

ANNUAL MANAGEMENT REPORT
FOR THE
SUBSISTENCE AND COMMERCIAL FISHERIES
OF THE KUSKOKWIM AREA

1997

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Regional Information Report¹ No. 3A99-12

Alaska Department of Fish and Game
Division of Commercial Fisheries
AYK Region
333 Raspberry Road
Anchorage, Alaska 99518

January 1999

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ACKNOWLEDGMENTS

Many people contributed toward the collection and processing of the data used in this report. Alaska Department of Fish and Game employees worked long and irregular hours at various locations throughout the Kuskokwim Area collecting the data presented in this report. We thank Spencer Rearden, Doug Bue, Larry DuBois, Jennifer Chris, Amanda Murphy, Richard Chapell, Stephen Blanchett, Allen Glore, Susan McNeil, Donna Elliot, Jeremy Woods, Robert Stewart, Gary Knuepfer, Marianne Profita, Brian Latham, Eddie Chris, Philip Perry, Dave Vozka, Joe Whittom, Chris Bach, Lydia Olympic, Tom Cappiello and Paul Salomone. In addition, we would like to recognize Valarie Bjornstad, Glenda Schmierbach, and the other volunteers in the Kuskokwim Area. They provided valuable assistance by helping complete projects that were not funded. A special thanks goes to Bobbi Fisher, Fish and Game Administrative Clerk III, for compiling and proofreading this report. Salmon processors contributed data, communications, transportation and advice. We gratefully acknowledge the subsistence and commercial fishers who voluntarily provided their time, skill and knowledge. The department is very grateful to Robert Sundown and his staff from the Association of Village Council Presidents, Angela Morgan and her staff from the Kuskokwim Native Association, Anthony Caole and his staff from the Native Village of Kwinhagak, the students and staff of the Takotna Community School and the Bering Sea Fisherman's Association. Their participation in cooperative assessment projects provided welcome assistance and information important for management of the fishery. The Yukon Delta National Wildlife Refuge (United States Fish and Wildlife Service) provided meeting space and advice. The Togiak National Wildlife Refuge provided assistance with escapement monitoring in Kuskokwim Bay.

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PREFACE

This report is one of a series of Annual Management Reports detailing the management activities of the Division of Commercial Fisheries staff in the Kuskokwim Area. The 1960-1974 management reports for the "Kuskokwim District" appear in the Arctic-Yukon-Kuskokwim Area report series. The 1975-1986 management reports appear in the Kuskokwim Area Annual Report series. The Annual Management Report became a part of the Regional Information Report Series in 1987.

Data presented in this report supersede information found in previous management reports. This report includes summary data from many research projects. Complete documentation of these projects and results appear in separate reports. The bibliography includes both referenced and unreferenced reports concerning the Kuskokwim Area fisheries. Some of the data presented are preliminary and may be presented with minor differences in future reports.

To simplify use of this report, the tabular data are separated into current year tables and appendices. The appendices are separated by fishery and fishing district. The appendices show annual comparisons and information that seldom change.

The ages of fish in this report are presented as both total age, year spawned to year recorded and in the European notation. In the European system, the number of winters in fresh water after hatching is followed by the number of winters in salt water. The fresh and salt water winters are separated by a decimal point. To derive total age from the European system you must add the fresh and salt water winters and add one for the year of spawning. For example an age-1.3 chinook salmon's total age is 5 years; $1+3+1=5$.

The Division of Commercial Fisheries (CF) of the Alaska Department of Fish and Game (ADF&G) is responsible for the management of commercial and subsistence fisheries in the Kuskokwim Area. This annual management report details the activities of the CF Division in the Kuskokwim Area in 1997.

Important subsistence and commercial fisheries in the Kuskokwim Area include herring and salmon. Other marine and freshwater finfish are harvested primarily for subsistence use. A list of indigenous fishes found in the Kuskokwim Area is provided in Appendix A.1.

PART I. SALMON FISHERY

Description of Area and District Boundaries

The Kuskokwim Area includes the Kuskokwim River drainage and all waters of Alaska that flow into the Bering Sea between Cape Newenham and the Naskonat Peninsula, plus Nunivak and St. Matthew Islands (Figure 1). Commercial salmon fishing occurs in four districts in the area:

District 1, the Lower Kuskokwim River, consists of the Kuskokwim River from a line between Apokak Slough and Popokamiut, upstream to a line between ADF&G regulatory markers located

at Bogus Creek, about nine miles above the Tuluksak River (Figure 2). The downstream boundary has been in effect since 1986 and the upstream boundary was established in 1994 (Appendix A.2).

District 2, the Middle Kuskokwim River, consists of the Kuskokwim River from ADF&G regulatory markers located at the upstream entrance to the second slough on the west bank downstream from Kalskag to the regulatory markers at Chuathbaluk (Figure 3). The downstream boundary of District 2 was used for the first time in 1990 (Appendix A.2).

District 4, Quinhagak, consists of the waters of Kuskokwim Bay between the mouth of Weelung Creek (misspelled in the regulations as Wheeling) and the South Mouth of the Arolik River (Figure 4). The northern boundary was new in 1990 and the first boundary change since 1960 (Appendix A.2).

District 5 consists of the waters of Goodnews Bay (Figure 5). The District 5 boundaries are a line between the northernmost tip of South Spit and the southernmost tip of North Spit, and a line between the mouth of Ukfigag Creek and the mouth of the Tunulik River.

The letter code assigned to the Kuskokwim Area by the Commercial Fisheries Entry Commission is "W". It precedes the district number on the figures and in news releases (e.g. W-1). This helps the public differentiate between announcements for the Yukon River districts (Y) and the Kuskokwim River (W) districts.

Fishery Resources

Five species of Pacific salmon are harvested by commercial and subsistence fishers in the area; chinook or "king" salmon (*Oncorhynchus tshawytscha*), sockeye or "red" salmon (*O. nerka*), coho or "silver" salmon (*O. kisutch*), pink or "humpy" salmon (*O. gorbuscha*), and chum or "dog" salmon (*O. keta*). The Kuskokwim River drainage has the largest populations of chinook, sockeye, coho and chum salmon in the area. Pink salmon occur throughout the area with significantly larger returns on even years than on odd years. Little quantitative data on the population size of pink salmon is available because of the lack of commercial markets and interest by subsistence fishers. There are no commercial fisheries for sheefish (*Stenodus leucichthys*) or Dolly Varden (*Salvelinus malma*) in the Kuskokwim Area. Their contribution to the subsistence fishery is not well quantified, except in the Kwethluk (Coffing 1991) and Kanektok Rivers (Wagner 1991). There is a growing sport fishery targeting salmon and resident freshwater fish (Jones 1995, Howe et al, 1996).

Management

Management of the Kuskokwim Area salmon fishery is complex because of the difficulty in determining run size and timing, harvesting of mixed stocks, overlapping multispecies salmon runs, allocation issues, and the immense size of the Kuskokwim River drainage (Appendix B.1). The overall goal of the Kuskokwim Area research and management programs is to manage the

salmon runs for sustained yield under policies set forth by the Alaska Board of Fisheries. Information is not adequate at this time to determine the escapement levels needed to produce maximum sustained yield. Subsistence fishing has been designated by the Alaska State Legislature and the Alaska Board of Fisheries as the highest priority among beneficial uses of the resource (A.S. 16.05.258). Management of the Kuskokwim Area commercial salmon fisheries must take a conservative approach to maintain the subsistence priority, and to provide for spawning area escapements to sustain production of the resource (Appendix A.3).

Most fisheries within the Kuskokwim Area harvest salmon stocks that are several weeks and hundreds of miles from their spawning grounds. As with most mixed stock fisheries, some individual stocks may be underharvested or overharvested in relation to their abundance. It is not practical, except in a very generalized sense, to manage the stocks separately based on current knowledge.

The management objective for chinook, coho and chum salmon in Districts 1 and 2 is to achieve desired escapement objectives (Appendix A.3) and allow for the orderly harvest of fish surplus to spawning requirements. Sockeye and pink salmon are not actively managed in Districts 1 and 2. The management objective for chinook, coho and sockeye salmon in Districts 4 and 5 is to achieve desired escapement objectives (Appendix A.3) and allow for the orderly harvest of fish surplus to spawning requirements. Chum and pink salmon are not actively managed in Districts 4 and 5. Inseason management depends heavily on commercial catch data, test fisheries and run timing information. Run timing models predict the final escapement using the historical percentage of run passage for a particular date.

CF permanent full time staff assigned to the Kuskokwim Area includes one area management biologist, two assistant area management biologists, two research project biologists and one field office assistant. In addition, approximately 25 seasonal employees are hired annually to assist in conducting various management and research projects. The staff aids in the enforcement of regulations in cooperation with the Department of Public Safety, Division of Fish and Wildlife Protection (FWP). Staff have also had increasing involvement with various non-profit groups and the United States Fish and Wildlife Service to develop and operate salmon escapement monitoring projects (Table 1).

COMMERCIAL FISHERY

The Kuskokwim Area commercial salmon fishery dates back to the late 1800s. In the early years of the fishery, most of the commercial catch was sold locally for dog food (Oswalt 1990, Brown 1983). Salmon have been harvested in the Kuskokwim Area for export since 1913 (Pennoyer 1965). The current system of fishing districts, formerly called subdistricts, began in 1960 for the Kuskokwim River and District 4 (Appendix A.2). District 5 was established in 1968. The Kuskokwim River chum salmon fishery began in 1971 with gillnet mesh size restricted to 6 inches or smaller after 25 June. In Districts 4 and 5, gillnet mesh size has been restricted to 6 inches or smaller since formal inception of the districts. In 1985, the 6-inch maximum gillnet mesh size was applied to all Kuskokwim Area commercial salmon fisheries. The directed chinook salmon fishery in the Kuskokwim River was discontinued in 1987 (Appendix A.2).

Prior to 1983, a management strategy of conservatively increasing the commercial harvest guidelines to establish definite trends between catch and escapement allowed development of the fishery. Since change from a harvest-guideline-based management strategy to an escapement-objective-based strategy in 1983, average harvests have increased (Appendix A.4). The only stock in the Kuskokwim Area that is a management concern² is Goodnews Bay chinook salmon. The failure of Aniak River chum salmon to reach its escapement objective in 1992 and 1993 has and will continue to require special management measures in the 1996 through 1998 return years to prevent the creation of a management concern.

Coho salmon are the most important species in the commercial fishery both in terms of harvest numbers and value to the fishers. The commercial fisheries in all four districts target coho in late July and August. Chum salmon are second in importance being the target species in the Kuskokwim River fisheries in June and July. Sockeye salmon are the third most commercially important species with directed fisheries in Districts 4 and 5. Chinook catch and value ranks fourth with the only directed commercial fishery on this species occurring in District 4. Pink salmon are the least numerous and least valuable species in the commercial fishery.

Public Communications

Communicating management plans and decisions to the public is often challenging because many people in the Kuskokwim Area speak only Yupik, or English as a second language. Special regulation notices are broadcast over local radio stations, VHF and CB radio in English and Yupik. The department and the Kuskokwim River Salmon Management Working Group (Working Group) relationship has dramatically improved the acceptance and understanding of many users. The Department participates in school and workshop programs in the winter. News releases are now more widely distributed through a computerized FAX and e-mail system.

Commercial Fishery Data

Catch per unit of effort (CPUE) is used in this report to describe the relative success of fishing and as an index of abundance. Commercial CPUE is the catch during a fishing period divided by the product of the number of unique CFEC permits used in a fishing period and the total number of hours the district was open to commercial fishing. Commercial CPUE is the number of fish caught per permit-hour in this report.

Computer tabulations of fish tickets provide the commercial catch data presented in this report. The computer software program is a statewide system provided by the Commercial Fisheries Division Computer Services section.

The commercial fishery has expanded during the last 15 years (Appendix A.5). This expansion is due to increased participation by individual fishers and improvements in fishing gear, tendering, and processing capabilities, and a shift to escapement based management. In 1995, a

² A management concern is a stock that fails to reach its escapement objective despite repeated proactive management measures.

record 829 of the 840 permit holders made at least one landing (Appendix A.6). Since 824 permit holders fished in 1989 and 1990, the number of active permits had declined slightly until 1995 (Appendix A.6). Since 1995, the number of participating permit holders has decreased considerably due primarily to a significant drop in the prices paid for salmon. Kuskokwim Area permit holders can transfer freely between commercial fishing districts.

Appendix A.5 shows that permit-hours peaked in 1975; probably due to the impending limited entry permit moratorium. Since that time, maintaining adequate subsistence harvests and average spawning escapements required reductions in fishing time. Fishing efficiency has increased, as the increase in harvest (Appendix A.4) and the decrease in permit-hours (Appendix A.5) shows. Improved run strength, escapement based management, and increased participation resulted in permit-hours stabilizing around 100,000 from 1987 to 1995 (Appendix A.5). In 1997, permit-hours were down considerably in Districts 1 and 2 because of limited fishing time due to weak chum and coho salmon returns and lower participation caused by low prices. Permit-hours were also well below average in District 5 primarily due to low prices. The number of permit-hours in District 4 was near the most recent 10-year (1987-1996) average.

Commercial fishing regulations set maximum gillnet specifications of 6-inch or smaller mesh, 50 fathoms in length and 45 meshes in depth for all districts (ADF&G 1995). Fishing periods in Districts 1 and 2 are usually six hours in duration from 1:00 p.m. until 7:00 p.m., as required by the management plan. Longer fishing periods generally divide the extra time before 1:00 p.m. and after 7:00 p.m. In Districts 4 and 5 fishing periods are normally 12 hours in length. Fishers prefer daylight fishing hours so the periods are normally 9:00 a.m. until 9:00 p.m.

Adjustments of the number and duration of commercial fishing periods and time intervals between periods are the primary methods of distributing the harvest throughout the run. This helps to avoid overharvesting discrete stocks, achieve biological escapement goals (BEGs), and allows sufficient fishing time for the subsistence fishery. In 1997, commercial fishing periods varied between 6 and 12 hours in length depending on the district, species, effort, run magnitude and processing capacity. Run magnitude is assessed by commercial and subsistence catch data and by various department, non-profit organization, USFWS and industry sponsored projects.

Kuskokwim Area fishers owned 97% of the commercial permits in 1997 (excluding educational permits held by local schools) while non-local Alaskan residents owned 2% (16). Non-residents owned only 7 permits (Table 2).

SPORT FISHERY

The Sport Fish Division in Dillingham manages all sport fisheries from the Goodnews River to and including the Aniak River drainage on the mainstem Kuskokwim. The Sport Fish Division in Fairbanks manages the remaining Kuskokwim River drainages. Overall, sport fishing activity and harvest is relatively low, but growing. The number of angler-days has increased from 11,358 in 1985 to 21,247 in 1997 (Minard, et. al. 1998). Moderate sport fishing activity occurs

in the Kanektok, Goodnews, Kisaralik, Kwethluk and Aniak Rivers, which account for the majority of the angler-days in the Kuskokwim Area.

ESCAPEMENT MONITORING AND ASSESSING RUN ABUNDANCE

The vast size, remoteness and geomorphic diversity of the Kuskokwim Area presents tremendous challenges to monitoring salmon escapements and assessing run abundance. Aerial spawning ground surveys have been the most cost effective means of monitoring salmon escapements, but they have limited usefulness and reliability. The more thorough and rigorous ground based projects such as weirs, counting towers and sonar have been operated in a few locations, but until recently cost has prohibited an expansion of ground based programs. Over the past few years a growing number of weir and counting tower projects have been developed in the Kuskokwim Area through cooperative partnerships with various non-ADF&G organizations (Table 1). These cooperative ventures have made a substantial improvement in the Department's ability to assess salmon escapements and to evaluate the effectiveness of inseason management actions.

Salmon managers require timely appraisals of run abundance in order to effectively prosecute commercial and subsistence fisheries without jeopardizing escapement needs. Escapement projects are of limited usefulness for inseason management of the Kuskokwim River commercial fishing districts because of the great distances between the areas of harvest and the location of escapement projects. It may take weeks for salmon to travel between these locations. Consequently, managers in the Kuskokwim River rely on a variety of inseason indicators to assess run abundance including test fisheries, commercial catch statistics and anecdotal information from subsistence and sport fishers. In the Kuskokwim Bay, the escapement monitoring projects are within a short distance of the commercial fishing districts, so escapement data can play a greater role in inseason management decisions. Kuskokwim Bay managers also make extensive use of commercial catch statistics and information from subsistence fishers.

Aerial Surveys

Aerial surveys are the most cost effective method of assessing salmon escapements over a wide geographic area. Aerial surveys were the basis for many of the provisional biological escapement goals (BEG's) established for Kuskokwim Area streams in 1983 (Buklis 1993). However, Kuskokwim Area BEG's derived from aerial surveys do not represent the entire spawning populations in their respective streams. The surveys are mostly conducted one time each season during a period of just a few days when the maximum number of fish are expected to be on the spawning grounds. The BEG's developed from these surveys are based on the raw, unexpanded counts, therefore each count serves as an index of abundance rather than a census.

Aerial surveys are ordinarily restricted to clear water streams and lakes, the distribution of which is geographically skewed towards the lower Kuskokwim River basin and coastal streams. Tributaries in the middle and upper Kuskokwim River are often tannin stained or clouded by glacier runoff,

both of which markedly reduce the visibility of fish. The list of streams with BEG's reflects the uneven geographic distribution of escapement assessment projects (Appendix A.3., Buklis 1993).

In most cases, aerial surveys are best used to index spawning populations of sockeye and large chinook salmon because they are more visible. Some streams do have aerial survey based BEG's for chum salmon (Buklis 1993), but these are likely of questionable usefulness because of protracted run timings and the low visibility of chum salmon on the spawning grounds. A few streams also list BEG's for coho salmon, but weather conditions seldom allow reliable aerial surveys to be flown for this species.

Ground Based Escapement Assessment

Weirs, counting towers and sonar projects operated in the Kuskokwim Area allow enumeration of entire spawning populations, or at least major segments of those populations. Seven such projects were operated in the Kuskokwim Area in 1997 (Figure 1). Three of the projects have BEG's associated with them, but only one, the Kogrukluk River weir, has a BEG for coho salmon (Appendix A.3). Most of the BEG's are based on the average **annual** escapements at each site through about 1983 (Buklis 1993). Other information collected at ground based projects may include salmon sex and length composition, scales for age determination, statistics on the occurrence of gillnet marks on fish, genetic stock identification samples, information on resident species, and habitat monitoring.

Kuskokwim River

Kogrukluk River Weir

The Kogrukluk River is a middle Kuskokwim River tributary located in the upper reaches of the Holitna River drainage (Figure 1). The department has operated a weir on the Kogrukluk River since 1976 to monitor passage of chinook, sockeye, chum and coho salmon (Cappiello and Burkey 1997). The BEG for each of these species is 10,000, 2,000, 30,000 and 25,000 fish, respectively. Sockeye are considered incidental at the site, but since the project was first established the annual trend has been towards increasing sockeye abundance (Appendix A.7). In fact, annual sockeye passage sometimes exceeds the abundance of other species. Kogrukluk River weir is the only project in the Kuskokwim Area where coho escapement is regularly monitored.

One of the earliest escapement monitoring projects in the Kuskokwim Area was a counting tower operated on the Kogrukluk River from 1969 through 1976 (Yanagawa 1972a, 1973, Kuhlmann 1973, 1974, 1975, Baxter 1976, 1977). The department first tried to weir the river in 1971, but was unsuccessful (Yanagawa 1972b). Both the tower and the 1971 weir site were located several miles upstream of the current weir project. The early projects were also upstream of Shotgun Creek, a productive salmon spawning ground. The current weir site is downstream of Shotgun Creek.

Travel time for chum and coho salmon from the upper end of District 1 to the weir is estimated at about 25 days based on tagging studies conducted in the early 1960s (ADF&G 1961a and 1962a). Inseason escapement projection models have been developed to estimate the end of season escapements (Cappiello and Burkey 1997), but their usefulness is generally very limited because of variability in salmon entry patterns.

Aniak River Sonar

The Aniak River is located in the lower Kuskokwim River basin and is believed to be one of the largest producers of chum salmon in the Kuskokwim Area (Figure 1). The Department began a sonar project on the river in 1980. Non-configurable sonar equipment was used from 1980 through 1995. A transducer was deployed from one bank and passage in the unensoned section of the river was estimated using a conversion factor (Schneiderhan 1989). In 1996, the project was redesigned to take advantage of user configurable sonar technology (Vania and Huttunen 1997). At the same time the project was relocated about a mile downstream where transducers were deployed from each bank to allow full channel ensounding. The Association of Village Council Presidents has also provided a technician to assist in field operations the past two years.

The sonar passage estimate includes a mix of species, however the operating period focuses on a time span from late June through late July when the majority of fish passage is believed to be chum salmon. This assumption has generally been confirmed through periodic netting activities (Schneiderhan 1989, Vania and Huttunen 1997). During the first few years of operation, fish passage was apportioned to chum and chinook salmon using the proportion of each species caught in gillnets (Schneiderhan 1981, 1982a, 1982b, 1984). Species apportionment was discontinued in 1986 due to inadequate sample sizes and the apparent dominance of chum salmon (Schneiderhan 1988a).

The BEG for Aniak River sonar is 250,000 fish counts (Buklis 1993). Area biologists derived the goal subjectively in the early 1980s by relating the sonar passage estimates to trends in harvest and other escapement indices (Schneiderhan 1984). In the years that followed, periodic consideration of the BEG provided no compelling reason to change the goal. The median annual fish passage during the years when the project was operated from one bank with non-configurable equipment is 253,000 fish counts (Appendix A.7). Average passage in the past two years with the user configurable equipment is 282,000 fish counts. The BEG of 250,000 counts has been carried forward to the redesigned sonar project, and will be reassessed as more information is gathered.

The travel time for chum salmon from the upper end of District 1 to the sonar site is estimated at about 7 or 8 days based on tagging studies (ADF&G 1961a and 1962a).

Other Kuskokwim River Escapement Projects

A number of other ground based escapement projects have been operated periodically in the Kuskokwim drainage. The most intensive efforts occurred in the past few years through

cooperative ventures with the U. S. Fish and Wildlife Service (USFWS), the Bering Sea Fishermen's Association (BSFA) and other organizations. Cooperative escapement projects were operated in 1997 on the Kwethluk, George and Takotna Rivers through partnerships with the Association of Village Council Presidents, Kuskokwim Native Association and Takotna Community School, respectively (Figure 1). These groups received federal funding through a grant obtained by the BSFA. The Department and USFWS worked jointly to provide varying levels of support to each project ranging from equipment and technical guidance to an on-site crew leader.

The George River weir and the Kwethluk River tower were each in their second year of operation; Takotna River tower was in its third year. Annual operational periods generally spanned the chinook and chum salmon runs, however, in 1997 the George River weir was continued through most of the coho run. Low numbers of sockeye salmon have been observed at all three locations. None of the cooperative projects have BEGs associated with them. All three projects are expected to operate in 1998, but funding is tenuous.

Other escapement monitoring projects have been operated in the Kuskokwim River basin over the years: In 1982 and 1983 a weir was operated on the South Fork Salmon River (Schneiderhan 1982c, 1982d). Experimental sonar deployment was tried in the Kwethluk and Kasigluk Rivers in 1978 and 1979 (Schneiderhan 1979,1980), and the USFWS operated floating or resistance board weirs on the Kwethluk (Harper 1998) and Tuluksak Rivers (Harper 1995a, 1995b, 1995c). All of these projects were discontinued due to funding shortages, technical limitations, or due to a lack of local support.

District 4

Kanektok River Tower

The Kanektok River is the main spawning stream in District 4 (Figure 1). Historically aerial surveys have been the primary means of assessing salmon escapements in the river. An experimental counting tower was initiated with little success in the lower Kanektok River in 1996 (Fox 1997). The project was operated through a cooperative venture between Quinhagak IRA and ADF&G, with support from BSFA, USFWS and the Bureau of Indian Affairs (BIA). Improvements were made to the tower operation in 1997 (Menard and Caole 1998). The changes, coupled with near record low water levels, allowed for moderate success in enumerating chinook, sockeye, chum and pink salmon, still reliable species identification was sometimes doubtful. The tower project is expected to operate in 1998, but there is no clear resolution for the difficulty in species identification.

Counting towers, as well as employment of sonar technology, have been used in the past to estimate salmon escapement in the Kanektok River. The initiatives however, were abandoned due to site limitations and technical obstacles (tower: ADF&G 1960, 1961b and 1962b; sonar: Schultz and Carey 1982, Schultz and Williams 1984, Huttunen 1984a, 1985, 1986, 1988).

District 5

Middle Fork Goodnews River

The Goodnews River is the primary salmon spawning stream in District 5. Salmon escapements are assessed in the drainage by means of aerial surveys and a weir on the Middle Fork Goodnews River (Figure 1). The weir is located about 11 miles from the eastern boundary of the commercial fishing district allowing for timely assessment of salmon escapement as needed for fishery management (Menard 1998). A fixed panel weir design was employed from 1991 to 1997. Use of a counting tower preceded the weir from 1981 through 1990 (Burkey 1990). The weir and tower projects monitored passage of chinook, sockeye and chum salmon. The BEGs are 3,500, 25,000 and 15,000 fish, respectively (Buklis 1993). The size of the entire Goodnews River drainage salmon spawning populations are estimated postseason based on the proportion of fish seen during aerial surveys relative to weir passage (Burkey et al. 1997).

Like most streams, assessment of coho salmon in the Goodnews River is problematic because of the high stream flows that often occur during the coho season. The problem was addressed in 1997 through the aid of the USFWS and BSFA who facilitated the purchase, fabrication and installation of a floating, or resistance board, weir (Menard 1998). The floating weir replaced the rigid weir about mid-summer in 1997 and for the first time salmon enumeration continued through coho season. The floating weir is intended to replace the rigid weir entirely in 1998.

Salmon Run Strength Assessment

Salmon managers require timely inseason appraisals of salmon run abundance. In the Kuskokwim River, escapement projects provide limited usefulness in this regard because of the great distances between the areas of harvest and project locations. Consequently, managers rely on test fisheries, commercial catch statistics and anecdotal information from subsistence and sport fishers to augment escapement data.

In Kuskokwim Bay, the escapement monitoring projects are much closer to the commercial fishing districts, so escapement data can be effectively used for inseason management. Kuskokwim Bay managers also make use of commercial catch statistics and information from subsistence and sport fishers. Catch statistics and anecdotal information are especially important in District 4 where reliable escapement monitoring has been lacking.

Bethel Test Fishery

Daily inseason assessment of Kuskokwim River salmon run strength and timing is available from a drift gillnet test fishery operated near Bethel. The Bethel test fishery is located at river mile 80 of the Kuskokwim River which is about the midpoint of District 1 (Figure 2). The project began in 1984 and the methodology has remained largely unchanged (Molyneaux 1994). From early June through late August the test fish crew conducts three or four systematic gillnet drifts beginning one hour after the ebbing of each tide. The drifts are done at three stations distributed across the width of the channel. Each drift is 20 minutes in duration. Two 50 fathom

gillnets are used, one net is hung with 5-3/8 inch web and the other with 8 inch web. The two gillnets are rotated between the three stations following a systematic schedule. Both mesh sizes are operated from 1 June through about 10 July when chinook, sockeye and chum salmon all occur in relatively good abundance. The 8-inch mesh is discontinued after about 10 July when chinook abundance is low. Test fishing with the 5-3/8 inch web continues until late August.

The test fish catch from each tide is tallied by species then sold to a local fish buyer or distributed to charities. Catch statistics for chinook, sockeye, chum and coho salmon are presented as daily catch per unit effort. Comparisons are made with test fish results from previous years to assess abundance and run timing. The comparisons are subjective in that managers need to consider variables such as water level, fishing patterns and changing river morphology when comparing data from between years, and even within years.

Historically, other test fisheries have been attempted in the Kuskokwim River: Kwegooyuk test fishery, 1966 - 1983 (Baxter 1970, Huttunen 1984b); Eek test fishery, 1988 - 1994 (unpublished); Kuskokwim River subsistence test fishery, 1988 - 1990 (Kuskokwim Fishermen's Cooperative, 1991); Aniak test fishery, 1992 - 1995 (unpublished); Chuathbaluk test fishery, 1992 - 1993 (unpublished); and the Lower Kuskokwim River test fishery, 1995 (unpublished). Most of these projects were initiated at the prompting of groups other than ADF&G. They were all eventually discontinued for a variety of reasons including lack of funding, problems with consistency, difficulties with catch disposition, and ambiguous results.

Commercial Catch Statistics

Comparison of commercial catch statistics is another common method for assessing run strength. However, the usefulness of this approach can be confounded by inconsistencies in the number of participating fishers, the duration of commercial fishing periods and other variables that might influence catch or the effort applied by fishers. The practicality of this approach is also limited by the need to sacrifice thousands, or even tens of thousands, of fish in order to make an assessment.

Subsistence and Sport Fish Information

Throughout each season staff keep in close communication with subsistence and sport fishers to assess their fishing success and the degree to which their needs are being met. These catch reports sometimes play a pivotal role in management decisions.

Kuskokwim River Sonar

The Department began developing a user configurable sonar project in 1988 for deployment in the mainstem of the Kuskokwim River near Bethel (Mesiar et al. 1994). That project became operable in 1993, but shortages in technical support and the restructuring of the Regional sonar

program precluded operation of the project after 1995. The Kuskokwim River sonar project is scheduled to restart within the next few years as part of the regional sonar rebuilding program.

SEASON SUMMARY

The 1997 Kuskokwim Area salmon season opened by emergency order with a period in District 4, on 13 June. The salmon season closed by regulation on 8 September following the final fishing period on 3 September.

Poor returns of chum and coho salmon coupled with low prices resulted in the lowest harvest and lowest exvessel value for Kuskokwim Area salmon fisheries since 1975 (Appendix A.6). Commercial salmon sales in 1997 were 73% below the most recent 10-year average (1987-1996), the lowest since 1975. In 1997, 404,847 salmon were sold in the Kuskokwim Area. The catch was composed of 47,990 chinook, 123,002 sockeye, 166,648 coho, 7 pink and 67,200 chum salmon (Table 3). The 1997 estimated salmon harvests compared to the recent 10-year averages were as follows: chinook, 14% below, sockeye, 27% below, coho, 75% below, pink, 98% below³ and chum 88% below average (Appendix A.4). The commercial harvest of chum was the lowest since 1970 while the coho harvest was the lowest since 1976.

The department sold 332 chinook, 584 sockeye, 1,103 coho, 3 pink and 790 chum salmon from the Bethel test fishery. These fish were not included in the commercial sales.

In 1997, 702 of the 832 Kuskokwim Area permit holders made at least one landing (Appendix A.6). This was the lowest number of permit holders fishing in the Kuskokwim Area since 1984 when documentation of this statistic began. Commercial fishing effort, measured by permit-hours, was the lowest since 1972 and only 49% of the most recent 10-year average (Appendix A.5).

The average prices paid per pound were extremely low (Appendix A.8). Chinook salmon were worth an average of \$0.28 per pound, the second lowest price since 1973 and \$0.41 below the 10-year average. Likewise, sockeye salmon were worth \$0.42 per pound which was \$0.47 below average and the second lowest price since 1980. The price for coho salmon of \$0.33 per pound was \$0.27 below average. Pinks brought \$0.10 a pound, \$0.02 below average. The \$0.12 per pound paid for chum salmon was \$0.15 below average and the second lowest since 1972.

Kuskokwim Area permit holders received \$1,058,808 for their catch, excluding bonuses and other incentives not reported on fish tickets. Salmon buyers and processors operating in the Kuskokwim Area during 1997 are listed in Table 3. The value of the catch was the lowest since 1975 at 81% below the previous 10-year average of \$5,449,861 (Appendix A.6). The average income per permit holder was \$1,507, the lowest on record and 78% below the 10-year average of \$6,757.

³ Odd years only.

Permit-hours were well below average in Districts 1 and 2 because of limited fishing time due to weak chum and coho salmon returns and lower fisher participation caused by low prices. Permit-hours were also well below average in District 5, primarily due to low prices. The number of permit-hours in District 4 was near the most recent 10-year (1987-1996) average (Appendix A.5).

Kuskokwim River (Districts 1 and 2)

The Working Group, comprised of representatives from several Kuskokwim River salmon user groups, continued to work closely with the department in 1997. Through uncommon dedication by all the concerned parties, the Working Group provided inseason management recommendations that served as a cooperative approach to management of the Kuskokwim River salmon fisheries (Table 4). During the season, the Working Group met 18 times to evaluate the status of the salmon runs and make recommendations to the department.

The 1997 preseason outlook was for a below average chum salmon run due to expected low returns to the Aniak River, believed to be one of the largest chum salmon producers in the Kuskokwim River drainage. The return of five-year-old fish was expected to be below average based on the poor escapement into the Aniak River in 1992. The return of four-year-old chum salmon from the 1993 escapement was also expected to be below average in abundance based on an extremely weak parent-year escapement. As a result of these low escapements, the Aniak stock was expected to have no harvestable surplus in 1997. Escapement was assumed to be adequate in most other Kuskokwim River tributaries in 1992 and 1993. Adequate escapements in the rest of the drainage were expected to result in normal returns to those systems in 1997. The preseason projected harvest for the Kuskokwim River commercial fishery in 1997 was 100,000 to 300,000 chum salmon (Burkey, et al 1998).

The Bethel test fishery CPUE provides a good estimate of the migration rate of salmon passing Bethel. The midpoints of the chinook, sockeye and coho migrations in the Bethel test fishery were slightly earlier than normal. The chinook migration midpoint of 20 June was 2 days earlier than the historical median of 22 June (Appendix B.5). The sockeye migration midpoint was 26 June, 2 days before the 28 June median (Appendix B.8). The midpoint of the coho run was 5 August, 4 days earlier than the historical median of 9 August (Appendix B.11). Run timing of chum salmon was contradictory to the other three species with the midpoint of the run being 7 July, 5 days later than the 2 July median (Appendix B.14).

The 1997 preseason outlook was for a below average chum salmon run. The return of five-year-old fish, from the 1992 escapement, were expected to be average based on their return as four-year-old salmon in 1996. The four-year-old chum salmon from the 1993 brood year were expected to be below average in abundance based on low parent-year escapement.

There was only one commercial fishing period in District 1 during the chum salmon season (Table 6). There were no commercial openings targeting chum salmon in District 2 (Table 6). A total of 17,026 chum salmon were harvested by 607 permit holders (Table 6). This was only 3% of the most recent 10-year average chum salmon harvest. The average price per pound for chum salmon was \$0.16 making the exvessel value of the catch worth \$19,509.

Run assessment through mid-June showed weak chum and chinook salmon abundance. Consequently, during the 13 June the Working Group and the Department decided not to set a commercial fishing period. At the 16 June meeting, the Working Group recommended that the Department continue to evaluate the salmon runs and determine the date for the first commercial opening. By 20 June, subsistence catches and the Bethel test fishery showed increasing chinook and chum salmon run strength. The Department opened the commercial fishery on 23 June for 6 hours downstream of Bethel in compliance with 5 AAC 07.365 KUSKOKWIM RIVER SALMON MANAGEMENT PLAN. The catch of 13,090 chum salmon was the lowest on record for that date. The chinook and sockeye catches were about average for that date.

For the remainder of the season, run strength indicators showed the chum salmon return to be well below average. In early July, it became evident that further harvest of chum salmon would seriously reduce our ability to meet escapement needs for that species. On 9 July, the Department closed the commercial and sport fisheries for chum salmon in the Kuskokwim River drainage for the rest of the season. From 14 July until 28 July the northern boundary of District W-4 was reduced in order to minimize possible interception of Kuskokwim River chum salmon.

On 15 July, the department, in conjunction with the Association of Village Council Presidents, Kuskokwim Native Association, Kuskokwim River Salmon Management Working Group, McGrath Native Village Council, Orutsararmuit Native Council, and Tanana Chiefs Council issued a cooperative appeal for subsistence users to voluntarily limit their take of chum salmon. The appeal requested that subsistence users take whatever means possible to conserve chum salmon by minimizing their harvest of chum salmon. It stated that the critically low return of chum salmon warranted extraordinary conservation measures by all Kuskokwim River salmon users (Appendix B.33).

Based on the strength of the coho salmon run, the Department and the Working Group agreed to reopen the commercial fishery on 31 July for 6 hours. To reduce the catch of chum salmon, fishing was restricted to the lower half of District 1 during the first coho opening. The coho catch of 14,463 was the second lowest for that date since 1980. The next two periods on 6 August and 12 August produced the lowest catches for their respective dates since 1980. The number of permit holders fishing in District 1 was slightly below average while the number of permit holders in District 2 was about one-tenth historical levels due to the lack of a buyer in the District.

The Working Group set four fishing periods in District 1 and two periods in District 2 (Table 6) during the 1997 coho salmon season. During the management of coho salmon, the Working group agreed with the Department's recommendation to fish for 6 hours for all periods. The Kuskokwim River remained closed to commercial fishing after the 18 August period due to the weakness of the coho run, well before the regulatory closure on 1 September.

Chinook Salmon

The combined commercial and subsistence chinook salmon harvest has increased from an average of 56,000 fish from 1960-1969 to 115,000 during 1987-1996 (Appendix B.15). A conservation concern for Kuskokwim River chinook salmon arose following a series of years with poor chinook salmon escapements in the mid 1980s (Figure 6). Besides the poor escapements, the low number of female chinook salmon in the escapement compounded the conservation concern (Cappiello and Burkey 1997).

Beginning in 1984, the Board began restricting the commercial fishery because the department was unable to correct the problem through inseason management measures. In 1985, a shift to 6-inch or smaller commercial gillnets reduced the harvest of larger female chinook salmon. This gear change was successful in reducing the sex ratio of the commercial catch from 43% to 29% female (Molyneaux and DuBois 1996). However, the total escapement index continued to decline (Figure 6). To provide for the subsistence harvest and maintain average spawning escapements the directed commercial harvest of chinook salmon was prohibited in 1987. Chinook salmon escapements improved in subsequent years (Figure 6). An unexpected benefit of the improved status of chinook salmon in the Kuskokwim River was an increase in the commercial harvest of chinook salmon (Molyneaux and DuBois 1996). The subsistence fishery continues to target large chinook salmon with "king" gear. Improved survival, perhaps related to elimination of the directed high seas salmon fishery, played a role in the success of these management changes.

Since 1987 the chinook salmon catch has been incidental to the chum salmon fishery in Districts 1 and 2. In 1997 the commercial harvest of 10,441 was well below the recent 10-year average of 33,648 (Appendix B.15). This was primarily due to the limited fishing time during the chum salmon fishery. The exvessel value of the chinook harvest was \$36,888, well below the recent average of \$350,250 (Table 3).

With a relatively late start of the commercial fishery and fewer openings, the total Kuskokwim River drainage escapement index for chinook salmon was achieved in 1997 (Figure 6). Chinook salmon escapement goals were achieved at the Kogruluk River weir (Appendix A.7) and in 7 of the 10 aerial survey index streams that were surveyed (Appendix B.2 and Table 7). The Bethel test fish index for chinook salmon was the third highest on record, suggesting average to above average run strength (Appendix B.3).

Sockeye Salmon

The sockeye salmon catch is incidental to the chum salmon fishery in Districts 1 and 2. Before 1981, sockeye and chum salmon were not accurately differentiated in commercial or subsistence catches. This prevented an accurate record of the sockeye and chum salmon harvest in the Kuskokwim River. Sockeye salmon have comprised 5% to 33% of the sockeye-chum salmon catch since 1981. Before 1981, the reported sockeye salmon catch was less than 2% of the sockeye-chum salmon catch (Appendix B.16). In 1997 the commercial harvest of 21,989 sockeye salmon was well below the recent 10-year average of 76,016 (Appendix B.16). As with

chinook salmon, this was primarily due to the limited fishing time during the chum salmon fishery.

Sockeye salmon escapement is documented ancillary to the other species. The Kogrukuk weir escapement estimate of 13,062 sockeye salmon in 1997 was above average (Appendix A.7). The Bethel test fish index for sockeye salmon ranked seventh of 14 years of data.

Chum Salmon

Before 1971, chum salmon were an incidental catch during the chinook and coho directed salmon fisheries. The expansion of the commercial chum salmon fishery began in 1971. Based on the 1924-1943 subsistence harvest estimates, a total chum salmon harvest of 400,000 appeared to be consistent with the reproductive potential of the run (Appendix A.4). A combined commercial and subsistence catch of 400,000 chum salmon was the management goal from 1971 to 1979. Subsistence catches for the entire river have declined since the inception of the commercial fishery in 1971 (Appendix B.17). From 1971 to 1980 the average subsistence chum harvest was 173,689. The average harvest declined to 136,206 for the period 1981 to 1990 (Appendix B.17). This is thought to be primarily due to the decline in the use of dog teams for transportation, not the increased commercial harvest.

The commercial chum salmon harvest for the Kuskokwim River (Districts 1 and 2) has averaged 507,147 salmon in the last 10 years (Appendix B.16).

The following guidelines are used to manage the commercial harvest:

1. Chum salmon run assessment projects indicate that escapements will be adequate.
2. Commercial catch per unit of effort compares to previous years when escapement was adequate.
3. Subsistence fishers report adequate subsistence catches.

Declining run strength normally resulted in a one to two week closure beginning in the last half of July. Since 1988, this closure of the commercial fishery between the chum and coho seasons has not occurred in most years. Before 1985, only that portion of District 1 downstream of Bethel was open to commercial fishing during the chum salmon fishery. The Board instructed the department to use the entire length of District 1 beginning in 1985. Low chum escapements occurred in 1986 and 1987. Runs in 1988 and 1989 were at record high levels, but in order to reach escapement objectives more time was required between fishing periods. The 1990 and 1991 runs were smaller but a 4 to 6 day spacing between periods resulted in approaching or reaching chum salmon escapement objectives. Since 1991, the commercial fishery has tended to open later in June and generally have relatively longer spacing between commercial periods (Appendix B.18).

The cumulative CPUE for chum salmon in the Bethel test fishery in 1997 was the third lowest since the project began in 1984 despite low water levels that should have increased the catchability of salmon. Closure of the commercial fishery from 24 June through 30 July allowed the Aniak River sonar counts to meet the minimum escapement objective for that system (Table 8). The other chum salmon escapement monitoring projects in the Kuskokwim drainage did not benefit to the same extent from the closure. The chum salmon escapement estimate at the Kogrukluk River weir was only 26% of the 30,000 fish objective. Chum salmon counts at the George River weir, Kwethluk River tower and Takotna River towers were 76%, 61% and 44% below their respective levels in 1996 (Appendix A.7).

At the Kogrukluk River weir, parent-year escapements exceeded the objective in the 1992 and 1993 brood years. Escapement past the Aniak River sonar was well below objective in 1992 and 1993. The observed contribution of 5-year-old chum salmon was lower than expected based on the number of 4-year-olds in 1996. The contribution of 4-year-old fish in the 1997 return was low, as expected based on the weak escapement in 1993.

Coho Salmon

Kuskokwim River managers have a limited number of indicators of coho salmon abundance in the drainage: the Bethel test fishery, Kogrukluk River weir, commercial catch data and an informal collection of subsistence information. The Kogrukluk River weir has a coho escapement objective of 25,000 fish. Commercial catch per unit of effort in District 2 during coho season is used as an indicator of abundance of coho salmon above District 1. The CPUE in District 2 has been useful when weir data are unavailable (Figure 7).

Traditionally, coho salmon (locally called "rain fish") were not well utilized for subsistence because of poor drying conditions during rainy fall weather. Subsistence use of coho salmon has increased in areas where freezers are available to preserve fish. In recent years, Subsistence Division staff has started their surveys after coho salmon have completed migration past the upper river villages. This has probably increased the numbers of coho salmon reported over earlier years when subsistence surveys were conducted before the coho migration was complete.

Commercial fishery management in the Kuskokwim River is based on coho salmon abundance when that species dominates the commercial catch. Fishing periods are usually simultaneous in Districts 1 and 2 throughout the season which closes by regulation on 1 September. Record runs in 1984 and 1994 as well as a late run in 1989 resulted in extensions of the season in those years (Appendix B.18). The management strategy during the coho season is similar to that for chum salmon.

In the most recent 20 years, coho catches have ranged from 196,000 fish in 1983 to the record high harvest in 1996 of 937,299 fish (Appendix B.16). The most recent 10-year average harvest is 572,524 fish. Since 1985, in years when both districts have had buyers, the number of permit holders that fished has ranged from 650 to 775. In 1997 a total of 597 permit holders harvested 130,803 coho salmon in the Kuskokwim River districts (Table 6).

Under cooperative management of the commercial fishery with the Kuskokwim River Salmon Management Working Group, the coho salmon escapement goal at the Kogruklu River weir has been achieved in three out of the six years with adequate data (Appendix A.7). Distrust by the public of the Bethel test fishery, lag time of Kogruklu River weir escapements, and lack of sufficient additional data contributed to the overfishing. The department's uncertainty during the early portions of the run often caused corrective actions to come too late to make a significant difference in escapement needs to the upper drainage as indexed by Kogruklu River weir. The escapement objective at Kogruklu River weir was achieved for three consecutive years from 1994-1996.

In 1997, the Kogruklu River weir operated for almost the entire coho migration period. An estimated 12,312 coho salmon escaped, only 49% of the minimum escapement goal of 25,000 fish (Appendix A.7). The Bethel test fishery cumulative CPUE in 1997 was the fifth lowest out of 14 years (Appendix B.9).

In the last decade, when buyers have been present in District 2, commercial fishing in July and August has usually been simultaneous with District 1 (Appendix B.19). Before 1997, the commercial fishing effort in District 2 had been fairly consistent and had provided a CPUE that correlated well with escapement at the Kogruklu River weir. An average cumulative CPUE of 43 or greater for fishing periods between 1 and 21 August has resulted in the escapement goal being reached (Figure 7). The 1996 cumulative CPUE was 58, reflecting the record escapement passed the Kogruklu River weir. The average CPUE in 1997 was 40. The Kogruklu River weir coho escapement in 1997 was well below that expected based on the historical correlation with District 2 CPUE, probably due to the much lower than normal participation in the fishery.

Roe Sales

There were no sales of salmon roe in the Kuskokwim Area in 1997. In 1996, the single processor operating in District 2 bought only salmon roe. Another processor bought a relatively small amount of salmon roe from Districts 1 and 4 in 1996. Partially due to a sharp drop in the wholesale price paid for salmon eggs, these processors did not operate in the Kuskokwim Area in 1997. The 1989 season was the only other year that a processor registered to buy only salmon roe in the Kuskokwim Area.

In response to the roe sales in 1996, three proposals to prohibit roe sales in the Kuskokwim Area were submitted to the Board of Fisheries. The Board adopted a regulation prohibiting roe sales in the Kuskokwim River, Districts 1 and 2, at their December 1997 meeting.

Kuskokwim Bay

Quinhagak (District 4)

District 4 is located in the marine waters adjacent to the village of Quinhagak at the mouth of the Kanektok River, approximately 25 miles south of the Kuskokwim River (Figure 4). Commercial

fishing occurs only in the marine waters of Kuskokwim Bay to ensure adequate escapement of salmon into the Kanektok and Arolik Rivers. The northern boundary of the fishing district is approximately seven miles from Quinhagak at the northernmost edge of Weelung Creek, and the southern boundary of the fishing district is approximately four miles from Quinhagak at the southernmost edge of the Arolik River. The western boundary of the fishing district is three miles from the coast. Commercial fishing occurs primarily in the tidal channels that radiate out into the bay from freshwater streams in the district.

In the Kuskokwim Area, permit holders have unrestricted movement between commercial fishing districts, and commercial fishing effort in District 4 has increased considerably in the last decade. The number of permit holders, fishing in District 4, the last two decades has ranged from 117 in 1982, to a record high during the 1993 season of 409. The recent 10-year average is 323 permit holders (Appendix C.1). The majority of the fishing effort occurs during the chinook and sockeye season, with twice as many permits usually fished compared to coho season (Appendix C.2). The shift of effort to District 4 may be due to the directed chinook salmon fishery, and changes in the June Kuskokwim River commercial fishery. However, in the last two years, District 4 has had below average effort, when compared to the 10-year average, with 218 and 289 permit holders in 1996 and 1997, respectively. The lower participation of permit holders in the fishery in the last two years may be attributable to lower fish prices. Also, in 1996 the initiation of the fishing season was delayed one week due to lack of processor interest. The 1997 District 4 harvest of 176,384 salmon was 12% below the recent 10-year average of 201,561 salmon (Appendix C.3).

District 4 opened on 13 June in compliance with 5 AAC 07.367. DISTRICT 4 SALMON MANAGEMENT PLAN, which requires an opening before 16 June. Above average catches for chinook salmon occurred and commercial fishing continued two times a week until sockeye salmon dominated the catch during the 30 June opening (Table 9 and Appendix C.5). Above average chinook salmon catches in the commercial fishery suggested an above average run. The 1997 chinook salmon commercial catch of 35,510 was the third highest catch on record and was 85% above the recent 10-year average of 19,214 (Appendix C.3). Buyers paid an average price of \$0.28 per pound. The exvessel value of chinook salmon was \$169,000 (Table 3).

A counting tower project operated by the Department and the Native Village of Kwinhagak (NVK) began operations on 11 June and continued until 21 August. The escapement estimate of chinook salmon at the counting tower was 16,731. This number is likely lower than the actual escapement due to identification problems of small chinook salmon, especially in June, when chinook, sockeye, and chum salmon showed little spawning coloration. Without characteristic coloration, small salmon often ended up being assigned as sockeye or chum salmon. Also, after mid-July there were nine days in which the escapement was only estimated for 16 hours each day. During an aerial survey in early August under poor conditions 7,990 chinook salmon were observed (Appendix C.4).

The directed sockeye salmon fishery began after the 30 June opening and continued three times a week until coho salmon dominated the catch during the 30 July opening (Table 9). The total sockeye salmon catch of 69,562 was the fourth highest catch on record and was 32% above the recent 10-year average of 52,600 fish (Appendix C.3 and C.6). The average price paid for

sockeye salmon was \$0.42 per pound. The exvessel value for sockeye salmon in District 4 was \$206,600 (Table 3). The counting tower escapement estimate of sockeye salmon was 96,348. In an aerial survey done under poor conditions 27,100 sockeye salmon were observed (Appendix C.4).

Concern over possible interception of Kuskokwim River chum salmon in District 4 resulted in the department restricting the commercial fishing on 14 July to south of the mouth of Oyak Creek, which was approximately three miles south of the previous northern boundary at Weelung Creek (Figure 4). Although two previous aerial surveys of the fishing district showed minimal effort north of Oyak Creek, nearly all District 4 fishers took part in a protest strike on 14 July over the reduction in fishing area. A meeting in Quinhagak between Department managers and the fishers resulted in an agreement for the southern boundary of the district to be extended three miles south of the Arolik River to compensate for the northern boundary being moved to Oyak Creek. These boundaries remained in effect until after the 28 July opening when they were restored to the original locations at the northernmost edge of Weelung Creek and the southernmost edge of the Arolik River.

Chum salmon are an incidental catch in the chinook and sockeye salmon commercial fisheries in District 4. During most fishing periods in 1997 the incidental catch of the chum salmon was below average (Appendix C.8), and the total chum salmon catch of 38,445 was 26% below the recent 10-year average of 51,948 fish (Appendix C.3). The average price per pound was \$0.11 for chum salmon and the exvessel value was \$30,800 (Table 3). The counting tower escapement estimate of chum salmon was 51,180. In an aerial survey, done under poor conditions and after peak spawning, 3,270 chum salmon were observed (Appendix C.4).

The directed coho salmon fishery occurred after the 1 August opening in which coho salmon catch surpassed sockeye salmon catch (Table 9). On 1 August, there was approximately 25% of the normal fishing fleet effort. This was due to a strike over coho salmon prices, which had been reduced from \$0.45 per pound to \$0.25 per pound. The fishing fleet effort returned to normal levels the next commercial period, on 4 August, and the following week (13 August), the price was raised to \$0.35 per pound.

Commercial catches when compared with historical catches showed the coho salmon run to be below average (Appendix C.7). Because of below average catches for two consecutive periods, fishing time was reduced from three periods per week to two periods per week on 11 August. Average catches of coho salmon prompted a return to three periods per week on 18 August. However, below average catches again resulted in reduced fishing time of two periods per week the last week of August. The last commercial fishing period was on 3 September, but there was no buyer, and the commercial fishery closed by regulation on 8 September. The 1997 coho salmon catch of 32,862 was 49% below the recent 10-year average of 64,383 fish (Appendix C.3). Permit holders were paid an average of \$0.34 per pound. The exvessel value of coho salmon in District 4 was \$92,400 (Table 3).

Goodnews Bay (District 5)

District 5 is the southernmost salmon district in the Kuskokwim Area (Figure 5). Fishing primarily is with drift gillnets in tidal channels in Goodnews Bay and a few set gillnets near the mouth of the bay. The number of commercial fishers peaked in 1988 when 125 permit holders fished and the recent 10-year average is 95 permit holders (Appendix D.1). As in District 4, the majority of the fishing effort occurs during the chinook and sockeye season, with twice as many permits usually fished compared to coho season (Appendix D.2). However, the last two years District 5 has had below average effort, when compared to the 10-year average, with 53 and 54 permit holders in 1996 and 1997, respectively. The lower fishing effort in the last two years may be attributable to lower fish prices. The 1997 District 5 harvest of 48,202 salmon was 47% below the recent 10-year average of 90,856 salmon (Appendix D.3).

A counting tower on the middle fork of the Goodnews River provided estimates of salmon escapement from 1981 through 1990. In 1991, a weir replaced the tower. This provided more accurate counts at a lower cost, and the savings have allowed the project to enumerate a portion of the coho salmon escapement. The primary objective of this project is to provide daily escapement information to improve management of the commercial fishery. The Middle Fork Goodnews River weir project also provides a calibration of aerial survey accuracy (Appendix D.4).

In 1997, District 5 opened to commercial fishing on 27 June (Table 10). Over the last five years, the management strategy has been to delay the first opening until the last week of June as an attempt to increase escapement of chinook salmon into the Goodnews River drainage. This strategy has resulted in the escapement goal of 3,500 chinook salmon, past the Middle Fork Goodnews River weir, being met twice in the last five years. In 1997, the escapement of 2,937 chinook salmon was 16% short of the goal. An aerial survey of the mainstem and middle fork of the Goodnews River enabled mainstem escapement to be estimated at 7,216 chinook salmon (Appendix D.5). In the commercial fishery the chinook salmon catches were average (Appendix D.6) and fishing was allowed for three 12-hour periods per week. The commercial harvest of 2,039 chinook salmon was 28% below the recent 10-year harvest of 2,801 fish (Appendix D.3). Permit holders were paid an average of \$0.34 per pound and the exvessel value was \$10,900 (Table 3).

The sockeye salmon catch in District 5 was average during the first few weeks of the commercial fishing season and then fell below average after mid-July (Appendix D.7). Commercial fishing continued for three 12-hour periods per week until the last week of July when processor availability was limited and fishing was therefore reduced to two 12-hour periods per week for the rest of the season. The commercial harvest in 1997 was 31,451 sockeye salmon which was 20% below the recent 10-year average of 39,513 fish (Appendix D.3). Sockeye salmon prices averaged \$0.42 per pound and the exvessel value was \$93,100 (Table 3). The escapement goal of 25,000 sockeye salmon past the weir was met on 12 July and the escapement for the season was 35,530 fish. An aerial survey enabled the mainstem of Goodnews River escapement to be estimated at 23,462 sockeye salmon (Appendix D.4).

The chum salmon catch is incidental to the sockeye salmon fishery in District 5. In 1997, in almost every fishing period, the catch of chum salmon was below average (Appendix D.9). The 1997 catch of 11,729 fish was 37% below the 10-year average of 18,473 fish (Appendix D.3). Permit holders were paid an average of \$0.11 per pound for chum salmon and the ex-vessel value was \$9,400 (Table 3). The chum salmon escapement at Middle Fork Goodnews River weir of 17,296 fish exceeded the goal of 15,000 fish (Appendix D.4).

The 1997 coho salmon catch of 2,983 was the third lowest on record and 89% below the recent 10-year average of 26,195 fish. Management for coho salmon occurred after the 11 August opening, when the coho salmon catch exceeded the sockeye salmon catch. The 11 August catch of 163 coho salmon was a record low for that date (Appendix D.8). Commercial fishing continued to be restricted to two 12-hour periods per week. On 25 August, Fish and Wildlife Protection issued citations to 6 permit holders for fishing off the coast outside of Goodnews Bay (Figure 5). This incident combined with previous low catches of coho salmon led the department to suspend commercial fishing in District 5 until further notice. After 28 August there was no processor interest in buying fish and the District 5 commercial fishery closed by regulation on 8 September. Permit holders were paid an average of \$0.34 per pound and the exvessel value was \$9,500 (Table 3).

In late July 1997, a new type of weir, a resistance board "floating weir," was installed on the Middle Fork Goodnews River. This weir proved better able to handle the high water flows that come with the autumn rains. The weir remained operational during several high water periods before finally being pulled out in mid-September due to flooding. This was the first season that the project was operational in September and 39% of the coho salmon enumerated in 1997 were counted in September. The weir was in operation until 17 September and enumerated 9,619 coho salmon. Only in three previous years had the project been operational past 17 August and the previous latest operational date was 28 August. No BEG has been established due to the limited coho escapement data. High water and poor flying conditions during late August and September prevented any aerial surveys of coho salmon escapement.

Enforcement

The Fish and Wildlife Protection Division of the Department of Public Safety were present in the Kuskokwim Area from early June until early September. Personnel available for this program were four commissioned and one non-commissioned officer. They used one C-185, three Supercub aircraft and one skiff. Citations were issued for commercial fishing in closed waters, closed season or closed period, no commercial fishing or crewmember license, and failure to properly identify vessels and gear.

OUTLOOK FOR 1998

The Kuskokwim Area has no formal forecast for salmon returns. Broad expectations are developed based on an evaluation of parent-year escapements and trends in harvest and productivity. Harvest expectations are described using a loose interpretation of the statistical

quartiles of the past ten years of harvest performance as a general guideline. Readers should be cautioned that these outlooks are subjective and have a high level of uncertainty associated with them.

Chinook Salmon

Most chinook salmon return to the Kuskokwim Area at age six, five, or four (Molyneaux and DuBois, 1996), so the primary brood years for the 1998 return will be 1992, 1993 and 1994. Chinook salmon escapement is monitored in the Kuskokwim River drainage by aerial surveys and Kogrukluk River weir. A limited amount of brood year data is also available from projects operated on the Tuluksak and Kwethluk Rivers. In Kuskokwim Bay, chinook escapement is monitored by aerial surveys and a weir on the Middle Fork Goodnews River.

Districts 1 and 2

The timing of the chinook migration through Districts 1 and 2 of the Kuskokwim River overlaps broadly with the chum salmon migration. Since 1987 the commercial fishery has been directed at the more abundant chum stocks through gear, time and area restrictions. Managers may further delay or restrict the commercial chum fishery when concerns about chinook abundance, or subsistence needs, warrant additional conservation measures (e.g., Francisco et al. 1988, 1990 and 1991). The incidental chinook harvest in the commercial fishery is therefore linked to both the abundance of chinook and chum salmon. Market interest in chum salmon is another important variable that drives the incidental chinook harvest.

The return of chinook salmon to the Kuskokwim River in 1998 is expected to be near average abundance based on parent-year escapements (Appendices B.2 and A.7). In 1992 Kogrukluk River escapement was 32 percent below the BEG, and four of eight aerial survey objectives were achieved. In 1993, commercial fishing effort was minimal due to low chum salmon abundance. Consequently, chinook escapement was augmented over what would have otherwise been available with more normal commercial fishing effort (Francisco et al. 1994). Passage at Kogrukluk River weir was 23 percent above the BEG in 1993, but aerial survey objectives⁴ were still only achieved in five of nine streams. Commercial fishing was again limited during the early portion of the 1994 season and benefits to chinook escapement were apparent (Anderson et al. 1994). Kogrukluk River chinook escapement was 52 percent above the BEG, and six of eight aerial survey objectives were achieved in 1994. Chinook escapements in the Tuluksak River had a similar pattern of increasing numbers from 1992 to 1994. Escapements were also monitored in the Kwethluk River in 1992, 1996 and 1997, with 1992 having the strongest chinook return of the three years. These brood year escapements should result in a good return of the smaller sized age four and five chinook salmon. These age groups are also predominantly male (Molyneaux and DuBois, 1996). The larger sized and female dominated age six component should be less abundant. Subsistence fishers often preferentially target large chinook salmon as suggested by

⁴ aerial survey objectives as used here include official BEG's and the median historic counts for streams surveyed, but which have no BEG.

the common use of 'king gear' which consists of gillnets hung with a mesh size of 8 inch or larger (Coffing 1991). If markets and fishing effort allow, the potential incidental commercial harvest of chinook salmon could be in the range of 20,000 to 40,000 fish (Table 11).

District 4

District 4, Quinhagak, currently has the only directed commercial chinook fishery in the Kuskokwim Area. Fishers use gillnets with mesh size restricted to 6 inches or smaller. The chinook run timing overlaps with the migration of sockeye and chum salmon, but the commercial fishery remains targeted on earlier running chinook as long as that species dominates the catch.

The only means of assessing brood year escapement for District 4 chinook is from aerial surveys of the Kanektok River. The aerial survey indexes were below the BEG in 1992 and 1993, but above in 1994 (Appendix C.4). The harvest trend in recent years has been variable with 1995 and 1997 being well above average, while 1994 and 1996 were below average. Based on the harvest trends and the brood year escapements, the 1998 return is expected to be average or below average. Market interest has not been a problem in District 4, but fishing periods are occasionally lost because of a lack of tender availability. The number of permit holders participating in the Quinhagak fishery has also been increasing. If markets and effort levels remain steady, harvest may be between 10,000 and 20,000 chinook in 1998 (Table 11).

District 5

In District 5 of Goodnews Bay, the chinook stocks have been depressed for the past several years. The commercial fishery is directed at sockeye salmon, but the migratory timing of the two species overlap with chinook running earlier. The first commercial fishing period is generally delayed as a conservation measure to bolster chinook escapements. Escapement has improved modestly in the Middle Fork Goodnews River, but passage at the weir still tends to be below the BEG in most years (Appendix A.7). Escapements were 56 and 29 percent below the BEG in the brood years of 1992 and 1993, but 10 percent above the BEG in 1994.

The incidental chinook harvest is driven by the level of early season effort allowed in the sockeye fishery. Market interest and tender availability are also sometimes limiting. The chinook returns are expected to continue to be relatively low in Goodnews Bay. Conservation measures will still be necessary in order to continue the chinook rebuilding program. The incidental commercial harvest is expected to be between 2,000 and 2,500 chinook salmon (Table 11).

Sockeye Salmon

Sockeye salmon return primarily at age five in the Kuskokwim Area (Molyneaux and DuBois, 1996), so the 1998 returns will be derived mostly from the 1993 brood year. In the Kuskokwim River, commercial harvest of sockeye is incidental to the directed chum fishery. Kuskokwim Bay districts, however, do support sockeye directed commercial fisheries.

The poor sockeye returns seen in some regions of the state this past summer (ADF&G 1997) did not appear to extend to the Kuskokwim Area. The sockeye escapement to Kogrukluk River was above average in 1997, as has been the trend for the past several years (Appendix A.7). Pessimists could argue that escapement to the Kogrukluk River should have been higher given the lack of commercial fishing effort in 1997. Still, subsistence fishers also reported good sockeye catches. The sockeye harvest in Districts 4 and 5 were also average to above average in 1997 (Appendix C.3 and D.3), as was the escapement to the Middle Fork Goodnews River (Appendix A.7).

Districts 1 and 2

The span of time in which sockeye salmon migrate through the Kuskokwim River commercial fishing districts is concurrent with the chum migration. The commercial fishery is directed at the more abundant chum salmon, but the two species intermix. Sockeye salmon rarely factor into management decisions, and monitoring of sockeye escapements is minimal. The incidental sockeye harvest is therefore linked to both the abundance of sockeye and the abundance of chum salmon with the later species driving management decisions. Market interest in chum salmon is another important variable influencing the incidental sockeye harvest in the river.

Sockeye returns to the Kuskokwim River in 1998 are expected to be above average. Commercial fishing was minimal in the parent-year due to chum salmon concerns, consequently good sockeye escapements likely occurred throughout the drainage. The Kogrukluk River, which is not considered a significant sockeye system, had record high sockeye escapement in 1993 (Appendix A.7). Reports from subsistence fishers also confirmed that sockeye were generally abundant throughout the Kuskokwim River in 1993. The apparently good brood year escapement suggests that Kuskokwim River fishers can anticipate an above average abundance of sockeye salmon in 1998. If market interest and fishing effort for chum salmon allow, the potential incidental sockeye harvest could be in the range of 60,000 to 90,000 fish (Table 11).

District 4

For most of June, the sockeye harvest in District 4 is incidental to the directed chinook fishery. The commercial fishery switches to sockeye management by late June or early July when sockeye become dominant. Still, the run timing of the two species overlap broadly and the overall commercial sockeye harvest has some linkage with chinook abundance.

Sockeye returns to District 4 are expected to be good in 1998. The brood year escapement, as indexed by aerial survey of the Kanektok River, was well above the BEG in 1993 (Appendix C.4). Harvest trends have also been consistently, if not dramatically, strong since 1990 (Appendix C.3). The pattern of increased harvest that began in 1990 is likely due to a combination of factors including, increased sockeye productivity, increased fishing effort, and an expansion of the commercial fishing district. The average to below average expectation for chinook salmon returns in 1998 is liable to dampen the incidental sockeye harvest in June, but otherwise harvest for the overall season is expected to be strong and in the range of about 60,000 to 80,000 fish (Table 11).

District 5

The sockeye run in District 5 overlaps with the earlier running chinook migration. The commercial fishery is directed at sockeye salmon, but the onset of that fishery is usually delayed as part of the chinook rebuilding plan. This management approach will continue to impact sockeye harvest in 1998.

District 5 is expected to have a good sockeye return in 1998. The 1993 brood year escapement past the Middle Fork Goodnews River weir was four percent above the BEG (Appendix A.7). In addition, above average escapements have been observed during the past few years. Harvest levels have also been good to strong despite the impact of the chinook rebuilding plan. The harvest in 1998 is expected to be in the range of 30,000 to 40,000 fish (Table 11).

Chum Salmon

Chum salmon return to the Kuskokwim Area primarily at five and four years of age (Molyneaux and DuBois, 1996) so 1993 and 1994 will be the main brood years for the 1998 returns. The commercial fisheries in Districts 1 and 2 of the Kuskokwim River target chum salmon. Chum catches in Districts 4 and 5 of Kuskokwim Bay, however, are incidental to fisheries directed at other salmon species.

Districts 1 and 2

Average to below average numbers of chum salmon are expected to return to the Kuskokwim River in 1998. Spawning escapements for early running stocks are thought to be indexed by Kogrukluk River weir. Parent-year escapement at the weir was 6 percent above the BEG in 1993 following strong management actions to minimize the chum harvest (Appendix A.7). Escapement in the following year was 54 percent above the BEG. These escapements are expected to result in a good showing of chum salmon during the early portion of the 1998 season.

A good portion of the Kuskokwim River chum salmon production however, is attributed to the Aniak River drainage. Aniak River chums are believed to enter the Kuskokwim River a little later than the stocks indexed by Kogrukluk River weir. The sonar passage estimate at Aniak River was 95 percent below the BEG in 1993, despite strong conservation measures taken in the fisheries. In 1994, however the passage estimate was 55 percent above the BEG. The critically low escapement in 1993 suggests that age five chum salmon from the Aniak River will be in low abundance, while the good escapement in 1994 should result in above average returns of the age four fish.

These expectations are confounded by the returns observed in 1997. Aniak River was expected to have a poor return of chum salmon this past season because of low brood year escapement in both 1993 and 1992; however, returns were much better than anticipated. In contrast, Kogrukluk River was expected to have near average chum salmon returns in 1997, but passage through the weir was the lowest on record despite negligible commercial harvest impacts. The chum salmon

returns to the Kwethluk, George and Takotna Rivers in 1997 were also a fraction of what they had been the in the previous one or two years of operation, reinforcing the belief that the 1997 chum salmon failure was a drainage wide phenomenon. The reason for the reversal of returns between Kogrukluuk and Aniak River is unknown, but it does give cause for additional caution regarding the 1998 outlook. The return of chum salmon to the Kuskokwim River in 1998 is cautiously expected to allow a below average to average harvest of 20,000 to 400,000 fish (Table 11). Poor market conditions and limited processor interest are additional concerns expected to continue in 1998.

District 4

Chum harvest in District 4 is incidental to fisheries directed at chinook and sockeye salmon. The run timings are concurrent for these species, but management focus is on chinook and sockeye salmon. Chum salmon are not generally integrated into management decisions; their incidental harvest is linked with the abundance of chinook and sockeye salmon.

Chum escapement in District 4 is traditionally monitored by aerial surveys of the Kanektok River. Survey counts have been chronically below the BEG index since 1984 (Appendix C.4), but this is probably misleading. The BEG for chum salmon of 30,500 is twice the sockeye BEG of 15,000, but the average aerial count has the reverse ratio of about two sockeye for every one chum salmon. This same ratio was observed in the escapement estimates made from the counting tower operated on the Kanektok River in 1997 (Appendix A.7); passage of sockeye was estimated at about 96,000 while chum passage was 51,000 (Menard and Caole 1998). The commercial fishery as well had a sockeye to chum ratio of about 2 to 1 (Appendix C.3). The chum salmon BEG for the Kanektok River is currently under review and will likely be lowered to better reflect historic abundance levels.

The incidental commercial harvest of chum salmon in District 4 has generally been strong throughout the 1990s (Appendix C.3). The increase is likely due to a combination of factors including increased fishing effort and an expansion of the commercial fishing district. Given the average to below average return expected for chinook salmon, and the strong returns expected for sockeye, the incidental chum harvest will likely be between 40,000 and 60,000 (Table 11).

District 5

The chum salmon harvest in District 5 is incidental to the sockeye directed commercial fishery. The run timing of the two species is concurrent, but chum salmon are not generally integrated into the management decision process. The incidental harvest of chum salmon is linked to the amount of fishing effort in the sockeye directed fishery.

Chum salmon escapement in District 5 is monitored at the Middle Fork Goodnews River weir. Escapement in the 1993 brood year was about three percent below the BEG, but escapement in 1994 was more than twice the BEG (Appendix A.7). Throughout the 1990s, chum escapements have generally been good. The incidental chum harvests in the 1990s have also generally been good. The return of chum salmon to the district in 1998 is again expected to be good, especially

for the age four component. Considering the good sockeye return expected to the district, the incidental harvest of chum salmon is expected to be in the range of 15,000 to 30,000 fish (Table 11).

Coho Salmon

Coho salmon return to the Kuskokwim Area primarily at four years of age, so 1994 will be the key parent-year for 1998 returns. There is very little information on which to base the coho salmon run outlooks. The Kogrukluksak and Tuluksak River weirs were the only coho escapement projects operated in the Kuskokwim Area in 1994, and both projects are located in the Kuskokwim River basin. Market interest in coho salmon has been relatively good in the Kuskokwim Area and that trend is expected to continue in 1998.

Districts 1 and 2

Average to above average numbers of coho salmon are expected to return to the Kuskokwim River in 1998. Coho escapement past Kogrukluksak River weir was 39 percent above the BEG in the parent-year. The Tuluksak River weir escapement estimate, which was in its fourth and final season of operation in 1994, was nearly tied for the highest coho passage in the projects brief history (Appendix A.7).

Coho returns to the Kuskokwim River have generally been on the rise for the past several years. There has also been a cyclic tendency for even years to have a somewhat larger return than odd years. More recently, returns have also been volatile. The 1996 harvest, and escapement at Kogrukluksak River, were both at record high levels; but 1997 followed with record low harvest and escapement. Considering the cyclic pattern of Kuskokwim River coho salmon, coupled with good parent-year escapement, the river may get an average to above average coho return in 1998, with a harvest in the range of 500,000 to 700,000 fish (Table 11). It should be emphasized that the level of uncertainty in the coho outlook is especially high given recent volatility and limited escapement assessment.

Districts 4 and 5

Commercial harvest data are the only guide to anticipating coho returns in Districts 4 and 5. As was described for the Kuskokwim River, the trend in District 4 over the past several years has been towards increasing harvest coupled with a modest cycle of even year dominance (Appendix C.3). The District 4 harvest also exhibited a pattern of volatility in 1996 and 1997 similar to what occurred in the Kuskokwim River. Based on these patterns, the 1998 return is cautiously expected to be average to above average with a harvest in the range of 50,000 to 90,000 (Table 11).

Coho harvest in District 5 has been on the decline the past four years (Appendix D.3). Part of the decline is due to limited tender availability in the district. The parent-year harvest of 1994

was second best catch on record for the district. The outlook for 1998 is for an average harvest in the range of 10,000 to 30,000 coho (Table 11).

SUBSISTENCE SALMON FISHERY

Background

The harvest of fish and wildlife for subsistence use is an important component of the mixed subsistence-cash economy throughout the Kuskokwim Area. The subsistence salmon fishery in the region is one of the largest and most important in the state. During summer, early June through August, the day-to-day activities of many Kuskokwim Area households revolve around the harvesting, processing and preserving of salmon for subsistence use. The seasonal movement of families from permanent winter communities to summer fishcamps situated along rivers and sloughs, continues to be a significant element of the annual subsistence harvest effort. The Division of Subsistence studies in the region indicate that fish contribute as much as 85 percent of the total pounds of fish and wildlife harvested in a community annually, and salmon as much as 53 percent of the total annual harvest (Coffing 1991).

Approximately 1,500 households in the region annually harvest salmon for subsistence use. Many other households, which are not directly involved in catching salmon, participate by assisting family and friends with cutting, drying, smoking, and associated preservation activities (salting, canning and freezing). Annual subsistence harvest surveys have been aimed at gathering data on chinook, chum, sockeye and coho salmon. Subsistence catches of chinook salmon in the Kuskokwim Area often exceed the commercial catch of this species (Appendix A.4).

There are 37 communities consisting of approximately 3,500 households within the Kuskokwim Area (Figure 1). The majority of the area households (2,864) are situated within the drainage of the Kuskokwim River. Bethel is the largest community in the region, containing approximately 1,424 households. Approximately 174 households are located in the northern Kuskokwim Bay communities of Kwigillingok, Kongiganak and Kipnuk. Residents of these three communities harvest subsistence salmon from the Kuskokwim River as well as from areas closer to the communities. Residents of Quinhagak, Goodnews Bay and Platinum, located along the southshore of Kuskokwim Bay, harvest salmon stocks primarily from the Kanektok, Arolik, and Goodnews River systems. Residents of Mekoryuk, Toksook Bay, Nightmute, Tununak and Newtok situated along the Bering Sea Coast also harvest salmon from coastal waters as well as local tributaries.

Eligibility, Licenses, Permits, and Gear

Eligibility criteria require individuals be Alaskan residents for the preceding 12 consecutive months before harvesting salmon for subsistence use. Prior to 1990, there were additional restrictions on participation in the fishery. These are described in earlier annual management reports. The majority of those individuals subsistence fishing for salmon in the Kuskokwim

Area are residents of the area. People living in other parts of the state who have family or friends in the region sometimes return to the Kuskokwim area to harvest or help process salmon.

During 1997, licenses and permits were not required for subsistence salmon fishing in the Kuskokwim Area. There were no restrictions on the number of salmon that could be harvested by individual fishers or households. Salmon harvested for subsistence use could be caught using set and drift gillnets, beach seines and fish wheels. In the Holitna, Kanektok, Arolik and Goodnews river drainages only, spears could also be used. The total length of set or drift gillnets in use by an individual fisher could not exceed 50 fathoms. Unless changed by emergency order, gillnets used for harvesting salmon in the Kuskokwim Area could be of any size mesh. Gillnets with six-inch or smaller mesh could not be more than 45 meshes in depth and nets with greater than six-inch mesh could not be more than 35 meshes in depth. Fishers were required to have their name and address attached to their gillnets and fish wheels.

Inseason Subsistence Closures

Areas within the commercial salmon fishing districts were periodically closed to subsistence salmon fishing 16 hours before, during, and 6 hours after commercial salmon fishing periods. The purpose of these closures is to discourage illegal commercial fishing and to help discourage the sale of subsistence caught salmon in the commercial fishery. Many of the commercial fishers are local residents who also participate in the subsistence fishery. The specific area closed to subsistence fishing varies from one district to the next. Except for that area between District 1 and District 2, areas outside of the commercial fishing districts did not close to subsistence fishing.

The entire Kanektok and Arolik Rivers in District 4 and all of the Goodnews River in District 5 were closed to all subsistence fishing with nets 16 hours before, during and 6 hours after each commercial fishing period in those districts. Except for District 2 where all tributaries also closed to subsistence salmon fishing, the tributaries in other districts remained open. That portion of the Kuskokwim River between Districts 1 and 2 was closed to subsistence fishing at the same time subsistence closures occurred in District 1. Kuskokuak Slough, located in District 1, did not close to subsistence fishing after 31 July.

SUBSISTENCE SALMON HARVEST SURVEYS

The management of Kuskokwim Area salmon fisheries requires that the Department know how many salmon are harvested in both the subsistence and commercial fisheries. Data on the subsistence harvest of salmon are collected annually. The Commercial Fisheries Division began conducting subsistence salmon harvest surveys along the Kuskokwim River in 1960. Surveys were initiated in Quinhagak (1967), Goodnews Bay and Platinum (1979). The Division of Subsistence took over the annual subsistence salmon harvest surveys in 1988 under a reimbursable service agreement and have been responsible for collecting and analyzing the data since then.

Methods

Four methods were used to gather subsistence salmon harvest data. These methods were:

- 1) subsistence salmon catch calendars,
- 2) postseason community household surveys,
- 3) postcard surveys,
- 4) telephone surveys.

The division maintains a community household database and updates this database annually during the community surveys. Each household in the database is designated as either "usually fish" or "does not usually fish" depending on past fishing history. Households listed in the database were the basis of sampling and estimation of subsistence salmon harvests for the Kuskokwim Area. Each household on the list was assigned a unique identifier through which subsequent information could be tracked.

The goals of the postseason survey were to:

- 1) collect harvest data that would result in a total harvest estimate for subsistence salmon by species for the Kuskokwim Fisheries Management Area by community;
- 2) compile information on fishing effort, gear types, participation rates, and timing of the subsistence harvest;
- 3) update community household lists and identify fishing households;
- 4) determine if subsistence fishing success during 1997 was poor, average, or better than average and, if poor, why.

Catch Calendars

In May 1997, subsistence salmon catch calendars were mailed to all Kuskokwim Area households that had been identified as "usually fish." Three similar, but unique, catch calendars (Appendix S.1) were designed for recording the daily catch of each salmon species harvested for subsistence use. One style of calendar was sent to households in communities along the Lower and Middle regions of the Kuskokwim River, to communities along the Bering Sea coast and along North Kuskokwim Bay, and to those communities in the Upper Kuskokwim River region upstream as far as the community of Stony River. A second style of calendar was sent to the remaining households in the Upper Kuskokwim River region and a third style was sent to households in Quinhagak, Goodnews Bay and Platinum. Differences in the style of calendar sent to households take into account the species available, salmon run-timing and timing of subsistence fishing activities. Where addresses were available, the calendars were mailed to post office boxes; otherwise, calendars were sent general delivery for the post office clerk to

distribute. Each calendar was postage paid and addressed for return to the Division of Subsistence office in Bethel. Subsistence salmon catch calendars were distributed to 1,888 households.

Household Surveys

The second method of collecting subsistence salmon harvest information was the postseason household surveys. With this method, staff traveled to communities in the Kuskokwim Area and went house-to-house interviewing residents about their 1997 salmon fishing efforts. Similar to the approach used in developing the catch calendars, three color-coded survey instruments were developed and used (Appendix S.2). Except for local terms used for the salmon species, the survey questions asked in each region were identical.

During 1997, the Division of Subsistence staff conducted house-to-house surveys in 25 communities. Budget constraints have precluded attempts to conduct house-to-house surveys in Bethel, where there are nearly 1,400 households, and in Mekoryuk, Newtok, Nightmute, Toksook Bay, Tununak, Chefornak and Telida. The villages of Kwigillingok and Kipnuk have not allowed household harvest surveys to be conducted for several years and the community of Kasigluk has not allowed harvest surveys since 1992. Household surveys are usually conducted in Oscarville, however, during the 1997 survey period, weather prevented staff from traveling to these communities. McGrath and Bethel are surveyed primarily by telephone and postcard surveys rather than house-to-house surveys.

Survey efforts in these communities occurred over a two-month period beginning in early October, after most residents had completed salmon fishing for the season and after most hunters had returned home from fall moose and caribou hunting. Communities in which residents usually harvest salmon through October were surveyed in November. Time spent in any one community ranged from one-half to two days depending on the size of the community.

Survey work was conducted systematically. Prior to beginning the community surveys, efforts were made to inform and prepare residents for the arrival of staff doing the surveys. This was done weeks or days in advance of their arrival through letters to City, Tribal, or Traditional Council offices in each community, radio announcements, posters in public buildings and phone calls to community officials. Prior to traveling to each community, staff identified households that had already mailed in or returned their salmon harvest calendars.

Upon arrival in a community, staff checked in with the City or Council office to introduce themselves and outline their task. Staff used community household checklists, prepared in advance, to help them identify households they needed to contact while conducting household surveys. Each "checklist" contained a listing of all known households in the community, identified those households which were reported to have subsistence fished for salmon the previous year (1996), and households which were mailed 1997 catch calendars. Knowledgeable individuals in the community helped staff update the community household list and identify which households "usually fished" and which households "usually did not fish." These individuals also helped to identify households that subsistence fished for salmon in 1997.

Staff attempted to contact all households that either were identified as "usually fish" or were known to have fished during 1997. Structured interviews were conducted with these households using the survey instrument. Subsistence salmon catch calendars that had not been mailed back to the department were also collected. If time permitted, other households on the community list were contacted about their salmon fishing activities. In 1997, 1,034 households were surveyed using this method.

Postcard Surveys

The third method of collecting information on subsistence harvest of salmon was through the use of postcard surveys (Appendix S.3). The postcard survey simply asked if the household harvested salmon from the Kuskokwim Area for subsistence use, the species and quantities harvested, the type of fishing gear used, and how fishing was for each of the four salmon species usually harvested. The postcard could be separated in half and returned postage paid to the department. This type of survey was the primary method of obtaining harvest data from identified "usually fish" households in Bethel, McGrath, Kipnuk, Kwigillingok, Kasigluk, Mekoryuk, Newtok, Nightmute, Toksook Bay, and Tununak and households in other communities which were not available at the time of the community surveys.

Postcard surveys were mailed out to Bethel and McGrath households in late September. Households in these two communities that had not returned their catch calendar or postcard survey were contacted by telephone in November. If a household did not have a telephone, a second postcard was sent to it in November. Several Bethel households were not surveyed because neither their telephone number nor mailing address was known. Overall, approximately 1,634 households were mailed postcard surveys.

Telephone Surveys

The fourth method of collecting information on subsistence harvest of salmon was through telephone surveys. These surveys were conducted in Bethel and McGrath and followed the questioning format of the postcards. One Nikolai household was also surveyed in this manner. Approximately 500 households were surveyed using this method.

Subsistence Salmon Harvest Estimation

Information from the four information sources (catch calendars, household surveys, postcard, and telephone surveys) was entered into a computer database. Data were verified against source documents, and several logic checks of the data were made. The master list of names and addresses of resident households was updated to reflect changes in household composition and number of households residing in each community. The unique household numbering system was maintained on the master list and on the database tables containing information from each of the four information sources.

In order to provide a single best estimate for a household's harvest of a salmon species during 1997, information was compiled from the various information sources. This process was conducted by a single researcher on the project to ensure data consistency. In most cases, there

were few discrepancies between the information available from the different sources. In those cases where a household was determined to have fished for salmon, but no salmon harvest could be quantified through any information source, the harvest was identified as "missing."

Guidelines developed during the course of the process included the assumptions that:

- (1) the salmon catch calendar contained the best means of recording the household's harvest;
- (2) information from the different sources needed to be evaluated concurrently in order to identify the harvest for each species;
- (3) information from the different sources for a particular species may be different due to the timing of the collection of this information;
- (4) information on the use of salmon to feed dogs be used as a minimum estimate of the household's harvest if no other information was available.

Salmon harvests identified as "removed from the commercial catch for subsistence use" were included in the household's subsistence harvest.

The average community catch (C_k) was estimated for salmon species from the composite catch per household data using the following formula:

$$C_k = \sum_{i=0}^1 (N_{ki} * C_{ki}) / \sum_{i=0}^1 N_{ki}$$

where

k = community

i = indicates whether the group "usually fishes" (1) or "usually does not fish"(0)

N_{ki} = number of households that "usually fish" or "usually do not fish "

C_{ki} = mean harvest for households that "usually fish" or "usually do not fish"

The total community catch (T_k) was estimated by $T_k = \sum_{i=0}^1 (N_{ki} * C_{ki})$ and its variance (V_k) includes a finite population correction factor:

$$V_k = \sum_{i=0}^1 ((N_{ki}^2)(1-(n_{ki}/ N_{ki}))(\sum_{ki}^2/ n_{ki}))$$

where n_{ki} = number of households for which information is available that "usually fish" or "usually do not fish" and \sum_{ki}^2 = variance for the amount harvested for the "usually fish" or "usually do not fish" households.

If fewer than 30 households or less than 50% of all households in a community were contacted, the reported harvest was used for the estimated harvest. Community catch estimates and their variances were summed across communities for region subtotals and across all regions for Kuskokwim Management Area totals.

1997 Sampling Summary

A summary of the sampling information by community and fishing area is presented in Table 12. Of the estimated 3,508 households located in the Kuskokwim Area, information was obtained for 2,089 (59%).

In total 1,663 households have been classified as "usually fish." In 1997, subsistence salmon harvest information was collected from 1,240 (75%) of these households. Households classified as "usually do not fish" for salmon totaled 1,845. Information was collected from 591 (32%) of these households. Many (53%) of the households classified as "usually do not fish" resided in Bethel.

Fishing activity information was obtained for 1,899 households within the Kuskokwim River drainage, including the North Kuskokwim Bay communities. A total of 1,663 of these households were successfully contacted. Of these households, 1,294 harvested salmon for subsistence use during 1997.

In the South Kuskokwim Bay region, containing the communities of Quinhagak, Goodnews Bay and Platinum, the majority, 166 (83%), of the 199 households living in the region were contacted. Of these contacted households, 130 (78%) fished for subsistence salmon in 1997.

In total, 271 households have been identified in the Bering Sea coast communities of Mekoryuk, Newtok, Nightmute, Toksook Bay and Tununak. Because house-to-house surveys were not conducted in these communities, data were obtained only by catch calendars. Two households in this region provided information and each reported harvesting salmon. Based on data gathered in other years, actual participation in salmon harvesting activities is thought to be much greater than that reported by catch calendars or postcard surveys.

House-to-house surveys continue to be the primary vehicle for gathering data on harvest and use of subsistence salmon. Except for Bethel and McGrath where postcard surveys and telephone interviews were the primary data collection method, house-to-house surveys accounted for 54 percent of all households contacted.

In total, 15% (278) of the 1,888 subsistence salmon calendars which were mailed pre-season were used and returned. There were 161 responses to the 1,634 postcard surveys that were mailed to Kuskokwim Area households who had not returned harvest calendars and were not interviewed by staff.

1997 Harvest Summary

A summary of the subsistence salmon harvest estimates by community and fishing area presented in Table 13. The 1997 total subsistence salmon harvest estimates for the Kuskokwim Area was 85,506 Chinook, 40,976 chum, 41,270 sockeye, and 30,714 coho salmon. Seventy-five percent of the overall subsistence salmon harvests in the Kuskokwim Area were taken by residents of communities located from Tuluksak downstream to Eek (District 1). Correspondingly, approximately 70 percent of the area population also reside in District 1.

Chinook and chum salmon harvests usually account for the largest proportion of the total subsistence salmon harvest. Chinook salmon are particularly sought after for subsistence use in the Kuskokwim Area. During 1997, the subsistence chinook harvest was more than the combined chum and sockeye harvest; however, the chinook harvest during 1997 was not the highest on record (Appendix A.10). During the past ten years, the subsistence chinook harvest in the Kuskokwim Area has averaged 87,000 salmon.

Sockeye harvests were slightly higher in 1997 than in the previous three years, however, sockeye harvests have averaged about 40,000 salmon over the past 10-years (Appendix A.11). For the first time, the subsistence sockeye harvest was greater than the subsistence chum harvest.

Chum salmon harvests during 1997 were the lowest on record and less than one-half of the 1996 harvest (Appendix A.13). Poor chum harvests were a result of reduced chum salmon abundance during 1997. Subsistence fishers throughout the Kuskokwim Area reported that subsistence chum salmon fishing was poor during 1997. An awareness by subsistence fishers of the poor chum salmon return and concerted voluntarily efforts to reduce their subsistence chum salmon harvests may also explain why chum salmon harvests were down.

The subsistence coho harvest during 1997 was the lowest on record since 1987 (Appendix A.12). Harvests of coho salmon in the Kuskokwim Area have averaged about 43,000 fish over the past ten years. During the past five years, however, subsistence coho harvests have been about 35,000 fish.

Several hundred households provided information on the types of gear that they used for harvesting subsistence salmon. It was not unusual for households to use more than one gear type. Overall, 801 households reported using drift gillnets, 289 used set gillnets, and 152 reported harvesting subsistence salmon with rod-and-reel gear (Table 14). Drift gillnets were the primary gear type used along the lower and middle Kuskokwim River while set gillnets outnumbered drift gillnets within the upper Kuskokwim region. Fish wheels were reported only in the middle and upper Kuskokwim areas where two households reported wheels as a gear type. Households surveyed during the 1997 season did not report using seines or spears.

Approximately 17 percent of the households that reported commercial fishing during 1997 also reported that they kept salmon from their commercial catch for subsistence use (Table 15). 387 chinook salmon, 256 chum, 218 sockeye and 269 coho salmon were retained from the commercial catch for subsistence use. Generally, the number of salmon retained from

commercial fishing activities is low; however, the numbers in 1997 were even lower due primarily to very little commercial fishing activity in the Kuskokwim River districts.

Approximately 800 households responded to a question about the quality of subsistence salmon fishing during 1997. The purpose of this question was to learn how households viewed their 1997 subsistence fishing success. Households were asked to rate their subsistence fishing success for each of the four species surveyed (chinook, sockeye, chum, coho). Seventy-eight percent of the responding households reported that Chinook fishing was very good or average (Table 16). Subsistence fishing for chinook was rated poorest by fishers in the South Kuskokwim Bay communities of Quinhagak, Goodnews Bay and Platinum and in the Upper Kuskokwim communities of Lime Village and Nikolai.

Subsistence chum salmon fishing was reported poor by 50 percent of the households responding. As a group, households in the Upper Kuskokwim region indicated especially poor fishing for chum salmon. Answers commonly given for poor fishing success for all species included: low water, warm water, low abundance or absence of fish, as well as a variety of personal reasons such as problems with fishing gear or boat and motor as examples.

Eighty percent of fishers reported sockeye fishing as very good or average. Success in harvesting sockeye was relatively good throughout the Kuskokwim Area. Seventy percent ranked coho fishing as very good or average. Subsistence fishing for coho salmon was rated poorest by fishers in the South Kuskokwim Bay communities of Quinhagak, Goodnews Bay and Platinum and in the Upper Kuskokwim communities of Lime Village and Nikolai. Success in harvesting sockeye was relatively good throughout the Kuskokwim Area.

PART II: FRESHWATER FINFISH FISHERY

Several species other than salmon, herring and halibut are used for commercial, subsistence, and recreation purposes in the Kuskokwim Area. They are inconnu or sheefish (*Stenodus leucichthys*), whitefish (*Coregonus*) and (*Prosopium*) char (*Salvelinus*), burbot (*Lota lota*), Arctic grayling (*Thymallus arcticus*), northern pike (*Esox lucius*), Arctic lamprey (*Lampetra japonica*), rainbow smelt (*Osmerus mordax*) blackfish (*Dallia pectoralis*), rainbow trout (*Oncorhynchus mykiss*), lake trout (*Salvelinus namaycush*), threespine stickleback (*Gasterosteus aculeatus*), ninespine stickleback (*Pungitius pungitius*), and longnose sucker (*Catostomus catostomus*). The Division of Sport Fish documents the recreational fisheries.

Subsistence Fishery

Methods used for harvesting subsistence freshwater finfish include set and drift gillnets, seine, fishwheels, long lines, dip nets, jigging (hook and line through the ice), and pots (locally called "traps"). Subsistence harvests occur year round. These fish may be eaten fresh, dried, smoked or frozen. Most are used for human consumption; however, some are also used for dog food. Regulations do not limit the number of freshwater fish that may be harvested using subsistence

gear. Harvest data for these species are not collected on an annual basis. Data for some Kuskokwim Area communities may be found in the Division of Subsistence Technical Paper series.

Commercial Fishery

The commercial fishery has been sporadic, primarily harvesting whitefish and burbot for local markets. Some of the whitefish harvest occurs under the ice in the winter.

A permit from the Commercial Fisheries Entry Commission is required. A permit from the department to conduct commercial fisheries on whitefish, pike, smelt, burbot and lamprey is also required. Those species may also be taken incidentally to commercial salmon fishing. Three freshwater permits were issued by the Bethel CF office in 1997 for the Kuskokwim Area. The guidelines for permits are:

1. All waters of the area except the Johnson River drainage and Whitefish Lake are open to commercial harvest of freshwater finfish. The heavy subsistence utilization of freshwater species in these areas is the reason for the closure.
2. Only whitefish, cisco, smelt, pike, burbot, and lamprey may be taken. Sheefish, char and trout may not be taken due to their small population, low reproductive rates and their heavy utilization in the subsistence and sport fisheries.
3. All legal commercial gear types are allowed.
4. Gillnets must be greater than 2 1/2 and less than 5 inches stretch mesh. Long lines and set lines must use hooks with a gap between point and shank larger than 3/4 inch.

Appendix F.1 presents the freshwater finfish fishery catches and value since 1977. Fourteen permit holders landed fish in 1997. The exvessel value of the harvest was \$4,832.

Stock Status

The department does not monitor the status of the freshwater species in the Kuskokwim Area. Limited department observations, advisory committee recommendations and fishers interviews give no indication of declining populations in most drainages. Residents of Kasigluk, Atmautluak and Nunapitchuk have expressed concerns that subsistence fishers are overexploiting the whitefish stocks in Nunavakpak Lake (near Kasigluk).

PART III: MISCELLANEOUS SALTWATER FINFISH

A poorly documented commercial fishery on Saffron (*Eleginus gracilus*), or "Tom Cod" has occurred in the Kuskokwim Area for some time. These fish were surplus to subsistence needs and fishers and local stores were, and often still are, unaware of the regulatory requirements. The department has been trying to inform buyers and sellers of these requirements. Since 1988, we have had information on the sale of fish exported from the coastal villages to Bethel. Sales within the villages are still undocumented. One commercial landing of 250 pounds (\$500 exvessel value) was documented in 1997 (Appendix G.1).

PART IV. HERRING FISHERY

INTRODUCTION

Area and District Boundaries

There are five commercial gillnet sac roe districts and a subsistence herring fishery in the Kuskokwim Area. The Security Cove District includes all waters between the latitude of Cape Newenham and the latitude of the Salmon River (Figure 8). The Goodnews Bay District includes the waters of Goodnews Bay inside the north and south spits at the mouth and a line between the Ukfigag and Tunulik Rivers. The Cape Avinof District (Figure 9) consists of all waters landward of Kikegtek, Pingurbek and Kwigluk Islands from the longitude of Ishkowik River (162° 44' W. long) to the longitude of the Ursukfak River (164° 11' W. long). The Nelson Island District consists of all waters north of Chinigyak Cape and east of Atrnak Point, and all waters north of Talurarevuk Point and south of the southernmost tip of Chinit Point and east of 165° 30' W. long., and all waters north of the northernmost tip of Chinit Point and south of Kigigak Island and east of 165° 30' W. long. (Figure 10). The Nunivak Island District includes all waters extending three miles seaward of mean low water along the northern and east sides of Nunivak Islands from Kikoojit Rocks (60° 20' 00" N. lat., 166° 39' 05" W. long.) to Kaksajookalik Island (59° 45' 10" N. lat., 166° 14' 20" W. long.), the western most point of Cape Mendenhall (Figure 11).

Management Programs

The Security Cove, Goodnews Bay and Nunivak Island commercial herring fisheries are managed under the Bering Sea Herring Fishery Management Plan which sets the maximum exploitation rate at 20% of the estimated spawning biomass. The department attempts to harvest stocks in good condition (large volume, increasing abundance, good recruitment) at the upper end of the exploitation range (15-20%). Stocks in poor condition (small volume, decreasing abundance, poor recruitment) are exploited at lower than maximum rates (0-15%). The Alaska Board of Fisheries has directed the department to manage the commercial herring fisheries in the Nelson Island and Cape Avinof Districts for an exploitation rate not to exceed 15% of the estimated available biomass. To provide additional protection for the subsistence herring harvest

in the Nelson Island District, the following guidelines have been established by the Board of Fisheries:

1. The commercial fishery will be allowed to take up to 15% of the herring biomass, compared to up to 20% for most other fisheries having stocks of similar size and condition.
2. The commercial fishing season will be opened when a biomass of 3,000 tons or spawning activity is documented.
3. Periodic closures of the commercial fishery will be scheduled, during which time only subsistence fishing will be allowed.
4. Several important subsistence use areas occur throughout the district (e.g. waters around Cape Vancouver) and specific areas may be closed to commercial fishing to insure the adequacy of subsistence harvests.
5. The department will use all available means, including input from local residents, to insure the adequacy of subsistence herring harvests during the commercial fishing season.

All Kuskokwim Area commercial herring fisheries are opened and closed by emergency order to provide for an orderly fishery and allow periodic assessment of herring biomass. In 1990, the Nelson and Nunivak Island Districts were given limited entry status by the Commercial Fisheries Entry Commissions (CFEC). Entry permits were issued to qualified applicants who had fished in these fisheries before 1 January 1988. The Goodnews Bay District was closed to new entry beginning in 1997 and given limited entry status. CFEC will hold meetings in 1998 to determine a qualification system that will result in 182 limited entry permits being issued.

Season Summary

The total Kuskokwim Area Pacific herring harvest for 1997 was 3,163 tons with a total estimated value to the fishers of approximately \$804,000 (Appendix H.1). The average price paid in all districts was \$200 per ton for 10% roe recovery, with an increase or decrease of \$20 per ton for each percentage point above or below 10%. This was well below the 1996 price of \$600 per ton. Commercial fisheries occurred in all districts. The sac roe harvest was 3,157 tons while no herring were sold as bait. The only food/bait sales in this area occur during the sac roe fishery when the roe content is below the processors' acceptable minimums. Approximately 5 tons of herring were wasted.

Fishing effort, measured in number of fishers who made deliveries, decreased from 1996 levels by 32% in Security Cove, 24% in Goodnews Bay, 4% at Nelson Island, 50% in Nunivak Island and 10% at Cape Avinof (Appendix H.2). Six hundred twenty-three permit holders landed herring in the Kuskokwim Area, a decrease of 23% from 1996. Average income per permit holder (excluding Nunivak Island) ranged from \$995 in the Security Cove District to \$1,886 at Nelson Island (Appendix H.3). Fourteen companies bought herring in the Kuskokwim Area in

1997. Average roe recovery, from sac roe quality herring, ranged from 11.5% in the Cape Avinof District to 14.2% in the Goodnews Bay District. The overall average sac roe content was 12.7%, highest on record for the Kuskokwim Area. Exploitation rates in individual districts (excluding Nunivak) ranged from 9.8% in the Nelson Island District to 19.2% in the Security Cove District (Appendix H.1).

The 1997 total estimated herring spawning biomass was 25,718 tons for the surveyed portion of the Kuskokwim Area herring districts. This was 14% lower than the 1996 estimate (Appendix H.1). Ages 9 and older herring comprised 41% of the total biomass (Table 17). Recruit herring (ages 3, 4, and 5) accounted for 43% of the total run in number of fish (Table 18).

STOCK STATUS

Assessment Methods

Aerial surveys were flown throughout the Pacific herring spawning season in all Kuskokwim Area commercial fishing districts to determine relative abundance, distribution, and biomass of herring. Occurrence and extent of milt, numbers of fishing vessels and visibility features affecting survey quality were also recorded. Data collection methods were similar to those used since 1978.

Approximately 21 hours were spent conducting aerial surveys in the Kuskokwim Area: 9 hours in Security Cove and Goodnews Bay, 4 hours in the Cape Avinof District, 4 hours in Nelson Island and 4 hours in Nunivak Island. Weather and sea conditions were fair at best in all Districts, with the majority of surveys being conducted under poor conditions.

Standard conversions of 1.52 tons/538 ft² (water depths less than 16 ft), 2.58 tons/538 ft² (water depths between 16 and 26 ft) and 2.83 tons/538 ft² (water depths greater than 26 ft) were used to convert estimated herring school surface areas to biomass within all districts.

Test fishing with variable mesh gillnets occurred in all districts to determine age, sex, size and sexual maturity of herring and to note occurrence of other schooling fishes. The sampling goal for test fish catches was to sample a minimum of 60 herring per day or 420 per week from each district. Commercial landings were sampled in all fishing districts. Age composition of herring collected from the department test fishery and the commercial catch is summarized, by district, in Table 18. Additionally, volunteer commercial gillnet vessels collected herring samples within all districts that industry roe technicians evaluated for roe quality. This program allowed the openings to be timed to maximize roe production. This information also allows interpretation and modification of aerial survey biomass data.

Ground surveys conducted in some districts provide information on the distribution and density of eel grass beds and herring spawn deposition.

Spawning Populations

Security Cove District

Seven aerial surveys were flown on seven days during the 1997 season, from 1 May to 24 May. Two of these surveys were flown under acceptable conditions. Herring schools were first observed in the district on 1 May (132 tons). On 8 May, 4,064 tons of herring were observed during an aerial survey. The herring biomass expected to return to the Security Cove District in 1997 was 4,640 tons based on preseason projections. The preseason biomass estimate of 4,640 tons was used as the total biomass estimate in 1997. A total of 6.5 miles of spawn was observed in the district with peak spawning activity (2.5 miles) on 8 May.

The Security Cove test fish crew fished from 5 May to 23 May with variable mesh gillnets. From this catch, 859 herring were sampled for age, sex, size and maturity. Age 9 and older herring comprised 37% of the biomass (Table 17) while 3- to 5-year-old fish were 53% of the return in numbers of fish (Table 18).

Goodnews Bay District

Eight aerial surveys were flown on eight days during the 1997 season, from 1 May to 25 May. One was flown under satisfactory conditions. A survey on 5 May saw 2,848 tons in the district. The herring biomass expected to return to the Goodnews Bay District in 1997 was 4,752 tons based on preseason projections. The preseason biomass estimate of 4,752 tons was used as the biomass estimate for 1997. One mile of spawn was observed during aerial surveys of the district.

Test fishing occurred from 4 May to 29 May. The catch of 1,317 herring was sampled for age-sex-size data. Age 9 and older herring made up 39% of the biomass (Table 17) while age 3 to 5 fish were 41% of the test catch (Table 18).

Cape Avinof District

Between 23 May and 28 May, four aerial surveys were flown in the Cape Avinof District. One of these surveys was flown under satisfactory conditions. No herring were observed during these surveys. The total biomass present in the district was estimated to be 4,616 tons based on a comparison of the commercial fishery CPUE in 1996 and 1997. No spawn was observed during aerial surveys in the Cape Avinof District in 1997. Spawning was documented by the test fish crew and local residents.

The Department's test fishery near Kipnuk captured 1,043 herring between 21 May and 5 June to sample for age-sex-size data. Age 9 and older herring made up 37% of the biomass (Table 17) while recruit herring represented 50% of the return in numbers of fish (Table 18).

Nelson Island District

Nine aerial surveys were flown on nine days from 11 May to 28 May during the 1997 season. None of these surveys were made under acceptable conditions. During an aerial survey on 28 May, 839 tons of herring were observed just south of the district. Since no acceptable surveys occurred, the preseason forecasted biomass of 7,909 tons was used as the total biomass estimate for 1997. A total of 5.4 miles of spawn was observed during aerial surveys of the district. Peak spawning was observed on 21 May when 4.0 miles of spawn were sighted.

Test fishing with variable mesh gillnets occurred from 14 May to 12 June. Age, sex, size and maturity information was taken from 1,559 herring. Age 3 to 5 fish made up 37% of the test catch while 29% were age 9 or older herring. Age 9 herring dominated the return in biomass (22%) (Table 17) and in numbers of fish (16%) (Table 18).

Nunivak Island District

Four aerial surveys were flown on four days between 22 May and 26 May during the 1997 season. Severe weather limited the opportunity to conduct aerial surveys in the district. Two surveys were made under acceptable conditions. During an aerial survey on 22 May, 31 tons of herring were observed. Total biomass was assumed to be 3,801 tons based on the projected return from the 1996 escapement. A total of 0.8 linear miles of spawn was observed during aerial surveys.

The Department test fishery sampled 56 herring for biological data on 23 May. Age 9 and older herring comprised 42% of the sample while recruit herring were not present in the sample (Table 17).

Central Kuskokwim Bay

The Central Kuskokwim Bay area extends from Jacksmith Bay, south of Quinhagak, to the Ishkowiik River (Figure 1). No commercial herring fishing districts are located in this area. Six aerial surveys were flown in this area from 1 May to 25 May. Two of these surveys were flown under satisfactory conditions. During a survey on 5 May, 804 tons of herring were observed.

SUBSISTENCE FISHERY

Subsistence fishing for Pacific herring in the northeastern Bering Sea is very important in villages of the Yukon-Kuskokwim River delta. The subsistence fishery is conducted primarily by residents of the coastal villages of Kwigillingok, Kongiganek, Kipnuk, Chefornak, Toksook Bay, Umkumiut, Nightmute, Tununak and Newtok. The herring stocks utilized by the subsistence fishery are the same ones targeted by the commercial fishery in the nearby commercial fishing districts.

Subsistence harvest surveys have occurred annually in Nelson Island villages from 1985 to 1996 and sporadically in Kuskokwim delta villages since 1975. Average annual herring subsistence harvests have been at least 110 tons since 1975 (Burkey et al. 1998). No subsistence surveys were conducted of Kuskokwim Area communities in 1997. Subsistence survey results reflect harvest trends and reported catches represent minimum figures since not all fishers are contacted and other Kuskokwim River delta villages were not surveyed.

Most Nelson Island families expressed satisfaction with this year's subsistence herring fishery. Timing of the fishery, quality and quantity of herring and excellent drying weather cooperated to produce a good season. Herring of high fat content were relatively few which minimized spoilage.

COMMERCIAL FISHERY

Security Cove District

The total harvest of 892 tons was composed of 887 tons of sac roe herring with an average roe content of 12.5%, and 5 tons of waste. Fourteen processors bought herring from 222 permit holders who made 528 deliveries in three periods with 10.5 hours total fishing time. The estimated ex-vessel value was \$221,000. The exploitation rate was 19.2% based on the preseason biomass projection of 4,640 tons.

In order to gauge roe quality and herring abundance, commercial fishermen conducted test fisheries before the first three commercial periods. On 9 May, commercial test fishing produced 10 samples with an overall average of 11.5% mature roe. Commercial test fishing on 10 May produced seven samples with an overall average of 10.2% mature roe. Commercial test fishing on 11 May produced 13 samples with an overall average of 11.1% mature roe.

On 7 May, the first period opened for 3.5 hours starting at 7:00 PM (Table 19). One hundred sixty-seven permit holders delivered 325 tons of sac roe quality herring with an average roe content of 12.4%. Approximately 5 tons of herring were wasted due to low roe content. The second opening occurred on 8 May for 3 hours starting at 7:30 AM. One hundred seventy-one permit holders delivered 196 tons of herring with a 12.3% average roe content. The final period was for 4 hours on 8 May starting at 7:30 PM. One hundred ninety permit holders delivered 367 tons of herring with a 12.7% average roe content. Due to a high number of participating permit holders, all periods were open to only 50 fathoms of gillnet per boat.

A total of 420 herring were sampled from the commercial catch. Age composition was 71% age 9 or older, and 29% age 6 to 8 (Table 18).

Goodnews Bay District

The total harvest was 805 tons of sac roe herring with an average roe content of 14.2%. Three processors bought herring from 139 permit holders who made 933 deliveries in 12 periods with

65 hours total fishing time. The estimated ex-vessel value was \$228,000. The exploitation rate was 16.9% based on the preseason biomass projection of 4,752 tons. Various factors including early run timing and adverse weather contributed to the inability of fishermen to reach the 950-ton guideline harvest limit.

On 14 May, a meeting with fishers and processors was held to assess the roe quality of herring in the district. Commercial fishers brought catch samples to the meetings for evaluation by industry roe technicians. At the meeting, four samples had an average roe content of 14.4%. Despite the high roe content, fishermen wanted to postpone fishing until fishermen from other areas arrived on the grounds and more fishermen were ready to fish.

On 16 May, the first period opened for 4 hours at 2:00 PM. Fifty-eight permit holders delivered 33 tons of sac roe herring with a 13.8% average roe content. The second period opened for 5 hours at 2:00 PM on 17 May. Forty-nine permit holders delivered 14 tons of herring with an average roe content of 14.7%. A severe storm with 60-knot winds prevented a fishing period on 18 May. Between 19 May and 25 May, the district was opened 10 times for a total of 56 hours. Catches ranged from less than 1 ton on 25 May to 219 tons on 21 May (Table 19).

A total of 420 herring were sampled from the commercial catch. Age composition, estimated by length, was 76% age 9 or older, 23% age 6-8, and 1% less than age 6 (Table 18).

Cape Avinof District

The total harvest was 687 tons of sac roe herring with an average roe content of 11.5%. Two processors bought herring from 145 permit holders who made 560 deliveries in five periods with a total fishing time of 26 hours. The estimated ex-vessel value was \$157,000. The exploitation rate was 14.9% based on a postseason biomass estimate (comparison of commercial fishery CPUE between 1996 and 1997) of 4,616 tons.

Samples caught near Kwigillingok by commercial fishers on 20 May and 21 May had an average roe content of 12.7%. Commercial test fishing in the Kipnuk area on 21 May produced six samples with an average roe content of 13.7%.

On 20 May the first period opened for 4 hours starting at 8:00 PM. Seventy-four permit holders delivered 106 tons of herring with an 11.3% average roe content. Between 22 May and 24 May the district was opened four times for a total of 22 hours. Catches ranged from 129 tons on 22 May to 173 tons on 23 May (Table 19).

A total of 120 herring were sampled from the commercial catch in the Kipnuk area. Age composition was 74% age 9 or older, 23% age 6-8, and 3% less than age 6. In the Kwigillingok area, 420 herring were sampled from the commercial catch. Age composition was 71% age 9 or older and 29% age 6-8 (Table 18).

Nelson Island District

The total harvest was 778 tons of sac roe herring with an average roe content of 12.7%. Three processors bought herring from 105 permit holders who made 348 deliveries in three periods with a total fishing time of 10 hours. The estimated ex-vessel value was \$198,000. The exploitation rate was 9.8% based on a postseason biomass estimate (comparison of commercial fishery CPUE between 1996 and 1997) of 7,909 tons.

Commercial test fishing on 15 May produced four samples with an average roe content of 14.0%. On 20 May, commercial test fishing resulted in 12 samples with an average roe content of 12.3%.

On 20 May, the first period opened for 4 hours starting at 9:00 PM (Table 19). Ninety-six permit holders delivered 304 tons of sac roe quality herring with a 12.6% average roe content. The second period was for 4 hours beginning 9:00 AM on 21 May. Ninety-nine permit holders harvested 404 tons of sac roe herring with an average roe content of 12.8%. The last period was for two hours starting at 11:00 AM on 22 May. Catch from this period was 71 tons of herring with 13.0% average roe content. The final period was open to only 50 fathoms of gillnet per boat.

A total of 422 herring were sampled from the commercial catch. Age composition was 90% age 9 or older and 10% age 6-8 (Table 18).

Nunivak Island District

The district was open to herring fishing for 6 hours on 21 May. Although twelve permit holders fished, no herring were sold because there was no buyer. Approximately 200 pounds of herring caught during this period were utilized for subsistence. On 24 May, a buyer arrived and the district was opened continuously from 6:00 PM until 10:00 AM on 27 May. Fishermen were unable to locate marketable quantities of herring and no deliveries were made (Table 19).

Commercial test fishermen produced 5 samples on 20 May with an average roe content of 11.1%.

A total of 29 herring were sampled from commercial fishermen. Age composition was 79% age 9 or older and 21% age 6-8 (Table 18).

Enforcement

The Division of Fish and Wildlife Protection (FWP) was present in the Goodnews Bay and Security Cove Districts this year. At least 10 people from FWP were involved in Kuskokwim Bay herring fisheries. The P/V Walstad, two supercub aircraft, a Cessna 185 and two FWP skiffs were utilized by enforcement officers. Details on the number and type of violations observed are not available from FWP at this time.

OUTLOOK AND MANAGEMENT STRATEGY FOR 1998

Projections from postseason escapement estimates, using historic mean rates of survival and current mean weights for each age class, and estimates of recruitment for each age class (Wespedstad 1982), suggest that the 1998 spawning biomass for the Kuskokwim Bay herring stocks (Security Cove to Nunivak Island) will be approximately 23,282 tons with a projected harvest of 4,242 tons (Table 20). If the return is as expected, a moderate reduction in biomass will be observed in all districts. However, variability in the quality of aerial survey assessments of biomass and deviations from the assumed survival or recruitment rates may result in the observed biomass being either above or below these projections. Therefore, harvest levels will be adjusted during the season according to observed herring spawning biomass. In addition, in accordance with the AYK Region harvest policy, newly recruited age classes (age 2 through 5 year-old-herring) will not be targeted by the commercial fishery. If it is not possible to determine herring abundance using aerial survey methods, stock abundance will be assessed using information from the projected biomass, test and commercial catches and spawn deposition observations.

Security Cove District

The 1998 projected return to the Security Cove District is 4,017 tons. A 20% exploitation rate would result in a harvest of about 803 tons (Table 20). A larger catch may occur if the 1998 biomass assessment is greater than the projection. Commercial fishing will not be allowed until the observed biomass reaches 1,200 tons or significant spawning activity is observed. The occurrence and length of fishing periods will depend on stock strength, fishing effort, and spawning activity.

Age 5 herring are expected to dominate the return. Age 9 and older herring are expected to comprise approximately 25% of the biomass.

Goodnews Bay District

The management strategy for this district will be similar to that planned for Security Cove. The season will open and close by emergency order when a biomass of 1,200 tons is observed or spawning activity occurs. The 1998 projected return of herring to the Goodnews Bay District is 4,064 tons. A 20% exploitation rate would result in a harvest of 813 tons (Table 20). A larger catch may occur if the 1998 biomass assessment is greater than the projection.

Age 5 herring are expected to comprise nearly 33% of the biomass. Age 9 and older herring are expected to comprise nearly 28% of the biomass.

Cape Avinof District

Either significant spawning activity or a biomass of 500 tons must be observed before the commercial herring season can be opened. The projected 1998 biomass for the Cape Avinof District is 4,287 tons (Table 20). The exploitation rate will be no greater than 15% because of the limited database for this area and the priority of subsistence fishing. Assuming a 15% commercial exploitation rate, the projected harvest would be 643 tons of herring.

Age 5 herring are expected to dominate the returning population. Age 9 and older herring are expected to comprise nearly 27% of the biomass.

Nelson Island District

In the Bering Sea Herring Fishery Management Plan, the Alaska Board of Fisheries set a minimum biomass threshold of 3,000 tons necessary for a commercial herring fishery in the Nelson Island District. The inseason estimate of herring biomass must exceed the threshold level before a commercial fishery can be allowed. The spawning biomass projected to return to the Nelson Island District in 1998 is 7,136 tons (Table 20). At an exploitation rate of 15%, the harvest will be 1,070 tons of herring. A larger catch may occur if the 1998 biomass assessment is greater than the projection.

Age 5 is expected to be the dominant age group in 1998. Age 9 and older herring are expected to comprise almost 37% of the biomass in 1998.

Guidelines established by the Board of Fisheries (see page 42) that provide additional protection for the subsistence harvest of herring will be followed.

Nunivak Island District

The commercial season will open when the biomass reaches 1,500 tons or when significant spawning is observed. The projected biomass of herring returning to the Nunivak Island District in 1998 is 3,778 tons. A 20% exploitation rate would result in a 756 ton harvest (Table 20). A larger catch may occur if the 1998 biomass assessment is greater than the projection.

Age 5 is expected to be the dominant age group. Age 9 and older herring are expected to comprise nearly 36% of the return.

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TABLES

Table 1. Salmon fishery projects operated in the Kuskokwim Area during 1997

Project Name	Location	Primary Objectives	Duration	Agency	Responsibility
Salmon Management Plan	Kuskokwim Area	- develop a comprehensive plan for managing salmon stocks of the Kuskokwim Area. - define goals and objectives. - identify potential opportunities and concerns. - recommend appropriate procedures. - evaluate priorities.	June - Sept.	ADFG/CFMD	all aspects
Subsistence Catch and Effort Assessment	Kuskokwim Area	- document and estimate the catch and associated effort of the subsistence salmon fisheries via interviews, catch calendars, mail-out questionnaires and telephone interviews.	Post-season	ADFG/S	all aspects
Escapement Sampling	Kuskokwim Area	- estimate age, sex and length of chinook, sockeye, chum and coho salmon from selected tributary spawning populations.	June - Sept	ADFG/CFMD	all aspects
Aerial Surveys	Kuskokwim Area	- index relative abundance of chinook salmon spawning escapement in selected streams throughout the Kuskokwim Area. - index relative abundance of sockeye salmon spawning escapement in the Kanektok and Goodnews Rivers.	July - Aug	ADFG/CFMD	all aspects
Sport Catch, Harvest and Effort Assessment	Kuskokwim Area	- statewide mail-out survey to estimate sport catch, harvest and effort.	post-season	ADFG/SF	all aspects
Commercial Catch and Effort Assessment	Districts 1, 2, 4 and 5	- document and estimate the catch and associated effort of the commercial salmon fishery via receipts (fish tickets) of commercial sales and dock side sampling.	June - Sept	ADFG/CFMD	all aspects
Commercial Catch Sampling	Districts 1, 4 and 5	- determine age, sex, and length of salmon harvested in the commercial fisheries.	June - Sept	ADFG/CFMD	all aspects
Bethel Test Fishery	Bethel Area RM. 80	- index relative run timing of chinook, sockeye, chum and coho salmon using drift gillnets. - index relative run abundance of chinook, sockeye, chum and coho salmon using CPUE derived from drift gillnet catches.	June - Aug	ADFG/CFMD	all aspects
Kwethluk River Counting Tower	mile Kwethluk River RM. 99	- estimate daily escapement of chinook, sockeye, chum and pink salmon into the Kwethluk River. - estimate age, sex and length composition of chinook and chum salmon escapement.	June - July	AVCP ADFG/CFMD USFWS BSEA	all aspects planning, supplies & crew support planning & supplies funding

- continued -

Table 1 (2 of 2)

Project Name	Location	Primary Objectives	Duration	Agency	Responsibility
Aniak River Sonar	mile 12 Aniak River RM. 225	- estimate daily escapement of salmon into the Aniak River. - estimate age, sex and length composition of chum salmon escapement	June - July	ADFG/CFMD	all aspects
				AVCP	crew support
George River Weir	mile 4 George River RM. 309	- estimate daily escapement of chinook, sockeye, chum and pink salmon into the George River. - estimate age, sex and length composition of chinook and chum salmon escapement.	June - July	KNA	all aspects
				ADFG/CFMD	all aspects crew leader
				BSFA	funding
Kogrukluk River Weir	mile 85 Holitna River Drainage RM. 335	- estimate daily escapement of chinook, sockeye, chum and coho salmon into the Kogrukluk River. - estimate age, sex and length composition of chinook, chum and coho salmon escapement	June - Sept	ADFG/CFMD	all aspects
Takotna River Counting Tower	mile 35 Takotna River RM. 507	- estimate daily escapement of chinook and chum salmon into the Takotna River.	June - July	TCSTC	all aspects
				ADFG/CFMD	planning & supplies
				BSFA	funding
Kanektok River Counting Tower	mile -7 Kanektok River Kuskokwim Bay	- estimate daily escapement of chinook, sockeye, chum, pink and coho salmon into the Kanektok River. - estimate age, sex and length composition of chinook, sockeye, chum, and coho salmon escapement.	June - July	QIRA	all aspects
				ADFG/CFMD	planning, supplies & crew leader
				USFWS	planning & supplies
				BSFA	funding
Middle Fork Goodnews River Weir	mile 18 Middle Fork Goodnews River Kuskokwim Bay	- estimate daily escapement of chinook, sockeye, chum, pink and coho salmon into the Middle Fork Goodnews River. - estimate age, sex and length composition of chinook, sockeye, chum and coho salmon escapement	June - Aug	ADFG/CFMD	all aspects
				USFWS BSFA	flusting weir support

Agency Acronyms:

- ADFG/CFMD - Commercial Fisheries Management and Development Division; Alaska Department of Fish and Game
- ADFG/S - Subsistence Division; Alaska Department of Fish and Game
- ADFG/SF - Sport Fish Division; Alaska Department of Fish and Game
- AVCP - Association of Village Council Presidents
- BSFA - Bering Sea Fishermen's Association
- KNA - Kuskokwim Native Association
- QIRA - Quinhagak IRA
- TCSTC - Takotna Community School and Training Center
- USFWS - U.S. Fish and Wildlife Service

Table 2. Kuskokwim Area salmon entry permits issued by village, 1996

Village	Number of Entry Permits
Akiachak	64
Akiak	23
Aniak	10
Atnautluak	28
Bethel	167
Chefornak	3
Chuathbaluk	2
Eek	40
Goodnews Bay	29
Kalskags	8
Kasigluk	44
Kipnuk	17
Kongiganak	21
Kwethluk	58
Kwigillingok	18
Mekoryuk	2
Napakiak	39
Napaskiak	34
Nunapitchuk	48
Oscarville	2
Platinum	4
Quinhagak	83
Sleetmute	1
Tuluksak	27
Tuntutuliak	44
KUSKOKWIM AREA SUBTOTAL	816
Anchorage	11
Dillingham	1
Fairbanks	3
Manokotak	2
Togiak	1
NON-LOCAL ALASKA RESIDENTS SUBTOTAL	18
Valencia, CA	1
Dunwoody, GA	1
Honey In The Hills, FL	1
Paul Smiths, NY	1
Florence, OR	1
Tacoma, WA	1
NON-RESIDENT SUBTOTAL	6
TOTAL NUMBER OF PERMITS	840

Table 3. Harvest and exvessel value of Kuskokwim Area salmon catch by district, 1997

<u>Lower Kuskokwim River, District W-1</u>						
	<u>Chinook</u>	<u>Sockeye</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Total</u>
			<u>1997</u>			
Fish	10,436	21,988	129,429	2	17,003	178,858
Pounds	141,705	158,346	946,532	6	121,933	
Price	0.26	0.41	0.33	0.10	0.16	
Value	\$36,843	\$64,922	\$312,356	\$1	\$19,509	\$433,631
			<u>Ave. 1988-96</u>			
Fish	32,123	67,666	571,981	6,111	484,383	1,162,264
Value	\$335,894	\$427,511	\$2,167,491	\$2,078	\$967,172	\$3,900,147
<u>Middle Kuskokwim River, District W-2</u>						
			<u>1997</u>			
Fish	5	1	1,202	0	23	1,231
Pounds	129	8	8,232	0	132	
Price	0.35	0.50	0.35		0.10	
Value	\$45	\$4	\$2,881	\$0	\$13	\$2,944
			<u>Ave. 1988-96</u>			
Fish	1,272	1,614	19,777	27	15,187	37,877
Value	\$14,356	\$10,009	\$72,805	\$15	\$25,630	\$122,814
<u>Quinhagak, District W-4</u>						
			<u>1997</u>			
Fish	35,492	69,508	32,862	5	38,435	176,302
Pounds	603,333	491,814	271,752	13	279,719	
Price	0.28	0.42	0.34	0.10	0.11	
Value	\$168,933	\$206,562	\$92,396	\$1	\$30,769	\$498,
			<u>Ave. 1988-96</u>			
Fish	18,457	57,721	65,972	14,893	56,765	213,807
Value	\$199,050	\$300,126	\$285,975	\$4,594	\$94,761	\$884,507
<u>Goodnews Bay, District W-5</u>						
			<u>1997</u>			
Fish	2,039	31,451	2,983	0	11,729	48,202
Pounds	31,962	221,775	27,931	0	85,069	
Price	0.34	0.42	0.34		0.11	
Value	\$10,867	\$93,146	\$9,497	\$0	\$9,358	\$122,867
			<u>Ave. 1988-96</u>			
Fish	2,740	40,819	25,876	4,293	18,261	91,988
Value	\$33,104	\$237,952	\$130,664	\$1,258	\$36,568	\$439,545
<u>Kuskowkim Area Total</u>						
			<u>1997</u>			
Fish	47,972	132,948	166,476	7	67,190	404,593
Pounds	777,129	871,943	1,254,447	19	486,853	
Price	0.28	0.42	0.33	0.10	0.12	
Value	\$216,689	\$364,633	\$417,129	\$2	\$59,649	\$1,058,102
			<u>Ave. 1988-96</u>			
Fish	54,591	167,820	683,606	25,324	574,595	1,505,937
Value	\$582,405	\$975,598	\$2,656,935	\$7,944	\$1,124,131	\$5,347,013

Table 4. Executive summary of Working Group and department actions, 1997

Date	Comment
28 April	<p>The Working Group accepted the resignations of Joe Lomack, of the Kuskokwim Fishermen's Coop, and Joe Chief Sr., Elder representative. Greg Hoffman Sr. was appointed to fill the Kuskokwim Fishermen's Coop seat and Andrew Fredricks, Sleetmute, was appointed to be the Elder representative. Greg Hoffman Sr and Henry Hunter (Orutsararmuit Native Council) were elected Co-Chairs of the Working Group for the 1997 season. A request for voting membership from ONC was rejected. A committee was appointed to review and revise the Working Group By-Laws. Other topics discussed were the 1997 AYK Board of Fisheries meeting, 1997 Kuskokwim River Salmon Management Plan, AYK sonar program rebuilding plan and proposed cuts to the ADF&G budget.</p>
13 June	<p>The king and chum salmon runs appear to be below average in size with relatively low subsistence catches. John Nicori Jr. was appointed the Lower Kuskokwim River Subsistence representative. Orutsararmuit Native Council's resignation from the Working Group was accepted. Henry Hill, Upriver Commercial Fishermen's representative was elected to replace Henry Hunter (ONC) as a Co-Chair. After review, the revised Working Group By-Laws were sent back to committee for further revision.</p> <p><u>Dept. recommendation:</u> Working Group to meet again on 16 June to reevaluate the salmon runs.</p> <p><u>Actual outcome:</u> Working Group met again on 16 June.</p>
16 June	<p>The king and chum salmon runs continue to appear below average for this time period. The Working Group approved Pete Mellick, from Sleetmute, to serve as alternate for the Sportfish representative.</p> <p><u>Dept. recommendation:</u> Working Group to meet again on June 18 to reevaluate the salmon runs.</p> <p><u>Working Group recommendation:</u> The department to continue evaluating the salmon run and determine the date of the first commercial opening.</p> <p><u>Actual outcome:</u> Six hour period in District W-1, below Bethel, on 23 June.</p>
25 June	<p>Record low chum salmon harvest during the 23 June commercial period.</p> <p><u>Dept. recommendation:</u> Commercial fishing on the Kuskokwim River be suspended until indicators of chum salmon run strength increase enough to allow consideration of a fishing period.</p> <p><u>Working Group recommendation:</u> The department to continue evaluating the salmon run with the next Working Group meeting to be at the call of the chair.</p> <p><u>Actual outcome:</u> The Working Group met again on 10 July.</p>

- continued -

Table 4. (2 of 4)

Date	Comment
10 July	<p>The Kuskokwim River commercial and sport fisheries for chum salmon were closed due to an extremely weak return of chum salmon.</p> <p><u>Dept. recommendation:</u> The Working Group discuss the need and possible means to reduce the harvest of chum salmon in the subsistence fishery.</p> <p><u>Working Group recommendation:</u> Collect public input through personal contacts and a radio call-in show before recommending any actions effecting the subsistence fishery.</p> <p><u>Actual outcome:</u> The Working Group met again on 14 July.</p>
14 July	<p>The Working Group voted to join a Cooperative Appeal for Conservation of Kuskokwim River Chum Salmon. The appeal was issued in conjunction with ADF&G, Association of Village Council Presidents, Kuskokwim Native Association, McGrath Native Village Council, Orutsararmuit Native Council, and Tanana Chiefs Conference. The appeal requested that subsistence users take whatever means possible to conserve chum salmon.</p>
26 July	<p>Chum salmon escapement levels are critically low and it is important to continue conserving chum salmon.</p> <p><u>Dept. recommendation:</u> Working Group meet on 28 July to reevaluate the salmon runs.</p> <p><u>Working Group recommendation:</u> None - the Working Group failed to achieve a quorum.</p> <p><u>Actual outcome:</u> The Working Group met again on 28 July.</p>
28 July	<p>The Working Group approved Donald Evon, of Kwethluk, to serve as alternate to the Lower Kuskokwim Subsistence representative.</p> <p><u>Dept. recommendation:</u> Six hour period in District W-1, below Bethel, on 31 July.</p> <p><u>Working Group recommendation (#1):</u> Six hour period in District W-1 (entire district) on 31 July - Motion failed due to lack of consensus.</p> <p><u>Working Group recommendation (#2):</u> Six hour period in District W-1, below Bethel on 31 July - Motion failed due to lack of consensus.</p> <p><u>Working Group recommendation (#3):</u> Working Group to meet again on 31 July - Motion failed due to lack of consensus.</p> <p><u>Working Group recommendation (#4):</u> Four hour period in District W-1, below Bethel on 31 July - Motion failed due to lack of consensus.</p> <p><u>Working Group recommendation (#5):</u> Working Group to meet again on 30 July.</p> <p><u>Actual outcome:</u> Working Group met again on 30 July.</p>
30 July	<p><u>Dept. recommendation:</u> Six hour period in District W-1, below Bethel on 31 July.</p> <p><u>Working Group recommendation:</u> Six hour period in Districts W-1, below Bethel on 31 July.</p> <p><u>Actual outcome:</u> Six hour period in Districts W-1, below Bethel on 31 July.</p>

- continued -

Table 4. (3 of 4)

Date	Comment
1 August	Coho salmon run strength is too weak to allow commercial fishing at this time. <u>Dept. recommendation:</u> Working Group meet again on 4 August. <u>Working Group recommendation:</u> Working Group to meet again on 4 August. <u>Actual outcome:</u> Working Group met again on 4 August.
4 August	<u>Dept. recommendation:</u> Six hour period in District W-1, below Bethel on 5 August. <u>Working Group recommendation (#1):</u> Six hour period in District W-1 (entire) on 5 August - Motion failed due to lack of consensus. <u>Working Group recommendation (#2):</u> Six hour period in District W-1 (entire) on 6 August. <u>Actual outcome:</u> Six hour period in District W-1 (entire) on 6 August.
7 August	Coho salmon run strength is too weak to allow commercial fishing at this time. <u>Dept. recommendation:</u> Working Group meet again on 9 August. <u>Working Group recommendation:</u> None - the Working Group fail to achieve a quorum. <u>Actual outcome:</u> Working Group met again on 9 August.
9 August	Coho salmon run strength continues to be too weak to allow commercial fishing. <u>Dept. recommendation:</u> Working Group meet again on 11 August. <u>Working Group recommendation (#1):</u> Six hour period in Districts W-1 and W-2 on 11 August - Motion failed due to lack of consensus. <u>Working Group recommendation (#2):</u> If the coho salmon CPUE in the Bethel test fishery is 50 or greater for the next two tides, six hour period in Districts W-1 and W-2 on 11 August. <u>Actual outcome:</u> No commercial period; the Working Group met again on 11 August.
11 August	<u>Dept. recommendation:</u> Six hour period in Districts W-1 (time: 1300-1900) and W-2 (time: 1000 - 1600) on 12 August. <u>Working Group recommendation:</u> Six hour periods in Districts W-1 and W-2 on 12 August. <u>Actual outcome:</u> Six hour periods in Districts W-1 and W-2 on 12 August.
14 August	Coho salmon run strength is too weak to allow commercial fishing more than once per week. <u>Dept. recommendation:</u> Working Group meet again on 17 August. <u>Working Group recommendation (#1):</u> Six hour periods in Districts W-1 and W-2 on 16 August. <u>Working Group recommendation (#2):</u> Working Group meet again on 17 August. <u>Actual outcome:</u> Working Group met again on 17 August.

- continued -

Table 4. (4 of 4)

Date	Comment
17 August	<u>Dept. recommendation:</u> Six hour period in Districts W-1 (time: 1300-1900) and W-2 (time: 1000 - 1600) on 18 August. <u>Working Group recommendation (#1):</u> Six hour periods in Districts W-1 and W-2 on 18 August - motion failed due to lack of consensus. <u>Working Group recommendation (#2):</u> Working Group reconsidered and accepted their first motion. <u>Actual outcome:</u> Six hour period in Districts W-1 and W-2 on 18 August.
21 August	Coho salmon run strength is too weak to allow commercial fishing at this time. <u>Dept. recommendation:</u> Working Group meet again on 24 August. <u>Working Group recommendation:</u> Working Group meet again on 24 August. <u>Actual outcome:</u> Working Group met again on 24 August.
24 August	Coho salmon run strength continues to be too weak to allow commercial fishing. <u>Dept. recommendation:</u> Working Group meet again on 26 August. <u>Working Group recommendation:</u> Working Group meet again on 26 August. <u>Actual outcome:</u> Working Group met again on 25 August.
26 August	Coho salmon run strength continues to be too weak to allow commercial fishing. <u>Dept. recommendation:</u> Working Group meet again at the call of the Chair if coho run strength improves enough to allow commercial fishing. <u>Working Group recommendation:</u> None - the Working Group failed to achieve a quorum. <u>Actual outcome:</u> Working Group to meet again at the call of the Chair.

Table 5. Salmon processors and associated data, Kuskokwim Area, 1997.

<u>Processor</u>	<u>Product</u>	<u>District</u>
Hammer Inc. P.O. Box Bethel, AK 99559	Fresh Salmon Smoked Salmon	1
Inlet Fish Producers, Inc. P.O. Box 578 Bethel, AK 99559	Frozen Salmon Fresh Salmon Salmon Roe	1, 2, 4 and 5
North Alaska Fisheries, Inc. P.O. Box 92737 Anchorage, AK 99509	Fresh Salmon Frozen Salmon Salmon Roe	1
Woodbine Alaska Fish Co. P.O. Box 218 Egegik, AK 99579	Frozen Salmon Canned Salmon Salmon Roe	1, 2, 4 and 5

Table 6. Commercial salmon harvest and fishing effort by period in Kuskokwim River Districts 1 and 2, and both districts combined, 1997.

Period	Date	Hours	Permits	Chinook		Sockeye		Chum		Pink		Coho	
				Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE
<u>District 1</u>													
1	6/23	6	353	10,023	4.73	21,218	10.02	13,090	6.18	0	0.00	0	0.00
2	7/31	6	429	141	0.05	352	0.14	2,060	0.80	2	0.00	14,963	5.81
3	8/06	6	513	145	0.05	229	0.07	1,387	0.45	0	0.00	37,216	12.09
4	8/12	6	507	61	0.02	122	0.04	408	0.13	0	0.00	56,149	18.19
5	8/18	6	475	66	0.02	67	0.02	58	0.02	0	0.00	21,273	7.46
Subtotal		30	604	10,436		21,988		17,003		0		129,601	
<u>District 2</u>													
1	8/12	6	2	1	0.08	0	0.00	23	1.92	0	0.00	494	41.17
2	8/18	6	3	4	0.22	1	0.06	0	0.00	0	0.00	708	39.33
Subtotal		12	4	5		1		23		0		1,202	
Total													
Districts 1 & 2			607	10,441		21,989		17,026		2		130,803	

Table 7. Peak aerial survey salmon escapement estimates in Kuskokwim Area spawning tributaries by species, 1997^a.

Location	Date	Chinook	Sockeye	Coho	Chum
<u>KUSKOKWIM RIVER:</u>					
Holitna River	21-Jul	2,093	3,400	na	2,120
Kipchuk River	21-Jul	855	60	na	845
Salmon River (Aniak)	21-Jul	687	220	na	340
Aniak River	22-Jul	2,187	4,200	na	6,890
Holokuk River	22-Jul	165	0	na	350
Kasigluk River	28-Jul	12	0	na	2,300
Kisaralik River	28-Jul	439	0	na	200
Tuluksak River	28-Jul	173	0	na	990
Gagaryak River	29-Jul	364	0	na	880
Oskawalik River	29-Jul	1,470	0	na	530
Cheeneetnuk River	30-Jul	345	0	na	2,365
Salmon River ^b (Pitka Fk)	30-Jul	720	0	na	997
Tatlawiksuk River	30-Jul	415	0	na	1,896
<u>KUSKOKWIM BAY:</u>					
Kinegnak River	31-Jul	19	3,260	na	1,050
Kanektok River	02-Aug	8,080	27,100	na	3,270
Goodnews River Middle Fork	06-Aug	3,611	12,610	na	790
Goodnews River	06-Aug	1,445	19,843	na	1,565
Kanektok River	01-Sep	40	19,795	5,192	na
Arolik River	01-Sep	na	na	1,021	na
Unulak River	01-Sep	na	na	369	na
Salmon River	01-Sep	na	na	69	na

a Peak aerial salmon escapement index count. Aerial index counts do not represent total escapement, but reflect annual spawner abundance trends when made using standard survey methods under acceptable conditions.

b Survey conditions rated poor.

Table 8. Daily and cumulative estimates of fish passage at the Aniak River sonar site, 1997.

Date	Left Bank	Right Bank	Daily Count	Cumulative Count	Percent Passage
16-Jun	74	143	217	217	0
17-Jun	52	272	324	541	0
18-Jun	119	445	564	1,105	0
19-Jun	155	535	690	1,795	1
20-Jun	248	737	985	2,780	1
21-Jun	205	371	576	3,356	1
22-Jun	92	760	852	4,208	2
23-Jun	270	821	1,091	5,299	2
24-Jun	1,412	1,261	2,673	7,972	3
25-Jun	1,344	1,667	3,011	10,983	4
26-Jun	964	1,789	2,753	13,736	5
27-Jun	1,238	1,940	3,178	16,914	6
28-Jun	2,445	2,145	4,590	21,504	8
29-Jun	1,663	1,822	3,485	24,989	10
30-Jun	1,151	1,193	2,344	27,333	10
1-Jul	1,455	1,011	2,466	29,799	11
2-Jul	1,650	1,270	2,920	32,719	12
3-Jul	4,621	2,420	7,041	39,760	15
4-Jul	7,628	4,070	11,698	51,458	20
5-Jul	5,760	3,986	9,746	61,204	23
6-Jul	3,199	3,783	6,982	68,186	26
7-Jul	2,984	3,014	5,998	74,184	28
8-Jul	2,770	3,152	5,922	80,106	31
9-Jul	1,975	2,016	3,991	84,097	32
10-Jul	1,272	1,207	2,479	86,576	33
11-Jul	3,849	3,350	7,199	93,775	36
12-Jul	6,466	4,429	10,895	104,670	40
13-Jul	3,366	2,738	6,104	110,774	42
14-Jul	1,632	2,040	3,672	114,446	44
15-Jul	1,779	1,665	3,444	117,890	45
16-Jul	3,515	3,602	7,117	125,007	48
17-Jul	3,704	3,109	6,813	131,820	50
18-Jul	5,392	3,977	9,369	141,189	54
19-Jul	5,668	5,568	11,236	152,425	58
20-Jul	3,826	3,591	7,417	159,842	61
21-Jul	7,833	6,971	14,804	174,646	67
22-Jul	6,339	6,105	12,444	187,090	71
23-Jul	4,760	3,584	8,344	195,434	74
24-Jul	2,714	3,234	5,948	201,382	77
25-Jul	2,654	3,098	5,752	207,134	79
26-Jul	1,290	1,974	3,264	210,398	80
27-Jul	2,428	2,296	4,724	215,122	82
28-Jul	4,251	4,231	8,482	223,604	85
29-Jul	3,457	3,464	6,921	230,525	88
30-Jul	3,273	3,465	6,738	237,263	90
31-Jul	3,568	1,959	5,527	242,790	92
1-Aug	4,340	2,451	6,791	249,581	95
2-Aug	4,750	2,646	7,396	256,977	98
3-Aug	3,707	1,838	5,545	262,522	100
TOTAL	139,307	123,215	262,522	262,522	

Table 9. Quinhagak, District 4 commercial salmon harvest and effort by period, 1997.

Period	Date	Hours	Permits	Chinook		Sockeye		Chum		Pink		Coho	
				Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE
1	6/13	12	115	6,669	4.83	216	0.16	72	0.05				
2	6/16	12	95	6,358	5.58	411	0.36	279	0.24				
3	6/19	12	123	6,405	4.34	1,678	1.14	788	0.53				
4	6/23	12	67	3,338	4.15	1,623	2.02	1,129	1.40				
5	6/26	12	132	3,578	2.26	2,777	1.75	1,199	0.76				
6	6/30	12	160	2,541	1.32	9,771	5.09	2,498	1.30				
7	7/02	12	178	1,955	0.92	10,007	4.68	2,935	1.37				
8	7/04	12	161	1,381	0.71	8,757	4.53	2,839	1.47				
9	7/07	12	124	1,042	0.70	6,771	4.55	3,552	2.39				
10	7/09	12	153	722	0.39	6,806	3.71	4,638	2.53				
11	7/11	12	102	331	0.27	6,236	5.09	3,997	3.27				
12	7/14	12	4	26	0.54	279	5.81	134	2.79				
13	7/16	12	75	196	0.22	3,315	3.68	2,546	2.83				
14	7/18	12	76	190	0.21	3,005	3.29	2,590	2.84	2	0.00	2	0.00
15	7/21	12	65	197	0.25	2,452	3.14	2,503	3.21	3	0.00	7	0.01
16	7/23	12	56	106	0.16	1,370	2.04	2,210	3.29			36	0.05
17	7/25	12	53	78	0.12	974	1.53	1,281	2.01			62	0.10
18	7/28	12	47	45	0.08	645	1.14	714	1.27			71	0.13
19	7/30	12	46	78	0.14	483	0.88	718	1.30			335	0.61
20	8/01	12	14	28	0.17	331	1.97	359	2.14			389	2.32
21	8/04	12	58	59	0.08	442	0.64	652	0.94			1,946	2.80
22	8/06	12	54	58	0.09	321	0.50	381	0.59			1,589	2.45
23	8/08	12	53	23	0.04	176	0.28	134	0.21			1,602	2.52
24	8/13	12	62	31	0.04	205	0.28	100	0.13			4,382	5.89
25	8/15	12	70	27	0.03	166	0.20	106	0.13			5,095	6.07
26	8/18	12	56	13	0.02	66	0.10	28	0.04			6,931	10.31
27	8/20	12	61	10	0.01	97	0.13	26	0.04			5,551	7.58
28	8/22	12	62	11	0.01	75	0.10	12	0.02			2,493	3.35
29	8/25	12	47	9	0.02	50	0.09	13	0.02			1,036	1.84
30	8/28	12	35	5	0.01	57	0.14	12	0.03			1,335	3.18
31	9/03	12	0	<i>No Buyer</i>									
Total		372	289	35,510		69,562		38,445		5		32,862	

Table 10. Goodnews Bay, District 5 commercial salmon harvest and effort by period, 1997.

Period	Date	Hours	Permits	Chinook		Sockeye		Chum		Pink		Coho	
				Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE
1	6/27	12	25	359	1.20	1,664	5.55	540	1.80				
2	6/30	12	22	299	1.13	4,290	16.25	997	3.78				
3	7/02	12	26	292	0.94	4,325	13.86	1,284	4.12				
4	7/04	12	22	177	0.67	2,154	8.16	798	3.02				
5	7/07	12	29	145	0.42	2,868	8.24	1,389	3.99				
6	7/09	12	36	128	0.30	2,994	6.93	1,180	2.73				
7	7/11	12	38	162	0.36	3,285	7.20	1,036	2.27				
8	7/14	12	42	125	0.25	2,812	5.58	1,180	2.34				
9	7/16	12	22	74	0.28	1,262	4.78	582	2.20				
10	7/18	12	32	74	0.19	1,673	4.36	824	2.15				
11	7/21	12	30	68	0.19	1,300	3.61	820	2.28			1	0.00
12	7/23	12	23	34	0.12	767	2.78	591	2.14			3	0.01
13	7/25	12	17	23	0.11	411	2.01	206	1.01			0	
14	7/28	12	9	9	0.08	254	2.35	94	0.87			5	0.05
15	8/01	12	12	12	0.08	245	1.70	108	0.75			19	0.13
16	8/04	12	7	8	0.10	142	1.69	41	0.49			35	0.42
17	8/08	12	11	16	0.12	174	1.32	17	0.13			97	0.73
18	8/11	12	10	7	0.06	100	0.83	14	0.12			163	1.36
19	8/15	12	17	7	0.03	210	1.03	13	0.06			735	3.60
20	8/18	12	0	<i>No Buyer</i>									
21	8/20	12	21	11	0.04	214	0.85	4	0.02			828	3.29
22	8/22	12	18	6	0.03	155	0.72	4	0.02			629	2.91
23	8/25	12	17	3	0.01	152	0.75	7	0.03			468	2.29
Total		276	54	2,039		31,451		11,729		0		2,983	

Table 11. Preliminary outlook for the 1998 Kuskokwim Area commercial salmon harvest (in thousands of fish) by species and management district.

Species	Management District						Kuskokwim Area Total					
	Districts 1 and 2		District 4		District 5							
Chinook	20	to	40	10	to	20	2	to	3	32	to	63
Sockeye	60	to	90	60	to	80	30	to	50	150	to	210
Coho	500	to	700	50	to	90	10	to	30	560	to	820
Pink ^a	3	to	30	15	to	60	4	to	18	22	to	108
Chum	20	to	400	40	to	60	15	to	30	75	to	490
Total	603	to	1,260	175	to	310	61	to	131	839	to	1,691

^a Outlook is based on historical catches in even years only.

Table 12. 1997 Kuskokwim Area subsistence salmon project sampling summary.

COMMUNITY	TotalHH	CALENDARS		POSTCARDS		Household Surveys	Phone Surveys	Any Information	Subsist. Fished
		Mailed	Returned	Mailed	Returned				
Kipnuk	82	8	0	82	0	0	0	0	
Kwigillingok	36	3	0	35	0	0	0	0	
Kongiganak	<u>56</u>	<u>47</u>	<u>3</u>	<u>14</u>	<u>0</u>	<u>33</u>	<u>0</u>	<u>54</u>	<u>36</u>
NORTH KUSKOKWIM BAY	174	58	3	131	0	33	0	54	36
Tuntutuliak	86	57	1	11	1	52	0	65	52
Eek	68	58	18	13	0	48	0	62	38
Kasigluk	78	60	3	75	5	0	0	9	9
Nunapitchuk	97	81	14	17	4	77	0	97	80
Atmautiuk	50	45	9	12	3	33	0	48	40
Napakiak	68	54	15	11	1	53	0	68	49
Napaskiak	79	65	9	26	1	46	0	78	63
Oscarville	11	9	2	11	1	0	0	3	3
Bethel	1,424	535	63	834	113	0	398	560	314
Kwethluk	130	113	28	28	2	91	0	125	102
Akiachak	106	89	13	31	3	66	0	104	88
Akiak	55	48	6	16	2	33	0	54	43
Tuluksak	<u>66</u>	<u>58</u>	<u>8</u>	<u>17</u>	<u>?</u>	<u>45</u>	<u>0</u>	<u>66</u>	<u>55</u>
LOWER KUSKOKWIM RIVER	2,298	1,272	189	1,102	131	544	398	1,339	936
Lower Kalskag	65	52	7	11	4	39	0	62	44
Upper Kalskag	47	27	3	8	4	30	0	45	25
Aniak	151	111	18	15	4	127	0	145	109
Chuathbaluk	<u>26</u>	<u>22</u>	<u>5</u>	<u>4</u>	<u>0</u>	<u>20</u>	<u>0</u>	<u>26</u>	<u>21</u>
MIDDLE KUSKOKWIM RIVER	289	212	33	38	12	216	0	278	199
Crooked Creek	30	22	4	7	4	18	0	29	21
Red Devil	21	20	4	4	0	12	0	19	14
Sleetmute	35	32	9	2	3	24	0	35	27
Stony River	16	13	1	4	1	11	0	16	11
Lime Village	15	8	1	1	0	12	0	15	7
McGrath	123	64	7	34	0	0	85	92	34
Takotna	12	1		11	0	1	0	1	
Nikolai	22	18	3	2	0	18	0	21	9
Telida	<u>3</u>	<u>0</u>	<u>0</u>	<u>3</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
UPPER KUSKOKWIM RIVER	277	178	29	68	8	96	85	228	123
Quinhagak	125	104	18	22	3	86	0	118	98
Goodnews Bay	60	37	4	5	0	49	0	58	28
Platinum	<u>14</u>	<u>7</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>10</u>	<u>0</u>	<u>12</u>	<u>4</u>
SOUTH KUSKOKWIM BAY	199	148	22	29	3	145	0	188	130
Mekoryuk	54	10	0	54	0	0	0	0	
Newtok	49	0	0	46	0	0	0	0	
Nightmute	25	3	0	25	0	0	0	0	
Toksook Bay	74	5	2	72	0	0	0	2	2
Tununak	<u>69</u>	<u>2</u>	<u>0</u>	<u>69</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	
BERING SEA COAST	271	20	2	266	0	0	0	2	2
KUSKOKWIM AREA TOTALS	3,508	1,888	278	1,634	161	1,034	483	2,089	1,426

* Blanks indicate no data are available.

Table 13. 1997 Kuskokwim Area subsistence salmon harvests.

COMMUNITY	HOUSEHOLDS		CHINOOK		CHUM		SCKEYE		COHO	
	Total	Contacted	Reported	Estimated	Reported	Estimated	Reported	Estimated	Reported	Estimated
			Harvest	Total*	Harvest	Total*	Harvest	Total*	Harvest	Total*
Kipruk	82	0	0		0		0		0	
Kwigillingok	36	0	0		0		0		0	
Kongiganak	<u>56</u>	<u>42</u>	<u>1,046</u>	<u>1,609</u>	<u>586</u>	<u>902</u>	<u>733</u>	<u>1,128</u>	<u>402</u>	<u>618</u>
N. KUSKOKWIM BAY	174	42	1,046	1,609	586	902	733	1,128	402	618
Tuntutuliak	66	50	2,702	3,730	2,079	2,877	1,481	2,048	483	669
Eck	68	55	1,700	2,253	490	649	438	584	61	80
Kasigluk	78	9	880	880	1,278	1,278	499	499	518	518
Nunapitchuk	97	77	3,238	4,086	2,214	2,794	1,847	2,330	691	872
Atmautluak	50	40	1,435	1,768	1,205	1,484	586	724	419	531
Napakiaik	68	57	2,273	2,873	1,150	1,458	1,149	1,455	134	168
Napaskiak	79	55	3,131	4,887	1,662	2,589	1,487	2,329	418	656
Oscarville	11	3	512	512	35	35	78	76	60	60
Bethel	1,424	537	11,742	21,253	4,914	8,790	5,741	10,868	8,625	15,108
Kwethluk	130	104	5,350	6,872	2,766	3,554	2,784	3,581	930	1,193
Akiachak	106	77	5,148	7,414	1,249	1,768	2,108	3,014	307	441
Akiak	55	43	2,559	3,378	1,306	1,725	1,059	1,398	644	846
Tuluksak	<u>66</u>	<u>52</u>	<u>4,377</u>	<u>5,627</u>	<u>2,240</u>	<u>2,887</u>	<u>1,214</u>	<u>1,556</u>	<u>337</u>	<u>434</u>
LOWER KUSKOKWIM	2,298	1,159	45,047	65,533	22,588	31,888	20,471	30,466	13,627	21,578
Lower Kalskag	65	52	2,634	3,549	1,100	1,487	1,077	1,455	482	652
Upper Kalskag	47	36	751	1,107	275	405	170	251	530	781
Aniak	151	135	3,436	3,794	1,587	1,747	1,020	1,124	1,356	1,494
Chuathbaluk	<u>26</u>	<u>22</u>	<u>1,058</u>	<u>1,290</u>	<u>1,012</u>	<u>1,244</u>	<u>714</u>	<u>881</u>	<u>176</u>	<u>217</u>
MIDDLE KUSKOKWIM	289	245	7,879	9,740	3,974	4,883	2,981	3,711	2,544	3,144
Crooked Creek	30	27	833	944	272	311	307	350	228	261
Red Devil	21	16	319	452	389	551	492	697	982	1,391
Sleetmute	35	35	1,171	1,171	417	417	1,458	1,458	419	419
Stony River	16	14	730	863	500	591	1,360	1,607	381	450
Lime Village	15	14	49	59	210	251	550	660	236	277
McGrath	123	90	748	974	104	131	0		599	753
Takotna	12	1					0		0	
Nikolai	22	20	201	232	56	65	0		122	141
Telida	<u>3</u>	<u>0</u>	<u>0</u>		<u>0</u>		<u>0</u>		<u>0</u>	
UPPER KUSKOKWIM	277	217	4,051	4,695	1,928	2,297	4,187	4,792	2,966	3,692
KUSKOKWIM RIVER	3,038	1,663	58,023	81,577	29,076	39,970	28,372	40,097	19,539	29,032
Quinhagak	125	99	2,661	3,433	475	600	431	556	975	1,264
Goodnews Bay	60	55	395	437	120	133	427	472	310	343
Platinum	<u>14</u>	<u>12</u>	<u>12</u>	<u>12</u>			<u>137</u>	<u>137</u>	<u>54</u>	<u>54</u>
S. KUSKOKWIM BAY	199	166	3,068	3,882	595	733	995	1,165	1,339	1,661
Mekoryuk	54	0	0		0		0		0	
Newtok	49	0	0		0		0		0	
Nightmute	25	0	0		0		0		0	
Toksook Bay	74	2	47	47	273	273	8	8	21	21
Tununak	<u>69</u>	<u>0</u>	<u>0</u>		<u>0</u>		<u>0</u>		<u>0</u>	
BERING SEA COAST	271	2	47	47	273	273	8	8	21	21
KUSKOKWIM TOTALS	3,508	1,831	61,138	85,506	29,944	40,976	29,375	41,270	20,899	30,714

* If fewer than 30 households or less than 50% of the community were contacted, then reported harvest is used for estimated harvest.

Table 14. Gear types used for subsistence salmon fishing in the Kuskokwim Area during 1997.

Community	Number of Households Reporting Subsistence Fishing Gear Used ^a						
	Setnet	Drift Net	Fish Wheel	Rod and Reel	Seine	Spear	Other
Kongiganak	1	22	0	0	0	0	0
NORTH KUSKOKWIM BAY	1	22	0	0	0	0	0
Tuntutuliak	4	37	0	0	0	0	0
Eek	10	17	0	0	0	0	0
Kasigluk	1	4	0	0	0	0	0
Nunapitchuk	3	57	0	0	0	0	0
Atmautluak	3	23	0	0	0	0	0
Napakiak	24	26	0	0	0	0	0
Napaskiak	18	35	0	0	0	0	0
Oscarville	1	1	0	0	0	0	0
Bethel	43	195	0	49	0	0	0
Kwethluk	37	60	0	1	0	0	0
Akiachak	19	49	0	0	0	0	0
Akiak	12	22	0	0	0	0	0
Tuluksak	19	29	0	1	0	0	0
LOWER KUSKOKWIM RIVER	194	555	0	51	0	0	0
Lower Kalskag	12	27	0	1	0	0	0
Upper Kalskag	4	14	0	2	0	0	0
Aniak	10	59	1	54	0	0	0
Chuathbaluk	1	14	0	2	0	0	0
MIDDLE KUSKOKWIM RIVER	27	114	1	59	0	0	0
Crooked Creek	4	12	0	3	0	0	0
Red Devil	6	3	0	3	0	0	0
Sleetmute	8	17	0	6	0	0	0
Stony River	6	4	0	1	0	0	0
Lime Village	5	0	0	0	0	0	0
McGrath	15	0	1	12	0	0	0
Nikolai	5	0	0	4	0	0	0
UPPER KUSKOKWIM RIVER	49	36	1	29	0	0	0
Quinhagak	8	52	0	10	0	0	0
Goodnews Bay	8	20	0	3	0	0	0
Platinum	2	2	0	0	0	0	0
SOUTH KUSKOKWIM BAY	18	74	0	13	0	0	0
KUSKOKWIM AREA TOTALS	289	801	2	152	0	0	0

a. Households using more than one type of gear are listed for each gear type they reported. Communities where gear type data were not available are not listed.

Table 15. Subsistence salmon harvested in conjunction with commercial salmon fishing in the Kuskokwim Area, 1997.

	HOUSEHOLDS REPORTING		NUMBER OF SALMON RETAINED FROM COMMERCIAL CATCH FOR SUBSISTENCE USE			
	Commercial Fishing	Retained Commercial Caught Salmon for Subsistence	Chinook	Chum	Sockeye	Coho
Kongiganak	<u>13</u>	<u>2</u>	<u>5</u>	<u>25</u>	<u>5</u>	<u>5</u>
NORTH KUSKOKWIM BAY	13	2	5	25	5	5
Tuntutuliak	29	7	9	5	9	4
Eek	30	5	75	6	5	8
Nunapitchuk	38	4	84	65	30	40
Atmautluak	20	5	37	50	30	6
Napakiak	21	1	0	0	0	30
Napaskiak	21	3	0	0	0	24
Kwethluk	44	5	2	2	3	2
Akiachak	37	7	108	90	73	25
Akiak	12	3	5	5	5	17
Tuluksak	<u>20</u>	<u>3</u>	<u>5</u>	<u>0</u>	<u>2</u>	<u>4</u>
LOWER KUSKOKWIM RIVER	272	43	325	223	157	160
Lower Kalskag	3	0	0	0	0	0
Upper Kalskag	3	0	0	0	0	0
Aniak	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
MIDDLE KUSKOKWIM RIVER	7	0	0	0	0	0
Crooked Creek	1	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Sleetmute	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
UPPER KUSKOKWIM RIVER	2	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
KUSKOKWIM RIVER	294	45	330	248	162	165
Quinhagak	53	20	57	8	56	104
Goodnews Bay	21	1	0	0	0	0
Platinum	<u>4</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
SOUTH KUSKOKWIM BAY	78	21	57	8	56	104
KUSKOKWIM AREA TOTALS	372	66	387	256	218	269

Note: Data are based upon household surveys and are not expanded. Households in Kipruk, Kwigillingok, Kasigluk, Oscarville, Bethel and communities in the Bering Sea Coast region were not asked this survey question.

Table 16. Quality of Kuskokwim Area subsistence salmon fishing, 1997.

COMMUNITY	Percent of households reporting fishing success as "Very Good or Average" and "Poor"							
	CHINOOK		CHUM		SOCKEYE		COHO	
	Very Good or Average	Poor	Very Good or Average	Poor	Very Good or Average	Poor	Very Good or Average	Poor
Kongiganak	<u>90</u>	<u>10</u>	<u>47</u>	<u>53</u>	<u>82</u>	<u>18</u>	<u>50</u>	<u>50</u>
NORTH KUSKOKWIM BAY	90	10	47	53	82	18	50	50
Tuntutuliak	83	17	64	36	87	13	69	31
Eek	62	38	43	57	86	14	40	60
Kasigluk	60	40	50	50	75	25	20	80
Nunapitchuk	79	21	46	54	95	5	62	38
Atmautluak	47	53	67	33	88	13	67	33
Napakiak	70	30	59	41	76	24	67	33
Napaskiak	97	3	63	37	87	13	77	23
Oscarville	100	0	0	100	100	0	100	0
Bethel	77	23	56	44	79	21	71	29
Kwethluk	86	14	48	52	83	18	67	33
Akiachak	86	14	24	76	66	34	56	44
Akiak	75	25	36	64	75	25	64	36
Tuluksak	<u>88</u>	<u>12</u>	<u>37</u>	<u>63</u>	<u>83</u>	<u>17</u>	<u>93</u>	<u>7</u>
LOWER KUSKOKWIM RIVER	79	21	50	50	82	18	68	32
Lower Kalskag	84	16	94	6	92	8	100	0
Upper Kalskag	60	40	38	63	80	20	100	0
Aniak	83	17	29	71	67	33	76	24
Chuathbaluk	<u>92</u>	<u>8</u>	<u>33</u>	<u>67</u>	<u>83</u>	<u>17</u>	<u>67</u>	<u>33</u>
MIDDLE KUSKOKWIM RIVER	82	18	49	51	77	23	80	20
Crooked Creek	83	17	44	56	60	40	88	13
Red Devil	86	14	50	50	100	0	100	0
Sleetmute	94	6	38	62	92	8	93	7
Stony River	67	33	40	60	100	0	50	50
Lime Village	50	50	67	33	100	0	100	0
McGrath	89	11	50	50			88	13
Nikolai	<u>50</u>	<u>50</u>	<u>33</u>	<u>67</u>			<u>50</u>	<u>50</u>
UPPER KUSKOKWIM RIVER	81	19	44	56	88	12	83	17
Quinhagak	55	45	47	53	60	40	57	43
Goodnews Bay	47	53	73	27	71	29	53	47
Platinum	0	100			0	100	0	100
SOUTH KUSKOKWIM BAY	51	49	57	43	61	39	53	48
KUSKOKWIM AREA TOTAL	78	22	50	50	80	20	70	30

Note: There were no responses to this survey question by Takotna, Telida, Kipnuk, Kwigillingok and communities from the Bering Sea Coast region. Blanks indicate no data available.

Table 17. Kuskokwim area Pacific herring proportion of biomass by age class, 1997.

District	Age (years)												Total weight (st)	Total %	Percent 9+ yrs	
	2	3	4	5	6	7	8	9	10	11	12	13+				
Commercial catch^a																
Security Cove					3.5	10.3	12.5	36.4	21.8	2.8	6.7	6.0	892	100.0	73.7	
Goodnews Bay			0.1	0.5	6.1	7.5	5.3	38.2	23.3	7.9	7.0	4.2	805	100.1	80.6	
Cape Avinof			0.1	0.3	2.5	13.5	8.1	35.1	15.4	8.1	8.4	8.4	687	99.9	75.4	
Nelson Island					0.4	4.4	4.3	26.6	22.2	12.2	11.2	18.8	778	100.1	91.0	
Nunivak Island													0	0.0	0.0	
All Districts			0.0	0.2	3.2	8.8	7.7	34.2	20.9	7.6	8.3	9.2	3162	100.0	80.1	
Test Fishery^b																
Security Cove			23.7	7.9	15.1	10.6	6.2	19.6	9.9	2.2	2.5	2.7	4640	100.4	36.9	
Goodnews Bay			20.4	8.0	16.6	10.4	6.0	17.8	10.9	3.1	2.5	4.2	4752	99.9	38.5	
Cape Avinof		0.2	24.5	3.6	11.0	17.7	6.6	20.6	7.7	3.4	2.2	2.6	4616	100.1	36.5	
Nelson Island		0.1	18.1	2.7	11.7	14.9	5.8	22.0	10.0	4.3	4.3	6.1	7909	100.0	46.7	
Nunivak Island		0.1	20.1	3.0	13.0	16.0	6.0	21.5	8.7	3.4	3.5	4.9	3801	100.2	42.0	
All Districts		0.1	21.0	4.8	13.3	14.0	6.1	20.5	9.5	3.4	3.1	4.3	25718	100.1	40.9	

a Commercial drift gill net

b ADF&G variable mesh gill net

Table 18. Kuskokwim area Pacific herring age frequency by district, 1997.

District	Age (years)											Sample Size
	3	4	5	6	7	8	9	10	11	12	13+	
Commercial catch^a												
Security Cove				4.2	11.5	13.2	37.2	20.6	2.5	5.9	4.8	355
Goodnews Bay		0.3	0.8	8.3	8.9	5.7	38.7	21.5	6.7	5.7	3.5	372
Cape Avinof												
Kwigilingok				4.0	16.8	8.4	34.8	14.6	7.2	6.9	7.4	405
Kipnuk		1.1	2.2	1.1	11.8	9.7	35.5	15.1	8.6	8.6	6.5	93
Nelson Island				0.6	5.2	4.7	28.4	22.3	11.6	10.2	17.1	363
Nunivak Island					12.5	8.3	29.2	12.5	4.2	12.5	20.8	24
All Districts		0.1	0.3	4.0	10.8	8.1	34.7	19.2	7.1	7.3	8.3	1612
Test Fishery^b												
Security Cove		41.8	11.3	17.2	8.9	3.4	10.1	4.4	1.2	0.8	0.9	859
Goodnews Bay		31.1	9.8	18.1	9.6	5.0	13.3	7.2	1.9	1.5	2.5	1317
Cape Avinof	0.6	44.2	4.7	12.3	15.4	4.8	11.5	3.7	1.4	0.6	0.8	1043
Nelson Island	0.3	33.4	3.6	14.3	14.8	4.8	15.7	5.7	2.3	2.3	3.0	1559
Nunivak Island				11.5	23.1	9.6	34.6	9.6	7.7	1.9	1.9	52
All Districts	0.2	36.2	6.9	15.4	12.5	4.6	13.3	5.5	1.8	1.4	2.0	4830

a Commercial drift gill net

b ADF&G variable mesh gill net

Table 19. Summary of Pacific herring commercial harvest by fishing period for Kuskokwim Area fishing districts, Alaska, 1997

District	Period	Date	Time	Total hours	Harvest (st)
Security Cove	1	5/07	1900-2230	3.5	329.6
	2	5/08	0730-1030	3.0	195.8
	3	5/08	1930-2330	4.0	366.8
			Total	10.5	892.2
Goodnews Bay	1	5/16	1400-1800	4.0	33.3
	2	5/17	1400-1900	5.0	14.4
	3	5/19	1530-2030	5.0	53.1
	4	5/20	0330-0930	6.0	191.9
	5	5/20	1600-2100	5.0	94.3
	6	5/21	0400-1000	6.0	219.1
	7	5/21	1600-2200	6.0	53.2
	8	5/22	0530-1100	6.0	83.7
	9	5/23	0600-1200	6.0	48.6
	10	5/24	0600-1100	5.0	10.0
	11	5/24	1900-2400	5.0	2.7
	12	5/25	0700-1300	6.0	0.8
		Total	65.0	805.2	
Cape Avinof	1	5/21	2000-2400	4.0	105.7
	2	5/22	0800-1400	6.0	128.9
	3	5/22-23	2000-0200	6.0	172.5
	4	5/23	0900-1500	6.0	148.7
	5	5/23-24	2200-0200	4.0	131.3
		Total	20.0	687.0	
Nelson Island	1	5/20-21	2100-0100	4.0	304.0
	2	5/21	0900-1300	4.0	403.5
	3	5/22	1100-1300	2.0	70.7
		Total	10.0	778.2	
Nunivak Island	1	5/21	1700-2300	6.0	0.0
	2	5/24-5/27	1800-1000	64.0	0.0
			Total	70.0	0.0

Table 20. Projections of Pacific herring spawning biomass and harvest for commercial fishing districts in the Kuskokwim Area, Alaska, 1997.

District	1997 Projection ^a			Exploitation Rate (%)
	Biomass (st)	Threshold (st) ^b	Harvest (st)	
Security Cove	4,640	1,200	928	20
Goodnews Bay	4,752	1,200	950	20
Cape Avinof	3,737	500	561	15
Nelson Island	5,094	3,000	764	15
Nunivak Island	3,801	1,500	760	20
Total	22,024		3,963	

a Preseason projection. Projection may be adjusted based on inseason biomass estimates.

b Threshold biomass needed to allow a commercial fishery from 5 AAC 27.060 Bering Sea Herring Fishery Management Plan

Table 21. 1997 commercial salmon harvest and effort by period for statistical area 335-11.

Period	Date	Hours	Permits	Chinook		Sockeye		Coho		Pink		Chum	
				Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE
1	6/23	6	81	2,171	4.47	7,745	15.94					4,540	9.34
2	7/31	6	108	44	0.07	118	0.18	4,460	6.88			559	0.86
3	8/06	6	92	29	0.05	126	0.23	4,350	7.88			120	0.22
4	8/12	6	73	5	0.01	40	0.09	4,095	9.35			36	0.08
5	8/18	6	65	8	0.02	43	0.11	5,327	13.66			24	0.06
Total		30	158	2,257		8,072		18,232		0		5,279	

Table 22. 1997 commercial salmon harvest and effort by period for statistical area 335-12.

Period	Date	Hours	Permits	Chinook		Sockeye		Coho		Pink		Chum	
				Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE
1	6/23	6	274	7,852	4.78	13,473	8.20					8,550	5.20
2	7/31	6	322	97	0.05	234	0.12	10,503	5.44	2		1,501	0.78
3	8/06	6	280	62	0.04	80	0.05	15,689	9.34			662	0.39
4	8/12	6	261	33	0.02	40	0.03	28,857	18.32			269	0.17
5	8/18	6	234	19	0.01	18	0.01	6,622	4.72			28	0.02
		30	449	8,063		13,845		61,671		2		11,010	

Table 23. 1997 commercial salmon harvest and effort by period for statistical area 335-13.

Period	Date	Hours	Permits	Chinook		Sockeye		Coho		Pink		Chum	
				Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE
3	8/06	6	105	37	0.06	17	0.03	8,856	14.06			201	0.32
4	8/12	6	121	17	0.02	36	0.05	11,622	16.01			13	0.02
5	8/18	6	116	39	0.06	4	0.01	4,421	6.35			5	0.01
		18	170	93		57		24,899		0		219	

Table 24. 1997 commercial salmon harvest and effort by period for statistical area 335-14.

Period	Date	Hours	Permits	Chinook		Sockeye		Coho		Pink		Chum	
				Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE	Number	CPUE
3	8/06	6	37	17	0.08	6	0.03	8,321	37.48			404	1.82
4	8/12	6	56	6	0.02	6	0.02	11,575	34.45			90	0.27
5	8/18	6	60			2	0.01	4,903	13.62			1	
		18	79	23		14		24,799		0		495	

FIGURES



Figure 1. Kuskokwim Area map showing salmon management districts and escapement monitoring projects.

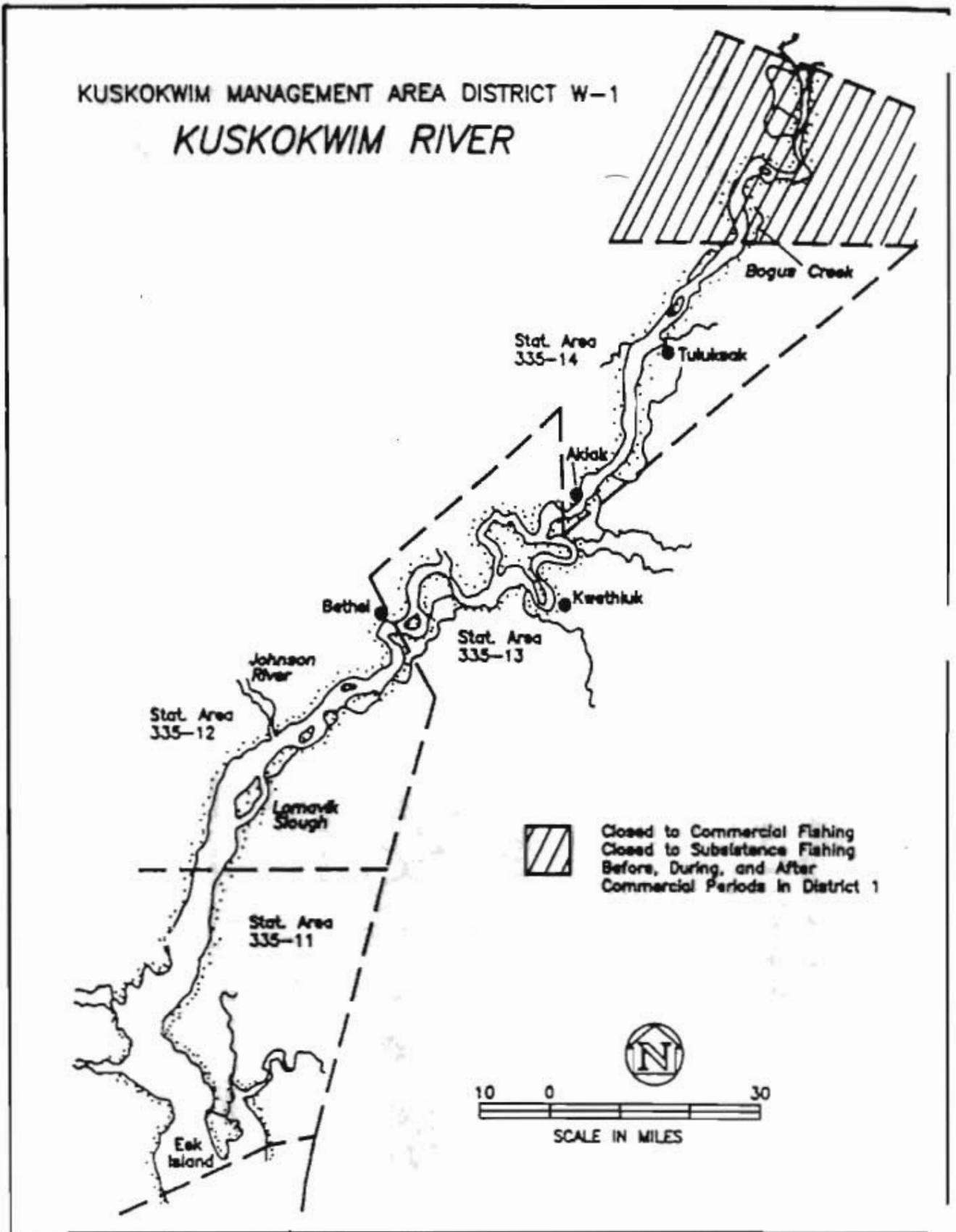


Figure 2. Kuskokwim Management Area, District 1.

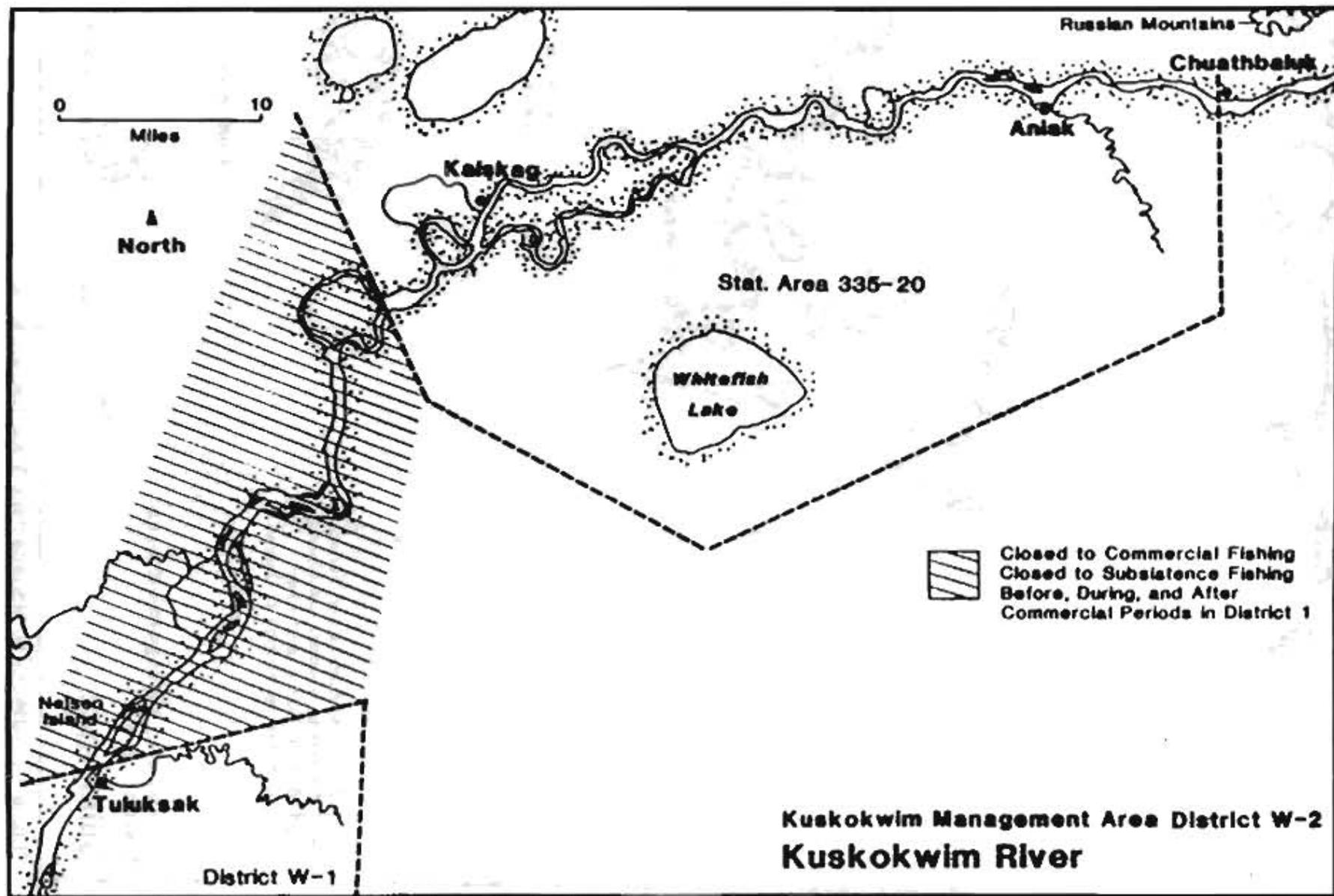


Figure 3. Kuskokwim Management Area, District W-2

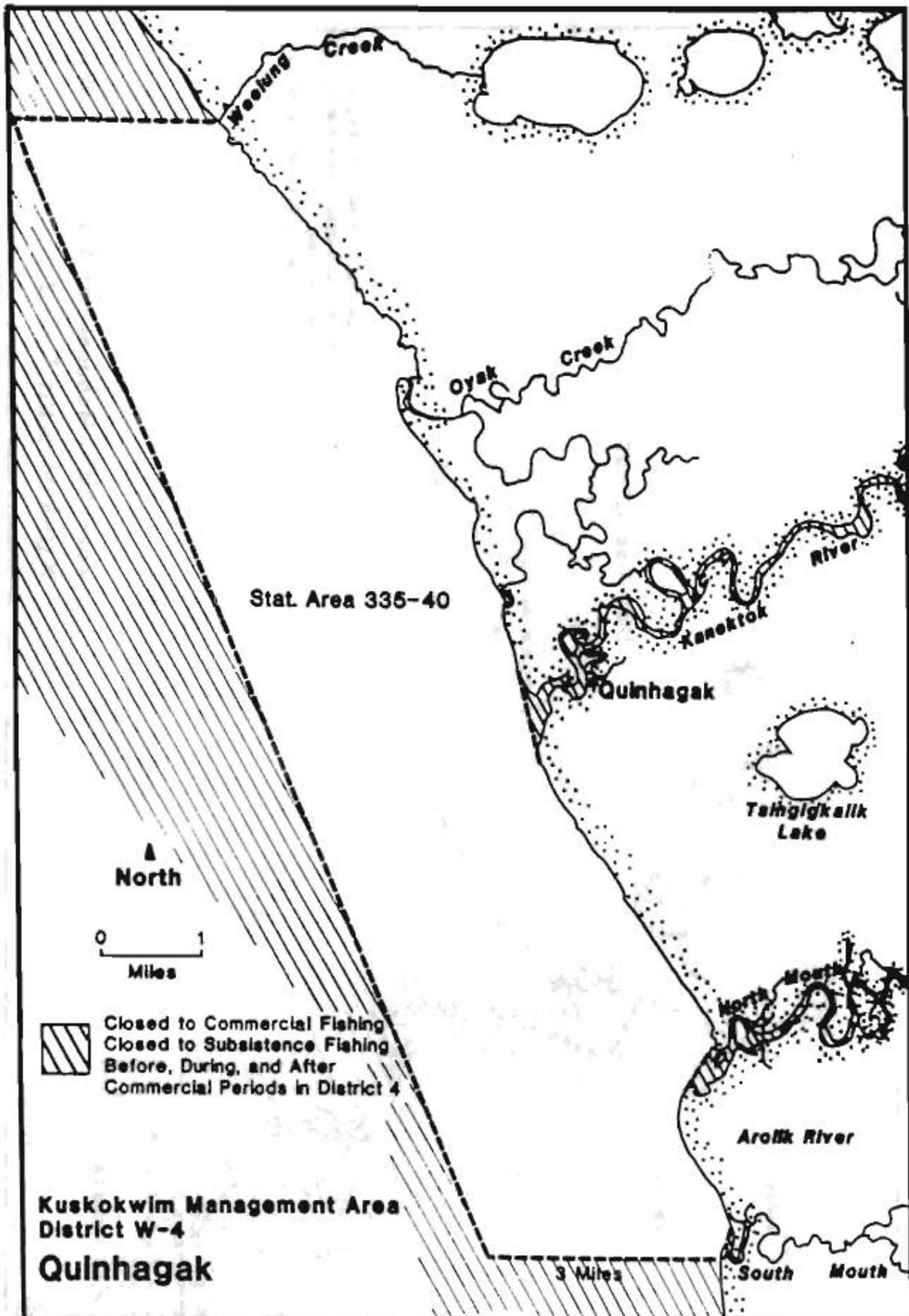


Figure 4 . Kuskokwim Management Area, District W-4

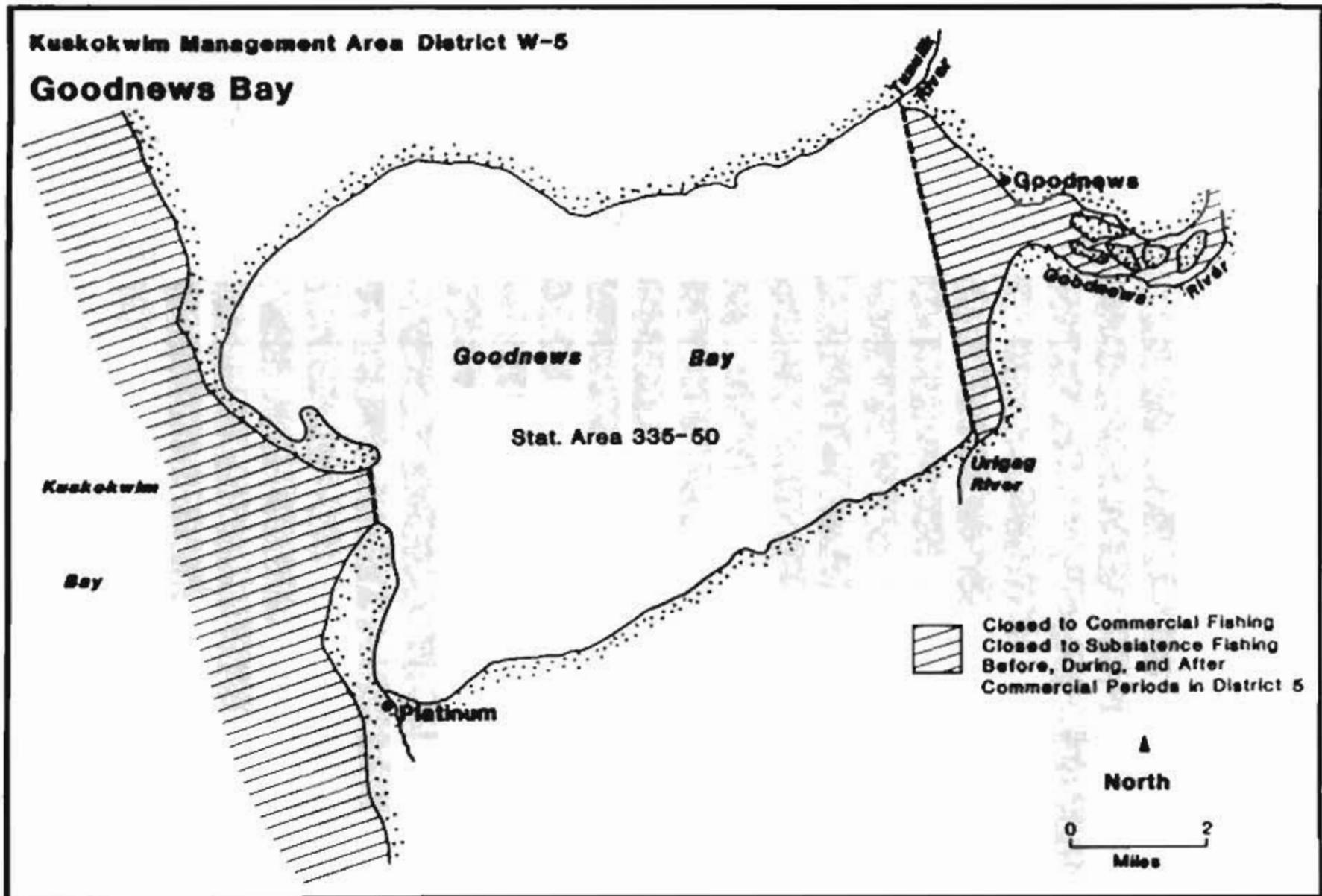


Figure 5 . Kuskokwim Management Area, District W-5

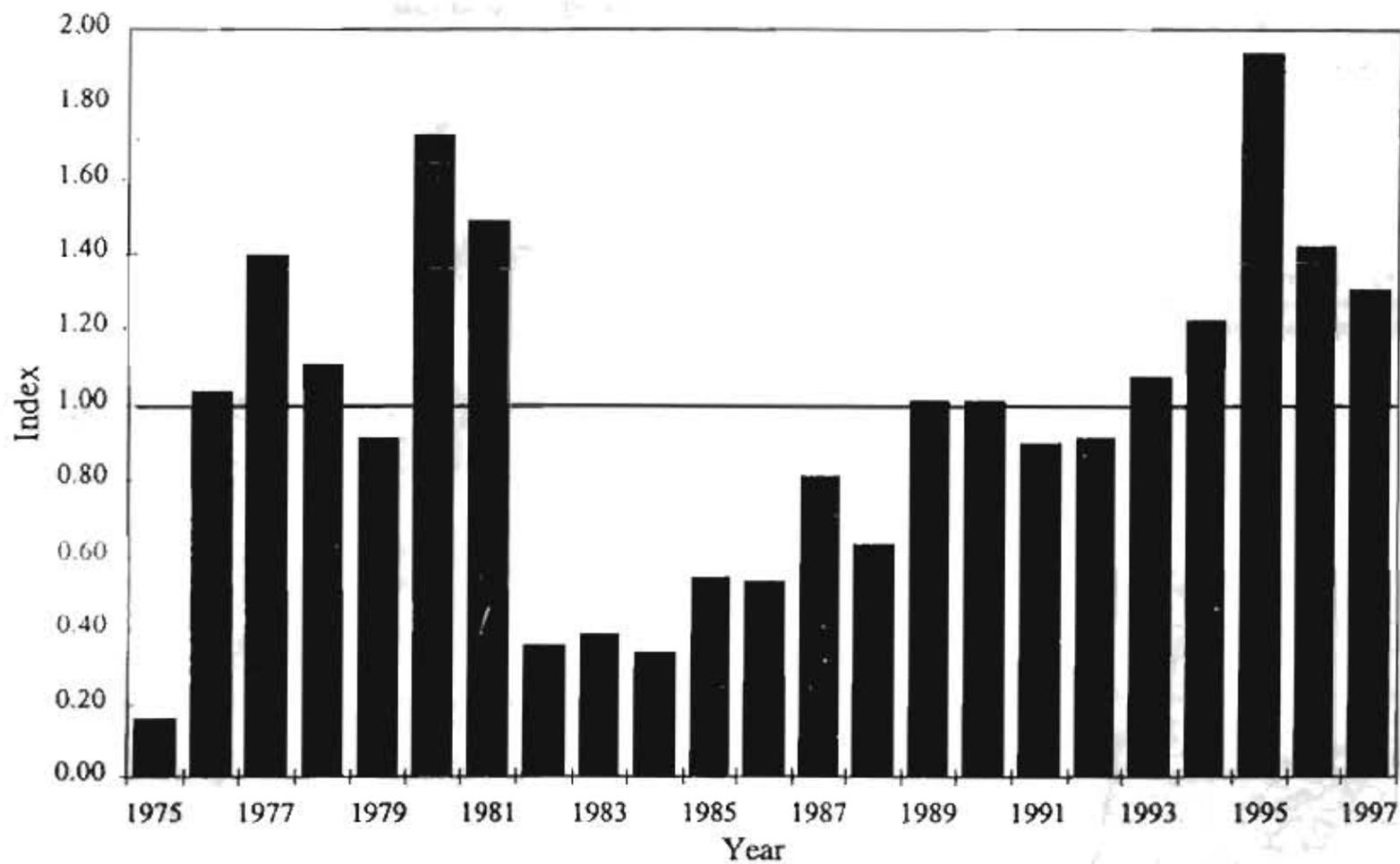


Figure 6. Kuskokwim River chinook salmon escapement index, 1975-1997. The index is computed as the median relative escapement of all systems for which data of adequate quality is available. The relative escapement for a system is the proportion of the biological escapement goal (BEG) achieved, if a BEG has been established, and the proportion of the median historical escapement achieved otherwise.

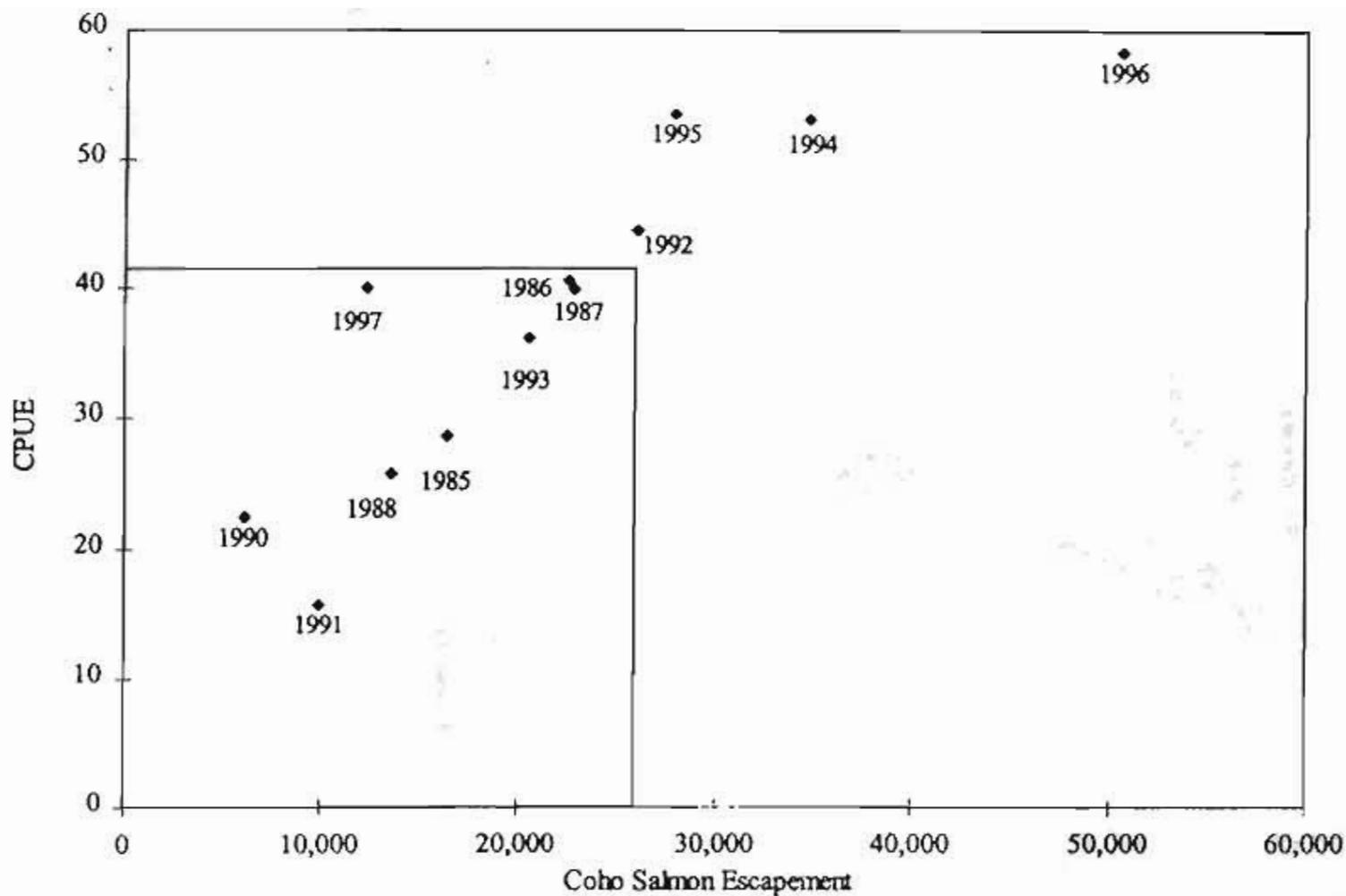


Figure 7. Relationship between annual coho salmon escapement at Kogrukluk River weir and the annual average commercial CPUE between 1 August and 21 August in District W - 2.

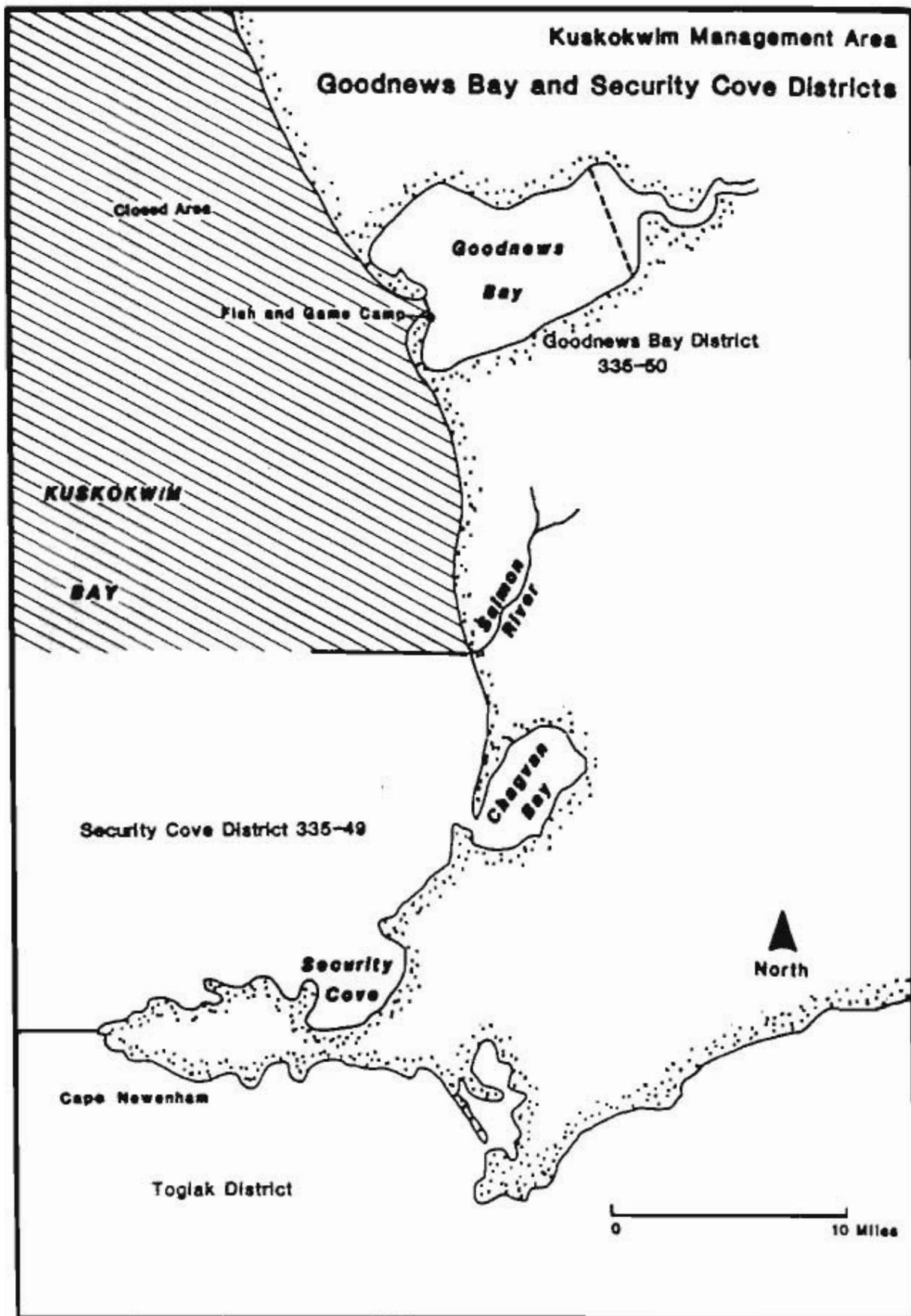


Figure 8. Goodnews Bay and Security Cove Herring Districts

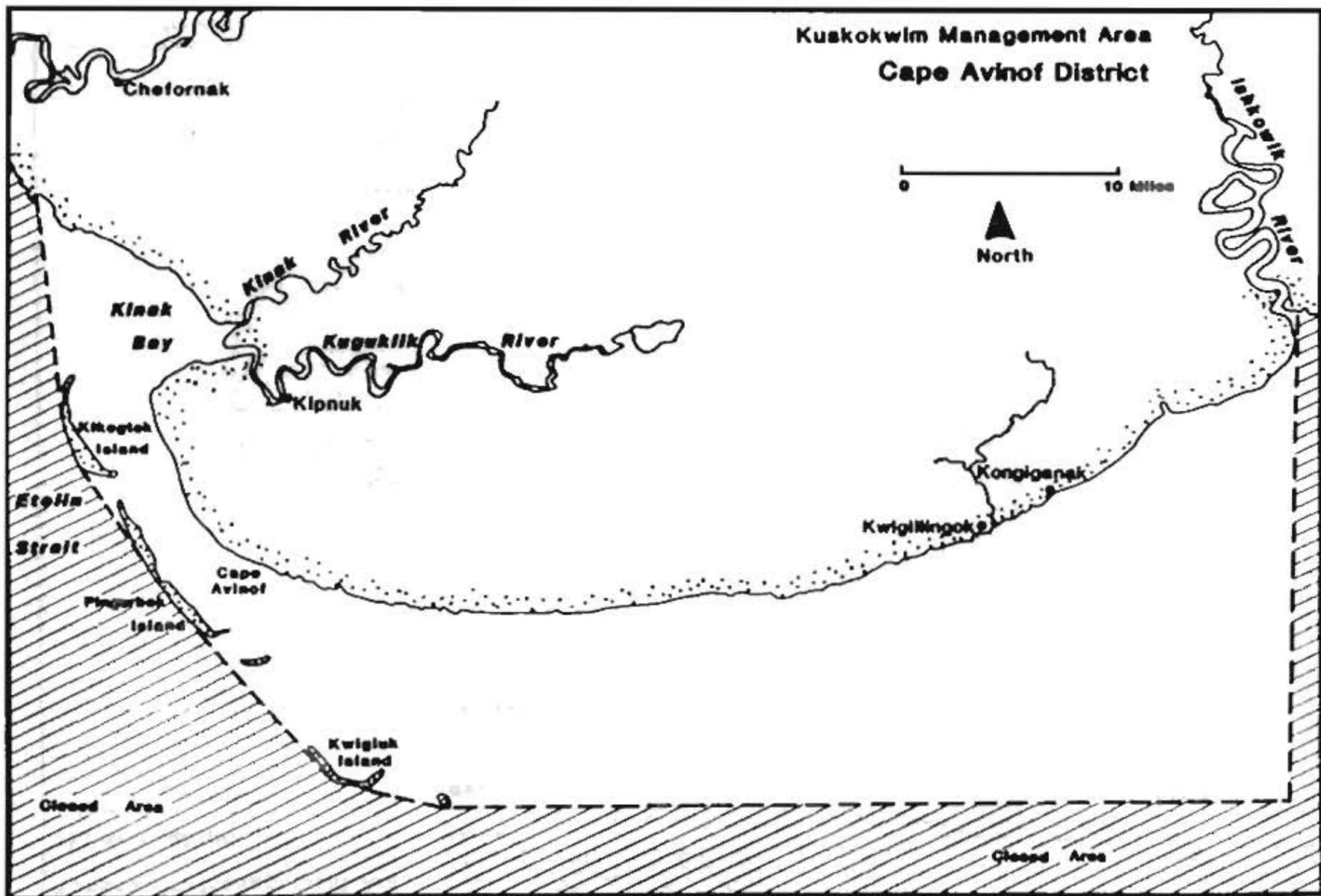


Figure 9. Cape Avinof Herring District

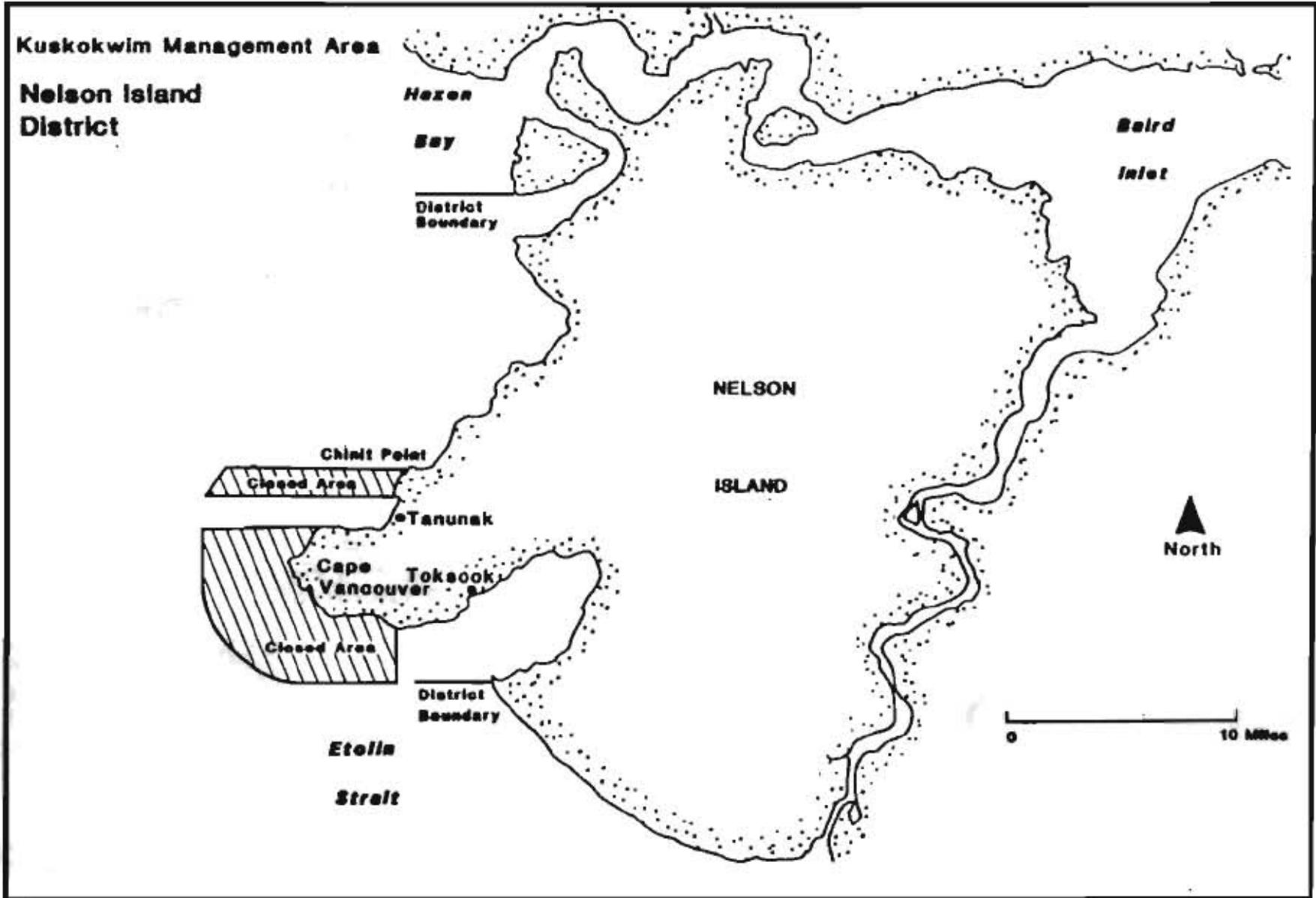


Figure 10 Nelson Island Herring District

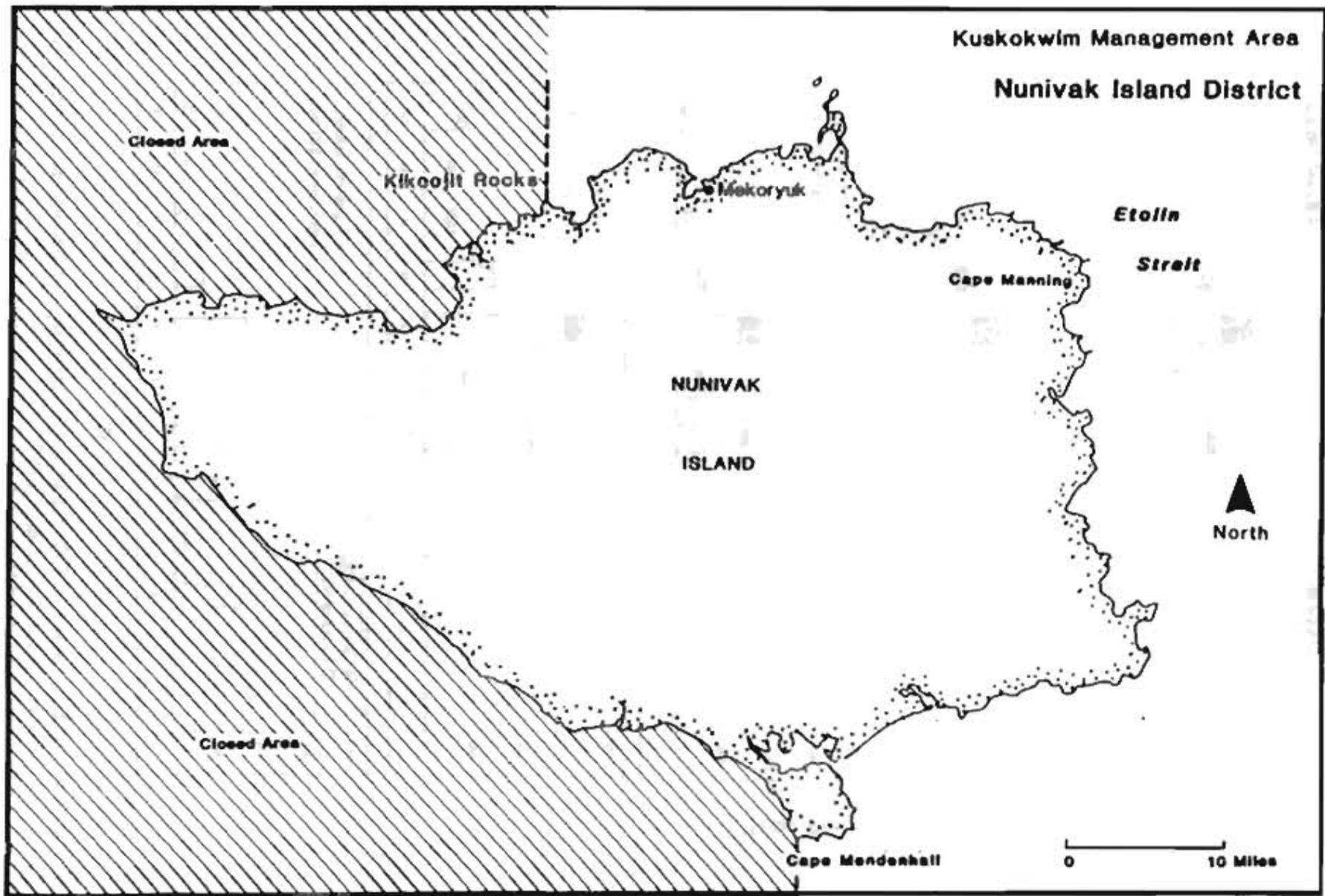


Figure 11. Nunivak Island Herring District

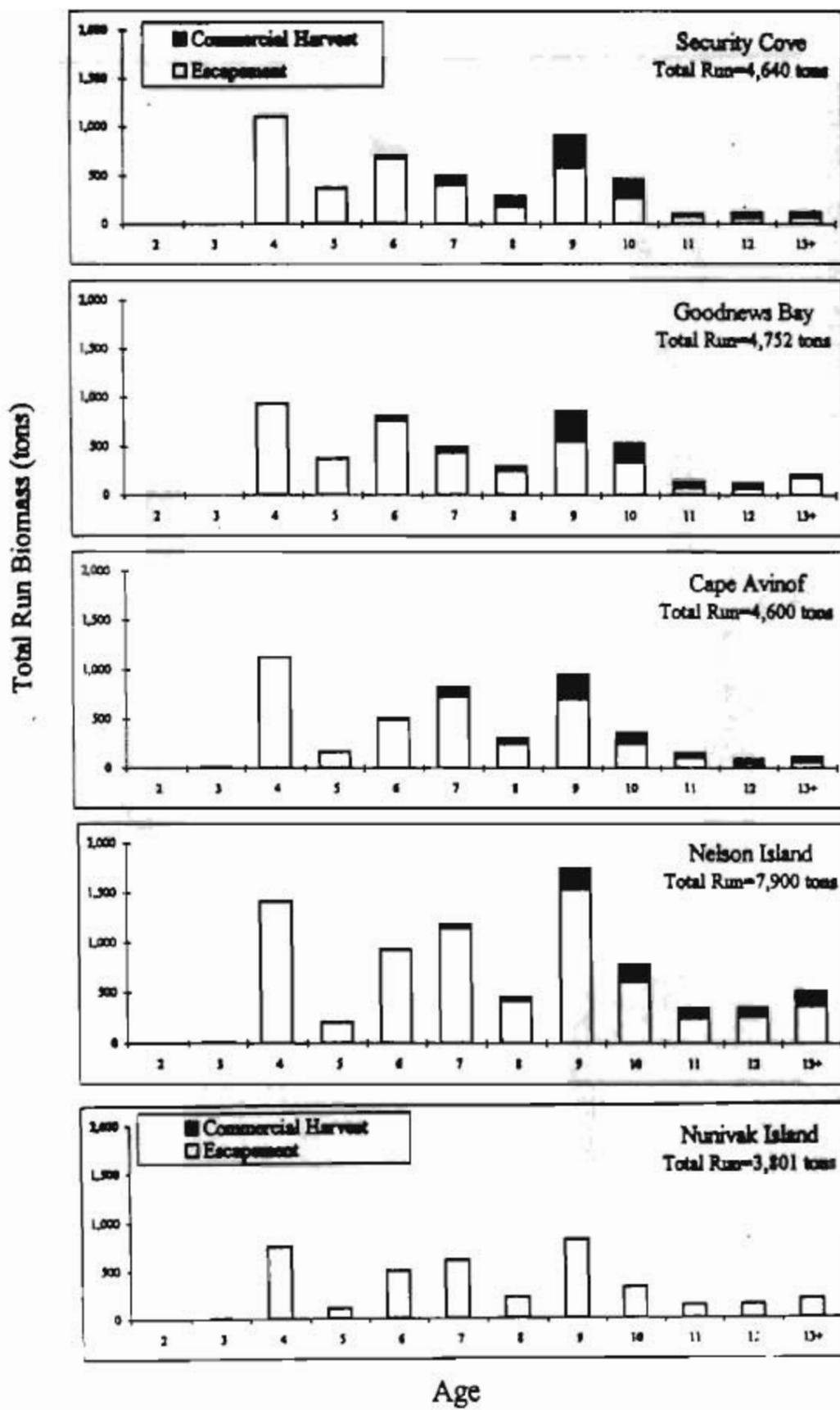


Figure 12. Age composition of Pacific herring in spawning populations and commercial harvests, Kuskokwim Area, 1997.

APPENDICES

APPENDIX A

Appendix A.1. Fish species commonly found in the Kuskokwim Area.

Species Code	Genus and Species ^a	Common Name ^a
110	<i>Gadus macrocephalus</i>	Pacific Cod
113	<i>Eleginus gracilis</i>	Saffron Cod
129	<i>Platichthys stellatus</i>	Starry Flounder
122	<i>Pleuronectes glacialis</i>	Arctic Flounder
127	<i>Pleuronectes aspera</i>	Yellowfin Sole
128	<i>Pleuronectes vetulus</i>	English Sole
162	<i>Cottus cognatus</i>	Slimy Sculpin
166	<i>Oligocottus maculosus</i>	Tidepool Sculpin
192	<i>Hexagrammos stelleri</i>	Whitespotted Greenling
200	<i>Hippoglossus stenolepis</i>	Pacific Halibut
230	<i>Clupea pallasii</i>	Pacific Herring
410	<i>Oncorhynchus tshawytscha</i>	Chinook Salmon
420	<i>Onchornynchus nerka</i>	Sockeye Salmon
430	<i>Onchornynchus kisutch</i>	Coho Salmon
440	<i>Onchornynchus gorbuscha</i>	Pink Salmon
450	<i>Onchornynchus keta</i>	Chum Salmon
500	<i>Esox lucius</i>	Northern Pike
513	<i>Osmerus mordax</i>	Rainbow Smelt
514	<i>Hypomesus olidus</i>	Pond Smelt
516	<i>Mallotus villosus</i>	Capelin
520	<i>Salvelinus alpinus</i>	Arctic Char
532	<i>Salvelinus malma</i>	Dolly Varden
541	<i>Onchornynchus mykiss</i>	Rainbow Trout
550	<i>Salvelinus namaycush</i>	Lake Trout
570	<i>Stenodus leucichthys</i>	Inconnu
588	<i>Coregonus nasus</i>	Broad Whitefish
589	<i>Coregonus pidschian</i>	Humpback Whitefish
583	<i>Coregonus sardinella</i>	Least Cisco
584	<i>Coregonus autumnalis</i>	Arctic Cisco
586	<i>Prosopium cylindraceum</i>	Round Whitefish
590	<i>Lota lota</i>	Burbot
600	<i>Lampetra tridentata</i>	Pacific Lamprey
601	<i>Lampetra japonica</i>	Arctic Lamprey
610	<i>Thymallus arcticus</i>	Arctic Grayling
630	<i>Dallia pectoralis</i>	Alaska Blackfish
640	<i>Catostomus catostomus</i>	Longnose Sucker
660	<i>Gasterosteus aculeatus</i>	Threespine Stickleback
661	<i>Pungitius pungitius</i>	Ninespine Stickleback
670	<i>Percopsis omiscomaycus</i>	Trout Perch
NA	<i>Megalocottus platycephalus</i>	Belligerent Sculpin
NA	<i>Myoxocephalus quadricornis</i>	Fourhorn Sculpin

^a Based on American Fisheries Society Special Publication No. 20, Common and Scientific Names of Fishes from the United States and Canada (Fifth Edition). Committee and Names of Fishes, Bethesda, Maryland, 1991.

Appendix A.2. Historic events, which have potential or actual, influence on the commercial salmon fisheries of the Kuskokwim Area.

YEAR	EVENT *
1913	• Commercial sale of salmon export first documented in the Kuskokwim Area.
1954	• Commercial chinook salmon quota established.
1959	• First chinook landing since quota established.
1960	• Kanektok Counting Tower (1960-1962) • Quinhagak District (W-4) commercial salmon fishery established. • Kuskokwim Area divided into four subdistricts; Lower Kuskokwim River (Subdistrict 1), Middle Kuskokwim River (Subdistrict 2), Upper Kuskokwim River (Subdistrict 3), Quinhagak (Subdistrict 4). District boundaries are not well recorded; in the Aniak area some commonly used drift sites overlap between District 2 and 3 which confused catch reporting. • Kuskokwim River Drainage Surveys, 1960.
1961	• ADF&G Kuskokwim River tagging study.
1962	• ADF&G Kuskokwim River tagging study. • Boundary between Subdistricts 2 and 3 changed; the new location was not recorded but the most likely location was Kolmakoff River. The reason for the change was to move the boundary to a point which was between commonly used gillnet locations and thereby avoid confusion in catch reporting. As a result, there were no landings in Subdistrict 3.
1963	• ADF&G Kuskokwim River tagging study. • Boundaries of subdistrict documented; Subdistrict 1 extended from Kuskokuak to Mishevik Slough, Subdistrict 2 was from Mishevik Slough to Kolmakoff River, Subdistrict 3 was upstream of Kolmakoff River.
1965	• Kwegooyuk test fishery (1965-1984; no records available for 1965).
1966	• ADF&G Kuskokwim River tagging study. • Subdistrict 3 was deleted from the regulations due to a lack of landings.
1968	• Goodnews Bay District (W-5) commercial salmon fishery established.
1969	• District 4 tagging study (1969-1970) on chinook and chum salmon. • Kogruluk River (a.k.a. Holitna River, Ignatti) tower/weir (1969-present).
1970	• Effect of explosive detonation in ice on northern pike.
1971	• Commercial fishing time in the Kuskokwim River reduced from two 24 hour periods per week to two 12 hour period per week. • Chum fishery begins in the Kuskokwim River; season was from 25 June to 31 July, location limited to waters downstream of Napakiak, mesh size restricted to 6 in. or smaller. • Fishing periods established by Emergency Order in August. • Gillnet mesh size in Districts 4 and 5 restricted to 6 inch or smaller.
1974	• Commercial sale of salmon roe from subsistence caught fish (1974-1977)

-continued-

YEAR	EVENT*
1976	<ul style="list-style-type: none"> Commercial fishing time in the Kuskokwim River was reduced from two 12 hour periods per week to two 6 hour periods per week. Eek River reconnaissance survey. Study on genetic variants in chum and chinook salmon.
1977	<ul style="list-style-type: none"> Fishing periods to be established by Emergency Order before 26 June and after 31 July. Limited entry permits issued. Subsistence fishing closed 24 hours before during and 6 hours after each commercial fishing period. Hoholitna River reconnaissance survey
1978	<ul style="list-style-type: none"> Kasigluk River reconnaissance survey. Kwethluk River sonar project.
1979	<ul style="list-style-type: none"> The portion of District 1 used during the chum salmon season was extended from Napakiak upstream to Bethel. Kasigluk River sonar project. High seas salmon fleet moved to 20° west.
1980	<ul style="list-style-type: none"> Subsistence fishing closed 24 hours before, during and 6 hours after each commercial fishing period. Aniak River sonar project.
1981	<ul style="list-style-type: none"> Pilot test fish and FanScan projects at Bethel. Inventory of Kisaralik River and Lake. Goodnews River counting tower (1981-1990). Salmon River (Pitka Fork drainage) weir project (1981-1984). Species identification program results in better differentiation of sockeye and chum salmon.
1982	<ul style="list-style-type: none"> Kanektok River sonar project (1982-1986).
1983	<ul style="list-style-type: none"> Pilot test fish project at Bethel using drift gillnets. Provisional escapement goals established for many of the major spawning tributaries in the area. Management strategy shifts from guideline harvest based to obtaining escapement objective.
1984	<ul style="list-style-type: none"> Kwegooyuk test fishery replaced by the Bethel drift test fishery.
1985	<ul style="list-style-type: none"> Commercial fishing restricted to mesh sizes less than or equal to 6 inches. Chum season utilizes entire length of District 1.
1986	<ul style="list-style-type: none"> <i>Migratory timing of coho salmon in the Kuskokwim Area, 1979-1984</i> Kuskokwim River salmon abundance estimate based on calibrated test fish CPUE. Downstream boundary of District 1 extended to a line from Apokak Slough to Popokamiut.
1987	<ul style="list-style-type: none"> Discontinued the directed chinook salmon fishery in the Kuskokwim River. First fishing period restricted to that portion of District 1 which is downstream of Bethel due to chinook conservation concerns. Subsistence fishing in all of District 2 and its tributary streams is closed before, during and after commercial periods. South peninsula sockeye and chum salmon tagging study.

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YEAR	EVENT*
1988	<ul style="list-style-type: none"> • Review of the estimation of Kuskokwim River annual salmon passage through expansion of the Bethel test fish CPUE. • Kuskokwim River sonar project (1988-1995). • Kuskokwim River subsistence test fisheries (1988-1990). • District 1 upstream boundary extended to Bogus Creek. • District 2 reduced in size; downstream boundary moved upstream to High Bluffs, the upstream boundary moved downstream to Chuathbaluk. • Portion of Kuskokwim River between Districts 1 and 2 closed to subsistence fishing when District 1 subsistence fishing is closed. • Reorganization of District 1 Statistical Areas. • District 4 Salmon Management Plan adopted. • Establishment of the Kuskokwim River Salmon Management Working Group (1988-present). • Eek Test Fishery (1988-1990, 1992 to present).
1989	<ul style="list-style-type: none"> • USFWS conducted genetic sampling throughout the Kuskokwim Area. • USFWS conducted chinook tagging study in the lower Kuskokwim River. • Record low temperatures recorded in interior Alaska coupled with shallow snow pack threaten survival of salmon eggs/fry from 1988 spawning.
1990	<ul style="list-style-type: none"> • ADF&G genetic sampling (1990 - present). • Reorganization of District 1 statistical areas. • Upstream boundary of District 1 moved downstream from Bogus Creek to Big Island. • Downstream boundary of District 2 moved upstream to second slough below Kalskag. • District 4 northern boundary is extended north to Weelung Creek.
1991	<ul style="list-style-type: none"> • USFWS begins operation of weir on Tuluksak River (1991-1994). • Weir replaces counting tower on Goodnews River (1991-present).
1992	<ul style="list-style-type: none"> • Initiation of the Aniak and Chuathbaluk test fisheries. • Eek test fishery is re-established for the coho season. • USFWS operates Kwethluk River weir (1992) • Ban on high-seas drift gillnet fishing imposed. • Unusual proportion of returning 5 year old chum salmon had a compressed annulus between the second the third winter checks. • Failure of age 4 chum salmon in the Kuskokwim River; Aniak drainage especially hard hit; attributed to cold winter of 1988-89.
1993	<ul style="list-style-type: none"> • Failure of age 4 and 5 chum salmon in the Kuskokwim River, Yukon River, and the Norton Sound/Kotzebue Area; cause unknown; especially hard hit were the Aniak drainage and the Yukon fall chum; commercial fishing severely restricted, chum sport fishery was closed, and the subsistence salmon fishery was restricted and closed for a period of time (first time ever).
1994	<ul style="list-style-type: none"> • Working Group commissioned and Dr. Mundy started "Recommendations for Strengthening the Cooperative Management Process of the Kuskokwim River Salmon Management Working Group".
1995	<ul style="list-style-type: none"> • Bering Sea Fishermen's Association operates a chum salmon radio telemetry project on the Kuskokwim River. • Takotna Community School operates a salmon counting tower on the Takotna River (1995-present). • AVCP and BSFA operate the Lower Kuskokwim test fishery in cooperation with the department; the project is a modification of the Eek test fishery.

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YEAR	EVENT*
1996	<ul style="list-style-type: none"> • ADF&G genetic sampling for late spawning chum salmon and one mixed stock sample from District W1. • Near record low water levels on the Kuskokwim River during June and early August coupled with record high water temperatures. • Irregular fishing schedule in District W1 during June and July due to limited market interest for chum salmon. • Record early coho run coupled with record high harvest and escapement at Kogrukluk River. • AVCP operates a salmon counting tower on the Kwethluk River. • KNA operates a salmon weir on the George River. • Aniak River sonar is relocated to allow for full channel ensonification and configurable sonar technology is employed. • Quinhagak IRA begins development of a salmon counting tower on the Kanektok River.
1997	<ul style="list-style-type: none"> • Middle Fork Goodnews River converts from fixed-panel weir to a resistance board "floating weir". • Quinhagak IRA operates a salmon counting tower on the Kanektok River.

* For additional information on specific topics refer to the Region III Report Catalog or historical Area Management Reports for the Kuskokwim Area.

Appendix A.3 Kuskokwim Area escapement index objectives for chinook, sockeye, coho and chum salmon.

	Chinook	Escapement Objectives ^a		Chum
		Sockeye	Coho	
<u>KUSKOKWIM RIVER:</u>				
1. Kwethluk River				
a. 3-step Mt. to Canyon Cr.	1.0	-	-	7.0
b. Canyon Creek	0.2	-	-	-
2. Kisaralik River				
a. Airstrip to Kisaralik L.	1.0	-	-	8.0
b. Kasigluk R. (upper to lower)	0.1	-	-	4.0
3. Tuluksak R. (Fog R. to Bear Cr.)	0.4	-	-	5.0
4. Aniak River				
a. Buckstock R. to Aniak L.	1.5	-	-	10.0
b. Salmon River	0.6	-	-	3.0
c. Aniak Sonar Project ^b	-	-	-	250.0
5. Holitna River				
a. Nogamut to Kashegelok	2.0	-	-	12.0
b. Kogruluk Weir ^c	10.0	-	25.0	30.0
6. Salmon River (Pitka Fork)	1.3	-	-	-
<u>KUSKOKWIM BAY:</u>				
1. Kanektok River to Kagati Lake	5.8	15.0	25.0	30.5
2. Goodnews River System				
a. Main Fork and lakes	1.6	15.0	15.0	17.0
b. Middle Fork and lakes	0.8	5.0	2.0	4.0
c. Middle Fork Weir ^c	3.5	25.0	-	15.0

- a Escapement objectives in thousands of fish are preliminary and are subject to change as additional data becomes available. Unless otherwise indicated, escapement objectives are based on aerial index counts which do not represent total escapement, but do reflect annual spawner abundance trends when made using standard survey methods under acceptable survey conditions.
- b Sonar total escapement estimates.
- c Weir total escapement estimates.

Appendix A.4. Kuskokwim Area commercial, subsistence and personal use salmon catches, 1913-1996.

Year	Commercial Harvest					Subsistence Harvest				Total Harvest	
	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Other ^e	Coho ^b		Subtotal
1913	7,800					7,800					7,800
1914		2,667				2,667					2,667
1915											0
1916	949					949					949
1917	7,878					7,878					7,878
1918	3,055					3,055					3,055
1919	4,836					4,836					4,836
1920	34,853					34,853					34,853
1921	9,854					9,854					9,854
1922	8,944	6,120				15,064				180,000	195,064
1923	7,254					7,254					7,254
1924	19,253	900		7,167	7,167	34,487	17,700	203,148		220,848	255,335
1925	1,644	5,800				7,444	10,800	230,850		241,650	249,094
1926										738,576	738,576
1927										286,254	286,254
1928										481,090	481,090
1929										560,196	560,196
1930	7,626	2,448				10,074				538,650	548,724
1931	8,541					8,541				389,367	397,908
1932	9,339					9,339				746,415	755,754
1933							6,290	443,998		450,288	450,288
1934							20,890	597,132		617,932	617,932
1935	6,448				8,296	14,744	22,930	554,040		576,970	591,714
1936	624					624	33,500	540,423		582,923	583,547
1937	480					480		537,111		537,111	537,591
1938	624				828	1,452	10,153	400,342		410,395	411,847
1939	134					134	14,000	125,425		139,425	139,559
1940	247				500	747	8,000	415,523		423,523	424,270
1941	187				674	861	8,000	415,523		423,523	424,384
1942							6,400	325,339		331,739	331,739

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Year	Commercial Harvest						Subsistence Harvest				Total Harvest
	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Other ^c	Coho ^b	Subtotal	
1943							6,400	325,339		331,739	331,739
1944											0
1945											0
1946	2,288				674	2,962					2,962
1947	5,356					5,356					5,356
1948											0
1949											0
1950											0
1951	4,210					4,210					4,210
1952											0
1953											0
1954	57					57					57
1955											0
1956											0
1957											0
1958											0
1959	3,760					3,760					3,760
1960	5,969	5,649	0	0	5,498	17,116	18,887	301,753		320,640	337,756
1961	23,246	2,308	18,864	90	5,090	49,598	28,934	179,529		208,463	258,061
1962	20,867	10,313	45,707	4,340	12,432	93,659	13,582	175,304	161,849	350,733	444,394
1963	18,571	0	0	0	15,660	34,231	34,482	170,829	137,649	342,960	377,191
1964	21,230	13,422	707	939	28,992	65,290	29,017	219,208	190,191	438,419	503,706
1965	24,965	1,886	4,243	0	12,191	43,284	24,697	250,878		275,573	318,859
1966	25,823	1,030	2,610	268	22,985	52,716	49,325	175,735		225,060	277,776
1967	29,986	652	8,235	0	58,239	97,112	61,262	214,468		275,730	372,842
1968	43,157	3,834	19,684	75,818	154,275	298,818	35,698	278,008		313,706	612,524
1969	64,777	10,362	50,377	1,251	110,473	237,240	40,617	204,105		244,722	481,962
1970	64,722	12,654	60,566	27,422	62,245	227,609	69,612	246,810	11,868	328,290	555,899
1971	44,936	6,054	99,423	13	10,006	160,432	43,013	116,391	6,899	166,303	326,735
1972	55,598	4,312	97,197	1,952	23,880	182,939	38,176	120,316	1,325	159,817	342,756
1973	51,374	5,224	184,207	634	152,408	393,847	38,451	179,259	23,746	241,456	635,303
1974	30,670	29,003	196,127	60,099	179,579	495,478	26,665	179,170	32,780	336,615	832,093

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Year	Commercial Harvest						Subsistence Harvest					Total Harvest	
	Chinook	Sockeye	Chum	Pink	Coho	Subtotal	Chinook	Other ^c	Coho ^b	Subtotal			
1975	28,219	17,686	225,308	910	112,751	384,874	47,569	176,389		223,958	608,832		
1976	49,262	14,636	231,877	39,998	112,130	447,903	58,055	223,792	4,312	286,159	734,062		
1977	58,256	18,621	298,959	434	263,727	639,997	58,158	203,397	12,193	273,748	913,745		
1978	63,194	13,734	282,044	61,968	247,271	668,211	38,145	125,052	12,437	175,634	843,845		
1979	53,314	39,463	297,167	574	308,683	699,201	57,053	163,451		220,504	919,705		
1980	48,599	42,213	561,483	30,306	327,908	1,010,509	62,047	168,987	47,335	278,369	1,288,878		
1981	79,377	105,940	485,653	463	278,541	949,974	64,274	163,554	28,301	256,129	1,206,103		
1982	79,816	97,716	326,481	18,259	567,452	1,089,724	61,141	195,691	45,181	302,013	1,391,737		
1983	93,676	90,834	306,554	379	248,389	739,832	51,020	149,172	2,834	203,026	942,858		
1984	74,016	81,304	488,480	23,902	826,774	1,494,476	60,668	144,651	15,016	220,335	1,714,811		
1985	74,083	121,221	224,680	111	382,096	802,191	45,720	33,632	95,999	1,062	24,524	200,937	
1986	44,972	142,029	349,268	16,569	736,910	1,289,748	54,256	20,239	142,930 ^c	29,742	247,167	1,536,915	
1987	65,558	170,849	603,274	163	478,594	1,318,438	71,804	25,180	70,709	291	18,085	186,069	
1988 ^{de}	74,563	149,949	1,443,953	37,592	623,733	2,329,790	75,107	33,102	153,980	43,866	306,055	2,635,845	
1989 ^d	66,914	82,365	801,355	819	554,411	1,505,864	85,322	37,088	145,106	57,847	325,363	1,831,227	
1990	84,451	203,919	521,023	16,050	443,783	1,269,226	92,678	39,662	131,469	50,713	314,522	1,583,748	
1991	48,170	202,441	502,187	522	556,818	1,310,138	90,224	56,404	96,308	55,581	298,517	1,608,655	
1992	67,597	192,341	436,506	85,978	772,449	1,554,871	68,665	34,159	99,576	44,496	246,896	1,801,767	
1993	26,636	167,235	94,937	71	686,570	975,449	91,721	51,363	61,726	35,295	240,105	1,215,554	
1994	27,345	191,169	360,893	84,870	836,100	1,520,377	98,378	39,279	76,951	36,504	251,112	1,771,489	
1995	72,352	198,045	707,212	318	555,539	1,533,466	100,159	28,622	68,942	39,165	236,888	1,770,354	
1996	22,959	122,260	301,975	1,663	1,099,865	1,548,722	81,598	35,036	90,238	34,698	241,570	1,790,292	
1997	47,990	123,002	67,200	7	166,648	404,847	85,506	41,270	40,976	30,714	198,466	603,313	
10-Year Average							9-Year Average						
1987-96	55,655	168,057	577,332	379 ^f	662,786	1,464,208	1988-96	87,095	39,413	102,700	44,241	273,448	1,778,770

^a Primarily chum and coho salmon.^b Reported subsistence coho salmon harvest only. Coho salmon subsistence harvest is poorly documented with no Kuskokwim River estimates attempted prior to 1988.^c Includes sockeye, pink and chum salmon.^d The personal use catch is included with the subsistence catch.^e Beginning in 1988, estimates are based on a new formula therefore data since 1988 is not comparable with previous years.^f Even years only.

Appendix A.5. Commercial fishing effort in the Kuskokwim Area by permit-hour^a,
1960 - 1997.

Year	District 1	District 2	District 3	District 4	District 5	Total
1960	5,136	960	648	4,368	Closed	11,112
1961	16,200	1,512	1,512	4,992	Closed	24,216
1962	14,274		0	8,434	Closed	22,708
1963	5,712	1,722	0	5,520	Closed	12,954
1964	6,468	1,140	0		Closed	7,608
1965	13,500	546	0	3,696	Closed	17,742
1966	18,270		Closed		Closed	18,270
1967	88,248	1,932		3,954	Closed	94,134
1968	77,466	720		7,986	4,704	90,876
1969	67,140	1,488		29,952	14,055	112,635
1970	56,646	3,414		22,080	9,756	91,896
1971	18,060	1,842				19,902
1972	47,802					47,802
1973	77,478	3,072		18,372	2,928	101,850
1974	124,569	4,950		18,984	8,148	156,651
1975	181,786	3,648		12,312	5,400	203,146
1976	82,788	3,894		14,784	4,848	106,314
1977	73,944	3,426		17,592	3,780	98,742
1978	71,856	1,892		14,952	3,672	92,372
1979	49,608	984		27,096	8,220	85,908
1980	33,370	714		21,636	9,504	65,224
1981	45,096	1,248		25,656	11,256	83,256
1982	46,108	1,128		22,656	14,556	84,448
1983	47,040	708		20,748	9,456	77,952
1984	62,643	1,050		31,488	14,004	109,185
1985	37,452	462		22,254	8,544	68,712
1986	48,744	606		25,740	10,572	85,662
1987	60,525	576		21,222	10,332	92,655
1988	81,724	912		27,440	14,064	124,140
1989	66,470	816		26,134	12,552	105,972
1990	50,642	1,051		44,520	10,548	106,761
1991	62,672	1,320		29,160	11,532	104,684
1992	54,288	1,164		35,380	15,180	106,012
1993	39,210	774		35,988	13,118	89,090
1994	54,750	702		26,580	15,768	97,800
1995	42,784	602		34,020	14,844	92,250
1996	37,015	242		18,880	6,518	62,655
1997	13,662	30		28,848	5,832	48,372
10-Year Average (1987-1996)	55,008	816		29,932	12,446	98,202

^a The number of permits that made deliveries times the number of hours in the period.

Appendix A.6. Estimated exvessel value of the Kuskokwim Area commercial salmon fishery, 1964-1997.

<u>Year</u>	<u>Gross Value of Catch to Fishermen</u>	<u>Permits Fished^a</u>	<u>Average Income</u>
1964	83,030		
1965	90,950		
1966	87,466		
1967	138,647		
1968	290,370		
1969	297,233		
1970	362,470		
1971	371,220		
1972	360,727		
1973	827,735		
1974	1,056,042		
1975	899,178		
1976	1,380,229		
1977	3,891,950		
1978	2,337,470		
1979	3,329,155		
1980	2,725,134		
1981	3,613,309		
1982	4,213,954		
1983	2,670,400		
1984	5,809,000	774	7,505
1985	3,248,089	781	4,159
1986	4,746,089	789	6,015
1987	6,392,822	798	8,011
1988	12,514,492	811	15,431
1989	5,194,025	824	6,303
1990	4,865,070	824	5,904
1991	3,961,423	820	4,831
1992	5,295,912	814	6,506
1993	3,962,890	807	4,911
1994	5,201,611	797	6,526
1995	4,209,752	829	5,078
1996	2,900,613	713	4,068
1997	1,058,102	703	1,505
Ten year Average (1987-1996)	5,449,861	804	6,757

a Number of permit holders that made at least one delivery

Appendix A.7. Historical salmon escapement data from selected Kuskokwim Area projects, 1976-1997.

Year	Operating Period	Chinook	Sockeye	Chum	Pink ^a	Coho
Kogrukluk River Weir						
BEG		10,000		30,000		25,000
1976	06/29 to 07/31	5,579	2,326	8,117	0	^b
1977	07/14 to 07/27	1,945 ^b	1,637 ^b	19,444	2	^b
1978	06/28 to 07/31	13,667	1,670	48,125	2	^b
1979	07/01 to 07/24	11,338	2,628	18,599	1	^b
1980	07/01 to 07/11	6,572 ^b	3,200 ^b	41,777	1	^b
1981	06/27 to 10/05	16,655	18,066	57,365	6	11,455
1982	07/09 to 09/14	10,993	17,297	64,077	19	37,796
1983	06/23 to 09/27	2,992 ^b	1,176 ^b	9,407 ^b	0	8,538
1984	06/19 to 09/15	4,928	4,133	41,484	0	27,595
1985	07/06 to 09/24	4,619	4,359	15,005	0	16,441
1986	06/29 to 09/07	5,038	4,224	14,693	0	22,506
1987	07/15 to 09/24	4,063 ^b	^b	17,422 ^b	0	22,821
1988	07/05 to 09/17	8,505	4,397	39,540	0	13,512
1989	07/07 to 08/24	11,940 ^b	5,811 ^b	39,548	0	^b
1990	06/28 to 09/07	10,218	8,406	26,765	1	6,132 ^b
1991	07/04 to 09/15	7,850	16,455	24,188	4	9,933
1992	07/01 to 08/21	6,755	7,540	34,105	11	26,057 ^b
1993	07/02 to 09/06	12,332	29,358	31,899	0	20,517 ^b
1994	07/02 to 09/14	15,227	14,192 ^b	46,192 ^b	23	34,695
1995	07/02 to 09/06	20,630	10,996	31,265	2	27,856
1996	06/29 to 09/15	14,199	15,381	48,494	6	50,555
1997	06/28 to 09/21	13,285	13,062	7,937	0	12,312
Aniak River Sonar						
BEG				250,000 ^c		
<i>Non user-configurable, one-bank expanded estimates 1980 - 1995</i>						
1980	06/22 to 07/30	56,469		1,169,470		
	08/16 to 09/12					81,556
1981	06/16 to 08/06	42,060		589,286		
1982	06/21 to 08/01	33,864		442,461		
1983	06/18 to 07/28	4,911		129,367		
1984	06/16 to 07/30			266,976		
1985	06/22 to 07/28			253,051		
1986	06/26 to 07/24			209,080		
1987	06/22 to 07/31			193,013		
1988	06/22 to 07/31			401,511		
1989	06/21 to 07/24			243,922		
1990	06/23 to 08/06			232,260		
1991	06/29 to 07/29			314,166		
1992	06/22 to 07/29			84,269		
1993	06/24 to 07/28			13,870		
1994	06/28 to 07/28			388,163		
1995	06/23 to 07/23			^d		
<i>User-configurable, two-bank estimates, 1996-1997</i>						
BEG				250,000 ^e		
1996	06/21 to 07/28			302,106		
1997	06/16 to 08/03			262,522		

- continued -

Appendix A.7. (2 of 2)

Year	Operating Period	Chinook	Sockeye	Chum	Pink	Coho
Kwethluk River						
<i>Weir</i>						
1992	06/18 to 09/12	9,675	1,316	30,596	45,952	45,605
<i>Tower</i>						
1996	06/22 to 07/27	7,859	2,075	27,462	2,899 ^b	180 ^b
1997	06/22 to 08/12	10,505	1,400	10,780	1,009 ^b	1,110 ^b
Tuluksak River Weir						
1991	06/12 to 09/18	697	34	7,675	391	4,651
1992	06/24 to 09/10	1,083	129	11,183	2,458	7,501
1993	06/17 to 09/10	2,218	88	13,804	210	8,328
1994	06/29 to 09/11	2,922	94	15,707	3,450	8,213
George River Weir						
1996	06/21 to 07/26	7,487	98	17,570	644 ^b	173 ^b
1997	06/09 to 09/15	7,820	445	5,940	0	8,937
Takotna River Tower						
1995	07/07 to 07/31	^b	0	1,685 ^b	0	0 ^b
1996	06/15 to 07/26	402	0	2,806	0	0 ^b
1997	06/15 to 07/26	1,167	0	1,785		
Middle Fork Goodnews River Tower/Weir						
BEG		3,500	25,000	15,000		
<i>Counting Tower, 1981 - 1991</i>						
1981	06/13 to 08/15	3,688	49,108	21,827	1,327 ^b	356 ^b
1982	06/23 to 08/03	1,395	56,255	6,767	13,855 ^b	91 ^b
1983	06/11 to 07/28	6,022	25,813	15,548	34 ^b	0 ^b
1984	06/15 to 07/31	3,260	32,053	19,003	13,744 ^b	249 ^b
1985	06/27 to 07/31	2,831	24,131	10,367	144 ^b	282 ^b
1986	06/16 to 07/24	2,092	51,069	14,764	8,133 ^b	163 ^b
1987	06/22 to 07/30	2,272	28,871	17,517	62 ^b	62 ^b
1988	06/23 to 07/30	2,712	15,799	20,799	6,781 ^b	6 ^b
1989	06/29 to 07/31	1,915	21,186	10,380	246 ^b	1,212 ^b
1990	06/19 to 07/24	3,636	31,679	6,410	3,378 ^b	0 ^b
<i>Weir, 1991 - 1997</i>						
1991	06/29 to 08/24	1,952	47,397	27,525	1,694 ^b	1,978 ^b
1992	06/29 to 08/25	1,903	27,268	22,023	23,030 ^b	150 ^b
1993	06/22 to 08/18	2,317	26,044	14,472	253 ^b	1,374 ^b
1994	06/23 to 08/08	3,856	55,751	34,849	38,705 ^b	309 ^b
1995	06/19 to 08/28	4,836	39,009	33,699	330 ^b	5,415 ^b
1996	06/19 to 08/23	2,930	58,264	40,450	14,509 ^b	9,699 ^b
1997	06/11 to 09/17	2,937	35,530	17,296	940	9,619
Kanektok River Tower						
1996	7/2-7/13; 7/20-7/25	6,827 ^b	71,637 ^b	70,617 ^b		
1997	06/11 to 08/21	16,731	96,348	51,180	7,872 ^b	23,172 ^b

^a Pink salmon can pass freely through the Kogruluk River weir.

^b No counts or incomplete count as project was not operated during a significant portion of the species' migration.

^c Aniak River sonar counts after 1983 represent multiple species, however, chum salmon are assumed to be the dominant species during the operational period.

^d Reliable escapement estimates are not available from Aniak River sonar for 1995.

^e The original Aniak River sonar BEG of 250,000 fish counts has been carried forward to the user configurable project, but the BEG will be reassessed as more information is gathered.

Appendix A.8. Mean salmon weights and prices paid to commercial permit holders in the Kuskokwim Area, 1967 - 1997.

Year	Average Weight (lb)					Average Price (\$)				
	Chinook	Sockeye	Chum	Pink	Coho	Chinook	Sockeye	Chum	Pink	Coho
1967	27.8	7.4	7.0	^a	5.9	0.13	0.05	0.04	^a	0.09
1968	23.8	6.2	7.9	4.0	7.2	0.16	0.10	0.04	0.05	0.09
1969	19.6	6.2	5.8	3.6	7.3	0.19	0.15	0.07	0.06	0.10
1970	18.9	5.4	6.1	3.3	7.3	0.20	0.21	0.08	0.08	0.14
1971 ^b	26.2	6.9	6.4	^a	6.1	0.17	0.10	0.08	^a	0.13
1972	24.7	^a	6.5	^a	6.4	0.20	^a	0.08	^a	0.16
1973	26.7	^a	6.8	^a	5.8	0.25	^a	0.19	^a	0.26
1974	17.1	6.3	6.8	4.1	7.5	0.46	0.34	0.25	0.23	0.27
1975	14.9	^a	6.4	^a	8.2	0.54	^a	0.26	^a	0.31
1976 ^c	17.0	6.7	7.0	3.5	7.8	0.64	0.43	0.27	0.25	0.40
1977	22.7	8.3	7.3	3.9	7.8	1.15	0.45	0.45	0.25	0.65
1978	24.2	6.5	8.9	3.9	7.1	0.50	0.49	0.32	0.12	0.40
1979	16.6	6.9	7.0	3.9	7.9	0.66	0.53	0.37	0.11	0.75
1980	14.1	6.7	6.4	3.6	6.9	0.47	0.31	0.24	0.12	0.64
1981	17.8	7.2	7.5	3.5	6.4	0.84	0.61	0.23	0.11	0.63
1982	19.3	7.2	7.3	3.6	7.3	0.82	0.41	0.22	0.05	0.53
1983	18.8	6.8	7.4	3.5	6.8	0.54	0.51	0.33	0.05	0.39
1984	16.4	6.6	6.7	3.2	7.7	0.89	0.52	0.28	0.07	0.55
1985	17.0	7.0	7.1	3.6	7.5	0.71	0.59	0.25	0.05	0.51
1986	17.0	7.2	6.8	3.4	6.4	0.80	0.70	0.25	0.05	0.60
1987	15.2	7.5	6.8	3.7	7.2	1.10	1.30	0.27	0.10	0.73
1988	15.1	7.3	8.1	3.4	7.5	1.30	1.42	0.40	0.15	1.25
1989	16.6	7.2	6.8	3.4	7.3	0.75	1.20	0.26	0.05	0.55
1990	15.1	6.7	6.9	3.2	6.5	0.56	1.05	0.26	0.12	0.75
1991	15.3	6.9	6.3	3.4	6.5	0.56	0.67	0.31	0.12	0.45
1992	13.4	7.0	6.8	3.9	7.3	0.66	0.90	0.32	0.06	0.45
1993	14.3	7.1	6.5	3.4	6.6	0.62	0.70	0.40	0.25	0.58
1994	15.6	6.9	6.6	3.6	7.6	0.51	0.53	0.21	0.08	0.57
1995	17.3	6.9	6.9	3.7	7.2	0.60	0.71	0.18	0.12	0.41
1996	15.7	7.2	7.2	3.8	8.0	0.26	0.40	0.11	0.12	0.25
1997	16.2	7.1	7.3	2.7	7.5	0.28	0.42	0.12	0.10	0.33
10-Year Average (1987 - 96)	15.4	7.1	6.9	3.6	7.2	0.69	0.89	0.27	0.12	0.60

^a Information unavailable.

^b Information on price per pound was not available for District 5.

^c Information was not available for District 4.

Appendix A.9. Maximum, mean, and minimum number of permits used in a single period by district, 1962-1997.

Year	District 1			District 2			District 4			District 5		
	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.
1962	190	121	25				32	19	7		Closed	
1963	103	17	1	17	10	2	30	13	1		Closed	
1964	113	30	1	30	4	1	29	15	1		Closed	
1965	164	43	1	5	3	1	31	13	1		Closed	
1966	172	122	61	1	1	1	12	8	1		Closed	
1967	208	144	10	4	2	1	19	8	1		Closed	
1968	262	164	2				78	38	8	17	13	5
1969	274	161	1	11	2	1	119	51	1	28	21	10
1970	320	198	22	11	6	3	75	48	21	25	16	5
1971	355	117	5	20	14	2	48	36	3	11	9	8
1972	341	149	28	12	10	8				12	9	5
1973	372	234	3	18	11	1	70	42	17	17	10	5
1974	444	272	25							40	23	7
1975	483	280	12				106	47	13	30	20	10
1976	495	357	174	55	33	11	99	44	5	35	13	4
1977	487	380	204	83	54	24	172	70	7	21	15	5
1178	509	390	72	24	12	3	123	38	3	24	15	5
1979	549	456	179	33	27	20	126	63	12	27	19	6
1980	482	421	319	37	23	12	101	56	3	35	22	9
1981	541	442	278	151	42	11	106	69	30	38	24	10
1982	499	414	302	47	7	10	107	67	5	30	25	7
1983	547	442	323	34	24	9	134	70	10	62	30	11
1984	542	411	39	33	17	8	165	82	34	47	38	29
1985	530	446	262	15	11	6	191	84	7	47	34	12
1986	600	489	234	27	9	3	216	86	2	52	31	19
1987	607	513	132	22	16	13	253	105	48	75	41	23
1988	640	583	408	21	17	13	202	73	9	68	39	22
1989	679	509	126	22	17	14	140	77	51	65	39	10
1990	653	614	534	18	16	14	218	106	1	58	27	1
1991	662	589	512	19	17	16	227	81	4	50	28	1
1992	653	577	374	21	15	9	187	86	19	91	34	17
1993	654	556	274	17	16	13	219	94	10	80	40	10
1994	606	501	157	17	13	6	171	69	13	88	34	2
1995	617	469	219	16	7	1	239	87	41	68	32	16
1996	541	351	194	6	3	1	120	65	41	40	28	13
1997	513	455	353	3	3	2	178	78	4	42	21	7

Appendix A.10. Kuskokwim Area subsistence Chinook salmon harvest by community, 1960 - 1997.

Community	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Kipnuk	248	11	123	75	a						
Kwigillingok	250	35	43	106	339	a	250	957	70		220
Kongiganak	b	b	b	b						385	891
Tuntutuliak	228	2,226	842	2,853	1,826	1,575	3,097	3,462	2,214	2,195	3,558
Eek				c	c	2,921	4,572	2,566	2,038	2,065	1,882
Kasigluk & Eek					1,857	3,123					
Kasigluk	135	1,215	127	1,302	c	c	1,032	2,768	1,485	2,888	3,931
Nunapitchuk	683	2,042	848	1,874	636	490	2,213	1,926	1,750	2,279	4,680
Atmautluak	b	b	b	b	b	b	b	b	b	b	1,205
Napakiak	1,830	2,573	2,191	3,148	2,877	2,872	3,658	3,895	2,468	3,546	4,960
Napaskiak	536	1,258	759	1,569	2,201	1,071	2,710	2,998	1,663	2,227	3,446
Oscarville	1,968	282	75	309	339	688	322	1,127	393	457	542
Bethel	1,923	4,150	1,378	7,019	4,114	3,371	8,046	13,925	6,205	7,472	17,026
Kwethluk	2,692	3,763	2,329	5,050	3,262	2,887	6,551	6,993	2,848	3,187	7,932
Akiachak	1,626	3,052	1,800	2,533	3,488	3,685	4,904	5,543	3,755	2,602	7,022
Akiak	1,885	3,159	906	2,869	2,495	1,345	3,670	3,660	1,822	1,275	3,290
Tuluksak	737	1,486	493	1,295	572	1,021	1,576	1,709	1,048	1,131	1,995
Lower Kalskag	961	571	c	c	710	c	c	c	1,502	2,102	2,146
Upper Kalskag	667	1,049	c	c	1,143	c	c	c	1,619	1,623	734
Kalskags Comb.			805	2,661		1,395	3,379	3,567			
Aniak	1,057	688	185	602	1,104	c	2,072	1,280	517	1,406	2,136
Aniak ¹					642						
Chuathbaluk	64	54	10	30	74	c	139	217	34	180	219
Napalmute	20	16	44	52	134	a	76	60	94	19	22
Crooked Creek	747	518	561	859	1,358	374	1,446	585	77	541	684
Georgetown							12		0	9	2
Red Devil	c	40	c	c	c	c			111	142	232
Sleetmute	c	222	c	c	c	c	303	343	207	267	161
Sleetmute ²	465	262	144	228	314	79					
Kashegelok ¹							10				
Stony River	435	25	31		299	79	636	303	176	2,167	105
Lime Village										50	15
Mcgrath							300	25			
Takotna											
Nikolai											
Telida											
Quinhagak								1,349	2,756		
Goodnews Bay											
Platinum											
Total	18,887	28,934	13,582	34,482	29,017	24,697	49,325	61,262	35,698	40,617	69,612

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Appendix A.10. (Page 2 of 4)

Community	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Kipnuk ²						75	382	75			
Kwigillingok ³	200	10									
Kongiganak	41					122	361				
Tuntutulak	1,841	3,214	2,859	1,577	3,492	4,807	2,470	1,656	2,268	2,545	4,446
Eek	1,969		1,981	2,358	2,110	3,232	2,675	1,807	2,003	1,557	1,731
Kasigluk	1,645	1,292	1,864	1,411	1,713	1,613	1,324	608	1,142	1,704	3,377
Nunapitchuk	1,978	2,496	2,663	1,165	2,092	2,578	2,622	2,178	2,109	2,612	2,918
Atmautluak	548	864	1,106	382	1,042	1,159	1,015	966	2,242	1,288	1,247
Napakiak	1,868	2,009	1,763	1,224	2,864	3,330	2,702	2,140	2,191	2,582	3,017
Napaskiak	1,916	1,578	2,048	900	2,303	3,566	1,989	2,122	2,085	3,160	2,911
Oscarville	570	196	586	180	891	623	672	349	629	477	495
Bethel	8,731	8,371	8,898	4,631	11,688	13,215	9,408	6,905	11,564	12,591	15,367
Kwethluk	5,564	5,137	3,444	2,694	3,179	4,193	5,563	3,172	6,919	7,627	6,167
Akiachak	4,818	3,872	2,592	1,726	3,534	4,915	5,407	2,951	4,818	5,405	3,094
Akiak	2,688	1,899	1,895	1,292	2,837	3,076	2,880	1,850	3,567	3,355	2,386
Tuluksak	1,280	1,318	1,322	883	1,338	1,411	2,906	1,906	1,489	2,807	2,446
Lower Kalskag	2,355	2,604	1,309	1,586	2,755	4,536	1,750	1,951	2,821	3,917	3,271
Upper Kalskag	601	401	938	463	1,752	1,413	2,813	1,253	1,590	1,889	1,171
Aniak	1,076	2,105	1,030	1,952	1,391	1,490	4,991	1,331	2,634	2,750	3,102
Chuathbaluk	179	261	942	674	594	657	1,507	1,238	2,189	1,507	841
Napaimute	17	20	13	6	16	420	176	144	149	90	45
Crooked Creek	291	183	269	650	238	264	619	488	728	654	512
Georgetown							66			93	
Red Devil	135	182	138	205	623	195	324	153	488	255	298
Sleetmute	181	69	504	269	256	356	684	300	755	220	728
Kashegekok ¹						156	233	92			
Stony River	402	95	287	439	761	620	33	182	171	332	233
Lime Village	2,119				100	33			38		
McGrath									581		
Takotna									65		
Nikolai									60		500
Telida											
Quinhagak							2,012	2,328	1,420	1,940	2,562
Goodnews Bay							574		228	498	1,309
Platinum									110	192	100
Total	43,013	38,176	38,451	26,665	47,569	58,055	58,158	38,145	57,053	62,047	64,274

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Appendix A.10. (Page 3 of 4)

Community	1982	1983	1984	1985	1986	1987	1988 ¹	1989	1990	1991	1992
Kipnuk ^a	60							54	108	80	
Kwigillingok ^a											9
Kongiganak	52			235			585	1,412	1,442	778	904
Tuntutuliak	1,984	2,523	3,519	2,644	2,452	2,522	2,741	3,781	4,044	4,143	3,524
Eek	2,578	2,040		1,438			2,212	1,580	4,920	2,360	2,232
Kasigluk	3,115			2,054			1,367	2,173	3,167	2,955	94
Nunapitchuk	2,577	2,688		2,019	3,410	3,372	2,297	3,170	3,199	4,106	3,575
Atmautluak	1,752			1,559			1,131	1,227	2,569	1,784	1,422
Napakiak	3,500	2,047		1,805		2,760	3,091	3,710	4,158	2,543	3,328
Napaskiak	2,872			2,155		2,907	3,898	4,699	4,972	3,664	4,133
Oscarville	523			916		745	415	1,591	898	1,422	122
Bethel	13,516	8,492	11,066	6,940	11,984	8,107	15,038	24,655	19,641	28,817	17,196
Kwethluk	5,897		6,732	4,937	5,824	8,779	10,976	7,562	9,218	7,511	6,504
Akiachak	4,468		5,588	3,254		4,871	9,563	5,504	7,168	5,657	4,163
Akiak	2,745		3,413	2,975		3,683	3,706	4,811	5,178	3,247	3,207
Tuluksak	2,220	1,671	2,286	2,749		3,712	3,289	3,791	1,878	3,351	2,382
Lower Kalskag	2,594		3,242	1,707	1,666		3,024	3,337	2,494	3,947	2,269
Upper Kalskag	963		657	605	587		859	1,256	1,558	1,105	1,366
Aniak	2,071	3,174	1,847	1,828	4,624	2,131	4,071	3,406	3,189	3,261	3,955
Chuathbaluk	1,491			1,102			34	403	1,674	791	933
Napaimute	138			53							
Crooked Creek	515			218			318	451	929	947	472
Red Devil	273			176			263	189	273	168	328
Sleetmute	242		154	745			433	420	711	770	801
Stony River	419			167			315	692	498	586	233
Lime Village							341	105	240	60	
McGrath	160	830	730	59			440	418	1,231	880	1,038
Takotna							100	62	62	0	0
Nikolai	778	750	795	615			136	716	560	421	605
Telida								1			0
Quinhagak	2,402	2,542	3,109	2,341	2,682	3,663	3,690	3,542	6,013	3,693	3,447
Goodnews Bay	1,185	1,004	597	399	513	640	289	419	351	894	318
Platinum	51	62	32	27	42	176	21	48	188	23	56
Mekoryuk ^a								0	0	0	0
Newtok ^a							14	5	1	0	
Nightmute ^a							17	0	3	20	
Toksook Bay ^a							81	127	143	25	49
Tununak ^a							52	5	0	15	
Other											21
Total	61,141	51,020^b	60,668^b	45,720	54,256^b	71,804^b	75,107	85,322	92,678	90,224	68,665

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Appendix A.10. (Page 4 of 4).

Community	1993	1994	1995	1996	1997
Kipruk ^a	348	150			
Kwigillingok ^a	80	7		15	
Kongiganak	781	1,271	843	830	1,609
Tuntutuliak	3,633	4,679	4,023	4,027	3,730
Eek	2,619	2,917	3,535	2,568	2,253
Kasigluk	548	694	392	579	880
Nunapitchuk	3,810	4,746	4,400	3,234	4,086
Atmautluak	1,818	1,819	1,918	1,801	1,768
Napakiak	3,972	3,545	3,902	3,784	2,873
Napaskiak	5,671	6,356	4,984	4,453	4,887
Oscarville	1,475	1,385	1,438	996	512
Bethel	22,083	24,515	29,568	20,783	21,253
Kwethluk	9,181	9,262	8,931	9,183	6,872
Akiachak	7,231	8,081	6,571	5,209	7,414
Akiak	4,280	4,759	4,118	4,569	3,378
Tufuksak	3,755	4,534	4,333	3,143	5,627
Lower Kalskag	3,930	3,976	5,321	2,870	3,549
Upper Kalskag	1,679	1,340	1,396	1,351	1,107
Aniak	4,618	3,413	3,422	3,204	3,794
Chuathbaluk	1,447	1,043	2,615	880	1,290
Crooked Creek	771	968	934	864	944
Red Devil	487	379	425	337	452
Sleetmute	1,787	1,327	885	1,230	1,171
Stony River	445	359	559	597	863
Lime Village	41	216	144	48	59
McGrath	567	1,052	800	1,203	974
Takotna	0	0		0	
Nikolai	475	449	979	305	232
Telida					
Quinhagak	3,368	3,995	2,746	3,075	3,433
Goodnews Bay	628	712	858	403	437
Platinum	80	72	25	12	12
Mekoryuk ^a	0	6		0	
Newtok ^a	0	2			
Nightmute ^a		8			
Toksook Bay ^d	128	341	94	45	47
Tununak ^a	5	0			
Total	91,721	98,378	100,159	81,598	85,506

Blanks indicate missing data.

- a Data collected, combined with unspecified village or villages.
- b Village not yet founded.
- c Data collected, but reported with another village.
- d Aniak, Chuathbaluk and Russian Mission.
- e Sleetmute to Red Devil.
- f Kashegelo and Holitna.
- g Reported catch only.

- h Estimate based on a sample of villages surveyed.
- i Beginning in 1988, estimate based on new formula, data not comparable to previous years.

Appendix A.11. Kuskokwim Area subsistence sockeye salmon harvest by community, 1985 - 1997.

Community	1985	1986	1987	1988 ^a	1989	1990	1991	1992	1993	1994	1995
Kipnuk ^a					402	175	136		90	132	
Kwigillingok ^a								0	140	5	
Kongiganak	130			830	658	423	533	905	705	702	530
Tuntutuliak	1,498	288	991	600	1,173	1,954	1,768	1,894	955	3,185	1,134
Eek	241			336	170	1,177	489	671	406	461	283
Kasigluk	1,138			376	235	810	1,421	81	122	275	165
Nunapitchuk	1,447	905	1,187	884	1,026	1,098	2,277	2,273	2,545	1,555	882
Atmautluak	1,308			320	1,143	1,501	881	1,304	1,387	796	1,099
Napakiak	1,242		1,439	1,087	1,752	1,375	1,176	1,315	1,150	1,627	959
Napaskiak	1,181		2,199	1,120	721	1,227	2,673	2,428	3,495	1,933	1,605
Oscarville	942		438	1,752	404	153	711	35	932	324	414
Bethel	3,409	7,730	3,810	5,614	7,316	6,392	17,669	7,173	10,503	8,563	8,190
Kwethluk	5,584	5,423	3,845	5,190	2,414	4,055	3,723	1,829	3,790	3,742	2,504
Akiachak	3,182		3,532	4,890	2,420	3,176	4,123	3,095	4,545	3,323	2,019
Akiak	1,368		1,883	1,378	2,492	1,739	1,708	1,458	3,558	1,786	643
Tuluksak	1,620		1,733	1,493	2,314	1,120	3,595	2,034	2,492	1,393	1,244
Lower Kalskag	948	783		1,581	767	851	1,092	467	2,339	950	681
Upper Kalskag	187	1,182		345	338	287	276	333	349	298	55
Aniak	2,116	2,652	2,101	1,078	959	1,356	2,031	1,180	1,578	571	975
Chuathbaluk	1,797			44	215	1,178	1,246	471	823	995	472
Napaimute	125										
Crooked Creek	1,218			327	436	1,656	998	489	831	512	192
Red Devil	205			437	356	445	426	315	717	311	620
Sleetmute	1,351			898	776	1,060	1,164	855	1,609	1,158	1,083
Stony River	585			195	1,084	835	1,912	1,462	1,488	802	1,342
Lime Village					5,653	2,333	956	0	2,800	1,760	700
McGrath			0	0	0	0	0	0	0	0	0
Takotna			0	0	0	0	0	0	0	0	0
Nikolai			0	0	0	0	0	0	0	0	0
Telida				0	0			0			
Quinhagak	106	423	1,067	1,261	633	1,951	1,772	1,264	1,082	1,000	573
Goodnews Bay	582	860	834	898	710	970	1,132	669	784	669	219
Platinum	142	83	121	167	151	153	150	158	51	101	34
Mekoryuk ^a				1	0	50	1	0	1	87	
Newtok ^a					10	3	0		0	20	
Nighmute ^a					0	10	210			15	
Toksook Bay ^a					277	242	105	1	66	228	5
Tununak ^a					83	7	50		30	0	
Other ^a								1	1		
Total	33,632	20,239 ^b	25,180 ^b	33,102	37,088	39,662	56,404	34,159	51,363	39,279	28,622

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Appendix A.11. (Page 2 of 2)

Community	1996	1997
Kipruk ^a		
Kwigillingok ^a	10	
Kongiganak	722	1,128
Tuntutuliak	1,526	2,048
Eek	478	584
Kasigluk	588	499
Nunapitchuk	1,735	2,330
Atmautluak	1,456	724
Napakiak	1,083	1,455
Napaskiak	2,446	2,329
Oscarville	212	78
Bethel	7,112	10,868
Kwethluk	4,035	3,581
Akiachak	2,607	3,014
Akiak	1,449	1,398
Tuluksak	1,075	1,558
Lower Kalskag	1,144	1,455
Upper Kalskag	294	251
Aniak	1,277	1,124
Chuathbaluk	681	881
Crooked Creek	304	350
Red Devil	977	697
Sleetmute	1,304	1,458
Stony River	1,218	1,607
Lime Village	500	660
McGrath	0	20 ^b
Takotna	0	0
Nikolai	0	0
Telida		
Quinhagak	400	556
Goodnews Bay	411	472
Platinum	7	137
Mekoryuk ^a	0	
Newtok ^a		
Nightmute ^a		
Toksook Bay ^a	5	8
Tununak ^a		
Total	35,036	41,270

Blanks indicate missing data.

a Reported harvest only.

c Beginning in 1988, estimate based on new formula, data not comparable to previous years.

b Estimated total based on sampled villages.

d McGrath residents sometimes travel to areas downriver to harvest sockeye.

Appendix A.12. Kuskokwim Area subsistence Coho salmon harvest by community, 1985 - 1997.

Community	1985	1986	1987	1988 ^a	1989	1990	1991	1992	1993	1994	1995
Kipnuk ^a					200	460	30		25	185	
Kwigillingok ^a								0	80	0	
Kongiganak	88			1,146	562	413	540	544	502	566	605
Tuntutuliak	371	1,692	760	754	508	1,135	729	761	820	441	365
Eek	406			291	349	1,620	343	531	206	426	347
Kasigluk	1,763			906	772	858	1,769	174	228	387	518
Nunapitchuk	513	1,084	696	898	469	573	1,167	2,226	321	781	641
Atmautluak	326			337	971	350	254	518	426	411	566
Napakiak	836		959	588	1,757	1,700	597	1,237	590	920	390
Napaskiak	415		629	1,503	1,130	922	754	866	783	2,012	580
Oscarville	155		40	50	430	43	136	0		49	
Bethel	6,094	19,351	8,077	8,291	22,390	19,342	28,136	15,902	13,764	12,258	19,906
Kwethluk	3,041	3,545	2,537	5,240	3,736	3,928	2,380	2,325	1,838	1,816	1,304
Akiachak	967		286	7,927	1,890	1,621	2,393	2,108	1,351	1,531	677
Akiak	1,270		1,294	1,577	4,959	1,591	2,231	1,137	1,315	1,110	501
Tuluksak	1,723		337	1,537	1,483	946	1,903	1,544	412	285	531
Lower Kalskag	596	2,211		158	981	375	510	469	778	845	718
Upper Kalskag	105	759		136	688	300	493	931	354	184	167
Aniak	1,552	1,051	2,302	1,903	2,640	1,484	1,143	1,844	1,091	1,682	1,265
Chuathbaluk	393			72	272	813	93	349	366	795	84
Napaimute	211										
Crooked Creek	290			89	530	886	277	413	409	581	381
Red Devil	846			672	1,591	866	1,132	1,160	1,812	994	1,557
Sleetmute	1,330			1,776	1,009	1,023	1,557	1,132	880	649	1,075
Stony River	395			161	611	423	502	744	512	505	1,083
Lime Village				1,055	2,025	538	336	300	618	960	246
McGrath				790	537	2,408	882	2,780	1,989	2,558	2,225
Takotna					40	0	0	0	0	0	
Nikolai	550			530	328	73	83	173	267	119	545
Telida					80			0			
Quinhagak	67	41	125	4,317	3,787	4,174	3,232	2,958	2,152	2,739	2,561
Goodnews Bay	210			1,072	830	1,556	1,789	1,163	1,197	435	296
Platinum	11	8	43	90	77	90	39	190	29	77	9
Mekoryuk ^a					106	52	130	2	53	87	
Newtok ^a					15	4	0		0	0	
Nightmute ^a					70	0	20			0	
Toksook Bay ^a					35	46	1	15	57	116	22
Tununak ^a					9	0	0		70	0	
Other ^a							39				
Total	24,524	29,742 ^b	18,085 ^b	43,866	57,847	50,713	55,581	44,496	35,295	36,504	39,165

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Appendix A.12. (Page 2 of 2)

Community	1996	1997
Kipnuk ^a		
Kwigillingok ^a	5	
Kongiganak	421	618
Tuntutullak	1,339	669
Eek	389	80
Kasigluk	368	518
Nunapitchuk	1,310	872
Atmautluak	537	531
Napakiak	600	168
Napaskiak	398	658
Oscarville	19	60
Bethel	12,929	15,108
Kwethluk	3,195	1,193
Akiachak	850	441
Akiak	972	846
Tuluksak	1,116	434
Lower Kalskag	1,022	652
Upper Kalskag	360	781
Aniak	2,671	1,494
Chuathbaluk	395	217
Crooked Creek	171	261
Red Devil	1,274	1,391
Sleetmute	846	419
Stony River	571	450
Lime Village	0	277
McGrath	919	753
Takotna	0	
Nikolai	64	141
Telida		
Quinhagak	1,467	1,264
Goodnews Bay	293	343
Platinum	59	54
Mekoryuk ^a	3	
Newtok ^a		
Nightmute ^a		
Toksook Bay ^a	135	21
Tununak ^a		
Total	34,698	30,714

Blanks indicate missing data.

a Reported harvest only.

b Estimated total based on sampled villages.

c Beginning in 1988, estimate based on new formula. data not comparable to previous years.

Appendix A.13. Kuskokwim Area subsistence chum salmon harvest by community, 1985 - 1997.

Community	1985	1986	1987	1988 ^c	1989	1990	1991	1992	1993	1994	1995
Kipnuk ^a					0	540	205		601	214	
Kwigillingok ^a								0	200	5	
Kongiganak	671			1,473	1,967	980	1,036	1,524	811	1,340	1,275
Tuntutuliak	4,346	2,734	5,385	4,700	5,068	6,250	4,755	6,052	2,899	5,232	3,488
Eek	401			1,323	972	3,090	814	1,397	244	624	815
Kasigluk	4,199			3,541	3,007	3,406	3,137	26	374	537	457
Nunapitchuk	4,346	4,676	4,621	7,331	6,923	5,240	6,055	8,229	4,854	4,587	4,297
Atmautluak	4,440			4,695	3,014	4,006	2,394	3,183	1,345	1,455	3,466
Napakiak	3,686		2,784	4,535	7,068	8,389	2,340	4,401	2,281	4,096	3,084
Napaskiak	5,810		6,832	11,623	13,079	8,166	6,582	6,061	3,622	5,605	4,271
Oscarville	1,294		1,135	2,461	1,341	925	1,141	29	566	676	1,018
Bethel	9,260	14,778	7,974	17,442	25,581	18,436	22,770	14,908	9,172	12,341	15,821
Kwethluk	6,866	9,736	7,636	21,352	10,128	11,102	5,497	7,647	3,491	6,102	6,050
Akiachak	5,931		4,355	17,749	7,747	9,133	5,994	5,771	3,492	6,286	4,074
Akiak	6,724		3,837	6,699	13,000	8,235	6,668	5,907	7,549	4,599	1,878
Tuluksak	6,064		3,466	7,046	9,796	5,845	5,695	4,798	3,834	2,476	2,609
Lower Kalskag	4,637	2,538		8,232	4,932	4,212	2,886	2,758	3,062	2,758	1,455
Upper Kalskag	1,855	3,684		3,317	3,427	1,321	2,357	2,843	578	864	1,351
Aniak	8,804	5,905	5,751	11,628	10,404	9,089	3,492	7,870	2,900	2,612	3,566
Chuathbaluk	3,782			450	2,051	4,510	1,912	2,502	2,895	1,615	1,807
Napaimute	414										
Crooked Creek	2,888			768	779	2,884	1,367	904	715	649	358
Red Devil	1,021			3,168	1,376	1,466	1,236	1,523	1,004	1,220	882
Sleetmute	3,689			4,873	1,813	1,874	1,862	3,151	681	1,533	1,758
Stony River	722			3,405	1,352	1,132	602	1,335	775	932	1,375
Lime Village				913	2,100	2,500	715	0	508	2,080	920
McGrath				639	1,276	2,839	1,068	2,854	590	1,294	1,486
Takotna				200	250	56	0	0	0	0	
Nikolai	2,900			2,404	1,221	882	495	818	353	293	301
Telida					15			0			
Quinhagak	901	808	1,084	1,065	1,568	3,234	1,593	1,833	1,008	1,452	686
Goodnews Bay	339	188	371	405	620	193	144	921	188	425	152
Platinum	9	3	207	43	164	139	5	85	0	45	3
Mekoryuk ^a				500	2,915	1,067	1,178	0	808	2,337	
Newtok ^a					20	4	0		0	0	
Nightmute ^a					30	35	60			7	
Toksook Bay ^a					86	224	103	246	296	660	239
Tununak ^a					16	65	150		30	0	
Other ^a							3	1			
Total	95,999	142,930^b	70,709^b	153,980	145,106	131,469	96,308	99,576	61,726	76,951	68,942

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Appendix A.13. (Page 2 of 2)

Community	1996	1997
Kipnuk ^a		
Kwigillingok ^a	30	
Kongiganak	1,331	902
Tuntutuliak	5,852	2,877
Eek	923	649
Kasigluk	1,196	1,278
Nunapitchuk	5,833	2,794
Atmautluak	2,672	1,484
Napakiak	4,249	1,458
Napaskiak	4,983	2,589
Oscarville	1,552	35
Bethel	16,403	8,790
Kwethluk	11,870	3,554
Akiachak	4,993	1,768
Akiak	4,640	1,725
Tuluksak	3,167	2,887
Lower Kalskag	3,357	1,487
Upper Kalskag	1,621	405
Aniak	8,447	1,747
Chuathbaluk	2,089	1,244
Crooked Creek	347	311
Red Devil	787	551
Sleetmute	1,215	417
Stony River	443	591
Lime Village	500	251
McGrath	206	111
Takotna	10	
Nikolai	249	65
Telida		
Quinhagak	930	600
Goodnews Bay	214	133
Platinum	5	0
Mekoryuk ^a	0	
Newtok ^b		
Nightmute ^a		
Toksook Bay ^a	124	273
Tununak ^c		
Total	90,238	40,976

Blanks indicate missing data.

a Reported harvest only.

b Estimated total based on sampled villages.

c Beginning in 1988, estimate based on new formula, data not comparable to previous years.

APPENDIX B

Appendix B.1. Kuskokwim River distances,^a

Location	Distance from the Mouth		Distance from Bethel	
	Kilometer	Miles	Kilometer	Miles
Popokamiut (Lower boundary District 1)	-3	-2	-129	-80
Kuskokwim River Mouth 60.80 N, 162.42 W	0	0	-125	-78
Eek Island, Southernmost tip, (Lower boundary District 1)	19	12	-106	-66
Apokak Slough (Lower boundary District 1)	35	22	-90	-56
Eek River	39	24	-87	-54
Kwegooyuk	42	26	-84	-52
Kinak River	48	30	-78	-48
Tuntutuliak Village	56	35	-87	-54
Kialik River	59	37	-66	-41
Fowler Island	83	52	-42	-26
Johnson River	93	58	-32	-20
Napakiak Village	104	65	-21	-13
Napaskiak Village	115	71	-12	-7
Oscarville Village	115	71	-11	-7
Bethel City	125	78	0	0
Gweek River	145	90	20	12
Kwethluk Village	159	99	34	21
Akiachak Village	169	105	43	27
Kasigluk River	173	108	48	30
Kisaralik River	175	109	50	31
Akiak Village	190	118	64	40
Mishevik Slough,	212	132	87	54
Tuluksak Village	218	136	93	58
Nelson Island	220	137	95	59
(District 1 Boundary), Bogus Creek	234	146	109	68
High Bluffs	264	164	139	86
Boundary of District 2	295	183	170	105
Mud Creek Slough	297	185	172	107
Kalskag Village	309	192	184	114
Aniak Village, Aniak River	362	225	237	147
Chuathbaluk Village (Upper boundary District 2)	375	233	250	155
Kolmakof River	395	246	270	168
Napaimiut Village	410	255	285	177

(continued)

Location	Distance from the Mouth		Distance from Bethel	
	Kilometer	Miles	Kilometer	Miles
Holokuk River	415	258	290	180
Oskawalik River	449	279	324	201
Crooked Creek Village	466	290	341	212
Georgetown Village, George River	497	309	372	231
Red Devil Village	526	327	401	249
Sleetmute village	539	335	414	257
Holitna River	540	336	415	258
Stony River Village	585	364	460	286
Stony River	587	365	462	287
Swift River	611	380	486	302
Tatlawisksuk River	616	383	491	305
Devil's Elbow	645	401	520	323
Vinasale	740	460	615	382
McGrath Village	815	507	690	429
Middle Fork	889	553	764	475
Big River	801	560	776	482
Pitka Fork	920	572	795	494
Medra Village	928	577	803	499
South Fork	931	579	806	501
East Fork	943	586	818	508
North Fork	943	586	818	508
Nikolai Village	999	621	874	543
Swift Fork	1,136	706	1,011	628
Telida Village	1,184	736	1,059	658
Highpower Creek	1,200	746	1,075	668
Fish Creek	1,284	798	1,159	720
North Fork Lake	1,334	829	1,209	751
Top of Kuskokwim Drainage	1,498	931	1,373	853

- a These distances were taken from the USGS 1:36,300 series of topographic maps. The "mouth" was defined as the point where the "grassland" banks are 24 miles apart. Some locations are not on the mainstem of the Kuskokwim River, as a result their mileages appear to be out of sequence since they are listed in the order of the turn off.

Appendix B.2. Peak aerial survey counts of chinook salmon in indexed Kuskokwim River spawning tributaries, 1975 - 1997^a.

Year	Lower Kuskokwim				Middle Kuskokwim						Upper Kuskokwim		
	Kwethluk		Kisaralik	Tuluk sak	Aniak	Kipchuk (Aniak)	Salmon (Aniak)	Holokuk	Oskawalik	Holitna	Kogrukluk		Cheeneemuk
EEK	Canyon C.	Weir											
1975			118			94	17	71	1,114				
1976				139		177	126	204	2,571	5,579		1,197	1,146
1977		2,290		291			562	60	276			1,399	1,978
1978	1,613	1,732	2,417	403			289			2,766	13,667	267	1,127
1979		911						113			11,338		699
1980	2,378			725				1,186	250	123			1,177
1981		1,783	672		9,074		894				16,655		1,474
1982	230				2,645		185	42	120	521	10,993		419
1983	188	471	731	129	1,909		231	33	52	1,069		243	586
1984		273	157	93	1,409					299	4,926	1,177	577
1985	1,118	629		135					61		4,619	1,002	625
1986					909		336	100		850	5,038	381	
1987	1,739	975		60		193	516	208	193	813		317	
1988	2,255	766	840	188	945		244	57	80		8,506		501
1989	1,042	1,157	152		1,880	994	631				11,940		446
1990	1,983	1,295	631	166	1,255	537	596	143	113		10,218		
1991	1,312	1,002		342	1,564	885	583				7,850		
1992					2,284	670	335	64	91	1,822	6,755	1,050	2,555
1993					2,687	1,248	1,082	114	103	1,573	12,332	678	1,012
1994		848	1,021		1,848	1,520	1,218				15,227	1,206	1,010
1995			1,243		3,174	1,215	1,442	181	289	2,787	20,630	1,565	1,911
1996					3,496		983	85			14,199		
1997			439	173	2,187	855	980	322	1,470	2,093	13,280	345	
BEG	1,460^b	1,200^c	1,000^c	400^c	1,500^c	670^b	600^c	107^b	108^b	2,000^c	10,000^c	1,002^b	1,300^c

^a Estimates are from "peak" aerial surveys conducted between 20 and 31 July under fair, good, or excellent viewing conditions.

^b Median of years 1975 through 1994.

^c Formally established BEG (Buklis 1993).

Appendix B.3. Historic daily CPUE for chinook salmon catches in the Bethel test fishery, 1984 - 1997.^a

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
5/30	0	0												
5/31	0	0												
6/01	0	0				0	0		0	3	3	3	3	
6/02	1	0			3	0	2	0	0	4	2	3	10	0
6/03	0	0	0		0	0	0	0	0	10	3	1	5	2
6/04	0	0	3	0	0	0	1	0	0	3	2	1	17	5
6/05	0	0	1	5	2	0	1	1	0	8	11	3	10	4
6/06	0	0	1	3	0	0	1	3	2	11	15	2	19	0
6/07	2	0	5	5	3	2	3	6	0	5	2	10	19	2
6/08	3	0	0	16	22	7	4	2	3	8	5	15	6	7
6/09	6	0	1	9	14	9	5	1	6	29	5	2	15	2
6/10	5	0	0	20	5	15	8	0	7	16	2	10	20	15
6/11	5	0	0	18	21	4	14	3	21	3	0	10	25	3
6/12	13	0	0	22	18	9	14	0	22	20	7	17	19	30
6/13	3	0	0	13	11	11	6	2	21	14	16	16	33	10
6/14	5	0	1	21	3	27	2	2	18	10	52	10	45	1
6/15	17	0	9	10	8	19	9	1	11	22	15	3	16	9
6/16	14	0	20	11	8	7	11	3	21	17	13	3	26	24
6/17	4	0	14	54	21	21	6	3	24	37	14	11	25	37
6/18	26	0	4	14	7	35	13	12	9	30	2	24	8	26
6/19	14	0	15	13	13	19	26	6	5	29	22	31	11	49
6/20	14	1	3	18	25	16	9	15	9	30	13	8	15	39
6/21	5	7	17	23	16	14	12	6	9	27	20	29	22	48
6/22	12	0	15	30	13	17	19	4	0	31	29	11	6	34
6/23	4	3	14	26	16	23	9	6	6	13	12	22	10	21
6/24	11	0	13	9	21	21	24	6	14	21	3	25	13	7
6/25	4	4	1	38	8	26	34	7	12	8	10	22	7	20
6/26	4	0	5	20	10	48	31	4	11	2	2	35	6	14
6/27	6	3	8	25	14	50	13	2	9	5	11	12	3	12
6/28	10	8	0	15	5	11	25	7	13	5	3	5	9	0
6/29	4	9	3	18	3	3	21	16	11	7	15	19	3	1
6/30	1	4	3	12	3	22	0	9	6	12	7	15	4	3
7/01	6	12	7	15	12	11	2	9	11	3	5	13	0	2
7/02	14	1	6	9	1	3	9	8	6	4	3	3	2	1
7/03	3	9	7	3	5	9	17	6	7	3	5	9	0	4
7/04	11	6	3	8	5	7	20	6	10	3	3	9	2	3
7/05	4	9	3	7	8	10	5	1	3	0	5	7	4	4
7/06	6	8	1	9	0	2	6	2	0	0	5	0	4	6
7/07	0	3	1	15	0	9	8	3	0	2	11	3	2	6
7/08	3	5	4	0	0	4	14	2	3	2	2	5	2	2
7/09	7	5	3	1	0	5	5	0	0	4	3	6	2	0
7/10	2	1	0	3	0	4	0	2	3	2	0	0	3	6
7/11	0	2	2	2	0	0	0	0	4	2	0	2	2	8
7/12	1	1	0	2	0	1	4	0	4	2	0	0	0	2
7/13	1	1	0	2	0	0	2	2	4	0	0	0	2	0
7/14	0	0	1	1	8	0	2	1	0	0	0	0	0	0
7/15	1	2	0	0	0	0	2	1	0	0	0	0	0	0
7/16	8	0	0	0	8	0	2	2	4	0	0	0	0	0
7/17	0	1	0	3	8	1	2	0	5	2	0	0	0	2
7/18	2	0	0	0	2	2	0	2	6	0	2	0	0	0
7/19	0	0	0	14	0	1	0	2	3	2	2	0	0	0
7/20	3	0	0	1	0	5	0	0	0	0	0	2	0	2
7/21	0	0	2	2	0	1	0	0	0	0	0	0	0	2
7/22	0	0	2	0	0	6	4	0	0	0	0	0	0	2
7/23	0	0	0	3	0	0	0	0	0	0	0	0	0	0
7/24	1	0	3	0	1	0	2	0	0	0	0	0	0	2

continued

Appendix B.3. (2 of 2)

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
7/25	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7/26	2	0	0	0	2	0	4	0	0	0	0	0	2	0
7/27	0	2	0	4	2	0	0	0	0	0	0	4	0	0
7/28	0	0	0	0	0	0	2	0	0	0	0	0	0	0
7/29	0	2	0	0	0	0	4	0	0	0	0	0	0	0
7/30	0	0	0	0	4	0	0	0	0	0	0	2	0	0
7/31	3	0	0	0	0	0	0	0	0	0	0	0	2	0
8/01	2	0	0	0	0	0	0	0	0	0	0	0	0	0
8/02	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8/03	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8/04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/06	0	0	0	0	0	0	2	0	0	0	0	0	0	0
8/07	0	0	0	2	0	0	0	0	2	0	0	0	0	0
8/08	0	2	0	0	0	0	0	0	0	0	0	0	0	0
8/09	0	0	0	0	0	1	0	0	0	0	0	0	0	0
8/10	0	0	0	0	0	0	2	0	0	0	0	0	0	0
8/11	0	0	0	2	3	0	0	0	0	0	0	0	0	0
8/12	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8/13	0	0	0	0	0	2	0	0	0	0	0	0	0	2
8/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/15	0	0	0	0	0	0	2	0	0	0	0	0	0	0
8/16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19	0	0	0	0	0	0	0	0	2	0	0	0	0	0
8/20	0	1	0	0	0	2	0	0	0	0	0	0	0	0
8/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/24	0	0	0	0	0	0	0	0	0	0	2	0	0	0
8/25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/26	0	0	0	0	0	0	2	0	0	0	0	0	0	0
8/27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/28	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/31	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/02	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/09	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a Boxed values indicate days when there was a commercial fishing period in District W1.

Appendix B.4. Historic daily cumulative CPUE for chinook salmon catches in the Bethel test fishery, 1984 - 1997.^a

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
5/30	0	0												
5/31	1	0												
6/01	1	0				0	0		0	3	3	0	3	
6/02	3	0			3	0	2	0	0	7	5	3	13	0
6/03	3	0	0		3	0	2	0	0	17	7	3	18	2
6/04	3	0	3	0	3	0	3	0	0	20	9	4	35	7
6/05	3	0	4	5	5	0	4	1	0	28	20	7	47	11
6/06	3	0	6	8	5	0	6	4	2	39	35	9	66	11
6/07	5	0	10	13	8	2	8	10	2	45	37	19	84	13
6/08	7	0	10	29	30	8	13	11	5	52	42	34	90	20
6/09	13	0	12	38	44	17	17	13	11	81	47	36	105	22
6/10	18	0	12	59	49	32	25	13	18	97	48	46	125	36
6/11	23	0	12	77	71	36	39	16	39	100	48	55	150	39
6/12	35	0	12	98	89	45	53	16	61	120	55	73	169	69
6/13	38	0	12	112	100	56	58	17	82	134	71	89	202	79
6/14	43	0	13	133	103	83	61	19	100	143	123	99	247	80
6/15	60	0	22	143	111	102	69	20	111	166	138	102	262	89
6/16	74	0	42	154	119	109	81	23	132	182	151	105	288	113
6/17	78	0	56	208	140	130	87	26	156	220	164	116	313	150
6/18	104	0	59	222	147	165	100	38	185	250	166	140	322	176
6/19	118	0	74	235	160	185	126	43	170	279	188	171	333	224
6/20	132	1	77	253	185	201	135	59	179	309	201	179	348	263
6/21	137	8	94	277	201	215	146	64	188	336	221	208	370	312
6/22	149	8	109	306	214	231	165	68	188	367	251	219	376	346
6/23	153	11	123	333	231	255	174	74	194	380	263	241	386	366
6/24	164	11	136	342	252	278	198	80	208	401	266	266	399	374
6/25	169	15	138	379	260	302	232	87	220	409	276	288	406	394
6/26	173	15	143	400	270	350	263	91	230	410	278	323	412	408
6/27	178	18	151	425	284	401	276	93	239	416	289	335	415	419
6/28	188	26	151	440	289	412	301	99	252	420	292	340	423	419
6/29	192	35	154	458	292	415	322	116	263	427	307	359	426	421
6/30	194	38	156	471	295	437	322	125	268	440	314	374	430	424
7/01	200	51	163	486	307	448	324	133	279	443	318	387	430	426
7/02	214	52	169	495	308	451	333	141	285	446	322	390	432	427
7/03	217	60	176	498	313	461	350	147	293	450	327	399	432	430
7/04	228	67	179	506	318	468	370	153	303	453	330	408	434	433
7/05	232	76	182	513	326	477	375	154	306	453	334	415	438	437
7/06	238	85	183	522	326	479	381	156	306	453	339	415	442	443
7/07	238	87	184	537	326	488	388	159	306	455	350	418	444	449
7/08	240	93	189	537	326	492	403	160	309	457	352	423	445	451
7/09	248	98	191	538	326	496	408	160	309	461	355	429	447	451
7/10	250	99	191	541	326	500	408	162	313	464	355	429	450	456
7/11	250	102	193	543	326	500	408	162	317	466	355	431	452	464
7/12	251	103	193	545	326	501	411	162	321	468	355	431	452	466
7/13	252	105	193	548	326	501	414	163	325	468	355	431	453	466
7/14	252	105	194	549	334	501	416	165	325	468	355	431	453	466
7/15	253	106	194	549	334	501	418	166	325	468	355	431	453	466
7/16	261	106	194	549	341	501	420	168	329	468	355	431	453	466
7/17	261	107	194	551	347	503	422	168	335	470	355	431	453	468
7/18	263	107	194	551	349	504	422	170	341	470	357	431	453	468
7/19	263	107	194	566	349	505	422	172	344	473	359	431	453	468

continued

Appendix B.4. (2 of 2)

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
7/20	266	107	194	567	349	510	422	172	344	473	359	433	453	470
7/21	266	107	196	569	349	511	422	172	344	473	359	433	453	472
7/22	266	107	198	569	349	518	425	172	344	473	359	433	453	474
7/23	266	107	198	572	349	518	425	172	344	473	359	433	453	474
7/24	267	107	201	572	350	518	427	172	344	473	359	433	453	476
7/25	267	107	201	572	350	518	427	172	344	473	359	433	455	476
7/26	268	107	201	572	352	518	431	172	344	473	359	433	456	476
7/27	268	109	201	577	354	518	431	172	344	473	359	438	456	476
7/28	268	109	201	577	354	518	433	172	344	473	359	438	456	476
7/29	268	111	201	577	354	518	438	172	344	473	359	438	456	476
7/30	268	111	201	577	358	518	438	172	344	473	359	440	456	476
7/31	271	111	201	577	358	518	438	172	344	473	359	440	458	476
8/01	273	111	201	577	358	518	438	172	344	473	359	440	458	476
8/02	273	111	201	577	358	519	438	172	344	473	359	440	458	476
8/03	273	111	201	578	358	519	438	172	344	473	359	440	458	476
8/04	273	111	201	578	358	519	438	172	344	473	359	440	458	476
8/05	273	111	201	578	358	519	438	172	344	473	359	440	458	476
8/06	273	111	201	578	358	519	439	172	344	473	359	440	458	476
8/07	273	111	201	580	358	519	439	172	347	473	359	440	458	476
8/08	273	113	201	580	358	519	439	172	347	473	359	440	458	476
8/09	273	113	201	580	358	520	439	172	347	473	359	440	458	476
8/10	273	113	201	580	358	520	441	172	347	473	359	440	458	476
8/11	273	113	201	582	361	520	441	172	347	473	359	440	458	476
8/12	273	113	201	582	361	520	441	172	347	473	359	440	458	477
8/13	273	113	201	582	361	522	441	172	347	473	359	440	458	478
8/14	273	113	201	582	361	522	441	172	347	473	359	440	458	478
8/15	273	113	201	582	361	522	443	172	347	473	359	440	458	478
8/16	273	113	201	582	361	522	443	172	347	473	359	440	458	478
8/17	273	113	201	582	361	522	443	172	347	473	359	440	458	478
8/18	273	113	201	582	361	522	443	172	347	473	359	440	458	478
8/19	273	113	201	582	361	522	443	172	349	473	359	440	458	478
8/20	273	114	201	582	361	523	443	172	349	473	359	440	458	478
8/21	273	114	201	582	361	523	443	172	349	473	359	440	458	478
8/22	273	114	201	582	361	523	443	172	349	473	359	440	458	478
8/23	273	114	201	582	361	523	443	172	349	473	359	440	458	478
8/24	273	114	201	582	361	523	443	172	349	473	362	440	458	478
8/25	273	114	201	582	361	523	443	172	349	473	362	440	458	478
8/26	273	114	201	582	361	523	445	172	349	473	362	440	458	478
8/27	273	114	201	582	361	523	445	172	349	473	362	440	458	478
8/28	273	114	201	582	361	523	445	172	349	473	362	440	458	478
8/29	273	114		582	361	523	445	172	349	473	362	440	458	478
8/30														
8/31														
9/01														
9/02														
9/03														
9/04														
9/05														
9/06														
9/07														
9/08														
9/09														
9/10														
9/11														

^a Boxed values indicate days when there was a commercial fishing period in District W1.

Appendix B.5. Historic cumulative daily percent passage for chinook salmon catches in the Bethel test fishery, 1984 - 1997.^o

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Median
6/01	1	0	0	0	0	0	0	0	0	1	1	0	1		0
6/02	1	0	0	0	1	0	0	0	0	1	1	1	3	0	0
6/03	1	0	0	0	1	0	0	0	0	4	2	1	4	1	0
6/04	1	0	1	0	1	0	1	0	0	4	2	1	8	1	1
6/05	1	0	2	1	1	0	1	1	0	6	6	2	10	2	1
6/06	1	0	3	1	1	0	1	2	0	8	10	2	14	2	2
6/07	2	0	5	2	2	0	2	6	0	9	10	4	18	3	2
6/08	3	0	5	5	8	2	3	7	1	11	12	8	20	4	5
6/09	5	0	6	7	12	3	4	7	3	17	13	8	23	4	6
6/10	7	0	6	10	14	6	6	7	5	20	13	10	27	8	7
6/11	8	0	6	13	20	7	9	9	11	21	13	13	33	8	10
6/12	13	0	6	17	25	9	12	9	17	25	15	17	37	14	15
6/13	14	0	6	19	28	11	13	10	23	28	20	20	44	16	18
6/14	16	0	6	23	29	16	14	11	29	30	34	22	54	17	20
6/15	22	0	11	25	31	20	16	12	32	35	38	23	57	19	23
6/16	27	0	21	26	33	21	18	13	38	39	42	24	63	24	25
6/17	29	0	28	36	39	25	20	15	45	46	45	26	68	31	30
6/18	38	0	30	38	41	32	23	22	47	53	46	32	70	37	37
6/19	43	0	37	40	44	35	28	25	49	59	52	39	73	47	42
6/20	48	1	38	44	51	38	30	34	51	65	56	41	76	55	46
6/21	50	7	47	48	56	41	33	37	54	71	61	47	81	65	49
6/22	55	7	54	53	59	44	37	40	54	78	69	50	82	72	54
6/23	56	9	61	57	64	49	39	43	56	80	73	55	84	77	57
6/24	60	9	68	59	70	53	45	46	60	85	73	60	87	78	60
6/25	62	13	68	66	72	58	52	51	63	86	76	65	89	82	65
6/26	63	13	71	69	75	67	59	53	66	87	77	74	90	85	70
6/27	65	15	75	73	79	77	62	54	69	88	80	76	91	88	76
6/28	69	23	75	76	80	79	68	58	72	89	81	77	92	88	76
6/29	70	30	76	79	81	79	73	67	75	90	85	82	93	88	79
6/30	71	34	78	81	82	83	73	72	77	93	87	85	94	89	81
7/01	73	44	81	83	85	86	73	77	80	94	88	88	94	89	84
7/02	78	45	84	85	85	86	75	82	82	94	89	89	94	89	85
7/03	79	53	87	86	87	88	79	86	84	95	90	91	94	90	87
7/04	83	59	89	87	88	89	83	89	87	96	91	93	95	91	89
7/05	85	67	90	88	90	91	85	90	88	96	92	94	96	91	90
7/06	87	74	91	90	90	92	86	91	88	96	94	94	97	93	91
7/07	87	77	92	92	90	93	88	92	88	96	97	95	97	94	92
7/08	88	81	94	92	90	94	91	93	89	97	97	96	97	94	94
7/09	91	86	95	92	90	95	92	93	89	98	98	98	98	94	94
7/10	92	87	95	93	90	96	92	94	90	98	98	98	98	95	95
7/11	92	89	96	93	90	96	92	94	91	99	98	98	99	97	95
7/12	92	90	96	94	90	96	93	94	92	99	98	98	99	97	95
7/13	92	92	96	94	90	96	93	95	93	99	98	98	99	97	95
7/14	92	92	97	94	92	96	94	96	93	99	98	98	99	97	96
7/15	93	93	97	94	92	96	94	97	93	99	98	98	99	97	96

continued

Appendix B.5. (2 of 2)

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Median
7/16	95	93	97	94	95	96	95	98	95	99	98	98	99	97	96
7/18	96	94	97	95	97	96	95	99	98	100	99	98	99	98	97
7/19	96	94	97	97	97	97	95	100	99	100	99	98	99	98	98
7/20	97	94	97	97	97	98	95	100	99	100	99	99	99	98	98
7/21	97	94	98	98	97	98	95	100	99	100	99	99	99	99	98
7/22	97	94	99	98	97	99	96	100	99	100	99	99	99	99	99
7/23	97	94	99	98	97	99	96	100	99	100	99	99	99	99	99
7/24	98	94	100	98	97	99	96	100	99	100	99	99	99	99	99
7/25	98	94	100	98	97	99	96	100	99	100	99	99	99	99	99
7/26	98	94	100	98	98	99	97	100	99	100	99	99	100	99	99
7/27	98	96	100	99	98	99	97	100	99	100	99	99	100	99	99
7/28	98	96	100	99	98	99	98	100	99	100	99	99	100	99	99
7/29	98	97	100	99	98	99	99	100	99	100	99	99	100	99	99
7/30	98	97	100	99	99	99	99	100	99	100	99	100	100	99	99
7/31	99	97	100	99	99	99	99	100	99	100	99	100	100	99	99
8/01	100	97	100	99	99	99	99	100	99	100	99	100	100	99	99
8/02	100	97	100	99	99	99	99	100	99	100	99	100	100	99	99
8/03	100	97	100	99	99	99	99	100	99	100	99	100	100	99	99
8/04	100	97	100	99	99	99	99	100	99	100	99	100	100	99	99
8/05	100	97	100	99	99	99	99	100	99	100	99	100	100	99	99
8/06	100	97	100	99	99	99	99	100	99	100	99	100	100	99	99
8/07	100	97	100	100	99	99	99	100	99	100	99	100	100	99	100
8/08	100	99	100	100	99	99	99	100	99	100	99	100	100	99	100
8/09	100	99	100	100	99	99	99	100	99	100	99	100	100	99	100
8/10	100	99	100	100	99	99	100	100	99	100	99	100	100	99	100
8/11	100	99	100	100	100	99	100	100	99	100	99	100	100	99	100
8/12	100	99	100	100	100	99	100	100	99	100	99	100	100	100	100
8/13	100	99	100	100	100	100	100	100	99	100	99	100	100	100	100
8/14	100	99	100	100	100	100	100	100	99	100	99	100	100	100	100
8/15	100	99	100	100	100	100	100	100	99	100	99	100	100	100	100
8/16	100	99	100	100	100	100	100	100	99	100	99	100	100	100	100
8/17	100	99	100	100	100	100	100	100	99	100	99	100	100	100	100
8/18	100	99	100	100	100	100	100	100	99	100	99	100	100	100	100
8/19	100	99	100	100	100	100	100	100	100	100	99	100	100	100	100
8/20	100	100	100	100	100	100	100	100	100	100	99	100	100	100	100
8/21	100	100	100	100	100	100	100	100	100	100	99	100	100	100	100
8/22	100	100	100	100	100	100	100	100	100	100	99	100	100	100	100
8/23	100	100	100	100	100	100	100	100	100	100	99	100	100	100	100
8/24	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/25	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/26	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/27	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/28	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/29	100	100	100	100	100	100	100	100	100	100	100	100			100

^a The boxed areas within each column represent the central 50 percent test-fish catches and the median.

Appendix B.6. Historic daily CPUE for sockeye salmon catches in the Bethel test fishery, 1984 - 1997.*

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
5/30	0	0												
5/31	0	0												
6/01	0	0					0	0	0	0	0	0	0	0
6/02	0	0			0	0	0	0	0	0	0	0	0	0
6/03	0	0	0		0	0	0	0	0	0	0	0	0	0
6/04	0	0	0	6	0	0	0	0	0	0	0	0	0	0
6/05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/06	0	0	0	3	0	3	0	0	0	0	0	0	3	3
6/07	3	0	6	9	0	0	0	0	0	0	0	0	0	0
6/08	0	0	8	17	12	0	0	0	0	3	0	0	3	0
6/09	0	0	13	13	14	3	0	0	0	3	0	0	9	3
6/10	0	0	3	16	12	3	0	0	0	0	0	0	40	0
6/11	5	0	21	16	43	20	8	0	0	7	0	0	50	6
6/12	0	0	6	112	62	12	3	0	0	6	0	3	20	3
6/13	2	0	11	49	47	11	0	3	9	31	0	3	43	6
6/14	6	0	6	9	14	27	16	3	13	7	3	7	67	6
6/15	0	0	48	42	9	24	14	3	13	3	3	13	53	12
6/16	7	0	102	168	7	15	20	0	14	23	0	16	68	61
6/17	7	0	49	252	26	15	63	12	48	66	10	3	22	9
6/18	22	3	79	69	48	46	16	51	45	41	0	19	33	60
6/19	0	13	119	17	98	28	38	11	9	16	55	28	107	31
6/20	14	0	34	47	26	19	31	39	15	63	10	6	103	61
6/21	5	12	145	76	135	53	15	9	28	136	76	66	136	174
6/22	26	11	169	166	135	58	14	43	36	46	29	49	29	147
6/23	0	97	63	355	117	36	77	17	39	54	73	22	88	24
6/24	31	0	33	142	63	40	60	6	67	60	109	31	124	8
6/25	41	135	226	49	29	83	91	9	96	110	36	134	126	66
6/26	19	128	198	62	115	26	25	6	19	23	40	74	122	60
6/27	48	126	202	34	69	53	43	21	49	21	26	28	95	50
6/28	20	117	138	41	42	40	90	39	141	25	23	131	65	7
6/29	3	256	20	37	9	35	104	25	108	62	189	61	77	188
6/30	18	150	221	164	45	40	6	20	71	428	20	64	20	38
7/01	34	190	15	241	91	13	24	28	35	117	13	88	11	40
7/02	46	54	98	63	28	11	24	35	36	55	29	69	17	47
7/03	24	68	85	36	32	22	65	62	78	14	190	108	62	9
7/04	36	33	32	124	54	1	96	36	22	57	93	66	34	20
7/05	35	45	42	166	45	5	22	38	6	10	73	128	11	32
7/06	23	56	33	12	17	3	3	7	12	32	160	32	9	6
7/07	24	58	74	44	11	13	23	7	0	20	35	45	23	56
7/08	27	3	21	6	13	15	38	0	13	58	44	30	12	45
7/09	17	23	11	30	10	3	29	27	3	6	86	13	46	20
7/10	2	6	2	30	5	0	14	6	4	4	29	0	11	23
7/11	2	12	9	4	4	2	6	3	7	4	6	7	8	21
7/12	2	6	23	3	0	5	4	3	6	0	4	2	8	8
7/13	0	5	17	7	0	4	8	3	19	21	0	4	11	4
7/14	1	2	13	5	3	0	6	3	23	30	2	2	10	2
7/15	3	0	2	3	2	0	8	3	4	9	0	0	2	6
7/16	10	9	8	0	0	6	4	0	10	2	0	0	9	4
7/17	2	4	6	2	3	1	0	2	4	0	2	0	2	2
7/18	5	4	3	0	2	1	0	0	6	0	2	0	0	2
7/19	4	3	4	6	0	1	2	0	0	0	0	0	0	8
7/20	0	5	4	3	0	0	0	0	0	0	0	4	2	4
7/21	2	5	7	0	0	0	0	0	0	2	1	0	0	8
7/22	1	8	3	0	1	0	0	2	0	2	2	0	4	0
7/23	0	3	3	0	0	0	0	2	0	0	0	2	0	2
7/24	0	0	0	0	1	0	0	0	0	0	2	0	0	2
7/25	2	0	0	0	0	0	0	0	0	0	0	0	2	2
7/26	2	2	0	0	0	0	0	0	0	0	0	0	2	4
7/27	0	0	1	0	0	0	0	0	0	0	0	0	0	0
7/28	0	0	0	0	0	0	2	0	0	0	0	2	0	0
7/29	0	0	2	8	0	0	0	0	0	0	0	0	0	0
7/30	0	0	2	0	0	0	1	0	0	0	0	0	0	2
7/31	0	0	0	0	1	0	2	0	0	0	0	0	0	0
8/01	0	0	1	0	0	0	0	0	0	0	0	2	0	0
8/02	0	0	0	2	0	0	0	0	0	0	0	0	0	0
8/03	0	2	0	2	0	0	0	0	0	0	2	0	0	0

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Appendix B.6. (2 of 2)

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
8/04	0	0	0	0	0	0	0	0	0	0	0	0	0	4
8/05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/06	0	0	1	0	0	0	2	0	0	0	0	0	0	0
8/07	0	0	0	0	0	0	0	0	0	0	0	2	0	0
8/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/09	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8/10	0	0	3	0	0	0	0	0	0	0	2	0	0	0
8/11	0	0	0	9	0	0	0	0	0	0	0	0	0	0
8/12	0	0	0	2	0	0	0	0	0	2	0	0	0	0
8/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/24	0	0	1	1	0	0	0	0	0	0	0	0	0	0
8/25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/26	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/28	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/31	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/02	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/08	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/09	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a Boxed values indicate days when there was a commercial fishing period in District W1.

Appendix B.7. Historic cumulative daily CPUE for sockeye salmon catches in the Bethel test fishery, 1984 - 1997.^a

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
5/30	0	0	0	0	0									
5/31	0	0	0	0	0									
6/01	0	0	0	0	0	0	0		0	0	0	0	0	
6/02	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/04	0	0	0	6	0	0	0	0	0	0	0	0	0	0
6/05	0	0	0	6	0	0	0	0	0	0	0	0	0	0
6/06	0	0	0	9	0	3	0	0	0	0	0	0	3	3
6/07	3	0	6	18	0	3	0	0	0	0	0	0	3	3
6/08	3	0	14	35	12	3	0	0	0	3	0	0	6	3
6/09	3	0	27	48	27	6	0	0	0	6	0	0	15	6
6/10	3	0	30	64	38	9	0	0	0	6	0	0	55	6
6/11	8	0	50	80	82	29	8	0	0	14	0	0	105	12
6/12	8	0	56	191	143	40	11	0	0	20	0	3	125	15
6/13	10	0	68	240	191	51	11	3	9	50	0	6	167	20
6/14	16	0	73	249	205	78	27	6	22	57	3	13	234	26
6/15	16	0	121	290	214	102	41	9	35	60	6	26	287	38
6/16	23	0	223	458	221	117	60	9	49	83	6	42	355	98
6/17	30	0	273	710	247	132	123	21	97	149	16	45	377	107
6/18	52	3	352	779	296	178	139	71	142	190	16	64	411	167
6/19	52	16	471	796	394	207	177	83	151	207	71	92	518	198
6/20	66	16	505	843	419	226	207	122	167	269	80	98	621	258
6/21	71	28	650	919	554	278	222	130	194	406	156	164	757	432
6/22	97	40	819	1,085	690	336	236	173	230	451	185	213	785	580
6/23	97	137	882	1,440	807	372	313	190	269	506	258	235	873	604
6/24	128	137	915	1,582	869	412	374	196	336	596	368	266	997	612
6/25	169	272	1,141	1,631	898	495	464	204	432	705	404	400	1,123	698
6/26	188	400	1,339	1,693	1,013	521	489	210	451	728	443	475	1,245	758
6/27	236	526	1,541	1,727	1,082	574	532	231	499	749	469	502	1,341	808
6/28	256	643	1,679	1,768	1,124	614	622	270	640	774	492	633	1,405	814
6/29	259	899	1,699	1,805	1,133	648	726	295	748	836	681	694	1,482	1,002
6/30	277	1,049	1,920	1,969	1,178	688	732	315	819	1,264	701	758	1,502	1,040
7/01	311	1,239	1,935	2,211	1,269	702	756	343	854	1,380	714	846	1,513	1,080
7/02	357	1,293	2,032	2,273	1,297	713	780	378	890	1,435	742	915	1,530	1,127
7/03	381	1,361	2,117	2,309	1,329	736	845	440	967	1,449	932	1,023	1,592	1,136
7/04	416	1,394	2,149	2,433	1,383	737	941	476	989	1,505	1,025	1,089	1,626	1,156
7/05	451	1,439	2,191	2,599	1,428	742	963	514	995	1,515	1,097	1,217	1,637	1,188
7/06	475	1,495	2,224	2,611	1,445	745	966	521	1,008	1,546	1,257	1,249	1,646	1,194
7/07	498	1,553	2,298	2,655	1,456	759	988	528	1,008	1,566	1,292	1,294	1,669	1,250
7/08	525	1,556	2,319	2,662	1,469	774	1,027	528	1,020	1,625	1,336	1,324	1,681	1,295
7/09	542	1,579	2,330	2,691	1,478	777	1,055	555	1,024	1,631	1,422	1,337	1,726	1,315
7/10	545	1,584	2,332	2,722	1,483	777	1,069	561	1,028	1,635	1,451	1,337	1,738	1,339
7/11	547	1,597	2,341	2,726	1,488	779	1,076	563	1,034	1,639	1,457	1,343	1,743	1,360
7/12	549	1,603	2,365	2,729	1,488	784	1,080	566	1,040	1,639	1,461	1,346	1,751	1,368
7/13	549	1,607	2,382	2,736	1,488	788	1,088	569	1,059	1,660	1,461	1,350	1,763	1,372
7/14	550	1,609	2,395	2,741	1,491	788	1,093	572	1,082	1,690	1,463	1,352	1,772	1,374
7/15	553	1,609	2,397	2,744	1,492	788	1,102	575	1,086	1,698	1,463	1,352	1,774	1,380
7/16	562	1,619	2,404	2,744	1,492	795	1,106	575	1,097	1,700	1,463	1,352	1,783	1,383
7/17	564	1,622	2,411	2,746	1,496	797	1,106	577	1,101	1,700	1,465	1,352	1,784	1,385
7/18	569	1,626	2,414	2,746	1,498	798	1,106	577	1,107	1,700	1,468	1,352	1,784	1,387
7/19	573	1,629	2,418	2,752	1,498	799	1,108	577	1,107	1,700	1,468	1,352	1,784	1,395
7/20	573	1,635	2,421	2,755	1,498	799	1,108	577	1,107	1,700	1,468	1,357	1,786	1,399
7/21	575	1,639	2,428	2,755	1,498	799	1,108	577	1,107	1,703	1,469	1,357	1,786	1,406
7/22	576	1,648	2,431	2,755	1,499	799	1,108	579	1,107	1,705	1,471	1,357	1,790	1,406
7/23	576	1,651	2,434	2,755	1,499	799	1,108	581	1,107	1,705	1,471	1,359	1,790	1,408
7/24	576	1,651	2,434	2,755	1,500	799	1,108	581	1,107	1,705	1,473	1,359	1,790	1,410
7/25	578	1,651	2,434	2,755	1,500	799	1,108	581	1,107	1,705	1,473	1,359	1,792	1,412

continued

Appendix B.7. (2 of 2)

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
7/26	579	1,653	2,434	2,755	1,500	799	1,108	581	1,107	1,705	1,473	1,359	1,794	1,416
7/27	579	1,653	2,435	2,755	1,500	799	1,108	581	1,107	1,705	1,473	1,359	1,794	1,416
7/28	579	1,653	2,435	2,755	1,500	799	1,109	581	1,107	1,705	1,473	1,361	1,794	1,416
7/29	579	1,653	2,437	2,755	1,500	799	1,109	581	1,107	1,705	1,473	1,361	1,794	1,416
7/30	579	1,653	2,439	2,755	1,500	799	1,111	581	1,107	1,705	1,473	1,361	1,794	1,418
7/31	579	1,653	2,439	2,755	1,501	799	1,113	581	1,107	1,705	1,473	1,361	1,794	1,418
8/01	579	1,653	2,441	2,755	1,501	799	1,113	581	1,107	1,705	1,473	1,363	1,794	1,418
8/02	579	1,653	2,441	2,757	1,501	799	1,113	581	1,107	1,705	1,473	1,363	1,794	1,418
8/03	579	1,654	2,441	2,759	1,501	799	1,113	581	1,107	1,705	1,473	1,365	1,794	1,418
8/04	579	1,654	2,441	2,759	1,501	799	1,113	581	1,107	1,705	1,473	1,365	1,794	1,422
8/05	579	1,654	2,441	2,759	1,501	799	1,113	581	1,107	1,705	1,473	1,365	1,794	1,422
8/06	579	1,654	2,442	2,759	1,501	799	1,114	581	1,107	1,705	1,473	1,365	1,794	1,422
8/07	579	1,654	2,442	2,759	1,501	799	1,114	581	1,107	1,705	1,473	1,367	1,794	1,422
8/08	579	1,654	2,442	2,759	1,501	799	1,114	581	1,107	1,705	1,473	1,367	1,794	1,422
8/09	579	1,654	2,442	2,759	1,501	799	1,114	581	1,107	1,705	1,473	1,367	1,794	1,424
8/10	579	1,654	2,444	2,759	1,501	799	1,114	581	1,107	1,705	1,475	1,367	1,794	1,424
8/11	579	1,654	2,444	2,759	1,501	799	1,114	581	1,107	1,705	1,475	1,367	1,794	1,424
8/12	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/13	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/14	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/15	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/16	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/17	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/18	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/19	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/20	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/21	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/22	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/23	579	1,654	2,444	2,761	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/24	579	1,654	2,445	2,762	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/25	579	1,654	2,445	2,762	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/26	579	1,654	2,445	2,762	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/27	579	1,654	2,445	2,762	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/28	579	1,654	2,445	2,762	1,501	799	1,114	581	1,109	1,705	1,475	1,367	1,794	1,424
8/29	579	1,654		2,762	1,501	799	1,114	581	1,109	1,705	1,475	1,367		
8/30	579	1,654		2,762		799	1,114	581	1,109	1,705	1,475			
8/31	579			2,762		799	1,114	581	1,109	1,705	1,475			
9/01	579			2,762										
9/02	579			2,762										
9/03	579			2,762										
9/04	579			2,762										
9/05	579			2,762										
9/06	579			2,762										
9/07				2,762										
9/08				2,762										
9/09				2,762										
9/10				2,762										
9/11				2,762										

^a Boxed values indicate days when there was a commercial fishing period in District W1.

Appendix B.8. Historic cumulative daily percent passage for sockeye salmon catches in the Bethel test fishery, 1984 - 1997.^a

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Median
6/01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/07	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
6/08	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0
6/09	0	0	1	2	2	1	0	0	0	0	0	0	1	0	0
6/10	0	0	1	2	3	1	0	0	0	0	0	0	3	0	0
6/11	1	0	2	3	5	4	1	0	0	1	0	0	6	1	1
6/12	1	0	2	7	10	5	1	0	0	1	0	0	7	1	1
6/13	2	0	3	9	13	6	1	0	1	3	0	0	9	1	2
6/14	3	0	3	9	14	10	2	1	2	3	0	1	13	2	3
6/15	3	0	5	11	14	13	4	1	3	4	0	2	16	3	3
6/16	4	0	9	17	15	15	5	1	4	5	0	3	20	7	5
6/17	5	0	11	26	16	17	11	4	9	9	1	3	21	8	9
6/18	9	0	14	28	20	22	12	12	13	11	1	5	23	12	12
6/19	9	1	19	29	26	26	16	14	14	12	5	7	29	14	14
6/20	11	1	21	31	28	28	19	21	15	16	5	7	35	18	18
6/21	12	2	27	33	37	35	20	22	18	24	11	12	42	30	23
6/22	17	2	33	39	46	42	21	30	21	26	13	16	44	41	28
6/23	17	8	36	52	54	47	28	33	24	30	18	17	49	42	31
6/24	22	8	37	57	58	52	34	34	30	35	25	19	56	43	34
6/25	29	16	47	59	60	62	42	35	39	41	27	29	63	49	42
6/26	32	24	55	61	68	65	44	36	41	43	30	35	69	53	43
6/27	41	32	63	63	72	72	48	40	45	44	32	37	75	57	46
6/28	44	39	69	64	75	77	56	46	58	45	33	46	78	57	56
6/29	45	54	69	65	76	81	65	51	67	49	46	51	83	70	65
6/30	48	63	79	71	78	86	66	54	74	74	47	55	84	73	72
7/01	54	75	79	80	85	88	68	59	77	81	48	62	84	76	76
7/02	62	78	83	82	86	89	70	65	80	84	50	67	85	79	80
7/03	66	82	87	84	89	92	76	76	87	85	63	75	89	80	83
7/04	72	84	88	88	92	92	84	82	89	88	69	80	91	81	86
7/05	78	87	90	94	95	93	86	89	90	89	74	89	91	83	89
7/06	82	90	91	95	96	93	87	90	91	91	85	91	92	84	91
7/07	86	94	94	96	97	95	89	91	91	92	88	95	93	88	92
7/08	91	94	95	96	98	97	92	91	92	95	91	97	94	91	94
7/09	94	95	95	97	99	97	95	96	92	96	90	98	96	92	96
7/10	94	96	95	99	99	97	96	97	93	96	96	98	97	94	96
7/11	94	97	96	99	99	98	97	97	93	96	99	98	97	96	97
7/12	95	97	97	99	99	98	97	98	94	96	99	98	98	96	97
7/13	95	97	97	99	99	99	98	98	95	97	99	99	98	96	98
7/14	95	97	98	99	99	99	98	99	98	99	99	99	99	96	99
7/15	95	97	98	99	99	99	99	99	98	100	99	99	99	97	99
7/16	97	98	98	99	99	100	99	99	99	100	99	99	99	97	99
7/17	97	98	99	99	100	100	99	99	99	100	99	99	99	97	99
7/18	98	98	99	99	100	100	99	99	100	100	99	99	99	97	99
7/19	99	98	99	100	100	100	99	99	100	100	99	99	99	98	99
7/20	99	99	99	100	100	100	99	99	100	100	99	99	100	98	99
7/21	99	99	99	100	100	100	99	99	100	100	100	99	100	99	99
7/22	99	100	99	100	100	100	99	100	100	100	100	99	100	99	100
7/23	99	100	100	100	100	100	99	100	100	100	100	99	100	99	100

continued

Appendix B.8. (2 of 2)

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Median
7/24	99	100	100	100	100	100	99	100	100	100	100	99	100	99	100
7/25	100	100	100	100	100	100	99	100	100	100	100	99	100	99	100
7/26	100	100	100	100	100	100	99	100	100	100	100	99	100	99	100
7/27	100	100	100	100	100	100	99	100	100	100	100	99	100	99	100
7/28	100	100	100	100	100	100	100	100	100	100	100	100	100	99	100
7/29	100	100	100	100	100	100	100	100	100	100	100	100	100	99	100
7/30	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
7/31	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/01	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/02	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/03	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/04	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/05	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/06	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/07	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/08	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/09	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/10	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/11	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/12	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/13	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/14	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/15	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/16	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/17	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/18	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/19	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/20	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/21	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/22	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/23	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/24	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/25	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/26	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/27	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/28	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/29	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* The boxed areas within each column represent the central 50 percent test-fish catches and the median.

Appendix B.9. Historic daily CPUE for coho salmon catches in the Bethel test fishery, 1984 - 1997.^a

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
7/09	0	0	0	0	0	0	0	0	0	0	3	0	0	0
7/10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/11	0	0	0	0	0	0	0	0	0	0	0	0	2	0
7/12	0	0	0	0	0	0	0	0	0	0	0	0	8	0
7/13	0	0	0	0	2	2	0	0	6	7	0	0	8	0
7/14	0	0	0	0	0	2	0	0	2	0	0	0	10	0
7/15	0	0	2	0	0	2	0	0	0	0	2	0	8	0
7/16	2	0	2	0	0	0	0	0	2	0	2	0	17	2
7/17	2	2	2	0	4	2	0	0	1	0	0	0	35	0
7/18	3	0	2	0	0	4	0	0	7	0	2	0	17	0
7/19	7	2	4	0	0	0	4	2	9	9	9	0	122	6
7/20	7	4	4	0	4	10	13	6	5	2	0	4	108	8
7/21	5	5	10	0	2	7	10	7	3	5	0	0	194	12
7/22	5	20	8	7	4	16	7	4	7	24	22	0	120	6
7/23	12	0	21	2	0	6	3	6	2	28	6	6	97	10
7/24	9	2	54	0	12	6	8	4	4	9	48	2	240	36
7/25	16	24	29	0	16	4	2	7	9	6	38	18	675	57
7/26	12	21	26	0	8	0	2	2	11	4	11	8	615	31
7/27	18	8	74	2	44	2	10	23	10	20	13	11	256	20
7/28	29	15	20	2	72	9	43	34	11	71	27	15	170	6
7/29	60	40	84	12	28	8	35	42	23	67	26	4	517	31
7/30	201	14	54	5	43	37	12	71	25	69	66	22	598	16
7/31	154	29	31	5	75	343	10	64	13	73	101	25	482	12
8/01	179	50	323	13	43	218	26	42	32	73	75	36	186	58
8/02	104	37	101	40	32	447	22	24	17	148	33	30	322	85
8/03	312	89	404	93	79	78	21	118	50	302	21	337	38	340
8/04	45	80	419	69	42	24	54	124	11	538	13	150	35	276
8/05	78	47	253	27	45	159	65	10	11	127	2	102	79	54
8/06	189	92	249	42	300	348	78	32	57	318	24	131	28	92
8/07	45	182	210	103	370	195	50	20	56	102	178	145	27	14
8/08	108	86	86	53	183	54	73	64	115	73	230	32	25	22
8/09	76	114	180	34	41	185	118	43	250	34	156	109	120	58
8/10	55	124	297	43	106	33	58	42	875	11	190	69	94	44
8/11	105	218	87	35	257	111	64	35	420	25	392	69	38	150
8/12	98	96	326	189	256	74	210	248	91	66	137	35	39	46
8/13	25	75	96	142	68	24	180	91	123	32	64	75	63	67
8/14	24	29	64	348	174	17	166	40	128	0	93	186	44	23
8/15	113	84	180	205	185	2	258	36	41	9	86	29	56	54
8/16	10	68	55	121	58	0	108	20	80	109	72	28	27	49
8/17	279	19	48	107	152	15	91	25	78	18	307	44	2	18
8/18	304	23	101	52	112	4	86	88	41	33	188	45	19	31
8/19	204	8	91	19	35	6	61	35	32	136	22	8	35	16
8/20	6	12	30	9	41	14	83	26	137	114	60	13	25	70
8/21	28	17	94	16	10	35	39	38	17	27	64	31	6	117
8/22	110	0	52	9	74	22	69	20	42	4	19	54	4	71
8/23	4	17	136	21	88	11	131	10	53	0	13	26	8	25
8/24	8	8	100	25	106	3	40	26	4	4	141	12	14	48
8/25	33	12	26	9	121	26	61	14	21	9	81	43	57	35
8/26	26	0	43	19	89	10	56	42	13	18	42	27	12	12
8/27	24	10	10	32	64	17	39	17	9	10	59	2	0	0
8/28	14	34	4	50	9	17	2	18	4	12	19	11	0	4
8/29	48	12		35	4	6	13	18	2	13	2	4		
8/30	21	0		48		2	8	9	5	5	9			
8/31	24			0		7	0	0	4	2				
9/01	5			20										
9/02	11			23										
9/03	7			27										
9/04	5			23										
9/05	29			22										
9/06	7			24										
9/07				12										
9/08				15										
9/09				7										
9/10				19										
9/11				9										

^a Boxed values indicate days when there was a commercial fishing period in District W1.

Appendix B.10. Historic cumulative daily CPUE for coho salmon catches in the Bethel test fishery, 1984 - 1997.^a

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
7/09	0	0	0	0	0	0	0	0	0	0	3	0	0	0
7/10	0	0	0	0	0	0	0	0	0	0	3	0	0	0
7/11	0	0	0	0	0	0	0	0	0	0	3	0	2	0
7/12	0	0	0	0	0	0	0	0	0	0	3	0	10	0
7/13	0	0	0	0	2	2	0	0	6	7	3	0	17	0
7/14	0	0	0	0	2	4	0	0	6	7	3	0	27	0
7/15	0	0	2	0	2	6	0	0	8	7	5	0	34	0
7/16	2	0	4	0	2	6	0	0	10	7	8	0	52	2
7/17	3	2	6	0	6	8	0	0	11	7	8	0	86	2
7/18	7	2	8	0	6	12	0	0	18	7	10	0	104	2
7/19	13	3	11	0	6	12	4	2	27	16	16	0	226	8
7/20	21	7	15	0	10	22	17	8	31	18	18	4	334	16
7/21	28	12	25	0	12	30	27	15	34	23	18	4	528	27
7/22	31	33	33	7	16	46	34	19	40	47	40	4	647	33
7/23	43	33	54	9	16	51	37	25	43	75	46	11	745	43
7/24	51	35	107	9	28	57	45	29	47	84	95	13	884	78
7/25	67	59	136	9	44	61	47	36	55	90	133	31	1,660	136
7/26	79	80	163	9	53	61	49	38	66	95	144	39	2,275	167
7/27	97	88	236	11	97	63	59	61	76	114	157	50	2,531	187
7/28	126	103	256	14	169	72	102	95	86	185	184	65	2,701	193
7/29	186	143	320	25	197	80	136	137	110	252	210	69	3,219	224
7/30	387	157	374	30	239	117	148	206	135	322	276	91	3,817	240
7/31	541	186	405	35	314	460	158	271	148	395	377	116	4,298	251
8/01	720	237	727	47	358	678	184	314	179	468	452	151	4,484	309
8/02	824	274	828	87	390	1,125	205	337	195	616	486	181	4,806	394
8/03	1,136	343	1,233	180	468	1,203	226	455	246	917	507	517	4,844	734
8/04	1,182	402	1,652	249	511	1,227	280	579	257	1,455	520	668	4,879	1,011
8/05	1,259	450	1,905	278	556	1,386	345	589	268	1,582	522	769	4,958	1,085
8/06	1,428	542	2,154	318	856	1,734	423	621	325	1,900	546	900	4,984	1,157
8/07	1,473	724	2,383	421	1,226	1,929	473	641	381	2,002	723	1,045	5,011	1,170
8/08	1,581	809	2,450	475	1,409	1,983	548	705	496	2,075	953	1,077	5,037	1,192
8/09	1,657	924	2,630	509	1,450	2,168	664	748	746	2,108	1,110	1,186	5,157	1,250
8/10	1,712	1,047	2,927	551	1,556	2,202	722	790	1,421	2,120	1,300	1,255	5,251	1,294
8/11	1,817	1,268	3,014	587	1,813	2,312	766	824	1,841	2,144	1,691	1,324	5,289	1,444
8/12	1,915	1,361	3,340	778	2,070	2,386	998	1,072	1,932	2,210	1,828	1,359	5,328	1,491
8/13	1,940	1,437	3,436	918	2,138	2,410	1,176	1,163	2,056	2,242	1,892	1,434	5,391	1,558
8/14	1,984	1,466	3,501	1,266	2,312	2,427	1,342	1,203	2,183	2,242	1,985	1,620	5,435	1,581
8/15	2,077	1,550	3,681	1,470	2,497	2,429	1,600	1,239	2,224	2,252	2,051	1,649	5,491	1,635
8/16	2,087	1,619	3,735	1,591	2,555	2,429	1,708	1,259	2,304	2,361	2,123	1,677	5,518	1,685
8/17	2,366	1,637	3,784	1,699	2,706	2,444	1,798	1,284	2,382	2,379	2,430	1,721	5,520	1,702
8/18	2,669	1,661	3,885	1,751	2,818	2,448	1,884	1,371	2,422	2,412	2,619	1,766	5,539	1,733
8/19	2,874	1,669	3,976	1,779	2,853	2,455	1,945	1,406	2,455	2,548	2,640	1,779	5,574	1,749
8/20	2,880	1,680	4,006	1,779	2,894	2,468	2,029	1,433	2,592	2,662	2,700	1,786	5,599	1,818
8/21	2,908	1,698	4,100	1,795	2,903	2,503	2,067	1,471	2,609	2,689	2,765	1,819	5,605	1,936
8/22	3,017	1,698	4,152	1,804	2,978	2,525	2,136	1,491	2,651	2,693	2,784	1,873	5,609	2,006
8/23	3,021	1,715	4,288	1,825	3,046	2,536	2,267	1,501	2,703	2,693	2,797	1,899	5,616	2,031
8/24	3,030	1,723	4,388	1,850	3,154	2,539	2,307	1,527	2,707	2,897	2,938	1,911	5,630	2,080
8/25	3,062	1,734	4,414	1,859	3,275	2,564	2,368	1,540	2,729	2,706	3,019	1,954	5,687	2,114
8/26	3,086	1,734	4,457	1,878	3,364	2,574	2,424	1,583	2,741	2,724	3,061	1,981	5,699	2,126
8/27	3,112	1,744	4,467	1,910	3,426	2,591	2,463	1,600	2,750	2,734	3,119	1,983	5,699	2,126
8/28	3,126	1,778	4,471	1,960	3,437	2,609	2,465	1,618	2,754	2,745	3,138	1,994	5,699	2,130
8/29	3,175	1,790		1,995	3,441	2,615	2,477	1,636	2,757	2,758	3,141	1,998		
8/30	3,196	1,790		2,043		2,616	2,485	1,645	2,762	2,763	3,150			
8/31	3,219			2,043		2,624	2,485	1,645	2,766	2,765	3,150			
9/01	3,225			2,063										
9/02	3,236			2,086										
9/03	3,243			2,113										
9/04	3,249			2,137										
9/05	3,278			2,159										
9/06	3,285			2,183										
9/07				2,195										
9/08				2,210										
9/09				2,217										
9/10				2,236										
9/11				2,245										

^a Boxed values indicate days when there was a commercial fishing period in District W1

Appendix B.11. Historic cumulative daily percent passage for coho salmon catches in the Bethel test fishery, 1984 - 1997.^a

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Median
7/09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/15	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
7/16	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
7/17	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
7/18	0	0	0	0	0	0	0	0	1	0	0	0	2	0	0
7/19	0	0	0	0	0	0	0	0	1	1	1	0	4	0	0
7/20	1	0	0	0	0	1	1	0	1	1	1	0	6	1	1
7/21	1	1	1	0	0	1	1	1	1	1	1	0	9	1	1
7/22	1	2	1	0	0	2	1	1	1	2	1	0	11	2	1
7/23	1	2	1	0	0	2	1	1	2	3	1	1	13	2	1
7/24	2	2	2	0	1	2	2	2	2	3	3	1	17	4	2
7/25	2	3	3	0	1	2	2	2	2	3	4	2	29	6	2
7/26	2	4	4	0	2	2	2	2	2	3	5	2	40	8	2
7/27	3	5	5	1	3	2	2	4	3	4	5	2	44	9	3
7/28	4	6	6	1	5	3	4	6	3	7	6	3	47	9	5
7/29	6	8	7	1	6	3	5	8	4	9	7	3	56	11	6
7/30	12	9	8	1	7	4	6	13	5	12	9	5	67	11	9
7/31	17	10	9	2	9	18	6	16	5	14	12	6	75	12	11
8/01	22	13	16	2	10	26	7	19	6	17	14	8	79	15	14
8/02	26	15	19	4	11	43	8	20	7	22	15	9	84	19	17
8/03	35	19	28	9	14	46	9	28	9	33	16	26	85	34	27
8/04	37	22	37	12	15	47	11	35	9	53	17	33	86	47	34
8/05	39	25	43	14	16	53	14	36	10	57	17	38	87	50	37
8/06	44	30	48	16	25	66	17	38	12	69	17	45	87	54	41
8/07	46	40	53	21	36	74	19	39	14	72	23	52	88	55	43
8/08	49	45	55	23	41	76	22	43	18	75	30	54	88	56	47
8/09	51	52	59	25	42	83	27	45	27	76	35	59	90	59	52
8/10	53	59	65	27	45	84	29	48	51	77	41	63	92	61	56
8/11	56	71	67	29	53	88	32	50	67	78	54	66	93	68	66
8/12	59	76	75	38	60	91	40	65	70	80	58	68	93	70	69
8/13	60	80	77	45	62	92	47	71	74	81	60	72	95	73	72
8/14	61	82	78	62	67	93	54	73	79	81	63	81	95	74	76
8/15	65	87	82	72	73	93	64	75	80	81	65	83	96	77	79
8/16	65	90	84	78	74	93	69	76	83	85	67	84	97	79	81
8/17	73	91	85	83	79	93	72	78	86	86	77	86	97	80	84
8/18	83	93	87	86	82	93	76	83	88	87	83	88	97	81	86
8/19	89	93	89	87	83	94	78	85	89	92	84	89	98	82	89
8/20	89	94	90	87	84	94	82	87	94	96	86	89	98	85	89
8/21	90	95	92	88	84	95	83	89	94	97	88	91	98	91	91
8/22	94	95	93	88	87	96	86	91	96	97	88	94	98	94	94
8/23	94	96	96	89	89	97	91	91	98	97	89	95	99	95	95
8/24	94	96	98	91	92	97	93	93	98	98	93	96	99	98	96
8/25	95	97	99	91	95	98	95	94	99	98	96	98	100	99	97
8/26	96	97	100	92	96	98	96	96	99	98	97	99	100	100	98
8/27	97	97	100	93	100	99	99	97	99	99	99	99	100	100	99
8/28	97	99	100	96	100	99	99	98	100	99	100	100	100	100	100
8/29	99	100		98	100	100	100	99	100	100	100	100			100
8/30	99	100		100		100	100	100	100	100	100				100
8/31	100			100		100	100	100	100	100					100

^a The boxed areas within each column represent the central 50 percent test-fish catches and the median.

Appendix B.12. Historic daily CPUE for chum salmon catches in the Bethel test fishery, 1984 - 1997.^a

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
5/30	0	0												
5/31	0	0												
6/01	0	0				3	0		0	0	0	0	0	0
6/02	0	0			0	0	0	0	0	0	10	0	0	0
6/03	0	0	0		0	0	0	0	0	0	8	0	0	0
6/04	5	0	0	0	0	0	0	0	0	0	3	0	0	3
6/05	0	0	6	3	9	3	0	0	0	0	0	0	15	0
6/06	0	0	10	12	0	0	3	0	7	3	7	0	29	0
6/07	0	0	0	6	3	6	0	0	3	0	3	0	12	0
6/08	2	0	8	9	11	10	0	0	3	0	0	0	23	0
6/09	10	0	28	15	38	9	0	0	3	0	10	0	35	0
6/10	10	0	6	6	29	12	0	0	6	6	0	0	54	0
6/11	3	0	9	21	63	3	0	0	12	8	3	6	67	0
6/12	15	0	9	13	91	17	3	3	9	0	13	0	65	5
6/13	8	3	0	19	87	20	0	0	44	9	28	3	175	0
6/14	11	0	9	3	19	7	13	6	21	7	58	6	321	0
6/15	5	3	38	10	45	36	0	0	105	13	143	26	204	9
6/16	31	3	46	42	26	24	3	0	116	3	59	48	168	17
6/17	41	8	121	122	56	4	22	0	55	10	52	51	171	12
6/18	75	8	108	41	195	49	20	0	43	35	20	63	187	34
6/19	9	65	151	6	160	68	28	0	0	0	263	36	594	14
6/20	20	115	64	60	50	44	9	25	33	11	26	80	742	26
6/21	52	3	87	24	143	76	30	3	58	44	278	153	820	119
6/22	8	25	104	200	251	56	22	9	49	95	125	94	357	53
6/23	108	28	203	103	246	79	53	14	53	65	190	111	498	20
6/24	167	3	112	48	86	167	77	6	29	126	112	51	665	48
6/25	166	52	460	66	16	208	32	9	39	107	10	219	513	59
6/26	86	65	177	100	63	111	49	32	43	0	17	157	325	111
6/27	109	58	109	87	306	134	168	58	212	7	16	25	90	32
6/28	105	24	35	105	109	78	72	50	107	13	7	59	80	0
6/29	22	180	6	268	108	122	87	64	130	30	111	146	93	83
6/30	59	177	105	246	88	106	32	8	136	153	7	111	63	23
7/01	115	77	3	152	382	115	67	30	124	120	10	164	92	50
7/02	160	31	70	120	188	66	28	91	43	19	19	144	114	20
7/03	66	24	193	34	437	78	200	22	267	125	192	291	67	59
7/04	209	5	123	82	469	57	214	33	322	82	141	168	112	20
7/05	163	40	309	177	192	182	188	6	189	78	88	214	149	78
7/06	48	25	140	389	120	59	26	12	105	39	383	58	128	41
7/07	60	93	62	463	27	117	173	12	13	24	245	274	41	129
7/08	48	3	68	38	34	65	136	9	139	71	732	271	23	110
7/09	52	5	246	272	92	57	61	60	48	31	394	219	32	76
7/10	39	0	34	208	148	66	81	46	46	28	253	27	133	33
7/11	7	0	87	63	83	3	78	26	48	37	69	98	31	42
7/12	16	3	163	53	65	7	74	43	59	62	33	73	37	54
7/13	16	10	134	87	63	55	23	21	51	270	108	49	82	45
7/14	7	0	25	255	38	35	33	28	49	67	57	66	52	20
7/15	91	0	10	61	69	11	24	20	27	140	38	30	121	64
7/16	24	6	16	33	82	20	37	12	21	88	32	17	113	52
7/17	15	32	43	107	64	17	24	16	23	75	15	15	81	20
7/18	14	9	43	125	57	23	59	51	25	53	48	21	42	53
7/19	16	19	50	202	16	16	66	16	29	94	26	8	96	33
7/20	9	7	36	170	29	29	73	16	4	52	9	38	52	33
7/21	18	5	52	23	36	13	57	40	3	51	0	35	57	36
7/22	1	12	34	12	10	7	40	57	0	134	82	42	68	15
7/23	9	6	26	8	6	13	35	33	23	28	38	43	19	14
7/24	3	2	29	28	24	0	24	12	6	9	55	27	42	44
7/25	8	9	11	41	15	4	8	56	10	0	26	16	25	34

continued

Appendix B.12. (2 of 2)

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
7/26	7	6	2	20	13	0	2	8	7	2	9	27	24	20
7/27	7	2	3	4	18	0	18	49	8	7	9	17	19	6
7/28	3	4	7	6	10	0	35	18	9	4	18	24	6	6
7/29	8	10	11	5	13	1	36	36	4	5	11	9	8	16
7/30	6	4	5	2	23	0	9	14	6	2	6	2	11	2
7/31	1	1	0	1	6	14	2	24	0	6	14	10	2	2
8/01	2	0	5	4	5	6	6	8	0	5	16	8	4	8
8/02	3	1	0	3	4	8	6	6	15	7	10	2	5	10
8/03	3	2	4	9	6	4	6	12	2	2	2	12	0	18
8/04	6	8	0	11	3	1	2	10	0	11	2	6	0	14
8/05	2	0	0	3	3	0	1	0	0	9	2	2	0	0
8/06	0	4	3	4	7	3	23	2	4	2	0	4	0	0
8/07	0	6	1	0	19	2	6	2	0	0	4	4	0	2
8/08	0	0	0	0	3	0	0	5	0	0	9	0	0	2
8/09	0	0	2	2	3	2	4	2	4	0	7	0	0	4
8/10	0	36	0	2	4	0	2	3	0	0	2	0	2	2
8/11	0	1	0	0	3	0	2	4	2	0	4	2	0	4
8/12	0	0	0	0	2	0	4	3	6	0	2	0	0	0
8/13	0	0	0	0	0	0	0	2	0	0	0	0	0	0
8/14	0	0	2	0	0	0	0	0	0	0	0	2	0	0
8/15	0	0	2	4	0	0	2	2	0	0	0	0	0	0
8/16	0	0	0	1	0	0	2	0	0	0	2	0	0	0
8/17	0	0	0	0	0	0	0	2	0	0	0	0	0	0
8/18	2	0	0	0	0	0	0	2	0	0	2	0	0	0
8/19	0	0	0	0	0	0	0	0	0	2	0	0	0	0
8/20	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8/21	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8/22	0	0	0	0	0	0	2	0	0	0	0	2	0	0
8/23	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8/24	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/26	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/27	0	0	0	0	0	0	2	0	0	0	0	0	0	0
8/28	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/29	0	0	0	0	0	0	0	0	0	2	0	0	0	0
8/30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8/31	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/02	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/03	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/04	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/06	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9/07	0	0	0	0	0	0	0	0	0	0	0	0	0	0

^a Boxed values indicate days when there was a commercial fishing period in District W1.

Appendix B.13. Historic cumulative daily CPUE for chum salmon catches in the Bethel test fishery, 1984 - 1997.*

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
5/30	0	0												
5/31	0	0												
6/01	0	0				3	0		0	0	0	0	0	
6/02	0	0			0	3	0	0	0	0	10	0	0	0
6/03	0	0	0		0	3	0	0	0	0	18	0	0	0
6/04	5	0	0	0	0	3	0	0	0	0	21	0	0	3
6/05	5	0	6	3	9	6	0	0	0	0	21	0	15	3
6/06	5	0	16	16	9	6	3	0	7	3	28	0	45	3
6/07	5	0	16	22	12	11	3	0	10	3	31	0	56	3
6/08	7	0	24	30	23	22	3	0	13	3	31	0	80	3
6/09	17	0	53	45	61	30	3	0	16	3	41	0	115	3
6/10	28	0	59	52	90	42	3	0	22	9	41	0	169	3
6/11	30	0	68	72	153	45	3	0	34	17	44	6	237	3
6/12	45	0	77	86	244	62	6	3	43	17	57	6	301	8
6/13	53	3	77	105	331	82	6	3	87	27	86	10	476	8
6/14	63	3	86	108	350	90	18	9	108	33	142	16	797	8
6/15	68	5	124	117	395	126	18	9	212	46	285	42	1,001	17
6/16	100	8	170	159	421	150	21	9	328	49	343	90	1,170	34
6/17	141	16	290	281	477	154	43	9	383	59	395	141	1,340	45
6/18	216	25	398	322	671	203	63	9	426	93	416	204	1,527	79
6/19	225	90	549	328	832	271	91	9	426	93	678	240	2,121	93
6/20	245	205	613	388	881	315	100	34	460	105	705	320	2,864	119
6/21	297	207	700	412	1,025	391	130	37	518	149	983	473	3,684	238
6/22	305	232	804	613	1,276	446	152	46	567	244	1,107	567	4,041	290
6/23	413	260	1,007	715	1,522	525	205	60	620	310	1,297	678	4,539	310
6/24	580	263	1,119	763	1,608	692	282	66	649	436	1,408	729	5,204	
6/25	746	315	1,579	829	1,624	900	314	74	688	543	1,419	948	5,717	
6/26	832	380	1,756	928	1,687	1,011	363	106	732	543	1,435	1,105	6,042	
6/27	941	438	1,865	1,015	1,993	1,145	531	163	943	550	1,451	1,130	6,132	560
6/28	1,045	463	1,901	1,120	2,101	1,223	603	213	1,050	563	1,458	1,190	6,211	560
6/29	1,068	643	1,907	1,389	2,210	1,345	690	277	1,180	594	1,569	1,335	6,305	643
6/30	1,126	820	2,012	1,635	2,298	1,452	722	285	1,316	746	1,575	1,447	6,368	666
7/01	1,241	896	2,015	1,787	2,680	1,567	789	315	1,440	866	1,585	1,610	6,459	716
7/02	1,401	928	2,085	1,906	2,868	1,633	817	406	1,483	885	1,604	1,755	6,573	736
7/03	1,467	952	2,277	1,941	3,306	1,711	1,017	427	1,750	1,010	1,796	2,045	6,641	794
7/04	1,677	957	2,401	2,003	3,775	1,768	1,231	461	2,072	1,092	1,937	2,213	6,753	815
7/05	1,840	997	2,709	2,180	3,966	1,950	1,419	466	2,261	1,170	2,025	2,427	6,902	892
7/06	1,888	1,022	2,850	2,569	4,086	2,009	1,445	478	2,366	1,209	2,408	2,485	7,029	933
7/07	1,948	1,115	2,912	3,032	4,114	2,126	1,618	490	2,379	1,233	2,653	2,759	7,070	1,061
7/08	1,996	1,118	2,979	3,070	4,148	2,190	1,754	499	2,518	1,304	3,385	3,029	7,093	1,171
7/09	2,048	1,123	3,225	3,342	4,240	2,247	1,815	559	2,567	1,335	3,779	3,248	7,125	1,247
7/10	2,087	1,123	3,260	3,550	4,388	2,314	1,896	605	2,613	1,363	4,031	3,275	7,258	1,280
7/11	2,093	1,123	3,347	3,612	4,471	2,317	1,975	631	2,661	1,400	4,100	3,373	7,289	1,323
7/12	2,109	1,126	3,510	3,665	4,536	2,324	2,048	674	2,719	1,461	4,133	3,446	7,326	1,377
7/13	2,125	1,137	3,644	3,752	4,599	2,379	2,071	695	2,770	1,731	4,241	3,495	7,408	1,421
7/14	2,132	1,137	3,669	4,007	4,637	2,414	2,104	723	2,820	1,798	4,298	3,561	7,459	1,441
7/15	2,224	1,137	3,679	4,068	4,706	2,424	2,128	743	2,846	1,938	4,336	3,591	7,581	1,505
7/16	2,248	1,142	3,696	4,101	4,788	2,445	2,165	755	2,867	2,026	4,368	3,608	7,694	1,556
7/17	2,262	1,174	3,739	4,208	4,852	2,462	2,190	770	2,890	2,101	4,383	3,623	7,775	1,577
7/18	2,276	1,183	3,782	4,333	4,909	2,485	2,249	821	2,915	2,154	4,431	3,645	7,817	1,630
7/19	2,292	1,202	3,831	4,535	4,925	2,501	2,315	837	2,944	2,248	4,457	3,653	7,913	1,662
7/20	2,301	1,209	3,867	4,706	4,954	2,530	2,388	853	2,948	2,299	4,465	3,690	7,965	1,695
7/21	2,318	1,214	3,919	4,729	4,990	2,543	2,445	894	2,952	2,350	4,465	3,725	8,022	1,732
7/22	2,319	1,225	3,953	4,740	4,999	2,551	2,485	951	2,952	2,484	4,547	3,767	8,090	1,747
7/23	2,328	1,231	3,979	4,748	5,005	2,564	2,520	983	2,975	2,512	4,585	3,810	8,109	1,761
7/24	2,331	1,233	4,008	4,776	5,030	2,564	2,544	995	2,981	2,521	4,641	3,837	8,151	
7/25	2,339	1,243	4,019	4,817	5,045	2,568	2,552	1,051	2,991	2,521	4,666	3,853	8,176	

continued

Appendix B.13. (2 of 2)

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
7/26	2,346	1,249	4,021	4,837	5,058	2,568	2,554	1,059	2,999	2,523	4,675	3,879	8,200	1,858
7/27	2,353	1,251	4,023	4,841	5,075	2,568	2,572	1,108	3,006	2,530	4,684	3,897	8,219	1,864
7/28	2,356	1,255	4,031	4,847	5,085	2,568	2,607	1,126	3,015	2,534	4,702	3,920	8,224	1,870
7/29	2,364	1,265	4,042	4,852	5,098	2,570	2,643	1,162	3,019	2,539	4,712	3,929	8,232	1,886
7/30	2,370	1,269	4,047	4,854	5,120	2,570	2,651	1,175	3,025	2,541	4,719	3,931	8,243	1,888
7/31	2,370	1,270	4,047	4,856	5,126	2,584	2,653	1,199	3,025	2,547	4,732	3,942	8,244	1,890
8/01	2,372	1,270	4,051	4,860	5,131	2,590	2,659	1,207	3,025	2,552	4,748	3,950	8,248	1,898
8/02	2,375	1,271	4,051	4,863	5,135	2,598	2,665	1,213	3,040	2,558	4,759	3,952	8,253	1,907
8/03	2,378	1,272	4,055	4,872	5,142	2,602	2,671	1,224	3,042	2,561	4,761	3,964	8,253	1,925
8/04	2,383	1,281	4,055	4,884	5,145	2,603	2,672	1,234	3,042	2,571	4,763	3,970	8,253	1,939
8/05	2,385	1,281	4,055	4,887	5,148	2,603	2,673	1,234	3,042	2,581	4,765	3,972	8,253	1,939
8/06	2,385	1,285	4,058	4,891	5,155	2,606	2,697	1,236	3,046	2,583	4,765	3,977	8,253	1,939
8/07	2,385	1,290	4,059	4,891	5,174	2,608	2,703	1,238	3,046	2,583	4,769	3,981	8,253	1,941
8/08	2,385	1,290	4,059	4,891	5,177	2,608	2,703	1,243	3,046	2,583	4,778	3,981	8,253	1,943
8/09	2,385	1,290	4,062	4,893	5,180	2,610	2,707	1,245	3,050	2,583	4,785	3,981	8,253	1,947
8/10	2,385	1,326	4,062	4,895	5,184	2,610	2,708	1,248	3,050	2,583	4,787	3,981	8,255	1,949
8/11	2,385	1,327	4,062	4,895	5,187	2,610	2,710	1,252	3,052	2,583	4,791	3,983	8,255	1,953
8/12	2,385	1,327	4,062	4,895	5,189	2,610	2,714	1,255	3,058	2,583	4,793	3,983	8,255	1,953
8/13	2,385	1,327	4,062	4,895	5,189	2,610	2,714	1,257	3,058	2,583	4,793	3,983	8,255	1,953
8/14	2,385	1,327	4,063	4,895	5,189	2,610	2,714	1,257	3,058	2,583	4,793	3,985	8,255	1,953
8/15	2,385	1,327	4,066	4,899	5,189	2,610	2,716	1,258	3,058	2,583	4,793	3,985	8,255	1,953
8/16	2,385	1,327	4,066	4,900	5,189	2,610	2,718	1,258	3,058	2,583	4,795	3,985	8,255	1,953
8/17	2,385	1,327	4,066	4,900	5,189	2,610	2,718	1,260	3,058	2,583	4,795	3,985	8,255	1,953
8/18	2,387	1,327	4,066	4,900	5,189	2,610	2,718	1,262	3,058	2,583	4,797	3,985	8,255	1,953
8/19	2,387	1,327	4,066	4,900	5,189	2,610	2,718	1,262	3,058	2,585	4,797	3,985	8,255	1,953
8/20	2,387	1,327	4,066	4,900	5,189	2,610	2,718	1,262	3,058	2,585	4,797	3,985	8,255	1,955
8/21	2,387	1,327	4,066	4,900	5,189	2,610	2,718	1,262	3,058	2,585	4,797	3,985	8,255	1,957
8/22	2,387	1,327	4,066	4,900	5,189	2,610	2,720	1,262	3,058	2,585	4,797	3,987	8,255	1,957
8/23	2,387	1,327	4,066	4,900	5,189	2,610	2,720	1,262	3,058	2,585	4,797	3,987	8,255	1,959
8/24	2,387	1,327	4,066	4,900	5,189	2,610	2,720	1,262	3,058	2,585	4,797	3,987	8,255	1,959
8/25	2,387	1,327	4,066	4,900	5,189	2,610	2,720	1,262	3,058	2,585	4,797	3,987	8,255	1,959
8/26	2,387	1,327	4,066	4,900	5,189	2,610	2,720	1,262	3,058	2,585	4,797	3,987	8,255	1,959
8/27	2,387	1,327	4,066	4,900	5,189	2,610	2,722	1,262	3,058	2,585	4,797	3,987	8,255	1,959
8/28	2,387	1,327	4,066	4,900	5,189	2,610	2,722	1,262	3,058	2,585	4,797	3,987	8,255	1,959
8/29	2,387	1,327		4,900	5,189	2,610	2,722	1,262	3,058	2,587	4,797	3,987		
8/30	2,387	1,327		4,900		2,610	2,722	1,262	3,058	2,587	4,797			
8/31	2,387			4,900		2,610	2,722	1,262	3,058	2,587				
9/01	2,387			4,900										
9/02	2,387			4,900										
9/03	2,387			4,900										
9/04	2,387			4,900										
9/05	2,387			4,900										
9/06	2,387			4,900										
9/07														

* Boxed values indicate days when there was a commercial fishing period in District W1.

Appendix B.14. Historic cumulative daily percent passage for chum salmon catches in the Bethel test fishery, 1984 - 1997.*

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Median
6/01	0	0				0	0		0	0	0	0	0		0
6/02	0	0			0	0	0	0	0	0	0	0	0	0	0
6/03	0	0	0		0	0	0	0	0	0	0	0	0	0	0
6/04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/06	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
6/07	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
6/08	0	0	1	1	0	1	0	0	0	0	1	0	1	0	0
6/09	1	0	1	1	1	1	0	0	1	0	1	0	1	0	1
6/10	1	0	1	1	2	2	0	0	1	0	1	0	2	0	1
6/11	1	0	2	1	3	2	0	0	1	1	1	0	3	0	1
6/12	2	0	2	2	5	2	0	0	1	1	1	0	4	0	1
6/13	2	0	2	2	6	3	0	0	3	1	2	0	6	0	2
6/14	3	0	2	2	7	3	1	1	4	1	3	0	10	0	2
6/15	3	0	3	2	8	5	1	1	7	2	6	1	12	1	3
6/16	4	1	4	3	8	6	1	1	11	2	7	2	14	2	4
6/17	6	1	7	6	9	6	2	1	13	2	8	4	16	2	6
6/18	9	2	10	7	13	8	2	1	14	4	9	5	18	4	8
6/19	9	7	14	7	16	10	3	1	14	4	14	6	26	5	9
6/20	10	15	15	8	17	12	4	3	15	4	15	8	35	6	12
6/21	12	16	17	8	20	15	5	3	17	6	20	12	45	12	15
6/22	13	17	20	13	25	17	6	4	19	9	23	14	49	15	17
6/23	17	20	25	15	29	20	8	5	20	12	27	17	55	16	20
6/24	24	20	28	16	31	27	10	5	21	17	29	18	63	18	21
6/25	31	24	39	17	31	34	12	6	23	21	30	24	69	21	24
6/26	35	29	43	19	33	39	13	8	24	21	30	28	73	27	29
6/27	39	33	46	21	38	44	20	13	31	21	30	28	74	29	31
6/28	44	35	47	23	40	47	22	17	34	22	30	30	75	29	34
6/29	45	48	47	28	43	52	25	22	39	23	33	33	76	33	39
6/30	47	62	49	33	44	56	27	23	43	29	33	36	77	34	43
7/01	52	68	50	36	52	60	29	25	47	33	33	40	78	37	47
7/02	59	70	51	39	55	63	30	32	48	34	33	44	80	38	48
7/03	61	72	56	40	64	66	37	34	57	39	37	51	80	41	56
7/04	70	72	59	41	73	68	45	36	68	42	40	56	82	42	59
7/05	77	75	67	44	76	75	52	37	74	45	42	61	84	46	67
7/06	79	77	70	52	79	77	53	38	77	47	50	62	85	48	70
7/07	82	84	72	62	79	81	59	39	78	48	55	69	86	54	72
7/08	84	84	73	63	80	84	64	40	82	50	71	76	86	60	76
7/09	86	85	79	68	82	86	67	44	84	52	79	81	86	64	81
7/10	87	85	80	72	85	89	70	48	85	53	84	82	88	65	84
7/11	88	85	82	74	86	89	73	50	87	54	85	85	88	68	85
7/12	88	85	86	75	87	89	75	53	89	57	86	86	89	70	86
7/13	89	86	90	77	89	91	76	55	91	67	88	88	90	73	88
7/14	89	86	90	82	89	92	77	57	92	70	90	89	90	74	89

continued

Appendix B.14. (2 of 2)

Date	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Median
7/15	93	86	90	83	91	93	78	59	93	75	90	90	92	77	90
7/16	94	86	91	84	92	94	80	60	94	78	91	90	93	79	91
7/17	95	88	92	86	94	94	80	61	95	81	91	91	94	80	91
7/18	95	89	93	88	95	95	83	65	95	83	92	91	95	83	92
7/19	96	91	94	93	95	96	85	66	96	87	93	92	96	85	93
7/20	96	91	95	96	95	97	88	68	96	89	93	93	96	87	95
7/21	97	91	96	97	96	97	90	71	97	91	93	93	97	88	96
7/22	97	92	97	97	96	98	91	75	97	96	95	94	98	89	96
7/23	98	93	98	97	96	98	93	78	97	97	96	96	98	90	97
7/24	98	93	99	97	97	98	93	79	97	98	97	96	99	92	97
7/25	98	94	99	98	97	98	94	83	98	98	97	97	99	94	97
7/26	98	94	99	99	97	98	94	84	98	98	97	97	99	95	98
7/27	99	94	99	99	98	98	94	88	98	98	98	98	100	95	98
7/28	99	95	99	99	98	98	96	89	99	98	98	98	100	95	98
7/29	99	95	99	99	98	98	97	92	99	98	98	99	100	96	98
7/30	99	96	100	99	99	98	97	93	99	98	98	99	100	96	99
7/31	99	96	100	99	99	99	97	95	99	99	99	99	100	96	99
8/01	99	96	100	99	99	99	98	96	99	99	99	99	100	97	99
8/02	100	96	100	99	99	100	98	96	99	99	99	99	100	97	99
8/03	100	96	100	99	99	100	98	97	99	99	99	99	100	98	99
8/04	100	96	100	100	99	100	98	98	99	99	99	100	100	99	99
8/05	100	96	100	100	99	100	98	98	99	100	99	100	100	99	100
8/06	100	97	100	100	99	100	99	98	100	100	99	100	100	99	100
8/07	100	97	100	100	100	100	99	98	100	100	99	100	100	99	100
8/08	100	97	100	100	100	100	99	98	100	100	100	100	100	99	100
8/09	100	97	100	100	100	100	99	99	100	100	100	100	100	99	100
8/10	100	100	100	100	100	100	100	99	100	100	100	100	100	99	100
8/11	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100
8/12	100	100	100	100	100	100	100	99	100	100	100	100	100	100	100
8/13	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/14	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/15	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/16	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/17	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/18	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/19	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/20	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/21	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/22	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/23	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/24	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/25	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/26	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/27	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
8/28	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

^a The boxed areas within each column represent the central 50 percent test-fish catches and the median.

Appendix B.15. Utilization of Kuskokwim River chinook salmon, 1960 - 1997.

Year	Commercial Harvest ^a	Estimated Subsistence Harvest ^b	Total Utilization	Running 10-Year Average
1960	5,969	18,887	24,856	
1961	18,918	28,934	47,852	
1962	15,341	13,582	28,923	
1963	12,016	34,482	46,498	
1964	17,149	29,017	46,166	
1965	21,989	24,697	46,686	
1966	25,545	49,325	74,870	
1967	29,986	59,913	89,899	
1968	34,278	32,942	67,220	
1969	43,997	40,617	84,614	55,758
1970	39,290	69,612	108,902	64,163
1971	40,274	43,242	83,516	67,729
1972	39,454	40,396	79,850	72,822
1973	32,838	39,093	71,931	75,365
1974	18,664	27,139	45,803	75,329
1975	21,720	48,448	70,168	77,677
1976	30,735	58,606	89,341	79,124
1977	35,830	56,580	92,410	79,376
1978	45,641	36,270	81,911	80,845
1979	38,966	56,283	95,249	81,908
1980	35,881	59,892	95,773	80,595
1981	47,663	61,329	108,992	83,143
1982	48,234	58,018	106,252	85,783
1983	33,174	47,412	80,586	86,649
1984	31,742	56,930	88,672	90,935
1985	37,889	43,874	81,763	92,095
1986	19,414	51,019	70,433	90,204
1987	36,179	67,325	103,504	91,314
1988	55,716	70,943 ^c	126,659	95,788
1989	43,217	82,098	125,315	98,795
1990	53,504	85,499	139,003	103,118
1991	37,778	85,627	123,405	104,559
1992	46,872	64,702	111,574	105,091
1993	8,735	89,290	98,025	106,835
1994	16,211	95,411	111,622	109,130
1995	30,846	97,193	128,039	113,758
1996	7,421	78,729	86,150	115,330
1997	10,441	81,577	92,018	114,181
10-Year Average (1987-1996)	33,648	81,682	115,330	

^a Districts 1 and 2; also includes harvests in District 3 from 1960 to 1965.

^b Estimated subsistence harvest expanded from villages surveyed.

^c Beginning in 1988, estimates are based on a new formula so data since 1988 is not comparable with previous years.

Appendix B.16. Historical commercial salmon harvest in the Kuskokwim River, Districts 1 and 2 combined, 1960 - 1997 ^a.

Year	Chinook	Sockeye	Chum	Pink	Coho	Total
1960	5,969	0	0	0	2,498	8,467
1961	18,918	0	0	0	5,044	23,962
1962	15,341	0	0	0	12,432	27,773
1963	12,016	0	0	0	15,660	27,676
1964	17,149	0	0	0	28,613	45,762
1965	21,989	0	0	0	12,191	34,180
1966	25,545	0	0	0	22,985	48,530
1967	29,986	0	148	0	56,313	86,447
1968	34,278	0	187	0	127,306	161,771
1969	43,997	322	7,165	0	83,765	135,249
1970	39,290	117	1,664	44	38,601	79,716
1971	40,274	2,606	68,914	0	5,253	117,047
1972	39,454	102	78,619	8	22,579	140,762
1973	32,838	369	148,746	33	130,876	312,862
1974	18,664	136	171,887	84	147,269	338,040
1975	21,720	23	181,840	10	81,945	285,538
1976	30,735	2,971	177,864	133	88,501	300,204
1977	35,830	9,379	248,721	203	241,364	535,497
1978	45,641	733	248,656	5,832	213,393	514,255
1979	38,966	1,054	261,874	78	219,060	521,032
1980	35,881	360	483,211	803	222,012	742,267
1981	47,663	48,375	418,677	292	211,251	726,258
1982	48,234	33,154	278,306	1,748	447,117	808,559
1983	33,174	68,855	267,698	211	196,287	566,225
1984	31,742	48,575	423,718	2,942	623,447	1,130,424
1985	37,889	106,647	199,478	75	335,606	679,695
1986	19,414	95,433	309,213	3,422	659,988	1,087,470
1987	36,179	136,602	574,336	43	399,467	1,146,627
1988	55,716	92,025	1,381,674	10,825	524,296	2,064,536
1989	43,217	42,747	749,182	464	479,856	1,315,466
1990	53,504	84,870	461,624	3,397	410,332	1,013,727
1991	37,778	108,946	431,802	378	500,935	1,079,839
1992	46,872	92,218	344,603	7,451	666,170	1,157,314
1993	8,735	27,008	43,337	64	610,739	689,883
1994	16,211	49,365	271,115	30,949	724,689	1,092,329
1995	30,846	92,500	605,918	93	471,461	1,200,818
1996	7,421	33,878	207,877	1,621	937,299	1,188,096
1997	10,441	21,989	17,026	2	130,803	180,261
10-Year Average (1987-1996)	33,648	76,016	507,147	208 ^b	572,524	1,194,864

^a Includes harvests in District 3 from 1960 to 1965.

^b Odd years only.

Appendix B.17. Utilization of Kuskokwim River chum salmon, 1960-1997.

Year	Commercial Harvest ^a	Subsistence Harvest ^b	Total Utilization	Running 10-Year Average
1960	0	301,753 ^c	301,753	
1961	0	179,529 ^c	179,529	
1962	0	161,849 ^c	161,849	
1963	0	137,649 ^c	137,649	
1964	0	190,191 ^c	190,191	
1965	0	250,878 ^c	250,878	
1966	0	175,735 ^c	175,735	
1967	148	208,445 ^c	208,593	
1968	187	275,008 ^c	275,195	
1969	7,165	204,105 ^c	211,270	209,264
1970	1,664	246,810 ^c	248,474	203,936
1971	68,914	116,391 ^c	185,305	204,514
1972	78,619	120,316 ^c	198,935	208,223
1973	148,746	179,259 ^c	328,005	227,258
1974	171,887	277,170 ^c	449,057	253,145
1975	181,840	176,389 ^c	358,229	263,880
1976	177,864	223,792 ^c	401,656	286,472
1977	248,721	198,355 ^c	447,076	310,320
1978	248,658	118,809 ^c	367,467	319,547
1979	261,874	161,239 ^c	423,113	340,732
1980	483,211	165,172 ^c	648,383	380,723
1981	418,677	157,306 ^c	575,983	419,790
1982	278,306	190,011 ^c	468,317	446,729
1983	267,698	146,876 ^c	414,574	455,386
1984	423,718	142,542 ^c	566,260	467,106
1985	199,478	94,750	294,228	460,706
1986	309,213	141,931 ^c	451,144	465,655
1987	574,336	70,709	645,045	485,451
1988	1,381,674	151,967 ^d	1,533,641	602,069
1989	749,182	140,345	889,527	648,710
1990	461,624	125,626	587,250	642,597
1991	431,802	92,961	524,763	637,475
1992	344,603	96,081	440,684	634,712
1993	43,337	59,259	102,596	603,514
1994	271,115	72,268	343,383	581,226
1995	605,918	68,263	674,181	619,221
1996	207,877	89,430	294,307	603,833
1997	17,026	29,076	46,102	543,643
10-Year Average (1987-1996)	507,147	96,691	603,584	

^a District 1 and 2^b Estimated subsistence harvest expanded from villages surveyed.^c Includes small numbers of small chinook, sockeye and coho salmon^d Beginning in 1988, estimates are based on a new formula so data since 1988 is not comparable with previous years.

Appendix B.18. Historical commercial salmon catches by fishing period in Kuskowim Area District 1.

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1974	Jun 10 - 11 *	422	12	5,064	4,384	0.9	1	0.0	153	0.0	0	0.0
	Jun 13 - 14 *	488	12	5,856	5,790	1.0	2	0.0	607	0.1	0	0.0
	Jun 17 - 18 *	506	12	6,072	5,857	1.0	62	0.0	1,394	0.2	0	0.0
	Jun 27 ^a	267	6	1,602	558	0.3	0	0.0	27,017	16.9	0	0.0
	Jul 01 - 02 ^b	380	12	4,560	561	0.1	26	0.0	55,356	12.1	0	0.0
	Jul 04 - 05 ^b	282	12	3,384	196	0.1	0	0.0	27,211	8.0	0	0.0
	Jul 08 - 09 ^b	376	12	4,512	286	0.1	1	0.0	50,672	11.2	0	0.0
	Jul 18 ^b	190	6	1,140	31	0.0	0	0.0	6,661	5.8	19	0.0
	Aug 01 - 02 ^b	267	12	3,204	17	0.0	9	0.0	813	0.3	9,576	3.0
	Aug 05 - 08 ^b	444	72	31,968	18	0.0	35	0.0	1,170	0.0	59,090	1.8
	Aug 12 - 15 ^b	396	72	28,512	12	0.0	0	0.0	103	0.0	58,066	2.0
	Aug 19 - 22 ^b	263	72	18,936	0	0.0	0	0.0	32	0.0	12,301	0.6
	Aug 26 - 29 ^b	107	72	7,704	1	0.0	0	0.0	10	0.0	5,360	0.7
	Sept. 02 - 05 ^b	25	72	1,800	0	0.0	0	0.0	0	0.0	430	0.2
Total		666	456	124,314	17,711		136		171,199		144,842	
1975	Jun 16 ^a	12	6	72	359	4.99	0	0.0	3	0.0	0	0.0
	Jun 19 - 20 *	46	12	552	1,031	1.87	0	0.0	34	0.1	0	0.0
	Jun 23 - 24 *	483	12	5,796	17,235	2.97	0	0.0	3,792	0.7	0	0.0
	Jun 30 ^b	276	6	1,656	691	0.42	0	0.0	31,216	18.9	0	0.0
	Jul 03 ^b	360	6	2,160	636	0.29	0	0.0	35,525	16.4	0	0.0
	Jul 07 ^b	369	6	2,214	421	0.19	0	0.0	39,396	17.8	0	0.0
	Jul 10 ^b	304	6	1,824	195	0.11	0	0.0	39,910	21.9	0	0.0
	Jul 14 ^b	326	6	1,956	179	0.09	0	0.0	21,092	10.8	0	0.0
	Aug 01 ^b	142	6	852	5	0.01	0	0.0	2,113	2.5	2,357	2.8
	Aug 04 - 06 ^b	292	48	14,016	40	0.00	1	0.0	5,639	0.4	12,500	0.9
	Aug 11 - 13 ^b	373	48	17,904	8	0.00	0	0.0	2,247	0.1	18,551	1.0
Aug 18 - 20 ^b	388	48	18,624	16	0.00	3	0.0	746	0.0	34,435	1.8	
Aug 25 - 27 ^b	270	48	12,960	0	0.00	0	0.0	73	0.0	16,277	1.3	
Total		737	258	80,586	20,816		4		181,786		84,120	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1976	Jun 17 ^a	459	6	2,754	6,962	2.5	1	0.0	532	0.2	0	0.00
	Jun 21 ^a	495	6	2,970	13,048	4.4	0	0.0	2,543	0.9	0	0.00
	Jun 28 ^b	348	6	2,088	4,143	2.0	508	0.2	42,464	20.3	0	0.00
	Jul 01 ^b	415	6	2,490	1,550	0.6	338	0.1	44,024	17.7	0	0.00
	Jul 08 ^b	381	6	2,286	894	0.4	1,268	0.6	48,669	21.3	0	0.00
	Jul 12 ^b	344	6	2,262	344	0.2	701	0.3	21,153	9.4	0	0.00
	Jul 15 ^b	265	6	1,590	236	0.1	151	0.1	14,176	8.9	44	0.03
	Aug 02 - 03 ^x	286	24	6,864	83	0.0	0	0.0	2,067	0.3	10,534	1.53
	Aug 09 - 11 ^x	400	48	19,200	96	0.0	3	0.0	866	0.0	29,728	1.55
	Aug 16 - 18 ^x	387	48	18,576	50	0.0	1	0.0	154	0.0	28,664	1.54
	Aug 23 - 25 ^x	300	48	14,400	10	0.0	0	0.0	69	0.0	14,543	1.01
Aug 30 - 31 ^b	174	42	7,308	2	0.0	0	0.00	10	0.0	4,420	0.60	
Total		674	252	82,788	27,418		2,971		176,727		87,933	
1977	Jun 15 ^a	467	6	2,802	12,458	4.45	20	0.0	334	0.12	0	0.00
	Jun 20 ^a	484	6	2,904	16,227	5.59	18	0.0	1,715	0.59	0	0.00
	Jun 27 ^a	378	6	2,268	1,337	0.59	1,386	0.6	40,321	17.78	0	0.00
	Jun 30 ^b	409	6	2,454	504	0.21	3,055	1.5	58,884	24.00	0	0.00
	Jul 04 ^b	331	6	1,986	266	0.13	1,952	1.0	37,500	18.88	0	0.00
	Jul 07 ^b	368	6	2,208	407	0.18	1,799	0.8	56,943	25.79	0	0.00
	Jul 14 ^b	385	6	2,310	153	0.07	77	0.0	24,765	10.72	1	0.00
	Aug 01 - 02 ^b	360	24	8,640	91	0.01	392	0.0	7,157	0.83	23,987	2.78
	Aug 08 ^b	487	48	23,376	117	0.01	59	0.0	3,306	0.14	91,474	3.91
	Aug 15 - 16 ^b	438	24	10,512	57	0.01	4	0.0	1,161	0.11	60,935	5.80
	Aug 18 ^b	378	12	4,536	13	0.00	1	0.0	224	0.05	25,589	5.64
	Aug 22 ^b	361	12	4,332	12	0.00	6	0.0	202	0.05	16,980	3.92
	Aug 25 ^b	264	12	3,168	12	0.00	0	0.0	127	0.04	11,874	3.75
Aug 29 ^b	204	12	2,448	5	0.00	0	0.0	42	0.02	6,819	2.79	
Total		653	186	73,944	31,659		9,369		232,681		237,659	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1978	Jun 09 *	509	6	3,054	7,590	2.49	10	0.0	734	0.24	0	0.00
	Jun 14 *	266	6	1,596	6,142	3.85	0	0.0	1,291	0.81	0	0.00
	Jun 16 *	396	6	2,376	12,341	5.19	22	0.0	5,950	2.50	0	0.00
	Jun 22 *	72	4	288	1,724	5.99	0	0.0	1,629	5.66	0	0.00
	Jun 23 *	429	4	1,716	8,342	4.86	0	0.0	12,587	7.34	0	0.00
	Jun 26 *	499	5	2,094	1,964	0.73	1	0.0	44,296	16.44	0	0.00
	Jun 29 *	422	6	2,652	1,759	0.66	52	0.0	36,793	13.87	0	0.00
	Jul 03 *	476	6	2,856	894	0.31	93	0.0	26,629	9.32	0	0.00
	Jul 06 *	485	12	5,820	1,460	0.25	302	0.1	48,031	8.25	0	0.00
	Jul 10 *	428	12	5,136	694	0.14	216	0.0	48,931	9.53	0	0.00
	Jul 13 *	422	6	2,532	293	0.12	0	0.0	14,935	5.90	0	0.00
	Aug 01 *	297	12	3,564	97	0.03	23	0.0	3,298	0.93	6,311	1.77
	Aug 04 *	364	12	4,368	79	0.02	6	0.0	906	0.21	9,445	2.16
	Aug 08 *	433	12	5,196	65	0.01	4	0.0	629	0.12	28,501	5.49
	Aug 11 *	485	12	5,820	39	0.01	2	0.0	280	0.05	42,428	7.29
	Aug 15 *	476	12	5,712	33	0.01	0	0.0	87	0.02	48,950	8.57
	Aug 18 *	434	12	5,208	16	0.00	2	0.0	67	0.01	29,485	5.66
	Aug 22 *	396	12	4,752	8	0.00	0	0.0	53	0.01	22,287	4.69
	Aug 25 *	293	12	3,516	12	0.00	0	0.0	13	0.00	11,168	3.18
Aug 29 *	250	12	3,000	1	0.00	0	0.0	80	0.03	12,215	4.07	
Total		723	182	71,856	43,553		733		247,219		210,790	
1979	Jun 11 *	523	6	3,138	12,270	3.91	14	0.00	462	0.15	0	0.00
	Jun 15 *	549	6	3,294	12,363	3.75	37	0.01	2,055	0.62	0	0.00
	Jun 22 *	502	6	3,012	5,651	1.88	50	0.02	32,295	10.72	0	0.00
	Jun 26 *	531	6	3,186	2,277	0.71	23	0.01	53,648	16.84	0	0.00
	Jun 29 *	542	6	3,252	1,583	0.49	8	0.00	48,643	14.96	0	0.00
	Jul 03 *	542	6	3,252	1,233	0.38	21	0.01	83,164	25.57	0	0.00
	Jul 10 *	520	6	3,120	470	0.15	23	0.01	32,434	10.40	0	0.00
	Aug 02 *	478	12	5,736	67	0.01	186	0.03	3,643	0.64	52,276	9.11
	Aug 06 *	480	6	2,880	38	0.01	54	0.02	1,148	0.40	53,797	18.68
	Aug 09 *	497	6	2,982	34	0.01	19	0.01	502	0.17	26,422	8.86
	Aug 13 *	463	6	2,778	20	0.01	11	0.00	179	0.06	27,915	10.05
	Aug 16 *	467	6	2,802	16	0.01	4	0.00	129	0.05	21,675	7.74
	Aug 20 *	390	6	2,340	23	0.01	7	0.00	104	0.04	19,445	8.31
	Aug 23 *	328	6	1,968	0	0.00	0	0.00	54	0.03	5,376	2.73
	Aug 27 *	510	12	3,720	6	0.00	2	0.00	40	0.01	6,342	1.70
Aug 30 *	179	12	2,148	2	0.00	1	0.00	16	0.01	2,182	1.02	
Total		685	114	49,608	36,053		460		258,516		215,430	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1980	Jun 12 ^a	469	6	2,814	9,891	3.51	2	0.00	711	0.25	0	0.00
	Jun 18 ^a	468	6	2,808	16,921	6.03	24	0.01	5,940	2.12	0	0.00
	Jun 23 ^b	426	6	2,616	4,777	1.83	0	0.00	105,825	40.45	0	0.00
	Jun 26 ^b	408	6	2,448	1,460	0.60	0	0.00	131,945	53.90	0	0.00
	Jul 02 ^b	383	6	2,298	498	0.22	23	0.01	122,613	53.36	0	0.00
	Jul 09 ^b	431	6	2,586	445	0.17	4	0.00	90,233	34.89	0	0.00
	Aug 04 ^b	375	6	2,250	54	0.02	73	0.03	2,697	1.20	9,889	4.40
	Aug 07 ^b	455	6	2,730	45	0.02	67	0.02	2,098	0.77	36,126	13.23
	Aug 11 ^b	482	6	2,892	33	0.01	64	0.02	4,350	1.50	35,178	12.16
	Aug 14 ^b	439	6	2,634	23	0.01	38	0.01	366	0.14	28,211	10.71
	Aug 18 ^b	441	6	2,646	12	0.00	25	0.01	179	0.07	43,748	16.53
	Aug 21 ^b	419	6	2,514	10	0.00	26	0.01	94	0.04	33,274	13.24
	Aug 25 ^b	370	6	2,220	12	0.01	9	0.00	64	0.03	19,264	8.68
	Aug 28 ^b	319	6	1,914	3	0.00	5	0.00	19	0.01	13,484	7.04
Total		663	84	35,370	34,184		360		467,134		219,174	
1981	Jun 10 ^a	489	6	2,934	11,897	4.05	48	0.0	2,623	0.89	0	0.00
	Jun 16 ^a	541	6	3,246	17,985	5.54	316	0.1	11,501	3.54	0	0.00
	Jun 22 ^b	511	6	3,066	3,830	1.25	3,852	1.3	78,168	25.50	0	0.00
	Jun 25 ^b	508	6	3,048	2,000	0.66	6,037	2.0	81,431	26.72	0	0.00
	Jun 30 ^b	484	6	2,904	2,563	0.88	12,262	4.2	51,942	17.89	0	0.00
	Jul 02 ^b	459	6	2,754	1,707	0.62	9,769	3.5	58,594	21.28	0	0.00
	Jul 06 ^b	461	6	2,766	1,088	0.39	5,510	2.0	55,799	20.17	0	0.00
	Jul 09 ^b	440	6	2,640	941	0.36	7,760	2.9	66,138	25.05	0	0.00
	Aug 03 ^b	430	6	2,580	101	0.04	1,057	0.4	1,866	0.72	16,184	6.27
	Aug 06 ^b	441	6	2,646	77	0.03	674	0.3	1,046	0.40	13,885	5.25
	Aug 10 ^b	445	6	2,670	54	0.02	454	0.2	629	0.24	26,972	10.10
	Aug 13 ^b	473	6	2,838	54	0.02	233	0.1	448	0.16	46,252	16.30
	Aug 17 ^b	458	6	2,748	38	0.01	146	0.1	164	0.06	34,739	12.64
	Aug 20 ^b	380	6	2,280	17	0.01	55	0.0	73	0.03	24,184	10.61
	Aug 24 ^b	372	6	2,232	16	0.01	28	0.0	40	0.02	23,771	10.65
	Aug 27 ^b	346	6	2,076	16	0.01	25	0.0	59	0.03	13,785	6.64
	Aug 31 ^b	278	6	1,668	8	0.00	20	0.0	21	0.01	8,086	4.85
Total		679	102	45,096	42,011		45,554		410,542		207,858	

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Appendix B.18. (page 5 of 14)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1982	Jun 14 ^a	464	6	2,784	4,912	1.76	321	0.12	2,532	0.91	0	0.00
	Jun 17 ^a	496	6	2,892	11,285	3.90	1,061	0.37	4,694	1.62	0	0.00
	Jun 21 ^a	499	6	2,994	13,343	4.46	2,432	0.81	10,003	3.34	0	0.00
	Jun 24 ^a	459	4	1,836	8,548	4.66	3,157	1.72	12,908	7.03	0	0.00
	Jun 28 ^a	352	4	1,408	1,943	1.38	9,938	7.06	58,528	41.57	0	0.00
	Jun 30 ^a	483	4	1,932	2,064	1.07	5,824	3.01	47,773	24.73	0	0.00
	Jul 02 ^a	434	4	1,736	1,095	0.63	3,110	1.79	38,918	22.42	0	0.00
	Jul 05 ^a	372	6	2,232	875	0.39	2,769	1.24	29,315	13.13	0	0.00
	Jul 08 ^a	435	6	2,610	748	0.29	1,786	0.68	28,942	11.09	2	0.00
	Jul 12 ^a	354	6	2,124	307	0.14	638	0.30	20,709	9.75	23	0.01
	Jul 29 ^b	416	6	2,496	114	0.05	48	0.02	2,599	1.04	19,561	7.84
	Aug 02 ^b	388	6	2,328	67	0.03	69	0.03	949	0.41	31,944	13.72
	Aug 05 ^a	445	6	2,670	47	0.02	26	0.01	624	0.23	35,766	13.40
	Aug 09 ^a	442	6	2,652	29	0.01	25	0.01	342	0.13	61,231	23.09
	Aug 12 ^a	449	6	2,694	26	0.01	6	0.00	189	0.07	80,685	29.95
	Aug 16 ^a	420	6	2,520	15	0.01	5	0.00	96	0.04	77,785	30.87
	Aug 19 ^a	403	6	2,418	12	0.00	12	0.00	69	0.03	49,566	20.50
	Aug 23 ^a	349	6	2,094	3	0.00	5	0.00	28	0.01	25,218	12.04
	Aug 26 ^a	314	6	1,884	9	0.00	0	0.00	18	0.01	26,761	14.20
	Aug 30 ^a	302	6	1,812	7	0.00	1	0.00	18	0.01	26,815	14.80
Total		686	112	46,116	45,120		31,233		259,254		435,357	
1983	Jun 13 ^a	489	6	2,934	7,445	2.54	114	0.04	829	0.28	0	0.00
	Jun 16 ^a	450	6	2,700	5,961	2.21	156	0.06	976	0.36	0	0.00
	Jun 20 ^a	474	6	2,844	4,776	1.68	3,289	1.16	28,915	10.17	0	0.00
	Jun 23 ^b	450	6	2,700	3,287	1.22	4,807	1.78	24,625	9.12	0	0.00
	Jun 27 ^b	446	6	2,676	2,566	0.96	10,465	3.91	44,802	16.74	0	0.00
	Jun 30 ^a	547	6	3,282	2,359	0.72	12,490	3.81	55,209	16.82	0	0.00
	Jul 04 ^a	443	6	2,658	1,213	0.46	24,540	9.23	46,176	17.37	0	0.00
	Jul 07 ^a	496	6	2,976	1,202	0.40	7,286	2.45	36,965	12.42	0	0.00
	Jul 11 ^a	466	6	2,796	633	0.23	3,001	1.07	20,560	7.35	0	0.00
	Aug 01 ^a	377	6	2,262	238	0.11	478	0.21	4,041	1.79	9,767	4.32
	Aug 04 ^a	430	6	2,580	237	0.09	272	0.11	2,580	1.00	15,389	5.96
	Aug 08 ^a	383	6	2,298	130	0.06	444	0.19	1,322	0.58	34,541	15.03
	Aug 11 ^a	485	6	2,910	96	0.03	146	0.05	534	0.18	35,268	12.12
	Aug 15 ^a	462	6	2,772	64	0.02	71	0.03	148	0.05	24,072	8.68
	Aug 18 ^a	408	6	2,448	56	0.02	52	0.02	111	0.05	22,822	9.32
	Aug 22 ^a	388	6	2,328	53	0.02	39	0.02	88	0.04	34,918	15.00
	Aug 26 ^b	323	6	1,938	27	0.01	31	0.02	55	0.03	19,039	9.82
Total		679	102	45,102	29,442		67,681		267,936		195,816	

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Appendix B.18. (page 6 of 14)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1984	Jun 18 *	484	6	2,904	10,845	3.73	409	0.14	5,803	2.00	0	0.0
	Jun 21 *	443	6	2,658	6,336	2.38	2,618	0.98	22,094	8.31	0	0.0
	Jun 25 *	466	6	2,796	3,018	1.08	10,743	3.84	91,773	32.82	0	0.0
	Jun 28 *	470	6	2,820	2,625	0.93	10,942	3.88	67,120	23.80	0	0.0
	Jul 02 *	483	6	2,898	1,988	0.69	8,145	2.81	69,897	24.12	0	0.0
	Jul 05 *	426	6	2,556	1,218	0.48	6,798	2.66	54,981	21.51	1	0.0
	Jul 09 *	496	6	2,976	1,211	0.41	2,821	0.95	36,440	12.24	52	0.0
	Jul 12 *	436	6	2,616	858	0.33	12/27	0.84	24,269	9.28	196	0.1
	Jul 16 *	373	6	2,238	744	0.33	1,121	0.50	18,613	8.32	619	0.3
	Jul 30 *	459	6	2,754	351	0.13	281	0.10	2,329	0.85	56,609	20.6
	Aug 02 *	401	6	2,406	291	0.12	157	0.07	1,184	0.49	79,240	32.9
	Aug 06 *	542	9	4,878	106	0.02	113	0.02	639	0.13	84,406	17.3
	Aug 09 *	523	9	4,707	106	0.02	111	0.02	373	0.08	80,990	17.2
	Aug 13 *	504	9	4,536	81	0.02	67	0.01	235	0.05	80,268	17.7
	Aug 16 *	502	9	4,518	50	0.01	29	0.01	131	0.03	78,342	17.3
	Aug 20 *	491	9	4,419	33	0.01	14	0.00	59	0.01	63,829	14.4
	Aug 23 *	481	9	4,329	21	0.00	11	0.00	63	0.01	49,372	11.4
	Aug 27 *	350	9	3,150	53	0.02	2	0.00	18	0.01	16,472	5.2
	Aug 30 *	210	9	1,890	9	0.00	1	0.00	5	0.00	11,222	5.9
	Sept 03 *	69	5	360	2	0.01	0	0.00	5	0.01	1,603	4.5
	Sept 06 *	39	6	234	0	0.00	0	0.00	0	0.00	1,877	8.0
Total		654	149	62,643	29,946		46,571		396,031		605,098	
1985	Jun 20	423	6	2,538	6,519	2.57	5,246	2.07	19,762	7.79	0	0.00
	Jun 24	488	6	2,928	10,413	3.56	25,536	8.72	42,778	14.61	0	0.00
	Jun 27	492	6	2,952	8,791	2.98	26,155	8.86	47,443	16.07	0	0.00
	Jul 1	514	6	3,084	6,168	2.00	31,082	10.08	47,471	15.39	0	0.00
	Jul 4	460	6	2,760	3,774	1.37	16,114	5.84	28,581	10.36	0	0.00
	Aug 01	487	6	2,922	204	0.07	174	0.06	2,470	0.85	34,052	11.65
	Aug 05	527	6	3,162	121	0.04	33	0.01	1,558	0.49	54,819	17.34
	Aug 08	525	6	3,150	58	0.02	3	0.00	472	0.15	78,149	24.81
	Aug 12	530	6	3,180	44	0.01	7	0.00	342	0.11	77,809	24.47
	Aug 15	441	6	2,646	28	0.01	0	0.00	193	0.07	28,013	10.59
	Aug 19	406	6	2,436	13	0.01	2	0.00	32	0.01	19,316	7.93
	Aug 22	390	6	2,340	10	0.00	0	0.00	56	0.02	17,534	7.49
	Aug 26	297	6	1,782	8	0.00	0	0.00	22	0.01	10,688	6.00
	Aug 29	262	6	1,572	8	0.01	1	0.00	28	0.02	9,568	6.09
Total		654	84	37,452	36,159		104,353		191,208		329,948	

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Appendix B.18. (page 7 of 14)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1986	Jun 26	514	6	3,084	7,786	2.52	40,468	13.12	68,947	22.36	1	0.00
	Jun 30	576	6	3,456	4,200	1.22	22,633	6.55	60,780	17.59	0	0.00
	Jul 03	556	6	3,336	3,224	0.97	15,766	4.73	65,839	19.74	0	0.00
	Jul 07	586	6	3,516	1,805	0.51	8,347	2.37	55,983	15.92	0	0.00
	Jul 10	532	6	3,192	1,156	0.36	5,488	1.72	48,990	15.35	0	0.00
	Jul 31	352	6	2,112	60	0.03	219	0.10	2,239	1.06	27,553	13.05
	Aug 04	530	6	3,180	49	0.02	201	0.06	1,345	0.42	96,127	30.23
	Aug 07	600	9	5,400	66	0.01	38	0.01	50	0.01	127,024	23.52
	Aug 11	553	6	3,318	32	0.01	3	0.00	9	0.00	82,215	24.78
	Aug 13	526	6	3,156	32	0.01	2	0.00	3	0.00	92,918	29.44
	Aug 15	519	6	3,114	67	0.02	4	0.00	11	0.00	55,633	17.87
	Aug 18	477	6	2,862	15	0.01	4	0.00	0	0.00	51,328	17.93
	Aug 21	465	6	2,790	8	0.00	2	0.00	2	0.00	50,640	18.15
	Aug 25	458	6	2,748	4	0.00	0	0.00	0	0.00	37,365	13.60
	Aug 28	346	6	2,076	0	0.00	0	0.00	3	0.00	16,436	7.92
Sept 01	234	6	1,404	6	0.00	0	0.00	0	0.00	5,949	4.24	
Total		688	99	48,744	18,510		93,175		304,201		643,189	
1987	Jun 18	526	9	4,734	19,126	4.04	9,508	2.01	14,137	2.99	0	0.00
	Jun 24	607	9	5,463	0	0.00	24,355	4.46	54,454	9.97	0	0.00
	Jun 30	564	9	5,076	0	0.00	39,112	7.71	112,963	22.25	0	0.00
	Jul 03	580	6	3,480	5,970	1.72	44,030	12.65	66,783	19.19	0	0.00
	Jul 07	578	6	3,468	3,636	1.05	9,196	2.65	103,059	29.72	0	0.00
	Jul 11	597	6	3,582	1,910	0.53	4,611	1.29	72,118	20.13	1	0.00
	Jul 15	569	6	3,414	1,415	0.41	2,301	0.67	71,923	21.07	10	0.00
	Jul 20	551	6	3,306	1,343	0.41	826	0.25	65,135	19.70	500	0.15
	Aug 06	590	6	3,540	207	0.06	271	0.08	4,074	1.15	49,182	13.89
	Aug 13	604	6	3,624	103	0.03	222	0.06	894	0.25	104,968	28.96
	Aug 17	595	6	3,570	76	0.02	133	0.04	378	0.11	73,867	20.69
	Aug 19	585	6	3,510	36	0.01	25	0.01	156	0.04	45,277	12.90
	Aug 21	540	6	3,240	26	0.01	16	0.00	140	0.04	33,601	10.37
	Aug 24	500	6	3,000	27	0.01	4	0.00	108	0.04	27,607	9.20
	Aug 27	479	6	2,874	13	0.00	9	0.00	70	0.02	21,772	7.58
Aug 31	364	6	2,184	7	0.00	5	0.00	57	0.03	12,823	5.89	
Sept 03	278	6	1,668	8	0.00	3	0.00	31	0.02	11,352	6.81	
Sept 07	132	6	792	4	0.01	4	0.01	19	0.02	4,311	5.44	
Total		703	117	60,525	33,907		134,631		566,499		385,321	

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Appendix B.18. (page 8 of 14)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1988	Jun 16	602	8	4,816	12,640	2.62	7,408	1.54	72,219	15.00	0	0.00
	Jun 20	612	6	3,672	11,708	3.19	14,502	3.95	113,628	30.94	0	0.00
	Jun 24	644	6	3,864	9,710	2.51	19,894	5.15	119,808	31.01	0	0.00
	Jun 28	609	6	3,654	5,350	1.46	17,628	4.82	154,027	42.15	0	0.00
	Jul 02	580	6	3,480	3,531	1.01	15,102	4.34	187,916	54.00	0	0.00
	Jul 05	579	6	3,474	2,340	0.67	7,284	2.10	163,971	47.20	9	0.00
	Jul 08	604	6	3,624	1,891	0.52	3,623	1.00	138,772	38.29	1	0.00
	Jul 11	598	6	3,588	1,628	0.45	2,467	0.69	137,450	38.31	24	0.01
	Jul 14	597	6	3,582	1,751	0.49	822	0.23	116,930	32.64	141	0.04
	Jul 18	567	6	3,402	1,107	0.33	396	0.12	57,749	16.98	502	0.15
	Jul 21	539	6	3,234	621	0.19	164	0.05	39,643	12.26	1,278	0.40
	Jul 25	494	6	2,964	329	0.11	109	0.04	24,893	8.40	6,323	2.13
	Jul 28	552	6	3,312	333	0.10	70	0.02	16,028	4.84	20,970	6.33
	Aug 01	594	6	3,564	201	0.06	32	0.01	6,967	1.95	33,954	9.53
	Aug 04	639	6	3,834	206	0.05	105	0.03	5,152	1.34	76,576	19.97
	Aug 08	640	6	3,840	114	0.03	92	0.02	2,890	0.75	76,345	19.88
	Aug 10	596	6	3,576	73	0.02	9	0.00	1,376	0.38	53,874	15.07
	Aug 12	624	6	3,744	115	0.03	11	0.00	1,422	0.38	84,700	22.62
	Aug 15	613	6	3,678	76	0.02	14	0.00	663	0.18	59,724	16.24
	Aug 18	620	6	3,720	37	0.01	8	0.00	230	0.06	37,415	10.06
	Aug 20	577	6	3,462	29	0.01	5	0.00	121	0.03	24,046	6.95
	Aug 27	532	6	3,192	14	0.00	8	0.00	93	0.03	22,683	7.11
	Aug 31	408	6	2,448	6	0.00	11	0.00	34	0.01	9,852	4.02
Total		746	140	81,724	53,810		89,764		1,361,982		508,417	

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Appendix B.18. (page 9 of 14)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1989	Jun 19	374	8	2,992	9,204	3.08	5,495	1.84	41,789	13.97	0	0.0
	Jun 23	277	8	2,216	6,071	2.71	7,011	3.16	65,650	29.63	0	0.0
	Jun 26	126	8	1,008	1,862	1.85	3,746	3.72	32,373	32.12	0	0.0
	Jun 30	642	8	5,136	9,232	1.80	10,214	1.99	131,629	25.63	0	0.0
	Jul 03	629	6	3,774	4,600	1.22	5,808	1.54	91,345	24.20	0	0.0
	Jul 05	553	6	3,318	3,311	1.00	2,917	0.88	85,727	25.84	3	0.0
	Jul 08	621	6	3,726	3,136	0.84	3,177	0.85	119,066	31.96	9	0.0
	Jul 11	616	6	3,696	1,691	0.46	1,565	0.42	78,053	21.12	126	0.0
	Jul 14	590	6	3,540	1,216	0.34	796	0.22	44,401	12.54	230	0.0
	Jul 18	437	6	2,622	868	0.33	451	0.17	26,407	10.07	2,216	0.1
	Jul 27	562	6	3,372	210	0.06	95	0.03	5,716	1.70	5,651	0.7
	Aug 03	679	6	4,074	174	0.04	30	0.01	3,615	0.89	99,022	24.3
	Aug 07	642	6	3,852	78	0.02	22	0.01	868	0.23	73,514	19.1
	Aug 09	644	6	3,864	40	0.01	7	0.00	432	0.11	103,158	26.7
	Aug 12	650	6	3,900	34	0.01	8	0.00	122	0.03	81,970	21.0
	Aug 15	616	6	3,696	25	0.01	4	0.00	119	0.03	23,071	6.2
	Aug 18	381	6	2,286	7	0.00	5	0.00	16	0.01	5,938	2.6
	Aug 23	528	6	3,168	19	0.01	14	0.00	21	0.01	30,940	9.8
	Aug 26	508	6	3,048	17	0.01	13	0.00	15	0.00	20,881	6.9
	Aug 29	423	6	2,538	7	0.00	9	0.00	21	0.01	11,080	4.4
	Sept 01	194	6	1,164	3	0.00	1	0.00	7	0.01	3,225	2.8
Total		745	134	66,990	41,745		41,388		727,392		461,034	
1990	Jun 20	630	6	3,780	16,690	4.42	10,318	16.38	30,306	8.02	0	0.00
	Jun 25	611	6	3,666	16,031	4.37	27,024	44.23	58,944	16.08	0	0.00
	Jun 29	645	6	3,870	9,428	2.44	18,774	29.11	74,911	19.36	0	0.00
	Jul 05	591	6	3,546	4,071	1.15	10,759	18.20	86,835	24.49	0	0.00
	Jul 09	589	6	3,534	2,804	0.79	8,757	14.87	91,411	25.87	0	0.00
	Jul 14	625	8	5,000	2,127	0.43	5,467	8.75	79,803	15.96	70	0.01
	Aug 01	611	6	3,666	252	0.07	533	0.87	9,065	2.47	23,549	6.42
	Aug 06	631	6	3,786	306	0.08	133	0.21	4,597	1.21	61,450	16.23
	Aug 10	653	6	3,918	94	0.02	66	0.10	1,269	0.32	58,251	14.87
	Aug 13	642	6	3,852	38	0.01	48	0.07	509	0.13	115,444	29.97
	Aug 16	650	9	5,850	28	0.00	29	0.04	239	0.04	68,605	11.73
	Aug 20	594	6	3,564	11	0.00	34	0.06	113	0.03	51,838	14.54
	Aug 27	534	6	3,204	3	0.00	16	0.03	25	0.01	16,030	5.00
Total		743	83	51,236	51,883		81,958		438,027		395,237	

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Appendix B.18. (page 10 of 14)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1991	Jun 20	601	6	3,606	13,813	3.83	19,732	5.47	13,266	3.68	0	0.00
	Jun 24	616	6	3,696	12,612	3.41	19,262	5.21	30,632	8.29	0	0.00
	Jul 01	629	6	3,774	5,966	1.58	24,428	6.47	50,121	13.28	0	0.00
	Jul 06	589	6	3,534	2,102	0.59	24,219	6.85	40,060	11.34	0	0.00
	Jul 13	571	6	3,426	904	0.26	6,458	1.88	52,552	15.34	16	0.00
	Jul 18	568	6	3,408	452	0.13	5,128	1.50	78,797	23.12	977	0.29
	Jul 22	543	6	3,258	233	0.07	3,085	0.95	49,788	15.28	2,655	0.81
	Jul 25	533	8	4,264	186	0.04	1,526	0.36	30,083	7.06	4,871	1.14
	Jul 29	534	8	4,272	134	0.03	732	0.17	24,026	5.62	37,141	8.69
	Aug 01	602	6	3,612	125	0.03	624	0.17	13,098	3.63	38,284	10.60
	Aug 05	643	8	5,144	56	0.01	96	0.02	6,091	1.18	56,262	10.94
	Aug 08	634	8	5,072	33	0.01	40	0.01	3,194	0.63	72,037	14.20
	Aug 12	662	8	5,296	42	0.01	31	0.01	1,586	0.30	114,581	21.64
	Aug 14	601	8	4,808	18	0.00	23	0.00	634	0.13	58,393	12.14
	Aug 19	590	6	3,540	24	0.01	24	0.01	313	0.09	57,364	16.20
	Aug 26	512	8	4,096	6	0.00	12	0.00	93	0.02	43,664	10.66
	Total		749	110	64,806	36,706		105,420		394,334		486,245
1992	Jun 18	567	8	4,536	9,736	2.15	8,508	1.88	32,695	7.21	0	0.00
	Jun 22	619	8	4,952	14,578	2.94	25,017	5.05	74,429	15.03	0	0.00
	Jun 25	627	8	5,016	8,984	1.79	21,922	4.37	55,114	10.99	0	0.00
	Jun 29	602	6	3,612	7,323	2.03	26,082	7.22	80,213	22.21	0	0.00
	Jul 06	587	8	4,696	3,250	0.69	7,962	1.70	84,196	17.93	2	0.00
	Aug 03	619	8	4,952	306	0.06	137	0.03	4,069	0.82	78,233	15.80
	Aug 06	590	6	3,540	116	0.03	98	0.03	1,319	0.37	57,506	16.24
	Aug 11	653	6	3,918	157	0.04	76	0.02	664	0.17	181,905	46.43
	Aug 14	632	6	3,792	63	0.02	53	0.01	196	0.05	87,959	23.20
	Aug 17	596	6	3,576	47	0.01	49	0.01	122	0.03	79,357	22.19
	Aug 20	578	6	3,468	36	0.01	17	0.00	53	0.02	73,363	21.15
	Aug 24	550	6	3,300	27	0.01	19	0.01	23	0.01	28,069	8.51
	Aug 27	481	6	2,886	26	0.01	6	0.00	26	0.01	28,238	9.78
	Aug 31	374	6	2,244	8	0.00	8	0.00	17	0.01	16,962	7.56
	Total		741	94	54,488	44,677		89,956		333,136		631,594

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Appendix B.18. (page 11 of 14)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1993	Jun 25	622	8	4,976	8,184	1.64	26,363	5.30	34,123	6.86	0	0.00
	Jul 31	625	6	3,750	172	0.05	210	0.06	4,133	1.10	56,107	14.96
	Aug 04	656	6	3,936	98	0.02	141	0.04	2,080	0.53	137,649	34.97
	Aug 06	632	8	5,056	88	0.02	84	0.02	1,396	0.28	91,400	18.08
	Aug 09	628	6	3,768	65	0.02	75	0.02	446	0.12	54,817	14.55
	Aug 14	640	6	3,840	46	0.01	39	0.01	287	0.07	80,226	20.89
	Aug 17	620	6	3,720	30	0.01	31	0.01	119	0.03	82,696	22.23
	Aug 21	592	6	3,552	9	0.00	25	0.01	58	0.02	47,097	13.26
	Aug 25	441	6	2,646	6	0.00	13	0.00	28	0.01	10,556	3.99
	Aug 28	387	6	2,322	12	0.01	19	0.01	30	0.01	13,592	5.85
	Sept 01	274	6	1,644	4	0.00	3	0.00	18	0.01	12,190	7.41
Total		739	70	39,210	8,714		27,003		42,718		586,330	
1994	Jun 24	576	8	4,608	14,221	3.09	38,958	8.45	87,214	18.93	0	0.00
	Jul 14	496	4	1,984	578	0.29	3,891	1.96	43,585	21.97	820	0.41
	Jul 19	500	6	3,000	441	0.15	4,475	1.49	60,104	20.03	7,027	2.34
	Jul 23	506	6	3,036	313	0.10	1,125	0.37	38,149	12.57	24,213	7.98
	Jul 26	552	6	3,312	225	0.09	471	0.14	22,460	6.78	39,901	12.05
	Jul 29	577	6	3,462	204	0.06	159	0.05	11,252	3.25	52,090	15.05
	Aug 04	606	6	3,636	88	0.06	87	0.02	3,983	1.10	75,514	20.77
	Aug 09	530	6	3,180	29	0.03	70	0.02	1,153	0.36	129,570	40.75
	Aug 12	606	8	4,848	34	0.01	47	0.01	777	0.16	117,753	24.29
	Aug 15	595	8	4,760	22	0.01	33	0.01	321	0.07	47,902	10.06
	Aug 18	598	8	4,784	20	0.00	16	0.00	212	0.04	82,750	17.30
	Aug 22	554	8	4,432	12	0.00	15	0.00	104	0.02	44,054	9.94
	Aug 25	447	8	3,576	9	0.00	7	0.00	63	0.02	37,595	10.51
	Aug 27	445	6	2,670	3	0.00	4	0.00	30	0.01	20,526	7.69
	Aug 30	263	6	1,578	2	0.00	2	0.00	16	0.01	8,192	5.19
	Sept 02	157	6	942			2	0.00	3	0.00	2,489	2.64
Total		706	106	53,808	16,201		49,362		269,426		690,396	

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Appendix B.18. (page 12 of 14)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1995	Jun 22	569	4	2,276	6,895	3.03	4,420	1.94	49,157	21.60	0	0.00
	Jun 26	568	4	2,272	9,452	4.16	19,449	8.56	93,152	41.00	0	0.00
	Jun 29	565	4	2,260	4,972	2.20	18,188	8.05	83,580	36.98	0	0.00
	Jul 03	475	4	1,900	2,847	1.50	17,078	8.99	89,427	47.07	0	0.00
	Jul 06	481	4	1,924	1,521	0.79	14,765	7.67	81,246	42.23	0	0.00
	Jul 10	494	4	1,976	906	0.46	7,100	3.59	86,368	43.71	21	0.01
	Jul 14	435	4	1,740	546	0.31	4,219	2.42	43,137	24.79	221	0.13
	Jul 18	336	6	2,016	366	0.18	2,482	1.23	37,294	18.50	671	0.33
	Jul 21	368	4	1,472	202	0.14	940	0.64	21,039	14.29	1,272	0.86
	Aug 04	214	6	1,404	64	0.05	123	0.09	1,072	0.76	48,665	34.66
	Aug 08	611	6	3,066	95	0.03	363	0.10	1,229	0.34	98,548	26.88
	Aug 12	617	6	3,702	50	0.01	359	0.10	899	0.24	102,421	27.67
	Aug 16	593	6	3,558	52	0.01	147	0.04	208	0.06	65,713	18.47
	Aug 19	555	6	3,330	28	0.01	87	0.03	133	0.04	41,057	12.33
	Aug 22	497	6	2,982	16	0.01	113	0.04	157	0.05	43,978	14.75
	Aug 26	477	6	2,862	25	0.01	117	0.04	101	0.04	29,129	10.18
	Aug 29	355	6	2,130	15	0.01	45	0.02	39	0.02	17,790	8.35
	Sept 01	219	6	1,314	2	0.00	31	0.02	12	0.01	5,783	4.40
Total		712	92	42,784	28,054		90,026		588,250		455,269	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1996	Jun 17	245	2	490	2,045	4.17	1,850	3.78	11,560	23.59	0	0.00
	Jun 20	283	2	566	2,046	3.61	6,423	11.35	27,442	48.48	0	0.00
	Jun 24	240	2	480	666	1.85	4,420	12.28	19,438	53.99	0	0.00
	Jul 02	224	2	448	545	1.22	3,962	8.84	20,915	46.69	0	0.00
	Jul 05	194	2	388	316	0.81	3,481	8.97	17,651	45.49	2	0.01
	Jul 08	211	2	422	178	0.42	6,795	16.10	18,801	44.55	24	0.06
	Jul 12	237	2	474	230	0.49	3,781	7.98	26,468	55.84	1,608	3.39
	Jul 16	197	2	394	87	0.22	602	1.53	15,192	38.56	4,675	11.87
	Jul 19	267	3	801	164	0.20	298	0.37	13,390	16.72	14,746	18.41
	Jul 22	417	6	2,502	183	0.07	639	0.26	14,504	5.80	50,443	20.16
	Jul 25	487	8	3,896	124	0.03	256	0.07	9,024	2.32	113,637	29.17
	Jul 29	526	6	3,156	97	0.03	186	0.06	3,828	1.21	144,773	45.87
	Jul 31	464	6	2,784	52	0.02	92	0.03	1,541	0.55	122,946	44.16
	Aug 03	541	6	3,246	59	0.02	129	0.04	1,097	0.34	132,540	40.83
	Aug 07	514	6	3,084	43	0.01	73	0.02	581	0.19	94,332	30.59
	Aug 10	502	6	3,012	45	0.01	60	0.02	797	0.26	83,653	27.77
	Aug 13	471	6	2,826	25	0.01	82	0.03	296	0.10	70,053	24.79
	Aug 16	459	6	2,754	28	0.01	147	0.05	215	0.08	49,012	17.80
	Aug 20	400	6	2,400	19	0.01	83	0.03	51	0.02	25,870	10.78
	Aug 23	293	6	1,758	9	0.01	22	0.01	23	0.01	13,133	7.47
	Aug 26	209	6	1,254	11	0.01	23	0.02	13	0.01	8,684	6.93
Total		620	92.5	37,015	6,972		33,404		202,827		930,131	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1997	Jun 23	353	6	2,118	10,023	4.73	21,218	10.02	13,090	6.18		
	Jul 31	429	6	2,574	141	0.05	352	0.14	2,060	0.80	14,963	5.81
	Aug 06	513	6	3,078	145	0.05	229	0.07	1,387	0.45	37,216	12.09
	Aug 12	509	6	3,042	62	0.02	122	0.04	431	0.13	56,643	18.46
	Aug 18	478	6	2,850	70	0.02	68	0.02	58	0.02	21,981	7.46
Total		607	30.0	13,662	10,441		21,989		17,026		130,803	

^a Gillnet mesh size unrestricted.

^b Gillnets were restricted to 6 inches or less; after 1985 this restriction was in effect for all periods.

^c Sales of chinook salmon were prohibited. Estimated chinook harvest was between 12,119 and 13,615 on 6/24 and between 5,831 and 6,555 on 6/25.

Appendix B.19. Historical commercial salmon catches by fishing period in Kuskowim Area District 2.

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1974	Jun 10 - 14 ^a	26	96	2,496	549	0.2	0	0.0	16	0.0	0	0.0
	Jun 17 - 19 ^a	29	48	1,392	402	0.3	0	0.0	451	0.3	0	0.0
	Aug 5 - 9 ^a	14	96	1,344	2	0.0	0	0.0	210	0.2	990	0.7
	Aug 12 - 13 ^a	13	24	312	0	0.0	0	0.0	11	0.0	1,428	4.6
Total		37	264	5,544	953		0		688		2,418	
1975	Jun 23 - 27 ^a	38	96	3,648	1,319	0.36	0	0.0	2,385	0.7	0	0.0
Total		38	96	3,648	1,319		0		2,385		0	
1976	Jun 21 - 24 ^a	55	66	3,630	3,316	0.9	0	0.0	1,136	0.3	0	0.00
	Aug 23 - 25 ^a	11	24	264	1	0.0	0	0.0	1	0.0	568	2.15
Total		57	90	3,894	3,317		0		1,137		568	
1977	Jun 20 - 21 ^a	83	30	2,490	3,975	1.60	0	0.0	756	0.30	0	
	Jul 4 ^a	54	12	648	195	0.30	10	0.0	15,160	23.40	0	
	Aug 8 ^a	24	12	288	1	0.00	0	0.0	124	0.43	3,705	12.86
Total		105	54	3,426	4,171		10		16,040		3,705	
1978	Jun 14 ^a	8	6	48	359	7.48	0	0.0	59	1.23	0	
	Jun 16 ^a	13	6	78	424	5.44	0	0.0	189	2.42	0	
	Jun 22 ^a	9	4	36	411	11.42	0	0.0	377	10.47	0	
	Jun 23 ^a	24	4	96	893	9.30	0	0.0	804	8.38	0	
	Aug 18 ^b	3	12	36	0	0.00	0	0.0	0	0.00	257	7.14
	Aug 22 ^b	17	12	204	1	0.00	0	0.0	8	0.04	2,346	11.50
Total		43	44	498	2,088		0		1,437		2,603	
1979	Jun 21 ^a	29	12	348	1,030	2.96	142	0.41	982	2.82	0	0.00
	Jun 25 ^a	33	12	396	1,885	4.76	452	1.14	1,946	4.91	0	0.00
	Aug 13 ^b	20	12	240	0	0.00	0	0.00	430	1.79	3,630	15.13
Total		43	36	984	2,913		594		3,358		3,630	
1980	Jun 23 ^a	37	12	444	1,482	3.34	0	0.00	4,004	9.02	0	0.00
	Jul 09 ^b	21	6	126	215	1.71	0	0.00	11,911	94.53	0	0.00
	Aug 14 ^b	12	12	144	0	0.00	0	0.00	702	4.88	2,868	19.92
Total		43	30	714	1,697		0		16,617		2,868	
1981	Jun 16 ^a	18	6	108	933	8.64	4	0.0	810	7.50	0	0.00
	Jun 19 ^a	151	6	906	3,838	4.24	125	0.1	3,902	4.21	0	0.00
	Jun 25 ^b	11	6	66	499	7.56	0	0.0	3,329	50.44	0	0.00
	Aug 17 ^b	15	6	90	0	0.00	0	0.0	62	0.69	1,487	16.52
	Aug 20 ^b	13	6	78	1	0.01	0	0.0	32	0.41	1,896	24.31
Total		153	30	1,248	5,271		129		8,135		3,383	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1982	Jun 17 ^a	10	6	60	222	3.70	19	0.32	274	4.57	0	0.00
	Jun 21 ^a	23	6	138	769	5.57	53	0.38	817	5.92	0	0.00
	Jun 24 ^a	35	6	210	1,122	5.34	434	2.07	1,912	9.10	0	0.00
	Jul 2 ^b	24	6	144	271	1.88	607	4.22	7,060	49.03	0	0.00
	Jul 5 ^b	47	6	282	398	1.41	808	2.87	8,811	31.24	0	0.00
	Aug 9 ^b	15	6	90	2	0.02	0	0.00	144	1.60	1,841	20.46
	Aug 16 ^b	13	6	78	0	0.00	0	0.00	29	0.37	4,567	58.55
	Aug 19 ^b	21	6	126	1	0.01	0	0.00	5	0.04	5,352	42.48
Total		60	48	1,128	2,785		1,921		19,052		11,760	
1983	Jun 16 ^a	14	6	84	510	6.07	13	0.15	165	1.96	0	0.00
	Jun 20 ^b	28	6	168	746	4.44	86	0.51	2,069	12.32	0	0.00
	Jun 23 ^b	34	6	204	820	4.02	338	1.66	2,154	10.56	0	0.00
	Jun 27 ^b	33	6	198	755	3.81	736	3.72	4,276	21.60	0	0.00
	Aug 11 ^a	9	6	54	0	0.00	1	0.02	98	1.81	471	8.72
	Aug 15 ^b	0	6	0	0	0.00	0	0.00	0	0.00	0	0.00
	Aug 18 ^b	0	6	0	0	0.00	0	0.00	0	0.00	0	0.00
Total		43	42	708	2,831		1,174		8,762		471	
1984	Jun 21 ^a	15	6	90	561	6.23	84	0.93	967	10.74	0	0.00
	Jun 25 ^b	25	6	150	493	3.29	543	3.62	5,705	38.03	0	0.00
	Jun 28 ^b	33	6	198	524	2.65	395	1.99	13,376	67.56	0	0.00
	Jul 2 ^b	25	6	150	204	1.36	982	6.55	7,420	49.47	0	0.00
	Aug 06 ^b	16	6	96	9	0.09	0	0.00	110	1.15	4,339	45.20
	Aug 09 ^b	11	6	66	1	0.02	0	0.00	69	1.05	4,340	65.76
	Aug 13 ^b	12	6	72	1	0.01	0	0.00	24	0.33	2,792	38.78
	Aug 16 ^b	17	6	102	1	0.01	0	0.00	16	0.16	3,652	35.80
	Aug 20 ^b	13	6	78	1	0.01	0	0.00	0	0.00	2,179	27.94
	Aug 23 ^b	8	6	48	0	0.00	0	0.00	0	0.00	1,047	21.81
	Aug 27 ^b	0	6	0	0	0.00	0	0.00	0	0.00	0	0.00
Aug 30 ^b	0	6	0	0	0.00	0	0.00	0	0.00	0	0.00	
Total		58	72	1,050	1,795		2,004		27,687		18,349	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1985	Jun 20	8	6	48	136	2.83	115	2.40	647	13.48	0	0.00
	Jun 24	11	6	66	263	3.98	340	5.15	2,411	36.53	0	0.00
	Jun 27	12	6	72	548	7.61	739	10.26	2,263	31.43	0	0.00
	Jul 1	15	6	90	779	8.66	1,100	12.22	2,854	31.71	0	0.00
	Jul 4	0	6	0	0	0.00	0	0.00	0	0.00	0	0.00
	Aug 08	6	6	36	0	0.00	0	0.00	41	1.14	739	20.53
	Aug 12	14	6	84	3	0.04	0	0.00	45	0.54	2,914	34.69
	Aug 15	11	6	66	1	0.02	0	0.00	9	0.14	2,005	30.38
Total		23	48	462	1,730		2,294		8,270		5,658	
1986	Jun 26	3	6	18	186	10.33	616	34.22	439	24.39	0	0.00
	Jun 30	13	6	78	386	4.95	1,171	15.01	1,619	20.76	0	0.00
	Jul 3	8	6	48	168	3.50	265	5.52	1,249	26.02	0	0.00
	Jul 7	2	6	12	117	9.75	26	2.17	387	32.25	0	0.00
	Jul 10	6	6	36	45	1.25	179	4.97	1,282	35.61	0	0.00
	Aug 07	8	6	48	0	0.00	0	0.00	0	0.00	2,445	50.94
	Aug 11	10	6	60	0	0.00	0	0.00	23	0.38	2,677	44.62
	Aug 13	10	6	60	0	0.00	1	0.02	13	0.22	2,787	46.45
	Aug 15	27	6	162	1	0.01	0	0.00	0	0.00	5,761	35.56
	Aug 18	8	6	48	1	0.02	0	0.00	0	0.00	1,804	37.58
Aug 21	6	6	36	0	0.00	0	0.00	0	0.00	1,325	36.81	
Total		43	66	606	904		2,258		5,012		16,799	
1987	Jul 03	15	6	90	1,325	14.72	511	5.68	3,200	35.56	0	0.00
	Jul 07	22	6	132	935	7.08	1,459	11.05	4,152	31.45	0	0.00
	Aug 13	14	6	84	4	0.05	1	0.01	304	3.62	2,273	27.06
	Aug 17	14	6	84	6	0.07	0	0.00	102	1.21	3,374	40.17
	Aug 19	13	6	78	1	0.01	0	0.00	39	0.50	3,928	50.36
	Aug 21	18	6	108	1	0.01	0	0.00	40	0.37	4,571	42.32
Total		29	36	576	2,272		1,971		7,837		14,146	

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Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1988	Jun 24	13	6	78	669	8.58	1,041	13.35	4,232	54.26	0	0.00
	Jun 28	17	6	102	746	7.31	639	6.26	6,087	59.68	0	0.00
	Jul 2	19	6	114	468	4.11	579	5.08	8,155	71.54	0	0.00
	Aug 08	14	6	84	6	0.07	0	0.00	308	3.67	1,465	17.44
	Aug 10	16	6	96	10	0.10	0	0.00	312	3.25	3,823	39.82
	Aug 12	20	6	120	3	0.03	2	0.02	244	2.03	5,216	43.47
	Aug 15	21	6	126	1	0.01	0	0.00	144	1.14	2,317	18.39
	Aug 18	15	6	90	2	0.02	0	0.00	116	1.29	1,485	16.50
	Aug 20	17	6	102	1	0.01	0	0.00	94	0.92	1,573	15.42
Total		29	54	912	1,906		2,261		19,692		15,879	
1989	Jun 30	15	8	120	610	5.08	587	4.89	7,353	61.28	0	0.0
	Jul 03	18	6	108	371	3.44	238	2.20	5,101	47.23	0	0.0
	Jul 05	14	6	84	264	3.14	176	2.10	3,542	42.17	0	0.0
	Jul 11	14	6	84	128	1.52	95	1.13	4,580	54.52	0	0.0
	Aug 07	22	6	132	3	0.02	0	0.00	238	1.80	6,607	50.1
	Aug 09	18	6	108	3	0.03	0	0.00	114	1.06	5,714	52.9
	Aug 15	15	6	90	1	0.01	0	0.00	7	0.08	1,867	20.7
	Aug 18	20	6	120	3	0.03	0	0.00	11	0.09	2,733	22.8
Total		30	50	846	1,383		1,096		20,946		16,921	
1990	Jun 29	14	6	84	641	7.63	735	8.75	3,838	45.69	0	
	Jul 05	15	6	90	467	5.19	561	6.23	4,397	48.86	0	
	Jul 09	17	6	102	255	2.50	580	5.69	5,163	50.62	0	
	Jul 14	17	8	136	209	1.54	567	4.17	6,999	51.46	0	0.00
	Aug 06	15	6	90	21	0.23	5	0.06	742	8.24	1,111	12.34
	Aug 10	15	6	90	17	0.19	5	0.06	550	6.11	1,946	21.62
	Aug 13	16	6	96	4	0.04	1	0.01	276	2.88	4,192	43.67
	Aug 16	17	9	153	6	0.04	0	0.00	105	0.69	2,239	14.63
	Aug 20	18	6	108	0	0.00	0	0.00	12	0.11	2,548	23.59
	Aug 27	17	6	102	1	0.01	3	0.03	3	0.03	1,780	17.45
Total		22	65	1,051	1,621		2,457		22,085		13,816	

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Appendix B.19. (page 5 of 7)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1991	Jul 01	17	6	102	483	4.74	1,200	11.76	3,043	29.83	0	
	Jul 06	16	6	96	341	3.55	613	6.39	2,381	24.80	0	
	Jul 13	18	6	108	112	1.04	981	9.08	4,384	40.59	0	0.00
	Jul 18	17	6	102	49	0.48	365	3.58	6,534	64.06	0	0.00
	Jul 22	19	6	114	28	0.25	117	1.03	7,154	62.75	17	0.15
	Jul 25	17	8	136	20	0.15	177	1.30	7,686	56.51	115	0.85
	Jul 29	16	8	128	21	0.16	70	0.55	3,452	26.97	177	1.38
	Aug 05	17	8	136	6	0.04	0	0.00	1,245	9.15	1,596	11.74
	Aug 08	17	8	136	4	0.03	3	0.02	835	6.14	2,381	17.51
	Aug 12	16	8	128	2	0.02	0	0.00	340	2.66	1,829	14.29
	Aug 14	15	8	120	4	0.03	0	0.00	227	1.89	2,461	20.51
	Aug 19	19	6	114	2	0.02	0	0.00	138	1.21	1,689	14.82
	Aug 26	16	8	128	0	0.00	0	0.00	49	0.38	4,425	34.57
Total		23	92	1,548	1,072		3,526		37,468		14,690	
1992	Jun 25	16	8	128	1,021	7.98	930	7.27	3,916	30.59	0	
	Jun 29	15	6	90	815	9.06	525	5.83	2,439	27.10	0	
	Jul 6	9	8	72	310	4.31	486	6.75	2,840	39.44	0	0.00
	Aug 03	17	8	136	27	0.20	317	2.33	1,440	10.59	5,106	37.54
	Aug 06	17	6	102	11	0.11	1	0.01	536	5.25	3,832	37.57
	Aug 11	19	6	114	7	0.06	1	0.01	136	1.19	3,837	33.66
	Aug 14	21	6	126	0	0.00	1	0.01	70	0.56	8,216	65.21
	Aug 17	16	6	96	0	0.00	0	0.00	24	0.25	5,685	59.22
	Aug 20	14	6	84	1	0.01	0	0.00	43	0.51	2,682	31.93
	Aug 24	14	6	84	3	0.04	1	0.01	17	0.20	2,827	33.65
	Aug 27	11	6	66	0	0.00	0	0.00	5	0.08	1,238	18.76
	Aug 31	11	6	66	0	0.00	0	0.00	1	0.02	1,153	17.47
	Total		22	78	1,164	2,195		2,262		11,467		34,576
1993	Aug 06	15	8	120	9	0.08	2	0.02	303	2.53	6,828	56.90
	Aug 09	17	6	102	4	0.04	1	0.01	153	1.50	3,839	37.64
	Aug 14	17	6	102	3	0.03	1	0.01	70	0.69	2,681	26.28
	Aug 17	16	6	96	3	0.03	0	0.00	23	0.24	2,349	24.47
	Aug 21	17	6	102	0	0.00	0	0.00	26	0.25	3,115	30.54
	Aug 25	15	6	90	0	0.00	1	0.01	24	0.27	3,008	33.42
	Aug 28	14	6	84	1	0.01	0	0.00	11	0.13	1,798	21.40
	Sept 01	13	6	78	1	0.01	0	0.00	9	0.12	791	10.14
Total		20	50	774	21		5		619		24,409	

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Appendix B.19. (page 6 of 7)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1994	Aug 04	14	6	84	6	0.07	0	0.00	808	9.62	4,040	48.10
	Aug 09	17	6	102	3	0.03	0	0.00	350	3.43	5,790	56.76
	Aug 12	17	8	136	0	0.00	0	0.00	226	1.66	10,539	77.49
	Aug 15	16	8	128	0	0.00	1	0.01	151	1.18	7,190	56.17
	Aug 18	15	8	120	1	0.01	0	0.00	106	0.88	2,710	22.58
	Aug 22	12	8	96	0	0.00	1	0.01	34	0.35	1,855	19.32
	Aug 25	7	8	56	0	0.00	0	0.00	12	0.21	1,492	26.64
	Aug 27	6	6	36	0	0.00	1	0.03	2	0.06	677	18.81
Total		20	58	758	10		3		1,689		34,293	
1995	Jun 26	16	4	64	1,656	25.88	535	8.36	3,628	56.69	0	0.00
	Jun 29	13	4	52	707	13.60	620	11.92	3,577	68.79	0	0.00
	Jul 03	9	4	36	284	7.89	456	12.67	2,200	61.11	0	0.00
	Jul 06	8	4	32	74	2.31	331	10.34	2,372	74.13	0	0.00
	Jul 10	6	4	24	32	1.33	293	12.21	1,874	78.08	0	0.00
	Jul 14	2	4	8	7	0.88	51	6.38	480	60.00	0	0.00
	Jul 18	6	6	36	9	0.25	44	1.22	1,638	45.50	6	0.17
	Jul 21	5	4	20	4	0.20	132	6.60	899	44.95	13	0.65
	Aug 04	6	6	36	10	0.28	4	0.11	484	13.44	1,321	36.69
	Aug 08	9	6	54	2	0.04	6	0.11	379	7.02	2,816	52.15
	Aug 12	8	6	48	5	0.10	1	0.02	79	1.65	2,643	55.06
	Aug 16	12	6	72	1	0.01	0	0.00	41	0.57	4,398	61.08
	Aug 19	5	6	30	1	0.03	0	0.00	4	0.13	1,679	55.97
	Aug 22	8	6	48	0	0.00	1	0.02	9	0.19	1,750	36.46
	Aug 26	3	6	18	0	0.00	0	0.00	0	0.00	712	39.56
	Aug 29	3	6	18	0	0.00	0	0.00	4	0.22	660	36.67
	Sept 01	1	6	6	0	0.00	0	0.00	0	0.00	194	32.33
Total		21	88	602	2,792		2,474		17,668		16,192	

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Appendix B.19. (page 7 of 7)

Year	Date	Number of Permits	Hours Fished	Permit Hours	Chinook		Sockeye		Chum		Coho	
					Catch	CPUE	Catch	CPUE	Catch	CPUE	Catch	CPUE
1996	Jun 24	6	2	12	145	12.08	69	5.75	613	51.08	0	0.00
	Jul 2	4	2	8	175	21.88	109	13.63	376	47.00	0	0.00
	Jul 5	3	2	6	8	1.33	38	6.33	606	101.00	0	0.00
	Jul 8	4	4	16	42	2.63	92	5.75	877	54.81	0	0.00
	Jul 12	4	4	16	60	3.75	56	3.50	758	47.38	0	0.00
	Jul 16	1	4	4	5	1.25	33	8.25	336	84.00	3	0.75
	Jul 19	3	4	12	9	0.75	9	0.75	444	37.00	51	4.25
	Jul 22	2	6	12	0	0.00	6	0.50	414	34.50	234	19.50
	Jul 25	3	8	24	2	0.08	5	0.21	367	15.29	700	29.17
	Jul 29	2	6	12	1	0.08	2	0.17	98	8.17	668	55.67
	Jul 31	1	6	6	0	0.00	2	0.33	148	24.67	162	27.00
	Aug 10	2	6	12	0	0.00	0	0.00	0	0.00	787	65.58
	Aug 13	5	6	30	0	0.00	1	0.03	5	0.17	1,761	58.70
	Aug 16	2	6	12	0	0.00	0	0.00	8	0.67	590	49.17
	Aug 20	3	6	18	0	0.00	52	2.89	0	0.00	1,063	59.06
	Aug 23	2	6	12	0	0.00	0	0.00	0	0.00	620	51.67
	Aug 26	5	6	30	0	0.00	0	0.00	0	0.00	541	18.03
Total		8	84	242	447		474		5,050		7,180	
1997	Aug 12	2	6	12	1	0.08			23	1.92	494	41.17
	Aug 18	3	6	18	4	0.22	1	0.06			708	39.33
Total		4	12	30	5		1		23		1,202	

^a Gillnet mesh size unrestricted.

^b Gillnets were restricted to 6 inches or less; after 1985 this restriction was in effect for all periods.

Appendix B.20. Historical commercial salmon harvest by statistical area in District 1.

Year	Stat Area 335-11				Stat Area 335-12				Stat Area 335-13				Stat Area 335-14			
	Chinook	Sockeye	Chum	Coho	Chinook	Sockeye	Chum	Coho	Chinook	Sockeye	Chum	Coho	Chinook	Sockeye	Chum	Coho
1984 ^a	20,229	45,276	385,178	332,679	9,717	1,295	10,853	272,419								
1985 ^b	18,210	53,548	117,152	168,465	17,949	50,805	74,056	161,483								
1986	9,329	46,505	169,958	301,093	9,181	46,670	134,243	342,096								
1987	20,492	82,403	332,002	226,252	13,415	52,228	234,497	159,069								
1988 ^c	40,355	60,168	861,433	290,872	12,540	27,127	453,012	199,036	915	2,469	47,537	18,509				
1989	29,702	28,319	498,490	233,182	10,856	11,499	203,120	192,796	1,187	1,570	25,782	35,056				
1990 ^d	6,195	8,988	54,431	63,804	29,195	38,113	224,148	196,827	11,762	20,508	101,711	93,928	4,731	14,349	57,737	40,678
1991	4,218	16,961	63,636	98,565	23,104	50,760	165,651	217,820	5,840	19,884	92,063	117,335	3,544	17,815	72,984	52,525
1992	7,754	18,253	76,215	124,583	23,177	36,938	178,693	271,900	9,064	22,829	43,979	159,189	4,682	11,936	34,249	75,922
1993	2,198	10,054	12,272	113,956	6,302	16,821	26,712	226,119	148	116	1,932	171,208	66	12	1,822	75,047
1994	1,589	8,071	27,823	87,428	13,678	34,512	163,087	283,129	634	4,863	55,284	226,100	300	1,916	23,232	93,739
1995	4,917	19,129	111,404	63,421	12,966	27,055	257,166	175,531	8,336	29,131	153,619	164,763	1,835	14,711	66,061	51,554
1996	237	1,851	9,651	100,608	4,161	15,969	117,496	393,330	2,064	12,619	57,533	323,751	510	2,965	18,147	112,442
1997	2,257	8,072	5,279	18,232	8,063	13,845	11,010	61,671	93	57	219	24,899	23	14	495	24,799

^a Prior to June 25, gillnet mesh size was unrestricted in both statistical areas; after June 25, gillnet mesh size was restricted to 6 inches or less. Commercial fishing chum season was allowed only in 335-11, both stat. areas were open during coho season.

^b Through 1987, stat. area 335-11 was located downstream of Bethel, and 335-12 was located upstream from Bethel to Mishevak Slough.

^c Since 1985, gillnets have been restricted to 6 inches or less during all commercial periods.

^d The upstream boundary of District 1 was moved upstream to Bogus Cr.; the area from the old boundary to Bogus Cr. was designated as stat. area 335-13.

^e Beginning in 1990, the upstream boundary of District 1 was moved downstream to Nelson Is. and the district was split into four stat. areas. Stat. areas 335-11 & -12 are below Bethel, and 335-13 & -14 are above Bethel.

Appendix B.21 Lower Kuskokwim River, District 1, and the middle Kuskokwim River, District 2, combined commercial salmon harvest, 1960-1997.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	5,969	0	2,498	0	0	8,467
1961	18,918	0	5,044	0	0	23,962
1962	15,341	0	12,432	0	0	27,773
1963	12,016	0	15,660	0	0	27,676
1964	17,149	0	28,613	0	0	45,762
1965	21,989	0	12,191	0	0	34,180
1966	25,545	0	22,985	0	0	48,530
1967	29,986	0	56,313	0	148	86,447
1968	34,278	0	127,306	0	187	161,771
1969	43,997	322	83,765	0	7,165	135,249
1970	39,290	117	38,601	44	1,664	79,716
1971	40,274	2,606	5,253	0	68,914	117,047
1972	39,454	102	22,579	8	78,619	140,762
1973	32,838	369	130,876	33	148,746	312,862
1974	18,664	136	147,269	84	171,887	338,040
1975	21,720	23	81,945	10	181,840	285,538
1976	30,735	2,971	88,501	133	177,864	300,204
1977	35,830	9,379	241,364	203	248,721	535,497
1978	45,641	733	213,393	5,832	248,656	514,255
1979	38,966	1,054	219,060	78	261,874	521,032
1980	35,881	360	222,012	803	483,211	742,267
1981	47,663	48,375	211,251	292	418,677	726,258
1982	48,234	33,154	447,117	1,748	278,306	808,559
1983	33,174	68,855	196,287	211	267,698	566,225
1984	31,742	48,575	623,447	2,942	423,718	1,130,424
1985	37,889	106,647	335,606	75	199,478	679,695
1986	19,414	95,433	659,988	3,422	309,213	1,087,470
1987	36,179	136,602	399,467	43	574,336	1,146,627
1988	55,716	92,025	524,296	10,825	1,381,674	2,064,536
1989	43,217	42,747	479,856	464	749,182	1,315,466
1990	53,759	84,870	410,332	3,397	461,624	1,013,982
1991	37,778	108,946	500,935	378	431,802	1,079,839
1992	46,872	92,218	666,170	7,451	344,603	1,157,314
1993	8,735	27,008	610,739	64	43,337	689,883
1994	16,211	49,365	724,689	30,949	271,115	1,092,329
1995	30,846	92,500	471,461	93	605,918	1,200,818
1996	7,421	33,878	937,299	1,621	207,878	1,188,097
1997	10,441	21,989	130,803	2	17,026	180,261
Ten Year Average (1987-1996)	33,673	76,016	572,524	9,610 ^a	507,147	1,194,889

a Even years only.

Appendix B.22 Estimated historical daily fish passage at George River weir.

Date	Chinook		Sockeye		Chum		Pink		Coho		Suckers	
	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997
6/09		2		0		0		0		0		401
6/10		0		0		0		0		0		260
6/11		2		0		0		0		0		221
6/12		1		0		0		0		0		145
6/13		0		0		0		0		0		366
6/14		6		0		0		0		0		326
6/15		26		0		0		0		0		430
6/16		0 ^a		0 ^a		1 ^a		0 ^a		0 ^a		262 ^a
6/17		11		0		2		0		0		68
6/18		8		0		0		0		0		223
6/19		42		0		2		0		0		100
6/20		0		0		0		0		0		0
6/21	27	17	0	0	65	0	0	0	0	0	519	276
6/22	17	18	0	0	613	3	0	0	0	0	832	70
6/23	269	362	0	38	1,314	35	0	0	0	0	703	204
6/24	762	488	0	53	692	52	0	0	0	0	238	72
6/25	214	907	0	0	49	41	0	0	0	0	285	120
6/26	41	288	5	0	376	49	0	0	0	0	62	162
6/27	183	514	2	21	508	79	0	0	0	0	296	285
6/28	98	397	1	18	167	34	0	0	0	0	2	366
6/29	91 ^a	566	3 ^a	39	191 ^a	178	0 ^a	0	0 ^a	0	1 ^a	336
6/30	84	767	4	86	215	204	0	0	0	0	0	245
7/01	1,034	456	1	35	498	64	0	0	0	0	1	491
7/02	712 ^a	277	10 ^a	15	730 ^a	85	1 ^b	0	0 ^a	0	15 ^a	215
7/03	389	584	18	10	961	267	1	0	0	0	29	405
7/04	320	347	8	11	1,074	83	0	0	0	0	0	305
7/05	280	221	6	8	326	174	2	0	0	0	25	205
7/06	579	294	9	9	606	111	1	0	0	0	43	176
7/07	180	93	3	0	575	52	0	0	0	0	19	73
7/08	122	34	0	3	629	49	0	0	0	0	2	301
7/09	436	37	15	1	852	40	12	0	0	0	149	4
7/10	127	29	0	5	241	62	0	0	0	0	2	79
7/11	376	33	0	1	446	45	0	0	0	0	6	6
7/12	53	245	4	25	343	237	4	1	0	0	1	109
7/13	60	31	2	0	394	7	9	0	0	0	3	24
7/14	127	11	0	1	489	12	11	0	0	0	0	31
7/15	324	65	0	0	556	158	34	1	0	0	21	2
7/16	78	6	1	0	232	51	18	0	1	0	15	0
7/17	67	22	0	6	462	236	34	0	0	0	15	39
7/18	107	42	0	3	514	207	44	2	0	0	15	1
7/19	63	87	3	2	667	575	90	1	1	0	0	10
7/20	49	111	0	4	322	300	68	0	3	2	8	420
7/21	58	83	0	2	387	342	61	0	0	1	146	76
7/22	26	49	0	1	273	144	45	1	0	2	102	25
7/23	29	32	2	0	321	292	39	2	6	0	0	72
7/24	54	7	0	2	525	207	68	0	22	2	0	5
7/25	34	41	2	1	449	238	74	1	47	2	0	21
7/26	17	18	0	0	508	110	28	0	93	1	0	0
7/27		9		0		42		0		2		0
7/28		25		1		176		1		3		6

continued

Appendix B.22 (2 of 2)

Date	Chinook		Sockeye		Chum		Pink		Coho		Suckers	
	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997
7/29		7		7		96		0		2		4
7/30		13		0		71		0		3		6
7/31		13		1		133		1		8		17
8/01		4		0		41		1		9		2
8/02		5		0		28		0		22		0
8/03		7		0		35		0		25		0
8/04		4		1		70		0		52		1
8/05		4		2		50		0		41		0
8/06		2		3		38		0		59		0
8/07		3		1		32		0		75		0
8/08		3		1		33		1		69		0
8/09		5		4		13		1		70		0
8/10		1		0		17		1		35		0
8/11		3		0		25		0		71		0
8/12		8		3		34		0		198		0
8/13		5		6		39		0		170		0
8/14		2		4		32		0		213		0
8/15		4		0		9		0		92		0
8/16		8		0		12		0		44		0
8/17		1		0		8		0		59		0
8/18		1		0		5		0		103		0
8/19		0		1		6		0		70		0
8/20		3		1		7		0		346		0
8/21		2		0		6		0		334		0
8/22		1		0		0		0		1,152		0
8/23		0		0		0		0		131		0
8/24		0		1		0		0		162		0
8/25		0		1		2		0		66		0
8/26		0		2		5		0		275		1
8/27		0		0		5		0		64		13
8/28		0		0		1		0		60		6
8/29		0		2		4		0		17		1
8/30		0		3		6		2		1,474		21
8/31		0		0		9		0		275		2
9/01		0		0		1		0		481		0
9/02		0		0		0		0		202		0
9/03		0		0		4		0		161		7
9/04		0		0		0		0		151		0
9/05		0		0		4		0		261		0
9/06		0		0		1		0		58		0
9/07		0		0		7		0		234		0
9/08		0		0		0		0		34		0
9/09		0		0		0		0		375		0
9/10		0		0		5		0		478		0
9/11		0		0		0		0		174		0
9/12		0		0		0		0		47		0
9/13		0		0		0		0		141		1
9/14		0		0		0		0		105		0
9/15		0		0		0		0		174		0
Total	7,487	7,820	98	445	17,570	5,940	644	17	173	8,937	3,555	8,121

^a estimated fish passage

Appendix B.23 Estimated historical daily cumulative fish passage at George River weir.

Date	Chinook		Sockeye		Chum		Pink		Coho		Suckers	
	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997
6/09		2		0		0		0		0		401
6/10		2		0		0		0		0		661
6/11		4		0		0		0		0		882
6/12		5		0		0		0		0		1,027
6/13		5		0		0		0		0		1,393
6/14		11		0		0		0		0		1,719
6/15		37		0		0		0		0		2,149
6/16		37		0		1		0		0		2,411
6/17		48		0		3		0		0		2,479
6/18		56		0		3		0		0		2,702
6/19		98		0		5		0		0		2,802
6/20		98		0		5		0		0		2,802
6/21	27	115	0	0	65	5	0	0	0	0	519	3,078
6/22	44	133	0	0	678	8	0	0	0	0	1,351	3,148
6/23	313	495	0	38	1,992	43	0	0	0	0	2,054	3,352
6/24	1,075	983	0	91	2,684	95	0	0	0	0	2,292	3,424
6/25	1,289	1,890	0	91	2,733	136	0	0	0	0	2,577	3,544
6/26	1,330	2,178	5	91	3,109	185	0	0	0	0	2,639	3,708
6/27	1,513	2,692	7	112	3,617	264	0	0	0	0	2,935	3,991
6/28	1,611	3,089	8	130	3,784	298	0	0	0	0	2,937	4,357
6/29	1,702	3,655	11	169	3,975	476	0	0	0	0	2,938	4,693
6/30	1,786	4,422	15	255	4,190	680	0	0	0	0	2,938	4,938
7/01	2,820	4,878	16	290	4,688	744	0	0	0	0	2,939	5,429
7/02	3,532	5,155	25	305	5,418	829	1	0	0	0	2,954	5,644
7/03	3,921	5,739	43	315	6,379	1,096	2	0	0	0	2,983	6,049
7/04	4,241	6,086	51	326	7,453	1,179	2	0	0	0	2,983	6,354
7/05	4,521	6,307	57	334	7,779	1,353	4	0	0	0	3,008	6,559
7/06	5,100	6,601	66	343	8,385	1,464	5	0	0	0	3,051	6,735
7/07	5,280	6,694	69	343	8,960	1,516	5	0	0	0	3,070	6,808
7/08	5,402	6,728	69	346	9,589	1,565	5	0	0	0	3,072	7,109
7/09	5,838	6,765	84	347	10,441	1,605	17	0	0	0	3,221	7,113
7/10	5,965	6,794	84	352	10,682	1,667	17	0	0	0	3,223	7,192
7/11	6,341	6,827	84	353	11,128	1,712	17	0	0	0	3,229	7,198
7/12	6,394	7,072	88	378	11,471	1,949	21	1	0	0	3,230	7,307
7/13	6,454	7,103	90	378	11,865	1,956	30	1	0	0	3,233	7,331
7/14	6,581	7,114	90	379	12,354	1,968	41	1	0	0	3,233	7,362
7/15	6,905	7,179	90	379	12,910	2,126	75	2	0	0	3,254	7,364
7/16	6,983	7,185	91	379	13,142	2,177	93	2	1	0	3,269	7,364
7/17	7,050	7,207	91	385	13,604	2,413	127	2	1	0	3,284	7,403
7/18	7,157	7,249	91	388	14,118	2,620	171	4	1	0	3,299	7,404
7/19	7,220	7,336	94	390	14,785	3,195	261	5	2	0	3,299	7,414
7/20	7,269	7,447	94	394	15,107	3,495	329	5	5	2	3,307	7,834
7/21	7,327	7,530	94	396	15,494	3,837	390	5	5	3	3,453	7,910
7/22	7,353	7,579	94	397	15,767	3,981	435	6	5	5	3,555	7,935
7/23	7,382	7,611	96	397	16,088	4,273	474	8	11	5	3,555	8,007
7/24	7,436	7,618	96	399	16,613	4,480	542	8	33	7	3,555	8,012
7/25	7,470	7,659	98	400	17,062	4,718	616	9	80	9	3,555	8,033
7/26	7,487	7,677	98	400	17,570	4,828	644	9	173	10	3,555	8,033

continued

Appendix B.23. (2 of 2)

Date	Chinook		Sockeye		Chum		Pink		Coho		Suckers	
	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997
7/27	washout	7,686	400			4,870		9		12		8,033
7/28		7,711	401		21,083	5,046		10		15		8,039
7/29		7,718	408			5,142		10		17		8,043
7/30		7,731	408			5,213		10		20		8,049
7/31		7,744	409			5,346		11		28		8,066
8/01		7,748	409			5,387		12		37		8,068
8/02		7,753	409			5,415		12		59		8,068
8/03		7,760	409			5,450		12		84		8,068
8/04		7,764	410			5,520		12		136		8,069
8/05		7,768	412			5,570		12		177		8,069
8/06		7,770	415			5,608		12		236		8,069
8/07		7,773	416			5,640		12		311		8,069
8/08		7,776	417			5,673		13		380		8,069
8/09		7,781	421			5,686		14		450		8,069
8/10		7,782	421			5,703		15		485		8,069
8/11		7,785	421			5,728		15		556		8,069
8/12		7,793	424			5,762		15		754		8,069
8/13		7,798	430			5,801		15		924		8,069
8/14		7,800	434			5,833		15	1,137			8,069
8/15		7,804	434			5,842		15	1,229			8,069
8/16		7,812	434			5,854		15	1,273			8,069
8/17		7,813	434			5,862		15	1,332			8,069
8/18		7,814	434			5,867		15	1,435			8,069
8/19		7,814	435			5,873		15	1,505			8,069
8/20		7,817	436			5,880		15	1,851			8,069
8/21		7,819	436			5,886		15	2,185			8,069
8/22		7,820	436			5,886		15	3,337			8,069
8/23		7,820	436			5,886		15	3,468			8,069
8/24		7,820	437			5,886		15	3,630			8,069
8/25		7,820	438			5,888		15	3,696			8,069
8/26		7,820	440			5,893		15	3,971			8,070
8/27		7,820	440			5,898		15	4,035			8,083
8/28		7,820	440			5,899		15	4,095			8,089
8/29		7,820	442			5,903		15	4,112			8,090
8/30		7,820	445			5,909		17	5,586			8,111
8/31		7,820	445			5,918		17	5,861			8,113
9/01		7,820	445			5,919		17	6,342			8,113
9/02		7,820	445			5,919		17	6,544			8,113
9/03		7,820	445			5,923		17	6,705			8,120
9/04		7,820	445			5,923		17	6,856			8,120
9/05		7,820	445			5,927		17	7,117			8,120
9/06		7,820	445			5,928		17	7,175			8,120
9/07		7,820	445			5,935		17	7,409			8,120
9/08		7,820	445			5,935		17	7,443			8,120
9/09		7,820	445			5,935		17	7,818			8,120
9/10		7,820	445			5,940		17	8,296			8,120
9/11		7,820	445			5,940		17	8,470			8,120
9/12		7,820	445			5,940		17	8,517			8,120
9/13		7,820	445			5,940		17	8,658			8,121
9/14		7,820	445			5,940		17	8,763			8,121
9/15		7,820	445			5,940		17	8,937			8,121

Appendix B.24 Estimated historical daily cumulative percent fish passage at George River weir.^a

Date	Chinook		Sockeye		Chum		Pink		Coho		Suckers	
	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997
6/09		0		0		0		0		0		5
6/10		0		0		0		0		0		8
6/11		0		0		0		0		0		11
6/12		0		0		0		0		0		13
6/13		0		0		0		0		0		17
6/14		0		0		0		0		0		21
6/15		0		0		0		0		0		26
6/16		0		0		0		0		0		30
6/17		1		0		0		0		0		31
6/18		1		0		0		0		0		33
6/19		1		0		0		0		0		34
6/20		1		0		0		0		0		34
6/21	0	1	0	0	0	0	0	0	0	0	15	38
6/22	1	2	0	0	4	0	0	0	0	0	38	39
6/23	4	6	0	9	11	1	0	0	0	0	58	41
6/24	14	13	0	20	15	2	0	0	0	0	64	42
6/25	17	24	0	20	16	2	0	0	0	0	72	44
6/26	18	28	5	20	18	3	0	0	0	0	74	46
6/27	20	34	7	25	21	4	0	0	0	0	83	49
6/28	22	40	8	29	22	5	0	0	0	0	83	54
6/29	23	47	11	38	23	8	0	0	0	0	83	58
6/30	24	57	15	57	24	11	0	0	0	0	83	61
7/01	38	62	16	65	27	13	0	0	0	0	83	67
7/02	47	66	26	69	31	14	0	0	0	0	83	69
7/03	52	73	44	71	36	18	0	0	0	0	84	74
7/04	57	78	52	73	42	20	0	0	0	0	84	78
7/05	60	81	58	75	44	23	1	0	0	0	85	81
7/06	68	84	67	77	48	25	1	0	0	0	86	83
7/07	71	86	70	77	51	26	1	0	0	0	86	84
7/08	72	86	70	78	55	26	1	0	0	0	86	88
7/09	78	87	86	78	59	27	3	0	0	0	91	88
7/10	80	87	86	79	61	28	3	0	0	0	91	89
7/11	85	87	86	79	63	29	3	0	0	0	91	89
7/12	85	90	90	85	65	33	3	6	0	0	91	90
7/13	86	91	92	85	68	33	5	6	0	0	91	90
7/14	88	91	92	85	70	33	6	6	0	0	91	91
7/15	92	92	92	85	73	36	12	12	0	0	92	91
7/16	93	92	93	85	75	37	14	12	1	0	92	91
7/17	94	92	93	87	77	41	20	12	1	0	92	91
7/18	96	93	93	87	80	44	27	24	1	0	93	91
7/19	96	94	96	88	84	54	41	29	1	0	93	91
7/20	97	95	96	89	86	59	51	29	3	0	93	96
7/21	98	96	96	89	88	65	61	29	3	0	97	97
7/22	98	97	96	89	90	67	68	35	3	0	100	98
7/23	99	97	98	89	92	72	74	47	6	0	100	99
7/24	99	97	98	90	95	75	84	47	19	0	100	99
7/25	100	98	100	90	97	79	96	53	46	0	100	99
7/26	100	98	100	90	100	81	100	53	100	0	100	99
7/27		98		90		82		53		0		99
7/28		99		90		85		59		0		99

continued

Appendix B.24. (2 of 2)

Date	Chinook		Sockeye		Chum		Pink		Coho		Suckers	
	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997
7/29		99		92		87		59		0		99
7/30		99		92		88		59		0		99
7/31		99		92		90		65		0		99
8/01		99		92		91		71		0		99
8/02		99		92		91		71		1		99
8/03		99		92		92		71		1		99
8/04		99		92		93		71		2		99
8/05		99		93		94		71		2		99
8/06		99		93		94		71		3		99
8/07		99		93		95		71		3		99
8/08		99		94		96		76		4		99
8/09		100		95		96		82		5		99
8/10		100		95		96		88		5		99
8/11		100		95		96		88		6		99
8/12		100		95		97		88		8		99
8/13		100		97		98		88		10		99
8/14		100		98		98		88		13		99
8/15		100		98		98		88		14		99
8/16		100		98		99		88		14		99
8/17		100		98		99		88		15		99
8/18		100		98		99		88		16		99
8/19		100		98		99		88		17		99
8/20		100		98		99		88		21		99
8/21		100		98		99		88		24		99
8/22		100		98		99		88		37		99
8/23		100		98		99		88		39		99
8/24		100		98		99		88		41		99
8/25		100		98		99		88		41		99
8/26		100		99		99		88		44		99
8/27		100		99		99		88		45		100
8/28		100		99		99		88		46		100
8/29		100		99		99		88		46		100
8/30		100		100		99		100		63		100
8/31		100		100		100		100		66		100
9/01		100		100		100		100		71		100
9/02		100		100		100		100		73		100
9/03		100		100		100		100		75		100
9/04		100		100		100		100		77		100
9/05		100		100		100		100		80		100
9/06		100		100		100		100		80		100
9/07		100		100		100		100		83		100
9/08		4/9		4/9		100		4/9		83		4/8
9/09		4/9		4/9		100		4/9		87		4/8
9/10		4/9		4/9		4/9		4/9		93		4/8
9/11		4/9		4/9		4/9		4/9		95		4/8
9/12		4/9		4/9		4/9		4/9		95		4/8
9/13		4/9		4/9		4/9		4/9		97		4/9
9/14		4/9		4/9		4/9		4/9		98		4/9
9/15		4/9		4/9		4/9		4/9		100		4/9

^a The boxed areas within each column represent the central 50 percent test-fish catches and the median.

Appendix B.25 Estimated historical salmon passage at Takotna River tower.^a

Date	Chinook Passage									Chum Passage								
	Daily			Cumulative			Percent			Daily			Cumulative			Percent		
	1995 ^b	1996	1997	1995 ^b	1996	1997	1995 ^b	1996	1997	1995 ^b	1996	1997	1995 ^b	1996	1997	1995 ^b	1996	1997
6/15	0	0		0	0		0	0		0	0		0	0		0	0	
6/16	0	0		0	0		0	0		0	0		0	0		0	0	
6/17	0	0		0	0		0	0		0	0		0	0		0	0	
6/18	0	0		0	0		0	0		0	0		0	0		0	0	
6/19	0	0		0	0		0	0		0	0		0	0		0	0	
6/20	0	0		0	0		0	0		0	0		0	0		0	0	
6/21	0	0		0	0		0	0		14	6		14	6		0	0	
6/22	0	6		0	6		0	1		0	0		14	6		0	0	
6/23	0	0		0	6		0	1		0	0		14	6		0	0	
6/24	0	12		0	18		0	2		102	12		116	18		4	1	
6/25	0	30		0	48		0	4		0	27		116	45		4	3	
6/26	9	24		9	72		2	6		0	12		116	57		4	3	
6/27	17	9		26	81		6	7		137	51		253	108		9	6	
6/28	8	33		34	114		8	10		58	45		311	153		11	9	
6/29	21	36		55	150		14	13		127	84		438	237		16	13	
6/30	18	57		73	207		18	18		117	48		555	285		20	16	
7/01	15	0		88	207		22	18		101	18		656	303		23	17	
7/02	12	30		100	237		25	20		85	33		741	336		26	19	
7/03	12	72		112	309		28	26		89	33		830	369		30	21	
7/04	73	66		185	375		46	32		123	69		953	438		34	25	
7/05	39	54		224	429		56	37		264	72		1,217	510		43	29	
7/06	10	54		234	483		58	41		295	87		1,512	597		54	33	
7/07	37	33		271	516		67	44	0	242	33		0	1,754	630	63	35	
7/08	24	54		295	570		73	49	53	209	42		53	1,963	672	70	38	
7/09	3	69		298	639		74	55	18	172	57		71	2,135	729	76	41	
7/10	4	51		302	690		75	59	222	105	63		293	2,240	792	80	44	
7/11	5	69		307	759		76	65	63	88	60		356	2,328	852	83	48	
7/12	5	48		312	807		78	69	42	78	33		398	2,406	885	86	50	
7/13	7	24		319	831		79	71	98	70	36		496	2,476	921	88	52	
7/14	7	66		326	897		81	77	117	11	117		613	2,487	1,038	89	58	
7/15	9	27		335	924		83	79	82	28	36		695	2,515	1,074	90	60	
7/16	0	12		335	936		83	80	126	37	54		821	2,552	1,128	91	63	
7/17	20	36		355	972		88	83	11	58	78		832	2,610	1,206	93	68	
7/18	11	48		366	1,020		91	87	150	53	57		982	2,663	1,263	95	71	
7/19	9	12		375	1,032		93	88	189	35	18		1,171	2,698	1,281	96	72	
7/20	8	15		383	1,047		95	90	42	29	30		1,213	2,727	1,311	97	73	
7/21	7	3		390	1,050		97	90	129	26	72		1,342	2,753	1,383	98	77	
7/22	5	12		395	1,062		98	91	72	21	24		1,414	2,774	1,407	99	79	
7/23	4	9		399	1,071		99	92	79	15	66		1,493	2,789	1,473	99	83	
7/24	3	18		402	1,089		100	93	8	6	57		1,501	2,795	1,530	100	86	
7/25	0	15		402	1,104		100	95	18	11	24		1,519	2,806	1,554	100	87	
7/26	0	18		402	1,122		100	96	11	0	15		1,530	2,806	1,569	100	88	
7/27		12			1,134			97	33		72		1,563		1,641		92	
7/28		6			1,140			98	21		21		1,584		1,662		93	
7/29		15			1,155			99	29		57		1,613		1,719		96	
7/30		0			1,155			99	66		27		1,679		1,746		98	
7/31		0			1,155			99	6		21		1,685		1,767		99	
8/01		3			1,158			99			12				1,779		100	
8/02		6			1,164			100			8				1,785		100	
8/03		3			1,167			100			0				1,785		100	
8/04		0			1,167			100			0				1,785		100	

^a The boxed areas within each column represent the central 50 percent of fish passage.^b Operational period was insufficient to estimate daily or season passage.

Appendix B.26. Historic daily passage estimates of fish species in the Kuskokwim River at Bethel, 1993-1995 *

Date	Chinook			Sockeye			Chum			Coho			Pink			Whitefish		Clusos		Other		
	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993 ^b	1994	1994	1995	1993 ^c	1994 ^d	1995 ^e
03-Jun	651			105			17			0			0			0				0		
04-Jun	1,349		3,738	218		17	34			0		0	0		0	0			0	0		156
05-Jun	1,297	5,216	4,001	209	0	21	33	1,308	12	0	0	0	0	0	0	66	0	0	0	0	377	190
06-Jun	1,462	4,601	3,790	256	0	17	38	1,162	10	0	0	0	0	0	0	57	0	0	0	0	385	157
07-Jun	1,866	3,716	5,266	301	0	25	47	936	14	0	0	0	0	0	0	46	0	0	0	0	299	225
08-Jun	573	4,510	6,328	93	0	26	15	2,347	15	0	0	0	0	0	0	15	544	0	0	0	0	242
09-Jun	4,947	3,998	3,128	461	0	667	1,102	2,129	350	0	0	0	0	0	0	0	630	0	0	0	0	580
10-Jun	2,118	4,261	3,160	198	0	645	472	2,244	382	0	0	0	0	0	0	0	595	0	0	0	0	647
11-Jun	3,373	3,193	5,466	315	17	1,101	751	2,368	676	0	0	0	0	0	0	0	356	0	0	0	0	494
12-Jun	1,675	3,852	8,858	1,873	21	1,848	497	2,835	428	0	0	0	0	0	0	173	447	0	0	0	0	595
13-Jun	2,049	7,003	18,447	2,291	40	3,572	600	5,349	829	0	0	0	0	0	0	211	654	0	0	0	1,088	1,112
14-Jun	1,983	4,534	14,520	2,218	673	2,997	588	8,639	679	0	0	0	0	0	0	205	638	0	0	0	0	271
15-Jun	5,244	4,484	9,895	8,098	661	2,004	1,178	8,625	6,102	0	0	0	0	0	0	138	529	0	0	0	52	274
16-Jun	3,806	5,065	8,039	5,879	758	1,780	855	9,518	5,237	0	0	0	0	0	0	101	873	0	0	0	37	294
17-Jun	6,749	2,431	11,182	10,424	1,297	2,323	1,517	10,063	6,996	0	0	0	0	0	0	179	309	168	0	67	42	1,091
18-Jun	4,856	2,097	8,738	7,869	1,105	2,616	2,311	8,516	8,039	0	0	0	0	0	0	515	312	112	181	387	40	1,306
19-Jun	4,624	2,481	8,493	7,490	1,389	2,548	2,200	10,798	8,057	0	0	0	0	0	0	490	236	69	160	369	39	1,301
20-Jun	4,754	2,769	12,344	7,704	3,127	3,654	2,262	14,513	11,076	0	0	0	0	0	0	504	37	0	143	379	10	1,495
21-Jun	2,870	1,809	6,217	7,871	2,319	4,029	6,156	10,473	13,293	0	0	0	0	0	0	982	42	0	0	361	19	2,853
22-Jun	2,865	1,405	5,226	7,860	2,044	3,874	6,148	8,108	11,292	0	0	0	0	0	0	981	88	0	0	361	17	2,952
23-Jun	3,005	2,378	5,020	8,245	10,509	3,993	6,449	14,913	11,324	0	0	0	0	0	0	1,029	0	0	0	379	228	2,858
24-Jun	2,287	1,888	4,570	13,172	8,971	4,049	12,709	12,785	7,978	0	0	0	0	0	0	0	0	0	0	1,479	221	3,739
25-Jun	2,037	4,136	5,597	11,729	18,449	4,942	11,517	24,831	9,764	0	0	0	0	0	0	0	0	0	0	1,317	450	4,540
26-Jun	1,554	6,625	7,245	8,952	22,189	6,348	8,637	12,742	12,537	0	0	0	0	0	0	0	1,340	0	0	1,005	0	5,702
27-Jun	1,954	3,677	4,793	13,574	12,803	9,872	4,531	7,328	8,820	0	0	0	0	0	0	3,503	715	0	54	231	0	2,053
28-Jun	2,601	3,412	5,039	18,075	12,112	10,730	6,032	6,874	9,397	0	0	0	0	0	0	4,398	750	0	76	308	0	2,234
29-Jun	2,251	2,273	5,522	15,643	8,984	11,155	5,221	11,898	9,762	0	0	0	0	0	0	3,805	2,008	110	108	266	211	2,321
30-Jun	700	2,372	2,357	26,345	9,093	5,489	15,594	12,010	19,102	0	0	0	0	0	0	207	2,020	126	0	199	288	3,207
01-Jul	651	3,116	2,716	24,478	12,622	6,469	14,488	16,755	21,678	0	0	0	0	0	0	192	2,814	137	0	185	328	3,887
02-Jul	461	1,583	3,222	17,348	32,130	7,495	10,268	34,506	25,356	0	0	0	0	42	0	157	4,831	238	0	131	239	4,509
03-Jul	322	1,535	2,997	4,233	31,173	10,391	11,046	33,404	29,341	0	0	0	0	41	0	9,152	4,850	240	960	364	32	8,843
04-Jul	370	1,735	1,978	4,851	35,347	6,812	12,659	37,827	18,994	0	0	0	0	46	0	10,487	5,928	331	736	417	53	6,640
05-Jul	397	757	2,532	5,191	13,831	8,863	13,548	43,627	23,896	0	0	0	0	0	0	11,224	2,764	474	614	447	25	8,078
06-Jul	509	846	940	7,924	15,299	4,968	10,028	48,374	19,717	0	0	0	0	0	63	14,640	3,059	520	344	0	336	4,665
07-Jul	437	615	985	6,811	10,666	4,927	8,620	34,294	19,768	0	0	0	0	0	67	12,585	2,067	300	377	0	263	4,859
08-Jul	461	488	1,427	7,165	4,448	7,949	9,069	40,337	31,180	0	27	0	0	677	110	13,239	964	442	313	0	218	7,630
09-Jul	1,138	502	538	2,420	4,012	4,790	6,691	45,957	33,179	0	32	0	0	729	0	22,859	1,018	408	259	0	0	8,270
10-Jul	1,132	392	334	2,427	3,484	3,425	6,714	31,224	22,467	0	20	0	0	534	0	22,933	772	268	235	0	0	5,960
11-Jul	1,155	522	243	2,478	4,852	2,656	6,846	19,947	17,262	0	187	0	0	2109	0	23,384	6,391	2,399	160	0	0	4,595
12-Jul	147	432	866	1,858	3,939	429	15,048	15,645	19,044	276	159	0	0	1717	0	21,861	4,769	1,750	2,617	301	589	10,868
13-Jul	144	328	890	1,821	3,085	409	14,737	12,808	18,792	271	117	0	0	1335	0	21,408	4,207	1,583	2,572	295	534	10,522
14-Jul	161	183	849	2,034	1,382	373	16,468	13,736	17,462	302	230	0	0	1525	0	23,923	7,851	5,381	2,439	330	403	9,705
15-Jul	251	177	166	1,168	1,032	249	23,664	10,278	9,190	102	222	452	487	1503	0	19,435	5,971	3,925	5,063	411	0	15,809

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Date	Chinook			Sockeye			Chum			Coho			Pink			Whitefish		Ciscos		Other			
	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993 ^a	1994	1994	1995	1993 ^b	1994 ^c	1995 ^d	
16-Jul	240	158	199	1,110	1,418	273	22,491	13,655	9,100	97	213	687	462	1729	0	18,473	7,909	5,680	6,826	390	0	17,264	
17-Jul	158	141	208	737	3,319	277	14,925	14,726	8,076	64	939	902	307	1743	0	12,258	9,599	7,046	8,091	259	0	16,917	
18-Jul	128	134	82	0	3,172	195	20,053	13,895	8,757	2,141	782	391	0	1485	0	5,841	8,604	5,520	9,254	0	177	21,199	
19-Jul	131	180	71	0	2,304	173	20,775	11,857	7,219	2,218	713	171	0	1279	0	6,053	7,648	4,116	7,438	0	283	18,332	
20-Jul	114	0	60	0	196	164	17,957	4,668	6,278	1,917	2,379	160	0	425	0	5,231	2,204	10,301	6,803	0	240	16,080	
21-Jul	84	0		184	130		10,595	3,561		2,550	1,896		0	334		15,521	1,874	9,658		0	7		
22-Jul	71	0		154	164		8,880	4,528		2,137	2,409		0	377		13,009	2,302	12,112		0	9		
23-Jul	83	413		183	367		10,530	6,999		2,534	6,419		0	1,081		15,425	963	4,417		0	9		
24-Jul	2,837	753		0	668		3,905	11,921		11,296	11,197		0	1,621		9,859	1,591	6,290		582	0		
25-Jul	2,710	659		0	585		3,729	10,433		10,788	9,778		0	1,358		9,415	1,370	5,297		556	0		
26-Jul	2,340	0		0	9		3,221	4,610		9,317	10,410		0	1,690		8,131	761	2,443		479	0		
27-Jul	186	0		165	0		1,774	4,020		14,988	8,975		0	1,510		3,366	694	2,557		160	0		
28-Jul	150	0		133	0		1,422	4,603		12,019	10,313		0	1,718		2,699	786	2,799		128	0		
29-Jul	160	0		142	0		1,527	1,649		12,906	1,339		0	975		2,899	720	5,612		138	0		
30-Jul	0	0		0	0		776	1,731		12,890	14,050		423	1,085		286	883	6,682		0	0		
31-Jul	0	0		0	0		674	1,498		11,190	12,193		367	1,008		248	913	6,709		0	0		
01-Aug	0	149		0	0		698	2,382		11,596	13,358		380	1,709		258	624	3,113		0	0		
02-Aug	0	214		0	0		204	3,292		11,302	17,203		0	2,268		0	599	6,174		0	0		
03-Aug	0	246		0	0		261	3,785		14,403	19,568		0	2,547		0	611	6,643		0	0		
04-Aug	0	0		0	0		250	767		13,825	7,129		0	713		0	371	11,257		0	0		
05-Aug	0	0		0	0		195	577		11,004	5,524		0	543		318	298	9,198		37	0		
06-Aug	0	0		0	0		224	715		12,688	6,743		0	656		268	355	10,799		42	0		
07-Aug	0	0		0	0		176	234		9,931	15,658		0	485		287	49	2,551		33	0		
08-Aug	0	0		0	0		0	394		11,887	25,979		0	811		0	82	4,256		0	0		
09-Aug	0	0		0	0		0	303		10,242	19,944		0	593		0	58	3,088		0	0		
10-Aug	0	0		0	17		0	0		10,726	27,444		0	103		0	176	2,843		0	0		
11-Aug	0	0		0	16		144	0		10,290	40,308		0	55		1,720	163	1,178		0	0		
12-Aug	0	0		0	10		154	0		11,026	26,909		0	37		1,845	99	857		0	0		
13-Aug	0	0		0	0		111	0		7,922	17,867		0	8		1,324	15	1,105		0	0		
14-Aug	0	0		0	0		0	0		8,416	31,550		0	9		1,082	17	1,383		0	0		
15-Aug	0	0		0	0		0	0		8,054	23,718		0	11		1,035	21	1,355		0	0		
16-Aug	0	0		0	0		0	0		14,679	0		0	0		1,887	0	0		0	0		
17-Aug	0	0		0	0		0	0		8,437	0		0	0		169	0	0		0	0		
18-Aug	0	0		0	0		0	0		7,118	0		0	0		143	0	0		0	0		
19-Aug	0	0		0	0		0	0		7,274	0		0	0		145	0	0		0	0		
20-Aug	0	0		0	0		0	0		6,202	0		0	0		135	0	0		0	0		
Total	92,618	110,444	208,282	282,461	307,320	161,631	422,862	779,034	530,937	317,025	393,901	2,563	2,426	40,024	240	383,998	124,098	184,069	53,809	12,882	9,367	249,598	
Harvest ^e	49,740	86,115	77,134	46,716	59,642	63,154	58,989	222,724	409,771														
Total Run ^f	142,358	196,559	285,416	329,177	366,962	224,785	481,851	1,001,758	940,708														

^a All daily passage estimates are rounded to the nearest whole number.

^b All cisco and whitefish species caught in driftnets were categorized as whitefish.

^c Other species consisted of northern pike, burbot, dolly varden, and sheefish.

^d Other species consisted of northern pike, burbot, dolly varden, and sheefish.

^e Other species consisted of whitefish, northern pike, burbot, dolly varden, and sheefish.

^f The Harvest is the sum of the commercial catch below the sonar site and the subsistence catch below and including Bethel. (Source: 1993-95 Annual Management Reports)

^g The Total Run is the sum of the sonar estimate and the harvest.

Appendix B.27. Historic cumulative percent passage estimates of fish species in the Kosokokwin River at Bethel, 1993-1995.

Date	Chinook			Sockeye			Chum			Coho			Pink			Whitefish		Ciscus		Other			
	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993 ^a	1994	1994	1995	1993 ^b	1994 ^c	1995 ^d	
03-Jun	1			0			0			0			0			0			0	0			
04-Jun	2		2	0		0	0		0	0		0	0		0	0		0	0	0			0
05-Jun	4	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
06-Jun	5	9	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	
07-Jun	7	12	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	
08-Jun	8	16	11	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	11	0	
09-Jun	13	20	13	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	11	1	
10-Jun	15	24	14	1	0	1	0	1	0	0	0	0	0	0	0	0	2	0	0	0	11	1	
11-Jun	19	27	17	1	0	2	1	2	0	0	0	0	0	0	0	0	2	0	0	0	17	1	
12-Jun	21	30	21	1	0	3	1	2	0	0	0	0	0	0	0	0	2	0	0	0	23	1	
13-Jun	23	37	30	2	0	5	1	3	1	0	0	0	0	0	0	0	3	0	0	0	35	2	
14-Jun	25	41	37	3	0	7	1	4	1	0	0	0	0	0	0	0	3	0	0	0	37	2	
15-Jun	31	45	42	6	0	8	1	5	2	0	0	0	0	0	0	0	4	0	0	0	40	3	
16-Jun	35	49	45	8	1	9	1	6	3	0	0	0	0	0	0	0	4	0	0	1	44	3	
17-Jun	42	51	51	12	1	11	2	7	4	0	0	0	0	0	0	0	5	0	0	1	44	3	
18-Jun	48	53	55	14	1	12	3	8	6	0	0	0	0	0	0	0	5	0	0	4	44	4	
19-Jun	52	56	59	17	2	14	3	10	7	0	0	0	0	0	0	1	5	0	1	7	45	4	
20-Jun	58	58	65	20	3	16	3	12	9	0	0	0	0	0	0	1	5	0	1	10	45	5	
21-Jun	61	60	68	23	4	18	5	13	12	0	0	0	0	0	0	1	5	0	1	13	45	6	
22-Jun	64	61	70	25	4	21	6	14	14	0	0	0	0	0	0	1	5	0	1	16	45	7	
23-Jun	67	63	73	28	8	23	8	16	16	0	0	0	0	0	0	1	5	0	1	19	48	9	
24-Jun	70	65	75	33	11	26	11	18	17	0	0	0	0	0	0	1	5	0	1	30	50	10	
25-Jun	72	69	78	37	17	29	14	21	19	0	0	0	0	0	0	1	5	0	1	40	55	12	
26-Jun	73	75	81	40	24	33	16	22	22	0	0	0	0	0	0	1	6	0	1	48	55	14	
27-Jun	76	78	84	45	28	39	17	23	23	0	0	0	0	0	0	2	7	0	1	50	55	15	
28-Jun	78	81	86	51	32	46	18	24	25	0	0	0	0	0	0	3	7	0	1	52	55	16	
29-Jun	81	83	89	57	35	52	19	26	27	0	0	0	0	0	0	4	9	0	1	54	57	17	
30-Jun	82	85	90	66	38	56	23	27	31	0	0	0	0	0	0	4	11	0	1	56	60	18	
01-Jul	82	88	91	75	42	60	26	30	35	0	0	0	0	0	0	5	13	0	1	57	64	20	
02-Jul	83	90	93	81	52	65	29	34	39	0	0	0	0	0	0	5	17	0	1	58	66	21	
03-Jul	83	91	94	83	63	71	31	38	45	0	0	0	0	0	0	7	21	1	3	61	67	25	
04-Jul	83	92	95	84	74	75	34	43	49	0	0	0	0	0	0	10	26	1	4	64	67	28	
05-Jul	84	95	96	86	79	81	38	49	53	0	0	0	0	0	0	13	28	1	5	66	67	31	
06-Jul	84	94	97	89	84	84	40	55	57	0	0	0	0	0	26	16	30	1	6	68	71	33	
07-Jul	85	95	97	91	87	87	42	59	61	0	0	0	0	0	54	20	32	2	7	68	74	35	
08-Jul	85	95	98	94	89	92	44	64	67	0	0	0	0	2	100	23	33	2	7	68	76	38	
09-Jul	87	95	98	95	90	95	46	70	73	0	0	0	0	4	100	29	34	2	8	68	76	41	
10-Jul	88	96	98	96	91	97	47	74	77	0	0	0	0	5	100	35	34	2	8	68	76	43	

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Date	Chinook			Sockeye			Chum			Coho			Pink			Whitefish		Cisco		Other		
	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993	1994	1995	1993 ^a	1994	1994	1995	1993 ^b	1994 ^c	1995 ^d
11-Jul	89	96	98	97	93	98	49	77	80	0	0	0	0	18	100	41	39	3	8	68	76	43
12-Jul	89	97	99	97	94	99	53	79	84	0	0	0	0	15	100	47	43	4	13	70	82	50
13-Jul	89	97	99	98	95	99	56	81	88	0	0	0	0	18	100	52	47	5	18	72	85	54
14-Jul	90	97	100	99	96	99	60	82	91	0	0	0	0	22	100	59	53	8	22	75	92	58
15-Jul	90	97	100	99	96	99	66	84	93	0	0	18	20	23	100	64	58	10	31	78	92	64
16-Jul	90	97	100	99	96	99	71	85	94	0	0	44	39	29	100	69	64	13	43	81	92	71
17-Jul	90	98	100	100	97	100	74	87	96	0	1	80	52	34	100	72	72	17	58	83	92	78
18-Jul	90	98	100	100	98	100	79	89	97	1	1	87	52	38	100	73	79	20	74	85	94	86
19-Jul	91	98	100	100	99	100	84	91	99	2	1	94	52	41	100	75	82	22	88	83	97	94
20-Jul	91	98	100	100	99	100	88	91	100	2	2	100	52	42	100	76	87	28	100	83	100	100
21-Jul	91	98		100	99		91	92		3	2		52	43		80	88	33		83	100	
22-Jul	91	98		100	99		93	92		4	3		52	44		84	90	40		83	100	
23-Jul	91	98		100	100		95	93		5	4		52	46		88	91	42		83	100	
24-Jul	94	99		100	100		96	95		8	7		52	50		90	92	46		88	100	
25-Jul	97	99		100	100		97	96		12	10		52	54		93	93	49		92	100	
26-Jul	99	99		100	100		98	97		15	12		52	58		95	94	50		96	100	
27-Jul	100	99		100	100		98	97		19	14		52	62		96	94	51		97	100	
28-Jul	100	99		100	100		99	98		23	17		52	66		96	95	53		98	100	
29-Jul	100	99		100	100		99	98		27	17		52	68		97	96	56		99	100	
30-Jul	100	99		100	100		99	98		31	21		69	71		97	96	60		99	100	
31-Jul	100	99		100	100		99	98		35	24		84	74		97	97	63		99	100	
01-Aug	100	100		100	100		100	99		38	28		100	78		97	98	66		99	100	
02-Aug	100	100		100	100		100	99		42	32		100	84		97	98	69		99	100	
03-Aug	100	100		100	100		100	100		46	37		100	90		97	99	73		99	100	
04-Aug	100	100		100	100		100	100		51	39		100	92		97	99	79		99	100	
05-Aug	100	100		100	100		100	100		54	40		100	93		97	99	84		99	100	
06-Aug	100	100		100	100		100	100		58	42		100	95		97	99	90		100	100	
07-Aug	100	100		100	100		100	100		61	46		100	96		98	99	91		100	100	
08-Aug	100	100		100	100		100	100		65	52		100	98		98	100	94		100	100	
09-Aug	100	100		100	100		100	100		68	57		100	99		98	100	95		100	100	
10-Aug	100	100		100	100		100	100		72	64		100	100		98	100	97		100	100	
11-Aug	100	100		100	100		100	100		75	75		100	100		98	100	97		100	100	
12-Aug	100	100		100	100		100	100		79	81		100	100		98	100	98		100	100	
13-Aug	100	100		100	100		100	100		81	86		100	100		99	100	99		100	100	
14-Aug	100	100		100	100		100	100		84	94		100	100		99	100	99		100	100	
15-Aug	100	100		100	100		100	100		86	100		100	100		99	100	100		100	100	
16-Aug	100			100			100			91			100			100				100		
17-Aug	100			100			100			94			100			100				100		
18-Aug	100			100			100			96			100			100				100		
19-Aug	100			100			100			98			100			100				100		
20-Aug	100			100			100			100			100			100				100		

^a All cisco and whitefish species caught in driftnets were categorized as whitefish.

^b Other species consisted of northern pike, burbot, dolly varden, and sheefish.

^c Other species consisted of northern pike, burbot, dolly varden, and sheefish.

^d Other species consisted of whitefish, northern pike, burbot, dolly varden, and sheefish.

Appendix B.28. Factor table for historical estimates, Kogrukluk River 1976-1997

Year	Chinook ^a				Sockeye				Coho ^a				Chum			
	T ^b	Count	Prop. Missed	Est'd Total	T ^b	Count	Prop. Missed	Est'd Total	T ^b	Count	Prop. Missed	Est'd Total	T ^b	Count	Prop. Missed	Est'd Total
1976	L	5,500	0.0142	5,579	N	2,302	0.0103	2,326					N	8,046	0.0087	8,117
1977	(N)	763	0.6077	1,945	(N)	732	0.5527	1,637					(N)	7,404	0.6192	19,443
1978	N	13,102	0.0413	13,667	N	1,646	0.0144	1,670					N	47,099	0.0213	48,125
1979	N	10,104	0.1088	11,338	N	2,432	0.0746	2,838					L	13,959	0.2495	18,599
1980		676	c	8,572		403	c	3,200						5,638	c	41,777
1981	E	16,052	0.0362	16,655	E	17,691	0.0208	18,066	N	11,450	0.0004	11,455	E	56,262	0.0192	57,365
1982	E	5,325	0.5156	10,993	E	11,729	0.3219	17,297	N	35,582	0.0586	37,796	N	40,549	0.3872	64,077
1983	(N)	1,032	0.6551	2,992	(N)	375	0.6812	1,176	L	8,327	0.0247	8,538	(N)	3,248	0.6547	9,407
1984	N	4,928	0.0000	4,928	N	4,133	0.0000	4,133	E	25,304	0.0830	27,595	N	41,484	0.0000	41,484
1985	L	4,034	0.0682	4,619	L	4,344	0.0034	4,359	E	14,318	0.1291	16,441	L	13,851	0.0769	15,005
1986	L	2,922	0.4200	5,038	N	3,252	0.2301	4,224	E	14,717	0.3461	22,506	N	11,080	0.1846	14,693
1987		d		4,063		d		973	N	19,756	0.1343	22,821		d		17,422
1988	N	7,677	0.0974	8,505	E	4,235	0.0368	4,397	N	11,722	0.1325	13,512	E	28,498	0.2793	39,540
1989	N	4,908	0.5889	11,940	N	2,599	0.5527	5,811				e	N	15,543	0.6070	39,540
1990	N	10,097	0.0118	10,218	N	8,382	0.0029	8,406	L	2,736	0.5538	6,132	N	26,555	0.0078	26,765
1991	N	6,132	0.2189	7,850	N	14,450	0.1218	16,455	L	7,059	0.2915	6,132	L	21,331	0.1181	24,188
1992	N	6,397	0.053	6,755	L	7,328	0.0210	7,540	(N)	2,715	0.8958	26,057	N	32,051	0.0602	34,105
1993	N	10,516	0.1473	12,332	N	27,219	0.0729	29,358	(N)	4,437	0.7837	20,517	N	26,926	0.1559	31,899
1994	(E)	8,310	0.4543	15,227	L	5,676	0.6001	14,192	(E)	27,461	0.2085	34,695	(E)	23,756	0.4490	46,635
1995	E	18,856	0.0860	20,639	N	10,581	0.0377	10,996	E	17,492	0.3721	27,881	N	28,292	0.0923	31,265
1996	E	13,734	0.0327	14,199	N	15,221	0.0107	15,385	E	47,011	0.0701	50,555	E	47,010	0.0306	48,495
1997	E	13,112	0.0131	13,286	N	13,059	0.0014	13,078	L	11,611	0.0511	12,237	L	7,902	0.0071	7,958

a. Coho migrations were not monitored prior to 1981

b. The timing model used for estimating missed counts depends on the distribution of the mean date of migration (E-early, N-normal, L- late). The use of () indicates assumed timing.

c. From Baxter (1980); insufficient data to estimate escapements using time series techniques.

d. Except for coho, escapements were estimated from a ratio of unknown 1987 escapement and known 1987 aerial assessments to known 1988 escapement and known 1988 aerial assessment. Coho escapements estimated using time series techniques.

e. Heavy rain and high river levels allowed only two days of counts during the coho migration.

Appendix B.29 Historical cumulative estimated escapement of chinook salmon at the Kogrukluk weir for years with adequate data.

Date	1976(L)	1978(N)	1979(N)	1981(E)	1984(N)	1985(L)	1986(L)	1988(N)	1990(N)	1991(N)	1992(N)	1993(N)	1994(E)	1995(E)	1996(E)	1997(E)
15-Jun	5,579	13,667	11,338	16,655	4,928	4,619	5,038	8,505	10,218	7,850	6,755	12,332	15,227	20,630	14,199	13,281
16-Jun																
17-Jun				0												
18-Jun		0		1												
19-Jun		1		3												
20-Jun		3	0	8	1					1	1	1	2	7	4	1
21-Jun		4	1	18	1					3	2	2	4	18	6	3
22-Jun		11	3	38	1					6	5	4	8	35	12	7
23-Jun		19	7	78	3					13	11	9	17	73	29	19
24-Jun		29	15	158	4	0		0	25	20	17	31	144	52	35	32
25-Jun		49	30	318	6	1		3	47	37	31	57	290	95	65	60
26-Jun		99	60	418	7	3		8	72	56	47	87	381	146	102	94
27-Jun		179	105	738	11	6		18	121	93	79	146	672	243	170	161
28-Jun		279	130	1,072	68	11		48	127	145	123	227	976	380	265	212
29-Jun	0	391	205	1,605	155	21	0	98	150	223	190	349	1,461	588	412	822
30-Jun	5	456	290	2,167	200	41	3	178	269	303	259	474	1,973	794	492	1,418
01-Jul	21	798	420	2,784	515	61	28	228	318	462	331	724	2,535	1,211	756	1,925
02-Jul	23	916	576	3,688	819	111	125	338	781	849	586	1,017	2,958	1,727	1,754	2,097
03-Jul	41	1,401	683	4,567	1,073	231	192	553	1,142	872	673	1,623	3,226	2,040	2,585	3,024
04-Jul	56	2,205	941	5,307	1,212	276	283	828	1,321	1,102	1,136	1,985	3,684	4,064	2,982	3,611
05-Jul	126	2,834	1,312	6,308	1,309	311	344	1,177	1,748	1,252	1,371	2,642	4,814	5,526	4,448	4,636
06-Jul	169	3,179	1,694	7,388	1,547	333	395	1,642	2,201	1,420	1,445	3,350	5,924	7,305	6,134	5,426
07-Jul	235	3,432	2,003	8,603	1,721	393	455	2,338	2,456	1,606	1,590	4,226	6,861	8,611	7,922	6,568
08-Jul	392	4,051	2,393	9,379	1,865	499	585	2,921	3,298	1,810	1,728	4,941	7,553	9,744	8,802	7,054
09-Jul	704	4,935	2,736	10,423	2,030	618	662	3,492	3,449	2,432	2,545	5,821	8,798	10,423	9,485	7,762
10-Jul	1,165	5,606	3,355	11,406	2,053	1,034	1,144	4,176	4,677	2,949	2,870	6,625	9,573	12,249	10,637	7,981
11-Jul	1,512	6,307	3,817	12,165	2,157	1,200	1,426	4,880	5,205	3,230	3,301	7,508	10,255	13,046	10,376	8,205
12-Jul	1,786	6,939	4,577	12,681	2,442	1,445	1,535	5,538	6,206	3,671	3,786	8,161	10,734	14,760	10,794	8,737
13-Jul	2,502	7,536	5,509	13,172	2,704	1,750	1,992	6,030	6,317	4,359	3,924	8,849	11,181	15,524	11,509	9,040
14-Jul	2,814	8,149	6,491	13,630	3,028	2,019	2,273	6,625	6,704	4,876	4,229	9,275	11,599	15,899	12,024	9,592
15-Jul	3,065	8,822	7,039	14,190	3,359	2,165	2,577	7,075	7,259	5,196	4,637	9,642	12,108	16,145	12,306	9,990
16-Jul	3,312	9,549	7,739	14,642	3,635	2,493	2,712	7,386	8,406	5,613	4,802	10,051	12,520	16,919	12,487	10,314
17-Jul	3,599	10,201	8,409	15,021	3,860	2,668	2,906	7,536	8,624	6,126	5,128	10,385	12,865	17,608	12,724	10,691
18-Jul	4,023	10,689	8,873	15,343	3,965	2,967	3,205	7,639	9,032	6,506	5,408	10,796	13,463	17,981	12,951	11,168
19-Jul	4,308	11,250	9,228	15,641	4,064	3,226	3,464	7,783	9,092	6,834	5,603	10,958	13,734	18,456	13,211	11,527
20-Jul	4,400	11,725	9,582	15,884	4,201	3,403	3,661	7,810	9,189	7,125	5,747	11,230	13,955	18,730	13,299	11,9
21-Jul	4,792	11,996	9,907	16,071	4,325	3,584	3,812	7,917	9,386	7,283	5,914	11,430	14,126	18,996	13,479	12,26
22-Jul	4,982	12,298	10,085	16,254	4,436	3,626	3,904	8,025	9,487	7,452	6,079	11,489	14,292	19,358	13,577	12,471
23-Jul	5,153	12,501	10,216	16,372	4,525	3,730	4,008	8,109	9,615	7,498	6,238	11,590	14,400	19,509	13,633	12,581
24-Jul	5,235	12,800	10,524	16,450	4,594	3,900	4,223	8,165	9,672	7,544	6,341	11,678	14,471	19,643	13,710	12,634
25-Jul	5,322	12,980	10,640	16,492	4,630	4,016	4,339	8,211	9,709	7,589	6,425	11,730	14,509	19,863	13,809	12,668
26-Jul	5,378	13,094	10,780	16,533	4,674	4,146	4,479	8,249	9,764	7,628	6,458	11,806	14,546	20,022	13,840	12,758
27-Jul	5,428	13,188	10,846	16,564	4,704	4,212	4,545	8,276	9,799	7,658	6,484	11,883	14,575	20,157	13,865	12,781
28-Jul	5,448	13,258	10,944	16,600	4,741	4,290	4,643	8,292	9,843	7,696	6,511	12,004	14,622	20,224	13,892	12,862
29-Jul	5,476	13,322	10,999	16,631	4,773	4,345	4,698	8,319	9,913	7,730	6,541	12,080	14,763	20,291	13,944	12,899
30-Jul	5,500	13,381	11,037	16,655	4,799	4,373	4,736	8,350	9,960	7,742	6,561	12,110	14,871	20,367	14,043	12,946
31-Jul	5,518	13,433	11,070		4,821	4,406	4,769	8,373	10,016	7,760	6,582	12,129	14,957	20,394	14,062	12,982
01-Aug	5,533	13,487	11,112		4,837	4,441	4,811	8,390	10,061	7,771	6,599	12,143	15,015	20,418	14,078	13,002
02-Aug	5,545	13,497	11,147		4,859	4,476	4,846	8,400	10,103	7,796	6,624	12,150	15,042	20,443	14,090	13,032
03-Aug	5,554	13,519	11,173		4,877	4,500	4,872	8,404	10,132	7,812	6,634	12,166	15,067	20,490	14,099	13,057
04-Aug	5,560	13,543	11,180		4,889	4,507	4,879	8,416	10,143	7,820	6,643	12,191	15,089	20,511	14,106	13,070
05-Aug	5,562	13,559	11,195		4,892	4,521	4,894	8,422	10,183	7,823	6,653	12,214	15,119	20,522	14,108	13,088
06-Aug	5,566	13,577	11,209		4,896	4,535	4,908	8,429	10,168	7,828	6,661	12,234	15,128	20,532	14,114	13,107
07-Aug	5,567	13,604	11,212		4,900	4,537	4,911	8,435	10,174	7,833	6,674	12,263	15,144	20,536	14,122	13,120
08-Aug	5,568	13,624	11,230		4,908	4,555	4,929	8,445	10,183	7,833	6,687	12,284	15,163	20,551	14,132	13,130
09-Aug	5,570	13,635	11,239		4,911	4,563	4,938	8,448	10,190	7,833	6,702	12,295	15,165	20,561	14,134	13,153
10-Aug	5,575	13,643	11,258		4,912	4,582	4,957	8,449	10,192	7,834	6,709	12,310	15,171	20,571	14,148	13,181
11-Aug	5,577	13,653	11,272		4,915	4,595	4,971	8,454	10,202	7,837	6,716	12,315	15,177	20,581	14,155	13,214
12-Aug	5,578	13,658	11,284		4,916	4,607	4,983	8,464	10,206	7,838	6,723	12,326	15,183	20,596	14,165	13,223
13-Aug	5,579	13,662	11,290		4,921	4,612	4,989	8,468	10,208	7,840	6,731	12,332	15,188	20,602	14,170	13,227
14-Aug	5,579	13,665	11,296		4,922	4,618	4,995	8,469	10,209	7,842	6,732		15,197	20,608	14,173	13,231
15-Aug		13,666	11,298		4,923	4,619	4,997	8,471	10,212	7,842	6,737		15,204	20,608	14,178	13,244
16-Aug		13,666	11,298		4,924	4,619	4,997	8,474	10,214	7,843	6,746		15,208	20,609	14,179	13,250
17-Aug		13,667	11,304		4,925	4,619	5,003	8,479	10,214	7,845	6,748		15,211	20,612	14,179	13,255
18-Aug		13,667	11,307		4,925	4,619	5,006	8,483	10,215	7,845	6,752		15,211	20,614	14,180	13,256
19-Aug			11,316		4,927	4,619	5,015	8,486	10,216	7,846	6,754		15,216	20,614	14,180	13,261
20-Aug			11,323		4,927	4,619	5,022	8,489	10,216	7,847	6,755		15,217	20,616	14,183	13,265
21-Aug			11,327		4,928	4,619	5,024	8,492	10,217	7,847	6,755		15,220	20,619	14,185	13,266
22-Aug			11,332			4,619	5,031	8,495	10,217	7,848			15,221	20,620	14,188	13,268
23-Aug			11,335			4,619	5,035	8,497	10,218	7,848			15,221	20,621	14,192	13,269
24-Aug			11,337			4,619	5,036	8,497	10,218	7,848			15,221	20,621	14,193	13,269
25-Aug			11,338			4,619	5,036	8,498	10,218	7,849			15,221	20,621	14,193	13,271
26-Aug			11,338			4,619	5,036	8,499	10,218	7,850			15,221	20,621	14,195	13,277
27-Aug						4,619	5,037	8,500	10,218	7,850			15,221	20,624	14,198	13,2
28-Aug						4,619	5,038	8,504	10,218	7,850			15,221	20,626	14,197	13,2
29-Aug						4,619	5,038	8,505	10,218	7,850			15,227	20,630	14,199	13,286

Letters next to year indicate run-timing model used for estimating missing counts: L = late; N = normal; E = early.
 Bold italics represent estimated counts. Boxed areas are middle 50% of run. Midpoint is bounded by double lines. ESCAPEMENT GOAL = 10,000

Appendix B.30. Historical cumulative estimated escapement of sockeye salmon at the Kogrukuk Weir for years with adequate data.

Date	1976(N)	1978(N)	1979(N)	1981(E)	1982(E)	1984(N)	1985(L)	1986(N)	1988(E)	1990(N)	1991(N)	1992(L)	1993(N)	1995(N)	1996(N)	1997(N)
20-Jun				1		1								1	0	0
21-Jun				10		1				1	1		2	1	1	0
22-Jun				29		1		1		2	3	1	6	2	3	0
23-Jun				79		4		3		5	10	4	17	6	9	0
24-Jun				155		6		5	2	10	19	8	34	13	17	0
25-Jun				246	1	7		8	3	15	29	12	52	29	27	0
26-Jun				375	10	9		13	11	24	47	21	85	32	44	0
27-Jun			0	597	29	12		20	15	24	75	34	134	49	88	0
28-Jun	1	0		1,137	79	22		22	25	24	145	66	260	92	129	0
29-Jun	1	1		1,842	155	34		23	57	29	245	112	437	155	139	8
30-Jun	2	12	0	2,816	246	41		31	74	35	381	145	679	236	214	91
01-Jul	6	48	1	4,068	375	126	2	35	86	112	610	232	1,089	383	471	121
02-Jul	13	103	9	5,008	597	250	3	45	104	267	888	414	1,209	414	656	225
03-Jul	15	175	28	5,632	1,137	307	11	77	150	374	1,148	545	1,707	850	1,099	316
04-Jul	32	233	42	6,430	1,842	358	15	94	225	645	1,202	650	2,221	1,033	1,551	635
05-Jul	59	299	51	7,271	2,816	839	24	106	375	1,105	1,282	727	2,879	1,570	2,087	926
06-Jul	125	330	126	7,869	4,068	817	43	124	658	1,406	1,388	860	4,005	2,028	2,893	1,463
07-Jul	258	431	250	8,502	5,568	1,031	93	170	1,134	2,040	1,520	921	5,375	2,458	3,539	2,037
08-Jul	482	536	311	9,204	7,593	1,190	169	243	1,639	2,244	2,277	1,066	7,533	2,959	4,644	2,614
09-Jul	669	679	376	9,639	9,343	1,214	260	423	2,058	3,071	3,036	1,191	10,050	3,667	5,589	3,163
10-Jul	789	795	460	10,286	10,091	1,276	389	787	2,565	3,506	3,408	1,546	11,949	4,473	6,543	3,424
11-Jul	927	850	644	10,778	10,921	1,571	619	993	2,930	4,125	3,997	1,812	13,745	4,810	7,451	3,754
12-Jul	1,157	823	959	11,199	11,742	1,744	844	1,393	3,169	4,241	5,033	2,037	15,563	5,205	8,990	4,131
13-Jul	1,269	1,048	1,228	11,583	12,317	2,083	989	1,893	3,442	4,763	6,020	2,431	17,066	5,417	10,112	4,559
14-Jul	1,370	1,115	1,448	12,052	12,619	2,521	1,167	2,391	3,718	5,500	6,762	2,847	18,887	5,779	10,933	4,980
15-Jul	1,513	1,178	1,687	12,647	13,305	2,740	1,375	2,705	3,897	5,963	7,540	3,253	20,915	6,400	11,391	5,648
16-Jul	1,616	1,252	1,861	13,068	14,086	2,932	1,560	3,085	4,006	6,372	8,254	3,483	22,955	7,094	11,759	6,474
17-Jul	1,782	1,300	2,007	13,498	14,457	3,016	1,733	3,260	4,089	6,801	9,282	3,958	24,888	7,463	12,058	6,917
18-Jul	1,841	1,345	2,069	13,884	14,900	3,079	1,992	3,365	4,135	6,891	10,230	4,376	25,498	7,967	12,443	7,872
19-Jul	1,893	1,396	2,179	14,270	15,330	3,200	2,168	3,470	4,172	7,048	11,159	4,646	26,443	8,220	12,652	8,723
20-Jul	2,059	1,420	2,262	14,665	15,845	3,369	2,375	3,595	4,212	7,231	11,913	4,893	27,222	8,713	13,022	9,599
21-Jul	2,154	1,469	2,310	15,391	15,985	3,657	2,502	3,692	4,241	7,424	12,672	5,031	27,442	9,185	13,290	10,210
22-Jul	2,197	1,509	2,357	15,756	16,134	3,646	2,617	3,760	4,274	7,561	13,289	5,349	27,728	9,443	13,523	10,776
23-Jul	2,230	1,550	2,432	16,101	16,321	3,729	2,844	3,843	4,302	7,834	13,891	5,610	27,930	9,659	13,774	11,050
24-Jul	2,264	1,582	2,464	16,398	16,506	3,767	3,088	3,909	4,311	7,891	14,477	5,852	28,121	9,891	14,082	11,561
25-Jul	2,289	1,597	2,492	16,655	16,847	3,827	3,248	3,957	4,320	7,774	14,972	6,004	28,335	10,028	14,149	11,713
26-Jul	2,276	1,605	2,496	16,942	16,770	3,877	3,410	3,994	4,324	7,795	15,394	6,249	28,565	10,286	14,266	11,842
27-Jul	2,285	1,620	2,528	17,184	16,859	3,934	3,604	4,043	4,334	7,868	15,650	6,485	28,747	10,378	14,365	12,035
28-Jul	2,286	1,631	2,553	17,373	16,945	3,965	3,761	4,080	4,340	7,985	15,831	6,767	28,909	10,481	14,601	12,378
29-Jul	2,295	1,639	2,576	17,514	17,022	3,984	3,892	4,111	4,349	8,066	15,959	6,979	29,051	10,632	14,645	12,505
30-Jul	2,302	1,646	2,596	17,624	17,089	3,998	3,985	4,135	4,361	8,126	16,095	7,128	29,138	10,688	14,926	12,594
31-Jul	2,304	1,648	2,604	17,704	17,145	4,030	4,093	4,157	4,369	8,185	16,199	7,228	29,189	10,730	14,997	12,683
01-Aug	2,307	1,651	2,606	17,771	17,171	4,055	4,160	4,171	4,373	8,248	16,282	7,380	29,218	10,800	15,058	12,745
02-Aug	2,310	1,654	2,609	17,836	17,200	4,078	4,193	4,183	4,374	8,294	16,330	7,442	29,237	10,854	15,109	12,799
03-Aug	2,313	1,657	2,612	17,877	17,223	4,098	4,234	4,194	4,377	8,311	16,368	7,461	29,253	10,892	15,141	12,836
04-Aug	2,314	1,658	2,615	17,895	17,240	4,106	4,261	4,200	4,380	8,339	16,390	7,472	29,269	10,911	15,179	12,874
05-Aug	2,320	1,664	2,616	17,922	17,252	4,108	4,288	4,208	4,382	8,351	16,404	7,485	29,289	10,920	15,226	12,915
06-Aug	2,323	1,667	2,622	17,935	17,260	4,111	4,299	4,216	4,383	8,365	16,414	7,499	29,313	10,928	15,257	12,931
07-Aug	2,323	1,667	2,625	17,950	17,269	4,114	4,326	4,218	4,383	8,378	16,417	7,502	29,330	10,945	15,280	12,957
08-Aug	2,324	1,668	2,625	17,973	17,275	4,117	4,334	4,221	4,384	8,383	16,420	7,508	29,344	10,955	15,289	12,972
09-Aug	2,325	1,668	2,626	17,993	17,280	4,118	4,341	4,224	4,387	8,384	16,424	7,514	29,346	10,962	15,320	12,986
10-Aug	2,325	1,669	2,627	18,001	17,285	4,124	4,342	4,227	4,388	8,388	16,430	7,518	29,348	10,966	15,326	13,006
11-Aug	2,325	1,669	2,627	18,013	17,288	4,127	4,355	4,230	4,389	8,394	16,439	7,525	29,354	10,972	15,335	13,038
12-Aug	2,325	1,669	2,627	18,023	17,288	4,127	4,367	4,232	4,390	8,398	16,443	7,531	29,358	10,975	15,339	13,052
13-Aug	2,328	1,670	2,627	18,033	17,292	4,128	4,358	4,232	4,391	8,401	16,443	7,535		10,987	15,355	13,057
14-Aug	2,326	1,670	2,628	18,038	17,296	4,129	4,359	4,232	4,391	8,403	16,444	7,535		10,987	15,362	13,061
15-Aug			2,628	18,044	17,297	4,129	4,359	4,232	4,391	8,403	16,445	7,536		10,987	15,363	13,066
16-Aug				18,051	17,297	4,129	4,359	4,232	4,391	8,406	16,446	7,539		10,988	15,365	13,068
17-Aug				18,052		4,129	4,359	4,232	4,393	8,405	16,450	7,539		10,989	15,370	13,072
18-Aug				18,054		4,130	4,359	4,232	4,394	8,406	16,450	7,539		10,991	15,370	13,073
19-Aug				18,056		4,130	4,359	4,232	4,394	8,406	16,451	7,539		10,992	15,371	13,074
20-Aug				18,056		4,131	4,359	4,233	4,395	8,406	16,451	7,540		10,993	15,371	13,074
21-Aug				18,058		4,131	4,359	4,235	4,396	8,406	16,451			10,993	15,373	13,074
22-Aug				18,058		4,131	4,359	4,237	4,396	8,406	16,451			10,993	15,377	13,075
23-Aug				18,061		4,131	4,359	4,240	4,396	8,406	16,452			10,993	15,378	13,075
24-Aug				18,061		4,132	4,359	4,240	4,396	8,406	16,452			10,993	15,379	13,075
25-Aug				18,062		4,133	4,359	4,241	4,396	8,406	16,454			10,993	15,381	13,075
26-Aug				18,063		4,133	4,359	4,243	4,397	8,406	16,454			10,993	15,381	13,076
27-Aug				18,064		4,133	4,359	4,244	4,397	8,406	16,454			10,993	15,381	13,077
28-Aug				18,066		4,133	4,359	4,244	4,397	8,406	16,455			10,996	15,385	13,078
29-Aug																

Letters next to year indicate run-timing model used to estimate missing counts: L = late; N = normal; E = early.

Bold italics represent estimated counts. Boxed areas are middle 50% of run. Midpoint is bounded by double lines. NO ESCAPEMENT GOAL.

Appendix B.31 Historical cumulative estimated escapement of chum salmon at the Kogryukik Weir for years with adequate data.

Date	1975(N)	1978(N)	1979(L)	1981(E)	1982(N)	1984(N)	1985(L)	1986(L)	1988(E)	1990(N)	1991(L)	1992(N)	1993(N)	1995(N)	1996(E)
15-Jun				2											0
16-Jun		2		2											0
17-Jun		2	2	2	2				2			1	1		0
18-Jun		2	2	11	2				2	1		2	1		0
19-Jun		11	2	14	11				2	2		3	3	3	5
20-Jun		14	11	27	11	2			11	5		8	7	3	5
21-Jun		27	14	66	14	2			14	9		13	11	6	16
22-Jun		66	27	108	27	11			27	18		24	22	15	29
23-Jun	2	108	66	151	66	14	2	2	66	25	3	46	42	24	73
24-Jun	2	151	108	189	108	27	2	2	108	53	3	68	63	40	107
25-Jun	2	189	151	411	151	66	2	2	151	82	3	104	97	71	156
26-Jun	11	411	189	688	189	108	11	11	189	131	18	165	155	115	278
27-Jun	14	688	239	1,103	411	151	14	14	411	210	23	265	249	178	439
28-Jun	27	984	304	2,306	688	189	27	27	688	228	44	440	414	203	668
29-Jun	53	1,612	384	4,570	1,103	411	66	57	1,103	297	94	769	722	328	1,096
30-Jun	102	2,241	484	6,825	2,306	688	108	126	2,042	428	174	1,225	1,149	509	1,301
01-Jul	220	2,889	579	9,475	4,570	1,103	151	310	4,042	807	243	2,279	1,824	837	2,435
02-Jul	301	3,921	706	12,991	6,825	2,042	189	462	6,542	1,353	304	4,695	2,652	1,362	5,490
03-Jul	431	5,616	823	16,598	9,475	3,196	411	753	9,042	2,390	662	7,310	3,496	2,275	8,324
04-Jul	620	7,295	1,136	18,705	12,991	4,587	688	1,225	11,042	3,829	1,106	9,225	4,562	3,858	10,536
05-Jul	802	9,249	1,434	20,841	16,598	5,408	1,103	1,531	12,887	5,612	1,462	10,920	5,562	5,908	14,073
06-Jul	1,141	11,400	1,844	23,514	18,705	7,024	1,364	1,874	14,267	7,204	1,782	11,931	6,876	7,042	16,941
07-Jul	1,664	12,803	1,903	25,780	20,641	8,920	2,049	2,240	15,961	8,005	2,064	13,138	8,294	9,191	19,627
08-Jul	2,277	14,959	2,118	27,880	23,514	10,870	2,430	2,749	17,920	9,746	2,309	14,052	9,538	10,580	23,326
09-Jul	2,956	17,255	2,355	30,552	27,983	12,834	3,048	3,674	20,671	10,835	3,089	15,221	10,955	11,356	24,603
10-Jul	3,486	20,057	2,922	34,065	31,379	13,926	3,580	5,073	22,822	12,522	3,638	15,940	12,391	12,552	27,073
11-Jul	3,831	23,026	3,787	36,963	34,378	15,227	3,972	6,694	25,460	14,236	4,155	17,201	13,642	13,698	28,584
12-Jul	4,252	25,376	5,014	38,984	36,959	17,993	4,471	7,861	28,095	15,229	5,314	18,451	14,724	15,027	30,338
13-Jul	4,588	27,548	6,310	40,853	39,920	20,070	5,010	8,800	30,555	15,957	6,750	19,395	16,114	16,568	33,402
14-Jul	4,910	30,899	7,475	43,140	42,362	22,393	5,717	9,654	32,133	16,829	7,768	20,738	17,120	17,719	35,456
15-Jul	5,233	33,401	8,285	45,598	44,307	24,905	6,274	10,545	33,905	18,382	8,769	22,204	18,525	18,586	36,822
16-Jul	5,574	35,981	9,252	47,528	46,728	27,176	7,110	11,021	34,902	19,605	9,749	23,458	20,036	19,593	38,213
17-Jul	5,839	37,862	10,201	48,706	49,746	29,083	7,834	11,621	35,629	20,269	10,708	24,365	22,068	21,363	39,814
18-Jul	6,172	39,394	10,854	50,006	52,369	30,419	8,480	11,983	36,038	21,366	11,748	25,827	23,851	22,388	40,947
19-Jul	6,454	40,785	11,448	50,934	54,228	31,388	9,108	12,327	36,498	21,589	12,490	26,698	24,375	23,574	41,711
20-Jul	6,694	42,076	11,999	51,363	55,938	32,808	9,819	12,557	36,833	21,992	12,957	27,510	25,392	24,127	42,339
21-Jul	7,285	42,721	12,572	52,087	57,352	34,496	10,091	12,750	37,177	22,599	13,419	27,994	26,634	25,150	43,478
22-Jul	7,538	43,696	12,985	52,773	58,256	36,148	10,564	12,978	37,407	23,040	14,207	28,512	27,134	26,083	44,047
23-Jul	7,704	44,462	13,441	53,304	59,172	37,353	11,013	13,073	37,600	23,356	15,020	29,422	27,621	27,098	44,861
24-Jul	7,877	45,341	14,538	53,805	59,919	38,065	11,538	13,197	37,828	23,432	15,878	29,975	27,957	27,825	45,344
25-Jul	7,951	46,156	15,039	54,070	60,557	38,465	12,113	13,300	37,923	23,531	16,781	30,655	28,447	28,367	45,609
26-Jul	7,983	46,719	15,304	54,418	61,104	38,872	12,572	13,419	38,047	23,826	17,721	31,053	28,713	28,701	45,791
27-Jul	8,016	47,109	15,652	54,796	61,580	39,329	12,888	13,516	38,150	23,721	18,488	31,520	29,090	29,007	45,908
28-Jul	8,028	47,348	16,030	55,288	61,973	39,654	13,229	13,663	38,269	23,883	19,136	31,884	29,579	29,256	46,263
29-Jul	8,052	47,563	16,522	55,671	62,357	39,974	13,471	13,797	38,366	24,245	19,632	32,193	30,030	29,541	46,860
30-Jul	8,068	47,673	16,905	56,033	62,797	40,242	13,688	13,910	38,513	24,569	20,244	32,470	30,444	29,870	47,275
31-Jul	8,073	47,785	17,287	56,317	63,070	40,560	13,947	14,002	38,647	24,850	21,096	32,724	30,751	30,086	47,465
01-Aug	8,085	47,885	17,551	56,526	63,300	40,840	14,096	14,073	38,760	25,198	21,850	32,888	30,986	30,257	47,635
02-Aug	8,097	47,959	17,760	56,709	63,487	41,057	14,245	14,145	38,852	25,621	22,444	33,128	31,083	30,463	47,786
03-Aug	8,102	47,991	17,943	56,855	63,659	41,216	14,336	14,206	38,923	25,919	22,931	33,311	31,192	30,672	47,917
04-Aug	8,111	48,024	18,089	56,933	63,750	41,349	14,423	14,268	38,995	26,154	23,250	33,415	31,319	30,776	48,016
05-Aug	8,112	48,036	18,187	56,968	63,854	41,399	14,481	14,323	38,956	26,311	23,533	33,480	31,423	30,835	48,069
06-Aug	8,112	48,060	18,202	57,023	63,886	41,419	14,533	14,376	39,118	26,389	23,746	33,529	31,573	30,877	48,151
07-Aug	8,112	48,074	18,257	57,066	63,923	41,432	14,585	14,421	39,173	26,464	23,838	33,625	31,687	30,924	48,202
08-Aug	8,113	48,081	18,300	57,109	63,945	41,440	14,662	14,468	39,226	26,508	23,896	33,684	31,766	30,968	48,252
09-Aug	8,113	48,093	18,343	57,150	63,983	41,449	14,707	14,503	39,271	26,554	23,932	33,714	31,803	31,005	48,276
10-Aug	8,114	48,105	18,384	57,197	64,002	41,460	14,789	14,540	39,318	26,600	23,981	33,774	31,824	31,037	48,336
11-Aug	8,116	48,110	18,431	57,226	64,018	41,471	14,843	14,558	39,353	26,642	23,996	33,843	31,834	31,078	48,351
12-Aug	8,117	48,119	18,460	57,251	64,034	41,480	14,873	14,574	39,390	26,681	24,033	33,913	31,849	31,131	48,370
13-Aug	8,120	48,120	18,485	57,278	64,049	41,480	14,911	14,581	39,408	26,699	24,061	33,995	31,875	31,178	48,399
14-Aug	8,120	48,120	18,512	57,302	64,055	41,481	14,930	14,594	39,424	26,722	24,081	34,020	31,879	31,206	48,404
15-Aug	8,120	48,120	18,536	57,325	64,057	41,482	14,946	14,614	39,431	26,734	24,089	34,045	31,879	31,222	48,420
16-Aug	8,121	48,121	18,559	57,331	64,059	41,482	14,961	14,634	39,444	26,740	24,096	34,062	31,883	31,227	48,425
17-Aug	8,121	48,121	18,565	57,336	64,063	41,483	14,973	14,649	39,464	26,751	24,130	34,078	31,887	31,229	48,427
18-Aug	8,122	48,122	18,570	57,340	64,066	41,484	14,985	14,661	39,484	26,752	24,165	34,087	31,891	31,232	48,432
19-Aug	8,124	48,124	18,574	57,342	64,067	41,484	14,990	14,673	39,499	26,756	24,177	34,088	31,895	31,239	48,438
20-Aug	8,125	48,125	18,576	57,351	64,072	41,484	14,999	14,678	39,511	26,759	24,177	34,092	31,899	31,242	48,442
21-Aug			18,585	57,356	64,073		15,000	14,687	39,523	26,761	24,182	34,105		31,243	48,450
22-Aug			18,590	57,356	64,077		15,000	14,688	39,528	26,761	24,182			31,246	48,455
23-Aug			18,590	57,360			15,001	14,688	39,537	26,761	24,182			31,246	48,461
24-Aug			18,591	57,360			15,001	14,688	39,538	26,762	24,183			31,252	48,462
25-Aug			18,594	57,362			15,001	14,689	39,538	26,763	24,186			31,252	48,469
26-Aug			18,596	57,363			15,002	14,689	39,538	26,763	24,187			31,254	48,472
27-Aug			18,597	57,365			15,004	14,690	39,539	26,764	24,187			31,255	48,474
28-Aug			18,599	57,365			15,005	14,692	39,539	26,764	24,187			31,256	48,475
29-Aug			18,599	57,365			15,005	14,693	39,540	26,765	24,188			31,256	48,495

Letters next to year indicate run-timing model used for estimating missing counts: L = late; N = normal; E = early.

Bold italics represent estimated counts. Boxed areas are middle 50% of run. Midpoint is bounded by double lines. ESCAPEMENT GOAL = 30,000.

Appendix B.32. Historical cumulative estimated escapement of coho salmon at the Kogrulik weir for years with adequate data.

Date	1981(N)	1982(N)	1983(L)	1984(E)	1985(E)	1986(E)	1987(N)	1988(N)	1991(L)	1994(E)	1995(E)	1996(E)	1997 (L)
20-Jul	0	0		0	0			1	0		3	1	0
21-Jul	0	0		0	0			1	0		3	3	0
22-Jul	0	0		0	0			1	0		4	6	0
23-Jul	0	0		0	0			1	0		5	6	0
24-Jul	0	0		1	0			2	0		6	8	0
25-Jul	0	0		5	0			2	0		8	14	0
26-Jul	0	0		7	0			2	0		9	17	0
27-Jul	0	0		8	0			2	0		9	20	0
28-Jul	0	0		9	0			2	0	12	11	35	0
29-Jul	0	0		13	0			2	0	34	11	80	2
30-Jul	0	0		15	0	1		2	0	63	12	143	2
31-Jul	0	0		18	0	1		2	0	86	12	169	3
01-Aug	0	0		29	0	2		2	0	137	13	223	7
02-Aug	0	5		43	10	2		2	0	167	14	305	12
03-Aug	0	11		62	17	4	1	2	1	217	16	415	15
04-Aug	2	26		94	24	9	1	2	2	276	18	456	19
05-Aug	7	43		112	38	12	2	2	11	344	19	492	42
06-Aug	12	59		165	46	20	2	6	14	421	19	707	64
07-Aug	14	101	2	264	64	38	4	12	19	507	20	858	111
08-Aug	24	137	7	308	113	67	9	23	21	630	22	998	122
09-Aug	50	192	12	427	126	102	12	38	22	733	29	1,243	148
10-Aug	70	234	18	479	220	141	20	63	27	841	97	1,849	213
11-Aug	92	340	33	701	279	202	38	101	40	1,003	171	2,462	302
12-Aug	154	431	50	816	397	288	67	181	74	1,218	312	3,363	359
13-Aug	216	489	68	1,040	465	428	102	267	99	1,427	506	4,232	432
14-Aug	349	567	103	1,187	547	671	141	313	114	1,723	668	5,257	453
15-Aug	503	762	159	1,366	631	870	202	338	122	2,162	889	6,380	517
16-Aug	644	818	177	1,510	855	1,168	288	443	174	2,578	1,130	7,764	640
17-Aug	753	1,329	203	1,596	1,002	1,580	428	600	359	3,159	1,210	9,237	724
18-Aug	863	1,794	249	2,854	1,181	1,866	671	858	580	3,996	1,537	10,344	817
19-Aug	1,159	2,165	273	3,849	1,325	2,184	870	1,060	723	4,757	2,058	11,379	934
20-Aug	1,473	2,448	284	4,388	1,411	2,711	1,168	1,350	829	5,586	2,727	13,521	1,172
21-Aug	1,860	2,857	287	4,707	1,911	3,340	1,580	1,702	903	6,183	3,582	16,031	1,621
22-Aug	1,845	2,999	354	6,119	2,361	4,107	1,866	2,085	952	6,652	4,400	18,578	2,049
23-Aug	2,042	3,227	506	7,849	2,661	5,583	2,184	2,408	1,063	7,091	5,331	21,243	2,528
24-Aug	2,297	3,874	606	9,039	2,982	7,470	2,711	2,797	1,079	7,932	6,233	23,661	2,953
25-Aug	2,713	4,742	641	11,070	3,213	8,834	3,389	3,055	1,514	10,028	7,235	26,388	3,564
26-Aug	3,031	5,546	647	13,106	3,413	10,057	4,145	3,953	1,642	12,971	8,351	28,734	4,149
27-Aug	3,400	6,492	674	13,837	3,886	11,148	4,907	4,331	1,760	15,884	9,549	30,887	4,550
28-Aug	3,667	7,312	944	14,421	4,776	12,403	5,721	4,949	1,794	17,571	11,511	33,117	4,900
29-Aug	3,811	7,944	993	14,791	5,593	13,226	6,872	5,502	1,818	18,578	12,774	34,492	5,200
30-Aug	4,113	9,432	1,021	15,479	6,087	13,882	8,013	6,272	1,823	18,974	14,559	36,548	5,907
31-Aug	4,435	11,112	1,182	16,386	6,948	14,496	9,837	6,766	1,834	19,816	15,725	38,646	6,815
01-Sep	4,731	12,649	1,762	16,999	8,326	14,916	10,845	7,096	1,838	21,763	16,829	40,660	7,379
02-Sep	5,059	14,554	1,789	17,820	9,597	15,445	12,618	7,465	2,097	23,163	17,931	42,598	7,630
03-Sep	5,355	16,534	2,258	18,533	10,163	16,079	13,778	7,703	3,044	24,316	18,680	44,090	8,061
04-Sep	5,967	17,819	2,621	19,386	10,720	16,418	16,728	7,940	3,507	24,961	19,583	45,080	8,130
05-Sep	6,502	19,600	2,721	20,173	11,351	16,741	17,781	8,111	3,819	25,591	20,213	45,970	8,670
06-Sep	7,157	24,613	3,277	20,915	11,861	16,975	18,743	8,281	4,176	26,016	20,799	46,877	8,904
07-Sep	7,663	27,832	3,482	21,258	12,734	17,428	19,299	8,434	4,648	26,400	21,694	47,912	9,626
08-Sep	8,184	29,997	3,593	22,365	13,552	17,873	19,504	8,679	5,120	26,927	22,598	48,687	10,223
09-Sep	8,751	31,457	3,744	23,446	14,141	18,052	19,615	9,058	5,593	27,363	23,575	49,204	10,638
10-Sep	9,086	32,683	4,502	23,493	14,480	18,486	19,766	9,492	6,137	27,719	24,274	49,664	10,980
11-Sep	9,369	33,604	4,962	24,323	14,635	19,452	20,624	10,458	6,379	28,237	24,525	50,009	11,175
12-Sep	9,615	34,326	4,977	24,688	14,943	19,885	20,984	10,894	6,516	28,800	25,308	50,239	11,277
13-Sep	9,854	35,074	5,152	24,910	15,176	20,145	20,999	11,151	6,583	29,882	25,834	50,367	11,357
14-Sep	10,048	35,582	6,039	25,267	15,435	20,297	21,174	11,303	6,808	30,950	26,198	50,483	11,419
15-Sep	10,205	36,006	6,173	25,304	15,676	20,409	21,195	11,415	7,034	31,687	26,359	50,555	11,471
16-Sep	10,373	36,411	6,324	25,479	15,816	20,530	21,258	11,536	7,149	32,288	26,555		11,560
17-Sep	10,505	36,680	6,748	26,366	15,929	20,716	21,379	11,722	7,357	32,703	26,796		11,649
18-Sep	10,654	36,869	7,153	26,500	16,013	21,121	21,454	12,127	7,872	33,410	27,070		11,713
19-Sep	10,772	36,994	7,422	26,651	16,151	21,390	21,505	12,396	8,120	33,764	27,170		11,751
20-Sep	10,910	37,251	7,611	27,075	16,241	21,579	21,858	12,585	8,293	34,112	27,384		11,779
21-Sep	11,013	37,365	7,736	27,213	16,301	21,704	21,968	12,710	8,593	34,255	27,640		11,805
22-Sep	11,127	37,500	7,993	27,303	16,339	21,961	22,021	12,967	8,899	34,392	27,676		11,945
23-Sep	11,205	37,547	8,107	27,363	16,348	22,075	22,106	13,081	9,111	34,411	27,748		12,007
24-Sep	11,249	37,592	8,242	27,401	16,362	22,210	22,309	13,216	9,283	34,414	27,771		12,080
25-Sep	11,279	37,635	8,289	27,410	16,382	22,257	22,393	13,263	9,402	34,427	27,800		12,106
26-Sep	11,308	37,664	8,334	27,424	16,401	22,302	22,531	13,308	9,604	34,695	27,802		12,130
27-Sep	11,334	37,690	8,377	27,444	16,419	22,345	22,621	13,351	9,705		27,803		12,144
28-Sep	11,347	37,703	8,406	27,463	16,434	22,374	22,681	13,380	9,804		27,811		12,168
29-Sep	11,361	37,717	8,432	27,481	16,441	22,400	22,719	13,406	9,845		27,815		12,185
30-Sep	11,381	37,737	8,445	27,496		22,413	22,728	13,419	9,884		27,819		12,191
01-Oct	11,400	37,756	8,459	27,503		22,427	22,742	13,433	9,889		27,824		12,199
02-Oct	11,418	37,774	8,479	27,529		22,447	22,762	13,453	9,890		27,833		12,210
03-Oct	11,433	37,789	8,498	27,542		22,466	22,781	13,472	9,894		27,847		12,220
04-Oct	11,440	37,796	8,516	27,556		22,484	22,799	13,490	9,964		27,861		12,229
05-Oct	11,450		8,531	27,576		22,499	22,814	13,505					12,237
06-Oct	11,455		8,538	27,595		22,508	22,821	13,512					

Letters next to year indicate run-timing model used for estimating missing counts: L = late; N = normal; E = early.

Bold italics represent estimated counts. Boxed areas are middle 50% of the run. Midpoint is bounded by double lines. ESCAPEMENT GOAL 25,000.

July 15, 1997

Joint news release from: Alaska Department of Fish & Game
Association of Village Council Presidents
Kuskokwim Native Association
Kuskokwim River Salmon Management Working Group
McGrath Native Village Council
Orutsararmuit Native Council
Tanana Chiefs Conference

Cooperative Appeal for Kuskokwim River Chum Salmon Conservation

The Alaska Department of Fish & Game, Association of Village Council Presidents, Kuskokwim Native Association, Kuskokwim River Salmon Management Working Group, McGrath Native Village Council, Orutsararmuit Native Council, and Tanana Chiefs Conference recognize the urgency of the Kuskokwim River chum salmon situation. The return of chum salmon has been critically low this year. Subsistence fishers have reported low catches of chum salmon. The chum catch from the one commercial fishing period was the lowest on record for that time period. All salmon run monitoring projects show unusually weak chum salmon escapements, indicating that the weakness is drainage wide. This is the second generation of escapement failure. The current situation warrants extraordinary conservation measures by all Kuskokwim River users. In response, the Alaska Department of Fish & Game has closed the Kuskokwim River chum salmon commercial and sport fisheries.

The above named organizations also recognize the reliance many people have on Kuskokwim River chum stocks as a primary source of subsistence food. However, in this time of critical conservation concern, we ask Kuskokwim River subsistence users to minimize their harvest of chum salmon. We understand the very real hardship this will cause for many. We also realize that Kuskokwim River chum users are being asked to bear a very large share of the burden necessary for conserving those chum stocks. We believe, however, that drastic steps must be taken. Thank you for your help.

APPENDIX C

Appendix C.1. Quinhagak District commercial effort 1970-1997.

YEAR	NUMBER OF PERIODS	FISHING HOURS ^a	EFFORT ^b
1970	14	1494	88
1971	6	630	61
1972	16	192	107
1973	28	504	109
1974	30	360	196
1975	24	288	127
1976	27	324	181
1977	27	324	258
1978	37	444	200
1979	36	432	206
1980	36	432	169
1981	33	396	186
1982	34	408	117
1983	28	318	226
1984	33	396	263
1985	23	276	300
1986	29	348	324
1987	19	216	310
1988	32	384	288
1989	29	348	227
1990	30	444	390
1991	31	372	346
1992	34	420	349
1993	32	384	409
1994	32	384	308
1995	35	414	382
1996	27	298	218
1997	31	372	289
Ten Year Average (1987-96)	30	366	323

a Number of hours that fishing was open in the Quinhagak District.

b Permits that made at least one delivery during the year.

Appendix C.2. Historical commercial effort by salmon species caught in Quinhagak District, 1975-1997.

YEAR	CHINOOK	SOCKEYE	COHO	PINK	CHUM	TOTAL
1975	120	124	81	99	124	127
1976	169	145	90	167	176	181
1977	245	205	76	76	260	258
1978	195	101	77	140	197	200
1979 ^a						206
1980	152	126	120	143	156	169
1981	187	176	142	56	190	186
1982 ^a						117
1983	216	204	111	81	213	226
1984	238	229	227	209	238	263
1985	284	276	167	26	286	300
1986	320	307	148	201	315	324
1987	289	268	184	34	290	310
1988	253	186	182	167	236	288
1989	208	191	160	75	211	227
1990	377	371	138	259	386	390
1991	319	332	164	0	330	346
1992	329	340	189	280	341	349
1993	403	406	158	4	402	409
1994	288	278	136	238	289	308
1995	364	345	173	72	367	382
1996	202	212	137	1	210	218
1997	286	284	113	3	275	289
Ten Year Average (87-96)	303	293	162	37 ^b	306	323

a Catch by permit unavailable.

b Average of odd years only.

Appendix C.3. Quinagak District commercial salmon harvest, 1960-1997.

YEAR	CHINOOK	SOCKEYE	COHO	PINK	CHUM	TOTAL
1960	0	5,649	3,000	0	0	8,649
1961	4,328	2,308	46	90	18,864	25,636
1962	5,526	10,313	0	4,340	45,707	65,886
1963	6,555	0	0	0	0	6,555
1964	4,081	13,422	379	939	707	19,528
1965	2,976	1,886	0	0	4,242	9,104
1966	278	1,030	0	268	2,610	4,186
1967	0	652	1,926	0	8,087	10,665
1968	8,879	5,884	21,511	75,818	19,497	131,589
1969	16,802	3,784	15,077	953	38,206	74,822
1970	18,269	5,393	16,850	15,195	46,556	102,263
1971	4,185	3,118	2,982	13	30,208	40,506
1972	15,880	3,286	376	1,878	17,247	38,667
1973	14,993	2,783	16,515	277	19,680	54,248
1974	8,704	19,510	10,979	43,642	15,298	89,429
1975	3,928	8,584	10,742	486	35,233	58,973
1976	14,110	6,090	13,777	31,412	43,659	109,048
1977	19,090	5,519	9,028	202	43,707	77,546
1978	12,335	7,589	20,114	47,033	24,798	111,869
1979	11,144	18,828	47,525	295	25,995	103,787
1980	10,387	13,221	62,610	21,671	65,984	173,873
1981	24,524	17,292	47,551	160	53,334	142,861
1982	22,106	25,685	73,652	11,838	34,346	167,627
1983	46,385	10,263	32,442	168	23,090	112,348
1984	33,663	17,255	132,151	16,249	50,422	249,740
1985	30,401	7,876	29,992	28	20,418	88,715
1986	22,835	21,484	57,544	8,700	29,700	140,263
1987	26,022	6,489	50,070	66	8,557	91,204
1988	13,883	21,556	68,605	21,310	29,220	154,574
1989	20,820	20,582	44,607	273	39,395	125,677
1990	27,644	83,681	26,926	12,056	47,717	198,024
1991	9,480	53,657	42,571	115	54,493	160,316
1992	17,197	60,929	86,404	64,217	73,383	302,130
1993	15,784	80,934	55,817	7	40,943	193,485
1994	8,564	72,314	83,912	35,904	61,301	261,995
1995	38,584	68,194	66,203	186	81,462	254,629
1996	14,165	57,665	118,718	20	83,005 ^b	273,573
1997	35,510	69,562	32,862	5	38,445	176,384
Ten Year Average (87-96)	19,214	52,600	64,383	129 ^a	51,948	201,561

a Average of odd years only

b Estimate of chum roe included

Appendix C.4. Kanektok River aerial surveys by species, 1962-1997^a.

Year	SPECIES			
	Chinook	Sockeye	Coho	Chum
1962	935	43,108		
1963				
1964				
1965				
1966	3,718			28,800
1967				
1968	4,170	8,000		14,000
1969				
1970	4,112	3,028		80,100
1971				
1972				
1973	814			
1974				
1975		6,018		
1976		2,936		8,697
1977	5,787	6,304		32,157
1978 ^b	19,180	44,215		229,290
1979				
1980	6,172	113,931	69,325	23,950
1981 ^c	15,900	49,175		71,840
1982 ^d	8,142	55,940		
1983	8,890	2,340		9,360
1984 ^e	12,182	30,840	46,830	48,360
1985	13,465	16,270		14,385
1986	3,643	14,949		16,790
1987	4,223	51,753	20,056	9,420
1988	11,140	30,440		20,063
1989	7,914	14,735		6,270
1990	2,563	32,082		2,475
1991 ^d	2,100	43,500	4,330	18,000
1992 ^f	3,856	14,955		25,675
1993	4,670	23,128		1,285
1994 ^g	7,386	30,090		10,000
1995 ^h			2,250	16,272
1996 ^g	6,107	30,000	23,656	7,040
1997 ⁱ	7,990	27,100	5,192	3,270
10 YR AVG:	5,551	30,076		11,650
OBJECTIVE:	5,000	15,000		30,500

^a Aerial surveys are those rated fair or good surveys obtained between 20 July and 5 August for chinook and sockeye salmon, 20-31 July for chum salmon, and 20 August and 5 September for coho salmon. Some surveys which do not meet these criteria may be referenced in this table; text are footnoted.

^b Chum salmon count excluded from escapement objective calculation due to exceptional magnitude.

^c Poor survey for chinook, sockeye, chum salmon.

^d Late survey for chinook, sockeye salmon (after 5 August).

^e Poor coho survey.

^f Some chum may have been sockeye.

^g Chum count not at peak, estimate made during chinook survey.

^h Partial survey rated poor.

ⁱ Chinook, chum and sockeye numbers from 2 August. Chum count not at peak. Coho survey done on 1 October also not at peak.

Appendix C.5. Summary of historical commercial harvest by date, Quinagak District, chinook salmon, 1981-1997.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	1	0	0	0	0
13-Jun	5	33	7,720	6,669	0.0583
14-Jun	2	0	5,080	2,540	0.0708
15-Jun	4	1,165	3,914	3,182	0.0988
16-Jun	5	0	7,835	1,179	0.1365
17-Jun	2	3,527	8,190	5,859	0.1653
18-Jun	5	1,942	11,997	6,694	0.2462
19-Jun	3	3,525	6,405	5,801	0.2848
20-Jun	5	746	7,341	3,031	0.3303
21-Jun	4	4,268	6,194	4,976	0.3804
22-Jun	3	4,002	10,586	4,752	0.4278
23-Jun	4	2,039	11,652	4,807	0.4850
24-Jun	6	1,403	6,698	4,102	0.5458
25-Jun	5	2,125	4,539	3,719	0.5881
26-Jun	4	1,506	3,578	1,722	0.6091
27-Jun	3	1,849	9,711	3,795	0.6467
28-Jun	4	1,438	4,089	2,528	0.6727
29-Jun	4	0	2,378	1,872	0.6877
30-Jun	5	690	4,496	1,272	0.7127
01-Jul	4	657	3,752	2,211	0.7344
02-Jul	7	1,105	3,602	1,891	0.7675
03-Jul	6	1,096	2,771	1,903	0.7957
04-Jul	5	508	4,068	1,381	0.8190
05-Jul	7	611	2,710	967	0.8394
06-Jul	5	273	1,008	692	0.8482
07-Jul	8	620	1,566	1,135	0.8705
08-Jul	5	465	2,407	756	0.8833
09-Jul	7	441	1,259	739	0.8965
10-Jul	4	334	804	691	0.9027
11-Jul	9	331	1,545	621	0.9204
12-Jul	4	306	687	483	0.9252
13-Jul	7	205	1,011	419	0.9339
14-Jul	8	26	1,351	422	0.9438
15-Jul	6	230	1,306	342	0.9530
16-Jul	5	196	533	401	0.9574
17-Jul	6	130	290	219	0.9607
18-Jul	6	187	845	231	0.9659
19-Jul	5	97	792	140	0.9697
20-Jul	5	89	490	159	0.9724
21-Jul	7	90	248	162	0.9758
22-Jul	5	35	629	131	0.9784
23-Jul	6	0	324	97	0.9804
24-Jul	6	33	187	94	0.9819

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Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
25-Jul	66	0	379	110	0.9839
26-Jul	4	0	71	35	0.9843
27-Jul	9	0	194	88	0.9862
28-Jul	4	31	63	51	0.9867
29-Jul	7	21	116	64	0.9879
30-Jul	5	49	111	78	0.9889
31-Jul	7	0	54	35	0.9894
01-Aug	7	28	153	67	0.9907
02-Aug	6	14	53	37	0.9912
03-Aug	8	16	160	47	0.9924
04-Aug	4	0	59	34	0.9927
05-Aug	9	6	141	32	0.9937
06-Aug	7	19	78	38	0.9944
07-Aug	5	15	49	27	0.9948
08-Aug	8	0	71	19	0.9953
09-Aug	6	6	36	12	0.9955
10-Aug	7	0	125	28	0.9963
11-Aug	5	6	31	15	0.9964
12-Aug	7	12	74	24	0.9970
13-Aug	6	0	36	17	0.9973
14-Aug	7	6	29	12	0.9975
15-Aug	6	2	43	28	0.9979
16-Aug	8	1	16	8	0.9980
17-Aug	7	1	66	15	0.9984
18-Aug	7	7	13	10	0.9986
19-Aug	9	3	51	10	0.9989
20-Aug	6	6	16	9	0.9990
21-Aug	8	4	13	6	0.9992
22-Aug	6	3	33	9	0.9993
23-Aug	8	1	11	5	0.9994
24-Aug	6	1	14	4	0.9995
25-Aug	8	0	16	5	0.9996
26-Aug	8	1	17	6	0.9997
27-Aug	4	3	4	3	0.9997
28-Aug	7	2	8	4	0.9998
29-Aug	7	0	7	2	0.9999
30-Aug	3	0	9	1	0.9999
31-Aug	7	0	3	1	0.9999
01-Sep	6	0	10	1	0.9999
02-Sep	7	0	4	1	1.0000
03-Sep	5	0	2	0	1.0000
04-Sep	5	0	2	2	1.0000
05-Sep	7	0	2	1	1.0000
06-Sep	5	0	1	0	1.0000
07-Sep	7	0	0	0	1.0000
08-Sep	3	0	0	0	1.0000
09-Sep	1	0	0	0	1.0000

Appendix C.6. Summary of historical commercial harvest by date, Quinhagak District, sockeye salmon, 1981-1997.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	1	0	0	0	0
13-Jun	5	4	216	55	0.0006
14-Jun	2	0	384	192	0.0012
15-Jun	4	62	440	112	0.0022
16-Jun	5	0	411	150	0.0034
17-Jun	2	356	1,119	738	0.0056
18-Jun	5	355	574	462	0.0089
19-Jun	3	171	1,678	741	0.0126
20-Jun	5	111	485	367	0.0148
21-Jun	4	1,039	2,322	1,739	0.0247
22-Jun	3	379	1,146	746	0.0279
23-Jun	4	343	1,741	1,497	0.0352
24-Jun	6	638	3,271	1,818	0.0531
25-Jun	5	732	3,043	1,640	0.0651
26-Jun	4	805	2,777	2,009	0.0760
27-Jun	3	461	4,923	543	0.0846
28-Jun	4	1,908	10,941	2,190	0.1093
29-Jun	4	0	6,304	4,353	0.1309
30-Jun	5	1,360	9,771	2,601	0.1646
01-Jul	4	975	8,625	5,005	0.1928
02-Jul	7	1,242	10,007	3,121	0.2345
03-Jul	6	2,244	7,045	3,580	0.2693
04-Jul	5	627	8,757	5,555	0.3007
05-Jul	8	1,157	15,375	2,934	0.3502
06-Jul	5	1,126	8,381	6,045	0.3880
07-Jul	8	1,211	8,326	3,978	0.4374
08-Jul	5	1,289	9,304	4,001	0.4737
09-Jul	7	1,532	9,824	6,806	0.5291
10-Jul	4	2,229	9,894	5,185	0.5615
11-Jul	9	1,901	7,672	5,800	0.6238
12-Jul	4	1,468	6,827	4,149	0.6476
13-Jul	7	1,842	13,450	5,707	0.7125
14-Jul	8	279	7,490	2,370	0.7471
15-Jul	6	1,240	6,687	4,634	0.7838
16-Jul	5	564	8,537	3,209	0.8082
17-Jul	6	937	5,203	3,514	0.8367
18-Jul	6	657	5,842	1,388	0.8553
19-Jul	5	866	12,850	2,391	0.8856
20-Jul	5	477	4,611	1,722	0.9013
21-Jul	7	477	2,523	989	0.9146
22-Jul	5	799	3,537	1,298	0.9262
23-Jul	6	0	4,361	538	0.9364
24-Jul	6	215	2,610	926	0.9456

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Appendix C.6. (page 2 of 2)

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
25-Jul	6	0	2,681	684	0.9541
26-Jul	4	0	1,404	462	0.9575
27-Jul	9	0	2,096	253	0.9651
28-Jul	4	102	879	504	0.9680
29-Jul	7	126	997	429	0.9725
30-Jul	5	19	1,516	379	0.9761
31-Jul	7	1	730	210	0.9788
01-Aug	7	42	757	157	0.9814
02-Aug	6	38	583	116	0.9831
03-Aug	8	30	408	132	0.9852
04-Aug	4	3	442	240	0.9865
05-Aug	9	6	333	150	0.9884
06-Aug	7	16	321	143	0.9898
07-Aug	5	30	481	128	0.9912
08-Aug	8	0	198	68	0.9921
09-Aug	6	6	307	75	0.9930
10-Aug	7	10	77	20	0.9933
11-Aug	5	6	192	28	0.9938
12-Aug	7	1	125	64	0.9946
13-Aug	6	0	205	24	0.9951
14-Aug	7	1	194	34	0.9957
15-Aug	6	12	166	32	0.9962
16-Aug	8	0	133	28	0.9966
17-Aug	7	1	71	18	0.9969
18-Aug	7	6	146	27	0.9973
19-Aug	9	2	48	13	0.9975
20-Aug	6	3	97	31	0.9978
21-Aug	8	0	139	23	0.9983
22-Aug	6	1	75	12	0.9985
23-Aug	8	1	102	15	0.9988
24-Aug	6	0	18	2	0.9989
25-Aug	8	0	114	9	0.9992
26-Aug	8	0	33	9	0.9993
27-Aug	4	0	30	5	0.9994
28-Aug	7	0	68	7	0.9996
29-Aug	7	0	11	6	0.9997
30-Aug	3	0	58	0	0.9997
31-Aug	7	0	20	4	0.9998
01-Sep	6	0	32	3	0.9999
02-Sep	7	0	14	4	0.9999
03-Sep	5	0	8	1	0.9999
04-Sep	5	0	18	1	1.0000
05-Sep	7	0	16	0	1.0000
06-Sep	5	0	1	0	1.0000
07-Sep	7	0	5	0	1.0000
08-Sep	3	0	3	0	1.0000
09-Sep	1	0	0	0	1.0000

Appendix C.7. Summary of historical commercial harvest by date, Quinhagak District, coho salmon, 1981-1997.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	1	0	0	0	0
13-Jun	5	0	0	0	0
14-Jun	2	0	0	0	0
15-Jun	3	0	0	0	0
16-Jun	5	0	0	0	0
17-Jun	2	0	0	0	0
18-Jun	5	0	0	0	0
19-Jun	3	0	0	0	0
20-Jun	5	0	0	0	0
21-Jun	4	0	0	0	0
22-Jun	3	0	0	0	0
23-Jun	4	0	0	0	0
24-Jun	6	0	0	0	0
25-Jun	5	0	0	0	0
26-Jun	4	0	0	0	0
27-Jun	3	0	0	0	0
28-Jun	4	0	0	0	0
29-Jun	4	0	0	0	0
30-Jun	5	0	2	0	0.0000
01-Jul	3	0	0	0	0.0000
02-Jul	7	0	1	0	0.0000
03-Jul	6	0	0	0	0.0000
04-Jul	5	0	0	0	0.0000
05-Jul	7	0	0	0	0.0000
06-Jul	4	0	0	0	0.0000
07-Jul	8	0	0	0	0.0000
08-Jul	4	0	0	0	0.0000
09-Jul	7	0	39	0	0.0000
10-Jul	4	0	5	0	0.0000
11-Jul	9	0	9	0	0.0001
12-Jul	4	0	2	0	0.0001
13-Jul	7	0	38	0	0.0001
14-Jul	8	0	2	0	0.0001
15-Jul	6	0	24	11	0.0002
16-Jul	5	1	39	4	0.0002
17-Jul	6	0	251	8	0.0005
18-Jul	6	1	234	11	0.0008
19-Jul	5	2	88	11	0.0009
20-Jul	5	3	787	75	0.0022
21-Jul	7	7	366	19	0.0028
22-Jul	5	1	250	12	0.0032
23-Jul	6	0	1,386	66	0.0050
24-Jul	6	21	2,295	78	0.0078

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Appendix C.7. (page 2 of 2)

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
25-Jul	6	0	3,482	309	0.0123
26-Jul	4	0	122	99	0.0126
27-Jul	9	0	5,512	273	0.0238
28-Jul	4	71	1,214	342	0.0257
29-Jul	7	152	7,989	565	0.0367
30-Jul	5	335	3,079	738	0.0436
31-Jul	7	146	5,597	925	0.0527
01-Aug	7	389	5,680	910	0.0639
02-Aug	6	390	12,478	2,298	0.0850
03-Aug	8	592	5,390	1,067	0.0984
04-Aug	4	190	4,293	1,851	0.1062
05-Aug	9	387	19,091	2,987	0.1425
06-Aug	7	1,589	8,436	4,206	0.1709
07-Aug	5	693	8,188	5,243	0.1961
08-Aug	8	0	19,215	2,536	0.2391
09-Aug	6	1,831	11,553	5,486	0.2744
10-Aug	7	1,237	9,428	5,430	0.3130
11-Aug	5	4,686	10,076	6,800	0.3458
12-Aug	7	2,710	10,458	3,362	0.3783
13-Aug	6	1,561	10,961	5,725	0.4116
14-Aug	7	1,671	783	3,543	0.4396
15-Aug	6	1,603	15,733	7,852	0.4894
16-Aug	8	1,403	8,299	3,923	0.5220
17-Aug	7	2,008	9,897	5,253	0.5604
18-Aug	7	1,008	9,776	6,931	0.6063
19-Aug	9	2,532	12,931	4,679	0.6558
20-Aug	6	3,958	8,728	5,540	0.6887
21-Aug	8	2,110	7,631	3,489	0.7189
22-Aug	6	2,493	8,437	4,582	0.7453
23-Aug	8	2,400	11,957	4,528	0.7872
24-Aug	6	2,790	8,673	4,565	0.8160
25-Aug	8	115	5,308	2,807	0.8360
26-Aug	8	1,419	6,505	4,635	0.8681
27-Aug	4	1,431	5,975	3,687	0.8822
28-Aug	7	1,335	4,684	3,737	0.9039
29-Aug	7	0	3,623	2,701	0.9203
30-Aug	3	1,054	9,431	2,193	0.9323
31-Aug	7	1,427	7,145	2,340	0.9519
01-Sep	6	0	2,565	1,739	0.9612
02-Sep	7	535	4,065	160	0.9732
03-Sep	5	0	2,777	600	0.9790
04-Sep	5	0	2,058	1,177	0.9849
05-Sep	7	0	3,799	901	0.9925
06-Sep	5	0	1,769	0	0.9953
07-Sep	7	0	1,798	0	0.9988
08-Sep	3	0	1,262	0	1.0000
09-Sep	1	0	0	0	1.0000

Appendix C.8. Summary of historical commercial harvest by date, Quinhagak District, chum salmon, 1981-1997.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
12-Jun	1	0	0	0	0
13-Jun	5	14	1,092	84	0.0019
14-Jun	2	0	2,125	1,063	0.0046
15-Jun	4	252	2,821	1,065	0.0114
16-Jun	5	0	847	279	0.0139
17-Jun	2	1,556	1,916	1,736	0.0184
18-Jun	5	1,162	2,611	1,629	0.0299
19-Jun	3	788	1,913	1,198	0.0349
20-Jun	5	287	2,760	746	0.0419
21-Jun	4	868	4,471	2,214	0.0546
22-Jun	3	1,051	6,984	2,177	0.0678
23-Jun	4	1,103	3,226	1,452	0.0772
24-Jun	6	732	5,990	2,316	0.1005
25-Jun	5	1,711	6,662	3,606	0.1261
26-Jun	4	1,199	4,329	2,190	0.1390
27-Jun	3	1,855	2,722	1,874	0.1474
28-Jun	4	2,458	5,449	3,951	0.1679
29-Jun	4	0	8,441	6,449	0.1957
30-Jun	5	2,066	4,903	2,501	0.2163
01-Jul	4	1,836	13,544	6,427	0.2530
02-Jul	7	1,972	6,034	3,500	0.2876
03-Jul	6	1,788	10,073	4,734	0.3284
04-Jul	5	2,333	3,155	2,839	0.3466
05-Jul	7	1,820	7,481	4,168	0.3867
06-Jul	5	2,192	8,484	4,094	0.4163
07-Jul	8	2,939	7,138	3,630	0.4587
08-Jul	5	3,050	8,296	3,672	0.4907
09-Jul	7	3,518	8,768	4,368	0.5396
10-Jul	4	4,022	5,667	4,998	0.5652
11-Jul	9	2,313	9,329	3,997	0.6179
12-Jul	4	3,211	9,074	3,803	0.6447
13-Jul	7	270	9,794	4,882	0.6980
14-Jul	8	134	5,381	2,025	0.7244
15-Jul	6	2,796	10,756	6,179	0.7743
16-Jul	5	1,784	3,369	2,193	0.7900
17-Jul	6	2,326	8,308	4,018	0.8262
18-Jul	6	1,310	4,343	2,806	0.8479
19-Jul	5	1,577	4,960	3,184	0.8689
20-Jul	5	2,127	4,684	3,355	0.8901
21-Jul	7	1,143	2,503	1,827	0.9066
22-Jul	5	990	2,696	1,812	0.9188
23-Jul	6	0	2,210	1,503	0.9295
24-Jul	6	499	2,713	1,489	0.9422

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Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
25-Jul	6	0	1,397	1,078	0.9495
26-Jul	4	0	1,446	941	0.9538
27-Jul	9	0	1,885	677	0.9623
28-Jul	4	333	975	571	0.9655
29-Jul	7	190	1,412	797	0.9722
30-Jul	5	173	802	551	0.9754
31-Jul	7	5	715	468	0.9791
01-Aug	7	246	479	334	0.9821
02-Aug	6	153	459	267	0.9844
03-Aug	8	110	580	234	0.9870
04-Aug	4	4	652	189	0.9884
05-Aug	9	98	357	218	0.9908
06-Aug	7	52	381	181	0.9926
07-Aug	5	89	260	114	0.9936
08-Aug	8	0	234	119	0.9946
09-Aug	6	11	265	105	0.9955
10-Aug	7	9	108	53	0.9960
11-Aug	5	4	110	37	0.9963
12-Aug	7	15	109	51	0.9968
13-Aug	6	2	100	36	0.9972
14-Aug	7	13	166	37	0.9978
15-Aug	6	6	106	36	0.9981
16-Aug	8	2	96	31	0.9985
17-Aug	7	0	50	15	0.9987
18-Aug	7	7	49	9	0.9989
19-Aug	9	5	54	14	0.9991
20-Aug	6	3	27	13	0.9992
21-Aug	8	2	26	10	0.9994
22-Aug	6	1	18	13	0.9994
23-Aug	8	3	27	12	0.9996
24-Aug	6	0	8	4	0.9996
25-Aug	8	0	25	4	0.9997
26-Aug	8	0	15	6	0.9997
27-Aug	4	0	6	2	0.9998
28-Aug	7	2	17	5	0.9998
29-Aug	7	0	3	0	0.9998
30-Aug	3	0	18	1	0.9999
31-Aug	7	0	10	1	0.9999
01-Sep	6	0	8	1	0.9999
02-Sep	7	0	7	1	0.9999
03-Sep	5	0	43	0	1.0000
04-Sep	5	0	13	0	1.0000
05-Sep	7	0	5	0	1.0000
06-Sep	5	0	0	0	1.0000
07-Sep	7	0	2	0	1.0000
08-Sep	3	0	0	0	1.0000
09-Sep	1	0	0	0	1.0000

APPENDIX D

Appendix D.1. Goodnews Bay District commercial effort 1970-1997.

YEAR	NUMBER OF PERIODS	FISHING HOURS ^a	EFFORT ^b
1970	28	624	35
1971	3	156	16
1972	8	186	14
1973	24	288	21
1974	30	360	49
1975	24	288	50
1976	32	384	40
1977	24	288	34
1978	36	432	35
1979	36	432	30
1980	38	456	48
1981	34	492	48
1982	34	540	48
1983	28	336	79
1984	31	372	77
1985	22	264	69
1986	30	360	86
1987	21	252	69
1988	30	360	125
1989	28	336	88
1990	28	396	82
1991	27	432	72
1992	26	396	111
1993	28	336	114
1994	32	432	116
1995	25	396	118
1996	21	247	53
1997	23	276	54
Ten Year Average (1987-96)	27	358	95

a Number of hours that fishing was open in the Goodnews Bay District.

b Permits that made at least one delivery during the year.

Appendix D.2. Historical commercial effort by salmon species caught in Goodnews District, 1975-1997.

YEAR	CHINOOK	SOCKEYE	COHO	PINK	CHUM	TOTAL
1975	37	41	35	31	41	41
1976	39	41	31	39	41	42
1977	29	34	30	13	31	35
1978	29	30	30	30	29	34
1979a						30
1980	37	39	40	37	35	41
1981	43	44	44	1	41	44
1982	45	44	45	44	43	47
1983	71	68	40	0	70	72
1984	67	63	71	66	66	77
1985	63	63	52	6	63	69
1986	70	85	64	79	81	86
1987a						69
1988	106	123	76	87	100	125
1989	63	82	83	41	66	88
1990	71	82	42	41	81	82
1991	57	67	52	0	62	72
1992	85	111	53	104	106	111
1993	102	113	56	0	110	114
1994	106	116	44	105	115	116
1995	100	118	49	24	108	118
1996	46	53	32	1	53	53
1997	52	54	27	0	52	54
Nine Yr. Average (88-96)	82	96	54	16b	89	98

a Catch by permit unavailable.

b Average of odd years only.

ppendix D.3. Goodnews Bay District commercial salmon harvest, 1968-1997.

YEAR	CHINOOK	SOCKEYE	COHO	PINK	CHUM	TOTAL
1968	0	0	5,458	0	0	5,458
1969	3,978	6,256	11,631	298	5,006	27,169
1970	7,163	7,144	6,794	12,183	12,346	45,630
1971	477	330	1,771	0	301	2,879
1972	264	924	925	66	1,331	3,510
1973	3,543	2,072	5,017	324	15,781	26,737
1974	3,302	9,357	21,340	16,373	8,942	59,314
1975	2,156	9,098	17,889	419	5,904	35,466
1976	4,417	5,575	9,852	8,453	10,354	38,651
1977	3,336	3,723	13,335	29	6,531	26,954
1978	5,218	5,412	13,764	9,103	8,590	42,087
1979	3,204	19,581	42,098	201	9,298	74,382
1980	2,331	28,632	43,256	7,832	11,748	93,799
1981	7,190	40,273	19,749	11	13,642	80,865
1982	9,476	38,877	46,683	4,673	13,829	110,732
1983	14,117	11,716	19,660	0	6,766	52,259
1984	8,612	15,474	71,176	4,711	14,340	114,313
1985	5,793	6,698	16,498	8	4,784	33,781
1986	2,723	25,112	19,378	4,447	10,355	62,015
1987	3,357	27,758	29,057	54	20,381	80,607
1988	4,964	36,368	30,832	5,509	33,059	110,282
1989	2,966	19,299	31,849	82	13,622	67,818
1990	3,303	35,823	7,804	629	13,194	60,753
1991	912	39,838	13,312	29	15,892	69,983
1992	3,528	39,194	19,875	14,310	18,520	95,427
1993	2,117	59,293	20,014	0	10,657	92,081
1994	2,570	69,490	47,499	18,017	28,477	166,053
1995	2,922	37,351	17,875	39	19,832	78,019
1996	1,375	30,717	43,836	22	11,093	87,043
1997	2,039	31,451	2,983	0	11,729	48,202
Ten Year Average (1987-1996)	2,801	39,513	26,195	41 ^a	18,473	90,856

a Odd years only

Appendix D.4. Historical estimated salmon run size and commercial exploitation rate, Goodnews River, 1981-1997.

Year	Species	Middle Fork Weir Estimate	Middle Fork Aerial Survey Count as a Percentage of Weir Est.	Mainstem Goodnews River Escapement Estimate	Goodnews Bay Subsistence Harvest Estimate	Goodnews Bay Commercial Harvest	Total Run Size Estimate	Exploitation ^a Rate (% of Run)
1981	Chinook	3,688	-b	7,766 ^c	1,409	7,190	20,053	43%
	Sockeye	49,108	-b	100,029 ^c	3,511 ^d	40,273	192,921	23%
	Chum	21,827	-b	53,799 ^c	-	13,642	89,268	15%
1982	Chinook	1,395	-b	2,937 ^c	1,236	9,476	15,044	71%
	Sockeye	56,255	-b	114,587 ^c	2,754 ^d	38,877	212,473	20%
	Chum	6,767	-b	16,679 ^c	-	13,829	37,275	37%
1983	Chinook	6,022	36%	14,398	1,066	14,117	35,603	43%
	Sockeye	25,813	22%	69,955	1,518 ^d	11,716	109,002	12%
	Chum	15,548	-b	38,323 ^c	-	6,766	60,637	11%
1984	Chinook	3,260	35%	8,743	629	8,612	21,244	43%
	Sockeye	32,053	27%	67,213	964	15,474	115,704	14%
	Chum	19,003	35%	117,739	189	14,340	151,271	10%
1985	Chinook	2,831	70%	7,979	426	5,793	17,029	37%
	Sockeye	24,131	11%	50,481	704	6,698	82,014	9%
	Chum	10,367	32%	25,025	348	4,784	40,524	13%
1986	Chinook	2,092	57%	4,094	555	2,723	9,464	35%
	Sockeye	51,069	28%	93,228	942	25,112	170,351	15%
	Chum	14,764	38%	51,910	191	10,355	77,220	14%
1987	Chinook	2,272	100%	4,490	816	3,357	10,935	38%
	Sockeye	28,871	85%	51,989	955	27,758	109,573	26%
	Chum	17,517	58%	37,802	578	20,381	76,278	27%
1988	Chinook	2,712	39%	5,419	310	4,964	13,405	39%
	Sockeye	15,799	30%	38,319	1065	36,368	91,551	41%
	Chum	20,799	21%	39,501	448	33,059	93,807	36%
1989	Chinook	1,915	67%	2,891	467	2,966	8,239	42%
	Sockeye	21,186	60%	35,476	869	19,299	76,830	26%
	Chum	10,380	28%	15,495	760	13,622	40,257	36%
1990	Chinook	3,636	-b	7,656 ^c	682	3,303	15,277	26%
	Sockeye	31,679	-b	64,528 ^c	905	35,823	132,935	28%
	Chum	6,410	-b	15,799 ^c	342	13,194	35,745	38%
1991 ^c	Chinook	1,952	-b	4,521 ^c	682	912	8,067	20%
	Sockeye	47,397	-b	96,544 ^c	900	39,838	184,679	22%
	Chum	27,525	-b	67,844 ^c	106	15,892	111,367	14%

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Year	Species	Middle Fork Weir Estimate	Middle Fork Aerial Survey Count as a Percentage of Weir Est.	Mainstem Goodnews River Escapement Estimate	Goodnews Bay Subsistence Harvest Estimate	Goodnews Bay Commercial Harvest	Total Run Size Estimate	Exploitation ^a Rate (% of Run)
1992	Chinook	1,903	61%	1,854	252	3,528	7,537	50%
	Sockeye	27,268	21%	52,501	905	39,194	119,868	33%
	Chum	22,023	19%	16,084	662	18,520	57,289	33%
1993	Chinook	2,349	-b	4,727 ^c	488	2,117	9,681	27%
	Sockeye	26,452	-b	54,325 ^c	572	59,293	140,642	43%
	Chum	14,952	-b	38,061 ^c	133	10,657	63,803	17%
1994	Chinook	3,856	-b	7,866 ^c	657	2,570	14,949	22%
	Sockeye	55,751	-b	115,405 ^c	652	69,490	241,298	29%
	Chum	34,849	-b	91,653 ^c	402	28,477	155,381	19%
1995	Chinook	4,836	-b	9,865 ^c	552	2,922	18,175	19%
	Sockeye	39,009	-b	80,749 ^c	787	37,351	157,896	24%
	Chum	33,699	-b	88,628 ^c	329	19,832	142,488	14%
1996	Chinook	2,930	-b	5,977 ^c	526	1,375	10,808	18%
	Sockeye	58,264	-b	120,606 ^c	763	30,717	210,350	15%
	Chum	40,450	-b	106,384 ^c	326	11,093	158,253	7%
1997	Chinook	2,937	51%	7,216	449	2,039	12,641	20%
	Sockeye	35,530	57%	23,462	609	31,451	91,052	35%
	Chum	17,296	b	45,488	133	11,729	74,646	16%

a Commercial and subsistence exploitation

b Incomplete aerial survey results

c Average Middle Fork/Goodnews River escapement estimate ratio for 1983-1989 used to estimate Goodnews River escapement in years with no aerial survey data. After 1992, that year is included in the estimate ratio.

d Subsistence caught chum salmon is included in subsistence sockeye salmon harvest

e Goodnews Tower Project changed to weir project in 1991.

Appendix D.5. Aerial survey results, Goodnews River 1980-1997

Year	Goodnews River and Lake				Middle Fork Goodnews River and Lakes			
	Chinook	Sockeye	Chum	Coho	Chinook	Sockeye	Chum	Coho
1980	1,228	75,639	1,975		1,164	18,926	3,782	
1981	a	a	a		a	a	a	
1982	1,990	19,160	9,700		1,546	2,327	6,300	
1983	2,600	9,650	a		2,500	5,900	a	
1984	3,245	9,240	17,250	43,925	1,930	12,897	9,172	
1985	3,535	2,843	4,415		2,050	5,470	3,593	
1986	1,068	8,960	11,850		1,249	16,990	7,645	
1987	2,234	19,786	12,103	11,122	1,598	34,532	2,805	
1988	637	5,820	3,846		1,024	5,831	5,814	
1989	651	3,605	a		a	8,044	2,922	
1990	626	27,689	a		a	a	a	
1991 ^b	a	a	a		a	a	a	
1992	875	10,397	1,950		1,012	7,200	3,270	
1993	a	a	a	8,802	a	a	a	
1994	a	a	a		a	a	a	
1995	3,314	a	a		a	a	a	
1996	a	a	a		a	a	a	
1997	3,611	12,610	a		1,447	19,843	a	
Escapement								
Objective ^c	1,600	15,000	17,000	800	800	5,000	4,000	20,000

a Information not available

b Survey past peak

c Escapement objectives are preliminary and are subject to change as additional data becomes available. Escapement objectives are based on aerial index counts which do not represent total escapement, but do reflect annual spawner abundance trends when made using standard survey methods under acceptable survey conditions.

Appendix D.6. Summary of historical commercial harvest by period, Goodnews Bay District, chinook salmon, 1981-1997.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
13-Jun	1	1,252	1,252	1,252	0.0161
14-Jun	0				0.0161
15-Jun	1	197	197	197	0.0186
16-Jun	2	251	1,096	674	0.0359
17-Jun	1	362	362	362	0.0405
18-Jun	3	387	1,706	1,158	0.0822
19-Jun	2	296	390	343	0.0910
20-Jun	5	139	2,642	404	0.1448
21-Jun	2	1,298	1,535	1,417	0.1811
22-Jun	2	792	1,591	1,192	0.2117
23-Jun	3	583	1,639	788	0.2503
24-Jun	3	476	988	620	0.2770
25-Jun	4	340	1,896	1,154	0.3353
26-Jun	3	0	416	352	0.3451
27-Jun	45	173	3,944	388	0.4284
28-Jun	5	307	1,307	807	0.4790
29-Jun	4	330	921	686	0.5126
30-Jun	6	242	1,551	405	0.5617
01-Jul	2	77	1,156	617	0.5776
02-Jul	8	166	710	305	0.6141
03-Jul	3	156	391	264	0.6245
04-Jul	3	177	2,301	637	0.6645
05-Jul	8	95	1,809	290	0.7131
06-Jul	4	100	272	239	0.7240
07-Jul	9	132	1,119	316	0.7804
08-Jul	7	93	495	147	0.7982
09-Jul	6	99	351	139	0.8136
10-Jul	4	156	326	201	0.8250
11-Jul	8	53	408	175	0.8444
12-Jul	4	145	737	320	0.8639
13-Jul	5	66	182	135	0.8715
14-Jul	7	54	514	130	0.8896
15-Jul	6	0	354	108	0.9001
16-Jul	7	54	294	77	0.9105
17-Jul	3	65	210	156	0.9161
18-Jul	7	0	217	71	0.9232
19-Jul	4	33	71	64	0.9261
20-Jul	6	38	192	97	0.9344
21-Jul	6	35	68	58	0.9386
22-Jul	3	19	228	80	0.9428
23-Jul	8	17	97	36	0.9470
24-Jul	4	20	77	39	0.9493

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Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
25-Jul	8	0	82	27	0.9527
26-Jul	4	0	41	21	0.9538
27-Jul	8	19	122	39	0.9595
28-Jul	5	5	22	21	0.9605
29-Jul	5	15	157	31	0.9639
30-Jul	7	16	73	19	0.9665
31-Jul	4	7	34	19	0.9675
01-Aug	8	0	78	18	0.9705
02-Aug	6	6	27	20	0.9719
03-Aug	8	9	102	21	0.9759
04-Aug	5	6	23	12	0.9768
05-Aug	7	6	54	18	0.9787
06-Aug	6	6	79	10	0.9803
07-Aug	3	15	43	17	0.9815
08-Aug	9	0	60	13	0.9831
09-Aug	4	7	21	15	0.9839
10-Aug	9	5	78	14	0.9865
11-Aug	5	5	20	9	0.9872
12-Aug	6	7	47	23	0.9890
13-Aug	6	0	36	5	0.9898
14-Aug	7	4	41	10	0.9910
15-Aug	6	5	26	11	0.9920
16-Aug	8	0	17	7	0.9928
17-Aug	7	2	22	7	0.9937
18-Aug	6	0	10	6	0.9941
19-Aug	7	3	14	8	0.9948
20-Aug	6	1	12	7	0.9953
21-Aug	8	0	11	5	0.9958
22-Aug	6	3	17	8	0.9965
23-Aug	5	0	9	6	0.9968
24-Aug	6	2	17	4	0.9973
25-Aug	6	0	13	4	0.9977
26-Aug	8	0	8	4	0.9981
27-Aug	5	0	13	3	0.9984
28-Aug	8	0	11	3	0.9988
29-Aug	6	2	9	4	0.9991
30-Aug	4	1	4	2	0.9992
31-Aug	7	0	6	1	0.9993
01-Sep	6	0	7	1	0.9995
02-Sep	6	0	5	2	0.9997
03-Sep	5	0	3	2	0.9997
04-Sep	4	0	6	1	0.9998
05-Sep	6	0	5	1	0.9999
06-Sep	3	0	0	0	0.9999
07-Sep	7	0	1	0	1.0000
08-Sep	4	0	2	0	1.0000
09-Sep	1	0	0	0	1.0000

Appendix D.7. Summary of historical commercial harvest by period, Goodnews Bay District, sockeye salmon, 1981-1997.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
13-Jun	1	27	27	27	0.0000
14-Jun	0				0.0000
15-Jun	1	70	70	70	0.0002
16-Jun	2	125	696	411	0.0016
17-Jun	1	744	744	744	0.0029
18-Jun	3	281	596	348	0.0051
19-Jun	2	478	551	515	0.0069
20-Jun	5	102	1,989	523	0.0132
21-Jun	2	967	1,280	1,124	0.0172
22-Jun	2	569	1,074	822	0.0201
23-Jun	3	1,029	2,701	1,466	0.0293
24-Jun	3	596	2,120	1,892	0.0375
25-Jun	4	852	2,087	1,348	0.0475
26-Jun	3	0	1,909	1,719	0.0539
27-Jun	5	685	3,040	1,664	0.0701
28-Jun	5	2,008	4,163	2,932	0.0959
29-Jun	4	1,412	3,323	1,763	0.1106
30-Jun	6	2,037	8,143	4,873	0.1643
01-Jul	2	1,143	3,376	2,260	0.1723
02-Jul	8	1,818	8,198	3,673	0.2283
03-Jul	3	1,427	5,510	2,589	0.2451
04-Jul	3	1,598	7,674	2,154	0.2654
05-Jul	8	1,254	5,195	2,854	0.3104
06-Jul	4	2,346	7,886	4,723	0.3453
07-Jul	9	2,057	6,283	3,026	0.4025
08-Jul	7	1,231	6,261	4,362	0.4519
09-Jul	6	2,167	4,518	3,446	0.4890
10-Jul	4	1,759	8,140	3,856	0.5202
11-Jul	8	1,397	3,898	3,068	0.5616
12-Jul	4	1,444	16,753	3,664	0.6069
13-Jul	5	2,046	5,275	4,291	0.6413
14-Jul	7	1,039	4,876	2,812	0.6751
15-Jul	6	0	8,860	2,930	0.7119
16-Jul	7	902	4,969	2,071	0.7420
17-Jul	3	2,978	3,936	3,642	0.7607
18-Jul	7	0	3,049	1,673	0.7790
19-Jul	4	1,683	2,830	2,422	0.7956
20-Jul	6	395	3,852	2,009	0.8174
21-Jul	6	507	2,559	1,309	0.8333
22-Jul	3	614	2,207	2,056	0.8419
23-Jul	8	162	3,966	852	0.8599
24-Jul	4	588	2,458	1,166	0.8694

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Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
25-Jul	8	0	1,678	472	0.8798
26-Jul	4	0	1,804	908	0.8862
27-Jul	8	166	2,903	768	0.9003
28-Jul	5	278	893	555	0.9048
29-Jul	5	605	1,312	810	0.9129
30-Jul	7	84	1,982	423	0.9221
31-Jul	4	300	803	506	0.9259
01-Aug	8	0	811	258	0.9301
02-Aug	6	204	969	485	0.9359
03-Aug	8	36	975	604	0.9442
04-Aug	5	188	739	190	0.9468
05-Aug	7	94	932	308	0.9525
06-Aug	6	34	498	282	0.9554
07-Aug	3	178	692	686	0.9582
08-Aug	9	0	926	260	0.9631
09-Aug	4	46	485	172	0.9646
10-Aug	9	18	659	286	0.9697
11-Aug	5	0	174	100	0.9706
12-Aug	6	17	564	263	0.9736
13-Aug	6	0	347	158	0.9751
14-Aug	7	4	382	234	0.9779
15-Aug	6	5	422	160	0.9800
16-Aug	8	0	322	110	0.9820
17-Aug	7	4	498	151	0.9842
18-Aug	6	0	318	65	0.9852
19-Aug	7	5	360	117	0.9869
20-Aug	6	0	139	118	0.9880
21-Aug	8	1	373	93	0.9899
22-Aug	6	7	353	118	0.9913
23-Aug	5	0	193	88	0.9920
24-Aug	6	1	244	57	0.9931
25-Aug	6	0	353	63	0.9942
26-Aug	8	0	204	67	0.9951
27-Aug	5	0	148	28	0.9956
28-Aug	8	1	186	62	0.9966
29-Aug	6	1	155	54	0.9972
30-Aug	4	0	171	36	0.9977
31-Aug	7	0	88	51	0.9983
01-Sep	6	0	158	47	0.9988
02-Sep	6	2	69	40	0.9992
03-Sep	5	0	72	21	0.9995
04-Sep	4	0	61	27	0.9997
05-Sep	6	0	61	0	0.9998
06-Sep	3	0	0	0	0.9998
07-Sep	7	0	63	2	1.0000
08-Sep	4	0	0	0	1.0000
09-Sep	1	0	0	0	1.0000

Appendix D.8. Summary of historical commercial harvest by period, Goodnews Bay District, coho salmon, 1981-1997.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
13-Jun	1	0	0	0	0.0000
14-Jun	0				0.0000
15-Jun	1	0	0	0	0.0000
16-Jun	2	0	0	0	0.0000
17-Jun	1	0	0	0	0.0000
18-Jun	3	0	0	0	0.0000
19-Jun	2	0	0	0	0.0000
20-Jun	5	0	0	0	0.0000
21-Jun	2	0	0	0	0.0000
22-Jun	2	0	0	0	0.0000
23-Jun	3	0	0	0	0.0000
24-Jun	3	0	0	0	0.0000
25-Jun	4	0	0	0	0.0000
26-Jun	3	0	0	0	0.0000
27-Jun	5	0	0	0	0.0000
28-Jun	5	0	0	0	0.0000
29-Jun	4	0	0	0	0.0000
30-Jun	6	0	0	0	0.0000
01-Jul	2	0	0	0	0.0000
02-Jul	8	0	0	0	0.0000
03-Jul	3	0	0	0	0.0000
04-Jul	3	0	0	0	0.0000
05-Jul	8	0	0	0	0.0000
06-Jul	4	0	0	0	0.0000
07-Jul	9	0	0	0	0.0000
08-Jul	7	0	0	0	0.0000
09-Jul	6	0	0	0	0.0000
10-Jul	4	0	0	0	0.0000
11-Jul	8	0	0	0	0.0000
12-Jul	4	0	1	0	0.0000
13-Jul	5	0	0	0	0.0000
14-Jul	7	0	1	0	0.0000
15-Jul	6	0	13	0	0.0000
16-Jul	7	0	18	1	0.0001
17-Jul	3	0	0	0	0.0001
18-Jul	7	0	18	0	0.0001
19-Jul	4	0	11	3	0.0002
20-Jul	6	0	111	1	0.0004
21-Jul	6	1	18	5	0.0005
22-Jul	3	0	1	0	0.0005
23-Jul	8	1	195	15	0.0011
24-Jul	4	0	33	5	0.0012

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Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
25-Jul	8	0	632	52	0.0041
26-Jul	4	0	9	5	0.0041
27-Jul	8	0	1,059	71	0.0085
28-Jul	5	3	153	5	0.0090
29-Jul	5	5	343	35	0.0101
30-Jul	7	28	1,461	209	0.0176
31-Jul	4	24	364	34	0.0186
01-Aug	8	0	2,811	119	0.0265
02-Aug	6	96	1,491	500	0.0349
03-Aug	8	66	3,943	138	0.0475
04-Aug	5	35	949	553	0.0534
05-Aug	7	126	2,069	497	0.0643
06-Aug	6	316	4,275	696	0.0820
07-Aug	3	231	812	520	0.0855
08-Aug	9	97	3,090	1,133	0.1119
09-Aug	4	516	2,240	1,527	0.1246
10-Aug	9	463	4,198	1,340	0.1587
11-Aug	5	163	6,065	1,289	0.1833
12-Aug	6	1,225	6,488	1,920	0.2171
13-Aug	6	673	4,852	1,593	0.2445
14-Aug	7	1,325	4,644	2,354	0.2812
15-Aug	6	735	5,999	2,117	0.3172
16-Aug	8	462	7,321	2,392	0.3694
17-Aug	7	1,390	6,880	3,002	0.4222
18-Aug	6	0	3,864	1,912	0.4469
19-Aug	7	1,394	5,628	3,397	0.4991
20-Aug	6	68	9,590	1,675	0.5347
21-Aug	8	968	4,967	2,034	0.5774
22-Aug	6	629	6,731	3,556	0.6265
23-Aug	5	1,308	5,306	3,417	0.6625
24-Aug	6	1,597	5,520	3,636	0.7107
25-Aug	6	468	3,590	1,889	0.7377
26-Aug	8	15	3,249	1,976	0.7702
27-Aug	5	1,101	6,625	2,519	0.8029
28-Aug	8	1,016	3,529	1,944	0.8382
29-Aug	6	725	3,402	1,747	0.8629
30-Aug	4	1,483	3,730	1,986	0.8829
31-Aug	7	1,084	3,143	1,698	0.9141
01-Sep	6	604	2,778	1,415	0.9344
02-Sep	6	576	3,233	1,138	0.9538
03-Sep	5	377	2,309	1,167	0.9673
04-Sep	4	374	2,685	1,099	0.9788
05-Sep	6	0	2,202	684	0.9888
06-Sep	3	0	1,715	0	0.9925
07-Sep	7	0	2,310	16	1.0000
08-Sep	4	0	0	0	1.0000
09-Sep	1	0	0	0	1.0000

Appendix D.9. Summary of historical commercial harvest by period, Goodnews Bay District, chum salmon, 1981-1997.

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
13-Jun	1	10	10	10	0.0000
14-Jun	0				0.0000
15-Jun	1	102	102	102	0.0004
16-Jun	2	89	1,091	590	0.0050
17-Jun	1	167	167	167	0.0056
18-Jun	3	194	501	254	0.0093
19-Jun	2	249	557	403	0.0124
20-Jun	5	137	3,501	341	0.0299
21-Jun	2	591	698	645	0.0349
22-Jun	2	708	2,124	1,416	0.0458
23-Jun	3	886	7,833	886	0.0827
24-Jun	3	594	1,188	821	0.0927
25-Jun	4	724	2,351	1,580	0.1167
26-Jun	3	0	1,241	866	0.1248
27-Jun	5	540	2,364	728	0.1443
28-Jun	5	526	8,369	1,605	0.1948
29-Jun	4	425	2,983	1,239	0.2174
30-Jun	6	997	2,907	1,488	0.2559
01-Jul	2	710	850	780	0.2619
02-Jul	8	565	3,434	2,049	0.3180
03-Jul	3	1,309	3,074	2,540	0.3446
04-Jul	3	798	4,075	1,626	0.3696
05-Jul	8	967	3,193	1,521	0.4190
06-Jul	4	963	4,076	1,776	0.4520
07-Jul	9	1,036	4,478	1,809	0.5254
08-Jul	7	949	2,669	1,837	0.5691
09-Jul	6	1,024	2,503	1,274	0.6023
10-Jul	4	1,346	4,835	1,843	0.6402
11-Jul	8	562	5,830	1,023	0.6919
12-Jul	4	1,057	5,498	1,443	0.7281
13-Jul	5	896	2,288	1,361	0.7571
14-Jul	7	601	2,123	1,180	0.7926
15-Jul	6	0	3,296	1,612	0.8302
16-Jul	7	476	1,360	1,095	0.8550
17-Jul	3	1,532	2,115	2,019	0.8768
18-Jul	7	0	1,191	649	0.8938
19-Jul	4	459	1,470	986	0.9088
20-Jul	6	479	1,265	795	0.9284
21-Jul	6	233	820	454	0.9395
22-Jul	3	307	1,177	362	0.9466
23-Jul	8	35	591	277	0.9565
24-Jul	4	244	874	335	0.9633

-continued-

Date	No. Years w/ fishing period on this date	Minimum harvest	Maximum harvest	Median harvest	Cumulative proportion harvest
25-Jul	8	0	281	217	0.9691
26-Jul	4	0	608	172	0.9728
27-Jul	8	58	177	150	0.9771
28-Jul	5	81	94	89	0.9788
29-Jul	5	32	223	166	0.9813
30-Jul	7	28	124	102	0.9838
31-Jul	4	8	121	85	0.9849
01-Aug	8	0	108	56	0.9865
02-Aug	6	47	153	89	0.9886
03-Aug	8	22	105	52	0.9904
04-Aug	5	23	60	36	0.9911
05-Aug	7	21	165	54	0.9927
06-Aug	6	18	41	27	0.9933
07-Aug	3	16	62	21	0.9937
08-Aug	9	0	60	20	0.9945
09-Aug	4	13	63	32	0.9951
10-Aug	9	2	44	17	0.9958
11-Aug	5	10	25	13	0.9961
12-Aug	6	0	50	13	0.9965
13-Aug	6	2	22	9	0.9967
14-Aug	7	3	62	15	0.9973
15-Aug	6	0	23	7	0.9975
16-Aug	8	0	16	9	0.9978
17-Aug	7	0	22	7	0.9980
18-Aug	6	0	9	2	0.9981
19-Aug	7	2	16	5	0.9983
20-Aug	6	0	11	4	0.9984
21-Aug	8	0	127	2	0.9990
22-Aug	6	2	6	4	0.9991
23-Aug	5	0	8	4	0.9991
24-Aug	6	0	8	1	0.9992
25-Aug	6	0	8	4	0.9993
26-Aug	8	0	42	2	0.9995
27-Aug	5	0	5	2	0.9995
28-Aug	8	0	11	1	0.9996
29-Aug	6	0	6	4	0.9997
30-Aug	4	0	2	1	0.9997
31-Aug	7	0	9	1	0.9998
01-Sep	6	0	2	1	0.9998
02-Sep	6	0	10	3	0.9999
03-Sep	5	0	4	0	0.9999
04-Sep	4	0	9	3	1.0000
05-Sep	6	0	4	1	1.0000
06-Sep	3	0	0	0	1.0000
07-Sep	7	0	2	0	1.0000
08-Sep	4	0	0	0	1.0000
09-Sep	1	0	0	0	1.0000

APPENDIX F

Appendix F.1. Commercial freshwater fin fishery catch data, Kuskokwim Area, 1977-1997.

Year	Number of Fishermen ^b	Number Caught ^a		Total Weight (lbs)		Total Value (\$)		
		Whitefish ^c	Burbot	Whitefish	Burbot	Whitefish	Burbot	Total
1977	3	718	0	d	0	952	0	952
1978	b	1,735	0	6,017	0	d	0	d
1979	b	3,219	0	11,211	0	d	0	d
1980	4	603	0	2,173	0	830	0	830
1981	4	1,197	0	4,620	0	2,310	0	2,310
1982	5	1,512	0	6,219	0	2,856	0	2,856
1983	0	0	0	0	0	0	0	0
1984	2	0	651	0	d	0	d	d
1985	5	555	1,829	2,275	2,016	1,137	455	1,593
1986	3	0	0	0	3,428	0	857	857
1987	4	417	0	1,260	0	1,008	0	1,008
1988	3	d	d	2,588	7	1,991	3	1,994
1989	7	178	282	583	270	501	597	1,098
1990	11	1,664	d	5,502	10	5,166	5	5,171
1991	5	1,413	41	2,442	256	2,412	197	2,609
1992	6	2,124	18	6,309	86	6,285	43	6,328
1993	5	2,509	0	5,208	0	4,898	0	4,898
1994	3	2,393	0	4,905	0	4,345	0	4,345
1995	1	d	0	2,363	0	2,507	0	2,507
1996	2	3,139	0	4,915	0	4,776	0	4,776
1997	14	4,447	0	5,770	0	4,832	0	4,832

a Does not include catches incidental to the commercial salmon fishery.

b Does not include fisherman who delivered catches incidental to the commercial salmon fishery.

c Includes cisco, pike and blackfish (weight only).

d Data not available.

APPENDIX G

Appendix G.1. Commercial miscellaneous saltwater finfish fishery catch data, Kuskokwim Area, 1988-1997.

<u>Year</u>	<u>Number of Fishermen</u>	<u>Species</u>	<u>Number Caught</u>	<u>Total weight (lbs)</u>	<u>Total value (\$)</u>
1988	4	Tom Cod ^a	b	439	878
1989	2	Tom Cod	b	591	1,180
1990	1	Tom Cod	300	221	442
1991	2	Tom Cod	b	1,356	2,690
1992	1	Tom Cod	b	303	303
1993	0	-- --	-	--	--
1994	1	Tom Cod	b	100	160
1995	0	-- --	-	--	--
1996	1	Tom Cod	b	713	1,426
1997	1	Tom Cod	b	250	500

a Tom Cod is the local name for Saffron Cod (Eleginus gracilis).

b Data not available

APPENDIX H

Appendix H.1. Estimated biomass and commercial harvest of Pacific herring in Kuskokwim Area fishing districts, Alaska, 1981-1997

District	Estimated Biomass (st)	Harvest				Roe% ¹	Estimated Value (\$1000's)	Exploitation Rate (%)
		Sac-roe	Bait	Waste	Total			
1997								
Security Cove	4640	884	3	5	892	12.5	221	19.2
Goodnews Bay	4752	805	0	0	805	14.2	228	16.9
Cape Avinof	4616	687	0	0	687	11.5	157	14.9
Nelson Is.	7909	778	0	0	778	12.7	198	9.8
Nunivak Is.	3801	-	-	-	-	-	-	-
Total	25718	3154	3	5	3163	12.7	804	12.3
1996								
Security Cove	6867	1795	59	5	1859	11.6	1251	27.1
Goodnews Bay	6315	1191	13	0	1204	12.5	895	19.1
Cape Avinof	4500	820	0	0	820	13.4	659	18.2
Nelson Is.	6638	986	44	0	1031	11.4	679	15.5
Nunivak Is.	4197	61	40	0	101	9.9	39	2.4
Total	28517	4854	156	5	5014	12.1	3523	17.6
1995								
Security Cove	6702	1292	0	0	1292	12.3	956	19.3
Goodnews Bay	4224	1051	0	3	1054	13.5	848	25.0
Cape Avinof	3627	485	0	0	485	12.5	363	13.4
Nelson Is.	7754	1112	0	0	1112	10.6	710	14.3
Nunivak Is.	4579	33	7	0	41	11.0	22	0.9
Total	26886	3974	7	3	3985	12.2	2900	14.8
1994								
Security Cove	7638	-	-	-	-	-	-	-
Goodnews Bay	5679	1061	0	0	1061	12.3	391	18.7
Cape Avinof	2827	427	0	0	427	12.2	156	15.1
Nelson Is.	5564	713	4	0	717	11.0	235	12.9
Nunivak Is.	4921	14	0	0	14	8.6	4	0.3
Total	26629	2215	4	0	2219	11.8	787	8.3
1993								
Security Cove	6995	5	0	0	5	12.8	2	0.1
Goodnews Bay	6211	945	9	0	954	10.3	293	15.4
Cape Avinof	2837	206	9	0	215	12.0	76	7.6
Nelson Is.	4944	613	52	74	739	10.6	198	14.9
Nunivak Is.	5176	-	-	-	-	-	-	-
Total	26163	1769	70	74	1913	10.6	568	7.3
1992								
Security Cove	7773	697	127	10	834	9.2	285	10.7
Goodnews Bay	5572	711	29	0	740	9.5	286	13.3
Cape Avinof	3446	443	9	0	452	9.9	178	13.1
Nelson Is.	5275	188	52	6	246	8.3	78	4.7
Nunivak Is.	5703	7	20	0	27	8.5	4	0.5
Total	27769	2046	237	16	2299	9.4	830	8.3
1991								
Security Cove	4434	561	9	0	570	9.3	208	12.9
Goodnews Bay	4387	259	4	0	263	8.9	93	6.0
Cape Avinof	2083	240	27	0	267	9.5	94	12.8
Nelson Is.	2385	-	-	-	-	-	-	-
Nunivak Is.	3903	17	42	0	59	7.5	9	-
Total	17192	1077	82	0	1159	9.2	404	6.7
1990								
Security Cove	2650	174	60	0	234	8.7	94	8.8
Goodnews Bay	2577	427	28	0	455	12.2	314	17.7
Cape Avinof	2020	49	1	0	50	12.0	35	2.5
Nelson Is.	2705	-	-	-	-	-	-	-
Nunivak Is.	422	-	-	-	-	-	-	-
Total	10374	650	89	0	739	11.2	443	7.1

- continued -

Appendix H.1. (2 of 2)

District	Estimated Biomass (st)	Harvest				Roe% ^a	Estimated Value (\$1000's)	Exploitation Rate (%)
		Sac-roe	Bait	Waste	Total			
1989								
Security Cove	2830	544	10	0	554	9.4	256	19.6
Goodnews Bay	4044	453	162	0	616	8.4	335	15.2
Cape Avinof	2780	90	39	0	129	8.0	54	4.6
Nelson Is.	3316	122	100	11	233	8.5	57	7.0
Nunivak Is.	617	79	37	0	116	9.4	42	18.8
Total	13587	1289	347	11	1647	8.9	744	12.1
1988								
Security Cove	4906	324	0	0	324	9.3	362	6.6
Goodnews Bay	4479	473	10	0	483	8.0	463	10.8
Cape Avinof	4108	348	0	0	348	8.6	264	8.5
Nelson Is.	7152	760	15	0	775	9.2	713	10.8
Nunivak Is.	2800	-	-	-	-	-	-	-
Total	23445	1905	25	0	1930	8.8	1802	8.2
1987								
Security Cove	2300	312	1	0	313	9.7	242	13.6
Goodnews Bay	2000	179	142	0	321	7.3	133	16.1
Nelson Is.	8100	915	8	0	923	9.2	661	11.4
Nunivak Is.	4400	254	160	0	414	7.8	231	9.4
Total	16800	1660	311	0	1971	8.9	1267	11.7
1986								
Security Cove	3700	747	4	0	751	11.2	535	20.3
Goodnews Bay	3000	554	3	0	557	10.4	325	18.6
Nelson Is.	7300	852	34	0	886	10.3	428	12.1
Nunivak Is.	6000	469	42	0	511	10.1	213	8.5
Total	20000	2622	83	0	2705	10.5	1501	13.5
1985								
Security Cove	4900	703	0	30	733	10.1	355	15.0
Goodnews Bay	4300	711	0	13	724	8.7	309	16.8
Nelson Is.	9500	967	10	0	977	10.6	527	10.3
Nunivak Is.	5700	349	9	0	358	8.9	146	6.3
Total	24400	2730	19	43	2792	9.8	1337	11.4
1984								
Security Cove	5100	325	0	10	335	11.8	110	6.6
Goodnews Bay	4100	667	0	50	717	10.1	168	17.5
Total	9200	992	0	60	1052	10.7	278	11.4
1983								
Security Cove	6400	966	107	0	1073	9.4	443	16.8
Goodnews Bay	3200	426	9	0	435	9.4	185	13.6
Total	9600	1392	116	0	1508	9.4	628	15.7
1982								
Security Cove	5100	707	106	0	813	9.3	271	15.9
Goodnews Bay	2600	437	49	0	486	9.5	188	18.7
Total	7700	1144	155	0	1299	9.4	459	16.9
1981								
Security Cove	8300	1150	23	0	1173	8.1	347	14.1
Goodnews Bay	4300	558	99	0	657	7.7	196	15.3
Total	12600	1708	122	0	1830	8.0	543	14.5

Appendix H.2 Number of buyers and fishermen participating in Kuskokwim Area Pacific herring fisheries, Alaska, 1981-1997.

Year	District	Number of Buyers	Number of Fishermen	Number of Deliveries
<u>1997</u>	Security Cove	14	222	528
	Goodnews Bay	3	139	933
	Cape Avinof	2	145	560
	Nelson Island	3	105	348
	Nunivak Island	1	12 ^a	0
<u>1996</u>	Security Cove	14	326	601
	Goodnews Bay	5	182	1,186
	Cape Avinof	2	161	833
	Nelson Island	3	109	515
	Nunivak Island	2	24	85
<u>1995</u>	Security Cove	12	106	257
	Goodnews Bay	4	127	878
	Cape Avinof	2	93	537
	Nelson Island	4	100	575
	Nunivak Island	2	13	46
<u>1994</u>	Security Cove		No commercial opening	
	Goodnews Bay	2	103	683
	Cape Avinof	1	85	502
	Nelson Island	3	104	409
	Nunivak Island	1	12	14
<u>1993</u>	Security Cove	1	9	9
	Goodnews Bay	3	63	705
	Cape Avinof	1	97	478
	Nelson Island	1	73	487
	Nunivak Island		No commercial opening	
<u>1992</u>	Security Cove	6	58	178
	Goodnews Bay	3	78	375
	Cape Avinof	2	121	335
	Nelson Island	3	85	222
	Nunivak Island	1	14	23
<u>1991</u>	Security Cove	6	52	100
	Goodnews Bay	2	103	137
	Cape Avinof	1	137	463
	Nelson Island		No commercial opening	
	Nunivak Island	2	17	31
<u>1990</u>	Security Cove	9	52	77
	Goodnews Bay	3	126	530
	Cape Avinof	1	101	109
	Nelson Island		No commercial opening	
	Nunivak Island		No commercial opening	
<u>1989</u>	Security Cove	8	104	108
	Goodnews Bay	6	138	533
	Cape Avinof	3	147	335
	Nelson Island	4	162	438
	Nunivak Island	3	45	210

-continued-

Appendix H.2 (2 of 2)

Year	District	Number of Buyers	Number of Fishermen	Number of Deliveries
<u>1988</u>	Security Cove	4	31	51
	Goodnews Bay	6	60	309
	Cape Avinof	1	98	485
	Nelson Island	7	174	547
	Nunivak Island	No commercial opening		
<u>1987</u>	Security Cove	8	65	67
	Goodnews Bay	4	117	191
	Nelson Island	5	235	633
	Nunivak Island	4	61	341
<u>1986</u>	Security Cove	11	88	199
	Goodnews Bay	5	104	319
	Nelson Island	4	163	1,099
	Nunivak Island	5	36	284
<u>1985</u>	Security Cove	6	107	268
	Goodnews Bay	5	83	420
	Nelson Island	6	143	776
	Nunivak Island	5	37	273
<u>1984</u>	Security Cove	4	38	86
	Goodnews Bay	4	130	390
<u>1983</u>	Security Cove	6	94	312
	Goodnews Bay	4	84	225
<u>1982</u>	Security Cove	3	107	250
	Goodnews Bay	3	84	297
<u>1981</u>	Security Cove	7	113	311
	Goodnews Bay	5	175	479

a Estimated number of permit holders

Appendix H.3. Commercial harvest, effort and value of Pacific herring in Kuskokwim Area fishing districts, Alaska, 1981-1997.

Year	District	Estimated Harvest (st)	Number of permits	Hours fished	CPUE ^a (st)	Estimated Value	Income per permit
1997	Security Cove	892	222	10.5	0.38	\$221,000	\$995
	Goodnews Bay	805	139	65.0	0.09	\$228,000	\$1,640
	Cape Avinof	687	145	26.0	0.18	\$157,000	\$1,083
	Nelson Is.	778	105	10.0	0.74	\$198,000	\$1,886
	Nunivak Is.	0	12	70.0	0.00	\$0	\$0
1996	Security Cove	1859	326	5.5	1.04	\$1,252,270	\$3,841
	Goodnews Bay	1204	182	45.0	0.15	\$893,900	\$4,912
	Cape Avinof	820	161	57.0	0.09	\$659,280	\$4,095
	Nelson Is.	1031	109	25.0	0.38	\$676,624	\$6,208
	Nunivak Is.	101	24	256.0	0.02	\$38,234	\$1,593
1995	Security Cove	1292	106	12.0	1.02	\$956,000	\$9,019
	Goodnews Bay	1054	127	56.0	0.15	\$848,000	\$6,677
	Cape Avinof	485	93	48.0	0.11	\$363,000	\$3,903
	Nelson Is.	1113	100	28.0	0.40	\$710,000	\$7,100
	Nunivak Is.	41	13	387.0	0.01	\$22,000	\$1,692
1994	Security Cove	--	--	--	--	--	--
	Goodnews Bay	1062	103	38.0	0.27	\$391,000	\$3,796
	Cape Avinof	427	85	62.0	0.08	\$156,000	\$1,835
	Nelson Is.	717	104	26.0	0.27	\$235,000	\$2,260
	Nunivak Is.	14	12	6.0	0.19	\$4,000	\$333
1993	Security Cove	5	9	24.5	0.02	\$2,000	\$222
	Goodnews Bay	954	63	123.0	0.12	\$293,000	\$4,651
	Cape Avinof	215	97	106.0	0.02	\$75,000	\$773
	Nelson Is.	739	73	63.5	0.16	\$198,000	\$2,712
	Nunivak Is.	--	--	--	--	--	--
1992	Security Cove	834	58	34.0	0.42	\$285,000	\$4,914
	Goodnews Bay	740	78	29.0	0.33	\$286,000	\$3,667
	Cape Avinof	452	121	12.0	0.31	\$178,000	\$1,471
	Nelson Is.	246	85	10.0	0.29	\$78,000	\$918
	Nunivak Is.	27	14	6.0	0.32	\$4,000	\$286
1991	Security Cove	570	52	12.0	0.91	\$208,000	\$4,000
	Goodnews Bay	263	103	4.0	0.64	\$93,000	\$903
	Cape Avinof	267	137	28.0	0.07	\$94,000	\$686
	Nelson Is.	--	--	--	--	--	--
	Nunivak Is.	59	17	12.0	0.29	\$9,000	\$529
1990	Security Cove	234	52	7.0	0.64	\$94,000	\$1,808
	Goodnews Bay	455	126	32.0	0.11	\$314,000	\$2,492
	Cape Avinof	50	101	3.0	0.17	\$35,000	\$347
	Nelson Is.	--	--	--	--	--	--
	Nunivak Is.	--	--	--	--	--	--

- continued -

Appendix H.3. (2 of 2)

Year	District	Estimated Harvest (st)	Number of permits	Hours fished	CPUE ^a (st)	Estimated Value	Income per permit
1989	Security Cove	554	104	4.0	1.33	\$256,000	\$2,462
	Goodnews Bay	616	138	50.0	0.09	\$335,000	\$2,428
	Cape Avinof	129	147	194.0	0.00	\$54,000	\$367
	Nelson Is.	233	162	15.0	0.10	\$57,000	\$352
	Nunivak Is.	116	45	186.0	0.01	\$42,000	\$933
1988	Security Cove	324	31	23.5	0.44	\$362,000	\$11,677
	Goodnews Bay	483	60	40.0	0.20	\$463,000	\$7,717
	Cape Avinof	348	98	88.5	0.04	\$264,000	\$2,694
	Nelson Is.	775	174	7.5	0.59	\$713,000	\$4,098
	Nunivak Is.	--	--	--	--	--	--
1987	Security Cove	313	65	13.0	0.37	\$242,000	\$3,723
	Goodnews Bay	321	117	11.0	0.25	\$133,000	\$1,137
	Nelson Is.	923	235	6.0	0.65	\$661,000	\$2,813
	Nunivak Is.	414	61	39.0	0.17	\$231,000	\$3,787
1986	Security Cove	751	88	73.0	0.12	\$535,000	\$6,080
	Goodnews Bay	557	104	53.0	0.10	\$325,000	\$3,125
	Nelson Is.	886	163	40.0	0.14	\$428,000	\$2,626
	Nunivak Is.	511	36	156.0	0.09	\$213,000	\$5,917
1985	Security Cove	733	107	125.0	0.05	\$335,000	\$3,131
	Goodnews Bay	724	83	130.0	0.07	\$309,000	\$3,723
	Nelson Is.	977	143	44.0	0.16	\$527,000	\$3,685
	Nunivak Is.	358	37	228.0	0.04	\$146,000	\$3,946
1984	Security Cove	335	38	345.0	0.03	\$110,000	\$2,895
	Goodnews Bay	717	130	139.0	0.04	\$168,000	\$1,292
1983	Security Cove	1073	94	87.0	0.13	\$443,000	\$4,713
	Goodnews Bay	435	84	278.0	0.02	\$185,000	\$2,202
1982	Security Cove	813	107	302.0	0.03	\$271,000	\$2,533
	Goodnews Bay	486	84	314.0	0.02	\$188,000	\$2,238
1981	Security Cove	1173	113	90.0	0.12	\$347,000	\$3,071
	Goodnews Bay	657	175	133.0	0.03	\$196,000	\$1,120

a CPUE = catch per permit per hour fished

APPENDIX S

Appendix S. 1. 1997 Kuskokwim Area subsistence salmon harvest calendar.

Dear Subsistence Fishers:

Please write in the number of salmon that people in your household caught for subsistence. Include all subsistence salmon that were caught, including those you gave to others and those you may have caught for dog food. DO NOT include salmon that you sold when commercial fishing.

Our address is on the back of this calendar. When finished fishing, you can fold the calendar so that our return address is visible. DO NOT PUT POSTAGE ON THE CALENDAR WHEN YOU RETURN IT TO US. We have paid the postage.

This calendar is sent to you by the Subsistence Division of the Alaska Department of Fish and Game in Bethel.

NAME

Sub Rate
U S Postage
Paid
Fairbanks, AK
Permit No. 99

Thank you for helping to document subsistence harvests. If you have any questions, please call (907) 543-3100.



MAY 1997

SUBSISTENCE SALMON CALENDAR

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	11	12	13	14	15	16	17
TANNIUM =	King _____						
MAILLIN =	Chum _____						
SAYAK =	Red _____						
CHOOK =	King _____						
SOCIETY =	Chum _____						
	Red _____						
	18	19	20	21	22	23	24
	King _____						
	Chum _____						
	Red _____						
	25	26	27	28	29	30	31
	King _____						
	Chum _____						
	Red _____						

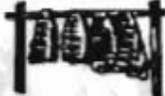
JUNE 1997

SUBSISTENCE SALMON CALENDAR

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2	3	4	5	6	7
TANNIUM =	King _____	King _____	King _____				
MAILLIN =	Chum _____	Chum _____	Chum _____				
SAYAK =	Red _____	Red _____	Red _____				
CHOOK =	King _____	King _____	King _____				
SOCIETY =	Chum _____	Chum _____	Chum _____				
	Red _____	Red _____	Red _____				
	8	9	10	11	12	13	14
	King _____	King _____	King _____				
	Chum _____	Chum _____	Chum _____				
	Red _____	Red _____	Red _____				
	15	16	17	18	19	20	21
	King _____	King _____	King _____				
	Chum _____	Chum _____	Chum _____				
	Red _____	Red _____	Red _____				
	22	23	24	25	26	27	28
	King _____	King _____	King _____				
	Chum _____	Chum _____	Chum _____				
	Red _____	Red _____	Red _____				
	29	30			<p>*There were 180,000 steel salmon dred in 18 native villages between Bethel and the east, affecting an average of 1,000 for each family. One-half of those are sold or bartered for food or other articles needed, leaving the rest for home consumption. US Bureau of Fisheries, 1922.</p>		
	King _____	King _____					
	Chum _____	Chum _____					
	Red _____	Red _____					

JULY 1997

SUBSISTENCE SALMON CALENDAR

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	<p>*The first catch of king was made on May 27. The run of roe and chum began on June 17. The regular streamer service along the Yukon River was practically ended by the dried-fish market. * US Bureau of Fisheries, 1928</p>						
	1	2	3	4	5	6	7
	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____
TAYYAPHE *	8	9	10	11	12	13	14
BALLUK *	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____
SAYAK *	15	16	17	18	19	20	21
CHOOK *	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____	King _____ Chum _____ Red _____
SOCKEY *	22	23	24	25	26	27	28
QAKYK *	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____
SILVER *	29	30	31				
	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____				
	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____				
	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____				

AUGUST 1997

SUBSISTENCE SALMON CALENDAR

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	<p>*According to a knowledgeable Hilaro elder, Salmo wheats were first introduced to the upper Kuskokwim in 1814 by an early trader near Wilson Slough, below present day McGrath after he observed wheats on the Yukon River near Anvik. * - Natural Resources Laboratory of Fairbanks, Alaska: Contributions by Jeff Reider</p>						
	1	2	3	4	5	6	7
	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____
TAYYAPHE *	8	9	10	11	12	13	14
BALLUK *	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____
SAYAK *	15	16	17	18	19	20	21
CHOOK *	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____
SOCKEY *	22	23	24	25	26	27	28
SILVER *	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____	King _____ Chum _____ Red _____ Coho _____
	29				<p>*Two white fishermen and 343 natives fished the river for local requirements using 808 gill nets of 12,086 bathos, 86 wheels and several small boats. The product consisted of 8 barrels of pickled king, 380 tons of dried chum and 31 tons of dried coho. * US Bureau of Fisheries, 1928</p>		
	King _____ Chum _____ Red _____ Coho _____						
	King _____ Chum _____ Red _____ Coho _____						
	King _____ Chum _____ Red _____ Coho _____						
	31						

SEPTEMBER 1997

SUBSISTENCE SALMON CALENDAR

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
BALLUK *		1	2	3	4	5	6
SAYAK *	Chum _____ Red _____ Coho _____						
QAKYK *	7	8	9	10	11	12	13
SOCKEY *	Chum _____ Red _____ Coho _____						
SILVER *	14	15	16	17	18	19	20
	Chum _____ Red _____ Coho _____						
	21	22	23	24	25	26	27
	Chum _____ Red _____ Coho _____						

Appendix S. 2. 1997 Kuskokwim Area subsistence salmon harvest survey form.

Division of Subsistence, Bethel

COMM. ID# _____

Chinook = "saryaqvat," Chum = "iqallak," Sockeye = "sajak," Coho = "qabiyag"

HHID# _____

KUSKOKWIM AREA 1997

POST-SEASON SUBSISTENCE SALMON HOUSEHOLD HARVEST SURVEY

* (Questions marked with an asterisk are asked of all households interviewed) kb

Community: _____	Household Head Name: _____
Survey Date: <u>10 11</u> , 1997	Name of Person Interviewed: HH, _____
Interviewer: <u>LO SM</u>	Household P.O. Box: _____
Was this household in community last year?: No Yes	

- *1. Did this household catch salmon for subsistence use this year? No (go to # 3) Yes
2. May I have your salmon calendar? (If household fished and we don't already have or don't collect the calendar, go to # 7)
 Picked up by interviewer _____ Mailed it to ADFG _____ Didn't get one _____
 (go to # 10) Did not use _____ Lost or unavailable _____
- *3. Does this household usually subsistence fish for salmon? No Yes

HOUSEHOLD DIDN'T FISH (Household did not help harvest/catch salmon)

4. Did this household help another household process ("put up") salmon?
 No (go to # 17) Yes: (Names, HHIDs) _____
5. Please estimate how many salmon all of you processed ("put up").
 CHINOOK _____ CHUM _____ SOCKEYE _____ COHO _____ Could not estimate _____
 ("kings") ("dogs") ("reds") ("silvers")
6. Please estimate how many salmon were for your household only.
 CHINOOK _____ CHUM _____ SOCKEYE _____ COHO _____ Could not estimate _____
 ("kings") ("dogs") ("reds") ("silvers")
- (Go to Question 17)

HOUSEHOLD FISHED, ADF&G DOES NOT HAVE CALENDAR

7. Did other households fish with you? No Yes: (Names, HHIDs) _____
8. Please estimate how many salmon your household (or all households together) caught. (Ask about salmon already eaten, frozen, given to other households, and dog food)
 CHINOOK _____ CHUM _____ SOCKEYE _____ COHO _____ Could not estimate _____
 ("kings") ("dogs") ("reds") ("silvers") Salmon are included with Household _____ (HHID)
9. Please estimate how many salmon were for your household only.
 CHINOOK _____ CHUM _____ SOCKEYE _____ COHO _____ All _____ Could not estimate _____
 ("kings") ("dogs") ("reds") ("silvers")
- (Go to Question 15)

HOUSEHOLD FISHED, ADF&G DOES HAVE CALENDAR

10. Are all of the salmon this household caught written on the calendar? (Ask about and include salmon already eaten, frozen, given to other households, and dog food)
 No Yes (go to # 12)
11. How many additional salmon, not written on the calendar, were caught?
 CHINOOK _____ CHUM _____ SOCKEYE _____ COHO _____ Could not estimate _____
 ("kings") ("dogs") ("reds") ("silvers")
12. Did other households fish with you? No (go to # 15) Yes: (Names, HHIDs) _____

(This Block is continued on back side)

COFFING, c:\FORMS\B4.DOC, 12:01 PM, September 18, 1996

Appendix S. 2. Continued (page 2 of 2).

LX

13. Are the salmon they caught written on your calendar? No ___ Yes ___

14. Please estimate how many salmon were for your household only. All ___
 CHINOOK ___ CHUM ___ SOCKEYE ___ COHO ___ Could not estimate ___

(Go to Question 15)

FISHING GEAR (For subsistence fishing households only)

15. What type(s) of fishing gear was used for catching subsistence salmon this year?

Drift net ___ Set Net ___ Rod and Reel ___ Fishwheel ___ Spear ___ Sein ___

16. How many salmon did your household catch and keep with Rod and Reel this year?

CHINOOK ___ CHUM ___ SOCKEYE ___ COHO ___

COMMERCIAL FISHING

*17. Does this household commercial fish? No ___ (go to # 21), Yes ___
 If yes, where? ___ Kuskokwim River or Bay ___ Yukon Area ___ Bristol Bay

18. Were all of the salmon caught when commercial fishing sold or were some brought home to eat or processed for subsistence? All were sold ___ Some were used for subsistence ___

19. How many commercially caught salmon were used for subsistence?

CHINOOK ___ CHUM ___ SOCKEYE ___ COHO ___

20. Are those salmon listed on the calendar or included in the catch numbers you gave me?

Yes ___ No ___

HOUSEHOLD SIZE

*21. How many people live in this household? _____

DOG FOOD (For subsistence fishing households only)

22. Did this household catch salmon for dog food?

No ___ (go to # 26) Only backbones/heads/guts/scraps ___ (go to # 26)
 Yes ___

23. How many salmon? CHUM ___ SOCKEYE ___ COHO ___
 ("dogs") ("reds") ("silvers")

24. Are the salmon caught for the dogs included on your calendar or in the estimates you gave me?

Yes ___ No ___

25. How many dogs does this household have? _____

26. (For subsistence fishing households only)

How was subsistence salmon fishing for your household this year?

Kings: ___ Very Good ___ Average ___ Poor If Poor, why? _____
 Chums: ___ Very Good ___ Average ___ Poor If Poor, why? _____
 Sockeye: ___ Very Good ___ Average ___ Poor If Poor, why? _____
 Coho: ___ Very Good ___ Average ___ Poor If Poor, why? _____

*27. What could Fish and Game do to make subsistence fishing better for you? (regulations, etc)

Appendix S. 3. 1997 Kuskokwim Area subsistence salmon harvest survey postcard.

Dear Kuskokwim Area Resident,

Please take a moment to answer the questions on the back side of this card and drop it in the mail to us. No stamp is necessary, postage is already paid. We will mail you a subsistence salmon harvest summary in Spring after the survey data is compiled.

We appreciate your help to document subsistence salmon harvests. We use this information to help the Board of Fisheries and the Department of Fish and Game make informed management decisions affecting the Kuskokwim Area. Your household harvest information remains confidential. Please call if you have any questions.

Thank you,

Subsistence Division
Room 214, BNC Complex
Bethel (543-3100)

Division of Subsistence
Alaska Dept. of Fish and Game
P.O. Box 1788
Bethel, AK 99559



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED
STATES

BUSINESS REPLY MAIL
First Class Mail Permit No. 50 Fairbanks, AK.

Postage Will Be Paid By Addressee

State of Alaska
Department of Fish and Game
Subsistence Division
P.O. Box 1788
Bethel, AK 99559-1788



(correct your address if necessary)

NAME: _____
P.O. BOX: _____
CITY, STATE: _____
ZIP CODE: _____

Did your household harvest salmon for subsistence use this year?
(include any salmon kept for subsistence when commercial fishing) Yes ___ No ___

How many subsistence salmon did your household harvest?
(include salmon eaten, given away, frozen, dried, smoked, canned, or for dogfood)

Chinook _____ Chum _____ Sockeye _____ Coho _____
(King salmon) (Dog salmon) (Red salmon) (Silver salmon)

What type(s) of gear did your household use to catch subsistence salmon?

Set net _____ Drift net _____ Fishwheel _____ Rod and reel _____

How was subsistence salmon fishing for your household this year?

King: Very good _____ Average _____ Poor, if Poor, why _____
Sockeye: Very good _____ Average _____ Poor, if Poor, why _____
Chum: Very good _____ Average _____ Poor, if Poor, why _____
Coho: Very good _____ Average _____ Poor, if Poor, why _____