,668	1,201	6,538	1,650,948
Percent	2.31	6.88	6.22	0.12	30.73	0.3	0.03	0.19	46.78
Sample Size	96	248	238	4	1,231	10	1	7	1,835
Mean Length	510	554	515	566	561	504	542	569	551
Std. Error	3	2	1		1	7		16	1
Sample Size	96	248	238	4	1,228	10	1	7	1,832
Mean Weight	2.16	2.67	1.95		2.6	1.85		2.47	2.51
Std. Error	0.12	0.04	0.05		0.03				0.02
Sample Size	12	43	28		170	2		1	256
Both Sexes	261,060	470,812	560,802	4,402	2,182,452	39,890	1,688	7,739	3,528,845
Percent	7.4	13.34	15.89	0.12	61.85	1.13	0.05	0.22	100
Sample Size	311	486	637	4	2,412	39	2	8	3,899
Mean Length	513	563	524	566	570	521	552	575	557
Std. Error	2	1	1		1	4		16	0
Sample Size	311	486	635	4	2,406	39	2	8	3,891
Mean Weight	2.07	2.8	2.13		2.8	2.28		2.47	2.64
Std. Error	0.04	0.05	0.04		0.02	0.08			0.02
Sample Size	47	69	77		340	4		1	538

Appendix A.5. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Egegik River, 1998.

	Age Group							Total ^a
	1.1	1.2	2.1	1.3	2.2	2.3	3.2	
<u>Sample Period 1: June 18 - 29</u>								
Males	1,023	15,858	17,393	1,023	26,089	53,200		114,586
Percent	0.52	7.99	8.76	0.52	13.14	26.8		57.73
Sample Size	2	31	34	2	51	104		224
Mean Length	348	459	358	575	496	577		507
Std. Error	26	6	4	23	5	3		2
Sample Size	2	31	34	2	51	104		224
Females		3,581		1,023	16,881	62,409		83,894
Percent		1.8		0.52	8.51	31.44		42.27
Sample Size		7		2	33	122		164
Mean Length		480		540	496	556		540
Std. Error		10		9	4	2		2
Sample Size		7		2	33	122		164
Both Sexes	1,023	19,439	17,393	2,046	42,970	115,609		198,480
Percent	0.52	9.79	8.76	1.03	21.65	58.25		100
Sample Size	2	38	34	4	84	226		388
Mean Length	348	462	358	558	496	566		521
Std. Error	26	5	4	12	4	2		1
Sample Size	2	38	34	4	84	226		388
<u>Sample Period 2: June 30 - July 5</u>								
Males	1,641	14,772	14,772	11,489	37,750	82,885		163,309
Percent	0.54	4.83	4.83	3.75	12.33	27.08		53.35
Sample Size	2	18	18	14	46	101		199
Mean Length	343	482	357	576	505	565		523
Std. Error	27	12	7	7	6	4		3
Sample Size	2	18	18	14	46	101		199
Females		17,234		12,310	41,853	68,934	2,462	142,793
Percent		5.63		4.02	13.67	22.52	0.8	46.65
Sample Size		21		15	51	84	3	174
Mean Length		487		559	501	549	511	528
Std. Error		7		5	3	3	7	2
Sample Size		21		15	51	84	3	174
Both Sexes	1,641	32,006	14,772	23,799	79,603	151,819	2,462	306,102
Percent	0.54	10.46	4.83	7.77	26.01	49.6	0.8	100
Sample Size	2	39	18	29	97	185	3	373
Mean Length	343	485	357	567	503	558	511	525
Std. Error	27	7	7	4	3	3	7	2
Sample Size	2	39	18	29	97	185	3	373

Appendix A.5. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Egegik River, 1998.

	Age Group								Total ^a
	1.1	1.2	2.1	1.3	2.2	2.3	3.2	3.3	
<u>Sample Period 3: July 6 - 10</u>									
Males	2,295	6,884	16,827	6,119	36,713	68,071	765	765	138,439
Percent	0.85	2.54	6.2	2.25	13.52	25.07	0.28	0.28	50.99
Sample Size	3	9	22	8	48	89	1	1	181
Mean Length	369	498	362	572	509	579	512	505	526
Std. Error	11	6	6	9	5	3			2
Sample Size	3	9	22	8	48	89	1	1	181
Females		11,473		4,589	30,594	84,899	1,530		133,085
Percent		4.23		1.69	11.27	31.27	0.56		49.01
Sample Size		15		6	40	111	2		174
Mean Length		486		514	504	558	539		538
Std. Error		6		22	4	2	8		2
Sample Size		15		6	40	111	2		174
Both Sexes	2,295	18,357	16,827	10,708	67,307	152,970	2,295	765	271,524
Percent	0.85	6.76	6.2	3.94	24.79	56.34	0.85	0.28	100
Sample Size	3	24	22	14	88	200	3	1	355
Mean Length	369	490	362	547	507	567	530	505	531
Std. Error	11	4	6	11	3	2	8		1
Sample Size	3	24	22	14	88	200	3	1	355
<u>Sample Period 4: July 11 - 20</u>									
Males	2,029	10,145	16,232	11,159	34,493	78,116	1,014		153,188
Percent	0.61	3.03	4.85	3.33	10.3	23.33	0.3		45.76
Sample Size	2	10	16	11	34	77	1		151
Mean Length	379	495	365	584	508	578	530		532
Std. Error	13	13	8	6	6	3			2
Sample Size	2	10	16	11	34	77	1		151
Females		15,217		5,072	49,710	104,494	7,101		181,594
Percent		4.55		1.52	14.85	31.21	2.12		54.24
Sample Size		15		5	49	103	7		179
Mean Length		492		565	498	560	511		535
Std. Error		3		5	4	2	6		2
Sample Size		15		5	49	103	7		179
Both Sexes	2,029	25,362	16,232	16,231	84,203	182,610	8,115		334,782
Percent	0.61	7.58	4.85	4.85	25.15	54.55	2.42		100
Sample Size	2	25	16	16	83	180	8		330
Mean Length	379	493	365	578	502	567	513		534
Std. Error	13	6	8	5	3	2	6		1
Sample Size	2	25	16	16	83	180	8		330

Appendix A.5. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Egegik River, 1998.

	Age Group								Total ^a
	1.1	1.2	2.1	1.3	2.2	2.3	3.2	3.3	
All Periods Combined:									
Males	6,988	47,659	65,224	29,790	135,045	282,272	1,779	765	569,522
Percent	0.63	4.29	5.87	2.68	12.16	25.41	0.16	0.07	51.27
Sample Size	9	68	90	35	179	371	2	1	755
Mean Length	362	479	361	578	505	574	522	505	523
Std. Error	9	5	3	4	3	2			1
Sample Size	9	68	90	35	179	371	2	1	755
Females		47,505		22,994	139,038	320,736	11,093		541,366
Percent		4.28		2.07	12.52	28.87	1		48.73
Sample Size		58		28	173	420	12		691
Mean Length		488		551	500	556	515		535
Std. Error		3		5	2	1	4		1
Sample Size		58		28	173	420	12		691
Both Sexes	6,988	95,164	65,224	52,784	274,083	603,008	12,872	765	1,110,888
Percent	0.63	8.57	5.87	4.75	24.67	54.28	1.16	0.07	100
Sample Size	9	126	90	63	352	791	14	1	1,446
Mean Length	362	484	361	566	503	565	516	505	529
Std. Error	9	3	3	3	2	1	4		1
Sample Size	9	126	90	63	352	791	14	1	1,446

^a Total does not include King Salmon River escapement (50).

Appendix A.6. Age, sex, and size (length in mm and weight in kg) composition of salmon sockeye commercial catch, Ugashik District, 1998.

	Age Group						Total
	1.2	1.3	2.2	1.4	2.3	2.4	
<u>Sample Period 1: June 10 - July 10</u>							
Males	5,918	14,056	11,097		54,007	370	85,448
Percent	3.75	8.9	7.03		34.19	0.23	54.1
Sample Size	16	38	30		146	1	231
Mean Length	533	573	537		579	578	570
Std. Error	6	4	4		2		1
Sample Size	16	38	30		146	1	231
Mean Weight	2.25	3.11	2.42		3.11		2.96
Std. Error	0.09	0.18	0.07		0.06		0.05
Sample Size	6	8	5		35		54
Females	1,110	15,166	4,439	370	51,416		72,501
Percent	0.7	9.6	2.81	0.23	32.55		45.9
Sample Size	3	41	12	1	139		196
Mean Length	492	565	510	566	560		557
Std. Error	7	3	5		2		1
Sample Size	3	41	12	1	139		196
Mean Weight		2.75	1.99	2.63	2.74		2.69
Std. Error		0.12	0.25		0.06		0.05
Sample Size		8	3	1	25		37
Both Sexes	7,028	29,222	15,536	370	105,423	370	157,949
Percent	4.45	18.5	9.84	0.23	66.74	0.23	100
Sample Size	19	79	42	1	285	1	427
Mean Length	526	569	529	566	570	578	564
Std. Error	5	3	3		1		1
Sample Size	19	79	42	1	285	1	427
Mean Weight	2.25	2.92	2.3	2.63	2.93		2.84
Std. Error	0.09	0.11	0.09		0.04		0.04
Sample Size	6	16	8	1	60		91
<u>Sample Period 2: July 10 - September 1</u>							
Males	44,767	72,595	35,088		231,093	1,210	384,753
Percent	7.82	12.69	6.13		40.38	0.21	67.23
Sample Size	37	60	29		191	1	318
Mean Length	525	578	536		580	592	569
Std. Error	4	4	4		2		1
Sample Size	37	60	29		191	1	318
Mean Weight	2.32	3.32	2.42		3.13		3.01
Std. Error	0.16	0.17	0.14		0.09		0.07
Sample Size	3	11	8		28		50
Females	3,630	31,458	25,408		125,831	1,210	187,537
Percent	0.63	5.5	4.44		21.99	0.21	32.77
Sample Size	3	26	21		104	1	155
Mean Length	528	558	540		566	574	561
Std. Error	15	4	5		2		2
Sample Size	3	26	21		104	1	155
Mean Weight		2.55	2.28		2.62		2.56
Std. Error		0.23	0.2		0.05		0.06
Sample Size		3	5		24		32
Both Sexes	48,397	104,053	60,496		356,924	2,420	572,290
Percent	8.46	18.18	10.57		62.37	0.42	100
Sample Size	40	86	50		295	2	473
Mean Length	525	572	538		575	583	566
Std. Error	4	3	3		1		1
Sample Size	40	86	50		295	2	473
Mean Weight	2.32	3.09	2.36		2.95		2.86
Std. Error	0.16	0.13	0.12		0.06		0.05
Sample Size	3	14	13		52		82

Appendix A.6. Age, sex, and size (length in mm and weight in kg) composition of salmon sockeye commercial catch, Ugashik District, 1998.

	Age Group						Total
	1.2	1.3	2.2	1.4	2.3	2.4	
<u>All Periods Combined:</u>							
Males	50,685	86,651	46,185		285,100	1,580	470,201
Percent	6.94	11.87	6.32		39.04	0.22	64.39
Sample Size	53	98	59		337	2	549
Mean Length	526	577	536		580	589	569
Std. Error	4	3	3		2		1
Sample Size	53	98	59		337	2	549
Mean Weight	2.31	3.29	2.42		3.13		3
Std. Error	0.14	0.14	0.11		0.07		0.05
Sample Size	9	19	13		63		104
Females	4,740	46,624	29,847	370	177,247	1,210	260,038
Percent	0.65	6.38	4.09	0.05	24.27	0.17	35.61
Sample Size	6	67	33	1	243	1	351
Mean Length	519	561	536	566	565	574	560
Std. Error	11	3	4		2		1
Sample Size	6	67	33	1	243	1	351
Mean Weight		2.62	2.24	2.63	2.65		2.6
Std. Error		0.16	0.18		0.04		0.05
Sample Size		11	8	1	49		69
Both Sexes	55,425	133,275	76,032	370	462,347	2,790	730,239
Percent	7.59	18.25	10.41	0.05	63.31	0.38	100
Sample Size	59	165	92	1	580	3	900
Mean Length	525	571	536	566	574	582	566
Std. Error	4	2	3		1		1
Sample Size	59	165	92	1	580	3	900
Mean Weight	2.31	3.05	2.35	2.63	2.95		2.86
Std. Error	0.14	0.11	0.09		0.05		0.04
Sample Size	9	30	21	1	112		173

Appendix A.7. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Ugashik River, 1998.

	Age Group									Total ^a	
	0.2	1.1	0.3	1.2	2.1	1.3	2.2	1.4	2.3		2.4
<u>Sample Period 1: July 2 - 12</u>											
Males	2,535		15,208	724	6,880	14,484			38,019		77,850
Percent	1.8		10.77	0.51	4.87	10.26			26.92		55.13
Sample Size	7		42	2	19	40			105		215
Mean Length	354		499	356	574	516			582		543
Std. Error	6		7	1	7	4			3		2
Sample Size	7		42	2	19	40			105		215
Females			6,880	362	10,139	9,414	362	36,209			63,366
Percent			4.87	0.26	7.18	6.67	0.26	25.64			44.87
Sample Size			19	1	28	26	1	100			175
Mean Length			480	399	552	490	579	558			537
Std. Error			7		4	5		3			2
Sample Size			19	1	28	26	1	100			175
Both Sexes	2,535		22,088	1,086	17,019	23,898	362	74,228			141,216
Percent	1.8		15.64	0.77	12.05	16.92	0.26	52.56			100
Sample Size	7		61	3	47	66	1	205			390
Mean Length	354		493	370	561	506	579	570			540
Std. Error	6		5	1	4	3		2			1
Sample Size	7		61	3	47	66	1	205			390
<u>Sample Period 2: July 13 - 23</u>											
Males	1,146	10,315	2,292	99,713	5,731	64,183	25,215		57,306		265,901
Percent	0.23	2.11	0.47	20.42	1.17	13.15	5.16		11.74		54.46
Sample Size	1	9	2	87	5	56	22		50		232
Mean Length	553	358	544	487	372	571	522		569		521
Std. Error		15	18	5	19	4	9		4		2
Sample Size	1	9	2	87	5	56	22		50		232
Females	1,146	1,146	64,184		56,160	37,822		61,891			222,349
Percent	0.23	0.23	13.15		11.5	7.75		12.68			45.54
Sample Size	1	1	56		49	33		54			194
Mean Length	407	544	489		547	503		551			523
Std. Error			4		3	4		3			2
Sample Size	1	1	56		49	33		54			194
Both Sexes	1,146	11,461	3,438	163,897	5,731	120,343	63,037		119,197		488,250
Percent	0.23	2.35	0.7	33.57	1.17	24.65	12.91		24.41		100
Sample Size	1	10	3	143	5	105	55		104		426
Mean Length	553	363	544	487	372	560	511		560		522
Std. Error		15	18	3	19	3	4		3		2
Sample Size	1	10	3	143	5	105	55		104		426

Appendix A.7. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Ugashik River, 1998.

	Age Group										
	0.2	1.1	0.3	1.2	2.1	1.3	2.2	1.4	2.3	2.4	Total ^a
<u>Sample Period 3: July 24 - 30</u>											
Males	1,446	2,892		46,279	4,339	25,309	29,647		47,002		156,914
Percent	0.55	1.11		17.73	1.66	9.7	11.36		18.01		60.11
Sample Size	2	4		64	6	35	41		65		217
Mean Length	405	360		474	380	557	508		570		517
Std. Error	11	18		5	10	7	5		4		2
Sample Size	2	4		64	6	35	41		65		217
Females				24,586		18,801	30,371		29,647	723	104,128
Percent				9.42		7.2	11.63		11.36	0.28	39.89
Sample Size				34		26	42		41	1	144
Mean Length				500		553	507		552	518	526
Std. Error				3		4	4		3		2
Sample Size				34		26	42		41	1	144
Both Sexes	1,446	2,892		70,865	4,339	44,110	60,018		76,649	723	261,042
Percent	0.55	1.11		27.15	1.66	16.9	22.99		29.36	0.28	100
Sample Size	2	4		98	6	61	83		106	1	361
Mean Length	405	360		483	380	555	507		563	518	521
Std. Error	11	18		4	10	4	3		3		2
Sample Size	2	4		98	6	61	83		106	1	361
<u>All Periods Combined:</u>											
Males	2,592	15,742	2,292	161,200	10,794	96,372	69,346		142,327		500,665
Percent	0.29	1.77	0.26	18.1	1.21	10.82	7.79		15.98		56.22
Sample Size	3	20	2	193	13	110	103		220		664
Mean Length	470	357	544	484	374	568	514		573		523
Std. Error	11	10	18	3	11	3	4		2		2
Sample Size	3	20	2	193	13	110	103		220		664
Females		1,146	1,146	95,650	362	85,100	77,607	362	127,747	723	389,843
Percent		0.13	0.13	10.74	0.04	9.56	8.71	0.04	14.35	0.08	43.78
Sample Size		1	1	109	1	103	101	1	195	1	513
Mean Length		407	544	491	399	549	503	579	553	518	526
Std. Error				3		2	2		2		1
Sample Size		1	1	109	1	103	101	1	195	1	513
Both Sexes	2,592	16,888	3,438	256,850	11,156	181,472	146,953	362	270,074	723	890,508
Percent	0.29	1.9	0.39	28.84	1.25	20.38	16.5	0.04	30.33	0.08	100
Sample Size	3	21	3	302	14	213	204	1	415	1	1,177
Mean Length	470	361	544	487	375	559	508	579	563	518	525
Std. Error	11	10	18	2	11	2	2		1		1
Sample Size	3	21	3	302	14	213	204	1	415	1	1,177

^a Total does not include escapement to King Salmon (27,425) and Dog Salmon (6,920) rivers.

Appendix A.8. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Nushagak District, 1998.

	Age Group										Total ^a	
	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3		2.4
<u>Sample Period 1: June 15 - June 30</u>												
Males			1,623	11,628		1,623	33,261	541	4,597	1,082	270	54,625
Percent			1.78	12.72		1.78	36.39	0.59	5.03	1.18	0.3	59.76
Sample Size			6	43		6	123	2	17	4	1	202
Mean Length			581	498		612	575	494	612	576	618	562
Std. Error			6	5		7	2	20	6	26		2
Sample Size			6	43		6	123	2	17	4	1	202
Mean Weight			3.82	2.27		4.2	3.89		4.41	3.01	4.62	3.58
Std. Error			0.08	0.19		0.04	0.27		0.15	1.08		0.17
Sample Size			2	14		2	33		3	2	1	57
Females	270		541	12,980			22,447	270		270		36,778
Percent	0.3		0.59	14.2			24.56	0.3		0.3		40.24
Sample Size	1		2	48			83	1		1		136
Mean Length	399		570	484			542	485		558		520
Std. Error			1	4			3					2
Sample Size	1		2	48			83	1		1		136
Mean Weight				1.82			2.78			2.9		2.43
Std. Error				0.08			0.12					0.08
Sample Size				15			17			1		33
Both Sexes	270		2,164	24,608		1,623	55,708	811	4,597	1,352	270	91,403
Percent	0.3		2.37	26.92		1.78	60.95	0.89	5.03	1.48	0.3	100
Sample Size	1		8	91		6	206	3	17	5	1	338
Mean Length	399		578	490		612	561	491	612	572	618	545
Std. Error			5	3		7	2	20	6	26		2
Sample Size	1		8	91		6	206	3	17	5	1	338
Mean Weight			3.82	2.03		4.2	3.44		4.41	2.99	4.62	3.12
Std. Error			0.08	0.1		0.04	0.17		0.15	1.08		0.11
Sample Size			2	29		2	50		3	3	1	90
<u>Sample Period 2: July 1 - July 5</u>												
Males			4,798	81,560		685	87,042	2,742	3,427	4,112		184,366
Percent			1.74	29.6		0.25	31.59	1	1.24	1.49		66.92
Sample Size			7	119		1	127	4	5	6		269
Mean Length			538	502		546	553	531	581	568		531
Std. Error			11	2			3	8	19	7		2
Sample Size			7	118		1	127	4	5	6		268
Mean Weight			3.2	2.08			2.92		3.62	2.9		2.56
Std. Error			0.19	0.06			0.09		0.43	0.24		0.05
Sample Size			3	22			32		3	3		63
Females			1,371	27,415			56,200	2,056	1,371	2,742		91,155
Percent			0.5	9.95			20.4	0.75	0.5	1		33.08
Sample Size			2	40			82	3	2	4		133
Mean Length			529	492			538	488	535	549		523
Std. Error			6	3			2	2	6	6		2
Sample Size			2	40			82	3	2	4		133
Mean Weight			2.41	1.86			2.53	1.81		2.68		2.31
Std. Error				0.07			0.05			0.08		0.04
Sample Size			1	10			28	1		2		42
Both Sexes			6,169	108,975		685	143,242	4,798	4,798	6,854		275,521
Percent			2.24	39.55		0.25	51.99	1.74	1.74	2.49		100
Sample Size			9	159		1	209	7	7	10		402
Mean Length			536	500		546	547	513	568	560		528
Std. Error			9	1			2	4	19	5		1
Sample Size			9	158		1	209	7	7	10		401
Mean Weight			3.02	2.02			2.77	1.81	3.62	2.81		2.48
Std. Error			0.19	0.05			0.06		0.43	0.15		0.04
Sample Size			4	32			60	1	3	5		105

Appendix A.8. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Nushagak District, 1998.

	Age Group											Total ^a
	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3	2.4	
<u>Sample Period 3: July 6 - July 7</u>												
Males				232,482		1,775	122,453	15,972			17,747	390,429
Percent				28.29		0.22	14.9	1.94			2.16	47.52
Sample Size				131		1	69	9			10	220
Mean Length				507		580	556	496			556	525
Std. Error				2			3	5			7	1
Sample Size				131		1	69	9			10	220
Mean Weight				2.05			2.92	1.83			3.34	2.37
Std. Error				0.05			0.11	0.04			0.52	0.05
Sample Size				38			22	3			2	65
Females				248,455			141,974	19,521	1,775	19,521		431,246
Percent				30.24			17.28	2.38	0.22	2.38		52.48
Sample Size				140			80	11	1	11		243
Mean Length				489			542	490	594	541		510
Std. Error				2			2	7		9		1
Sample Size				140			80	11	1	11		243
Mean Weight				1.79			2.48	1.67		2.17		2.03
Std. Error				0.03			0.04	0.2		0.15		0.03
Sample Size				48			28	3		4		83
Both Sexes				480,937		1,775	264,427	35,493	1,775	37,268		821,675
Percent				58.53		0.22	32.18	4.32	0.22	4.54		100
Sample Size				271		1	149	20	1	21		463
Mean Length				498		580	549	493	594	548		517
Std. Error				1			2	5		6		1
Sample Size				271		1	149	20	1	21		463
Mean Weight				1.92			2.68	1.74		2.73		2.19
Std. Error				0.03			0.06	0.11		0.26		0.03
Sample Size				86			50	6		6		148
<u>Sample Period 4: July 8 - July 9</u>												
Males		2,277	132,066				102,466	2,277	2,277	1,139		242,502
Percent		0.39	22.66				17.58	0.39	0.39	0.2		41.6
Sample Size		2	116				90	2	2	1		213
Mean Length			583	495			557	494	616	556		524
Std. Error			1	2			3	22	2			2
Sample Size			2	116			90	2	2	1		213
Mean Weight				1.96			2.95			2.94		2.4
Std. Error				0.06			0.1					0.05
Sample Size				27			31			1		59
Females	1,139		1,139	258,439			68,310	7,970	1,139	2,277		340,413
Percent	0.2		0.2	44.34			11.72	1.37	0.2	0.39		58.4
Sample Size	1		1	227			60	7	1	2		299
Mean Length	420		546	481			533	487	566	552		493
Std. Error				1			3	10		4		1
Sample Size	1		1	227			60	7	1	2		299
Mean Weight				1.74			2.38	1.92				1.87
Std. Error				0.02			0.1	0.12				0.03
Sample Size				56			13	3				72
Both Sexes	1,139		3,416	390,505			170,776	10,247	3,416	3,416		582,915
Percent	0.2		0.59	66.99			29.3	1.76	0.59	0.59		100
Sample Size	1		3	343			150	9	3	3		512
Mean Length	420		570	486			548	489	599	553		506
Std. Error			1	1			2	9	2	4		1
Sample Size	1		3	343			150	9	3	3		512
Mean Weight				1.81			2.72	1.92		2.94		2.09
Std. Error				0.02			0.07	0.12				0.03
Sample Size				83			44	3		1		131

Appendix A.8. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Nushagak District, 1998.

	Age Group											Total ^a
	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3	2.4	
<u>Sample Period 5: July 10 - July 11</u>												
Males	1,741		116,648				24,374	3,482	1,741	1,741		149,727
Percent	0.39		26.07				5.45	0.78	0.39	0.39		33.46
Sample Size	1		67				14	2	1	1		86
Mean Length	365		478				562	498	592	601		494
Std. Error			4				6	23				3
Sample Size	1		67				14	2	1	1		86
Mean Weight			1.6				2.89		3.35	3.24		1.86
Std. Error			0.06				0.31					0.07
Sample Size			19				5		1	1		26
Females			252,446				29,597	13,928	1,741			297,712
Percent			56.42				6.61	3.11	0.39			66.54
Sample Size			145				17	8	1			171
Mean Length			475				536	472	603			482
Std. Error			1				8	5				1
Sample Size			145				17	8	1			171
Mean Weight			1.55				2.85	1.58	3.89			1.69
Std. Error			0.02				0.11					0.02
Sample Size			33				5	1	1			40
Both Sexes	1,741		369,094				53,971	17,410	3,482	1,741		447,439
Percent	0.39		82.49				12.06	3.89	0.78	0.39		100
Sample Size	1		212				31	10	2	1		257
Mean Length	365		476				548	477	598	601		486
Std. Error			2				5	6				1
Sample Size	1		212				31	10	2	1		257
Mean Weight			1.57				2.87	1.58	3.62	3.24		1.75
Std. Error			0.02				0.15					0.03
Sample Size			52				10	1	2	1		66
<u>Sample Period 6: July 12 - July 14</u>												
Males	1,695	847	5,084	101,668			32,196	4,236	1,695	1,695		149,116
Percent	0.44	0.22	1.32	26.37			8.35	1.1	0.44	0.44		38.68
Sample Size	2	1	6	120			38	5	2	2		176
Mean Length	411	343	535	484			550	503	464	589		500
Std. Error	6		8	3			9	12		25		3
Sample Size	2	1	6	120			38	5	1	2		175
Mean Weight	1.12	0.71	3.52	1.79			2.92	2.3	4.17			2.12
Std. Error				0.06			0.17					0.06
Sample Size	1	1	1	36			11	1	1			52
Females			5,931	173,686	847	847	41,515	11,862		1,695		236,383
Percent			1.54	45.05	0.22	0.22	10.77	3.08		0.44		61.32
Sample Size			7	205	1	1	49	14		2		279
Mean Length			526	473	381	535	526	455		526		483
Std. Error			10	1			3	7		6		1
Sample Size			7	205	1	1	49	14		2		279
Mean Weight			2.26	1.68			2.42	1.54		2.18		1.82
Std. Error				0.03			0.06	0.09				0.03
Sample Size			1	50			8	4		1		64
Both Sexes	1,695	847	11,015	275,354	847	847	73,711	16,098	1,695	3,390		385,499
Percent	0.44	0.22	2.86	71.43	0.22	0.22	19.12	4.18	0.44	0.88		100
Sample Size	2	1	13	325	1	1	87	19	2	4		455
Mean Length	411	343	530	477	381	535	536	468	464	557		489
Std. Error	6		7	1			4	6		13		1
Sample Size	2	1	13	325	1	1	87	19	1	4		454
Mean Weight	1.12	0.71	2.84	1.72			2.64	1.74	4.17	2.18		1.94
Std. Error				0.03			0.08	0.09				0.03
Sample Size	1	1	2	86			19	5	1	1		116

Appendix A.8. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Nushagak District, 1998.

	Age Group											Total ^a
	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	1.4	2.3	2.4	
<u>Sample Period 7: July 15 - August 20</u>												
Males	1,083		3,250	63,916			86,666	1,083	2,167	4,333		162,498
Percent	0.4		1.2	23.69			32.13	0.4	0.8	1.61		60.24
Sample Size	1		3	59			80	1	2	4		150
Mean Length	521		571	513			563	515	581	572		543
Std. Error			11	3			4		23	13		2
Sample Size	1		3	59			80	1	2	4		150
Mean Weight	2.7		3.51	2.46			3.44			3		3.03
Std. Error				0.06			0.07			0.37		0.05
Sample Size	1		1	15			21			2		40
Females			6,500	42,250	4,333	46,583	3,250			4,333		107,249
Percent			2.41	15.66	1.61	17.27	1.2			1.61		39.76
Sample Size			6	39	4	43	3			4		99
Mean Length			528	502	543	538	524			540		523
Std. Error			5	4	17	2	27			13		2
Sample Size			6	39	4	43	3			4		99
Mean Weight				1.98		2.84	1.76					2.41
Std. Error				0.14		0.11						0.09
Sample Size				8		14	1					23
Both Sexes	1,083		9,750	106,166	4,333	133,249	4,333	2,167	8,666			269,747
Percent	0.4		3.61	39.36	1.61	49.4	1.61	0.8	3.21			100
Sample Size	1		9	98	4	123	4	2	8			249
Mean Length	521		542	509	543	554	522	581	556			535
Std. Error			5	2	17	2	27	23	9			2
Sample Size	1		9	98	4	123	4	2	8			249
Mean Weight	2.7		3.51	2.27		3.23	1.76		3			2.8
Std. Error				0.07		0.06			0.37			0.04
Sample Size	1		1	23		35	1		2			63
<u>All Periods Combined:</u>												
Males	2,778	2,588	17,032	739,968		4,083	488,458	30,333	15,904	31,849	270	#####
Percent	0.1	0.09	0.59	25.75		0.14	16.99	1.06	0.55	1.11	0.01	46.39
Sample Size	3	2	24	655		8	541	25	29	28	1	1,316
Mean Length	454	358	553	497		587	558	501	584	564	618	523
Std. Error	6		5	1		7	1	5	7	5		1
Sample Size	3	2	24	654		8	541	25	28	28	1	1,314
Mean Weight	1.74	0.71	3.45	1.97		4.2	3.08	1.93	3.98	3.2	4.62	2.45
Std. Error			0.14	0.02		0.04	0.05	0.04	0.2	0.35		0.02
Sample Size	2	1	7	171		2	155	4	8	11	1	362
Females	1,409		15,482	1,015,671	847	5,180	406,626	58,857	6,026	30,838		#####
Percent	0.05		0.54	35.34	0.03	0.18	14.15	2.05	0.21	1.07		53.61
Sample Size	2		18	844	1	5	414	47	5	24		1,360
Mean Length	416		530	482	381	541	537	480	578	542		498
Std. Error			5	1		17	1	4		6		1
Sample Size	2		18	844	1	5	414	47	5	24		1,360
Mean Weight			2.29	1.71			2.55	1.67	3.89	2.24		1.95
Std. Error				0.01			0.03	0.1		0.13		0.01
Sample Size			2	220			113	13	1	8		357
Both Sexes	4,187	2,588	32,514	1,755,639	847	9,263	895,084	89,190	21,930	62,687	270	#####
Percent	0.15	0.09	1.13	61.08	0.03	0.32	31.14	3.1	0.76	2.18	0.01	100
Sample Size	5	2	42	1,499	1	13	955	72	34	52	1	2,676
Mean Length	441	358	542	488	381	562	549	487	582	553	618	510
Std. Error	6		3	1		12	1	3	7	4		0
Sample Size	5	2	42	1,498	1	13	955	72	33	52	1	2,674
Mean Weight	1.74	0.71	3.06	1.82		4.2	2.84	1.73	3.97	2.77	4.62	2.18
Std. Error			0.14	0.01		0.04	0.03	0.07	0.2	0.2		0.01
Sample Size	2	1	9	391		2	268	17	9	19	1	719

^a Total does not include Igushik Beach setnet catch (116,398).

Appendix A.9. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Igushik Beach setnet fishery, Nushagak District, 1998.

	Age Group					Total
	1.2	1.3	2.2	1.4	2.3	
<u>Sample period 1: June 15 - July 9</u>						
Males	6,794	18,424	461		115	25,794
Percent	13.88	37.65	0.94		0.23	52.71
Sample Size	59	160	4		1	224
Mean Length	505	554	510		535	540
Std. Error	3	2	12			2
Sample Size	59	160	4		1	224
Mean Weight	2.15	3.26	1.94		2.87	2.94
Std. Error	0.04	0.07	0.04			0.05
Sample Size	15	35	2		1	53
Females	7,024	14,970	691		461	23,146
Percent	14.35	30.59	1.41		0.94	47.29
Sample Size	61	130	6		4	201
Mean Length	488	531	503		537	517
Std. Error	3	2	19		5	2
Sample Size	61	130	6		4	201
Mean Weight	1.91	2.54	2.59		2.61	2.35
Std. Error	0.08	0.06	0.79		0.26	0.05
Sample Size	8	32	2		2	44
Both Sexes	13,818	33,394	1,152		576	48,940
Percent	28.23	68.23	2.35		1.18	100
Sample Size	120	290	10		5	425
Mean Length	496	544	506		537	529
Std. Error	2	1	12		5	1
Sample Size	120	290	10		5	425
Mean Weight	2.03	2.94	2.33		2.66	2.66
Std. Error	0.05	0.05	0.48		0.26	0.04
Sample Size	23	67	4		3	97
<u>Sample period 2: July 10 - July 20</u>						
Males	14,086	19,407	626	157	1,722	35,998
Percent	20.88	28.77	0.93	0.23	2.55	53.36
Sample Size	90	124	4	1	11	230
Mean Length	513	566	520	618	549	544
Std. Error	2	2	13		5	1
Sample Size	90	124	4	1	11	230
Females	14,869	14,556	1,252		783	31,460
Percent	22.04	21.58	1.86		1.16	46.64
Sample Size	95	93	8		5	201
Mean Length	487	536	491		559	512
Std. Error	2	2	4		5	1
Sample Size	95	93	8		5	201
Both Sexes	28,955	33,963	1,878	157	2,505	67,458
Percent	42.92	50.35	2.78	0.23	3.71	100
Sample Size	185	217	12	1	16	431
Mean Length	500	553	501	618	552	529
Std. Error	1	1	5		4	1
Sample Size	185	217	12	1	16	431

Appendix A.9. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Igushik Beach setnet fishery, Nushagak District, 1998.

	Age Group					Total
	1.2	1.3	2.2	1.4	2.3	
<u>All Periods Combined:</u>						
Males	20,880	37,831	1,087	157	1,837	61,792
Percent	17.94	32.5	0.93	0.13	1.58	53.09
Sample Size	149	284	8	1	12	454
Mean Length	510	560	515	618	548	542
Std. Error	2	1	9		5	1
Sample Size	149	284	8	1	12	454
Mean Weight	2.15	3.26	1.94		2.87	2.94
Std. Error	0.04	0.07	0.04			0.05
Sample Size	15	35	2		1	53
Females	21,893	29,526	1,943		1,244	54,606
Percent	18.81	25.37	1.67		1.07	46.91
Sample Size	156	223	14		9	402
Mean Length	488	533	495		551	514
Std. Error	1	2	7		3	1
Sample Size	156	223	14		9	402
Mean Weight	1.91	2.54	2.59		2.61	2.35
Std. Error	0.08	0.06	0.79		0.26	0.05
Sample Size	8	32	2		2	44
Both Sexes	42,773	67,357	3,030	157	3,081	116,398
Percent	36.75	57.87	2.6	0.13	2.65	100
Sample Size	305	507	22	1	21	856
Mean Length	499	548	502	618	549	529
Std. Error	1	1	6		3	1
Sample Size	305	507	22	1	21	856
Mean Weight	2.03	2.94	2.33		2.66	2.66
Std. Error	0.05	0.05	0.48		0.26	0.04
Sample Size	23	67	4		3	97

Appendix A.10. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Wood River, 1998.

	Age Group					Total
	1.1	1.2	1.3	2.2	2.3	
<u>Sample Period 1: June 23 - July 3</u>						
Males	1,529	127,685	48,168	5,352		182,734
Percent	0.52	43.72	16.49	1.83		62.57
Sample Size	2	167	63	7		239
Mean Length	345	497	550	500		510
Std. Error	6	2	4	5		2
Sample Size	2	167	63	7		239
Females		68,046	38,229	2,294	765	109,334
Percent		23.3	13.09	0.79	0.26	37.43
Sample Size		89	50	3	1	143
Mean Length		482	534	482	561	501
Std. Error		3	3	4		2
Sample Size		89	50	3	1	143
Both Sexes	1,529	195,731	86,397	7,646	765	292,068
Percent	0.52	67.02	29.58	2.62	0.26	100
Sample Size	2	256	113	10	1	382
Mean Length	345	492	543	494	561	506
Std. Error	6	2	2	4		1
Sample Size	2	256	113	10	1	382
<u>Sample Period 2: July 4 - 7</u>						
Males		420,047	190,931	22,275		633,253
Percent		35.2	16	1.87		53.07
Sample Size		132	60	7		199
Mean Length		496	550	483		512
Std. Error		2	3	6		2
Sample Size		132	60	7		199
Females		365,951	187,748	3,182	3,182	560,063
Percent		30.67	15.73	0.27	0.27	46.93
Sample Size		115	59	1	1	176
Mean Length		481	526	479	541	496
Std. Error		2	4			2
Sample Size		115	59	1	1	176
Both Sexes		785,998	378,679	25,457	3,182	1,193,316
Percent		65.87	31.73	2.13	0.27	100
Sample Size		247	119	8	1	375
Mean Length		489	538	483	541	505
Std. Error		2	2	6		1
Sample Size		247	119	8	1	375

Appendix A.10. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Wood River, 1998.

	Age Group					Total
	1.1	1.2	1.3	2.2	2.3	
<u>Sample Period 3: July 8 - 23</u>						
Males	858	54,936	24,034	4,292	2,575	86,695
Percent	0.32	20.32	8.89	1.59	0.95	32.06
Sample Size	1	64	28	5	3	101
Mean Length	488	486	548	470	556	504
Std. Error		6	5	4	23	4
Sample Size	1	64	28	5	3	101
Females	858	140,771	25,751	15,451	858	183,689
Percent	0.32	52.06	9.52	5.71	0.32	67.94
Sample Size	1	164	30	18	1	214
Mean Length	360	478	523	476	571	484
Std. Error		2	7	4		2
Sample Size	1	164	30	18	1	214
Both Sexes	1,716	195,707	49,785	19,743	3,433	270,384
Percent	0.63	72.38	18.41	7.3	1.27	100
Sample Size	2	228	58	23	4	315
Mean Length	424	480	535	474	560	491
Std. Error		2	5	3	23	2
Sample Size	2	228	58	23	4	315
<u>All Periods Combined:</u>						
Males	2,387	602,668	263,133	31,919	2,575	902,682
Percent	0.14	34.33	14.99	1.82	0.15	51.41
Sample Size	3	363	151	19	3	539
Mean Length	396	495	550	484	556	511
Std. Error	6	2	3	5	23	1
Sample Size	3	363	151	19	3	539
Females	858	574,768	251,728	20,927	4,805	853,086
Percent	0.05	32.74	14.34	1.19	0.27	48.59
Sample Size	1	368	139	22	3	533
Mean Length	360	480	527	477	550	494
Std. Error		1	3	3		1
Sample Size	1	368	139	22	3	533
Both Sexes	3,245	1,177,436	514,861	52,846	7,380	1,755,768
Percent	0.18	67.06	29.32	3.01	0.42	100
Sample Size	4	731	290	41	6	1,072
Mean Length	387	488	539	481	552	503
Std. Error	6	1	2	3	23	1
Sample Size	4	731	290	41	6	1,072

Appendix A.11. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Igushik River, 1998.

	Age Group					Total
	1.2	1.3	2.2	1.4	2.3	
<u>Sample Period 1: June 28- July 8</u>						
Males	12,754	36,813	1,449		290	51,306
Percent	10.86	31.36	1.23		0.25	43.7
Sample Size	44	127	5		1	177
Mean Length	510	572	504		522	554
Std. Error	5	3	7			2
Sample Size	44	127	5		1	177
Females	16,812	44,930	2,319		2,029	66,090
Percent	14.32	38.27	1.98		1.73	56.3
Sample Size	58	155	8		7	228
Mean Length	479	537	466		528	519
Std. Error	4	2	4		8	2
Sample Size	58	155	8		7	228
Both Sexes	29,566	81,743	3,768		2,319	117,396
Percent	25.18	69.63	3.21		1.98	100
Sample Size	102	282	13		8	405
Mean Length	492	552	481		528	535
Std. Error	3	2	4		8	1
Sample Size	102	282	13		8	405
<u>Sample Period 2: July 9 - 22</u>						
Males	18,974	17,414	1,300		520	38,208
Percent	19.26	17.68	1.32		0.53	38.79
Sample Size	73	67	5		2	147
Mean Length	499	551	515		593	524
Std. Error	4	6	16		29	3
Sample Size	73	67	5		2	147
Females	34,308	23,652	1,040	260	1,040	60,300
Percent	34.83	24.01	1.06	0.26	1.06	61.21
Sample Size	132	91	4	1	4	232
Mean Length	471	523	467	504	540	493
Std. Error	3	3	19		10	2
Sample Size	132	91	4	1	4	232
Both Sexes	53,282	41,066	2,340	260	1,560	98,508
Percent	54.09	41.69	2.38	0.26	1.58	100
Sample Size	205	158	9	1	6	379
Mean Length	481	535	493	504	557	505
Std. Error	2	3	12		12	2
Sample Size	205	158	9	1	6	379

Appendix A.11. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Igushik River, 1998.

	Age Group					Total
	1.2	1.3	2.2	1.4	2.3	
<u>All Periods Combined:</u>						
Males	31,728	54,227	2,749		810	89,514
Percent	14.7	25.12	1.27		0.38	41.46
Sample Size	117	194	10		3	324
Mean Length	503	565	509		567	541
Std. Error	3	3	8		29	2
Sample Size	117	194	10		3	324
Females	51,120	68,582	3,359	260	3,069	126,390
Percent	23.68	31.77	1.56	0.12	1.42	58.54
Sample Size	190	246	12	1	11	460
Mean Length	474	532	466	504	532	506
Std. Error	2	2	7		6	1
Sample Size	190	246	12	1	11	460
Both Sexes	82,848	122,809	6,108	260	3,879	215,904
Percent	38.37	56.88	2.83	0.12	1.8	100
Sample Size	307	440	22	1	14	784
Mean Length	485	547	486	504	539	521
Std. Error	2	2	5		7	1
Sample Size	307	440	22	1	14	784

Appendix A.12. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Nushagak River, 1998.

	Age Group							Total	
	0.2	1.1	0.3	1.2	1.3	2.2	1.4		2.3
<u>Sample Period 1: June 9- July 4</u>									
Males				12,310	80,821	535	2,141		95,807
Percent				6.99	45.9	0.3	1.22		54.41
Sample Size				23	151	1	4		179
Mean Length				432	559	499	601		543
Std. Error				6	3		3		3
Sample Size				23	151	1	4		179
Females			1,070	4,282	70,652		3,747	535	80,286
Percent			0.61	2.43	40.12		2.13	0.3	45.59
Sample Size			2	8	132		7	1	150
Mean Length			536	463	543		567	585	540
Std. Error			6	21	2		11		2
Sample Size			2	8	130		7	1	148
Both Sexes			1,070	16,592	151,473	535	5,888	535	176,093
Percent			0.61	9.42	86.02	0.3	3.34	0.3	100
Sample Size			2	31	283	1	11	1	329
Mean Length			536	440	551	499	579	585	542
Std. Error			6	7	2		7		2
Sample Size			2	31	281	1	11	1	327
<u>Sample Period 2: 5 July - 9 August</u>									
Males	1,315	658	7,892	15,783	118,372		13,153	658	157,831
Percent	0.47	0.23	2.79	5.58	41.86		4.65	0.23	55.81
Sample Size	2	1	12	24	180		20	1	240
Mean Length	445	588	568	427	556		598	620	547
Std. Error	20		9	7	3		4		3
Sample Size	2	1	11	24	180		19	1	238
Females			3,946	5,261	105,221		9,864	658	124,950
Percent			1.4	1.86	37.21		3.49	0.23	44.19
Sample Size			6	8	160		15	1	190
Mean Length			529	502	532		550	515	532
Std. Error			10	10	2		4		2
Sample Size			6	8	159		15	1	189
Both Sexes	1,315	658	11,838	21,044	223,593		23,017	1,316	282,781
Percent	0.47	0.23	4.19	7.44	79.07		8.14	0.47	100
Sample Size	2	1	18	32	340		35	2	430
Mean Length	445	588	555	445	545		578	568	540
Std. Error	20		7	6	2		3		2
Sample Size	2	1	17	32	339		34	2	427

Appendix A.12. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Nushagak River, 1998.

	Age Group								Total
	0.2	1.1	0.3	1.2	1.3	2.2	1.4	2.3	
All Periods Combined:									
Males	1,315	658	7,892	28,093	199,193	535	15,294	658	253,638
Percent	0.29	0.14	1.72	6.12	43.41	0.12	3.33	0.14	55.27
Sample Size	2	1	12	47	331	1	24	1	419
Mean Length	445	588	568	429	557	499	599	620	545
Std. Error	20		9	5	2		4		2
Sample Size	2	1	11	47	331	1	23	1	417
Females			5,016	9,543	175,873		13,611	1,193	205,236
Percent			1.09	2.08	38.33		2.97	0.26	44.73
Sample Size			8	16	292		22	2	340
Mean Length			531	484	536		555	546	535
Std. Error			8	11	1		4		1
Sample Size			8	16	289		22	2	337
Both Sexes	1,315	658	12,908	37,636	375,066	535	28,905	1,851	458,874
Percent	0.29	0.14	2.81	8.2	81.74	0.12	6.3	0.4	100
Sample Size	2	1	20	63	623	1	46	3	759
Mean Length	445	588	553	443	547	499	578	573	541
Std. Error	20		7	5	1		3		1
Sample Size	2	1	19	63	620	1	45	3	754

Appendix A.13. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Nuyakuk River, 1998.

	Age Group						Total ^a
	0.3	1.2	1.3	2.2	1.4	2.3	
<u>Sample period : July 2 - 21.</u>							
Males	1,229	6,759	57,764			614	66,366
Percent	0.84	4.62	39.5			0.42	45.38
Sample Size	2	11	94			1	108
Mean Length	584	532	590			636	585
Std. Error	7	16	3				3
Sample Size	2	11	94			1	108
Females	6,759	4,301	66,367	614	1,843		79,884
Percent	4.62	2.94	45.38	0.42	1.26		54.62
Sample Size	11	7	108	1	3		130
Mean Length	545	499	547	533	585		545
Std. Error	10	9	2		17		2
Sample Size	9	7	107	1	3		127
Both Sexes	7,988	11,060	124,131	614	1,843	614	146,250
Percent	5.46	7.56	84.88	0.42	1.26	0.42	100
Sample Size	13	18	202	1	3	1	238
Mean Length	551	519	567	533	585	636	563
Std. Error	9	10	2		17		2
Sample Size	11	18	201	1	3	1	235

^a Enumeration and escapement sampling was done by Fisheries Research Institute personnel from University of Washington.

Appendix A.14. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Togiak River Section, Togiak District, 1998.

	Age Group						Total
	0.3	1.2	1.3	2.2	1.4	2.3	
<u>Sample Period 1: June 15 - July 3</u>							
Males	170	851	8,904	57	113	170	10,265
Percent	0.81	4.06	42.43	0.27	0.54	0.81	48.92
Sample Size	3	15	157	1	2	3	181
Mean Length	555	522	568	546	604	567	564
Std. Error	3	7	2		1	14	2
Sample Size	3	15	157	1	2	3	181
Mean Weight		2.3	3.2		3.43	3.64	3.13
Std. Error		0.11	0.07		0.01		0.06
Sample Size		9	46		2	1	58
Females	57	624	9,754		57	227	10,719
Percent	0.27	2.97	46.48		0.27	1.08	51.08
Sample Size	1	11	172		1	4	189
Mean Length	560	496	542		582	548	540
Std. Error		8	2			16	2
Sample Size	1	11	172		1	4	189
Mean Weight		2.45	2.65				2.64
Std. Error		0.3	0.05				0.05
Sample Size		2	41				43
Both Sexes	227	1,475	18,658	57	170	397	20,984
Percent	1.08	7.03	88.92	0.27	0.81	1.89	100
Sample Size	4	26	329	1	3	7	370
Mean Length	557	511	554	546	597	556	552
Std. Error	3	5	1		1	11	1
Sample Size	4	26	329	1	3	7	370
Mean Weight		2.36	2.91		3.43	3.64	2.88
Std. Error		0.14	0.04		0.01		0.04
Sample Size		11	87		2	1	101
<u>Sample Period 2: July 4 - July 10</u>							
Males	83	1,156	12,546	83	165	495	14,528
Percent	0.24	3.31	35.93	0.24	0.47	1.42	41.61
Sample Size	1	14	152	1	2	6	176
Mean Length	543	505	574	535	609	585	569
Std. Error		8	2		8	6	2
Sample Size	1	14	152	1	2	6	176
Mean Weight		2.25	3.62	2.64	4.15	3.78	3.52
Std. Error		0.19	0.06				0.06
Sample Size		3	47	1	1	1	53
Females	330	2,229	16,343	165	165	1,156	20,388
Percent	0.95	6.38	46.81	0.47	0.47	3.31	58.39
Sample Size	4	27	198	2	2	14	247
Mean Length	527	490	543	504	548	541	537
Std. Error	11	6	1	14	8	6	1
Sample Size	4	27	198	2	2	14	247
Mean Weight	3.04	1.82	2.76	2.18	2.61	2.86	2.66
Std. Error	0.01		0.04			0.21	0.03
Sample Size	2	1	45	1	1	2	52
Both Sexes	413	3,385	28,889	248	330	1,651	34,916
Percent	1.18	9.69	82.74	0.71	0.95	4.73	100
Sample Size	5	41	350	3	4	20	423
Mean Length	530	495	557	514	578	554	550
Std. Error	11	5	1	14	6	5	1
Sample Size	5	41	350	3	4	20	423
Mean Weight	3.04	1.97	3.13	2.33	3.38	3.14	3.02
Std. Error	0.01	0.19	0.03			0.21	0.03
Sample Size	2	4	92	2	2	3	105

Appendix A.14. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Togiak River Section, Togiak District, 1998.

	Age Group						Total
	0.3	1.2	1.3	2.2	1.4	2.3	
<u>Sample Period 3: July 11 - September 9</u>							
Males	552	2,207	17,520	414		1,793	22,486
Percent	0.97	3.86	30.68	0.72		3.14	39.37
Sample Size	4	16	127	3		13	163
Mean Length	569	515	571	531		587	566
Std. Error	13	6	2	6		12	2
Sample Size	4	16	127	3		13	163
Mean Weight	3.88	2.57	3.66	3.02		3.27	3.52
Std. Error		0.06	0.08	0.12		0.27	0.07
Sample Size	1	7	32	2		3	45
Females	690	2,207	28,832	276	276	2,345	34,626
Percent	1.21	3.86	50.48	0.48	0.48	4.11	60.63
Sample Size	5	16	209	2	2	17	251
Mean Length	545	499	541	496	562	537	538
Std. Error	8	7	1	4	10	6	1
Sample Size	5	16	209	2	2	17	251
Mean Weight	3.09	1.93	2.79		3.53	2.78	2.75
Std. Error		0.1	0.04				0.04
Sample Size	1	5	55		1	1	63
Both Sexes	1,242	4,414	46,352	690	276	4,138	57,112
Percent	2.17	7.73	81.16	1.21	0.48	7.25	100
Sample Size	9	32	336	5	2	30	414
Mean Length	555	507	552	517	562	558	549
Std. Error	7	5	1	4	10	6	1
Sample Size	9	32	336	5	2	30	414
Mean Weight	3.44	2.25	3.12	3.02	3.53	2.99	3.05
Std. Error		0.06	0.04	0.12		0.27	0.03
Sample Size	2	12	87	2	1	4	108
<u>All Periods Combined:</u>							
Males	805	4,214	38,970	554	278	2,458	47,279
Percent	0.71	3.73	34.48	0.49	0.25	2.17	41.84
Sample Size	8	45	436	5	4	22	520
Mean Length	563	514	571	533	607	585	566
Std. Error	10	4	1	6	5	9	1
Sample Size	8	45	436	5	4	22	520
Mean Weight	3.88	2.43	3.54	2.96	3.86	3.4	3.43
Std. Error		0.06	0.04	0.12	0.01	0.27	0.04
Sample Size	1	19	125	3	3	5	156
Females	1,077	5,060	54,929	441	498	3,728	65,733
Percent	0.95	4.48	48.6	0.39	0.44	3.3	58.16
Sample Size	10	54	579	4	5	35	687
Mean Length	540	494	542	499	559	539	538
Std. Error	6	4	1	6	7	4	1
Sample Size	10	54	579	4	5	35	687
Mean Weight	3.07	1.95	2.76	2.18	3.19	2.81	2.7
Std. Error	0.01	0.1	0.03			0.21	0.02
Sample Size	3	8	141	1	2	3	158
Both Sexes	1,882	9,274	93,899	995	776	6,186	113,012
Percent	1.67	8.21	83.09	0.88	0.69	5.47	100
Sample Size	18	99	1,015	9	9	57	1,207
Mean Length	550	503	554	518	576	557	550
Std. Error	6	3	1	4	5	4	1
Sample Size	18	99	1,015	9	9	57	1,207
Mean Weight	3.36	2.16	3.08	2.76	3.45	3.05	3.01
Std. Error	0.01	0.06	0.02	0.12	0.01	0.18	0.02
Sample Size	4	27	266	4	5	8	314

Appendix A.15. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon commercial catch, Kulukak Section, Togiak District, 1998.

	Age Group							Total
	0.3	1.2	0.4	1.3	2.2	1.4	2.3	
<u>Sample period: June 16 - August 24</u>								
Males	1,212	3,181	454	25,749	303	606	1,818	33,323
Percent	1.61	4.23	0.6	34.2	0.4	0.81	2.42	44.27
Sample Size	8	21	3	170	2	4	12	220
Mean Length	572	519	569	573	526	574	586	568
Std. Error	7	6	4	2	15	17	9	2
Sample Size	8	21	3	169	2	4	12	219
Mean Weight	3.25	2.37	3.1	3.41	2.36	2.29	3.23	3.26
Std. Error	0.11	0.18		0.1	0.26		0.43	0.08
Sample Size	2	2	1	20	2	1	4	32
Females	1,666	3,938	303	33,020	606	757	1,666	41,956
Percent	2.21	5.23	0.4	43.86	0.81	1.01	2.21	55.73
Sample Size	11	26	2	218	4	5	11	277
Mean Length	536	498	553	543	498	561	562	539
Std. Error	4	3	4	1	10	13	7	1
Sample Size	11	26	2	218	4	5	11	277
Mean Weight	2.45	1.93		2.63		2.36	2.59	2.55
Std. Error	0.28	0.12		0.05		0.08	0.02	0.04
Sample Size	2	4		40		2	3	51
Both Sexes	2,878	7,119	757	58,769	909	1,363	3,484	75,279
Percent	3.82	9.46	1.01	78.07	1.21	1.81	4.63	100
Sample Size	19	47	5	388	6	9	23	497
Mean Length	551	508	562	556	507	567	575	552
Std. Error	4	3	3	1	8	10	6	1
Sample Size	19	47	5	387	6	9	23	496
Mean Weight	2.79	2.13	3.1	2.97	2.36	2.33	2.92	2.87
Std. Error	0.17	0.1		0.05	0.26	0.08	0.22	0.04
Sample Size	4	6	1	60	2	3	7	83

Appendix A.16. Age, sex, and size (length in mm and weight in kg) composition of sockeye salmon escapement, Togiak River, 1998.

	Age Group							Total ^a
	1.1	0.3	1.2	1.3	2.2	1.4	2.3	
<u>Sample period: June 28- August 7</u>								
Males	565	847	12,139	49,686	1,976		10,163	75,376
Percent	0.37	0.55	7.9	32.35	1.29		6.62	49.08
Sample Size	2	3	43	176	7		36	267
Mean Length	373	568	517	577	557		572	564
Std. Error	22	13	5	2	10		6	2
Sample Size	2	3	43	176	7		36	267
Females		282	16,374	51,099	1,976	282	8,187	78,200
Percent		0.18	10.66	33.27	1.29	0.18	5.33	50.92
Sample Size		1	58	181	7	1	29	277
Mean Length		509	513	545	519	562	548	538
Std. Error			3	2	12		3	1
Sample Size		1	58	181	7	1	29	277
Both Sexes	565	1,129	28,513	100,785	3,952	282	18,350	153,576
Percent	0.37	0.74	18.57	65.63	2.57	0.18	11.95	100
Sample Size	2	4	101	357	14	1	65	544
Mean Length	373	553	515	561	538	562	561	551
Std. Error	22	13	3	1	8		4	1
Sample Size	2	4	101	357	14	1	65	544

^a Total does not include (21,900) sockeye salmon counted in the tributaries and mainstem Togiak River, below the counting towers.

Appendix A.17. Age and size (length in mm and weight in kg) composition of chinook salmon commercial catch, Nushagak District, 1998.

	Age Group				Total
	1.2	1.3	1.4	1.5	
<u>Sample Period: June 15 - August 7</u>					
Both Sexes	4,573	60,038	50,209	2,259	117,079
Percent	3.91	51.28	42.88	1.93	100
Sample Size	33	434	349	17	833
Mean Length	597	750	840	862	785
Std. Error	11	3	3	15	2
Sample Size	33	434	347	17	831
Mean Weight	4.3	8.1	9.66	12.93	8.71
Std. Error	0.33	0.7	0.25	1.53	0.38
Sample Size	8	100	93	6	207

Appendix A.18. Age and size (length in mm and weight in kg) composition of chinook salmon escapement, Nushagak River, 1998.

	Age Group						Total
	1.1	1.2	1.3	2.2	1.4	1.5	
<u>Sample period: June 9 - August 21</u>							
Both Sexes	1,041	15,513	64,349	96	35,047	1,449	117,495
Percent	0.89	13.2	54.77	0.08	29.83	1.23	100
Sample Size	9	158	634	1	325	14	1,141
Mean Length	407	569	750	513	859	876	757
Std. Error	17	5	3		4	8	2
Sample Size	9	154	634	1	324	14	1,136

Appendix A.19. Age and size (length in mm and weight in kg) composition of chinook salmon commercial catch, Togiak River Section, Togiak District, 1998.

	Age Group						Total
	1.1	1.2	1.3	1.4	2.3	1.5	
<u>Sample period: June 22 - July 14</u>							
Both Sexes	158	5,566	4,753	2,232	26	132	12,867
Percent	1.23	43.26	36.94	17.35	0.2	1.03	100
Sample Size	6	212	181	85	1	5	490
Mean Length	414	535	720	825	627	920	656
Std. Error	26	3	6	9		13	3
Sample Size	6	212	181	85	1	5	490
Mean Weight		3.33	9.26	9.54		13.65	6.75
Std. Error		0.36	1.94	0.61		1.63	0.75
Sample Size		26	31	30		3	90

Appendix A.20. Age, sex, and size (length in mm and weight in kg) composition of chum salmon commercial catch, Nushagak District, 1998.

	Age Group				Total
	0.2	0.3	0.4	0.5	
<u>Sample Period 1: June 15 - June 27</u>					
Males		7,589	2,769	83	10,441
Percent		42.55	15.53	0.47	58.54
Sample Size		274	100	3	377
Mean Length		595	622	640	602
Std. Error		2	3	36	2
Sample Size		274	100	3	377
Mean Weight		3.88	4.5	4.03	4.05
Std. Error		0.08	0.16		0.07
Sample Size		59	29	1	89
Females		5,844	1,495	55	7,394
Percent		32.77	8.38	0.31	41.46
Sample Size		211	54	2	267
Mean Length		571	590	604	575
Std. Error		2	5	61	2
Sample Size		210	54	2	266
Mean Weight		3.36	3.78		3.45
Std. Error		0.09	0.26		0.09
Sample Size		55	15		70
Both Sexes		13,433	4,264	138	17,835
Percent		75.32	23.91	0.77	100
Sample Size		485	154	5	644
Mean Length		584	611	625	591
Std. Error		1	3	33	1
Sample Size		484	154	5	643
Mean Weight		3.65	4.25	4.03	3.8
Std. Error		0.06	0.14		0.06
Sample Size		114	44	1	159
<u>Sample Period 2: June 28 - August 7</u>					
Males	1,071	66,429	11,786	536	79,822
Percent	0.56	34.83	6.18	0.28	41.85
Sample Size	2	124	22	1	149
Mean Length	565	585	599	629	587
Std. Error	10	3	5		2
Sample Size	2	124	22	1	149
Mean Weight		3.08	3.25	3.61	3.11
Std. Error		0.15	0.18		0.13
Sample Size		28	4	1	33
Females	1,607	100,179	8,572	536	110,894
Percent	0.84	52.53	4.49	0.28	58.15
Sample Size	3	187	16	1	207
Mean Length	525	555	564	630	556
Std. Error	6	2	6		2
Sample Size	3	187	16	1	207
Mean Weight	2.09	2.65	3.04		2.67
Std. Error		0.09	0.16		0.08
Sample Size	1	56	8		65
Both Sexes	2,678	166,608	20,358	1,072	190,716
Percent	1.4	87.36	10.67	0.56	100
Sample Size	5	311	38	2	356
Mean Length	541	567	584	630	569
Std. Error	5	1	4		1
Sample Size	5	311	38	2	356
Mean Weight	2.09	2.82	3.16	3.61	2.85
Std. Error		0.08	0.12		0.07
Sample Size	1	84	12	1	98

Appendix A.20. Age, sex, and size (length in mm and weight in kg) composition of chum salmon commercial catch, Nushagak District, 1998.

	Age Group				Total
	0.2	0.3	0.4	0.5	
<u>All Periods Combined:</u>					
Males	1,071	74,018	14,555	619	90,263
Percent	0.51	35.49	6.98	0.3	43.28
Sample Size	2	398	122	4	526
Mean Length	565	586	603	630	589
Std. Error	10	2	4	36	2
Sample Size	2	398	122	4	526
Mean Weight		3.16	3.49	3.67	3.22
Std. Error		0.13	0.15		0.11
Sample Size		87	33	2	122
Females	1,607	106,023	10,067	591	118,288
Percent	0.77	50.84	4.83	0.28	56.72
Sample Size	3	398	70	3	474
Mean Length	525	556	568	628	557
Std. Error	6	2	5	61	1
Sample Size	3	397	70	3	473
Mean Weight	2.09	2.69	3.15		2.72
Std. Error		0.08	0.14		0.08
Sample Size	1	111	23		135
Both Sexes	2,678	180,041	24,622	1,210	208,551
Percent	1.28	86.33	11.81	0.58	100
Sample Size	5	796	192	7	1,000
Mean Length	541	568	589	629	571
Std. Error	5	1	3	33	1
Sample Size	5	795	192	7	999
Mean Weight	2.09	2.88	3.35	3.67	2.94
Std. Error		0.07	0.11		0.07
Sample Size	1	198	56	2	257

Appendix A.21. Age, sex, and size (length in mm and weight in kg) composition of chum salmon escapement, Nushagak River, 1998.

	Age Group				Total
	0.2	0.3	0.4	0.5	
<u>Sample period: June 9 - August 9</u>					
Males	1,781	90,833	23,154	1,781	117,549
Percent	0.6	30.36	7.74	0.6	39.29
Sample Size	1	51	13	1	66
Mean Length	515	583	622	618	590
Std. Error		4	8		3
Sample Size	1	51	13	1	66
Females		154,950	26,716		181,666
Percent		51.79	8.93		60.71
Sample Size		87	15		102
Mean Length		558	571		560
Std. Error		3	5		3
Sample Size		87	15		102
Both Sexes	1,781	245,783	49,870	1,781	299,215
Percent	0.6	82.14	16.67	0.6	100
Sample Size	1	138	28	1	168
Mean Length	515	567	595	618	572
Std. Error		3	5		2
Sample Size	1	138	28	1	168

Appendix A.22. Age, sex, and size (length in mm and weight in kg) composition of chum salmon commercial catch, Togiak River Section, Togiak District, 1998.

	Age Group				Total
	0.2	0.3	0.4	0.5	
<u>Sample Period: June 16 - September 9</u>					
Males	144	14,789	6,749	574	22,256
Percent	0.28	28.93	13.2	1.12	43.54
Sample Size	1	103	47	4	155
Mean Length	581	590	603	611	594
Std. Error		2	4	14	2
Sample Size	1	103	47	4	155
Mean Weight	3.7	3.71	3.74		3.72
Std. Error		0.1	0.17		0.08
Sample Size	1	27	14		42
Females		19,242	9,333	287	28,862
Percent		37.64	18.26	0.56	56.46
Sample Size		134	65	2	201
Mean Length		573	571	581	572
Std. Error		2	3	22	2
Sample Size		134	65	2	201
Mean Weight		3.21	3.17	3.03	3.2
Std. Error		0.06	0.12		0.06
Sample Size		36	15	1	52
Both Sexes	144	34,031	16,082	861	51,118
Percent	0.28	66.57	31.46	1.68	100
Sample Size	1	237	112	6	356
Mean Length	581	580	584	601	582
Std. Error		2	3	12	1
Sample Size	1	237	112	6	356
Mean Weight	3.7	3.43	3.41	3.03	3.42
Std. Error		0.06	0.1		0.05
Sample Size	1	63	29	1	94

Appendix A.23. Age, sex, and size (length in mm and weight in kg) composition of coho salmon escapement, Nushagak River, 1998.

	Age Group			Total
	1.1	2.1	3.1	
<u>Sample period: July 13 - August 25</u>				
Males	3,027	62,818	1,261	67,106
Percent	2.88	59.86	1.2	63.94
Sample Size	12	249	5	266
Mean Length	547	558	555	558
Std. Error	12	3	27	3
Sample Size	12	247	5	264
Females	1,261	35,067	1,514	37,842
Percent	1.2	33.41	1.44	36.06
Sample Size	5	139	6	150
Mean Length	567	569	587	570
Std. Error	18	4	10	4
Sample Size	5	137	6	148
Both Sexes	4,288	97,885	2,775	104,948
Percent	4.09	93.27	2.64	100
Sample Size	17	388	11	416
Mean Length	553	562	572	562
Std. Error	10	3	13	2
Sample Size	17	384	11	412

Appendix B.1. Kvichak River sockeye salmon escapement and return by brood year including estimated interception catch (in thousands), 1950 - 1998.

Brood Year	Escapement	Return by Age Group															Total Recruits per Spawner	
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	3.4		Total
1950	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	248	0	0	0	248 ^c	-	
1951	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	221	3,377	0	0	983	0	1	0	4,582 ^c	-	
1952	- ^a	0 ^b	0 ^b	0	9,954	0	0	6,681	2,956	0	0	654	1	0	1	20,248 ^c	-	
1953	- ^a	0	0	0	91	0	0	62	365	0	0	60	0	0	0	16	593	-
1954	- ^a	0	0	0	81	17	0	29	643	0	0	0	0	0	29	0	799	-
1955	- ^a	0	0	0	251	14	0	100	589	0	0	531	20	0	0	0	1,504	-
1956	9,443	0	14	0	24,273	0	0	6,968	6,472	0	0	1,308	0	0	0	0	39,036	4.1
1957	2,843	8	0	0	243	0	0	244	3,333	0	2	259	0	0	2	0	4,091	1.4
1958	535	0	0	0	76	0	0	48	135	0	0	26	0	0	3	0	289	0.5
1959	680	0	0	0	212	1	0	117	206	0	0	11	0	0	0	0	547	0.8
1960	14,630	0	0	1	1,314	134	0	563	46,746	0	0	6,485	10	0	6	0	55,259	3.8
1961	3,706	1	0	0	334	0	0	190	2,293	0	0	679	5	0	0	0	3,503	0.9
1962	2,581	0	0	0	104	2	0	152	4,675	0	0	408	12	0	4	0	5,357	2.1
1963	339	0	0	0	49	3	0	50	639	0	0	366	3	0	9	0	1,120	3.3
1964	957	0	8	0	2,232	105	0	407	2,341	0	0	647	8	0	3	0	5,751	6.0
1965	24,326	0	25	0	9,853	484	0	471	32,951	0	0	1,239	2	0	1	0	45,026	1.9
1966	3,775	4	11	6	497	11	0	1,086	4,262	0	0	385	0	1	0	0	6,262	1.7
1967	3,216	0	0	5	349	2	0	272	812	0	0	86	0	0	0	0	1,527	0.5
1968	2,557	0	0	0	293	0	0	34	77	0	5	132	0	0	2	0	543	0.2
1969	8,394	0	0	1	129	7	0	321	4,221	0	0	595	19	0	11	0	5,304	0.6
1970	13,935	0	1	0	43	40	0	13	14,463	6	0	848	412	0	7	0	15,834	1.1
1971	2,387	0	0	0	244	18	0	93	2,169	0	0	303	2	0	0	0	2,829	1.2
1972	1,010	0	0	0	255	1	0	159	1,206	0	22	297	0	0	0	0	1,941	1.9
1973	227	0	0	2	576	2	2	1,028	274	0	3	543	28	0	0	0	2,457	10.8
1974	4,434	0	9	1	6,328	309	0	2,009	16,725	0	8	763	23	0	5	0	26,179	5.9
1975	13,140	0	5	0	5,683	302	0	1,232	30,263	0	0	599	2	0	0	0	38,087	2.9
1976	1,965	0	5	11	5,298	43	0	826	4,115	0	4	273	0	0	0	0	10,575	5.4
1977	1,341	11	43	6	1,934	2	0	935	208	0	0	99	0	0	0	0	3,238	2.4
1978	4,149	0	0	0	1,835	16	0	1,157	1,318	0	0	817	11	0	6	0	5,160	1.2
1979	11,218	1	57	3	18,331	73	0	2,234	17,931	0	0	3,512	0	0	0	0	42,142	3.8
1980	17,505	0	2	5	2,889	20	0	1,641	8,076	0	2	413	0	0	0	0	13,048	0.7
1981	1,754	0	0	12	789	0	0	231	931	0	0	167	0	0	0	0	2,129	1.2
1982	1,135	25	0	2	445	1	0	544	524	0	6	139	0	0	0	0	1,685	1.5
1983	3,570	0	1	5	8,596	3	0	3,010	1,195	0	5	573	0	2	1	0	13,392	3.8
1984	10,491	0	0	4	2,532	44	1	1,924	16,952	0	0	2,483	8	0	2	0	23,949	2.3
1985	7,211	4	7	30	1,024	29	0	1,282	13,465	0	2	1,560	1	15	2	0	17,419	2.4
1986	1,179	10	0	27	688	0	1	1,079	1,390	0	25	1,332	2	0	4	0	4,557	3.9
1987	6,066	29	4	69	4,179	31	4	2,519	4,499	0	5	700	4	0	2	0	12,044	2.0
1988	4,065	11	5	19	2,503	19	1	2,470	4,385	0	5	557	11	0	6	0	9,991	2.5
1989	8,318	29	2	54	2,147	117	2	1,678	18,826	0	2	3,316	13	1	0	0	26,187	3.1
1990	6,970	6	8	11	1,541	83	0	1,192	21,105	0	0	1,162	0	1	0	0	25,109	3.6
1991	4,223	0	1	4	2,688	2	0	1,232	699	0	6	170	0	0	0	0 ^d	4,802 ^d	1.1 ^d
1992	4,726	2	0	13	429	2	0	226	567	0	0	175	0	0 ^d	6 ^d	- ^c	1,420 ^c	0.3 ^c
1993	4,025	0	1	1	852	1	4	890	624	0	7 ^d	556 ^d	0 ^d	- ^c	- ^c	- ^c	2,937 ^c	0.7 ^c
1994	8,338	0	3	0	1,811	29	0 ^d	1,173 ^d	3,700 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	6,716 ^c	0.8 ^c
1995	10,039	0	17	0 ^d	7,593 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	7,610 ^c	0.8 ^c
1996	1,451	3 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	3 ^c	- ^c
1997	1,504	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c
1998	2,296	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c

^a Escapement not available.

^b Younger age groups not available.

^c Incomplete returns from brood year escapement.

^d Estimate from 1999 preliminary return numbers.

Appendix B.2. Branch River sockeye salmon escapement and return by brood year including estimated interception catch (in thousands), 1950 - 1998.

Brood Year	Escapement	Return by Age Group															Total	Total Recruits per Spawner
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	3.4		
1950	0 ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	262	0	0	0	0	262 ^c	-
1951	0 ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	294	343	0	0	43	0	0	0	0	681 ^c	-
1952	0 ^a	0 ^b	0 ^b	0	383	0	0	295	131	0	0	115	0	0	1	0	925 ^c	-
1953	0 ^a	0	0	0	5	0	0	11	64	0	0	0	0	0	0	0	80	-
1954	0 ^a	0	0	0	14	3	0	109	392	0	0	141	0	0	1	0	660	-
1955	0 ^a	0	0	0	788	0	0	237	26	0	0	44	0	0	0	0	1,095	-
1956	784	5	0	0	1,885	0	0	459	0	0	0	38	3	0	0	0	2,390	3.0
1957	127	0	0	0	5	0	0	23	43	0	0	13	0	0	1	0	85	0.7
1958	95	0	0	0	43	0	0	26	27	0	0	52	0	0	0	0	147	1.5
1959	825	0	0	0	302	0	0	265	122	0	0	76	1	0	2	0	768	0.9
1960	1,241	0	0	0	105	0	0	185	135	0	0	31	0	0	0	0	456	0.4
1961	90	0	10	1	89	1	0	185	7	0	0	0	0	0	0	0	292	3.2
1962	91	0	19	0	129	0	0	91	3	0	0	19	1	0	0	0	262	2.9
1963	203	0	0	0	199	1	0	140	34	0	0	1	0	0	0	0	376	1.9
1964	249	0	5	0	100	2	0	98	113	0	0	17	0	0	0	0	336	1.3
1965	175	0	6	0	104	1	0	161	10	0	0	17	0	0	0	0	299	1.7
1966	174	0	13	0	282	0	0	262	12	0	0	11	0	0	0	0	581	3.3
1967	203	0	9	8	291	1	0	51	46	0	0	7	0	0	0	0	413	2.0
1968	194	3	5	0	127	0	0	40	2	0	0	3	0	0	0	0	180	0.9
1969	182	0	0	0	4	1	0	54	105	0	0	25	0	0	0	0	190	1.0
1970	177	0	0	0	73	0	0	71	6	0	0	2	0	0	0	0	152	0.9
1971	187	0	2	0	26	0	0	28	31	0	0	37	0	0	2	0	126	0.7
1972	151	0	1	0	91	0	0	17	7	0	0	14	0	0	0	0	130	0.9
1973	35	0	0	0	97	1	0	130	18	0	0	2	0	0	0	0	248	7.1
1974	215	0	4	0	292	5	0	18	128	0	0	8	0	0	0	0	456	2.1
1975	100	0	15	0	415	0	0	340	3	0	1	1	0	0	0	0	775	7.8
1976	82	0	26	0	211	0	0	168	20	0	0	55	0	0	0	0	481	5.9
1977	100	0	27	0	141	1	0	700	0	0	4	9	0	0	0	0	881	8.8
1978	229	0	1	0	102	0	0	68	39	0	0	147	0	0	0	0	358	1.6
1979	294	0	3	2	459	2	0	297	32	0	0	3	0	0	0	0	799	2.7
1980	298	0	0	0	103	0	0	211	13	0	2	9	0	1	0	0	339	1.1
1981	82	0	0	0	55	0	0	171	53	0	2	11	0	0	0	0	291	3.5
1982	239	0	0	0	172	0	0	142	4	0	0	3	0	0	0	0	322	1.3
1983	96	0	0	0	148	0	0	131	33	0	0	3	0	0	0	0	316	3.3
1984	215	0	1	0	159	0	0	146	42	0	0	23	0	0	0	0	372	1.7
1985	118	0	3	0	357	0	0	113	92	0	0	8	0	0	0	0	574	4.9
1986	230	0	1	0	344	0	0	267	193	0	0	8	0	0	0	0	813	3.5
1987	154	0	0	0	158	0	0	170	172	0	3	80	0	0	0	0	583	3.8
1988	195	0	1	0	154	0	0	148	279	0	0	43	0	0	0	0	625	3.2
1989	197	0	5	0	354	2	0	172	178	0	0	16	0	0	0	0	727	3.7
1990	169	0	2	0	262	0	0	124	330	0	0	237	0	0	0	0	955	5.7
1991	278	0	0	0	200	4	0	220	165	0	0	0	0	0	0	0 ^d	588 ^d	2.1 ^d
1992	225	0	2	0	98	0	0	73	65	0	0	10	0	0 ^d	1 ^d	- ^c	248 ^c	1.1 ^c
1993	348	0	4	0	127	0	0	161	83	0	2 ^d	47 ^d	0 ^d	- ^c	- ^c	- ^c	424 ^c	1.2 ^c
1994	243	0	1	0	162	2	0 ^d	266 ^d	39 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	470 ^c	1.9 ^c
1995	216	0	4	0 ^d	698 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	702 ^c	3.3 ^c
1996	307	0 ^d	3 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	3 ^c	- ^c
1997	218	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c
1998	252	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c

^a Escapement not available.

^b Younger age groups not available.

^c Incomplete returns from brood year escapement.

^d Estimate from 1999 preliminary return numbers.

Appendix B.3. Naknek River sockeye salmon escapement and return by brood year including estimated interception catch (in thousands), 1950 - 1998.

Brood Year	Escapement	Return by Age Group														Total	Total Recruits per Spawner															
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3			3.4														
1950	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	1,100 ^c	-			
1951	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	3,234 ^c	-	
1952	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	1,571 ^c	-
1953	- ^a	0	0	0	0	24	0	0	135	177	3	0	206	42	0	1	1	589	0	13	3	0	0	0	0	0	0	0	0	0	1,851	-
1954	- ^a	0	0	0	0	85	19	0	302	2,129	0	0	587	0	13	3	0	3,137	0	13	3	0	0	0	0	0	0	0	0	0	1,851	-
1955	- ^a	0	0	0	0	720	1	0	820	214	0	0	88	2	4	2	0	1,851	0	4	2	0	0	0	0	0	0	0	0	0	1,851	-
1956	1,773	0	1	0	473	0	0	1,701	3	0	17	304	0	0	0	0	0	2,501	0	0	0	0	0	0	0	0	0	0	0	0	2,501	1.4
1957	635	0	0	0	53	2	0	329	505	0	1	674	5	0	3	0	1,571	0	3	0	0	0	0	0	0	0	0	0	0	0	1,571	2.5
1958	278	0	0	0	112	4	0	211	539	0	0	168	3	0	2	0	1,040	0	2	0	0	0	0	0	0	0	0	0	0	0	1,040	3.7
1959	2,232	0	0	0	349	7	0	351	742	0	0	705	0	0	0	0	2,155	0	0	0	0	0	0	0	0	0	0	0	0	0	2,155	1.0
1960	828	0	1	1	1,408	9	0	625	696	0	0	1,278	1	1	2	0	4,023	0	1	2	0	0	0	0	0	0	0	0	0	0	4,023	4.9
1961	351	0	0	0	239	3	0	744	315	0	3	640	0	0	8	0	1,953	0	8	0	0	0	0	0	0	0	0	0	0	0	1,953	5.6
1962	723	0	0	0	76	4	0	230	351	0	2	397	13	0	1	0	1,074	0	1	0	0	0	0	0	0	0	0	0	0	0	1,074	1.5
1963	905	0	0	0	136	8	0	390	833	0	0	627	7	0	1	0	2,003	0	1	0	0	0	0	0	0	0	0	0	0	0	2,003	2.2
1964	1,350	0	1	0	447	24	0	264	1,135	0	0	177	11	0	1	0	2,061	0	1	0	0	0	0	0	0	0	0	0	0	0	2,061	1.5
1965	718	0	5	0	540	44	0	360	732	0	0	437	1	0	1	0	2,121	0	1	0	0	0	0	0	0	0	0	0	0	0	2,121	3.0
1966	1,016	1	4	0	728	2	0	2,304	167	0	1	630	0	1	0	0	3,837	0	1	0	0	0	0	0	0	0	0	0	0	0	3,837	3.8
1967	756	0	0	2	326	6	0	625	401	0	0	356	0	1	0	0	1,716	0	1	0	0	0	0	0	0	0	0	0	0	0	1,716	2.3
1968	1,023	0	3	0	152	0	0	234	83	0	0	269	2	0	2	0	745	0	2	0	0	0	0	0	0	0	0	0	0	0	745	0.7
1969	1,331	0	0	0	47	3	0	307	976	0	0	1,211	5	0	3	0	2,552	0	5	0	3	0	0	0	0	0	0	0	0	0	2,552	1.9
1970	733	0	1	0	154	19	0	318	1,845	0	0	370	12	0	0	0	2,718	0	12	0	0	0	0	0	0	0	0	0	0	0	2,718	3.7
1971	936	0	1	0	397	24	0	559	1,428	0	0	1,844	3	9	8	0	4,274	0	9	8	0	0	0	0	0	0	0	0	0	0	4,274	4.6
1972	587	0	3	0	245	3	0	241	161	0	3	599	9	0	1	0	1,264	0	3	599	9	0	1	0	0	0	0	0	0	0	1,264	2.2
1973	357	0	0	0	494	0	0	618	524	0	0	598	0	0	0	0	2,235	0	0	0	0	0	0	0	0	0	0	0	0	0	2,235	6.3
1974	1,241	0	2	0	232	3	0	228	1,026	0	1	783	5	0	5	0	2,285	0	1	783	5	0	5	0	0	0	0	0	0	0	2,285	1.8
1975	2,027	0	1	0	425	11	0	1,746	1,393	0	0	1,641	1	8	0	0	5,226	0	1	8	0	0	0	0	0	0	0	0	0	0	5,226	2.6
1976	1,321	0	4	0	1,084	3	0	4,048	1,575	0	21	1,491	0	28	1	0	8,256	0	28	1	0	0	0	0	0	0	0	0	0	0	8,256	6.2
1977	1,086	2	10	7	635	0	0	2,272	95	0	64	401	0	1	5	0	3,493	0	1	5	0	0	0	0	0	0	0	0	0	0	3,493	3.2
1978	813	0	1	0	331	4	0	1,695	1,121	0	11	530	2	0	0	0	3,694	0	11	530	2	0	0	0	0	0	0	0	0	0	3,694	4.5
1979	925	0	4	1	2,438	4	0	973	792	0	9	408	4	0	3	0	4,637	0	9	408	4	0	3	0	0	0	0	0	0	0	4,637	5.0
1980	2,645	0	1	1	723	14	0	1,505	1,192	0	9	828	0	2	0	0	4,274	0	9	828	0	2	0	0	0	0	0	0	0	0	4,274	1.6
1981	1,796	0	4	0	782	9	0	2,568	473	0	12	937	0	3	0	0	4,788	0	12	937	0	3	0	0	0	0	0	0	0	0	4,788	2.7
1982	1,156	0	3	3	185	0	0	1,172	191	0	23	457	0	9	0	0	2,043	0	23	457	0	9	0	0	0	0	0	0	0	0	2,043	1.8
1983	888	0	0	1	163	7	0	484	336	0	5	480	0	0	1	0	1,477	0	5	480	0	0	1	0	0	0	0	0	0	0	1,477	1.7
1984	1,242	0	1	0	469	23	0	911	1,214	0	21	1,828	5	1	4	0	4,477	0	21	1,828	5	1	4	0	0	0	0	0	0	0	4,477	3.6
1985	1,850	0	2	6	656	20	1	3,533	1,293	0	44	1,441	0	28	10	0	7,033	0	44	1,441	0	28	10	0	0	0	0	0	0	0	7,033	3.8
1986	1,978	0	3	6	1,981	6	1	7,167	1,276	0	367	2,817	1	38	2	0	13,666	0	367	2,817	1	38	2	0	0	0	0	0	0	0	13,666	6.9
1987	1,062	3	0	12	336	4	1	1,251	565	0	95	3,225	2	12	0	0	5,505	0	95	3,225	2	12	0	0	0	0	0	0	0	0	5,505	5.2
1988	1,038	0	0	0	273	13	0	796	516	0	37	544	2	2	1	0	2,183	0	37	544	2	2	1	0	0	0	0	0	0	0	2,183	2.1
1989	1,162	0	1	0	226	5	0	930	1,154	0	0	566	4	0	1	0	2,888	0	0	566	4	0	1	0	0	0	0	0	0	0	2,888	2.5
1990	2,093	0	0	0	405	46	0	1,236	1,345	0	12	1,316	3	12	0	0	4,375	0	12	1,316	3	12	0	0	0	0	0	0	0	0	4,375	2.1
1991	3,579	1	13	0	546	1	0	5,209	250	0	45	343	0	1	0	0	6,408 ^d	0	45	343	0	1	0	0	0	0	0	0	0	0	6,408 ^d	1.8 ^d
1992	1,607	0	0	16	268	1	0	552	250	1	10	379	5	0 ^d	2 ^d	- ^c	1,483 ^c	0	10	379	5	0 ^d	2 ^d	- ^c	- ^c	1,483 ^c	0.9 ^c					
1993	1,536	0	0	2	293	12	0	1,390	473	0	20 ^d	634 ^d	0 ^d	- ^c	- ^c	- ^c	2,824 ^c	0	20 ^d	634 ^d	0 ^d	- ^c	- ^c	2,824 ^c	1.8 ^c							
1994	991	0	6	0	503	15	0 ^d	596 ^d	513 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	1,634 ^c	0	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	1,634 ^c	1.6 ^c	
1995	1,111	0	9	0 ^d	1,978 ^d	1 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	1,987 ^c	0	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	1,987 ^c	1.8 ^c	
1996	1,078	1 ^d	1 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	2 ^c	0	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	2 ^c	- ^c	
1997	1,026	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	0	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c
1998	1,202	- ^c	- ^c																													

Appendix B.4. Egegik River sockeye salmon escapement and return by brood year including estimated interception catch (in thousands), 1949 - 1998.

Brood Year	Escapement	Return by Age Group														Total	Total Recruits per Spawner	
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3			3.4
1949	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	0	0	14	0	14 ^c	-	
1950	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	0	0	0	0	274	70	4	23	0	371 ^c	-
1951	- ^a	0 ^b	0 ^b	0	0	0	0	325	1,018	0	1	1,301	2	0	6	0	2,654 ^c	-
1952	- ^a	0	0	0	623	0	0	446	241	0	1	295	19	2	5	0	1,633	-
1953	- ^a	0	0	0	26	0	0	39	435	2	0	337	254	0	12	0	1,104	-
1954	- ^a	0	0	0	11	4	0	13	1,190	0	0	641	87	0	46	0	1,990	-
1955	- ^a	0	1	0	20	0	0	163	672	0	0	396	6	1	6	0	1,265	-
1956	1,104	0	6	0	2,025	0	0	3,190	925	0	2	685	1	0	12	0	6,846	6.2
1957	391	0	0	0	37	0	0	43	1,096	0	0	927	70	0	62	0	2,236	5.7
1958	246	0	0	0	42	2	0	73	817	0	0	308	16	0	3	0	1,263	5.1
1959	1,072	0	0	0	73	2	0	164	1,037	0	0	467	14	0	24	0	1,783	1.7
1960	1,799	8	0	0	447	21	0	328	4,447	0	1	2,560	49	0	50	0	7,912	4.4
1961	702	0	0	3	82	0	0	229	446	0	1	791	28	0	10	0	1,591	2.3
1962	1,027	0	0	0	22	0	0	69	950	0	0	375	28	0	30	0	1,475	1.4
1963	998	0	0	1	16	2	0	112	538	1	1	506	74	0	7	0	1,258	1.3
1964	850	0	1	0	126	6	0	69	1,454	1	0	242	73	0	12	0	1,983	2.3
1965	1,445	0	0	0	104	35	0	72	2,016	0	4	845	6	2	20	0	3,103	2.1
1966	804	0	0	1	249	0	0	752	600	0	2	890	7	0	10	0	2,511	3.1
1967	637	0	0	2	60	2	0	257	665	0	0	622	1	1	2	0	1,613	2.5
1968	339	0	0	0	41	0	0	56	87	0	0	258	3	5	9	0	458	1.4
1969	1,016	0	0	0	12	1	0	111	1,096	0	0	1,141	279	2	113	0	2,756	2.7
1970	920	0	0	0	59	0	0	89	796	0	1	175	95	0	25	0	1,240	1.3
1971	634	0	0	0	45	2	0	109	1,477	0	0	970	74	1	55	0	2,732	4.3
1972	546	0	0	1	57	2	0	61	1,508	0	0	1,264	48	0	18	0	2,959	5.4
1973	329	0	0	0	76	0	0	135	578	0	0	851	35	0	4	0	1,679	5.1
1974	1,276	0	0	0	131	18	0	99	2,224	0	0	496	54	0	3	0	3,025	2.4
1975	1,174	0	0	0	148	9	0	241	2,449	2	0	797	14	2	1	0	3,663	3.1
1976	509	1	1	2	612	59	0	789	3,003	0	4	846	0	0	0	0	5,317	10.4
1977	693	0	2	0	823	1	0	1,969	688	0	14	655	52	0	13	0	4,217	6.1
1978	896	0	0	2	398	6	0	510	6,071	0	0	2,184	25	4	8	0	9,208	10.3
1979	1,032	0	3	0	712	9	3	520	3,036	0	4	1,659	0	0	0	0	5,947	5.8
1980	1,061	0	1	13	803	26	0	2,225	4,576	0	6	917	7	0	0	0	8,576	8.1
1981	695	0	0	6	544	64	0	953	3,284	0	11	1,438	9	0	7	0	6,317	9.1
1982	1,035	2	2	4	988	12	0	1,874	1,796	0	9	1,638	11	2	2	0	6,340	6.1
1983	792	0	3	0	1,748	7	1	2,763	3,235	0	7	2,822	21	23	16	0	10,646	13.4
1984	1,165	0	1	8	608	85	0	978	6,539	3	10	5,029	215	13	39	0	13,527	11.6
1985	1,095	4	0	9	567	32	0	1,404	4,358	0	9	1,262	8	0	18	0	7,672	7.0
1986	1,152	0	2	14	1,850	10	0	3,733	3,912	0	92	4,515	86	83	34	0	14,331	12.4
1987	1,274	2	0	9	886	66	0	4,561	8,863	3	101	11,239	133	31	57	0	25,952	20.4
1988	1,613	0	1	0	413	62	0	1,278	11,061	0	4	5,650	261	3	152	0	18,885	11.7
1989	1,612	1	0	6	513	34	0	456	6,063	1	6	3,979	170	1	31	0	11,260	7.0
1990	2,192	0	0	2	403	66	0	867	9,598	1	3	4,721	21	28	30	0	15,740	7.2
1991	2,787	4	1	3	1,397	20	2	3,939	3,113	0	47	2,607	19	2	9	0 ^d	11,163 ^d	4.0 ^d
1992	1,946	5	0	32	335	54	3	1,117	4,963	2	4	3,099	53	15 ^d	16 ^d	- ^c	9,700 ^c	5.0 ^c
1993	1,517	0	2	10	497	31	0	573	880	0	10 ^d	993 ^d	5 ^d	- ^c	- ^c	- ^c	3,000 ^c	2.0 ^c
1994	1,898	1	8	0	368	65	0 ^d	985 ^d	4,246 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	5,673 ^c	3.0 ^c
1995	1,267	0	7	0 ^d	3,173 ^d	4 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	3,184 ^c	2.5 ^c
1996	1,076	0 ^d	1 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	1 ^c	- ^c
1997	1,104	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c
1998	1,111	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c

^a Escapement not available.

^b Younger age groups not available.

^c Incomplete returns from brood year escapement.

^d Estimate from 1999 preliminary return numbers.

Appendix B.5. Ugashik River sockeye salmon escapement and return by brood year including estimated interception catch (in thousands), 1949 - 1998.

Brood Year	Return by Age Class															Total	Total Recruits per Spawner		
	Escapement	0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3			3.4	
1949	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	0	0	0	2	0	2 ^c	-	
1950	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	0	0	0	1	45	0	0	3	0	49 ^c	-	
1951	- ^a	0 ^b	0 ^b	0	0	0	1	47	174	0	2	118	1	0	0	0	342 ^c	-	
1952	- ^a	0	0	1	508	0	0	391	209	0	0	78	2	0	0	0	1,189	-	
1953	- ^a	0	0	0	216	0	0	249	420	0	0	216	7	0	0	0	1,108	-	
1954	- ^a	0	0	0	24	3	0	28	395	0	0	61	0	0	0	0	511	-	
1955	- ^a	0	0	1	17	1	0	33	118	0	0	7	0	0	0	0	177	-	
1956	425	1	12	0	3,165	0	0	837	80	0	2	35	0	0	0	0	4,132	9.7	
1957	215	0	0	1	35	0	0	105	354	0	2	100	4	0	2	0	603	2.8	
1958	280	0	0	0	63	0	0	105	444	0	0	66	0	0	0	0	679	2.4	
1959	219	0	0	0	18	0	0	38	310	0	0	132	0	0	1	0	498	2.3	
1960	2,304	0	0	0	674	11	0	296	1,563	0	0	487	0	0	0	0	3,032	1.3	
1961	349	0	0	3	240	2	0	500	247	0	1	120	0	0	0	0	1,113	3.2	
1962	255	0	0	2	77	2	0	130	185	0	0	27	0	0	0	0	424	1.7	
1963	388	0	0	0	13	0	0	21	91	0	0	23	0	0	0	0	148	0.4	
1964	473	0	0	0	31	9	0	16	245	0	0	18	0	0	2	0	324	0.7	
1965	997	0	0	0	86	2	0	38	249	0	1	162	1	0	0	0	538	0.5	
1966	704	1	0	2	723	0	0	1,478	90	0	0	21	0	0	0	0	2,315	3.3	
1967	239	0	0	0	56	0	0	50	44	0	0	34	0	0	0	0	184	0.8	
1968	71	0	0	0	14	0	0	7	15	0	0	3	0	0	0	0	40	0.6	
1969	160	0	0	0	4	0	0	5	53	0	0	26	2	0	2	0	92	0.6	
1970	735	0	0	0	4	1	0	2	256	0	1	28	2	0	1	0	295	0.4	
1971	530	0	0	0	178	0	0	236	290	0	0	130	0	0	1	0	835	1.6	
1972	79	0	0	0	35	0	0	58	119	0	0	41	2	0	3	0	258	3.3	
1973	39	0	0	1	16	0	0	8	17	0	0	46	4	0	0	0	92	2.4	
1974	62	0	0	0	13	10	0	15	602	0	0	83	2	0	0	0	724	11.7	
1975	429	0	3	0	1,484	4	0	575	1,721	0	0	325	2	1	0	0	4,116	9.6	
1976	356	0	0	2	2,027	58	0	1,527	1,248	0	7	437	0	0	3	0	5,309	14.9	
1977	202	0	2	18	585	0	0	1,614	266	0	10	186	6	1	4	0	2,693	13.3	
1978	82	0	0	5	247	7	0	413	863	0	6	523	1	0	0	0	2,064	25.2	
1979	1,707	0	20	0	3,076	8	0	851	1,471	0	14	562	0	5	0	0	6,006	3.5	
1980	3,335	0	1	13	1,183	39	0	2,309	3,371	0	10	850	3	2	0	0	7,782	2.3	
1981	1,328	0	2	10	1,603	4	0	2,632	2,278	0	4	933	1	1	0	0	7,468	5.6	
1982	1,186	0	1	15	423	1	1	713	606	0	9	737	0	2	0	0	2,508	2.1	
1983	1,001	0	0	10	650	6	1	342	632	0	3	319	1	1	0	0	1,965	2.0	
1984	1,270	0	0	5	472	55	0	568	3,635	0	13	709	3	0	4	0	5,464	4.3	
1985	1,006	2	1	6	508	2	0	721	978	0	4	469	0	5	0	0	2,696	2.7	
1986	1,016	5	1	46	503	1	0	2,427	1,874	0	71	1,750	4	15	0	0	6,697	6.6	
1987	687	7	1	9	828	11	0	1,626	1,875	0	25	2,310	10	20	24	0	6,744	9.8	
1988	654	1	2	1	463	27	0	692	2,144	0	37	2,252	22	3	7	0	5,651	8.6	
1989	1,713	3	7	7	694	14	0	391	2,479	0	12	955	6	1	4	0	4,573	2.7	
1990	749	0	1	13	345	15	2	709	2,302	0	2	1,218	2	2	0	0	4,609	6.2	
1991	2,482	1	6	0	2,034	1	0	3,167	597	0	14	326	0	4	0	0 ^d	6,151 ^d	2.5 ^d	
1992	2,195	6	3	49	191	4	1	597	1,013	0	1	827	0	10 ^d	0 ^d	- ^c	2,701 ^c	1.2 ^c	
1993	1,413	1	2	2	265	7	0	352	241	0	17 ^d	198 ^d	0 ^d	- ^c	- ^c	- ^c	1,086 ^c	0.8 ^c	
1994	1,095	0	12	4	333	12	0 ^d	328 ^d	692 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	1,381 ^c	1.3 ^c	
1995	1,321	3	18	5 ^d	2,816 ^d	1 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	2,843 ^c	2.2 ^c	
1996	692	0 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c
1997	657	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c
1998	925	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c

^a Escapement not available.

^b Younger age groups not available.

^c Incomplete returns from brood year escapement.

^d Estimate from 1999 preliminary return numbers.

Appendix B.6. Wood River sockeye salmon escapement and return by brood year including estimated interception catch (in thousands), 1950 - 1998.

Brood Year	Escapement	Return by Age Class														Total Recruits per Spawner			
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3		3.4	Total	
1950	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	1	57	0	0	0	0	58 ^c	-	
1951	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	456	290	0	3	54	0	0	1	0	803 ^c	-	
1952	- ^a	0 ^b	0 ^b	0	690	0	0	558	29	0	2	34	0	0	0	0	1,314 ^c	-	
1953	- ^a	0	0	0	301	0	0	331	139	0	2	34	0	0	1	0	809	-	
1954	- ^a	0	0	0	1,237	0	0	140	1,085	0	1	66	0	0	0	0	2,529	-	
1955	- ^a	0	0	0	2,407	0	0	833	401	0	5	143	0	0	0	0	3,789	-	
1956	773	0	0	48	774	0	0	627	24	0	0	0	0	0	0	0	1,472	1.9	
1957	289	0	0	21	136	0	0	257	35	0	0	0	0	0	0	0	449	1.6	
1958	960	0	1	0	2,145	1	0	389	75	0	0	32	0	0	0	0	2,643	2.8	
1959	2,209	0	0	1	979	10	0	398	359	0	1	55	0	0	2	0	1,805	0.8	
1960	1,016	0	6	0	1,474	0	0	1,039	106	0	2	105	1	0	0	0	2,732	2.7	
1961	461	0	0	10	255	0	0	1,183	24	0	2	20	0	1	1	0	1,495	3.2	
1962	874	1	2	0	992	1	2	340	116	0	6	43	0	0	0	0	1,503	1.7	
1963	721	0	0	0	536	1	0	769	76	0	0	46	0	0	0	0	1,427	2.0	
1964	1,076	0	1	6	452	0	0	347	338	0	0	74	0	0	2	0	1,219	1.1	
1965	675	2	1	8	472	1	0	999	90	0	0	213	0	0	1	0	1,787	2.6	
1966	1,209	0	7	29	974	0	0	988	46	0	7	69	0	0	1	0	2,122	1.8	
1967	516	0	3	21	642	0	0	269	75	0	2	80	0	0	0	0	1,090	2.1	
1968	649	0	1	0	514	0	0	565	5	0	4	19	0	0	0	0	1,108	1.7	
1969	604	0	0	4	57	0	0	445	201	0	10	116	0	0	0	0	834	1.4	
1970	1,162	0	2	0	1,539	0	0	1,002	231	0	0	26	0	0	0	0	2,799	2.4	
1971	851	3	0	18	456	0	0	576	198	0	1	49	0	0	0	0	1,301	1.5	
1972	431	2	1	22	779	0	0	631	32	0	20	27	0	0	0	0	1,514	3.5	
1973	330	1	1	0	213	0	0	1,148	74	0	3	44	0	0	0	0	1,484	4.5	
1974	1,709	0	3	6	2,956	4	0	1,698	421	0	5	71	0	0	0	0	5,164	3.0	
1975	1,270	13	47	12	1,592	2	0	1,977	406	0	2	734	0	0	0	0	4,784	3.8	
1976	817	0	3	0	2,278	3	0	2,589	572	0	10	265	0	0	0	0	5,721	7.0	
1977	562	0	20	0	1,029	0	0	2,173	40	0	0	26	2	0	0	0	3,289	5.9	
1978	2,267	0	0	0	1,364	3	0	1,029	784	0	12	96	0	0	0	0	3,288	1.5	
1979	1,706	0	10	0	2,643	0	0	1,491	24	0	1	13	0	0	0	0	4,182	2.5	
1980	2,969	0	0	0	453	0	0	978	72	0	1	101	0	0	0	0	1,606	0.5	
1981	1,233	0	0	0	626	0	0	1,137	60	0	0	86	0	0	0	0	1,909	1.5	
1982	976	0	4	0	522	0	0	765	121	0	12	14	0	0	0	0	1,438	1.5	
1983	1,361	0	1	5	1,940	0	2	1,154	15	0	2	75	0	0	0	0	3,194	2.3	
1984	1,003	0	0	0	586	0	2	1,340	32	0	15	23	0	0	0	0	1,998	2.0	
1985	939	8	3	15	1,127	0	1	1,390	29	0	2	12	0	1	0	0	2,587	2.8	
1986	819	7	2	25	1,179	0	1	1,970	70	0	12	64	0	0	0	0	3,330	4.1	
1987	1,337	25	0	30	1,334	0	14	756	98	0	8	92	0	1	0	0	2,360	1.8	
1988	867	4	1	8	1,613	0	3	1,425	90	0	15	34	0	0	0	0	3,193	3.7	
1989	1,186	1	4	16	2,293	0	0	1,922	13	0	2	39	0	0	0	0	4,288	3.6	
1990	1,069	10	1	10	1,104	1	3	1,208	286	0	2	169	0	0	0	0	2,794	2.6	
1991	1,160	0	12	9	2,633	0	0	2,466	54	0	65	71	0	0	0	0 ^d	5,312 ^d	4.6 ^d	
1992	1,286	10	1	57	2,398	0	2	1,674	90	0	0	49	0	0 ^d	1 ^d	- ^c	4,283 ^c	3.3 ^c	
1993	1,176	14	0	3	1,715	0	9	1,161	129	0	3 ^d	193 ^d	0 ^d	- ^c	- ^c	- ^c	3,227 ^c	2.7 ^c	
1994	1,472	0	10	0	2,747	1	0 ^d	2,015 ^d	446 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	5,219 ^c	3.5 ^c	
1995	1,482	1	5	0 ^d	3,499 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	3,505 ^c	2.4 ^c	
1996	1,650	0 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c
1997	1,512	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c
1998	1,756	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c

^a Escapement not available.

^b Younger age groups not available.

^c Incomplete returns from brood year escapement.

^d Estimate from 1999 preliminary return numbers.

Appendix B.7. Igushik River sockeye salmon escapement and return by brood year including estimated interception catch (in thousands), 1950 - 1998.

Brood Year	Escapement	Return by Age Class														Total	Total Recruits per Spawner	
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3			3.4
1950	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	1	78	0	0	0	0	78 ^c	-
1951	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	615	62	0	1	29	0	0	2	0	709 ^c	-
1952	- ^a	0 ^b	0 ^b	0	147	0	0	303	9	0	5	73	0	0	0	0	538 ^c	-
1953	- ^a	0	0	0	98	0	0	1	20	0	3	65	0	0	1	0	187	-
1954	- ^a	0	0	0	175	0	0	269	204	0	0	113	0	1	0	0	763	-
1955	- ^a	0	0	0	454	0	0	781	113	0	0	94	0	0	0	0	1,443	-
1956	400	0	0	0	169	0	0	523	12	0	3	36	0	0	0	0	743	1.9
1957	130	0	0	0	2	0	0	35	19	0	0	20	0	0	0	0	76	0.6
1958	107	0	0	0	14	0	0	71	20	0	0	28	0	0	0	0	133	1.2
1959	644	0	0	0	101	0	0	155	93	0	0	22	0	0	0	0	372	0.6
1960	495	0	0	1	61	0	0	310	44	0	0	57	0	0	0	0	474	1.0
1961	294	0	0	1	33	0	1	364	20	0	0	17	0	0	0	0	437	1.5
1962	16	0	0	8	20	0	0	280	9	0	0	9	0	0	0	0	327	20.4
1963	92	0	0	3	254	0	0	190	36	0	0	25	0	0	0	0	508	5.5
1964	129	0	0	1	162	0	0	585	133	0	0	49	0	0	0	0	930	7.2
1965	181	0	0	0	371	0	0	436	203	0	0	80	0	0	0	0	1,089	6.0
1966	206	0	0	0	66	0	0	383	6	0	0	15	0	0	0	0	470	2.3
1967	282	0	0	3	57	0	0	90	13	0	0	12	0	0	0	0	175	0.6
1968	195	0	0	0	43	0	0	120	0	0	2	10	0	0	0	0	176	0.9
1969	512	0	0	0	1	0	0	131	301	0	2	103	0	0	0	0	536	1.0
1970	371	0	0	1	26	0	0	170	41	0	0	71	0	0	0	0	309	0.8
1971	211	0	0	1	48	0	0	164	60	0	0	30	0	0	0	0	303	1.4
1972	60	0	0	4	89	0	0	109	6	0	8	13	0	0	0	0	229	3.8
1973	60	0	0	0	19	0	0	650	25	0	2	29	0	0	0	0	725	12.1
1974	359	0	0	7	441	1	0	750	346	0	4	25	0	0	0	0	1,574	4.4
1975	241	0	0	0	783	0	0	2,556	137	0	2	503	0	0	0	0	3,981	16.5
1976	186	0	0	0	551	3	0	1,411	194	0	20	215	0	0	0	0	2,394	12.9
1977	96	0	0	6	294	0	0	1,689	9	0	8	9	0	0	0	0	2,015	21.0
1978	536	0	0	0	96	0	0	330	84	0	1	15	0	0	0	0	527	1.0
1979	860	0	0	0	422	0	0	406	13	0	0	5	0	0	0	0	847	1.0
1980	1,988	0	0	0	20	0	0	271	25	0	0	56	0	0	0	0	373	0.2
1981	591	0	0	0	188	0	0	779	8	0	1	49	0	0	0	0	1,025	1.7
1982	424	0	0	7	57	0	0	434	9	0	2	10	0	0	0	0	518	1.2
1983	180	1	0	0	151	0	0	353	8	0	2	29	0	0	0	0	544	3.0
1984	185	0	0	0	41	0	0	641	56	0	5	36	0	1	0	0	781	4.2
1985	212	0	0	7	515	0	0	938	86	0	7	79	0	1	0	0	1,633	7.7
1986	308	3	0	14	236	0	1	2,231	27	0	15	30	0	0	0	0	2,557	8.3
1987	169	2	0	11	158	0	0	587	7	0	12	29	0	0	0	0	804	4.8
1988	170	0	0	1	189	0	1	1,056	41	0	3	36	0	0	0	0	1,327	7.8
1989	462	0	0	15	508	0	0	1,119	59	0	7	53	0	0	0	0	1,760	3.8
1990	366	1	0	3	159	0	0	1,429	183	0	4	146	0	0	0	0	1,925	5.3
1991	756	0	0	1	318	0	0	1,314	3	0	5	20	0	0	0	0 ^d	1,661 ^d	2.2 ^d
1992	305	0	0	3	44	0	0	148	8	0	0	26	0	0 ^d	0 ^d	- ^c	230 ^c	0.8 ^c
1993	406	0	0	1	132	0	2	316	20	0	0 ^d	36 ^d	0 ^d	- ^c	- ^c	- ^c	506 ^c	1.2 ^c
1994	446	0	0	0	238	0	0 ^d	875 ^d	96 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	1,209 ^c	2.7 ^c
1995	473	0	0	0 ^d	677 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	677 ^c	1.4 ^c
1996	401	0 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c
1997	128	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c
1998	216	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c

^a Escapement not available.

^b Younger age groups not available.

^c Incomplete returns from brood year escapement.

^d Estimate from 1999 preliminary return numbers.

Appendix B.8. Nushagak River sockeye salmon escapement and return by brood year including estimated interception catch (in thousands), 1983 - 1998.

Brood Year	Escapement	Return by Age Group															Total Recruits per Spawner	
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3	3.4		Total
1983	404	100	0	608	114	0	122	553	6	0	16	3	0	0	0	0	1,521	3.8
1984	593	10	0	226	51	0	32	566	2	0	20	6	0	0	0	0	912	1.5
1985	498	68	0	510	64	0	62	612	6	0	13	16	0	1	0	0	1,351	2.7
1986	990	68	0	837	114	0	58	676	0	0	182	64	0	0	0	0	1,999	2.0
1987	388	140	0	933	36	0	253	535	36	0	101	10	0	1	0	0	2,047	5.3
1988	483	68	0	546	214	0	120	1,426	12	0	62	8	0	0	0	0	2,457	5.1
1989	513	68	0	483	124	0	35	703	1	0	18	4	0	0	0	0	1,436	2.8
1990	680	53	0	761	36	0	104	253	18	0	11	7	0	4	0	0	1,247	1.8
1991	493	10	1	137	172	0	6	1,010	3	0	131	19	0	0	0	0 ^a	1,491 ^a	3.0 ^a
1992	695	85	0	496	228	0	11	650	9	0	63	11	0	0 ^a	0 ^a	- ^b	1,551 ^b	2.2 ^b
1993	715	43	0	43	63	0	2	803	1	0	119 ^a	51 ^a	0 ^a	- ^b	- ^b	- ^b	1,126 ^b	1.6 ^b
1994	509	0	0	55	81	0	2 ^a	687 ^a	6 ^a	0 ^a	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	832 ^b	1.6 ^b
1995	281	5	1	6 ^a	148 ^a	- ^a	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	159 ^b	0.6 ^b
1996	504	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b
1997	373	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b
1998	459	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b	- ^b

^a Estimate from 1999 preliminary return numbers.

^b Incomplete returns from brood year escapement.

Appendix B.9. Togiak River sockeye salmon escapement and return by brood year including estimated interception catch (in thousands), 1950 - 1998.

Brood Year	Escapement	Return by Age Class														Total	Total Recruits per Spawner
		0.2	1.1	0.3	1.2	2.1	0.4	1.3	2.2	3.1	1.4	2.3	3.2	2.4	3.3		
1950	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	28	0	0	0	28 ^c	-
1951	- ^a	0 ^b	0 ^b	0 ^b	0 ^b	0 ^b	0	98	53	0	0	9	0	0	0	160 ^c	-
1952	- ^a	0 ^b	0 ^b	0	152	0	0	58	9	0	0	6	0	0	0	225 ^c	-
1953	- ^a	0	0	1	31	0	0	84	8	0	0	16	0	0	0	141	-
1954	- ^a	0	0	0	20	0	0	146	12	0	0	17	2	0	0	196	-
1955	- ^a	0	0	0	136	0	0	190	9	0	1	38	0	0	0	373	-
1956	225	0	0	4	114	0	0	306	22	0	1	13	0	0	0	461	2.0
1957	25	2	0	5	48	0	0	70	20	0	0	36	1	0	0	182	7.3
1958	72	0	1	2	68	0	0	115	59	0	0	25	0	0	0	270	3.8
1959	210	0	0	0	141	0	0	92	56	0	0	7	0	0	0	296	1.4
1960	163	0	0	2	191	0	0	274	22	0	0	52	0	0	0	541	3.3
1961	122	1	0	3	85	0	0	216	15	0	1	19	0	0	0	340	2.8
1962	62	0	0	7	48	0	0	102	4	0	0	8	0	0	0	170	2.7
1963	116	0	0	2	43	0	0	65	18	0	0	24	0	0	0	152	1.3
1964	105	0	0	1	43	0	0	84	41	0	0	6	0	0	0	175	1.7
1965	96	0	0	2	154	0	0	181	31	0	0	37	0	0	0	406	4.2
1966	104	1	0	6	200	0	0	419	4	0	1	9	0	0	0	642	6.2
1967	81	1	0	6	18	0	0	99	16	0	1	40	0	0	0	181	2.2
1968	50	0	0	1	49	0	0	190	6	0	3	13	0	0	0	263	5.3
1969	117	0	0	5	28	0	0	142	25	0	3	13	0	0	0	216	1.8
1970	203	0	0	1	54	0	0	226	55	0	1	70	0	0	0	408	2.0
1971	200	0	0	4	106	0	0	317	62	0	1	68	0	0	0	558	2.8
1972	79	0	0	2	93	0	0	150	21	0	2	34	0	0	0	304	3.8
1973	107	1	0	10	151	0	0	442	18	0	1	31	0	0	0	654	6.1
1974	104	0	0	2	271	0	0	307	73	0	3	45	0	1	0	704	6.8
1975	181	1	0	7	195	0	0	848	87	0	2	59	0	0	0	1200	6.6
1976	189	0	0	1	189	0	0	558	142	0	4	175	0	0	0	1069	5.7
1977	163	0	0	5	232	0	0	617	14	0	4	14	0	0	0	884	5.4
1978	306	0	0	12	149	0	0	430	65	0	1	25	0	0	0	682	2.2
1979	198	1	0	1	270	0	0	293	12	0	2	5	0	0	0	583	2.9
1980	527	0	0	5	45	0	1	224	10	0	0	19	0	0	0	305	0.6
1981	307	2	0	11	53	0	0	245	15	0	1	16	0	0	0	345	1.1
1982	289	0	0	16	109	0	0	255	14	0	5	26	0	0	0	425	1.5
1983	213	1	0	3	285	0	2	924	9	0	2	21	0	0	0	1246	5.8
1984	151	0	0	14	21	0	0	109	4	0	1	17	0	0	0	167	1.1
1985	153	0	0	7	35	0	0	194	35	0	1	77	0	1	0	351	2.3
1986	203	0	0	18	77	0	1	445	83	0	14	121	0	0	0	760	3.7
1987	278	0	0	7	190	0	1	575	31	0	7	81	0	0	0	892	3.2
1988	309	1	0	9	111	0	3	403	34	0	3	53	0	0	0	616	2.0
1989	104	0	0	36	132	0	1	328	7	0	1	41	0	0	0	548	5.3
1990	166	1	0	23	101	0	1	460	75	0	5	37	0	0	0	705	4.2
1991	254	1	3	3	189	0	1	429	28	0	8	29	0	0	0 ^d	690 ^d	2.7 ^d
1992	210	1	0	35	50	0	1	124	33	0	1	30	0	0 ^d	0 ^d	275 ^c	1.3 ^c
1993	189	0	0	4	64	0	0	229	6	0	4 ^d	15 ^d	0 ^d	- ^c	- ^c	323 ^c	1.7 ^c
1994	174	1	0	3	43	0	0 ^d	166 ^d	31 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	245 ^c	1.4 ^c
1995	211	0	1	4 ^d	341 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	346 ^c	1.6 ^c
1996	187	1 ^d	0 ^d	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	1 ^c	- ^c
1997	152	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c
1998	175	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c	- ^c

^a Escapement not available.

^b Younger age groups not available.

^c Incomplete returns from brood year escapement.

^d Estimate from 1999 preliminary return numbers.

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