ANNUAL MANAGEMENT REPORT
YUKON AREA, 1994

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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 Management and Development in the Yukon Area. Data presented in this report supersedes information found in previous management reports. The 1960-1974 management reports for the Yukon Area appear in the Arctic-Yukon-Kuskokwim Area report series. The 1975-1986 management reports appear in the Yukon Area Annual Report series. The annual management report became a part of the Regional Information Report Series in 1987. Data from a number of research and monitoring projects are summarized in this report. The report is organized into the following major sections:

1. Salmon Fishery. This section presents a description of the area, fishery resources, fisheries and management practices.

2. Area Salmon Report. This section presents a comprehensive report of the current year and makes comparisons with previous years.

3. Cape Romanzof District Herring Fishery. This section presents a description of the area, fishery resources, fisheries and management practices, and summary of the current year herring fishery.

4. Other Marine and Freshwater Finfish Fisheries. This section presents a description of the fishery resources and finfish fisheries other than salmon and herring.

In order to facilitate use of this report, tabular data has been separated into current year tables for the salmon fishery and appendices where historical salmon data and herring and freshwater finfish data are presented.

Commercial fishing effort has been computed, assuming that if a permit holder delivers in any fishing period, the fisherman fished the entire period for as many hours as were open to commercial fishing. Catch-per-unit-effort (CPUE) is obtained by dividing the total fishermen hours into the catch for the corresponding period of time. Total fishermen is the total number of fishermen making deliveries, regardless of how many deliveries were made or periods fished during a particular "season". There are fishermen who deliver only once or twice during the entire season.

YUKON AREA INTRODUCTION

This annual management report details the activities of the Division of Commercial Fisheries Management and Development Division in the Yukon Area during 1994. The Division of Commercial Fisheries Management and Development (CFMD) of the Alaska Department of Fish and Game is responsible for the management of commercial, personal use, and subsistence fisheries in the Yukon Area.

The Yukon Area includes all waters of the Yukon River drainage in Alaska and all coastal waters from Canal Point Light near Cape Stephens southward to Naskonat Peninsula (Figure 1). Important subsistence and commercial fisheries include salmon and herring. Other marine and freshwater finfish are harvested primarily for subsistence use. A list of indigenous fishes found in the Yukon Area is provided in Appendix A.1.

SALMON FISHERY

Description of Area and District Boundaries

The Yukon River is the largest river in Alaska, draining approximately 35 percent of the state, and is the fifth largest drainage in North America. The river originates in British Columbia, Canada, within 30 miles of the Gulf of Alaska and flows over 2,300 miles to its mouth on the Bering Sea, draining an area of approximately 330,000 square miles. With the possible exception of a few fish taken near the mouth or adjacent coastal villages, only salmon of Yukon River origin are harvested in the Yukon Area.

Excluding the greater Fairbanks area (approximately 77,000 residents), there are approximately 10,000-15,000 rural residents in the Alaskan portion of the drainage, the majority of whom reside in 43 small villages scattered along the coast and major river systems. Nearly all of these people are dependent to varying degrees on fish and game resources for their livelihood.

Commercial salmon fishing occurs along the entire 1,200 mile length of the mainstem Yukon River in Alaska and the lower 225 miles of the Tanana River. The commercial fishing area is divided into seven districts and ten subdistricts for management and regulatory purposes (Figure 2). The present district boundaries were originally established in 1961 and redefined in 1962, 1974, 1978, and 1994. The Coastal District was established in 1994 and is only open to subsistence fishing. The Lower Yukon Area (Districts 1, 2, and 3) includes coastal waters of the delta and that portion of the Yukon River drainage from the mouth to Old Paradise Village, river mile 301. The Upper Yukon Area (Districts 4, 5, and 6) is that portion of the drainage upstream of Old Paradise Village to the U.S./Canada border. The districts and subdistricts are further divided into 28 statistical areas for management purposes (Figures 3-8). Figures 9-13 show selected closed waters areas. Yukon River mileages are listed in Appendix A.2.

Commercial, Aboriginal, sport, and domestic salmon fisheries also occur in Canada, with fishery management activities conducted by the Canadian Department of Fisheries and Oceans (DFO).

Fishery Resources

Five species of Pacific salmon are found in the Yukon River drainage: chinook salmon (*O. tshawytsha*), chum salmon (*Oncorhynchus keta*), coho salmon (*O. kisutch*), pink salmon (*O. gorbuscha*), and sockeye salmon (*O. nerka*).

Chinook salmon are the largest species found in the Yukon River ranging from 2-90 pounds and averaging 20-25 pounds. Spawning populations of chinook salmon have been documented throughout the Yukon River drainage from the Archuelinguk River located approximately 80 miles from the mouth to as far upstream as the headwaters of the drainage in Yukon Territory and British Columbia, Canada, nearly 2,000 miles from the mouth (Figures 14-18). Chinook salmon enter the mouth of the Yukon River soon after ice breakup during late May and early June and continue through mid-July.

The chum salmon return is made up of an early (summer chum) run and a later (fall chum) run. Summer chum salmon are chiefly characterized by: earlier run timing (early June to mid-July at the mouth), rapid maturation in freshwater, smaller size (average 6-7 pounds), and larger population size. Summer chum salmon spawn primarily in run-off streams in the lower 500 miles of the drainage and in the Tanana River drainage (Figures 14-16). Fall chum salmon are mainly distinguished by: later run timing (mid-July to early September at the mouth), robust body shape and bright silvery appearance, larger size (average 7-8 pounds) and smaller population size. Fall chum salmon primarily spawn in the upper portion of the drainage in streams which are spring fed, usually remaining ice-free during the winter. Major fall chum salmon spawning areas include the Tanana, Chandalar, and Porcupine River systems, as well as various streams in Yukon Territory, Canada, including the mainstem Yukon River (Figures 16-18).

Coho salmon enter the Yukon River from late July through September, average about seven pounds in weight, and spawn discontinuously throughout the Alaskan portion of the drainage. Major spawning populations of coho salmon have been documented in tributaries of the Tanana River drainage, and the Andreafsky and Anvik Rivers (Figures 14 and 16).

Pink salmon enter the lower river from late June to late July and average approximately 3 pounds in weight. Pink salmon primarily spawn in the lower portion of the drainage, downstream of the village of Grayling, river mile 336 (Figure 14). However, pink salmon have been caught in the mainstem Yukon River upstream as far as Ruby (river mile 601). During the past decade, large runs of pink salmon have occurred during even-numbered years.

Sockeye salmon are uncommon in the Yukon River drainage and only a few individuals are caught each year. Sockeye salmon have been reported in the mainstem Yukon River upstream to Rampart (river mile 763). There have been reports of sockeye salmon spawning areas being located in the Innoko, Kantishna, and Anvik River drainages.

Water Quality

Water quality and spawning habitats in the Yukon Area have been largely preserved in an undisturbed condition. Pollution, logging, dam construction, oil development, and mining activities, except in a few locations, have been to date minimal or nonexistent.

Management

Management of the Yukon River salmon fishery is complex because of the difficulty in determining run size, harvesting of mixed stocks, multispecies salmon runs, allocation issues, and the immense size of the Yukon River drainage. The overall goal of the Yukon Area research and management programs is to manage the salmon runs for sustained yield under the policies set forth by the Alaska Board of Fisheries. Escapement levels required to produce maximum sustained yields cannot be determined at this time due to the lack of an adequate database. 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. Management of the Yukon River 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.

Fisheries within the Yukon River drainage may harvest stocks of fish that are up to several weeks and hundreds of miles from their spawning grounds. Since the Yukon River commercial fishery is a mixed stock fishery, some tributary populations may be under- or over harvested in relation to their actual abundance. It is impossible to manage stocks separately based on current knowledge.

Primary management tools used to manage the commercial salmon harvest are guideline harvest ranges established by the Alaska Board of Fisheries (Table 1), and emergency order authority, which is used to implement fishing season openings and closures, fishing periods, and mesh size restrictions. Guideline harvest ranges have been established for chinook, summer chum, and fall chum salmon commercial fisheries throughout the Alaskan portion of the drainage. In general, the department attempts to manage the commercial fisheries such that the harvest in each district or subdistrict is proportionally similar within their respective guideline harvest ranges.

Based on the major failure of western Alaska chum salmon runs in 1993, new regulations and changes to existing regulations were adopted by the Alaska Board of Fisheries in March 1994 to address chum salmon conservation and rebuilding (Attachment 1).

During the fishing season, management is based on preseason projections and inseason run assessment. The salmon runs are monitored on a daily basis. Inseason run assessment includes abundance indices from test fisheries, passage estimates from the Pilot Station sonar project, and spawning escapement and harvest data. If it becomes apparent that the run is substantially smaller or larger than needed for escapement and subsistence requirements, then the commercial harvest rates can be adjusted through the use of emergency orders. Emergency order announcements are broadcast during the fishing season over various radio stations throughout the drainage.

The department operates several projects to obtain the biological information necessary for management of the salmon runs. Additional programs are operated by federal agencies, native organizations, and fishermen's groups. In 1994, the following projects were implemented:

1. Test Fishing. Department test fishing projects located at South, Middle and North Mouths utilized set gillnets to capture chinook, chum, and coho salmon in the delta area to determine run timing and to provide an index of abundance for annual comparisons between years. Contract fishermen operated fish wheels as part of test fishing projects at Manley and Nenana on the Tanana River. To index the fall chum salmon run, Bering Sea Fishermen's Association (BSFA) funded test fish wheels on the north and south banks of mainstem Yukon River near Tanana village.

2. Tributary Sonar Projects. Hydroacoustic equipment was operated in the Anvik River (summer season), Sheenjek River (fall season) and Toklat River (fall season) to enumerate chum salmon escapements. The United States Fish and Wildlife Service (USFWS) operated hydroacoustic equipment in the Chandalar River to estimate fall chum salmon escapement.

3. Main River Sonar Projects. Hydroacoustic equipment was operated in the mainstem Yukon River near Pilot Station to obtain inseason estimates of fish passage by species. Additionally, a main river sonar project still in the developmental stage was operated in cooperation with DFO on the Yukon River near Eagle.

4. Stock Separation and Age Composition. Scale and vertebra samples were collected from salmon harvest and escapement to determine age composition of the 1994 runs. Scale samples of chinook were also utilized for the purpose of allocating the harvest to region of spawning using scale pattern analysis techniques.

5. Data Processing of Commercial Fishery Statistics. Lower Yukon Area commercial harvest and effort data were obtained from fish tickets at the Emmonak field office. Similarly, Upper Yukon Area commercial harvest and effort data were collected at the Fairbanks office.

6. Aerial and Ground Surveys of Salmon Spawning Streams. Aerial surveys were flown to monitor spawning escapements in major index streams. Additionally, fall chum salmon foot surveys were conducted at selected areas in the Tanana River drainage.

7. Tagging Project. A salmon tagging project was conducted (chinook and fall chum salmon) by DFO to estimate harvest rates and total escapement in the Canadian mainstem Yukon River.

8. Tower Projects. Tower counting projects were conducted by Sport Fish Division on the Chena and Salcha Rivers to estimate chinook salmon escapement to those streams. A counting tower was operated on the Nulato River by Tanana Cheifs Conference (TCC), BSFA, and the department to estimate chinook and summer chum salmon escapement. The Alaska Cooperative Extension Service and BSFA operated a tower to estimate summer chum salmon escapement in Kaltag River.

9. Weir Projects. USFWS operated weirs on the East Fork Andreafsky and Gisasa Rivers to estimate chinook and summer chum salmon escapement. The department operated a weir on Barton Creek in the Toklat River drainage to estimate coho and fall chum salmon escapement.

10. Subsistence Surveys. Subsistence surveys were conducted to estimate subsistence salmon fishery harvest and effort throughout the Yukon Area.

CFMD permanent full time staff assigned to the Yukon Area include eight positions: two area management biologists, two assistant area management biologists, three research project biologists, and one field office assistant. In addition, approximately 30 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 Division of Fish and Wildlife Protection (FWP), Department of Public Safety.

State of Alaska funding for the Yukon Area salmon management and research program from July 1, 1993 through June 30, 1994 approximated $1.1 million. An additional $626,100 was allocated by the Federal Government to address research issues and travel associated with U.S./Canada Yukon River salmon treaty negotiations.

Commercial Fishery

The first recorded commercial salmon harvest in the Alaskan portion of the Yukon River drainage occurred in 1918. Relatively large harvests of chinook, chum, and coho salmon were taken during 1919-1921 (ADF&G 1985). The majority of these harvests were taken outside of the river mouth since catch restrictions were imposed within the river. The early commercial fishery met opposition and was closed during 1925-1931 because of concerns for the existing large subsistence fishery. Commercial fishing for chinook salmon was resumed at a much lower level in 1932, and a fishery has occurred annually since then. Commercial harvests of chum and/or coho occurred during 1918-1921, 1952-1954, 1956, and since 1961.

Chinook salmon commercial harvests began increasing during the late 1970s (Appendix A.4), because of increased efficiency of commercial fishermen and, in some years, due to above average run strength. Concern for possible over-exploitation resulted in reduced harvests levels during the late 1980s.

Summer chum salmon commercial harvests increased greatly during the 1980s as a result of regulation changes (e.g. mesh size specifications and earlier openings), greater availability of processing facilities and tendering, generally higher prices paid to fishermen, development of Japanese markets, and the occurrence of several very large runs (Appendix A.5). In February 1990, the Board of Fisheries established a river-wide guideline harvest range of 400,000 to 1,200,000 summer chum salmon. The board established guideline harvest ranges for districts and subdistricts using the 1975-1989 average harvest shares.

The commercial fishery for fall chum salmon began in 1961. Fall chum salmon commercial harvests increased beginning in 1979 (Appendix A.6). Observations of low spawning escapements in the mid-1980s resulted in more conservative management and reduced commercial harvests since 1986.

Coho salmon returns to the Yukon River are of lesser magnitude than fall chum salmon and are taken incidentally to the fall chum salmon commercial fishery. However, there has been a trend of increasing coho salmon harvests since 1984 (Appendix A.7).

Pink salmon commercial harvests have been very small due to an extremely limited market for Yukon River pink salmon to date.

The majority of commercial fishermen are residents of the Yukon River drainage. The relatively recent development of the commercial salmon fishery has enabled many area residents to obtain a cash income. In many cases the cash income provides a means for the area residents to maintain a subsistence life-style. Income earned from commercial fishing is often used to obtain hunting and fishing gear (e.g. nets, boats, and motors) utilized for subsistence activities.

Most fishermen operate outboard powered skiffs of 18 to 24 feet in length and do not use gillnet rollers or power reels of any type. In recent years, there has been a large increase in the use of larger outboard motors, VHF and CB radios, as well as fish finders, which has increased the efficiency of the fleet.

The majority of the salmon harvest is presently processed as a fresh or frozen product in contrast to earlier years when canning and salting were of greater importance (Appendix A.10). Salmon are processed at shore-based or floating operations, or transported by aircraft outside the area for processing. Production of salmon roe (purchased directly from fishermen) is prevalent in the Upper Yukon Area. Fish ticket reports containing a

breakdown of salmon roe by species other than chum salmon have only been available since 1990. It is certain that relatively small amounts of chinook and coho salmon roe were sold prior to this time, but were included as summer chum and fall chum salmon roe, respectively. A few chinook salmon are sold to local markets. Small quantities of chinook and fall chum salmon are smoke-cured and sold as "strips", a local specialty product. In addition, undocumented quantities of chum and coho salmon taken commercially are dried and sold as dog food.

Lower Yukon Area

Since the onset of the commercial salmon fishery in 1918, the majority of the Yukon River harvest has occurred in Districts 1 and 2 where fishing and processing effort is concentrated and flesh quality is optimal. With the advent of the Commercial Fisheries Limited Entry (CFEC) program in 1976, fishing effort in terms of the number of participants stabilized, but efficiency has increased. From 1984 through 1993, an average of 707 CFEC gillnet permits have been issued annually (Appendix A.8.). Lower Yukon Area permit holders may operate either set or drift gillnets, and may transfer between Districts 1, 2, and 3. Set gillnets are commonly used in coastal areas near the river mouth, but drift gillnets are the predominant gear type elsewhere.

During the 1954-1960 period, a 65,000 chinook salmon quota was in effect for the Alaskan portion of the river. Of this total, not more than 50,000 fish could be taken below the mouth of the Anuk River (river mile 63), 10,000 fish in the area between the mouths of the Anuk and Anvik Rivers and 5,000 fish upstream from the Anvik River. These chinook salmon harvest quotas were eliminated for Districts 1 and 2 in 1960. From 1961 through 1980, the fishery was regulated by scheduled weekly fishing periods with the season opened by a published regulatory date. Fishing time during the chinook salmon season was allowed for four days a week during 1961-1967, but was reduced to: 3-1/2 days a week beginning in 1968, 3 days a week in 1974, and 2-1/2 days a week in 1977. From 1982-1986, fishing periods of 24 hours duration generally occurred twice weekly. During 1987, 12-hour periods were introduced. Since 1989, commercial periods with unrestricted mesh size directed at chinook salmon have been 6, 9, or 12 hours in duration. Since 1981, a 60,000 to 120,000 chinook salmon guideline harvest range has been in effect for Districts 1 and 2 combined (Table 1). In District 3, a guideline harvest range of 1,800-2,200 chinook salmon was established in 1979.

Sale of other species of salmon captured during the chinook salmon season, excluding the 1920s, has been allowed only since 1967. The incidental catch of summer chum salmon was limited during the chinook salmon season in the late 1960s as fishermen could use only gillnets of eight inch minimum stretched mesh. However, beginning in 1970, each fisherman could substitute up to 50 fathoms of gillnet of any mesh size in Districts 1 and 2. In 1973, all mesh size restrictions were lifted during the chinook salmon season (from June 1 through early July).

A regulation was adopted in 1973 which specified that gillnets of six inch mesh size or less could be fished after a specified date in early July in Districts 1 and 2. Prior to the 1976 fishing season, a regulation was adopted which established a flexible range of dates from June 27 to July 5 in Districts 1 and 2, and July 5-15 in District 3, after which only gillnets of six inch maximum mesh size could have been used. Effective for the 1985 fishing season, a regulation was adopted which eliminated specific dates and implemented emergency order authority for establishing restricted mesh size periods (six inch maximum mesh size) in Districts 1, 2, and 3. Additionally, the Board of Fisheries issued a directive to the department to provide for summer chum salmon directed fishing periods prior to the end of the chinook salmon season if the summer chum salmon run was average or better in strength.

Similar to chinook salmon management, fishing time during the fall chum salmon season has gradually been reduced since the 1960s in Districts 1, 2, and 3. From 1983 though 1985, two 12-hour fishing periods per week were allowed in Districts 1 and 2, except that fishing time remained at two days per week for setnet fishermen in the coastal Setnet Only Area of District 1 (Figure 19). More commercial fishing time has been allowed in the coastal Setnet Only Area because of the influence tides have on fishing efficiency. Additionally, a 7-10 day season closure during the beginning of the fall chum salmon run in Districts 1, 2, and 3 was established in 1983.

Fishing time was further restricted in 1986 through implementation of the Yukon River Fall Chum Salmon Management Plan following observations of low spawning escapements from 1982-1984 and in anticipation of poor returns of fall chum salmon during 1986-1988. A season closure of July 15 was established in the Lower Yukon Area to protect the early portion of the fall chum salmon run and to provide more time to evaluate run strength. Additionally, the guideline harvest range was reduced to 0-110,000 fall chum salmon for Districts 1, 2, and 3. Under this management plan there was a possibility of no commercial fall season fishery as occurred during 1987. During 1986, 1988, and 1989, fishing period duration was restricted to as short as 12 hours in the Setnet Only Area and six hours in the remainder of the Lower Yukon Area. The current guideline harvest range of 60,000 to 220,000 fall chum salmon for Districts 1, 2 and 3 combined was established in 1990. No commercial fishing has been allowed in the lower river during the fall season since 1991.

Upper Yukon Area

Prior to 1974, the Yukon River drainage above the confluence of the Koyukuk River was designated as a single district (District 4). By regulation, commercial fishing was allowed 7 days per week until the quotas of 2,000 chinook salmon and 2,000 fall chum and coho salmon combined were taken. These quotas were established for the purpose of allowing a very limited commercial utilization to continue, which had occurred for many years. Fish wheels and set gillnets are the legal gear types for commercial salmon fishing in the Upper Yukon Area. Fishermen may not transfer between districts in the Upper Yukon Area.

In recognition of the developing upriver commercial fishery and the desire of fishermen in the upper portion of the drainage to be allowed increased participation, the Alaska Board of Fish and Game adopted several major regulation changes prior to the 1974 fishing season. District 4 was reduced in size and two new Districts, 5 and 6, were defined. Additionally, the weekly commercial salmon fishing period was reduced from 7 to 5 days per week. Regulations also provided for increases in the upriver commercial harvests: District 4: 1,000 chinook salmon and after August 15, 10,000 chum and coho salmon combined; District 5: 3,000 chinook salmon and after August 15, 25,000 chum and coho salmon combined; and District 6: 1,000 chinook salmon and after August 15, 15,000 chum and coho salmon combined.

Since 1974, the Alaska Board of Fisheries has enacted a number of major regulation changes in the Upper Yukon Area. Weekly fishing periods were reduced in all districts (except the upper portion of District 5) from 5 to 4 days per week, and split-period (two 48-hour periods) fishing schedules were established in 1980. Chinook salmon, and fall chum and coho salmon combined quotas were replaced by flexible guideline harvest ranges beginning in 1979. The current chinook salmon guideline harvest ranges for Districts 4, 5, and 6 were established in 1981.

District 4 boundaries were redefined and new subdistricts created to allow for the possibility of stock-specific management of fall chum and coho salmon in 1979. New subdistricts within District 5 were created in 1981. The combined fall chum and coho salmon guideline harvest ranges were reduced in 1986. In 1990, combined fall chum and coho salmon guideline harvest ranges were increased.

In the spring of 1988, the Alaska Board of Fisheries met in special session to take testimony on current and proposed salmon management practices on the Tanana River. This special session was a result of large scale illegal salmon and salmon roe sales documented in 1987 in portions of Districts 5 and 6. During this special session, the board adopted regulations for District 6 which included:

1. Reduced allowable commercial and subsistence fishing time from two 48-hour periods per week to two 42-hour periods per week.

2. Specified that there would be no more than one 42-hour commercial fishing period per week during the fall season.

3. Required subsistence fishing permits for the entire Tanana River drainage and established inseason reporting requirements for a portion of Subdistrict 6-B and all of Subdistrict 6-C.

4. Expanded rights of inspection of processing plants by enforcement personnel.

The board further instructed the staff to manage District 6 on the basis of existing guideline harvest ranges, indicating that these guidelines are to be exceeded only if it can be determined that doing so would not jeopardize meeting subsistence and spawning escapement requirements. Based on concerns for fall chum salmon spawning escapements in the Toklat River, the board in February 1990 reduced the Subdistricts 6-A and 5-A commercial fishing schedule to no more than one 24-hour period per week during the fall fishing season.

In February 1990, the Board of Fisheries adopted the Yukon River Summer Chum Salmon Management Plan and established guideline harvest ranges for summer chum salmon. In the Upper Yukon Area, summer chum salmon flesh is difficult to market because of the high cost of transportation and generally advanced state of sexual maturity, however, summer chum salmon roe quality is judged by the industry to be excellent. This has resulted in increased sales of summer chum salmon roe since 1980. Because of the large Subdistrict 4-A summer chum salmon roe fishery and difficulty in estimating the associated harvest, the guideline harvest range for that subdistrict was established as 113,000 to 338,000 summer chum, or the equivalent roe poundage of 61,000 to 183,000 pounds or some combination of fish and pounds of roe. In addition, regulations were adopted which stipulated that no more than 183,000 pounds of summer chum salmon roe from Subdistrict 4-A harvests may be sold annually. However, if the roe cap is reached, fishing effort may continue, but only the sale of chum salmon in the round will be allowed. The board also required that all salmon caught by CFEC permit holders during commercial fishing periods in Subdistrict 4-A be reported in numbers on fish tickets.

Carcasses resulting from roe extraction for commercial sales appear to be fully utilized for subsistence purposes except for District 4 summer chum harvests since 1980. A portion of the carcasses resulting from this harvest is utilized for subsistence purposes (primarily for dog food), however, some wastage is suggested by the large difference between the estimated commercial harvest and the reported subsistence use during some years. District 4 commercial related summer chum salmon harvests were estimated from 1980-1988 based on fish ticket sales, estimated sex ratio as documented by the department operated test fish wheel located near Kaltag from 1981 to 1985, and an estimated average roe weight of one pound per female chum salmon. The one pound per female average roe weight was estimated based on the subjective judgment of processors and fishermen.

In 1989, a comprehensive study was conducted in District 4 to collect more accurate average roe weight per female and sex ratio data to estimate the total commercial related summer chum harvest (Sandone 1991). The average roe weight per female for the 1989 season was calculated to be 0.9 pounds. A similar average roe weight per female was estimated in samples collected in 1988. Since 1989, the department has sampled commercial

catches from fish wheels and gillnets in upper river districts to estimate the mean proportion of females and to estimate average roe weights per female.

Fish wheels are the primary type of gear for harvesting summer chum salmon because of local fishing conditions and the efficiency of the gear. Fish wheels account for roughly 95% of the commercial harvest of this species in the Upper Yukon Area.

Subsistence Fishery

Subsistence fishing occurs throughout most of the Yukon Area. Historically, subsistence salmon harvests were very large. Subsistence salmon harvests declined through the 1970s (ADF&G 1985). However, beginning in the early 1980s, due, in part, to a renewed interest in sled dogs, the number of dogs within the Yukon Area has increased. Coincidentally, there has been an increase in the subsistence salmon harvest. In addition, the human population along the river is increasing, which may also relate to increased subsistence harvests.

Subsistence fishermen operate gillnets in the main rivers and coastal marine waters. Fish wheels are also utilized by subsistence fishermen primarily in the upper Yukon and Tanana Rivers. Beach seines are occasionally used in tributaries near spawning grounds to catch schooling or spawning salmon. Many people who fish for commercial purposes also operate as subsistence fishermen. In order to enforce commercial fishing regulations, it is necessary to place some restrictions on the subsistence fishery. However, throughout the fishing season, substantially more fishing time is allowed for subsistence than for commercial purposes.

In general, prior to 1993, subsistence fishing has been managed and regulated to coincide with commercial fishing periods when the commercial fishing season is open. However, regulations adopted in 1993 and 1994 separate subsistence and commercial fishing periods in Districts 1, 2, 3, and Subdistrict 4-A. Subsistence fishing opens 12 hours after the closure of a commercial period and ends 18 hours before the start of the next commercial opening in these areas. In all districts, additional subsistence only fishing time may be allowed during the commercial fishing season. Typically, subsistence fishing is allowed seven days per week in Districts 1 through 5, and for two 42-hour periods per week in District 6, prior to and following the commercial fishing season.

In February 1990, the Alaska Board of Fisheries closed the lower Kantishna River and the Toklat River drainage to subsistence fishing for fall chum salmon in an effort to rebuild the Toklat River spawning stock. However, as a result of a request from Kantishna River subsistence fishermen for injunctive relief, the Alaska Superior Court provided for subsistence fishing to resume in the Kantishna River in 1991. In February 1992, the board allowed subsistence salmon fishing, but only with fish wheels equipped with liveboxes, and with the stipulation that all chum salmon must be returned alive to the water.

There is usually little intentional wastage of the fish taken for subsistence purposes. A major portion of human food fish are frozen, dried or smoked for later consumption. Wet weather may cause drying fish to spoil. Chinook salmon are used mainly for human consumption. However, while chum and coho salmon are also used for human consumption, large numbers are also taken to feed sled dogs.

Comprehensive annual surveys of the subsistence salmon fishery were initiated by the department in 1961. Survey methodology and technique have varied from year to year, however, it is felt that the estimates reflect harvest trends. Normally, subsistence harvest data collected through the use of postseason household interviews, catch calendars, mail out questionnaires, and telephone interviews have been expanded for unknown fishing families or households on a community basis and expanded community harvests summed for district and total

drainage estimates on an annual basis (Walker et al. 1989). Current methodology for estimating subsistence salmon harvests can be found in other reports (Bromaghin and Hamner 1993 and Holder and Hamner *inpress*).

Beginning in the early 1970s, subsistence salmon fishing permits have been required in three sections of the Upper Yukon Area as follows: 1) the Yukon River near the Haul Road bridge between Hess Creek and Dall River, 2) the upper portion of District 5 between the upstream mouth of Twenty-Two Mile Slough and the U.S./Canada border, and 3) the Tanana River near Fairbanks. Beginning in 1988, subsistence salmon fishing permits have been required for the entire Tanana River drainage. Households which fish in areas requiring a permit are required to obtain a permit, document their catch, and return the permit upon expiration. Historical subsistence permit catch information are summarized in Appendices D.6 and D.7.

The majority of the subsistence salmon harvest is taken in the Upper Yukon Area which is illustrated by the historical catch data presented in Appendices D.1 to D.4. It should be noted that the practice of keeping sled dogs is much more common in the Upper Yukon Area and it is considered a major factor affecting subsistence use. It is also likely that the sale of subsistence-caught salmon roe (legal from 1974 through 1977) increased subsistence chum salmon harvests in the Upper Yukon Area above normal use levels during that period. Additionally, estimates of illegal sales of fall chum and coho salmon, and salmon roe in Districts 5 and 6 in 1987 were included with subsistence harvests, because there was no fall commercial fishing season allowed that year.

Since the development of the salmon roe fishery in the Upper Yukon Area, distinguishing between subsistence and commercial harvests has been made more difficult. The reason for this is that fish harvested to produce commercial roe sales are also utilized for subsistence purposes. It is probable that the unmarketable carcasses have simply replaced a large portion of the subsistence harvest. In 1990, the decision was made to separate harvests that produce commercial salmon roe sales from subsistence harvests in total utilization tables because of the difficulty in assigning a single use to the harvest. The commercial harvest is reported as fish sold in the round only. Estimated harvests of female salmon to produce roe sales, and the incidental harvest of summer chum males in District 4 are reported as commercial-related harvest. The harvest of males in salmon roe fisheries other than the summer chum salmon fishery in District 4 are believed to be either sold or retained for subsistence use. Subsistence surveys and personal interviews from 1986 through 1994 were conducted so as to estimate the number of summer chum salmon taken by standard subsistence fishing means (not related to commercial fishing). The proportion of the summer chum salmon subsistence harvest taken unrelated to commercial fishing in 1986 was used to estimate District 4 subsistence harvests from 1980 through 1985. The reported subsistence harvest was reduced in some districts and years (Appendix A.20-A.23) based upon assumptions of when and where fish harvested to produce commercial roe sales were included in reported subsistence harvests.

The commercial-related salmon harvest can be viewed as utilization for both commercial and subsistence purposes. To avoid double counting, a separate commercial related harvest estimate can be summed with the subsistence harvest estimate to provide the total potential subsistence use, or it can be summed with the commercial harvest for total commercial utilization.

Personal Use Fishery

Personal use fishing is very similar to subsistence fishing, but does not have subsistence fishing's statutory priority over other uses. Under the statutes and regulations that were in effect from 1988 until July 1, 1990, Alaska residents who lived in non-rural areas were prohibited from participating in subsistence fishing and subsistence fisheries were limited to rural areas. In those years, non-rural residents harvested salmon under personal use fishing regulations, which could apply to both rural and non-rural areas.

In the McDowell case, which took effect July 1, 1990, the Alaska Supreme Court struck down the rural residency requirement for subsistence participation, ruling that the Alaska Constitution prevented allocation of fish and game to people based on the location of their residence. The result was that every resident of the State of Alaska became eligible for subsistence fishing and, according to a lower court ruling, subsistence fisheries were not limited to rural areas.

During a special session in 1992, the legislature revised the subsistence law to once again allow the Board of Fisheries and Game to divide the state into subsistence or nonsubsistence zones. Inside the nonsubsistence areas, personal use fishing was authorized, but subsistence fisheries were not. The 1992 law mandated customary and traditional subsistence fisheries in the rest of the state. All state residents were eligible to participate in all subsistence or personal use fisheries. The Fairbanks Nonsubsistence Area, which is centered around the Fairbanks North Star Borough, was the only nonsubsistence area created by the Joint Boards of Fisheries and Game in the Yukon River Area.

In October 1993, a state superior court ruled in the Kenaitze case that the nonsubsistence area provision of the 1992 subsistence law was unconstitutional because it discriminated between different areas of the state. Although the state was initially granted a stay of the effect of that decision pending appeal to the supreme court, the stay was vacated on April 11, 1994. With the stay lifted, the state was required to provide for subsistence fishing in nonsubsistence areas during the 1994 season.

Canadian Harvests of Yukon River Salmon

Annual catch data from the Canadian portion of the Yukon River drainage has been provided by DFO since 1962.

The first recorded commercial salmon harvest in the Yukon River drainage occurred in 1903 when 70,000 pounds of chinook and fall chum salmon were taken in Yukon Territory, Canada (ADF&G 1985). Records of Canadian commercial utilization of Yukon River salmon indicate a fishery occurred sporadically from 1903 to 1917 and continuously from 1918 to 1947 (Appendix A.3). No harvest records are available from 1948 to 1957. Since 1958 harvest records document the annual catch by species, and since 1961, by user group.

In the Canadian portion of the Yukon River drainage there are commercial, Aboriginal, domestic, and sport fisheries for salmon. The Aboriginal and domestic fisheries are in some ways comparable to subsistence and personal use fisheries in Alaska, although the Aboriginal fishery is only open to native people. All of the commercial salmon harvest in Canada occurs on the mainstem Yukon River. Canadian salmon harvests in the Porcupine River drainage are currently limited to an Aboriginal fishery.

U.S./Canada Treaty Negotiations and Interim Agreement

In the spring of 1985, the governments of the United States and Canada ratified the Pacific Salmon Treaty. One provision of the treaty required the two countries to begin negotiations on Yukon River salmon stocks which spawn in Canada. Negotiations were initiated in 1985.

The U.S. delegation is led by the Chief Negotiator from the U.S. Department of State, representatives of ADF&G, USFWS, and National Marine Fisheries Service (NMFS), and members of the public who represent subsistence and commercial fishing interests along the Yukon River.

In the course of these negotiations over the years, both sides have agreed that spawning escapements of chinook and fall chum salmon in the Yukon River drainage in Canada had declined, were substantially below levels necessary to achieve optimum sustained yield, and needed to be rebuilt. It will require both sides working together for rebuilding to be successful.

A six year stabilization program, ending after the 1995 season, has been agreed to for chinook salmon in the mainstem Yukon River in Canada. The objective of the program is to stabilize the stock by achieving a spawning escapement of 18,000 or more chinook salmon for each year through 1995. This stabilization spawning objective was established to prevent further decline in chinook salmon escapements. During the stabilization period, Canada will manage all chinook salmon fisheries on the mainstem Yukon River within a guideline harvest range of 16,800 in years of weak returns to 19,800 in years of strong returns, for all user groups combined. A rebuilding plan for Canadian spawned chinook salmon needs to be developed prior to the 1996 season for the purpose of achieving a more optimal spawning escapement level in the future. The Joint Technical Committee (JTC), made up of U.S. and Canadian biologists, has recommended a spawning escapement objective of 33,000 to 43,000 chinook salmon as the long term goal of a rebuilding program.

A twelve-year rebuilding program, ending after the 2001 season, has been agreed to for fall chum salmon which spawn in the mainstem Yukon River drainage in Canada. The objective of the program is to rebuild the stock by achieving a spawning escapement of greater than 80,000 fall chum salmon for all brood years by the year 2001. The program will endeavor to rebuild the stronger brood years in one cycle and the weaker brood years in three cycles in equal increments. During the rebuilding program, Canada will manage all fall chum salmon fisheries on the mainstem Yukon River in Canada within a guideline harvest range of 23,600 in years of weak returns to 32,600 in years of strong returns. The U.S. will endeavor to deliver to the Canadian border on the mainstem Yukon River, the number of chum salmon necessary to meet the spawning escapement objective for that year in the rebuilding program, and provide for a harvest in Canada within the Canadian guideline harvest range. For 1995, the agreement is to endeavor to deliver between 103,600 and 112,600 fall chum salmon to the Canadian border on the mainstem Yukon River.

The two countries have agreed not to initiate new fisheries on the Porcupine River for a number of years and to consider rebuilding and improving management of Canadian Porcupine River fall chum salmon stocks.

An innovative development in these negotiations was the idea of establishing a special fund for salmon restoration and enhancement work. This would be targeted on the Canadian spawned chinook and fall chum salmon stocks, but would be intended for the benefit of fishermen on both sides. The U.S. federal government would make annual contributions to this fund based on an estimate of the number of Canadian-spawned salmon in the Alaska catch, the value of those fish, and an adjustment factor called "deeming," which takes into account the U.S. entitlement to some of the salmon that spawn in Canada, due to our role in the production and conservation of those stocks.

There are a number of issues that remain to be resolved, with the two major areas being: 1) catch sharing from the stocks that spawn in Canada after rebuilding is completed, and 2) the deeming issue, and related to that, the determination of the U.S. contribution to the Restoration and Enhancement Fund.

During the last year there was realization that, while reaching a comprehensive long term agreement remained a formidable challenge given some of the key unresolved issues, there would be benefits that could be realized by more formally implementing the areas of agreement to date. Work proceeded during 1994 to draw together the agreed elements to date into an interim agreement. A negotiation session was held in Whitehorse, Yukon Territory, Canada in early December 1994 to complete final drafting of this interim Yukon River Agreement,

which has taken the form of an exchange of diplomatic notes with two attachments. The first contains the body of the interim agreement and is based upon the areas of agreement to date in these negotiations. The second contains some preamble from the former Protocol draft not needed for an interim agreement, and those elements deferred for further negotiation while the interim agreement is in effect. Formal signing and exchange of the diplomatic notes took place in February 1995.

There will be a Yukon River Panel that will implement the interim Yukon River Agreement. The Panel will also administer the Yukon River Salmon Restoration and Enhancement Fund. The Panel will consist of a U.S. side and a Canadian side. The two sides will need to agree on a decision for an action to be taken. The U.S. side of this Yukon River Panel will consist of Alaskan Yukon River fishermen, Alaska state government officials, and U.S. federal government officials. There will be an advisory group of Alaskan Yukon River fishermen providing input to the U.S. side. There will also be a JTC providing support to the Panel. The focus of the Panel will be the salmon stocks that spawn in the Canadian portion of the Yukon River drainage. The Panel will make its recommendations to the management agencies in Alaska and Canada.

The Interim Agreement will be in place through 1997, with an option to extend if both sides desire. This will allow for a try-out period to get underway with a Yukon River Panel and a Yukon River Salmon Restoration and Enhancement Fund so that we can see whether this process works effectively, without making a longer term and more formal treaty commitment. The Panel will likely meet two or more times per year to review information, make recommendations to the management agencies, and administer the Fund. Negotiations will likely resume on the unresolved issues for the long term agreement after the Panel process has had a chance to get underway.

Marine Harvests of Yukon River Origin Salmon

High Seas Salmon Gillnet Fisheries

Chinook salmon of western Alaska origin were intercepted yearly by the Japanese mothership and landbased gillnet fisheries through 1991 (Appendix A.27). Current estimates indicate an average of 141,000 chinook salmon were taken during 1975-1983. Yukon River chinook salmon comprised the majority of western Alaska stocks taken in the Bering Sea mothership catches. In 1980, a total of 438,000 western Alaska chinook salmon was estimated to have been taken in these fisheries which exceeded the domestic commercial catch in western Alaska for that year.

Until 1988, the Japanese mothership salmon fishery operated in parts of the U.S. Exclusive Economic Zone (EEZ, waters from 3 to 200 miles of the U.S. coast). Beginning in 1988, the mothership fishery occurred outside of the EEZ. In 1990, the Japanese mothership fishery was converted to a "nontraditional land based salmon fishery". The nontraditional land based salmon fishery ended in 1991. Estimates of the numbers of western Alaska chinook salmon in this harvest are not available.

Foreign, Joint-Venture, and U.S. Domestic Groundfish Fisheries

Information on incidental salmon catches in offshore fisheries is not complete for recent years (Appendix A.27). Foreign groundfish fisheries in the EEZ ended in the Gulf of Alaska in 1985 and in the Bering Sea in 1987. The joint-venture groundfish fishery ended in the Gulf of Alaska in 1988 and ended in the Bering Sea in 1990. These fisheries were replaced by U.S. groundfish fisheries.

Due to the lack of an observer program, the numbers of salmon taken by the U.S./domestic groundfish fleet is not known through 1989. NMFS initiated an observer program beginning in 1990. In 1993, U.S. groundfish fisheries captured 39,500 chinook salmon in the Bering Sea and Aleutian Islands area and 24,700 chinook salmon in the Gulf of Alaska. Additionally, 242,504 other salmon species were taken, of which a majority were chum salmon. The groundfish fishery harvest for 1994 is not available.

Alaska Peninsula

The majority of chum salmon captured during June in the Unimak and Shumagin Islands area, located on the south side of the Alaska Peninsula, are bound for Bristol Bay, Asia, and the AYK Region, which includes the Yukon Area. The stocks contributing to the harvest in this fishery have been described by several studies, including a tagging study in 1987 and a 1983 scale pattern analysis study. In 1993 and 1994, a genetic stock identification study was conducted using fishery samples from the South Unimak area. Results of this study indicated stock contribution was similar to the 1987 tagging study. Sockeye salmon is the target species in the June fishery, but relatively large incidental catches of chum salmon are made. The sockeye salmon harvest is regulated by a quota that is annually adjusted according to the Bristol Bay sockeye salmon forecast.

For the 1994 season, the Board of Fisheries retained a harvest cap of 700,000 chum salmon during the June fishery. In addition, the board allowed the department to open the fishing season and establish fishing periods based on when sockeye to chum ratios were favorable in an effort to reduce incidental chum catches. A total of 1,461,000 sockeye and 582,000 chum salmon was taken in the June fishery in 1994. The chum salmon harvest was 17% lower than the harvest cap.

Norton Sound

A commercial harvest of 5,285 chinook salmon was taken in coastal Norton Sound waters in 1994. The previous 5-year average harvest was 6,837 fish. Some Yukon River bound chinook salmon are known to be intercepted by this fishery.

Salmon Spawning Escapement

An essential requirement for management of the Yukon River salmon fisheries is documentation of annual salmon spawning escapements. Such documentation provides for:

1. Determination of appropriate escapement levels or goals for selected spawning areas or management units;

2. Evaluation of escapement trends;

3. Evaluation of the effectiveness of the management program, which in turn forms the basis for proposing regulatory changes and management strategies; and

4. Evaluation of stock status for use in projecting subsequent returns.

Escapement Assessment Methods

The Yukon River drainage is too extensive for complete comprehensive escapement coverage of all salmon spawning streams. Consequently, low-level aerial surveys from single-engine, fixed-wing aircraft form an integral component of the escapement assessment program. Nevertheless, comprehensive assessment studies employing such techniques as intensified ground surveys, mark-and-recovery programs, counting towers, weirs, and hydroacoustics are also conducted. Regardless of the method utilized, the overall objective of escapement enumeration in the Yukon Area is to determine abundance (or often indices of relative abundance), timing, and distribution of spawning salmon populations throughout the drainage. Specific objectives may vary by individual project, while individual projects may vary by year depending upon fiscal and personnel constraints.

There are both advantages and disadvantages related to each type of assessment method. The more comprehensive studies tend to provide estimates of total salmon abundance and are often less dependent upon weather and water conditions. However, due to costs associated with staffing and operating the more sophisticated enumeration projects, relatively few have been initiated over the years and have been restricted primarily to major spawning streams.

In addition, a department mainstem sonar project has been operational since 1986 to estimate total salmon passage by species through the lower Yukon River at river mile 123 near Pilot Station. Hydroacoustic techniques are used to estimate passage of fish and a comprehensive test drift gillnet program is conducted to apportion sonar counts to species. Another study designed to estimate salmon abundance by species in the Yukon River has been operated annually by DFO since 1982 (excluding 1984) near Dawson in Canada. That project involves a comprehensive mark-and-recovery study designed to estimate the abundance of chinook and chum salmon entering the Canadian portion of the mainstem Yukon River.

In contrast to the more comprehensive assessment projects, perhaps the greatest advantage of aerial surveys is the cost-effectiveness of obtaining escapement information throughout an extremely vast area, most of which is remote. Another advantage to aerial surveillance is that real or potential habitat-related problems arising from natural or man-induced causes can be readily identified. Among the disadvantages are that results may be highly variable if non-standardized procedures are used.

Variability in aerial survey accuracy is dependent upon a number of factors such as weather and water turbidity, timing of surveys with respect to peak spawning, aircraft type, survey altitude, experience of both pilot and observer, and species of salmon being enumerated. It is recognized that aerial estimates are lower than actual stream abundance due to these factors. Further, peak abundance measured by aerial survey methods is significantly lower than total spawning abundance due to the die-off of early spawners, and arrival of fish after the survey. Aerial estimates in a given stream may demonstrate a wide range in the proportion of fish being enumerated from year to year. Peak aerial counts, however, can serve either as indices of relative abundance for examination of annual trends in escapement or as a basis from which to estimate total escapement using base year data and established expansion factors. Aerial survey results may also be useful in apportioning tributary spawning distribution to a mainstem total escapement estimate obtained from sonar, weir or tower counts.

Aerial escapement estimates are obtained from as many spawning streams as possible within the confines of fiscal, personnel, and weather constraints. However, selected spawning streams or "index areas" which represent a larger geographic area have been identified and receive highest priority. Index areas have been designated due to their importance as spawning areas and/or by their geographic location with respect to other unsurveyable salmon spawning streams in the general area.

Escapement Goals

Biological escapement goals (BEG's) have been established for several Yukon River drainage salmon spawning streams or areas (Appendix E.1). Most of these goals represent the minimum number of desired spawners considered necessary to maintain the historical yield from the stocks and are based upon historical performance, i.e., they are predicated upon some measure of historic averages. Establishment of escapement goals based upon a rigorous analysis of maximum sustained yield is not possible at this time due to the nature of the Yukon River mixed stock fisheries, lack of stock identification data, and consequential inability to reconstruct total inriver stock-specific returns. Consequently, most escapement goals are based upon aerial survey index estimates which do not represent total escapement but do reflect annual spawner abundance when using standard survey methods under acceptable survey conditions. However, the goals established for Anvik River summer chum salmon and selected fall chum salmon spawning stocks represent the desired minimum target for total spawning abundance; being based upon a somewhat more comprehensive escapement data base.

In order to gain greater understanding of escapement requirements and fluctuations in run size by spawning stocks, several specific projects are underway. Stock composition modeling is being utilized for chinook salmon based on scale pattern analysis. In addition, genetic stock identification using electrophoretic techniques is being examined as a tool for identifying discrete stocks of chinook and chum salmon in the mixed stock Yukon River fisheries.

AREA SALMON REPORT 1994

Following several years of decline, chum salmon returns to the Arctic-Yukon-Kuskokwim (AYK) Region were critically weak in 1993. Regulations to rebuild and conserve AYK chum salmon runs were adopted at the Alaska Board of Fisheries meeting held in Anchorage in March 1994. Because of the projection of below average to critically low summer and fall chum salmon runs in 1994, a very conservative management plan was developed. However, the summer and fall chum salmon runs in 1994 were larger than projected preseason. Productivity and survival from the primary brood years appeared to be much higher than that observed in recent years.

Alaskan Commercial Fishery 1994

In 1994, a total of 197,172 salmon in the round and 109,015 pounds of unprocessed salmon roe were sold in the Alaskan portion of the Yukon River drainage. The catch was composed of 113,137 chinook, 80,284 summer chum, 3,631 fall chum, and 120 coho salmon (Table 4). In addition, 2,394 pounds of chinook roe, 97,757 pounds of summer chum roe, 3,276 pounds of fall chum roe, and 5,588 pounds of coho roe were sold by commercial fishermen.

The total estimated commercial harvest including the estimated harvest to produce roe sold was 113,840 chinook, 258,741 summer chum, 7,999 fall chum, and 4,451 coho salmon (Table 4). The 1994 estimated salmon harvests compared to the recent 5-year averages (1989-1993) were as follows: chinook, 9% above (Appendix A.4), summer chum, 61% below (Appendix A.5), fall chum, 94% below (Appendix A.6), and coho, 91% below average (Appendix A.7).

The department sold 1,561 chinook and 2,769 summer chum salmon from the District 1 test fisheries (Table 12). In District 2, 70 chinook and 443 summer chum salmon were sold by the department's test fishery associated with the sonar project located near Pilot Station.

Yukon Area fishermen received an estimated $4.8 million for their 1994 salmon catch, approximately 44% below the recent 5-year average value. The wholesale value of the 1994 commercial catch was estimated at $11,967,000 (Appendix A.11). Salmon buyers and processors operating in the Yukon Area during 1994 are listed in Table 2. The majority of the salmon catch was processed as a fresh/frozen product. Commercial salmon harvest and salmon roe production is presented in Appendix A.10. Average prices paid to fishermen and average salmon weight are presented in Appendices A.12 and A.13, respectively.

In 1994, a total of 779 CFEC gillnet permits and 165 fish wheel permits (not including transfers) were issued (Table 3). An estimated 690 gillnet and 74 fish wheel permits were fished in 1994 (Appendix A.8). The number of commercial fishing permits (fishermen) that made at least one salmon delivery by district during the season are shown in Appendix A.9.

There was a lower than normal proportion of 6-year old chinook salmon (50%) in the commercial harvest (Menard 1996). Age-6 fish accounted for between 43% and 54% of the commercial harvest during unrestricted mesh size periods. Age-5 chinook salmon accounted for a larger than average percentage of the commercial harvest (approximately 45%) during the only fishing period restricted to 6 inch maximum mesh size.

The estimated percentage of Canadian-spawned chinook salmon harvested in 1994 throughout the Yukon River drainage was 60%; approximately 4% above average (Appendix A.25). The estimates presented in Appendix A.25 are based on analyses of chinook salmon scale patterns, age composition ratios, and geographic distribution of catches and escapements (Schneiderhan 1995).

Summer chum salmon commercial harvests in the Lower Yukon Area were dominated by age-5 fish. Age-5 summer chum salmon comprised between 53% and 85% of the commercial harvest in fishing periods allowing the use of 8 inch or greater mesh size and in unrestricted mesh size periods. Age-5 summer chum comprised 49% of the commercial catch in the one restricted mesh size period in District 1.

Fall chum salmon test fish catch samples in the lower river through August 18 indicated that approximately 59% of the run was comprised of age-4 fish and 40% of the run was comprised of age-5 fish. Age-4 coho salmon dominated samples taken from Yukon River fisheries as observed in all other years (Appendix A.24).

Lower Yukon Area Harvest

The 1994 Lower Yukon Area commercial salmon catch totaled 160,283 fish; 105,047 chinook and 55,236 summer chum salmon (Table 4). The chinook salmon harvest was 9% above the recent five-year average (1989-1993), while the summer chum harvest was the lowest since 1968 (86% below the recent five-year average). There was no commercial salmon fishery for fall chum and coho salmon in the Lower Yukon Area in 1994.

In 1994 a total of 707 CFEC gillnet permits were issued for the Lower Yukon Area (Table 3), of which, 659 permit holders fished at least once during 1994. Lower Yukon fishermen were paid an average (per pound) of $2.07 for chinook and $0.21 for summer chum salmon. The estimated exvessel value of the harvest was $4.2 million which was 45% below the 1989-1993 average value (Appendix B.12). The average earnings per fisherman was approximately $6,447.

A total of four processors operated in the Lower Yukon Area in 1994. All of the commercial salmon harvest was shipped to fresh or fresh/frozen markets. Canning of salmon in the Lower Yukon Area has not occurred since 1984.

Upper Yukon Area Harvest

Upper Yukon Area commercial salmon sales in the round totaled 8,090 chinook, 25,048 summer chum, 3,631 fall chum, and 120 coho salmon in 1994 (Table 4). In addition, roe sales by species totaled 2,394 pounds for chinook, 97,757 pounds for summer chum, 3,276 pounds for fall chum, and 5,588 pounds for coho salmon. Roe sales were 28% below the 1989-1993 average for summer chum salmon. Roe sales data are not available for chinook and coho salmon prior to 1990; therefore, harvest levels for 1994 cannot be compared to historical information. Historical commercial harvest by statistical area is presented in Appendices C.5-C.22.

Total estimated commercial related salmon harvests by district during 1994 are presented in Table 4. These catch figures reflect the estimated number of female salmon harvested to produce roe sold in Districts 4-6. In District 4, the estimated incidental catch of male summer chum salmon to produce roe sold is also included. Appendices C.2 to C.4 presents commercial salmon sales and estimated harvest by gear type (set gillnet and fish wheel).

A total of eight buyer/processors and ten catcher-sellers operated during 1994. Upper Yukon commercial fishermen received an estimated (per-pound average price) of $0.92 for chinook, $0.21 for summer chum $0.16 for fall chum, $0.48 for coho salmon, $3.11 for chinook roe, $3.77 for summer chum roe, and $1.50 for fall chum and coho salmon roe (Appendix A.12). The estimated exvessel value of the 1994 harvest was $538,211 (Appendix C.23). A total of 103 fishermen participated in the commercial fishery. The average earnings per fisherman was approximately $5,229.

Chinook and Summer Chum Salmon Season

The 1994 preseason outlook was for an average chinook salmon run based on parent year escapements. The summer chum salmon outlook was for a below average to critically low run. The commercial harvest for the Alaskan portion of the drainage was anticipated to be between 88,000 and 99,000 chinook salmon with a minimal harvest of summer chum salmon.

The Lower Yukon Area was considered free of ice by May 22 (Appendix A.26). The first chinook salmon harvests were reported on May 24 near Sheldon's Point by a subsistence fisherman. The department's test fishing project recorded the first chum and chinook salmon catches on May 28 and May 29, respectively (Appendix B. 13). Chinook salmon migratory timing was average and similar to run timing in 1989. Summer chum salmon migratory timing appeared to be near average. Chinook and summer chum salmon entered the river primarily through the South and Middle Mouths.

Comparative lower river test fishing cumulative CPUE from 8.5 inch mesh size set gillnet sites indicated above average abundance of chinook salmon in 1994, similar to the large returns in 1980, 1981 and 1987 (Appendix B.14). Approximately 50% of the 1994 chinook salmon run had entered the lower river by June 19. Chinook salmon test fish catches in 5.5 inch mesh size set gillnets were about average.

Comparative test net indices suggested the 1994 summer chum salmon run was above average in abundance (Appendix B.15). Approximately 50% of the summer chum salmon return had entered the lower river by June 26 according to test fishing CPUE data.

Because of the projection of a below average to critically low summer chum salmon run in 1994, the department managed the Yukon River commercial fishery very conservatively to reduce the mortality of summer chum salmon. The first management priority was to achieve spawning escapement goals. Once escapement goals were expected to be achieved and there was a harvestable surplus identified, the subsistence fishery had priority. The

management plan prescribed that no directed commercial fishing for summer chum salmon would be allowed until it could be determined that a harvestable surplus above escapement and subsistence needs existed. Directed chinook salmon commercial fishing periods were regulated to reduce summer chum salmon mortality by adjusting the timing, length, and frequency of fishing periods and by requiring fishermen to use gillnet mesh size of 8 inch or larger. Preseason, fishermen were informed that the commercial harvest of chinook salmon might be lower than anticipated due to management actions that might be necessary to conserve summer chum salmon.

The management plan identified the need for a total passage estimate of 1.1 million summer chum salmon above Pilot Station to provide for an escapement of 900,000 fish and subsistence harvest of 200,000 fish. A total passage estimate of 1,250,000 summer chum salmon above Pilot Station would be necessary to provide for increased spawning escapement (500,000 fish for Anvik River and 500,000 fish for non-Anvik areas), a subsistence harvest of 200,000 fish, and an incidental harvest of 50,000 fish during the chinook salmon directed commercial fishery prior to allowing a directed commercial fishery for summer chum salmon.

During the fishing season, two teleconferences with the Yukon River Drainage Fisheries Association (YRDFA) were conducted to obtain input from user groups and to provide chinook and summer chum salmon run status information. Additionally, the department had daily teleconferences among staff throughout western Alaska to provide current stock status information.

The Pilot Station sonar was used as the primary indicator of summer chum salmon run strength. Inseason, the total run projection range at Pilot Station was based on the earliest run timing observed at the project (the 1986 season) and average run timing. It was anticipated that a good projection of total run passage by the sonar would be possible between June 21 and June 27 (the average 25% and 50% point of the run, respectively). Post-season analysis showed that this was indeed the case. In an effort to be very conservative, through the month of June, the run projection based on the earliest run timing was used to assess the run. However, as the season progressed, it became apparent that the projection based on average run timing was more representative for 1994.

Since 1993, the Pilot Station sonar project has utilized new transducers operated at a lower frequency which allowed the sonar range to be greatly increased compared to previous years. Total season passage estimates of 141,000 chinook and 1,997,000 summer chum salmon were obtained in 1994 (Appendix E.3). The summer chum salmon passage estimate was the largest since the project became operational in 1986. However, passage estimates for 1994 may not be comparable to other years prior to 1993 because of the deployment of the new equipment.

The Anvik River sonar escapement estimate was compared to the Pilot Station sonar estimate inseason. This comparison was made to assess whether or not the distribution of spawners was appropriate such that the minimum escapement goal of 500,000 would be achieved in the Anvik River and that escapements to non-Anvik River tributaries would be adequate. On June 30, it was determined that escapements would likely be achieved river wide and that the surplus greater than escapement and subsistence needs would be assessed on a daily basis.

Districts 1 and 2

The Yukon Area Management Plan requires approximately 7-10 days of chinook salmon passage through the lower river, as documented by increasing subsistence and/or test net catches, prior to initiation of the commercial fishery. This provides for fish to become distributed throughout the Lower Yukon Area, and passage of a segment of the run out of the lower river before the commercial fishery begins. The 1994 commercial salmon fishing season was opened by emergency order after approximately eight days of increasing subsistence and test net catches. The chinook salmon directed fishery was opened on a staggered basis: June 13 in District 1, June 15 in District 2, and June 22 in District 3 (Tables 5-7).

Initially, only gillnets of 8 inch or greater mesh size were allowed in the directed chinook salmon commercial fishery in order to reduce the mortality of chum salmon. It was anticipated that the combined incidental harvest of summer chum salmon in Districts 1 and 2 would be no more than 35,000 fish, if the summer chum salmon run was very poor as in 1993.

In addition, fishermen were requested to attempt to use their commercially caught summer chum salmon for subsistence purposes during the first two periods in Districts 1 and 2. This management strategy was used to reduce the overall harvest of summer chum salmon by substituting chum salmon caught while commercial fishing for fish that would have been caught during subsistence fishing. It is estimated that about half of the commercial fishermen complied with this request. However, reporting on fish tickets of salmon caught but not sold from the commercial fishery was limited. During the first commercial fishing period in District 1, there was some confusion with the request to retain chum salmon for subsistence use. Some fishermen thought that it was illegal to sell chum salmon, and there was concern that the chum salmon catch would affect the chinook salmon fishery. The department responded by distributing additional notices to villages in Districts 1 and 2 and to buyers, and providing additional radio reports explaining the management strategy.

The total number of chum salmon caught but not sold was estimated by using the average catch for permit holders that either sold fish or reported their chum salmon as not sold, so as to expand for those permit holders reporting no harvest of chum salmon. We estimated that 10,817 and 4,556 summer chum salmon were caught but not sold in Districts 1 and 2, respectively, and were not reported on fish tickets. On June 21, it was determined that the summer chum salmon run was greater than 1.1 million fish. Therefore, fishermen were notified that the department's request for fishermen to attempt to use commercially caught chum salmon for subsistence purposes was cancelled and all chum salmon caught during commercial fishing periods could be sold as normal.

Because of the relatively slow increase in test fishing cumulative CPUE through June 10, the first periods in Districts 1 and 2 were 6 hours in duration (Tables 5 and 6). The next two periods in both districts were 9 hours in duration. The harvest of 18,222 chinook salmon taken during the second period in District 2 on June 21 was the second largest period harvest on record. Fishing periods were less than the expected 12 hours in order to lower the incidental harvest of summer chum salmon and to spread out the chinook salmon harvest. Additionally, to spread out the chinook salmon harvest, the second commercial period in District 2 and the third commercial period in District 1 were delayed from June 19 until June 21 and from June 20 to June 22, respectively. Unrestricted mesh size gillnets were allowed during the fourth opening in each district as summer chum salmon abundance reached an acceptable level.

The last commercial fishing period occurred on July 4 and 5 in District 1 and was the only opening restricted to gillnets of 6 inch or less mesh size. A total of 15,369 summer chum salmon were harvested during this period. Because of poor market conditions, no buyers were available for summer chum salmon and no additional commercial fishing periods were allowed after July 6.

The total harvest of 103,933 chinook salmon for Districts 1 and 2 was 13% above the midpoint of the guideline harvest range of 90,000 fish and 10% above the 1989-1993 average harvest of 94,255 fish (Tables 3 and 4). A total of 87,981 chinook salmon were harvested during 8 inch or greater mesh size fishing periods and 15,344 chinook salmon were harvested during the two unrestricted mesh size fishing periods in Districts 1 and 2. A total of 608 chinook salmon were harvested during the single period in District 1 restricted to 6 inch maximum mesh size gillnets. The average weight of chinook salmon harvested during 8 inch or greater mesh size fishing periods, unrestricted mesh size periods, and 6 inch maximum mesh size fishing periods was 20.1, 21.4, and 17.5 pounds, respectively.

Ten adipose fin-clipped fish were collected from commercial catch sampling of 3,320 chinook salmon in Districts 1 and 2, with eight coded wire tags verified, all from the Whitehorse Hatchery. Three adipose fin-clipped chinook salmon were collected from District 1 test nets, with one verified tag from the Whitehorse Hatchery. In District 4, five fin-clipped chinook salmon were collected during commercial catch sampling with two verified tags from the Whitehorse Hatchery. One possible problem with the District 4 samples was that the sample fish heads taken were cut too close to the nares, resulting in possible tag loss.

The total commercial summer chum salmon harvest in District 1 and 2 was 55,201 fish, which was 86% below the recent 5-year average harvest of 384,748 fish (Tables 3 and 5). The harvest was 22% of the lower end of the guideline harvest range of 251,000 summer chum salmon for Districts 1 and 2. A total of 30,189 summer chum salmon were harvested during fishing periods restricted to 8 inch or greater mesh size in Districts 1 and 2, 9,643 summer chum salmon were harvested during fishing periods with unrestricted mesh size in Districts 1 and 2, and 15,369 summer chum salmon were harvested during the one District 1 opening restricted to 6 inch or less mesh size. The average weight of chum salmon harvested during 8 inch or greater mesh size fishing periods, unrestricted mesh size periods, and 6 inch maximum mesh size fishing periods was 6.7 pounds, 6.5, and 6.2 pounds, respectively.

District 3

In District 3, two 12-hour fishing periods with gillnets restricted to 8 inch or greater mesh size were allowed. The initial delay in opening District 3 allowed the first segment of the chinook salmon run to pass through the district and allowed a majority of the subsistence harvest to be taken prior to the commercial fishery. A total of 1,114 chinook salmon were harvested, which was 38% below the lower end of the guideline harvest range and 42% below the recent five-year average (Table 7). A total of 35 summer chum salmon were sold, which was well below the recent five-year average of 3,532 fish. Because of the relatively poor quality of summer chum salmon in this district, summer chum salmon caught during commercial fishing are generally used for subsistence purposes. Seven permit holders sold fish in District 3, which was similar to last years effort.

District 4

The commercial fishing season opened on June 22 in Subdistricts 4-B and 4-C. The first four fishing periods in Subdistricts 4-B and 4-C were primarily directed toward chinook salmon. District 4 fishermen sold 2,216 chinook salmon and 550 pounds of chinook salmon roe, for an estimated 2,436 fish commercial harvest (Table 8). This harvest was near the midpoint of the District 4 guideline harvest range of 2,250-2,850 chinook salmon.

The last two fishing periods in Subdistricts 4-B and 4-C were directed at summer chum salmon. A total of 3,611 summer chum salmon and 7,384 pounds of summer chum roe were sold. The estimated harvest of 17,239 summer chum salmon was just above the low end of the guideline harvest range of 16,000-47,000 fish.

Four summer chum salmon directed fishing periods were allowed in Subdistrict 4-A; three 24-hour and one 18-hour period. These fishing periods were delayed until early-July when it was determined that enough summer chum salmon were available for commercial harvest. Subdistrict 4-A fishermen sold 62,801 pounds of summer chum roe, 14 pounds of chinook salmon roe and 33 pounds of pink salmon roe (Table 8). No fish were purchased in the round in Subdistrict 4-A. The department estimated postseason that 131,794 male and female summer chum salmon were harvested to produce the roe sold in Subdistrict 4-A. The total estimated harvest was just above the lower end of the guideline harvest range.

Anvik River Management Area

In March 1994, the Alaska Board of Fisheries adopted the Anvik River Chum Salmon Fishery Management Plan, which established regulations allowing for a commercial summer chum salmon fishery within the Anvik

River. During June, an experimental test fishing project was conducted in cooperation with BSFA to collect information on gear types, potential area to be opened for commercial fishing, and incidental harvest of other species. Because of the projected poor summer chum salmon run, the department did not anticipate allowing a commercial fishery in the Anvik River in 1994. Accordingly, buyers and commercial fishermen were not prepared for a commercial fishery.

However, it was projected in early July that the Anvik River summer chum salmon escapement would be close to one million fish, well above the escapement goal of 500,000 fish. To provide for an orderly commercial fishery, emergency regulations were adopted, based upon input from local fishermen and fishery managers. The emergency regulations allowed the sale of summer chum salmon roe, included the option of permit holders using a single gillnet not to exceed 25 fathoms in length and not larger than 5 1/4 inch mesh, and a catch limit of no more than 400 chum salmon or 400 pounds of chum salmon roe for each CFEC permit holder during each commercial fishing period. Local fishermen suggested a catch limit as a method of controlling the harvest to prevent wastage. As processors did not have any equipment or facilities to process fish in-the-round, the department allowed the sale of summer chum salmon roe in 1994.

Test fishing conducted prior to the commercial fishery indicated that beach seines were an efficient gear type, which would allow male chum salmon and other species (grayling and chinook salmon) to be released. A majority of fishermen that participated in the fishery purchased beach seines on short notice. One fishing operation utilized a hand purse seine. The lower 12 miles of the Anvik River were open to commercial fishing (Figure 19) for a total of six fishing periods (Table 8). A total of 19,532 pounds of chum salmon roe were sold from an estimated harvest of 22,574 female summer chum salmon. Incidental catches of chinook salmon appeared to be minimal. Overall, this fishery proved to be successful through the cooperative effort of fishermen and the department.

District 5

In District 5, chinook salmon is the primary species of commercial value during the early season. Summer chum salmon do not contribute substantially to the commercial harvest because of the distribution of the stocks, timing of the fishery, lower relative abundance, poor flesh quality, and the high transportation costs to market.

The commercial fishing season was opened in Subdistricts 5-A, 5-B, and 5-C on July 5 when it was estimated that the chinook salmon run was well distributed throughout the subdistricts. There was one 24-hour and one 12-hour period (Table 9). A total of 3,289 chinook and 10 pounds of chinook roe were sold. The total estimated harvest was 3,294 chinook salmon for Subdistricts 5-A, 5-B, and 5-C. This harvest was above the upper end of the guideline harvest range of 2,600 to 2,800 fish. A total of 229 summer chum salmon and 212 pounds of summer chum roe were sold.

There were two fishing periods allowed in Subdistrict 5-D, those being on July 12 and July 18. A total of 450 chinook salmon were sold in Subdistrict 5-D (Table 9).

District 6

District 6 had one 42-hour period directed toward the harvest of chinook salmon, which began on July 11 (Table 10). The next commercial fishing period was delayed until July 22 when preliminary escapement information indicated that chinook salmon spawning escapement objectives in the Chena and Salcha Rivers would be achieved and summer chum salmon run abundance indicated there was a surplus available for commercial harvest. Commercial fishing was allowed during one 42-hour period per week from July 22 through August 10 in order to balance the harvest of summer chum salmon with achieving adequate spawning escapements. Because of an above average chinook salmon return to the Tanana River, as documented by tower counts on the Chena and Salcha Rivers, the guideline harvest range of 600 to 800 chinook was exceeded in District 6. Commercial sales

totaled 2,135 chinook salmon and 1,820 pounds of chinook salmon roe, for an estimated harvest of 2,606 fish. A total of 21,208 summer chum salmon and 7,828 pounds of summer chum salmon roe were sold, for an estimated total commercial harvest of 31,434 summer chum salmon, which was within the guideline harvest range of 13,000 to 38,000 fish.

Fall Chum and Coho Salmon

The 1994 preseason projection for the Yukon River drainage fall chum salmon run was 605,000 fish. The Yukon River Drainage Fall Chum Salmon Management Plan was adopted in March of 1994 by the Board of Fisheries. The plan identified the need for 400,000 fall chum salmon for spawning escapement and approximately 200,000 fall chum salmon to provide for Alaskan subsistence and Canadian harvests. A total of 600,000 fall chum salmon were needed to allow for normal subsistence activities. The preseason projection suggested that the run would be sufficient to allow for escapement and rebuilding needs throughout the drainage and still provide for a normal subsistence salmon harvest levels. A commercial harvest in the Alaskan portion of the Yukon River drainage was not anticipated in 1994.

Because coho and fall chum salmon run timing overlap and the overriding importance of fall chum salmon, the harvest of coho salmon is a function of management strategies directed towards fall chum salmon. Given the department's concern for conserving fall chum salmon and lack of information necessary to manage coho salmon separately, no commercial harvest of coho salmon was anticipated for the 1994 season.

The department primarily used the preseason projection during the early portion of the fall chum salmon return. On average 25 percent of the run passes by Pilot Station sonar by August 1. From August 1 until August 20, Pilot Station sonar inseason fall chum salmon projections were used in management decisions. Based on the guidelines laid out in the Yukon River Drainage Fall Chum Salmon Management Plan, when the sonar inseason projection in 1994 fell below 600,000 fall chum salmon, the department implemented sport and personal use fisheries closures and subsistence salmon fishing restrictions.

The Pilot Station sonar assessment of the fall chum salmon run was significantly different from subsistence fishermen catch rate reports in 1994. As result of concerns about sonar operations and the subsistence reports, a diagnostic trip was made to Pilot Station sonar by regional and Sonar Technical Services personnel, on August 21 through August 25, to reevaluate the sonar's operation before further management actions were to be taken. During this evaluation, a less than optimum aiming was discovered. It was determined that for that day, the new aim was counting 2.3 times more fish than the old aim.

A comparison of sonar passage estimates and lower river test fish catch rates suggested that the sonar may have under-counted the run size since August 9 by approximately 70,000 fall chum salmon. From August 21 until September 4, the department used this adjusted sonar count in the management of the fisheries. The adjusted sonar count indicated that continued subsistence restrictions were still needed in order to meet escapement objectives. As specific management actions and operation of the Pilot Station sonar project during 1994 are the subject of ongoing litigation at this time, additional discussion will not be provided in this report. Detailed records of project operations and diagnostics are contained in the regional project files for 1994.

By early September, as preliminary spawning escapement information became available, it became obvious that the sonar had under-counted the run by significantly more than 70,000 fish. On September 4, normal subsistence salmon fishing schedules were allowed, as well as reopening the personal use fishery. Sport fishing for salmon was reopened on September 6. As additional information from the spawning grounds, and estimates of Canadian

border passage became available, it became evident that there was a commercially harvestable surplus of fall chum salmon available from the 1994 run.

Because of concerns expressed by subsistence fishermen in the Old Minto Area and in Fort Yukon, the limited commercial fisheries were only allowed upstream of those areas. The department permitted commercial fishing above Fort Yukon in the upper portion of Subdistrict 5-D. Three 48-hour commercial fishing periods were allowed beginning on September 19, September 22, and September 26 (Table 9). A total of 3,630 fall chum salmon were sold, this approached the upper end of the Subdistrict 5-D guideline harvest range of 1,000 to 4,000.

In the Tanana River, escapement information was not available until post-season foot surveys on the spawning grounds were completed in late October to mid-November. A limited commercial fishery was allowed above the Old Minto Area in Subdistrict 6-B, and Subdistrict 6-C, based on the overall run strength of the Yukon River drainage. During the one 24-hour commercial fishing period beginning on September 19, a total of one fall chum salmon and 3,276 pounds of fall chum salmon roe were sold (Table 10). It was estimated that a total of 4,368 female fall chum salmon were commercially harvested to produce the roe sold. The estimated harvest of fall chum salmon to produce the roe sold totaled 8,500 males and females. This level of harvest exceeded the low end of the District 6 guideline harvest range of 2,750 to 20,500 fall chum salmon. The incidental catch of coho salmon totaled 120 coho salmon and 5,588 pounds of coho salmon roe were sold. It was estimated that a total of 4,451 female coho salmon were commercially harvested to produce the roe sold. The estimated harvest of male and female coho salmon to produce the roe sold totaled 13,250 fish. Without specific escapement information from the fall chum spawning grounds in the upper Tanana River, the department was very conservative in the management of the District 6 commercial fishery and no more commercial periods were announced.

The department's test fishing project in the lower river was discontinued on August 18, earlier than scheduled. This action was taken to further reduce fall chum salmon harvests given the poor inseason projection from Pilot Station sonar and to maintain consistency with subsistence fishing closures. On that date, the cumulative test fishing CPUE for fall chum salmon was 30.40 (Appendix B.16 and B.17) through August 18, which was above the mean cumulative CPUE for the years 1980 to 1993 of 19.80. Wind direction, bank orientation of migrating salmon, water levels, and fish size may affect test net catches. Historical lower Yukon River test fishery indices are also affected by commercial removal below the test net sites which makes comparisons between years even more difficult.

It is difficult to compare the age composition data since the test nets were pulled prior to the normal termination dates, therefore the later component of the run was not sampled for age composition. Preliminary age composition data from fall chum salmon test fish catch samples through August 18 indicated that approximately 59% of the run was composed of age-4 fish, and 40% of the run was composed of age-5 fish.

Coho salmon test fishing data indicated the run was above average in magnitude. Run timing of coho salmon appeared to be near average. The cumulative test fishing CPUE of 25.03 was the highest on record through August 18 (Appendix B.16 and B.18). The average season cumulative CPUE on August 18 from 1980 through 1993 is 7.46. It should be noted that the entire coho salmon return is not indexed, because the migration continues into September after the test fishery is terminated. The Yukon River mainstem sonar project at Pilot Station estimated a total passage of 191,115 coho salmon through September 8 (Appendix E.3). This number is considered a minimum passage estimate for coho salmon.

The total number of salmon harvested in the subsistence fishery in the Yukon Area in 1994 was estimated from the survey program, subsistence fishing permit information, department test fish given to the public, and information on fish retained from commercial catches for subsistence use. Fish retained from commercial catches for subsistence use (excluding commercial related salmon) were included in the subsistence salmon harvest estimates. Commercial related salmon were female salmon harvested to produce roe sold in Districts 4, 5, and 6. The commercial related harvest of summer chum salmon in District 4 also included male salmon caught to produce the roe sold. The estimated harvests and number of households obtained from the individual programs are not additive because of overlapping harvest reporting from Stevens Village. There was no personal use fishery designation within the Yukon Area in 1994. Therefore, no personal use harvest occurred. Historical personal use harvests are presented in Appendix D.8-D.10.

The 1994 subsistence salmon harvests for the Alaskan portion of the Yukon River drainage (excluding Hooper Bay and Scammon Bay) by 1,324 fishing households were estimated to be 54,563 chinook, 132,510 summer chum, 123,218 fall chum, and 44,594 coho salmon (Table 13). The chinook salmon harvest was 7% above the 1989-1993 average catch of 50,941 fish (Appendix D.1); the summer chum harvest (excluding commercial related harvest) was 5% above the recent 5-year average harvest of 126,342 fish (Appendix D.2); the fall chum salmon harvest was 13% below the 1989-1993 average catch of 141,906 fish (Appendix D.3); and the coho salmon harvest was 18% above the 1989-1993 average catch of 37,850 fish (Appendix D.4). The coastal harvests near the villages of Hooper Bay and Scammon Bay were estimated to be 825 chinook, 14,903 summer chum, 347 fall chum, and 81 coho salmon. A portion of these harvests were probably from local non-Yukon River drainage streams as well as from salmon stocks migrating beyond the Yukon River. Further information regarding the 1994 Yukon River subsistence salmon harvest can be found in Holder and Hamner (in press).

Survey Program

Excluding the greater Fairbanks area, the majority of households in the Yukon Area reside in villages in which there are no regulatory requirements concerning reporting of their subsistence salmon harvest. The department has implemented a survey program to estimate the salmon harvest from areas not requiring a permit. The 1994 Yukon Area survey database contained 2,453 households in 31 villages and included the villages of Hooper Bay and Scammon Bay. This does not include 77 households in the 3 villages of Hughes, Allakaket and Alatna, which were not surveyed because of the disastrous flooding of the Koyukuk River in September 1994. The survey program utilized subsistence catch calendars, postseason household interviews, and postseason telephone interviews to improve the sampling frame and estimate the harvest. Stratified random sampling techniques were used to identify 1,083 households in the 31 villages which were to be interviewed during the 1994 survey. The stratification of the households was based on historical harvest information. Based on the 933 households surveyed (82% of the sampling goal), an estimated (95 percent confidence intervals are in parenthesis), 1,109 (±87) fishing households harvested a total of 43,369 (±3,637) chinook; 100,559 (±10,528) summer chum; 68,444 (±6,651) fall chum; and 12,146 (±2,942) coho salmon. Estimates of the 1994 subsistence salmon harvest by village are summarized in Table 13.

Subsistence Fishing Permit Program

Subsistence salmon fishing permits were required for households which desired to fish within the Tanana River drainage, the Yukon River drainage between Hess Creek and the Dall River, and the Yukon River drainage

between Twenty-Two Mile Slough and the U.S./Canada border. Households which fished in areas requiring a permit were required to document their catch and return the permit upon expiration. A total of 473 subsistence permits were issued which included two households that were issued permits to fish for salmon in two different permit areas (separate times) and 40 households that were issued Tolovana River subsistence pike permits and salmon permits. Also included were 4 permits to collect fall chum salmon carcasses from the Delta River floodplain. The reported subsistence permit catches by 457 permittees who had returned their permits as of March 20, 1995, was 8,536 chinook, 7,555 summer chum, 49,602 fall chum (including 250 Delta River carcasses), and 26,544 coho salmon. Subsistence harvests taken by permit fishermen in 1993 are summarized in Table 14 and historical permit catch information in Appendices D.6-D.7.

Subsistence Salmon Use from Commercial Fisheries

Commercial fishermen were required to document the number of fish retained for subsistence use from their commercial catch on fish tickets but compliance was poor. Since fish ticket reporting was poor, the number of salmon retained from commercial catches was estimated by a combination of survey responses and fish ticket records and is considered a minimal estimate. An estimated 1,486 chinook, 22,606 summer chum, and 2,900 coho salmon were retained from commercial catches for subsistence use.

The salmon carcasses which became available for subsistence use as a result of the commercial sale of salmon roe were considered part of the commercial harvest in the commercial related harvest category of Table 15. The estimated commercial related harvest to produce the roe sold was 703 female chinook salmon from Districts 4, 5, and 6, and 10,461 female summer chum salmon harvested in Districts 5 and 6. The estimated District 4 commercial related harvest of female and male summer chum salmon potentially available for subsistence use was 167,996 fish. The number of fish actually used for subsistence purposes was less than those fish potentially available due to non-retention of males, transport of fish out of the surveyed villages, and loss of fish to spoilage or animals. Subsistence surveys estimated 103,002 summer chum salmon were retained from commercial catches by District 4 households and used for subsistence purposes.

Subsistence Salmon Use from Department Test Fisheries

Department test fisheries gave away a total of 2,319 chinook, 10,058 summer chum, 5,817 fall chum, and 3,085 coho salmon to households in the villages of Emmonak, Kotlik, Pilot Station, Tanana and Nenana for subsistence use. These salmon were assumed to replace fish which would have been obtained through normal fishing activities; therefore salmon given away by the department were added to the village subsistence harvest of the recipient households.

Fall Season Subsistence Restrictions 1994

It is common and usually necessary for subsistence salmon fishing to be restricted during the commercial fishing season to enforce commercial fishing regulations. Chinook and summer chum salmon subsistence fishing progressed normally in 1994. After the early commercial fishing season, Districts 1, 2 and 3 were placed on a seven-day-per-week subsistence fishing schedule; Subdistricts 4-B, 4-C, 5-A, 5-B, and 5-C were placed on a five-day-per-week subsistence fishing schedule; Subdistrict 4-A was placed on a seven-day-per-week fishing schedule beginning July 20, at the close of the early commercial fishing season; District 6 remained on the regulatory schedule of two 42-hour subsistence and personal use fishing periods per week; and Subdistrict 5-D remained on a seven-day-per-week fishing schedule which is not affected by the commercial season.

The department had identified the need for approximately 600,000 fall chum salmon to provide for subsistence and escapement needs throughout the drainage in 1994. From approximately August 1 until August 20, Pilot Station sonar inseason fall chum salmon projections were used in management decisions. Based on the guidelines laid out in the Yukon River Drainage Fall Chum Salmon Management Plan, when the inseason projection fell below the 600,000 fall chum salmon level, the department implemented sport and personal use fisheries closures and subsistence directed fall chum salmon fishing restrictions.

Based primarily on the Pilot Station sonar run assessment, the directed fall chum salmon subsistence fishing schedule in Districts 1, 2, 3, and Subdistrict 4-A, and the Coastal District was reduced to five days per week on August 6, not including the tributaries below the Koyukuk River and rivers in the Coastal District which remained open seven days per week. Very few fall chum salmon occur in tributaries below the Koyukuk River and in streams in the Coastal District, thus subsistence fishing in these areas was not affected by the conservation concerns. Sport fishing for chum salmon within the Yukon River below the confluence of the Koyukuk River was also closed on August 6. Directed fall chum salmon subsistence fishing schedule was then reduced to 48-hours per week in Districts 1 through 4, and Subdistricts 5-B and 5-C, on August 13; except for the Yukon River tributaries below the Koyukuk River and rivers in the Coastal District which continued to remain open seven days per week. In addition, sport fishing for chum salmon was closed in the Yukon River drainage above the confluence of the Koyukuk River on August 13.

Based on sonar passage estimates at Pilot Station, directed fall chum salmon subsistence fishery was further restricted on August 18, Districts 1 through 4 were closed and Districts 5 and 6 were reduced to 24-hours per week. Districts 4, 5, and 6 were allowed to fish with liveboxes or livechutes for an additional 24-hours per week. The District 6 personal use fishery was also closed on August 18. Although subsistence fishing for salmon was restricted, subsistence fishing for other species such as whitefish and pike continued to be allowed with a gear restriction of 4 inch or less mesh size gillnets of 150 feet or less length seven days per week.

From August 21 until September 4, the department used an adjusted sonar count in the management of the Fisheries. The adjusted sonar count indicated that continued subsistence restrictions were necessary in order to meet escapement objectives. However, with the adjusted sonar passage projection, the department relaxed the restrictions in District 4 by reopening it for one 24-hour period per week on August 29. Additional subsistence salmon fishing periods were allowed in Districts 5 and 6, and Districts 1, 2, and 3 returned to a normal seven day per week schedule on September 1.

By early September, as preliminary spawning escapement information became available, it became obvious that the sonar significantly under-counted the run. On September 4, normal subsistence salmon fishing schedules were allowed throughout the drainage, as well as reopening the District 6 personal use fishery. Yukon River drainage sport fishing for chum salmon was reopened on September 6.

Canadian Fisheries 1994

This summary of the fisheries in the Canadian portion of the Yukon River drainage is exerpted from material provided by the DFO.

The management plan for Canadian fisheries on the Yukon River in 1994 was formulated by DFO to generally reflect the understandings reached during the Yukon River salmon treaty negotiations. Accordingly, the guideline harvest ranges, border passage, and spawning escapement goals for Canadian spawned chinook and fall chum salmon, tentatively agreed to in the negotiations, provided the foundation for the 1994 management plan.

A total of 21,218 chinook, 38,008 fall chum, and 334 coho salmon were estimated to have been harvested by Aboriginal, domestic, sport, and commercial fisheries in the Canadian portion of the Yukon River drainage in 1994 (Table 15 and Appendix A.20 and A.22). Overall, the chinook harvest was 12% above the recent average (1988-1993) and the fall chum harvest was 46% above the recent average (1990-1993).

Commercial Fishery

The Canadian Yukon River commercial fishery harvested a total of 42,065 salmon including 12,028 chinook, 30,035 fall chum and 2 coho salmon in 1994 (Table 15). A total of 30 commercial licenses was issued in 1994. This was the same number of licenses as in 1992 and 1993. The maximum number of commercial fishermen active during any one week of the chinook season was 19. During the fall chum season the highest number of fishermen in any one period was 16. Most of the commercial chinook harvest was taken by set gillnets; only three fish wheels were in use during the chinook season. However, during the fall chum season, more than 25% of the catch was estimated to have been taken in fish wheels. There has been a recent increase in the use of fish wheels during the fall chum season from 3 in 1990, to 9 in 1991, and 10 fish wheels in 1992 and 1993. There were nine fish wheels operated during the 1994 fall chum season.

Chinook Salmon

The major elements of the chinook salmon management plan implemented in Canada by DFO for 1994 included:

1) a commercial guideline harvest range of 9,100 to 12,100 chinook with a preseason target of 10,600 chinook. Based on the preseason outlook for a slightly above average return, it was expected the catch would fall towards the midpoint of the range; and

2) a one day per week fishery for the initial two weeks of the season, followed by a three day opening subject to run assessments. The duration of subsequent fishing periods was to be determined inseason based on run strength and harvest guidelines.

The 1994 chinook salmon fishing plan was similar to the plan in the previous year.

The commercial fishery opened on July 4 for 48 hours, one week later than scheduled. The first chinook was caught in the DFO tagging fish wheels on June 24. According to the fishing plan, the fishery was to have opened the Monday following the first catch. However, there was a delay in notification of the first chinook being captured and the fishery was opened a week later. Because of the delay in opening, an additional 24 hours was added to this initial opening. Consistent with the management plan, fishing time was extended to three days exactly two weeks after the run had begun. The first inseason projection of border passage was approximately 43,000 chinook salmon.

Beginning July 20, a staggered opening was implemented to better distribute the catch throughout the commercial fishing area. The topic of staggered openings had been raised by some commercial fishers at the preseason management meeting. It was agreed that the issue would be examined by DFO and possibly activated on an experimental basis in 1994. A new fishing boundary was established just upstream from the confluence of the Forty Mile and Yukon Rivers; the upstream area opened 24 hours before the lower area in each staggered opening.

The above average CPUE observed in the fishery prompted an increase in fishing time to four days during July 20-25. The peak commercial catch and CPUE of the season occurred during the week of July 20, approximately ten days later than the peak catches observed at the DFO fish wheels.

The total commercial catch of 12,028 chinook (Table 15) was 9% above average. The preliminary postseason estimate of the border passage indicated a Canadian commercial harvest rate of 26% on chinook salmon in 1994. Comparisons of the 1994 commercial chinook CPUE with previous years indicated the run was about average in magnitude and slightly late in timing. The combined DFO tagging fish wheel catches peaked towards the end of the second week in July, three weeks after the first fish was caught.

Fall Chum Salmon

As a result of the below average run outlook based on below average to poor escapements in 1989 and 1990, the 1994 fall chum salmon management plan was developed to address both the conservation concern for the 1994 run and the objectives of the three cycle rebuilding plan that had been tentatively agreed to in treaty negotiations. Accordingly, the management plan included the following components:

1) a spawning escapement goal of 65,900 chum salmon;

2) a commercial guideline harvest range of 20,700 to 29,700 fall chum salmon with a preseason target of 20,700; the lower end of the range was recommended in view of the below average expected return; and

3) reduced fishing time (one to two days per week) for the initial weeks of the fall chum season, followed by potentially longer openings commencing early September depending on assessments of run strength and the guideline harvest ranges.

In early August, ADF&G was projecting a below average drainage-wide fall chum salmon return of approximately 550,000 fish based on Pilot Station sonar data. Canadian fishers were notified by DFO prior to the middle of August of the poor fall chum run outlook. At that time, fishers were put on notice that the commercial fishery would likely be required to be scaled back from the preseason target of 20,700 chum, to an allowable commercial harvest of approximately 7,200 chum salmon.

By August 19 the outlook in Alaska had deteriorated with the drainage-wide fall chum projection falling to about 400,000 fish. Chum salmon had not yet reached the Canadian section of the upper Yukon River in any magnitude and as such, stock assessment indices in Canada were not yet available. It was suggested that if the Pilot Station data was representative of the upper Yukon River chum return, a border passage of approximately 58,000 fish (12% below the spawning escapement goal) could be expected. This estimate was based on a comparison of the 1993 Pilot Station sonar estimate (306,000 fish) and the upper Yukon River border passage estimate (45,000 fish) relative to the 1994 sonar data. As a result of this revised outlook, the commercial fishery in Canada was closed until further notice. Notice of closure in the domestic fishery was given a week later.

Weekly conference calls were scheduled with managers in Alaska to exchange data and discuss revised run outlooks. By early September, it was becoming clear that upriver indicators were not corroborating the Pilot Station sonar data. For example, the Sheenjek River escapement projection on September 5 indicated that the escapement goal for that system would likely be exceeded by more than 100%; Alaskan test fisheries on the upper Yukon River and in the Tanana River were beginning to indicate sustained run strength; and in Canada, DFO fish wheel catches had picked up substantially to near record levels. Furthermore, confidence in the sonar data had been seriously eroded after a diagnostic trip by sonar experts to Pilot Station in late August discovered serious operational problems indicating the likelihood that the sonar counts were erroneously low.

The Canadian commercial fishery remained closed from August 20 to September 8. During this period, run assessment activities in Canada had been intensified with the continuation of the tagging program at the DFO fish wheels, and implementation of a live-capture program employing three commercial fishers to sample and recapture tagged fish using commercial fish wheels. On September 5 a border passage projection of approximately 84,000 chum salmon was generated based on preliminary tag recovery data from the live-capture program.

The initial border passage projection indicated a total allowable catch of more than 18,000 chum salmon. This contributed to the decision to schedule a two day commercial fishery opening commencing September 8. Additional factors considered in the decision to re-open the fishery included the improvements in other upriver run indices in Alaska, and the above average DFO fish wheel catches which had nearly doubled the previous ten-year daily averages since August 29.

Record daily commercial catches and a CPUE that was approximately 74% above average prompted a twenty-four hour extension to the September 8 opening. Concurrently, the combined DFO fish wheel catch peaked (for the first time) in this week on September 11. Following the opening September 8-11, the border passage projection increased to 130,500 chum based on additional mark-recapture data from the live-capture program (which was suspended on September 8) and from the commercial opening.

DFO fish wheel catches remained strong through September 13 and a two day fishery was scheduled for September 14-16. The border passage projection increased to 138,000 chum salmon, the peak inseason projection, and the overall commercial chum harvest objective was moved to 29,700 chum salmon for the duration of the season, i.e. the top end of the commercial guideline harvest range. The commercial fishery was open for three days per week through the end of the fishing season on October 5.

The preliminary total commercial chum harvest of 30,035 fish was 29% above the recent four-year cycle average commercial catch of 21,320 (1990-1993). Based on preliminary tag recovery data, the harvest rate in the commercial fishery was approximately 22%, compared to the 1990-1993 cycle average of 27%.

The run strength based on cumulative commercial fishery CPUE was about 20% above average, whereas the cumulative DFO fish wheel catch was the second highest on record and was 35% above the previous cycle average. Run timing in the commercial fishery was bimodal with a protracted second mode. A true indication of the magnitude of the first mode could not be ascertained from commercial catch data due to the closure at the beginning of the chum season. However, the DFO fish wheel catches indicated that a significant group of fish had passed through the commercial fishing area during the late August - early September closure.

Canadian Aboriginal, Domestic and Sport Fisheries

A comprehensive survey of the Aboriginal fishery was conducted in 1994. Catch statistics were collected from participants through inseason and/or postseason interviews. The estimated catch was 8,089 chinook salmon in the mainstem Yukon River drainage and 428 chinook salmon at Old Crow in the Porcupine River drainage. The estimated fall chum salmon catch was 5,319 fish for the mainstem Yukon River drainage and 2,654 fish at Old Crow in the Porcupine River drainage.

A total of 373 chinook salmon was taken in the domestic fishery in 1994, which was slightly higher than average. No fall chum salmon catches were reported in the domestic fishery.

As in previous years, no Canadian sport fishery harvest data was collected in 1994. DFO has estimated that approximately 300 chinook salmon are harvested annually by sport fishermen in the Canadian portion of the Yukon River drainage. However, there are concerns that actual catches have significantly exceeded this level.

Escapement 1994

Comprehensive escapement assessment projects have been limited throughout the Yukon River drainage prior to 1994. However, due to both fiscal and personnel assistance from several agencies and organizations, comprehensive escapement studies were expanded in 1994. Projects funded and operated by the department included monitoring chum salmon escapements to the Anvik, Toklat, and Sheenjek Rivers using hydroacoustic techniques. Replicate ground surveys and stream life data were used to estimate abundance of chum salmon spawners in the Delta River, and counting platforms were used by the Sport Fish Division to monitor timing and abundance of both chinook and chum salmon spawners in the Chena and Salcha Rivers. The Yukon River sonar project at Pilot Station has been estimating daily salmon passage by species annually since 1986, except for 1992 when the project was operated in an experimental mode (Appendix E.3). Full operations were resumed in 1993 and 1994 with reconfigured equipment which provided greater insonification ranges and alleviated attenuation problems, thereby reducing biases that may have affected prior year estimates. The 1994 season also marked the third year of joint field research and development by the department, USFWS, and DFO investigating the feasibility of a Yukon River border sonar project near Eagle, Alaska. Objectives included ensonifying standard acoustic targets at known positions in the beam, refining inseason calibration procedures, and collecting acoustic data on passing fish.

Projects operated by USFWS to monitor salmon escapement abundance in 1994 included weir operations on the Gisasa and East Fork Andreafsky Rivers and a hydroacoustic project in the Chandalar River. The Andreafsky River drains a wilderness area of the Yukon Delta National Wildlife Refuge and supports major summer chum and chinook salmon spawning stocks. The department operated a salmon escapement project on the East Fork Andreafsky River from 1981 to 1988; sonar from 1981 to 1985 and a counting tower from 1986 to 1988. Low summer chum salmon escapement aerial survey indices for the Andreafsky River in recent years and the widespread failure of chum salmon returns in 1993 prompted the USFWS to initiate a 5-year weir project on the East Fork Andreafsky River in 1994.

The Gisasa River, a tributary of the lower Koyukuk River is located in the Koyukuk National Wildlife Refuge. Historical information on salmon escapement to this river dates back to the mid-1970s and is comprised entirely of aerial survey observations. In 1994, the USFWS operated a weir on this river from late June through early August to provide more comprehensive escapement information on summer chum and chinook salmon in the middle portion of the Yukon River drainage.

The Chandalar River is located in the Yukon Flats National Wildlife Refuge and supports one of the major fall chum salmon spawning stocks. Because of the importance of Chandalar River fall chum salmon to the refuge as a subsistence resource to local residents, USFWS re-established sonar operations in 1994 at the same location as during 1986-1990. However, the 1994 project involved determining the feasibility of using a split-beam sonar system to estimate total spawning escapement. Unfortunately, a major flood event in late August 1994 resulted in an increase in water level of approximately 3.5 m, necessitating a rapid evacuation of the project site three weeks earlier than scheduled.

Additional escapement assessment projects in the Alaskan portion of the Yukon River drainage, either jointly or entirely funded and operated by other organizations in 1994, included counting tower projects on the Nulato River

and Kaltag Creek. The Nulato River tower project marked the first comprehensive escapement assessment project conducted on this river. The project was a cooperative effort by the department, BSFA, and TCC. Although high and turbid water delayed initial operations by approximately 10 days, results were important in assessing spawning distribution of chinook and summer chum salmon in the middle portion of the Yukon River drainage during the 1994 season. The counting tower project on Kaltag Creek was operated by the Alaska Cooperative Extension 4-H program, with partial funding by BSFA. Although 1994 was not the first year of operation for this project, it marked the first year that counting was initiated at the beginning of the salmon run into Kaltag Creek. This project was important in assessing spawning distribution of summer chum salmon in the middle portion of the Yukon River drainage during the 1994 season.

Projects conducted by the Canadian DFO in 1994 consisted of a mark-and-recovery project near Dawson to estimate the total number of chinook and chum salmon passing the U.S./Canada border on the Yukon River mainstem. Site specific studies included manning an enumeration window and passage gate at Whitehorse to monitor chinook salmon escapement upstream of Whitehorse as well as installing a weir in Michie Creek to determine the portion of chinook salmon passing the fishway which spawn in that stream. Additionally, a weir was operated on the Fishing Branch River to enumerate fall chum salmon escapement.

Remaining escapement information throughout the Yukon River drainage in 1994 was obtained primarily by aerial and occasionally ground surveillance of selected salmon spawning streams. Conditions for conducting aerial surveys were extremely poor throughout most of the western portions of Interior Alaska during the chinook and summer chum salmon season from mid-July through early August. As a consequence, few surveys were successfully flown of salmon spawning streams in the lower portion of the drainage (downstream of the village of Tanana). By comparison however, survey conditions were considerably better during the early season throughout the Tanana River valley where most chinook and summer chum index streams were successfully surveyed, as well as a few of secondary importance.

As the fall season approached, weather conditions worsened. During the latter part of August, two vigorous weather systems brought heavy rain to northwest Alaska. Occurring approximately 8 days apart, the combined effect of these storms resulted in serious flooding in the Koyukuk River drainage, with severe damage done to most of the structures in Allakaket, Alatna, and Hughes. Other areas in northwest and north central Alaska received significant rain during this period as well. High water levels were reported east of the Koyukuk River in the Yukon River tributaries of the Hodzana, Chandalar, and Sheenjek Rivers.

Aerial surveillance of fall chum and coho salmon spawning streams was confined to the Tanana River drainage in 1994. Survey conditions in October and November were comparatively much better than occurred during the early season, with major index streams successfully surveyed.

Escapement surveys of selected tributaries in the Canadian portion of the drainage were made by DFO.

Escapement estimates obtained in 1994 are shown in Appendix E.2 while Figures 14 through 18 show major Yukon River tributary systems.

Chinook Salmon

Appendices E.4 and E.5 present historic chinook salmon escapement data for selected streams during the period 1961-1994. Chinook salmon escapement goals established by the Department for eight Alaskan streams, or index areas, are: East (>1,500) and West Fork (>1,400) Andreafsky, Anvik (>1,300 entire drainage or >500 Yellow River to McDonald Creek), North (>800) and South Fork (>500) Nulato, Gisasa (>600), Chena (>1,700), and

Salcha (>2,500) Rivers.[2] These escapement goals are based upon aerial survey index counts which do not represent total escapement.

The overall Yukon River chinook salmon run was considered above average in 1994. The sonar passage estimate of 138,800 chinook salmon at Pilot Station was in the upper half of the range of historical estimates since 1986, and slightly higher than the 1993 estimate. Although this estimate may not be directly comparable to estimates made prior to 1992, due to the use of improved equipment in 1993 and 1994, chinook salmon escapement goals were believed to have been achieved in all eight Alaskan streams for which goals have been established.

Chinook salmon escapements in the lower Yukon River drainage were characterized by counts obtained for the Andreafsky and Anvik Rivers. Although reliable aerial surveys of the East Fork and West Fork Andreafsky River were not possible due to inclement weather, a total of 7,801 chinook salmon were counted through the weir on the East Fork, suggesting that the escapement goals in this river were met. In the Anvik River, a total of 913 chinook salmon were counted under poor survey conditions in the mainstem index area from Yellow River to McDonald Creek; a count well above the minimum aerial survey escapement goal of 500 chinook salmon.

Chinook salmon escapements in the middle Yukon River drainage were characterized by escapements observed in the Nulato River, tributaries of the Koyukuk River, and tributaries of the Tanana River. Although an aerial survey estimate of salmon abundance could not be obtained for the Nulato River due to poor survey conditions, a total of 1,795 chinook salmon were counted past the tower site located below the forks. Given that project start-up was delayed by high water and counting conditions were hampered by turbid water, the tower count is considered conservative and it is likely that the minimum escapement goals for each fork of this river were achieved in 1994.

For the Gisasa River an aerial survey count of 2,775 chinook salmon was made on July 26 under fair survey conditions. This was the highest chinook salmon count on record for this stream and well above the aerial survey escapement goal minimum of 600 chinook salmon. The new weir project on this river provided a total count of 2,888 chinook salmon for the period July 11 through August 10.

Although no chinook salmon escapement goals have been established for other streams in the Koyukuk River, results of aerial surveys made on a few other tributaries in 1994 indicated escapements were at least average in magnitude. Counts were 526 chinook salmon in Henshaw Creek and 528 collectively, in the South Fork Koyukuk and Jim Rivers (Appendix E.2).

It should be pointed out that many of the chinook salmon which spawn in the upper portion of the Koyukuk River, utilize mainstem sections of the North, Middle, and South Fork Rivers, in addition to several tributary streams. While it is not known what effect the severe August flooding which occurred throughout the river basin in 1994 will have on future production from channel scouring, the potential deleterious impact could be great.

In the Tanana River drainage, aerial surveys of the Chena and Salcha Rivers indicated that excellent chinook salmon escapements were achieved in 1994. Most notable was the Salcha River aerial index area count of 11,189

[2] These chinook salmon escapement goals resulted from a staff reevaluation of goals in March 1992. Although no escapement goals have been established for individual Canadian streams, an interim escapement goal of 33,000-43,000 chinook spawners for the mainstem upper Yukon River drainage (Yukon Territory) was established by the Yukon River JTC in March 1987. Additionally, a six year stabilization plan, ending after the 1995 season, has been agreed upon by the U.S. and Canada. The objective of the plan is to stabilize the stock by achieving a spawning escapement of 18,000 or more chinook salmon for each year through 1995.

chinook salmon, the highest on record. Inseason assessment of chinook salmon escapement to the Tanana River drainage was improved in 1994 (and 1993) compared to prior years by operation of counting towers on the Chena and Salcha Rivers. The 1994 tower estimates of escapement were 11,877 chinook for the Chena River and 18,399 chinook salmon for the Salcha River. These estimates greatly exceeded the average total population escapement estimates obtained by mark and recapture methods in prior years. Although no chinook salmon escapement goals have been established for other Tanana River streams, an aerial count of 1,392 chinook salmon were observed in the Goodpaster River in 1994, the highest on record.

The preliminary DFO mark-and-recovery population estimate of chinook salmon entering the Canadian portion of the mainstem Yukon in 1994 was 46,680. Subtracting the estimated Canadian commercial and non-commercial harvest (excluding Old Crow) from this population estimate results in a spawning escapement estimate to Yukon Territory (excluding the Porcupine River drainage) of approximately 25,890 chinook salmon. Although falling below the spawning escapement goal range of 33,000-43,000 fish, this escapement level was well above the stabilization objective of 18,000 spawners. Yukon Territory chinook salmon spawning streams surveyed by DFO in 1994 included a ground survey of Tatchun Creek, and aerial surveys of Tincup Creek (Kluane River drainage), the Little Salmon, Ross (Pelly River drainage), Big Salmon, Nisutlin and Wolf Rivers (Teslin River drainage). Results from these surveys revealed that escapement to each of these streams was well above the 1988-1993 average for each.

The number of chinook salmon which returned to the Whitehorse fishway in 1994 totaled 1,577, of which 57% possessed an adipose-clip from hatchery releases. However, some fin-clipped fish re-ascended the fishway and were counted more than once. The total number spawned for hatchery brood stock in 1994 was 78 females and 118 males. A total of 586 adult chinook salmon were passed through Michie Creek weir, a tributary of the McClintock River which joins the Yukon River approximately 50 km upstream of the Whitehorse Rapids Fishway. Thirty-one percent (183 chinook) possessed an adipose-clip.

Summer Chum Salmon

Appendix E.6 presents historic summer chum salmon escapement data for selected streams during the period 1973-1994. Escapement goals for six major summer chum spawning streams in the lower Yukon River drainage are: East (>109,000) and West Fork (>116,000) Andreafsky, Anvik (>500,000), North Fork Nulato (>53,000), and in the Hogatza (Clear Creek at >8,000 and Caribou Creek at >9,000) Rivers. An additional escapement goal of >3,500 summer chum salmon exists for the Salcha River in the Tanana River drainage. With the exception of the Anvik River objective, which is based upon a sonar estimate of population size, all other objectives are based upon aerial survey observations during periods of peak spawning.

Although a below average summer chum run was expected in 1994, the return materialized stronger than projected; due at least in part to a stronger than average return of age-5 fish. Escapements throughout the drainage were judged to be very good. Although no aerial survey estimate was made for the Andreafsky River due to poor weather conditions, it is considered that the minimum escapement objectives for the East and West Forks were met. This is based upon a weir passage of 201,000 summer chums in the East Fork after a delayed startup from high water conditions. The Anvik River sonar project estimated 1,124,700 summer chum salmon through July 23, which was more than double the escapement goal, and represented approximately 56% of the total passage estimate of summer chum salmon at Pilot Station (1,997,186).

Upstream of the Anvik River, summer chum salmon escapement estimates were obtained for Kaltag Creek and the Nulato, Gisasa, and Dakli Rivers. A preliminary expanded estimate of 47,300 summer chums passed the

Kaltag Creek tower site between June 21 and July 28, while a preliminary expanded estimate of approximately 148,800 summer chums were estimated passing the Nulato River tower site. In the lower Koyukuk River drainage a total of 51,100 summer chum salmon were counted past the Gisasa River weir while in the upper Koyukuk River an aerial survey flown of Dakli River and Wheeler Creek resulted in an estimate of approximately 25,400 summer chum salmon (Appendix E.2), the highest aerial count made in that area.

Summer chum salmon escapements were also considered adequate in the Tanana River drainage as evidenced by observations made in the Chena and Salcha Rivers. Although less than 2,000 summer chum salmon were counted during an aerial survey of the Chena River on August 4, the counting tower estimate was 9,984 fish for the period July 1 through August 12. This was a conservative count due to turbid water conditions for a period of the counting operation. In the Salcha River, an aerial count of 4,916 summer chum salmon was observed, which is above the minimum goal of 3,500 fish. Further, an abundance estimate of 39,450 chum salmon was obtained from tower counts during the period July 1 through August 12.

Fall Chum Salmon

Appendix E.7 presents historic Yukon River fall chum salmon escapement data for selected streams since the early 1970s. The most complete database exists for Delta, Toklat, Sheenjek, and Fishing Branch Rivers. Escapement goals for these streams are greater than 11,000, greater than 33,000, greater than 64,000, and 50,000-120,000 fall chum salmon, respectively. These escapement goals are for total abundance. In addition, annual estimates of border passage and subsequent spawning escapement also exist for Canadian fall chum stocks in the upper mainstem Yukon River. The spawning escapement goal for those stocks is greater than 80,000 fall chum salmon spawners.[3]

The preseason projected return of fall chum salmon to the Yukon River in 1994 was 605,000 fish. The projection included an anticipated drainage-wide shortfall of 112,000 age-5 fish from the 1989 brood year based upon the poor performance of returning age-4 fish observed in 1993. Beyond the age-5 shortfall, it was anticipated that the age-4 component of returning fall chum salmon might exhibit some weakness based upon the extremely low number of age-3 fish observed returning in 1993. The public was cautioned that if this was the case, then the 1994 projected return could change to one of critically low abundance. In brief, fall chum salmon run strength was assessed inseason to be much weaker than it in fact was due to operational problems at the Pilot Station sonar project during the fall season. Initially, this resulted in closures or restrictions to various fall season fisheries throughout the drainage, on a run size much larger than originally believed. The low exploitation on Yukon River fall chum salmon resulted in achieving all escapement objectives throughout the drainage.

Evaluation of fall chum salmon escapement for the Porcupine River drainage was assessed by observations made in the Sheenjek and Fishing Branch Rivers. The sonar-estimated escapement in the Sheenjek River in 1994 was approximately 153,000 fish for the 52-day period of August 8 through September 28, some 139% above the escapement goal minimum of 64,000. In the Fishing Branch River, the interim escapement goal was achieved for the first time since 1985 and the second time since 1981. A weir passage of approximately 65,200 fall chums was approximately 30% above the minimum goal of 50,000 fish.

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[3]The U.S. and Canada has negotiated a twelve year rebuilding plan, beginning in 1990 and ending after the 2001 season, for Yukon River mainstem fall chum salmon. The objective of the plan is to rebuild the stock by achieving a spawning escapement of 80,000 or more fall chum salmon for all (four) brood years by the year 2001. The plan will endeavor to rebuild the stronger parent years in four years (one cycle) and the weaker parent years in twelve years (three cycles) in equal increments. The 1994 targeted level of escapement was >66,000.

Tanana River drainage fall chum salmon escapement was evaluated by observations made in the Toklat and Delta Rivers. Population estimates of fall chum salmon escapement to the Toklat River have in the past been made from expanded aerial or grounds survey counts of the spawning index area and using stream residence data collected from the Delta River. In 1994, in addition to this technique, a more comprehensive assessment of fall chum salmon escapement to the Toklat River was also attempted using hydroacoustic techniques. The expanded total population estimate of escapement based upon ground surveys was 76,057 fall chums, which was more than 120% above the minimum goal of 33,000 fish. Comparatively, preliminary field data indicates that approximately 71,000-72,000 salmon were estimated by sonar in the mainstem river during the period mid-August through early October. While species apportionment was not made at the sonar site, inferences from the ground survey indicate that less than one percent of the sonar estimate was coho salmon. This preliminary finding would indicate that past estimates of total fall chum salmon escapement to the Toklat River are reasonable.

Largely as a result of a preliminary comprehensive YRDFA proposal for rebuilding the Toklat River fall chum salmon stock, approximately 400,000 fall chum salmon eggs were collected from Toklat River in October 1994 as part of a third year pilot study. The fertilized eggs were transported to Clear Hatchery for incubation. Resulting fry were all fin-clipped, coded wire tagged, and released in the Toklat River in the spring of 1995. Consistent with the YRDFA proposal for the Toklat River study, a technical evaluation of the Toklat River spawning ground habitat was initiated in October 1994.

The estimated total abundance of fall chum salmon spawners in the Delta River was 23,777 based upon replicate ground surveys and salmon stream-live data; approximately 116% above the minimum escapement goal of 11,000 fish. While no escapement goals exist for other fall chum salmon spawning areas in the upper Tanana River, escapement counts during peak spawning were approximately 2,300 and 900 fish, respectively, in Bluff Cabin and Clearwater Lake Outlet Sloughs (Big Delta region). These numbers were approximately 50% below the recent ten-year averages of chum salmon observed in these areas.

The preliminary population estimate of fall chum salmon entering the Canadian portion of the upper Yukon River made by DFO in 1994 was 133,712 fish. Subtracting the preliminary estimated Canadian commercial and non-commercial harvest (excluding the Old Crow harvest) from this population estimate results in a total escapement estimate to Yukon Territory (excluding the Porcupine River) of 98,358 spawners. The 1994 fall chum salmon escapement level was the highest on record since inception of the DFO mark and recapture program in 1982. Further, this escapement estimate, as part of the twelve year rebuilding plan for the 1990 brood year, was approximately 49% above the minimum 1994 targeted level of 65,900 fall chum salmon spawners.

Preliminary fall chum salmon estimated commercial and subsistence harvest added to an estimated total spawning escapement (based upon a doubling of a standardized escapement index) resulted in a total run estimate for 1994 of 796,000 fish, the largest even-year return on record. This measure of total return was most similar to the 717,000 projection which excluded any age-5 shortfall. Strength of the 1994 return appeared, in fact, to lie in the age-5 component.

Coho Salmon

The sonar project at Pilot Station estimated a total passage of 191,115 coho salmon through September 8 in 1994 (Appendix E.3). However, coho salmon passage estimates at Pilot Station are not complete run assessments due to termination of the project each year prior to conclusion of the coho salmon migration. Further, operational problems at the Pilot Station sonar in 1994 also resulted in the passage estimate being considered conservative.

Coho salmon spawning escapement assessment is very limited in the Yukon River drainage due to funding limitations and often marginal survey conditions which prevail during periods of peak spawning. Most of the information that has been collected is from the Tanana River drainage (Appendix E.8). The only escapement goal established for coho salmon thus far is for the Delta Clearwater River (DCR), which is a minimum of 9,000 fish. The Sport Fisheries Division conducted a boat survey of the DCR index area on October 24, 1994 and counted 62,675 coho salmon, the highest on record for this stream. An additional 17,565 coho salmon were observed in tributaries of the DCR on October 27.

It appeared that coho salmon spawning escapements in other portions of the Tanana River drainage were average to above average, although not nearly to the extent as in the DCR. For example, 3,425 coho salmon were observed in the outlet to Clearwater Lake on 24 October; 57% greater than the 1989-1993 average of 2,176 coho salmon. Coho salmon aerial survey counts in the Nenana River drainage were 944 in Lost Slough (79% above the 1990-1993 average), 2,909 in Seventeen Mile Slough (second highest on record), and 1,647 in the mainstem Nenana River upstream of the Teklanika River (highest on record). A total of 410 coho salmon were counted by ground survey in Geiger Creek in the Toklat River drainage, double the 1989-1993 5-year average. Approximately 2,000 coho salmon passed a weir site on Barton Creek (Toklat River drainage) during the period September 11 through October 5, 1994.

Enforcement 1994

The primary enforcement authority for violations of Fish and Game regulations is the FWP within the Department of Public Safety. For purposes of enforcing commercial and subsistence fishing regulations within the Yukon River drainage, FWP has employees permanently stationed in Bethel, McGrath, Aniak, Galena, Coldfoot, and Fairbanks. Additionally, during the fishing season, officers are stationed in a temporary camp near the Dalton Highway bridge and at other locations along the Yukon and Tanana Rivers.

Lower Yukon Area

Fish and Wildlife Protection conducted intensive patrols in the Lower Yukon Area during June 1994 utilizing up to three float planes and five full time officers. Ten citations were issued; two for fishing during closed periods, one for fishing without license in possession, two for obstructing more than one-half of a waterway, two for failure to post current salmon prices, one for employing an unlicensed crew member, and two for fishing without a photo identification card in possession.

Upper Yukon Area

During the 1994 season, FWP concentrated enforcement efforts on permit holders who were fishing early, fishing over limits of gear, or not physically participating in the operation of their commercial gear. Overall, FWP officers noticed good compliance with season openings and closures during routine patrols.

Fish and Wildlife Protection officers continue to be concerned and active in the investigation of salmon roe from subsistence caught fish illegally entering into the commercial market. However, the amount of roe entering the commercial market this way is believed to have been significantly reduced from the levels in the late 1980s.

Chinook Salmon

The majority of chinook salmon returning to the Yukon River are 6-year-old fish; however, 5- and 7- year-old fish make a significant contribution to the run. In general, spawning escapements in 1989 were slightly below escapement objectives. It appears, however, that survival and production of the 1989 brood year is strong based on the relatively large contribution of 5-year-old fish to the 1994 commercial harvest. Additionally, it is expected that the return of 5-year-old fish in 1995 will be at least average in magnitude based on above average parent year escapement in 1990, and the average proportion of 4-year-old fish observed in the 1994 run. The return of 7-year-old fish in 1995 is expected to be average, as the return of the 6-year-old fish (1988 parent year) was average in 1994. Therefore, the 1995 chinook salmon run is anticipated to be average to above average in strength. An Alaskan commercial harvest of 88,000 to 108,000 chinook salmon, near the midpoint of the guideline harvest range, is expected to be available in 1995. This harvest would be distributed as follows: 82,000-100,000 fish in the Lower Yukon Area and 6,000-8,000 fish in the Upper Yukon Area.

Summer Chum Salmon

Summer chum salmon return primarily as 4-year-old fish, although substantial numbers of 5-year-old fish occur in some years. The return of 5-year-old fish in 1995 is expected to be below average based on the relatively poor escapements observed in 1990 and the below average return of 4-year-old fish in 1994. The return of 4-year-old fish in 1995 will be dependent on production from the 1991 brood year and survival of the resulting cohort. Summer chum salmon escapement to the Anvik River in 1991 was 848,000 salmon, 70% above the minimum escapement goal of 500,000 salmon. However, escapements to other spawning areas in 1991 were below average based on aerial survey escapement counts. Therefore, the overall 1995 summer chum salmon run is anticipated to be below average to average in strength. The river-wide commercial harvest is expected to be 300,000-600,000 summer chum salmon.

Fall Chum Salmon

The historical, estimated annual age composition of returning Yukon River fall chum salmon includes 70% age-4 fish followed by 25% age-5 fish. Age-6 and age-3 fish make up the remaining portion of the return. The brood year for returning age-4 salmon in 1995 is 1991. Fall chum salmon escapement in 1991 varied throughout the drainage. In 1991, the escapement level to both the Sheenjek and Delta Rivers exceeded minimum escapement goals. However, below desired level escapement occurred in the Toklat and Fishing Branch Rivers.

Based upon estimated spawner-return relationships and age composition data, the 1995 preseason run projection is for approximately 802,000 fall chum salmon. The Board of Fisheries identified the need for a minimum of 400,000 fall chum salmon for drainage-wide escapement. A recent average of Alaskan subsistence harvests is 170,600 fall chum salmon. Anticipating a Canadian harvest towards the upper end of their guideline harvest range (32,600) would indicate that a minimum of 603,200 fall chum salmon are needed in 1995 prior to allowing Alaskan commercial fishing activities. The preseason projection would suggest that a commercial harvest of up to 200,000 fall chum salmon may occur in 1995 and still meet subsistence and escapement needs. However, rebuilding efforts for both Canadian and Toklat River stocks will lower the maximum commercial harvest level that could be supported by the Yukon River fall chum salmon return. Up to 25% reduction in the allowable commercial harvest would permit additional salmon to reach the spawning grounds to aid in the rebuilding

efforts. If the fall chum salmon return as projected fishermen should expect a commercial harvest on the order of 150,000 fall chum salmon. Based on inseason information, the department may adjust the run size projection and corresponding allowable commercial-harvestable-surplus upwards or downwards.

Coho Salmon

Coho salmon have a later but overlapping run timing with that of fall chum salmon. Comprehensive coho salmon escapement information is lacking in the Yukon River drainage. Coho salmon return primarily as age-4 fish. Based on limited coho salmon escapement surveys in 1991, and assuming average survival rates, we project that there will be an above average return of coho salmon in 1995. There are no guideline harvest ranges established for coho salmon. Currently, coho salmon are considered an incidental harvest to the directed commercial fall chum salmon fishery. With a fall chum salmon commercial harvest towards the lower end of the guideline harvest range, an incidental commercial harvest of up to 60,000 coho salmon would be anticipated.

CAPE ROMANZOF DISTRICT HERRING FISHERY

Introduction

Pacific herring (*Clupea harengus pallasi*) are present in coastal waters of the Yukon Area during May and June. Spawning populations occur primarily in the Cape Romanzof area in Kokechik Bay and Scammon Bay (Appendix F.1) where suitable spawning habitat consisting of rocky beaches and rockweed (*Fucus*) is available. The arrival of herring on the spawning grounds is greatly influenced by ocean water temperature and ice conditions. Typically herring appear immediately after ice breakup. Spawning usually occurs between mid-May and mid-June.

Herring are utilized by local residents for subsistence purposes. In addition, a commercial herring sac-roe fishery has occurred in the Cape Romanzof District since 1980. The Cape Romanzof District consists of all State waters from Dall Point to 62 degrees north latitude (Appendix F.1). In 1982, the Board of Fisheries reduced the area open to commercial fishing by closing the waters outside of Kokechik Bay. Gillnets are the only legal gear type. The use of mechanical shakers has been prohibited since 1988. Limited entry to the fishery began with a moratorium on new entrants in 1988. Eventually, the fishery will be limited to 101 permits.

A total of $33,200 in State funds were allocated to the Division of Commercial Fisheries to manage the commercial fishery and conduct herring research studies at Cape Romanzof in 1994.

Commercial Fishery 1994

A total of 456 short tons (st) of herring were harvested in 1994 by 55 fishermen utilizing 54 fishing vessels (Appendix F.2). The harvest was approximately 15% below the recent five year average catch of 536 st (Appendix F.4). All of the harvest was purchased as sac roe. The average sac roe recovery was 9.17%. The commercial fishing season consisted of 3 fishing periods established by emergency order between May 23 and May 26 (Appendix F.3). Fishing period duration ranged from 1 hour to 3 hours for a total of 7 hours.

Commercial harvests increased steadily after inception of the fishery in 1980, reaching a peak harvest of 1,865 st in 1986. Since 1986, there has been a trend of decreasing harvests.

Estimated value of the 1994 harvest to fishermen was $123,874. Average price for herring sac roe was $300 per st at 10% roe recovery, plus or minus $30.00 a percentage point. Two companies, represented by two processing vessels and five tenders, purchased herring during the fishery (Appendix F.5).

Fishing effort in 1994 (55 fishermen) was the second lowest on record, but was 34% above the 1993 effort level. Effort has decreased due to implementation of limited entry as well as lower preseason harvest projections. Local Alaskan residents (defined as residents of Chevak, Hooper Bay, and Scammon Bay) accounted for 95% (52 permits) of the effort and 92% (421 st) of the harvest.

The commercial fishery was allowed to exceed the preseason harvest projection of 414 st, because inseason aerial survey biomass estimates and spawn deposition observations indicated a larger spawning biomasss than projected. Fishing gear was restricted to one 50-fathom gillnet per vessel throughout the commercial season. A countdown was provided to fishermen prior to the opening and closing of periods on VHF radio. Generally, commercial fishing periods were scheduled to occur just prior to high tide.

As in other recent years, the fishery was put on a one hour advance notice prior to opening the commercial fishery. In coordination with the department, commercial fishermen provided test catch samples for evaluation by industry representatives prior to commercial periods. Samples were collected relatively early on the incoming tide to provide time for scheduling beach meetings and announcing periods. Typically, commercial test samples indicated a high percentage of ripe females, except for May 22, the first day samples were collected. There were more immature females as well as a lower percentage of females documented on May 22 than in samples collected from May 23 through May 25 (Appendix F.6).

Evaluation of test samples suggested that larger mesh sizes usually resulted in higher percentages of females and higher roe recovery, while smaller mesh size catches generally had lower roe recovery. However, the differences between mesh sizes was much less evident than in recent years.

Buyers reported percent roe recovery, sex ratio and catch rates from early deliveries during each period. This information was used to extend the second commercial fishing period for one hour. This management strategy appears to be a good method of obtaining a higher roe percentage in the fishery.

The overall exploitation rate of herring was estimated postseason to be approximately 9.1% of the available biomass (Appendix F.4). A total of 517 herring were sampled from the commercial harvest. Samples were collected from 2 5/8 in, 2 3/4 in, 3 in 3 1/8, and 3 1/4 in mesh size gillnets. A total of 452 samples were aged. Age-9 and older herring made up 85% of the commercial catch by number (Appendix F.9 and F.10). There were no herring recruits in the commercial sample.

Two Fish and Wildlife Protection officers were present at Cape Romanzof during the last commercial herring fishing period in the 1994. Compliance with fishing regulations appeared to be very good. No citations were issued.

Subsistence Fishery 1994

A subsistence harvest estimate of 6 st of herring was reported to have been taken by 48 fishing families from Hooper Bay, Chevak, and Scammon Bay (Appendix F.7). In addition, 656 pounds of spawn-on-kelp (*Fucus*)

were harvested for subsistence purposes by 23 families. A total of 222 herring survey questionnaires were mailed to subsistence fishing families. Additionally, personal interviews were conducted in Hooper Bay and Scammon Bay in September to contact fishermen that did not return questionnaires. Approximately 42% of the 222 identified households were contacted. The subsistence catch figures represent only the harvest which was reported. Therefore, the reported catch is a minimum estimate since not all families were contacted and not all families which received questionnaires returned them. A majority of the fishermen that responded to questionnaires reported herring abundance appeared to be the same in 1994 as in 1993.

Stock Status

Five aerial surveys were flown during the 1994 season from May 20 through June 7 (Appendix F.8). A total of 2.66 hours were spent surveying the district. Surveys were flown along the coast to Hooper Bay, in Scammon and Kokechik Bays, and several miles offshore of the cape in an attempt to observe schools of herring. Survey conditions were much improved over previous years primarily due to calm winds early in the season. However, no peak biomass estimate was possible. The largest aerial biomass estimate was 2,316 st on May 21, which was prior to the peak of the spawning run.

Test fishing with variable mesh gillnets has been conducted since 1978 to determine distribution, timing and relative abundance of spawning herring, and to collect samples for age, sex, size and relative maturity information. In 1994, test fishing occurred from May 17 to June 7. A total of 3,153 Pacific herring were caught, of which 1,362 were sampled for biological data. Herring comprised 98% of the total catch of schooling species. Other fish captured during test fishing, primarily during the later portion of the project, were yellowfin sole, flounder, saffron cod, sculpin, smelt, and whitefish.

Age-9 and older herring comprised 51% of the variable mesh gillnet samples by number (Appendices F.11 and F.12). Age-6 herring dominated the samples in numbers of fish (23.8%). Newly recruited age 3, 4, and 5 herring represented 6% of the variable mesh gillnet samples. It should be noted that younger aged fish may have arrived after termination of the department's test fishing project.

The 1994 herring spawning biomass was estimated postseason to be 5,000 st. Analysis of age composition data, spawn deposition surveys, and aerial survey biomass estimates indicated the 1994 biomass was greater than in 1992 and 1993.

Qualitative spawn deposition surveys have been conducted annually to document spawn distribution and average number of egg layers deposited. The first spawn was observed on May 19 in Kokechik Bay. This initial spawn deposition was heavy. Spawn deposition peaked on May 27, with an average of 5.8 egg layers on *Fucus* substrate and an average of 2.4 egg layers on rock substrate.

The department initiated a new quantitative spawn deposition study in 1992 to develop a spawn deposition index. The major difficulty encountered in attempting to estimate biomass utilizing spawn deposition data in the past was the loss of spawn due to storms and desiccation. To address this problem, artificial substrates were located in intertidal spawning areas prior to spawning. The artificial substrate consisted of small steel platforms with 6 inch by 12 inch rectangular pieces of astroturf attached to a steel plate on each platform. Spawn deposited on the astroturf was removed and weighed daily at low tide. Daily removal of spawn allowed measurements of new spawn deposition and decreased the problem of spawn loss due to wave action and desiccation observed in previous studies.

A total of fifty platforms were placed in the same general location as in 1993, just north of the department's field camp on May 17 and 18. The platforms were removed on June 7. The results of the study indicated that the largest spawn deposition within the study area occurred on May 19, 21 and 31. The spawn deposition index of 4,068g obtained in 1994 was larger than the 2,403g and 3,746g obtained in 1992 and 1993, respectively. However, fewer platforms were utilized during the 1992 season compared to 1993 and 1994. Subjectively, it appeared that the overall deposition of spawn within the study area was greater in 1994 than in 1992 or 1993.

Outlook for 1995

The projected return for 1995, based upon limited information, is 3,417 st. Age 7 and 11 herring are expected to dominate the biomass. Age 9 and older herring are expected to comprise 54% of the returning biomass. The Bering Sea Herring management strategy is to harvest 0-20% of the estimated herring biomass. Because the stock appears to be exhibiting a general trend of older aged fish, and given the difficulty in obtaining biomass estimates, a 15% exploitation rate will be used to manage the fishery in 1995. The harvest projection is 513 st.

Emergency order authority will be used to adjust the occurrence and length of fishing periods. It is very likely that gear will be restricted to one 50 fathom gillnet per vessel. A minimum level of biomass cannot be used to determine the opening of commercial fishing periods since turbid water conditions usually preclude aerial biomass assessments. Therefore, test and commercial catch rates, number of fishing vessels, and spawn deposition observations will be used to determine timing and duration of commercial fishing periods. The initial commercial fishing period will be established when it is determined that commercial quantities of marketable sac roe herring are present on the grounds. Beach meetings will be utilized to judge roe quality. If sac roe quality is good, individual fishing periods may be extended. Allowing a harvest above or below the preseason projection will depend on assessment of herring abundance through aerial surveys, cumulative spawn deposition, test and commercial catch rates, and age composition data.

OTHER MARINE AND FRESHWATER FINFISH FISHERIES

Subsistence Fishery

Many subsistence fishermen operate gillnets in the main rivers and coastal marine waters to harvest marine and freshwater finfish other than salmon and herring. A limited number of sheefish are harvested during late May and early June in the Lower Yukon River as sheefish migrate upriver. The sheefish migration occurs just prior to and during the beginning of the upstream migration of chinook salmon. Fish wheels take relatively small numbers of whitefish and sheefish in the upper Yukon and Tanana Rivers during the commercial salmon fishery. Beach seines are occasionally used near spawning grounds primarily capturing salmon or other schooling species of fish. Traps and fish weirs of various designs are also used, mainly in the fall and winter months, to capture whitefish (*Coregonus sp. and Prosopium sp.*), blackfish (*Dallia pectoralis*), and burbot (*Lota lota*). Sheefish (*Stenodous leucicthys*), northern pike (*Esox lucius*), char (*Salvelinus sp.*), and "tomcod" (saffron cod) (*Eleginus gracilis*) are frequently taken through the ice by hand lines. Dip nets are used in late May to early June to take smelt in the delta area and in late October to early November to take Arctic lamprey (*Lamperta japonica*) in the main Yukon River downstream of Grayling.

Subsistence fisheries which target on non-salmon species such as pike, sheefish, and whitefish are inadequately documented and their overall significance is not well known. A comprehensive subsistence use survey was

conducted in the lower Yukon River in 1978-1979 (Crawford 1979). Several studies have been conducted to investigate sheefish migrations and to locate spawning areas in the Koyukuk River drainage (Alt 1968, 1969, 1970, 1974) and in the main Yukon River between Stevens Village and Fort Yukon (Alt 1986). Since 1993, subsistence salmon surveys included the collection of freshwater finfish harvest data. Subsistence catches of freshwater finfish taken under authority of a permit in the Upper Yukon Area in 1994 are presented in Appendix G.6.

Commercial Fishery

Regulations adopted by the Alaska Board of Fisheries allow the Department of Fish and Game to issue permits for the commercial harvest of freshwater species of fish such as whitefish, sheefish, char, northern pike, blackfish and Arctic lamprey. Permit authorization is not required for the sale of these species when taken incidentally during commercial salmon fishing (Appendix G.4 and G.5).

Commercial fisheries for species other than salmon have been allowed in widely scattered locations throughout the Yukon and Tanana River drainages and in the Colville River on the North Slope; most of these fisheries are limited, experimental operations, and occur only sporadically.

Permits for the taking of non-salmon species have been issued for various locations in the Lower Yukon Area. Reported harvests for those fisheries are presented in Appendix G.1. No permits were issued in 1994. However, one commercial sale of whitefish was documented on a fish ticket. Set gillnets are primarily used for taking whitefish and sheefish in the Lower Yukon Area. Typically, the catch is marketed in local village stores or Bethel.

A commercial fishery for whitefish has existed in the Colville River delta (located approximately 60 miles west of Prudhoe Bay) since 1964. Fishing generally takes place during late June and July for broad and humpback whitefish; and October through early December for arctic and least cisco. Set gillnets (of 3 and 5 inch mesh) are used as capture gear, and fishing during fall months occurs under the ice (Appendix G.2). Not all fish reported on permits for this area are sold.

In the Upper Yukon Area, commercial freshwater fisheries targeting primarily whitefish have been permitted in recent years. Harvest data are presented in Appendix G.3.

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TABLES AND FIGURES

Table 1. Guideline harvest ranges and mid-points for commercial harvest of Yukon River chinook, summer chum and fall chum salmon in Alaska.

Chinook Salmon

District or Subdistrict	Guideline Harvest Range					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1 and 2	60,000	89.1	90,000	91.6	120,000	92.9
3	1,800	2.7	2,000	2.0	2,200	1.7
4	2,250	3.3	2,550	2.6	2,850	2.2
5A,B,C	2,400	3.6	2,600	2.6	2,800	2.2
5D	300	0.4	400	0.4	500	0.4
6	600	0.9	700	0.7	800	0.6
Total	67,350	100.0	98,250	100.0	129,150	100.0

Summer Chum Salmon

District or Subdistrict	Guideline Harvest Range					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1 and 2	251,000	62.8	503,000	62.9	755,000	62.9
3	6,000	1.5	12,500	1.6	19,000	1.6
4A [a]	113,000	28.3	225,500	28.2	338,000	28.2
4B,C	16,000	4.0	31,500	3.9	47,000	3.9
5	1,000	0.3	2,000	0.3	3,000	0.3
6	13,000	3.3	25,500	3.2	38,000	3.2
Total	400,000	100.0	800,000	100.0	1,200,000	100.0

Fall Chum Salmon

District or Subdistrict	Guideline Harvest Range					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1, 2, and 3	60,000	82.5	140,000	71.2	220,000	68.6
4B,C	5,000	6.9	22,500	11.4	40,000	12.5
5A,B,C	4,000	5.5	20,000	10.2	36,000	11.2
5D	1,000	1.4	2,500	1.3	4,000	1.2
6	2,750	3.8	11,625	5.9	20,500	6.4
Total	72,750	100.0	196,625	100.0	320,500	100.0

[a] Or the equivalent roe poundage of 61,000 to 183,000 pounds or some combination of fish and pounds of roe.

Table 2. Salmon processors, buyers, catcher-sellers, and associated data, Yukon Area, 1994.

Commercial operation (Processing location/ buying station)	Product	District
Yukon Delta Fish Marketing Co-op, Inc. P.O. Box 169 Emmonak, AK 99581 (Emmonak)	Frozen Salmon Chinook Chum Salmon Roe	1 and 2
Bering Sea Fisheries, Inc. 4413 83rd Ave. SE Everett, WA 98205 (Lamont Slough)	Frozen Salmon Chinook Chum Salmon Roe	1 and 2
Boreal Fisheries P.O. Box 561 Graham, WA 98338 (Old Andreafsky)	Fresh Salmon Chinook Chum Salmon Roe	1 and 2
Maserculiq Fish Processors P.O. Box 118535 Marshall, Alaska 99585	Fresh Salmon Chinook Chum Salmon Roe	2 and 3
Alaska Pacific Caviar 3200 N.E. 125 St. Suite 1 Seattle, Washington 98125 (Aniak, Anvik, Grayling)	Frozen Salmon Chinook Chum Salmon Roe	4
Dainty Island Fisheries P.O. Box 49 Galena, AK 99741 (Galena)	Smoked Salmon Chinook Chum Salmon Roe	4
Great Northern Seafoods, Inc. Box 240365 Anchorage, AK 99524 (Galena)	Salmon Roe	4

- Continued -

Table 2. (p. 2 of 4)

Commercial operation (Processing location/ buying station)	Product	District
Whitney Foods P. O. Box 190429 Anchorage, Alaska 99519 (Kaltag)	Frozen Salmon Chinook Chum Salmon Roe	4
Capilano Pacific, Inc. 424 East Manor Ave. Anchorage, Alaska 99501 (Anvik, Galena, Ruby)	Frozen Salmon Chinook Chum Salmon Roe	4 and 5
Interior Alaska Fish Processors, Inc. 878 Lynwood Way North Pole, Alaska 99705 (North Pole, Kaltag, Fairbanks, Nenana)	Frozen Salmon Chinook Chum Salmon Roe Smoked Salmon	4, 5, and 6
Yutana Fisheries 1477 Shypoke Fairbanks, Alaska 99709 (Manley)	Fresh/Frozen Salmon Chinook Chum Salmon Roe	5 and 6
Arctic Circle Seafoods P.O. Box 18 Circle, Alaska 99733 (Circle)	Frozen Salmon Chinook Chum Salmon Roe	5
Laona Processors & Sales Co. P.O. Box 220448 Anchorage, AK 99520	Frozen Salmon Chinook Chum	5
Denny Mac Enterprises, Inc. P.O. Box 943 Sumner, Washington 98390 (Nenana)	Frozen Salmon Chinook Chum Salmon Roe	6

-Continued-

Table 2. (p. 3 of 4)

Commercial operation (Processing location/ buying station)	Product	District
Steven's Fisheries P.O. Box 38 Nenana, Alaska 99760 (Nenana)	Frozen Salmon Chinook Chum Salmon Roe	6
Charlie Campbell (catcher/seller) MHF Enterprise P.O. Box 111 Tanana, Alaska 99777 (Tanana)	Fresh Salmon Chinook Chum	5
Tommy Carroll (catcher/seller) P.O. Box 58 Ft. Yukon, Alaska 99740 (Ft. Yukon)	Fresh Salmon Chinook Chum	5
Hugh B. Fate Jr. (catcher/seller) 750 Farmers Loop Rd. Fairbanks, Alaska 99712 (Fairbanks)	Fresh Salmon Chinook Chum	5
Merill J. Hakala (catcher/seller) 140 Front St. Fairbanks, Alaska 99701 (Fairbanks)	Fresh Salmon Chinook Chum	5
Al Wright (catcher/seller) P.O. Box 60531 Fairbanks, Alaska 99706 (Fairbanks)	Fresh Salmon Chinook Chum	5
Linda Johnson (catcher/seller) Box 57 Manley, Alaska 99756	Fresh Salmon Chinook Chum	5

-Continued-

Table 2. (p. 4 of 4)

Commercial operation (Processing location/ buying station)	Product	District
Renee Merry (catcher/seller) 1293 Skypoke Dr. Fairbanks, Alaska 99709	Fresh Salmon Chinook Chum	5
Stan Zuray (catcher/seller) Box 172 Tanana, Alaska 99777	Fresh Salmon Chinook Chum	5
Frank Carruthers (catcher/seller) Box 77023 Tanana, Alaska 99777	Fresh Salmon Chinook Chum	5
John Childs (catcher/seller) 2091 Yellow Snow Rd. Fairbanks, Alaska 99709 (Fairbanks)	Fresh Salmon Chinook Chum	6
Gary Hinzman (catcher/seller) 1366 Opportunity Way Fairbanks, Alaska 99709 (Fairbanks)	Fresh Salmon Chinook Chum	6
Andy Ludecker-Jones (catcher/seller) Ludecker Fish Co. 2875 Ludecker Rd. Fairbanks, Alaska 99709 (Fairbanks)	Fresh Salmon Chinook Chum	6

Table 3. Commercial Fisheries Entry Commission salmon gear permits issued by residence, Yukon Area, 1994. [a,b]

District	Residence	GillNet Permits (S04Y)
1, 2, and 3	Emmonak	99
	Mountain Village	94
	Alakanuk	75
	Kotlik	76
	St. Marys	66
	Pilot Point	1
	Pilot Station	51
	Marshall	47
	Scammon Bay	41
	Anchorage	17
	Sheldon Point	21
	Russian Mission	13
	Bethel	12
	Holy Cross	8
	Stebbins	11
	Fairbanks	16
	Unalakleet	7
	Wasilla	8
	Shaktoolik	2
	Chevak	2
	Pitkas Point	1
	Aniak	1
	Big Lake	1
	Cooper Landing	1
	Dutch Harbor	1
	Eek	1
	Elim	1
	Hoonah	1
	Hooper Bay	2
	Iliamna	1
	Kalskag	1
	Ketchikan	1
	Koliganek	1
	Kotzebue	1
	Manley Hot Springs	2
	Lower Kalskag	1
	Naknek	1
	Nome	1
	Palmer	2
	Salcha	1
	Sand Point	2
	Sutton	1
	Talkeetna	4
	Toksook Bay	1
	Willow	2
	Cameron Mills, NY	1
	Conner,MT	1
	Everett, WA	1
	Las Vegas, NV	1
	Rock Hill, SC	1
	Seattle, WA	1
	Twist	1
Total Lower Yukon		707

-Continued-

Table 3. (p. 2 of 2).

District	Residence	GillNet Permits (S04P)	Fish Wheel Permits (S08P)	Total
4, 5, and 6	Anchor Pt.	0	3	3
	Anchorage	4	2	6
	Aniak	1	0	1
	Anvik	5	7	12
	Barrow	0	1	1
	Cantwell	1	0	1
	Circle City	0	1	1
	Fairbanks	23	24	47
	Ft. Yukon	0	1	1
	Gakona	1	0	1
	Galena	4	26	30
	Grayling	5	4	9
	Holy Cross	1	0	1
	Huslia	0	1	1
	Kaltag	2	14	16
	Kenai	0	1	1
	Kodiak	1	0	1
	Koyukuk	0	2	2
	Manley Hot Springs	1	4	5
	Minto	0	1	1
	Nenana	7	20	27
	Nome	1	0	1
	North Pole	0	2	2
	Nulato	0	16	16
	Palmer	1	0	1
	Rampart	4	2	6
	Ruby	3	9	12
	Russian Mission	0	1	1
	Salcha	1	0	1
	Soldotna	1	0	1
	Stevens Village	0	3	3
	Tanana	4	15	19
	Wasilla	0	2	2
	Portland, OR	0	1	1
	Palm Desert,CA	1	0	1
	Kenne, VA	0	1	1
	Comstock, WI	0	1	1
Total Upper Yukon		72	165	237
Grand Total Yukon Area		779	165	944

a Counts are for initial issues only and do not include transfers.

b Counts include interim use permits.

Table 4. Commercial salmon and salmon roe sales by statistical area, Yukon Area,1994. [a]

Statistical Area	Chinook			Summer Chum			Fall Chum			Coho			Total Salmon		
	Numbers	Roe	Estimated	Numbers	Roe	Estimated	Numbers	Roe	Estimated	Numbers	Roe	Estimated	Numbers	Roe	Estimated
334-11	4,176	0	4,176	11,208	0	11208	0	0	0	0	0	0			
12	6,723	0	6,723	6,340	0	6340	0	0	0	0	0	0			
13	5,037	0	5,037	5,165	0	5165	0	0	0	0	0	0			
14	3,888	0	3,888	2,389	0	2389	0	0	0	0	0	0			
15	14,580	0	14,580	3,602	0	3602	0	0	0	0	0	0			
16	1,686	0	1,686	290	0	290	0	0	0	0	0	0			
17	17,575	0	17,575	8,693	0	8693	0	0	0	0	0	0			
18	8,576	0	8,576	4,645	0	4645	0	0	0	0	0	0			
Subtotal District 1	62,241	0	62,241	42,332	0	42,332	0	0	0	0	0	0	104,573	0	104,573
334-21	9,223	0	9,223	4,100	0	4,100	0	0	0	0	0	0			
22	14,350	0	14,350	5,314	0	5,314	0	0	0	0	0	0			
23	4,514	0	4,514	1,435	0	1,435	0	0	0	0	0	0			
24	8,734	0	8,734	1,395	0	1,395	0	0	0	0	0	0			
25	4,871	0	4,871	625	0	625	0	0	0	0	0	0			
Subtotal District 2	41,692	0	41,692	12,869	0	12,869	0	0	0	0	0	0	54,561	0	54,561
334-31	1,114	0	1,114	35	0	35	0	0	0	0	0	0			
32	0	0	0	0	0	0	0	0	0	0	0	0			
Subtotal District 3	1,114	0	1,114	35	0	35	0	0	0	0	0	0	1,149	0	1,149
Total Lower Yukon	105,047	0	105,047	55,236	0	55,236	0	0	0	0	0	0	160,283	0	160,283

-Continued-

Table 4. (p. 2 of 2)

Statistical Area	Chinook			Summer Chum			Fall Chum			Coho			Total Salmon		
	Numbers	Roe	Estimated	Numbers	Roe	Estimated	Numbers	Roe	Estimated	Numbers	Roe	Estimated	Numbers	Roe	Estimated
334-42	389	374	539	2,844	6,455	14,803	0	0	0	0	0	0			
43	1,827	176	1,897	767	929	2,436	0	0	0	0	0	0			
44 [b]	0	0	0	0	18,095	35,543	0	0	0	0	0	0			
45	0	0	0	0	15,091	30,307	0	0	0	0	0	0			
46	0	14	7	0	29,615	65,944	0	0	0	0	0	0			
47	0	0	0	0	19,532	22,574	0	0	0	0	0	0			
Subtotal District 4	2,216	564	2,443	3,611	89,717	171,607	0	0	0	0	0	0	5,827	90,281	174,050
334-51	0	0	0	0	0	0	0	0	0	0	0	0			
52	1,648	10	1,653	133	212	368	0	0	0	0	0	0			
53	1,641	0	1,641	96	0	96	0	0	0	0	0	0			
54	0	0	0	0	0	0	0	0	0	0	0	0			
55	450	0	450	0	0	0	3,630	0	3,630	0	0	0			
Subtotal District 5	3,739	10	3,744	229	212	464	3,630	0	3,630	0	0	0	7,598	222	7,838
334-61	0	0	0	5,114	0	5,114	0	0	0	0	0	0			
62	1,941	1,513	2,333	13,805	5,643	21,182	0	3,239	4,319	0	5,398	4,184			
63	194	307	273	2,289	2,185	5,138	1	37	50	120	190	267			
Subtotal District 6	2,135	1,820	2,606	21,208	7,828	31,434	1	3,276	4,369	120	5,588	4,451	23,464	18,512	42,860
Total Upper Yukon	8,090	2,394	8,793	25,048	97,757	203,505	3,631	3,276	7,999	120	5,588	4,451	36,889	109,015	224,748
Grand Total Yukon Area	113,137	2,394	113,840	80,284	97,757	258,741	3,631	3,276	7,999	120	5,588	4,451	197,172	109,015	385,031

a Sales reported in numbers of fish sold in the round and pounds of unprocessed roe. Estimated harvest includes the number of females harvested to produce salmon roe sold, except summer chum salmon in District 4 which also includes the estimated number of males harvested. Does not include ADF&G test fishery sales.

b Does not include 33 pounds of pink salmon roe.

Table 5. Commercial salmon catch and CPUE by fishing period, set and drift gillnets combined, District 1, Lower Yukon Area, 1994. [a]

Period	Period Dates	Hours Fished	Fisher-men	Period Catch and Catch Per Unit Effort						Cumulative Catch and Catch Per Unit Effort					
				Chinook	CPUE	Coho	CPUE	Chum	CPUE	Chinook	CPUE	Coho	CPUE	Chum	CPUE
1 [b]	6/13-6/13	6	396	13,549	5.70	0	0.00	4,113	1.73	13,549	5.70	0	0.00	4,113	1.73
2 [b]	6/16-6/17	9	400	23,048	6.40	0	0.00	5,765	1.60	36,597	6.12	0	0.00	9,878	1.65
3 [b]	6/22-6/23	9	398	13,822	3.86	0	0.00	8,888	2.48	50,419	5.28	0	0.00	18,766	1.96
4 [c]	6/27-6/27	6	391	11,214	4.78	0	0.00	8,197	3.49	61,633	5.18	0	0.00	26,963	2.27
8 Inch or Greater and Unrestricted Mesh Size Subtotal		30	448	61,633	5.18	0	0.00	26,963	2.27						
5	7/04-7/05	9	241	608	0.28	0	0.00	15,369	7.09	608	0.28	0	0.00	15,369	7.09
Restricted mesh Size Subtotal [d]		9	241	608	0.28	0	0.00	15,369	7.09						
Summer Season Total		39	414	62,241	4.42	0	0.00	42,332	3.01						
Fall Season Total [f]		0	0	0	0.00	0	0.00	0	0.00						
Grand Total		39	414	62,241		0		42,332							

[a] Catches reported in numbers of fish sold in the round. Does not include ADF&G test fishery sales.
[b] During periods 1-3, gillnets were restricted to 8 inch or greater mesh size and fishermen were encouraged to use their commercially caught summer chum salmon for subsistence purposes in order to conserve chum salmon.
[c] Unrestricted mesh size gillnets allowed.
[d] Six inch maximum mesh size restriction in effect.
[f] No commercial openings.

Table 6. Commercial salmon catch and CPUE by fishing period, set and drift gillnets combined, District 2, Lower Yukon Area, 1994. [a]

Period	Period Dates	Hours Fished	No. of Fishermen	Period Catch and Catch Per Unit Effort						Cumulative Catch and Catch Per Unit Effort					
				Chinook	CPUE	Coho	CPUE	Chum	CPUE	Chinook	CPUE	Coho	CPUE	Chum	CPUE
1 [b]	6/15-6/15	6	228	8,173	5.97	0	0.00	1,775	1.30	8,173	5.97	0	0.00	1,775	1.30
2 [b]	6/21-6/21	9	233	18,222	8.69	0	0.00	5,507	2.63	26,395	7.62	0	0.00	7,282	2.10
3 [b]	6/26-6/27	9	234	11,167	5.30	0	0.00	4,141	1.97	37,562	6.74	0	0.00	11,423	2.05
4 [c]	7/03-7/03	6	206	4,130	3.34	0	0.00	1,446	1.17	41,692	6.12	0	0.00	12,869	1.89
8 Inch or Greater and Unrestricted Mesh Size Subtotal		30	250	41,692	6.12	0	0.00	12,869	1.89						
Restricted Mesh Size Subtotal [d]		0	0	0	0.00	0	0.00	0	0.00						
Summer Season Total		30	250	41,692	6.12	0	0.00	12,869	1.89						
Fall Season Total [f]		0	0	0	0.00	0	0.00	0	0.00						
Grand Total		30	250	41,692		0		12,869							

[a] Catches reported in numbers of fish sold in the round. Does not include ADF&G test fishery sales.
[b] During periods 1-3, gillnets were restricted to 8 inch or greater mesh size and fishermen were encouraged to use their commercially caught summer chum salmon for subsistence purposes in order to conserve chum salmon.
[c] Unrestricted mesh size gillnets allowed.
[d] Six inch maximum mesh size restriction.
[f] No commercial openings.

Table 7. Commercial salmon catch and CPUE by fishing period, set and drift gillnets combined, District 3, Lower Yukon Area, 1994. [a]

Period	Period Dates	Hours Fished	No. of Fishermen	Period Catch and Catch Per Unit Effort						Cumulative Catch and Catch Per Unit Effort					
				Chinook	CPUE	Coho	CPUE	Chum	CPUE	Chinook	CPUE	Coho	CPUE	Chum	CPUE
1	6/22-6/23	12	5	597	9.95	0	0.00	0	0.00	597	9.95	0	0.00	0	0.00
2	6/26-6/27	12	7	517	6.15	0	0.00	35	0.42	1,114	7.74	0	0.00	35	0.24
8 inch or Greater Mesh size subtotal [b]		24	7	1,114	7.74	0	0.00	35	0.24						
Summer Season Total		24	7	1,114	7.74	0	0.00	35	0.24						
Fall Season Total [c]		0	0	0	0.00	0	0.00	0	0.00						
Grand Total		24	7	1,114		0		35							

[a] Catches reported in numbers of fish sold in the round.
[b] Gillnets were restricted to 8 inch or greater mesh size in order to conserve summer chum salmon.
[c] No commercial season.

Table 8. Commercial salmon and salmon roe sales and effort by fishing period, set gillnets and fish wheels combined, District 4, Upper Yukon Area, 1994.

Subdistrict 4-A

Period	Period Dates	Hours Opened	No. of Fishermen	Chinook Salmon Number [a]	Chinook Salmon Pounds of Roe	Chinook Expansion Roe Weight [b]	Chinook Expansion Estimated Harvest [c]	Summer Chum Salmon Number [a]	Summer Chum Salmon Pounds of Roe	Salmon Expansion Percent Females [d]	Salmon Expansion Roe Weight [d]	Salmon Expansion Estimated Harvest [f]
1	7/07-7/08	24	31	0	0	2.00	0	0	21,890	0.63	0.83	41,904
2	7/11-7/12	18	36	0	0	2.00	0	0	21,155	0.50	0.81	52,785
3	7/14-7/15	24	32	0	0	2.00	0	0	11,874	0.70	0.84	20,767
4 [g]	7/18-7/19	24	21	0	14	2.00	7	0	7,882	0.66	0.77	16,338
Subtotal		90	41	0	14	2.00	7	0	62,801			131,794

Harvest Guideline Range: 113,000 to 338,000 Summer Chum Salmon

Anvik River Management Area

Period	Period Dates	Hours Opened	No. of Fishermen	Summer Chum Salmon Number [a]	Summer Chum Salmon Pounds of Roe	Salmon Expansion Percent Females	Salmon Expansion Roe Weight [d]	Salmon Expansion Estimated Harvest [e]
1	7/09-7/10	8	15	0	5,329		0.89	5,989
2	7/10-7/11	8	16	0	4,868		0.83	5,865
3	7/12-7/13	8	12	0	3,063		0.85	3,603
4	7/13-7/14	8	14	0	2,951		0.91	3,243
5	7/16-7/17	12	9	0	2,292		0.87	2,634
6	7/17-7/18	12	7	0	1,029		0.83	1,240
Subtotal		56	20	0	19,532			22,574

-Continued-

Table 8. (p. 2 of 2)

Subdistricts 4-B and 4-C

Period	Period Dates	Hours Opened	No. of Fishermen	Chinook Salmon Number [a]	Chinook Salmon Pounds of Roe	Chinook Expansion Roe Weight [d]	Chinook Expansion Estimated Harvest [c]	Summer Chum Salmon Number [a]	Summer Chum Salmon Pounds of Roe	Chum Salmon Expansion Percent Females [d]	Chum Salmon Expansion Roe Weight [d]	Chum Salmon Expansion Estimated Harvest [f]
1	6/22-6/24	48	4	199	0	2.56	199	1	0	0.00	0.00	1
2	6/26-7/28	48	5	453	0	2.56	453	158	0	0.43	1.00	158
3	6/29-7/01	48	4	659	3	2.63	660	589	67	0.55	0.83	735
4	7/03-7/05	48	7	905	73	2.54	934	1,011	92	0.55	0.91	1,195
5	7/10-7/12	48	12	0	457	2.54	184	1,252	4,192	0.60	0.90	8,933
6	7/13-7/14	24	12	0	17	2.54	6	600	3,033	0.60	0.90	6,217
Subtotal		264	16	2,216	550		2,436	3,611	7,384			17,239

Harvest Guideline Range: 2,250 to 2,650 Chinook Salmon 16,000 to 47,000 Summer Chum Salmon

[a] Number of salmon sold in the round.
[b] Estimated average roe weight in pounds per female used in expansion.
[c] Estimated harvest is the number of fish sold in the round plus estimated females harvested to produce roe sold.
[d] Weighted averages of percent female plus roe weights per period not used in determining estimated harvest subtotals.
[e] Estimated harvest is the estimated number of males and females harvested to produce roe sold. Numbers sold in the round are assumed to be primarily males and are not added to estimated harvest to avoid double counting.
[g] Does not include 33 pounds of pink salmon roe.

Table 9. Commercial salmon and salmon roe sales and effort by fishing period, set gillnets and fish wheels combined, District 5, Upper Yukon Area, 1994.

Subdistricts 5-A, B, C

Period	Date	Hours Opened	Number of Fishermen	Chinook Salmon Number	Chinook Salmon Pounds of Roe	Chinook Expansion Roe Weight[a]	Chinook Expansion Estimated Harvest[b]	Summer Chum Salmon Number	Summer Chum Salmon Pounds of Roe	Chum Expansion Roe Weight[a]	Chum Expansion Estimated Harvest[b]
1	7/05-7/06	24	23	1,756	0	2.22	1,756	157	28	0.90	188
2	7/08-7/09	12	21	1,533	10	2.22	1,538	72	184	0.90	276
Subtotal		36	25	3,289	10		3,294	229	212		464
Harvest Guideline Range:						2,400 to 2,800 Chinook			1,000 to 3,000 Summer Chum Salmon		

-Continued-

Table 9. (p.2 of 2)

Subdistrict 5-D EARLY SEASON

Period	Date	Hours Opened	Number of Fishermen	Chinook	Summer Chum Salmon Number	Summer Chum Salmon Pounds of Roe	Chum Expansion Roe Weight [a]	Chum Expansion Estimated Harvest [b]
1	7/12-7/14	36	3	159	0	0	-	0
2	7/18-7/19	24	2	291	0	0	-	0
Subtotal		60	3	450	0	0		0
Harvest Guideline Range:					300 to 500 Chinook Salmon			

Subdistrict 5-D LATE SEASON

Period	Date	Hours Opened	Number of Fishermen	Coho	Fall Chum Salmon Number	Fall Chum Salmon Pounds of Roe	Chum Expansion Roe Weight [a]	Chum Expansion Estimated Harvest [b]
3	9/19-9/21	48	1	0	1,140	0	-	1,140
4	9/22-9/24	48	1	0	1,290	0	-	1,290
5	9/26-9/28	48	1	0	1,200	0	-	1,200
Subtotal		144	1	0	3,630	0	-	3,630
Harvest Guideline Range:					1,000 to 4,000 Fall Chum and Coho Salmon			

[a] Estimated average roe weight in pounds per female used in expansion.
[b] Estimated harvest is the number of fish sold in the round plus estimated number of females harvested to produce roe sold.

Table 10. Commercial salmon and salmon roe sales and effort by fishing period, set gillnets and fish wheels combined, District 6, Upper Yukon Area, 1994. [a]

District 6 EARLY SEASON

				Chinook Salmon		Chinook Expansion		Summer Chum Salmon		Chum Expansion	
Period	Date	Hours Opened	Number of Fishermen	Number	Pounds of Roe	Roe Weight [b]	Estimated Harvest [c]	Number	Pounds of Roe	Roe Weight [b]	Estimated Harvest [c]
1	7/11-7/13	42	16	1,994	1,328	3.86	2,337	4,407	602	0.77	5,189
2	7/22-7/24	42	17	111	238	3.86	173	7,399	2,852	0.78	11,056
3	7/29-7/31	42	16	29	188	3.86	78	4,991	1,924	0.76	7,523
4	8/05-8/07	42	14	1	66	3.86	18	3,508	1,824	0.75	5,940
5	8/08-8/10	42	11	0	0	0.00	0	903	626	0.76	1,726
Subtotal		210	20	2,135	1,820	-	2,606	21,208	7,828	-	31,434
Harvest Guideline Range:						600 to 800 Chinook		13,000 to 38,000 Summer Chum Salmon			

District 6 LATE SEASON

				Coho Salmon		Coho Expansion		Fall Chum Salmon		Chum Expansion	
Period	Date	Hours Opened	Number of Fishermen	Number	Pounds of Roe	Roe Weight [b]	Estimated Harvest [c]	Number	Pounds of Roe	Roe Weight [b]	Estimated Harvest [c]
6	9/19-9/20	24	11	120	5,588	1.29	4,451	1	3,276	0.75	4,369
Subtotal			11	120	5,588		4,451	1	3,276		4,369
Harvest Guideline Range:							2,750 to 20,500 Fall Chum and Coho Salmon Combined				

[a] Does not include the department test fish sales.
[b] Estimated average roe weight in pounds per female used in expansion.
[c] Estimated harvest is the number of fish sold in the round plus estimated number of females harvested to produce roe sold.

Table 11. Yukon River drainage total estimated commercial related salmon catch by district and country, 1994. [a]

Districts	Number of Fishermen [c]	Chinook Sold in Round	Chinook Pounds of Roe	Chinook Estimated Harvest [b]	Summer Chum Sold in Round	Summer Chum Pounds of Roe	Summer Chum Estimated Harvest [b]	Fall Chum Sold in Round	Fall Chum Pounds of Roe	Fall Chum Estimated Harvest [b]	Coho Sold in Round	Coho Pounds of Roe	Coho Estimated Harvest [b]
1	414	62,241	0	62,241	42,332	0	42,332	0	0	0	0	0	0
2	250	41,692	0	41,692	12,869	0	12,869	0	0	0	0	0	0
Subtotal	657	103,933	0	103,933	55,201	0	55,201	0	0	0	0	0	0
Subtotal District 3	7	1,114	0	1,114	35	0	35	0	0	0	0	0	0
Total Lower Yukon	659	105,047	0	105,047	55,236	0	55,236	0	0	0	0	0	0
Anvik River	20	0	0	0	0	19,532	22,574	0	0	0	0	0	0
4-A	41	0	14	7	0	62,801	131,794 d	0	0	0	0	0	0
4-BC	16	2,216	550	2,436	3,611	7,384	17,239 d	0	0	0	0	0	0
Subtotal District 4	55	2,216	564	2,443	3,611	89,717	171,607 d	0	0	0	0	0	0
5-ABC	25	3,289	10	3,294	229	212	464	0	0	0	0	0	0
5-D	3	450	0	450	0	0	0	3,630	0	3,630	0	0	0
Subtotal District 5	28	3,739	10	3,744	229	212	464	3,630	0	3,630	0	0	0
Subtotal District 6	20	2,135	1,820	2,606	21,208	7,828	31,434	1	3,276	4,369	120	5,588	4,451
Total Upper Yukon	103	8,090	2,394	8,793	25,048	97,757	203,505	3,631	3,276	7,999	120	5,588	4,451
Total Alaskan	762	113,137	2,394	113,840	80,284	97,757	258,741	3,631	3,276	7,999	120	5,588	4,451
Total Canada	30	12,028	0	12,028	0	0	0	30,035	0	30,035	2	0	2
Grand Total	792	125,165	2,394	125,868	80,284	97,757	258,741	33,666	3,276	38,034	122	5,588	4,453

[a] Does not include ADF&G test fishery sales.
[b] Unless otherwise noted, estimated harvest is the number of fish sold in the round plus the estimated number of females harvested to produce roe sold (pounds of roe sold divided by weighted average roe weight per female).
[c] Number of unique permits fished by district, subdistrict or area. Totals by area may not add up due to transfers between districts or subdistricts.
[d] Estimated harvest includes both males and females harvested to produce roe sold(pounds of roe sold divided by weighted average roe weight per female divided by average percent females in the harvest). Summer chum salmon sold in the round in District 4 are assumed to be males and are included in the estimated harvest calculation.
[e] Does not include 33 pounds of pink salmon roe.

Table 13. (p. 2 of 2). a

Village	Survey Date		b	Fishing Households	Dogs	Chinook	Summer Chum	Fall Chum	Coho	Set Nets	Drift Nets	Fish Wheels
Venetie	10/25-10/26			28	244	524	567	4,302	4	22	0	6
Chalkyitsik	10/26-10/27			7	90	0	0	1,751	456	7	0	0
Chandalar/Black Rivers Subtotal				35	334	524	567	6,053	460	29	0	6
District 5 Subtotal				288	1,989	19,628	12,506	66,396	4,174	195	0	93
Manley	permits		s	23	476	480	1,405	13,722	10,410	17	0	6
Minto	permits		t	33	539	316	509	1,419	2,616	29	0	4
Nenana	permits		u	26	419	759	1,352	11,201	9,387	11	0	15
Healy	permits		v	3	91	0	0	2,002	1,958	2	0	1
Fairbanks NSB	permits		w	118	702	775	3,693	5,006	2,103	102	0	16
Delta Junction	permits		x	4	21	10	25	202	15	4	0	0
Other	permits		y	7	21	30	42	45	0	7	0	0
Retained from Commercial						198	3,518	0	2,900			
District 6 Tanana R. Subtotal				214	2,269	2,568	10,544	33,597	29,389	172	0	42
Upper Yukon River Drainage Total				793	6,199	33,017	56,766	113,504	37,215	521	103	169
Survey Subtotals				1,142	5,936	43,840	107,198	68,444	12,146	590	439	113
Permit Subtotals			z	296	2,832	7,743	7,551	49,304	26,544	240	0	56
ADF&G Test Fish Subtotals						2,319	10,058	5,817	3,085			
Retained from Commercial Subtotals						1,486	22,606	0	2,900			
Alaska, Yukon River Drainage Total				1,324	8,401	54,563	132,510	123,218	44,594	716	439	169
Yukon Area Total (including coastal communities)				1,438	8,768	55,388	147,413	123,565	44,675	830	439	169

a Data collected by Commercial Fisheries Management and Development Division. Survey data is expanded for number of fishing households, number of dogs, and catch data. Permit data is unexpanded, the number of dogs is based on permits issued, while the number of fishing households and their catch is based on returned permits. Gear data represents the principal gear types used by fishing households, with the exception of gear types not listed.
b Estimated number of households that fished in surveyed communities or number of permittees who reported fishing in permit required areas.
c A tagging study conducted at Hooper Bay in 1986 by the Bering Sea Fishermen's Association concluded that harvests in the Nuok Spit area of Hooper Bay intercepted Yukon River and Norton Sound chum salmon stocks.
d Includes 1,001 chinook, 2,992 summer chum, 1,522 fall chum, and 823 coho salmon from ADF&G test fish catches.
e Includes 984 chinook, 4,068 summer chum, 1,044 fall chum, and 1,210 coho salmon from ADF&G test fish catches.
f Salmon retained from commercial catches and used for subsistence purposes as recorded on fish tickets, as reported during subsistence surveys, or as estimated in Dan Bergstrom memorandum dated 10/6/94, whichever District total was higher.
g Includes 334 chinook, 2,998 summer chum, 1,349 fall chum, and 786 coho salmon from ADF&G test fish catches.
h Summer chum salmon available for subsistence use as a product of the commercial roe fishery were recorded as commercial related harvest.
i Does not include 103,002 summer chum salmon taken during commercial roe fishery used for subsistence as documented by surveys.
j Shageluk harvest data from households fishing mainstem Yukon River and Innoko River.
k Villages of Hughes, Allakaket & Alatna were not surveyed due to floods in September 1994. 5 year averages, 1989 to 1993, are shown.
l Includes 1895 fall chum and 266 coho from ADF&G test fish catches.
m Data from Fairbanks North Star Borough fishermen who fished the Yukon River in a permit required area. Of the 42 permits issued, 42 returned their permits and 29 fished.
n Permit harvest information from Stevens Village residents was included in the survey data.
o Circle. Of the 22 permits issued, 21 returned their permits and 11 fished.
p Central. Of the 11 permits issued, 11 returned their permits and 8 fished.
q Eagle. Of the 37 permits issued, 35 returned their permits and 27 fished.
r Other includes residents of Manley, Minto, Nenana, Tok and Wasilla who fished the Yukon River in a permit area. Of the 9 permits issued, 9 returned their permits and 7 fished.
s Manley . Of the 25 permits issued, 25 returned their permits and 23 fished.
t Minto. Of the 44 permits issued, 42 returned their permits and 33 fished. Includes 12 households that fished in two different permit areas.
u Nenana. Of the 46 permits issued, 39 returned their permits and 26 fished. Includes 7 fall chum from ADF&G test fish wheel.
v Healy. Of the 5 permits issued, 5 returned their permits and 3 fished.
w Data from Fairbanks North Star Borough fishermen who fished the Tanana River. Of the 158 permits issued, 156 returned their permits and 113 fished. Includes 2 households that fished in two different permit areas.
x Delta. Of the 5 permits issued, 5 returned their permits and 4 fished. Does not include 175 fall chum collected under three Delta River carcass permits.
y Other includes residents of Anchorage, Bettles, Birch Creek, Dot Lake, Eagle River, Juneau, Northway, and Tok who fished the Tanana River. Of the 9 permits issued, 9 returned their permits and 7 fished. Does not include 75 fall chum carcasses collected under one Delta River carcass permit issued to a Northway household.
z Does not include Delta River carcass permits or Stevens Village.

Table 13. (page 2 of 2).

Village	Survey Date		Fishing Households b	Dogs	Estimated Harvest: Chinook	Summer Chum	Fall Chum	Coho	Primary Gear Used: Set Nets	Drift Nets	Fish Wheels
Venetie	10/25-10/26		13	209	434	552	6,085	0	12	0	1
Chalkyitsik	11/9-11/10		6	57	0	0	845	0	6	0	0
Chandalar/Black Rivers Subtotal			19	266	434	552	6,930	0	18	0	1
District 5 Subtotal			238	1,937	16,866	7,655	57,594	2,205	177	1	60
Manley	permits	s	19	468	335	1,657	20,272	7,395	11	0	8
Minto	permits	t	28	238	535	1,320	4,782	338	22	0	6
Nenana	permits	u	38	513	619	5,050	15,720	7,153	15	0	23
Healy	permits	v	4	90	6	18	2,142	851	4	0	0
Fairbanks NSB	permits	w	106	341	652	4,291	7,027	3,482	89	0	9
Delta Junction	permits	x	4	1	0	0	85	0	2	0	0
Other	permits	y	14	72	31	105	3	0	13	0	1
District 6 Tanana R. Subtotal			213	1,723	2,178	12,441	50,031	19,219	156	0	47
Upper Yukon River Drainage Total			756	5,569	28,679	52,722	121,808	23,358	497	91	156
Survey Village Subtotals			1,130	5,251	41,304	115,025	53,344	8,042	575	447	101
Permit Area Subtotals			298	2,218	7,830	13,474	71,068	19,245	233	0	55
Test Fish Subtotals		z			1,885	8,364	7,311	1,507			
Alaska, Yukon River Drainage Total			1,304	6,873	48,934	119,503	131,369	28,642	692	442	156
Yukon Area Total (including coastal communitites)			1,428	7,469	51,019	136,863	131,723	28,794	808	447	156

a Data collected by Alaska Department of Fish and Game (ADF&G) Commercial Fisheries Management and Development Division. Survey data is expanded for number of fishing households, number of dogs, and catch data. Permit data is unexpanded, the number of dogs is based on permits issued, while the number of fishing households and their catch is based on returned permits. Gear data represents the principal gear types used by fishing households.

b Estimated number of households that fished in surveyed communities or number of permittees who reported fishing in permit required areas.

c A tagging study conducted at Hooper Bay in 1986 by the Bering Sea Fishermen's Association (BSFA) concluded that harvests in the Nuok Spit area of Hooper Bay intercepted Yukon River and Norton Sound chum salmon stocks.

d Includes 795 chinook, 3,005 summer chum, 1,133 fall chum, and 240 coho salmon from ADF&G test fish catches.

e Includes 920 chinook, 3,377 summer chum, 1,275 fall chum, and 339 coho salmon from ADF&G test fish catches.

f Includes 1 chinook, 523 fall chum, and 559 coho salmon from BSFA test fish catches.

g Includes 166 chinook, 1,875 summer chum, 541 fall chum, and 205 coho salmon from ADF&G test fish catches.

h Includes 2 chinook, 57 summer chum, and 199 fall chum salmon from BSFA test fish catches.

j Includes 1,876 fall chum and 164 coho salmon from BSFA test fish catches.

k Data from Fairbanks North Star Borough fishermen who fished the Yukon River in a permit required area. Of the 46 permits issued, 46 returned their permits and 31 fished. Includes two households that also applied to fish on the Tanana River.

m Permit harvest information from Stevens Village residents was included in the survey data.

n Includes 1,570 fall chum salmon from Council of Athabaskan Tribal Governments (CATG) test fish catches.

o Of the 15 permits issued in Circle, 15 returned their permits and 9 fished.

p Of the 9 permits issued in Central, 9 returned their permits and 4 fished.

q Of the 46 permits issued in Eagle, 46 returned their permits and 32 fished.

r Other includes residents of Manley, Nenana, and the Upper Tanana Villages of Tanacross, Northway, and Tok who fished the Yukon River in a permit area. Of the 17 permits issued, 17 returned their permits and 9 fished.

s Of the 28 permits issued in Manley, 25 returned their permits and 19 fished. Includes 1 chinook, 50 summer chum, and 194 fall chum salmon from the Tanana Tagging Project given away to a resident of Manley.

t Of the 65 permits issued in Minto, 64 returned their permits and 28 fished. Includes 31 Tolovana River Pike permits.

u Of the 49 permits issued in Nenana, 3 were Subdistrict 6-C personal use permits and the reminder were subsistence permits, 49 returned their permits and 38 fished. Includes two households that fished on the Kantishna River.

v Of the 8 permits issued in Healy, 8 returned their permits and 4 fished. Includes one household that also applied to fish on the Kantishna River.

w Fairbanks North Star Borough fishermen who fished the Tanana River. Of the 177 permits issued, 130 were Subdistrict 6-C personal use permits and the remainder were subsistence permits, 174 returned their permits and 106 fished. Include 24 Tolovana River Pike permits. Includes two households that also applied to fish on the Yukon River and one household that switched from a subsistence to a personal use permit on the Tanana River.

x Of the 7 permits issued in Delta. 6 were personal use permits and the remainder was a subsistence permit, 7 returned their permits and 4 fished.

y Other includes residents of Ketchican, Juneau, Eagle River, and the Upper Tanana River Villages, Tetlin, Tanacross, Northway, Dot Lake, and Tok who fished in the Tanana River. Of the 52 permits issued, 3 were Subdistrict 6-C personal use permits and the remainder were subsistence permits, 48 returned their permits and 14 fished.

z Test fish given away for subsistence purposes.

Table 14. Reported subsistence and personal use salmon harvested under the authority of a permit, listed by permit area, Yukon Area, 1995. a

Permit Fishing Area	Permit Type	Permit Issued	Permit Returned	Percent Returned	Number of Permits Returned that Fished	Reported Harvest Chinook	Reported Harvest Summer Chum	Reported Harvest Fall Chum	Reported Harvest Coho
Subsistence Use									
Yukon River near Haul Road Bridge	SY	59	59	100%	39	3,253	954	2,244	59
Yukon River near Circle and Eagle	SE	87	87	100%	53	3,628	129	19,047	1
Tanana River Fishing Subdistrict 6A	SA	38	35	92%	26	455	4,894	21,720	9,584
Tanana River Fishing Subdistrict 6B	SB	98	98	100%	59	1,322	6,712	25,364	7,458
Tanana River Upstream of Subdistrict 6C	SU	50	46	92%	12	0	0	88	0
Kantishna River Fishing Subdistrict 6A	SK	3	3	100%	3	1	5	1,802	1,760
Tolovana River Pike	ST	55	52	95%	20	0	0	0	0
Subsistence Permit Subtotals		390	380	97%	212	8,659	12,694	70,265	18,862
Personal Use									
Tanana River Fishing Subdistrict 6C	PC	139	138	99%	91	399	780	863	417
Tanana River Whitefish	PW	3	3	100%	2	0	0	0	0
Personal Use Permit Subtotals		142	141	99%	93	399	780	863	417
Permit Totals		532 b	521	98%	305 c	9,058	13,474	71,128	19,279

a Does not include permit information returned after February 29, 1996. Includes permits from Stevens Village.
b Includes 41 households that were issued permits for two different areas, including 27 Minto households who were issued both Tolovana River pike and salmon permits.
c Includes 2 households that fished in two different permit areas.

Table 14. Reported Yukon Area subsistence salmon catches taken under authority of a permit, by fishing area, 1994. a

Permit Fishing Area	Permit Type	Issued	Returned	Percent Returned	Fished b	Reported Harvest Chinook	Summer Chum	Fall Chum	Coho
Yukon River near Haul Road Bridge	SY-#-94	50	49	98%	36	3,073	384	2,911	25
Yukon River near Circle and Eagle	SE-#-94	79	76	96%	51	3,093	145	12,844	30
Tanana River Fishing Subdistrict 6A	SA-#-94	34	34	100%	28	570	3,793	17,286	11,879
Tanana River Fishing Subdistrict 6B c	SB-#-94	102	94	92%	49	1,337	2,035	13,726	12,480
Tanana River Fishing Subdistrict 6C	SC-#-94	145	142	98%	107	457	1,198	1,600	1,545
Tanana River Upstream of Subdistrict 6C	SU-#-94	7	7	100%	3	0	0	202	15
Kantishna River Fishing Subdistrict 6A	SK-#-94	3	3	100%	2	6	0	790	570
Tolovana River Pike	ST-#-94	48	47	98%	24	0	0	0	0
Subsistence Permit Subtotals		468	452	97%	300	8,536	7,555	49,359	26,544
Delta River Carcasses	SD-#-94	4	4	100%	4	0	0	250	0
Permit Totals		472 d	456	97%	304 e	8,536	7,555	49,609	26,544

a Does not include permit information returned after March 20, 1995.
b The number of fishermen who fished based on returned permits.
c Includes 7 fall chum given away as part of the Department's Nenana test fish wheel program.
d Includes 43 households that were issued permits for two different areas and includes 45 Minto households who were issued salmon permits.
e Includes 14 households that fished in two different permit areas.

Table 15. Yukon River drainage total utilization of salmon by district and country, 1994. [a,b]

District	Fishery	Chinook	Summer Chum	Fall Chum	Coho
1	Commercial	62,241	42,332	0	0
	Subsistence	6,654	44,753	4,887	3,272
	Test Fish Sales	1,561	2,769	0	0
	Total	70,456	89,854	4,887	3,272
2	Commercial	41,692	12,869	0	0
	Subsistence	9,034	28,652	4,151	3,881
	Test Fish Sales	70	443	0	0
	Total	50,796	41,964	4,151	3,881
3	Commercial	1,114	35	0	0
	Subsistence	5,858	2,339	676	226
	Total	6,972	2,374	676	226
Total Lower Yukon	Commercial	105,047	55,236	0	0
	Subsistence	21,546	75,744	9,714	7,379
	Test Fish Sales	1,631	3,212	0	0
	Total	128,224	134,192	9,714	7,379
4	Commercial	2,216	3,611	0	0
	Commercial Related [c]	227	167,996	0	0
	Subsistence	10,821	33,716	13,511	3,652
	Total	13,264	205,323	13,511	3,652
5	Commercial	3,739	229	3,630	0
	Commercial Related [c]	5	235	0	0
	Subsistence	19,628	12,506	66,396	4,174
	Total	23,372	12,970	70,026	4,174
6	Commercial	2,135	21,208	1	120
	Commercial Related [c]	471	10,226	4,368	4,331
	Subsistence	2,568	10,544	33,597	29,389
	Personal use	0	0	0	0
	Test Fish Sales	0	0	0	0
	Total	5,174	41,978	37,966	33,840
Total Upper Yukon	Commercial	8,090	25,048	3,631	120
	Commercial Related [c]	703	178,457	4,368	4,331
	Subsistence	33,017	56,766	113,504	37,215
	Personal use	0	0	0	0
	Test Fish Sales	0	0	0	0
	Total	41,810	260,271	121,503	41,666
Total Yukon Area (Alaska)	Commercial	113,137	80,284	3,631	120
	Commercial Related [c]	703	178,457	4,368	4,331
	Subsistence	54,563	132,510	123,218	44,594
	Personal use	0	0	0	0
	Sport Fish	2,281	350	0	1,893
	Test Fish Sales	1,631	3,212	0	0
	Total	172,315	394,813	131,217	50,938
Total Canada	Commercial	12,028	0	30,035	2
	Subsistence [d]	8,890	0	7,973	332
	Sport Fish	300	0	0	0
	Total	21,218	0	38,008	334
Grand Total	Commercial	125,165	80,284	33,666	122
	Commercial Related [c]	703	178,457	4,368	4,331
	Subsistence	63,453	132,510	131,191	44,926
	Personal use	0	0	0	0
	Sport Fish	2,581	350	0	1,893
	Test Fish Sales	1,631	3,212	0	0
	Total	193,533	394,813	169,225	51,272

[a] Commercial harvest includes only fish sold in the round.
[b] Does not inlude 825 chinook, 14, 903 summer chum, 347 fall chum, and 81 coho salmon harvested in Hooper and Scammon Bay for subsistence use.
[c] Commercial related is the estimated harvest of females to produce roe sales; the estimated harvest of male summer chum salmon not sold is also included in Subdistrict 4. Does not include estimated harvest from 33 pounds of pink salmon roe in District 4.
[d] Combined Aboriginal and domestic fisheries.

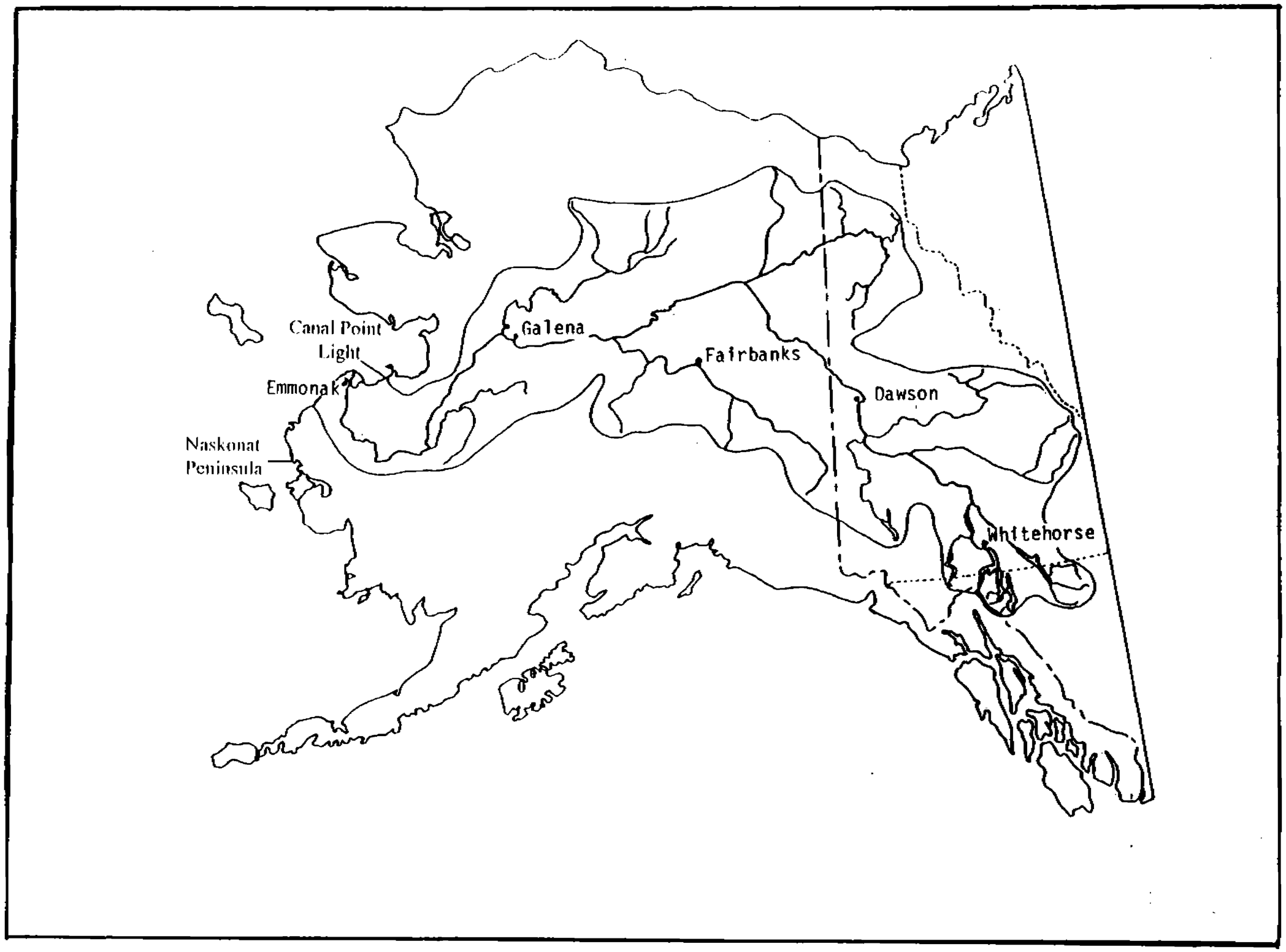

Figure 1. The Yukon River drainage, 330,000 square miles.

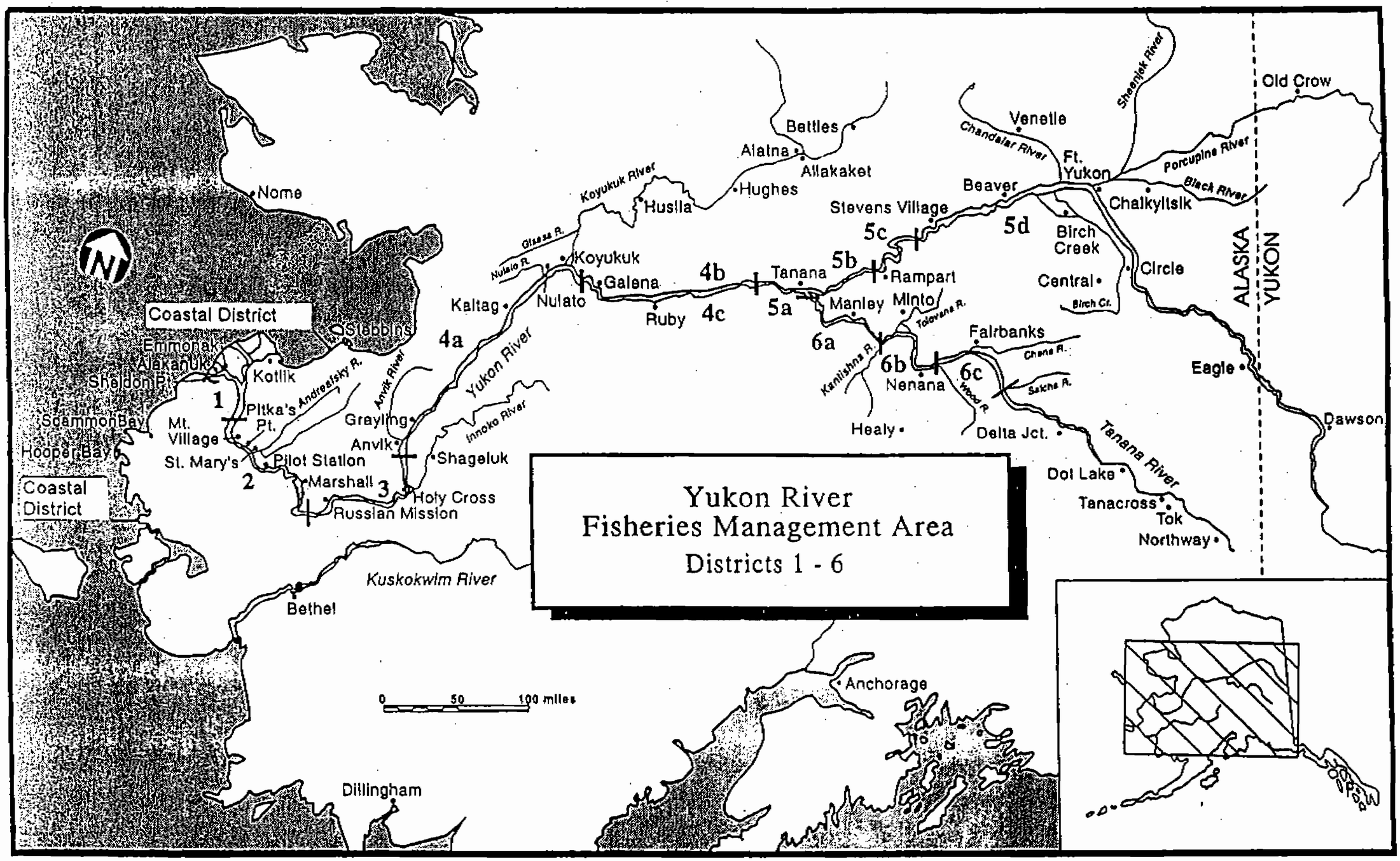

Figure 2. Map of Alaskan portion of the Yukon River drainage, showing communities and fishing districts.

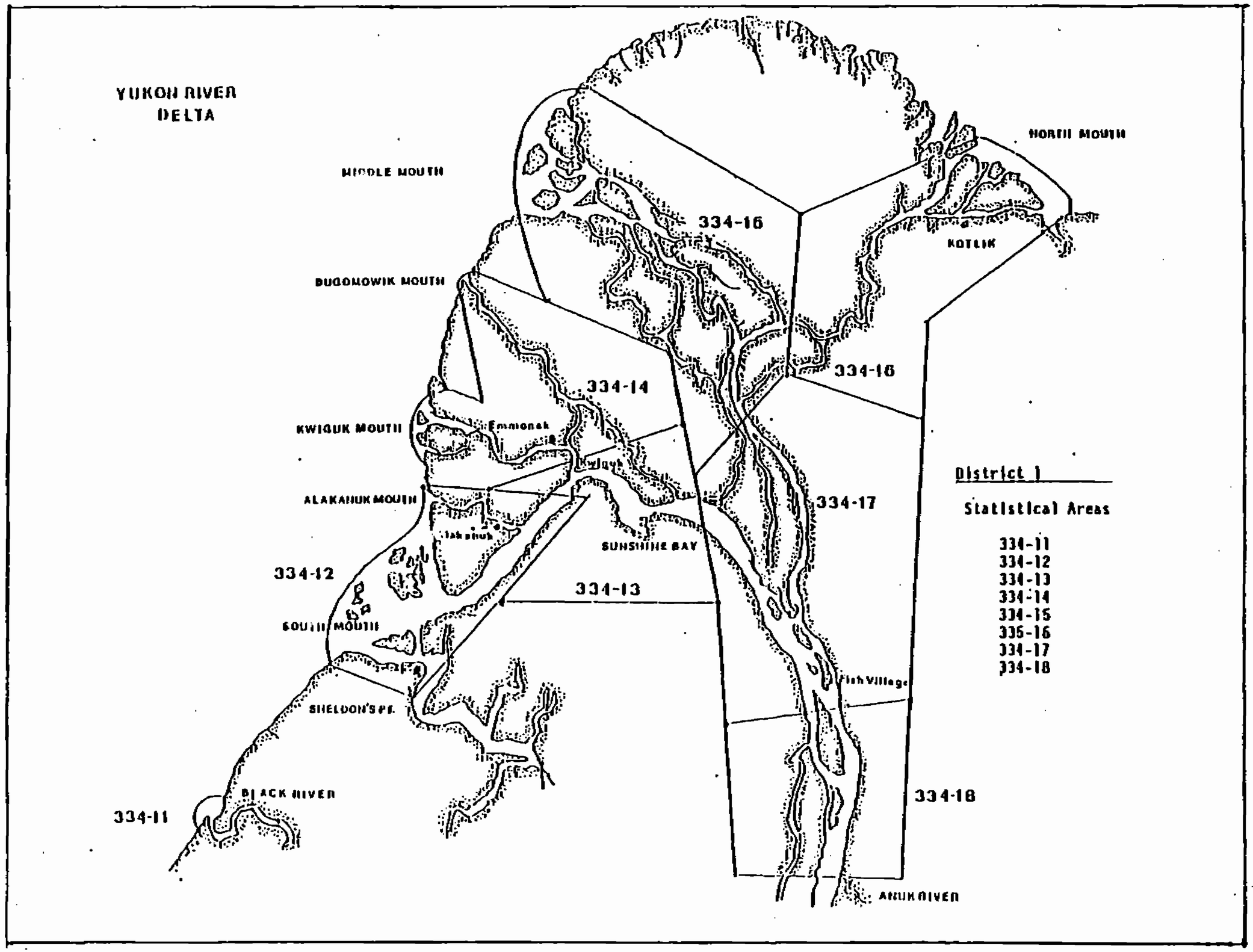

Figure 3. District 1 of Yukon management area with statistical areas.

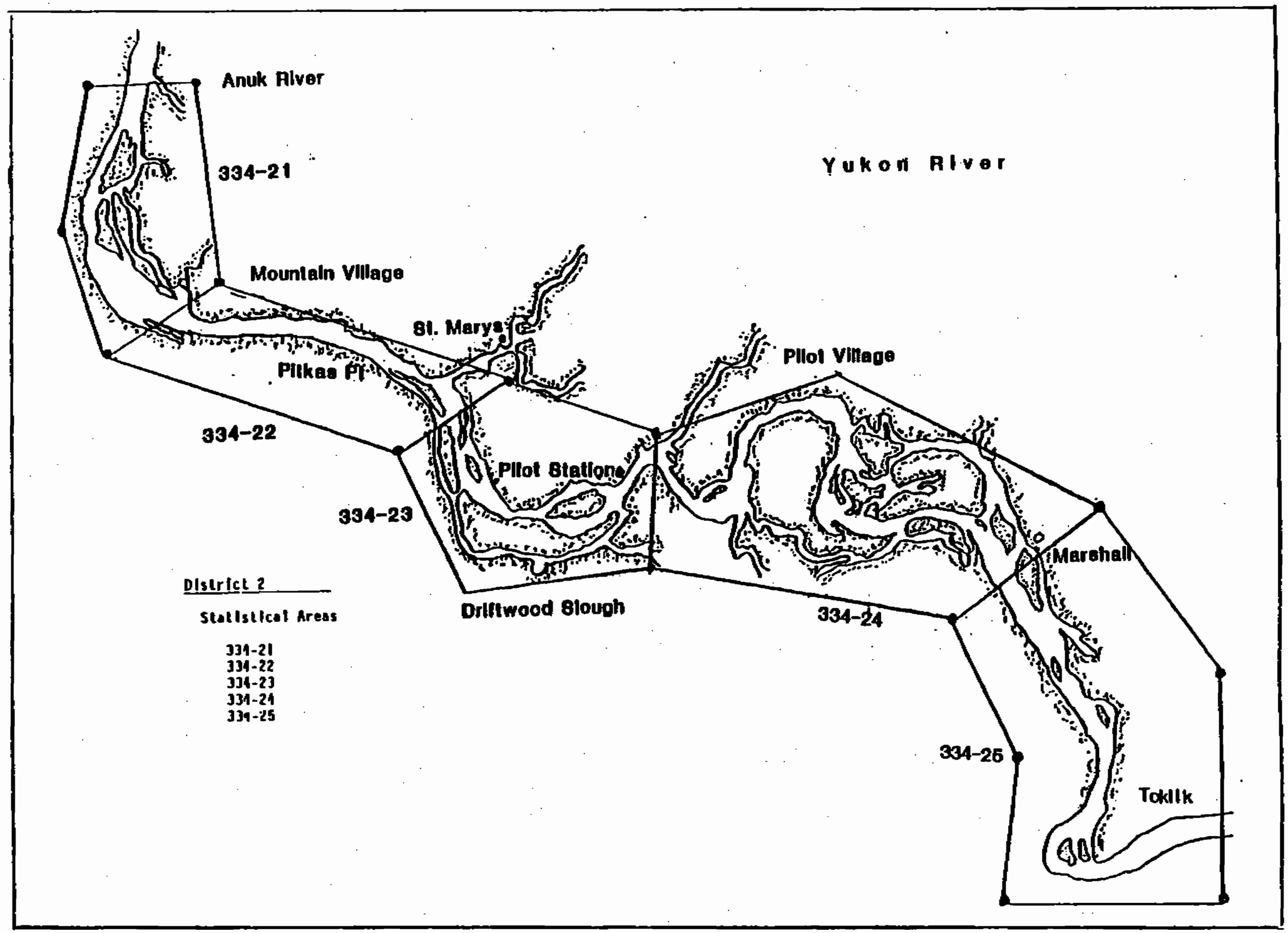

Figure 4. District 2 of Yukon management area with statistical areas.

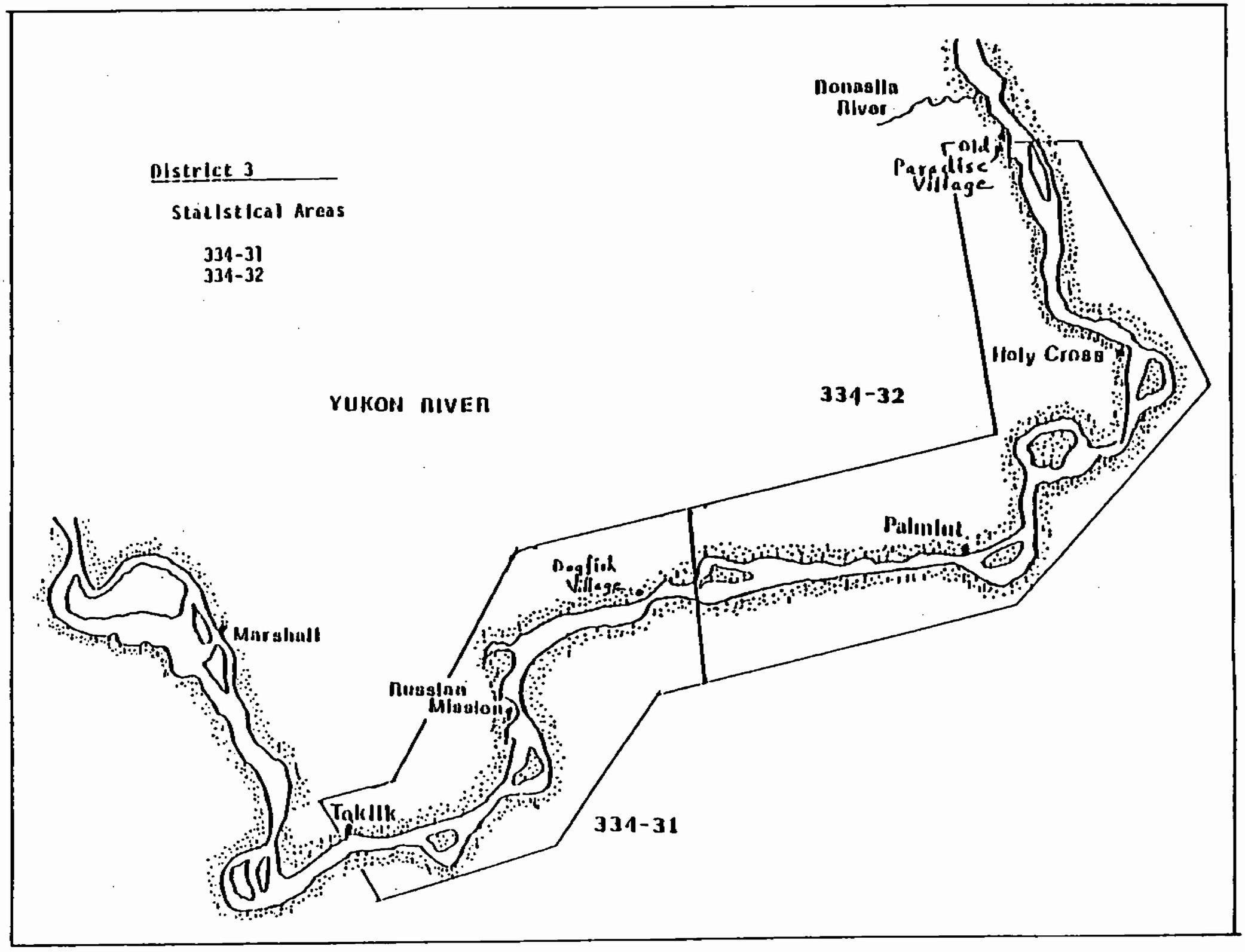

Figure 5. District 3 of Yukon management area with statistical areas.

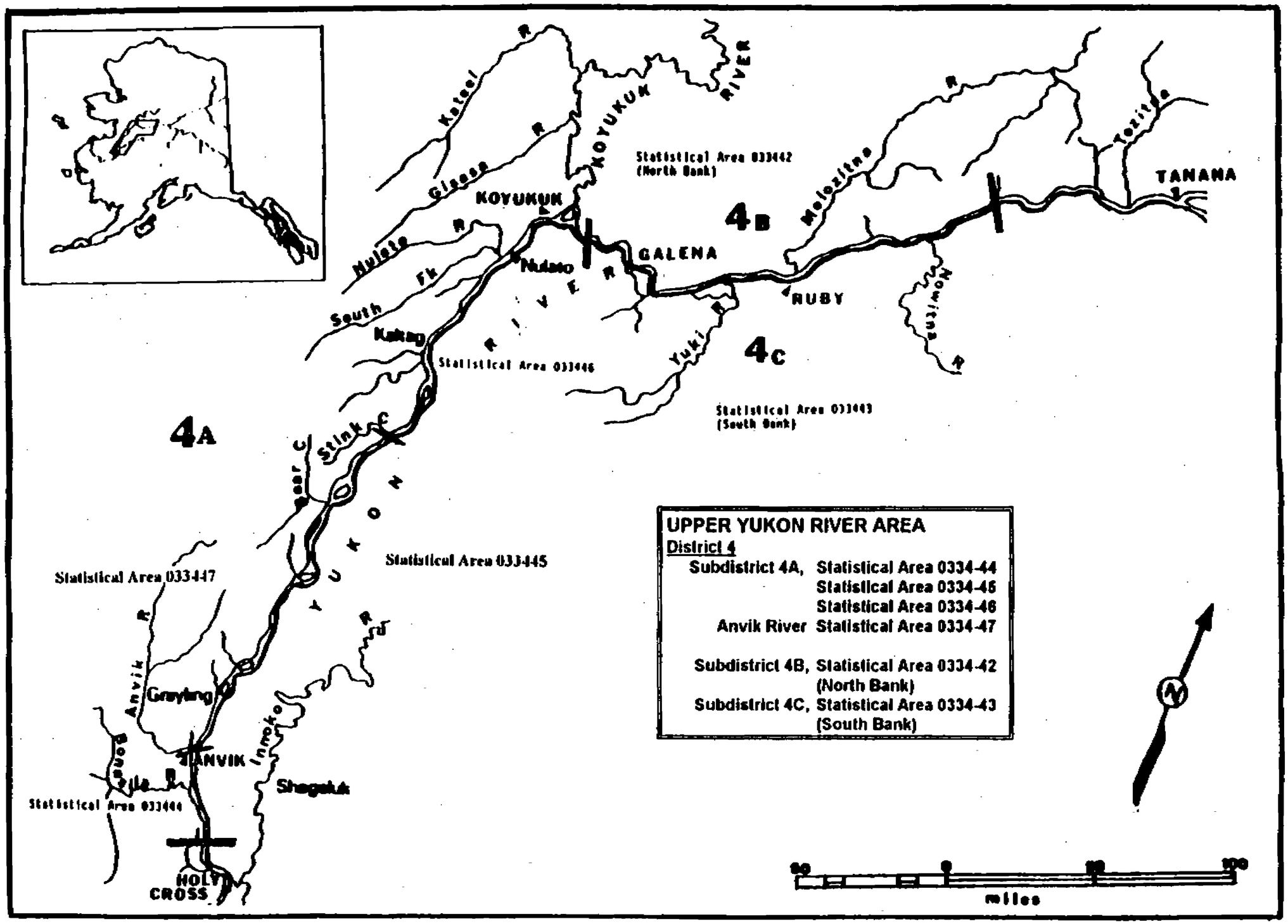

Figure 6. District 4 of Yukon Management area with statistical areas.

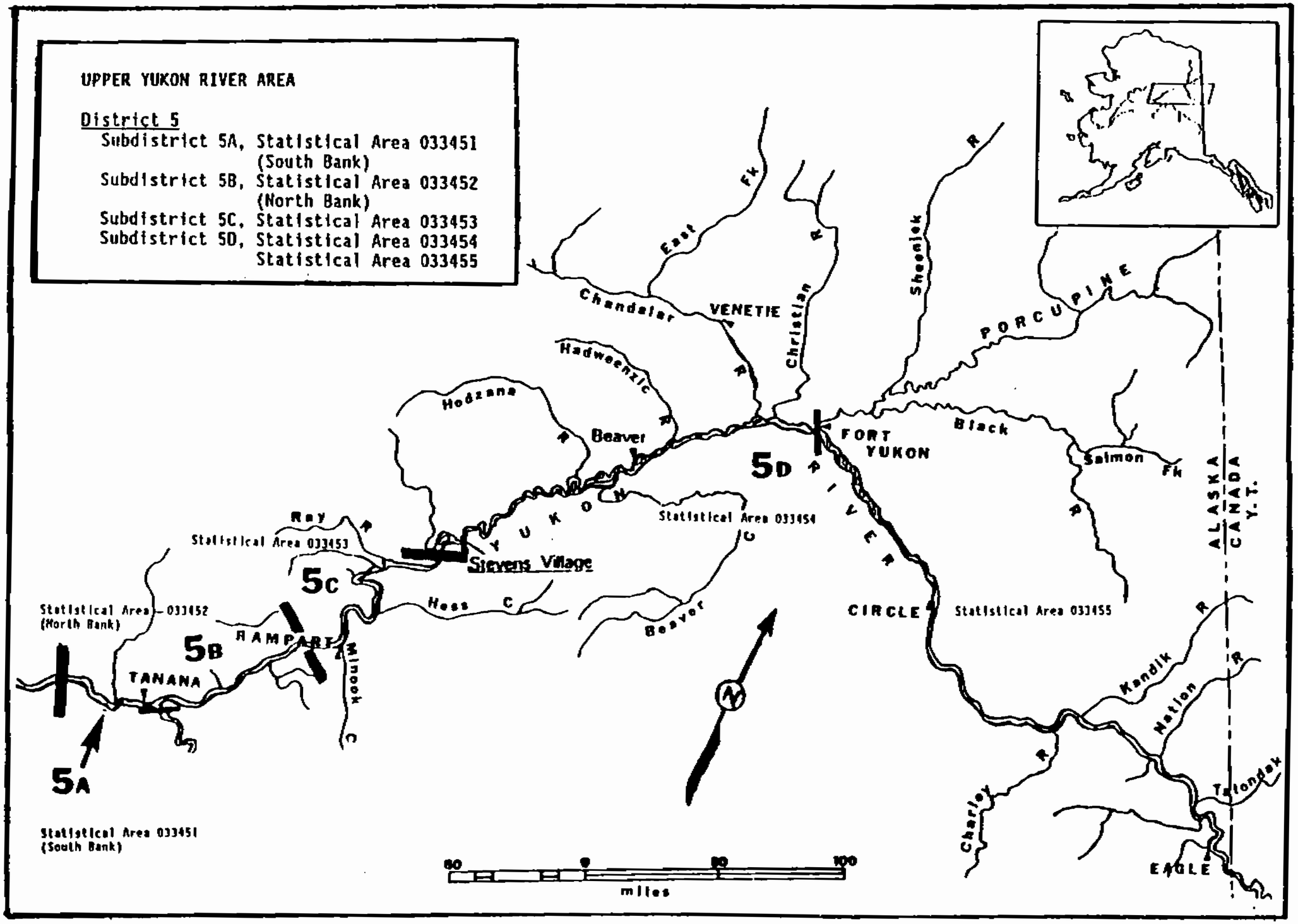

Figure 7. District 5 of Yukon management area with statistical areas.

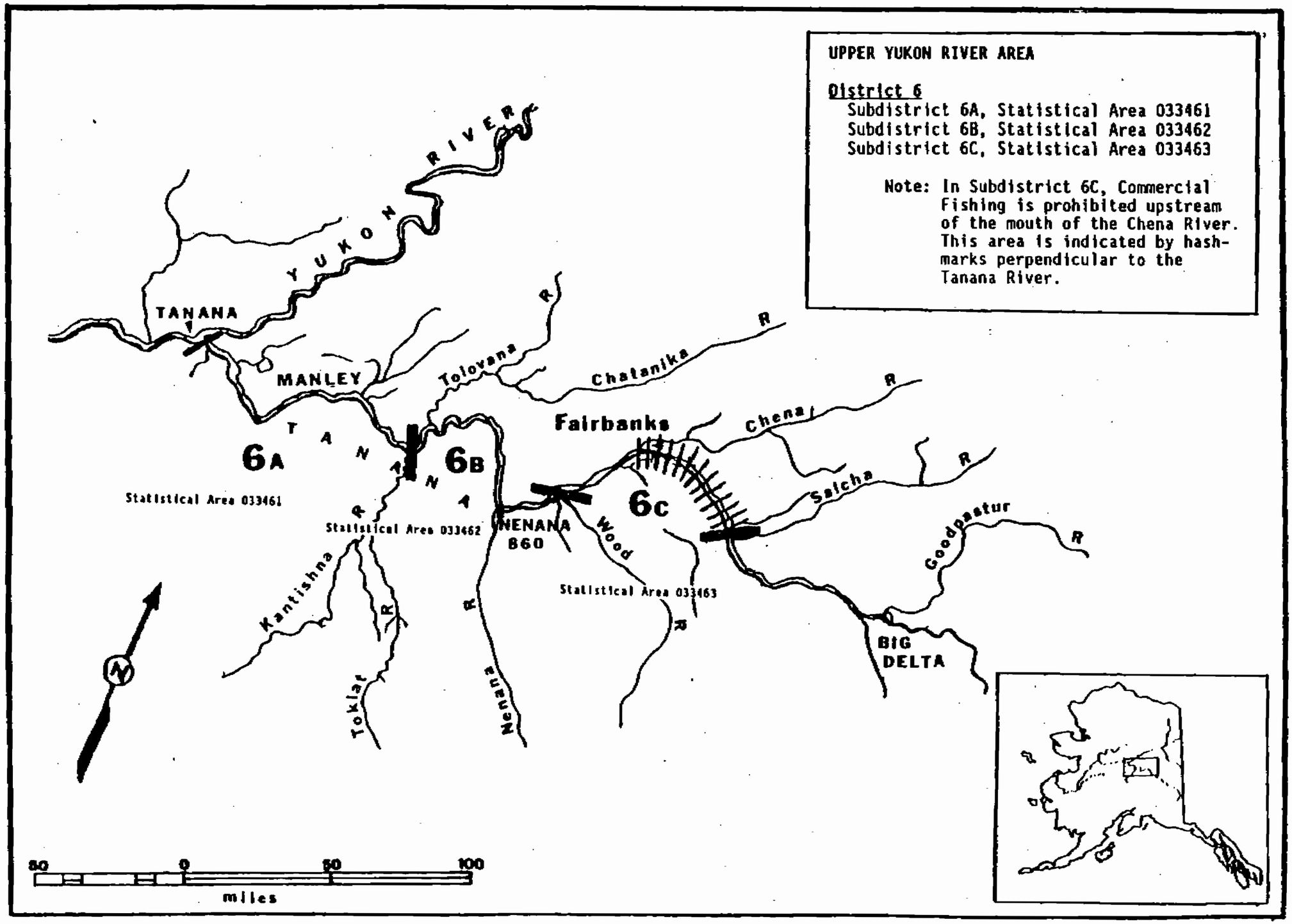

Figure 8. District 6 of Yukon management area with statistical areas.

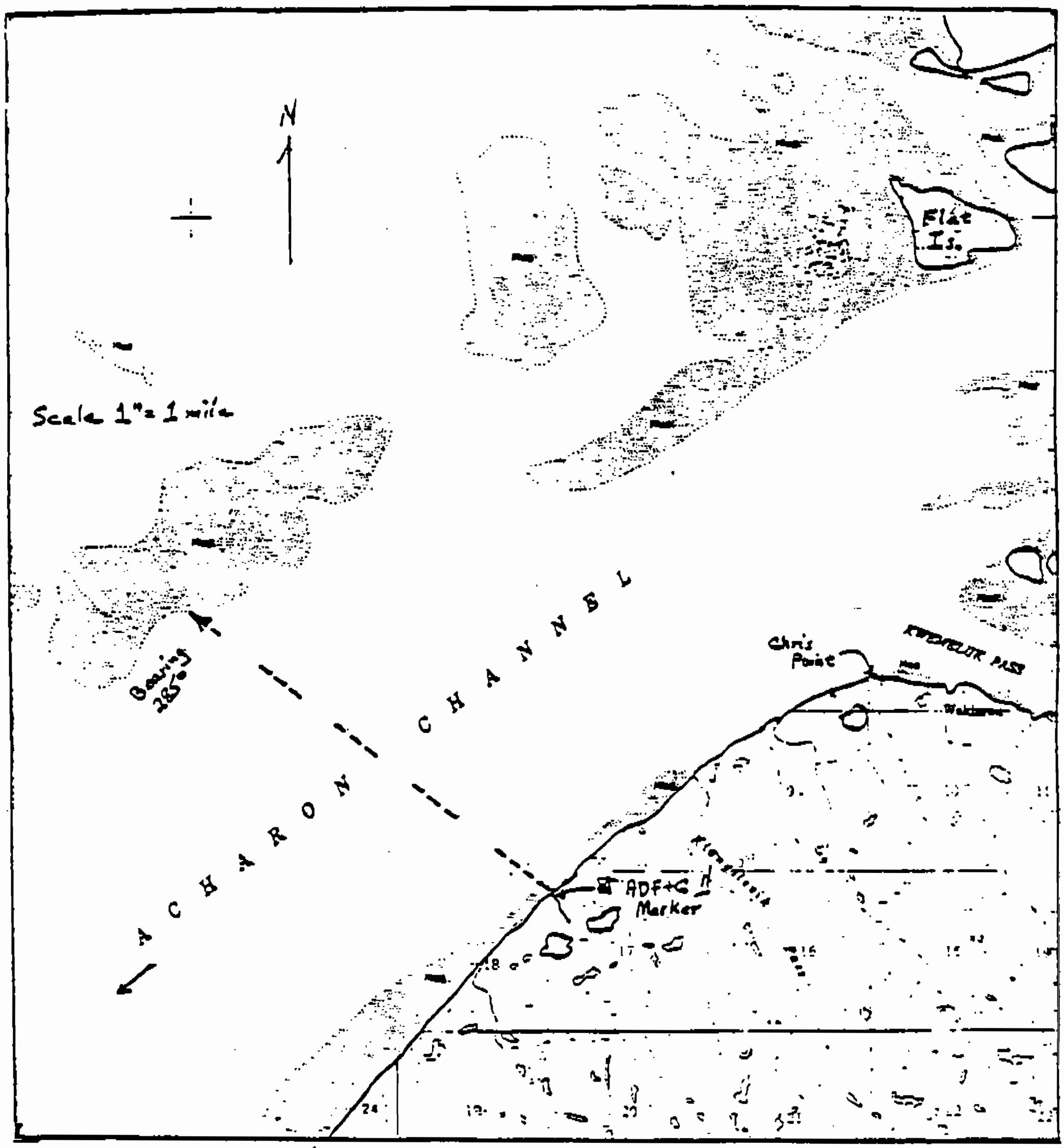

Figure 9. Closed waters Acharon Channel, south mouth Yukon River. (5AAC 05.350. CLOSED WATERS. (1) Acharon Channel of the south mouth area of the Yukon River west of a 2-1/2 nautical mile long line bearing 285° from an ADF&G regulatory marker located below Chris Point to the opposite side of the channel; the line may be marked by a series of yellow and green barrels placed by the Department between shore markers).

1/ ADF&G Regulatory Marker Sign, erected 5' height with driftwood logs, located on river bank at terminus of rivulet between two lakes approximately 2-1/2 miles below Chris Point.

2/ ADF&G yellow and green 55 gal. barrels anchored offshore.

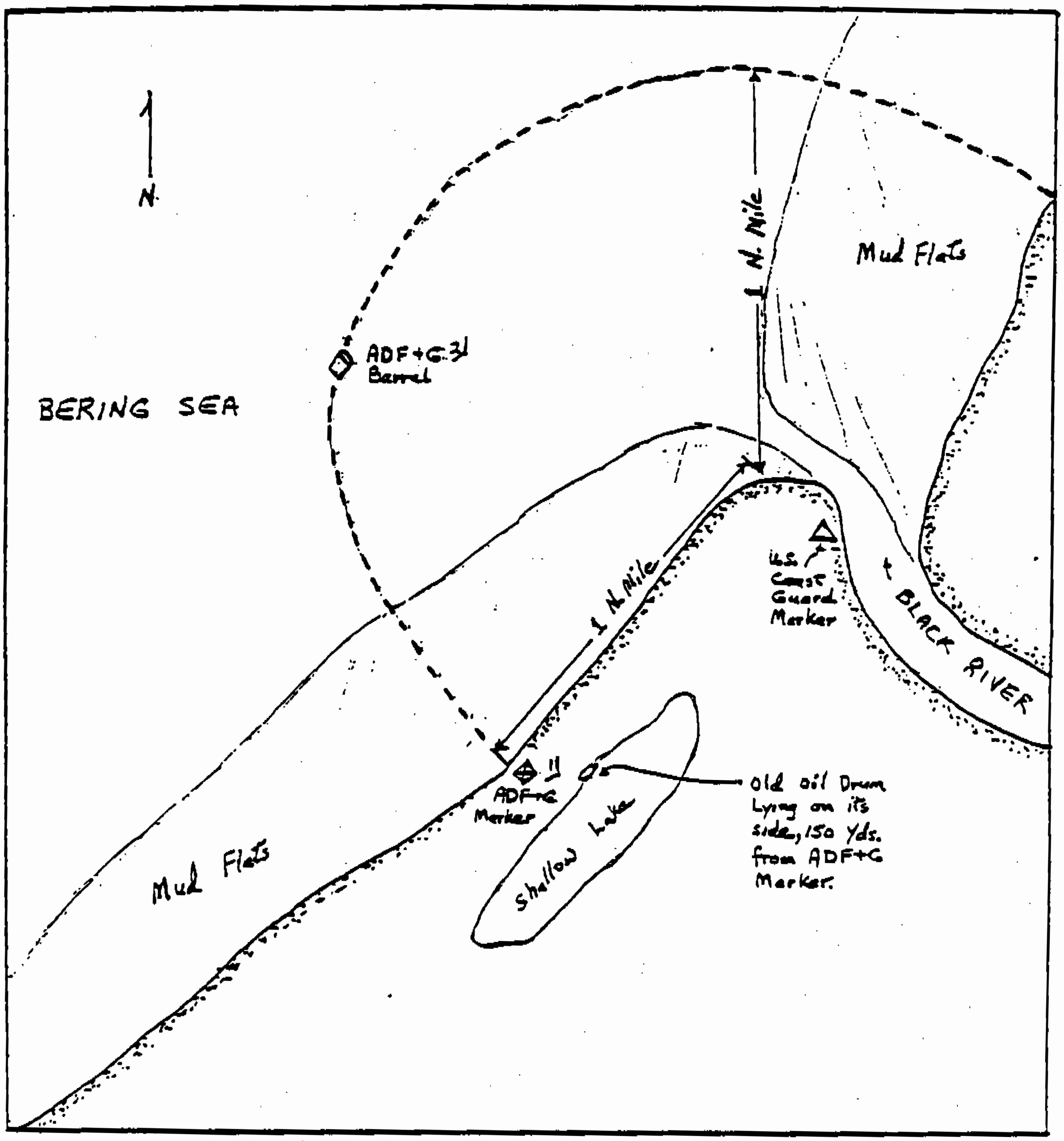

Figure 10. Closed waters of Black River mouth. (5AAC 05.350. CLOSED WATERS. (3) waters west of a one nautical mile radius from the mouth of Black River).

1/ ADF&G Regulatory Marker Sign erected 6' height with driftwood logs.

2/ ADF&G yellow and green 55 gal. barrel anchored 1 nautical mile offshore.

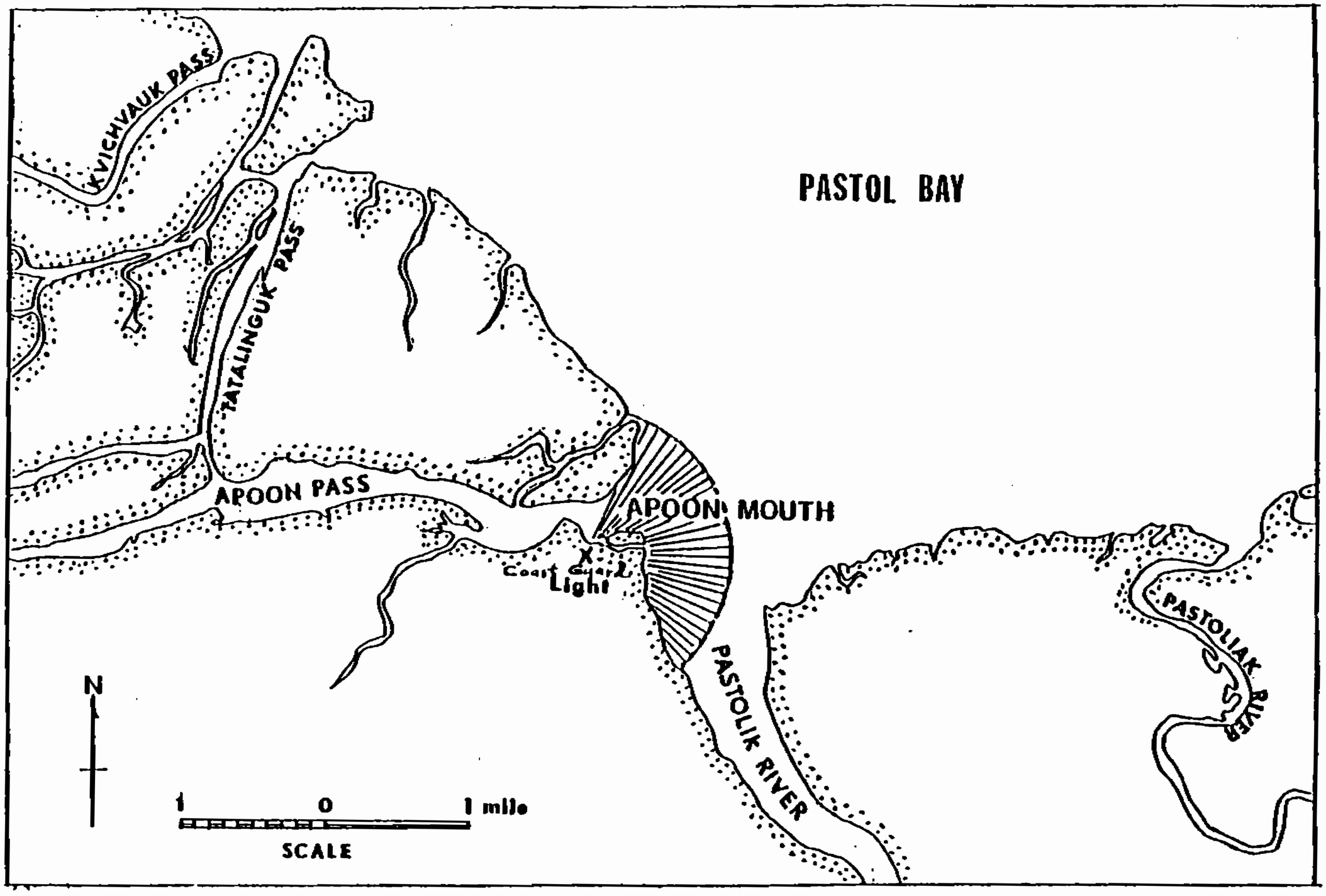

Figure 11. Closed waters of Apoon Mouth, Yukon River (5 AAC 05.350. CLOSED WATERS. (9) Waters east of a one nautical mile radius from a U.S. Coast Guard light at the mouth of Apoon Pass).

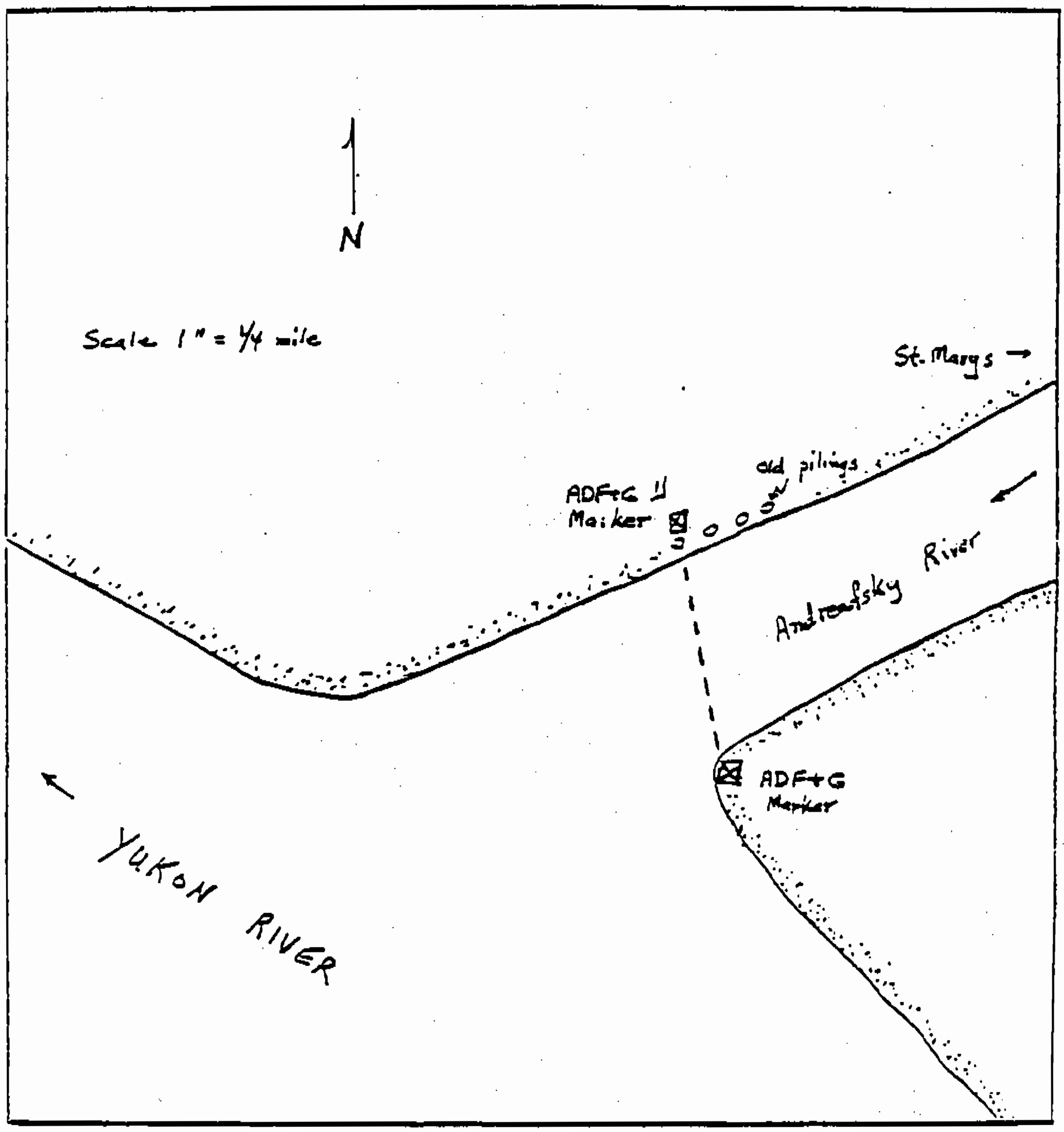

Figure 12. Closed waters of Andreafsky River mouth. (5AAC 05.350. CLOSED WATERS. (4) waters of the Andreafsky River upstream of a line from Department regulatory markers placed on each side of the river at its mouth).

1/ North bank ADF&G regulatory marker sign attached to 4th wooden piling stump downstream.

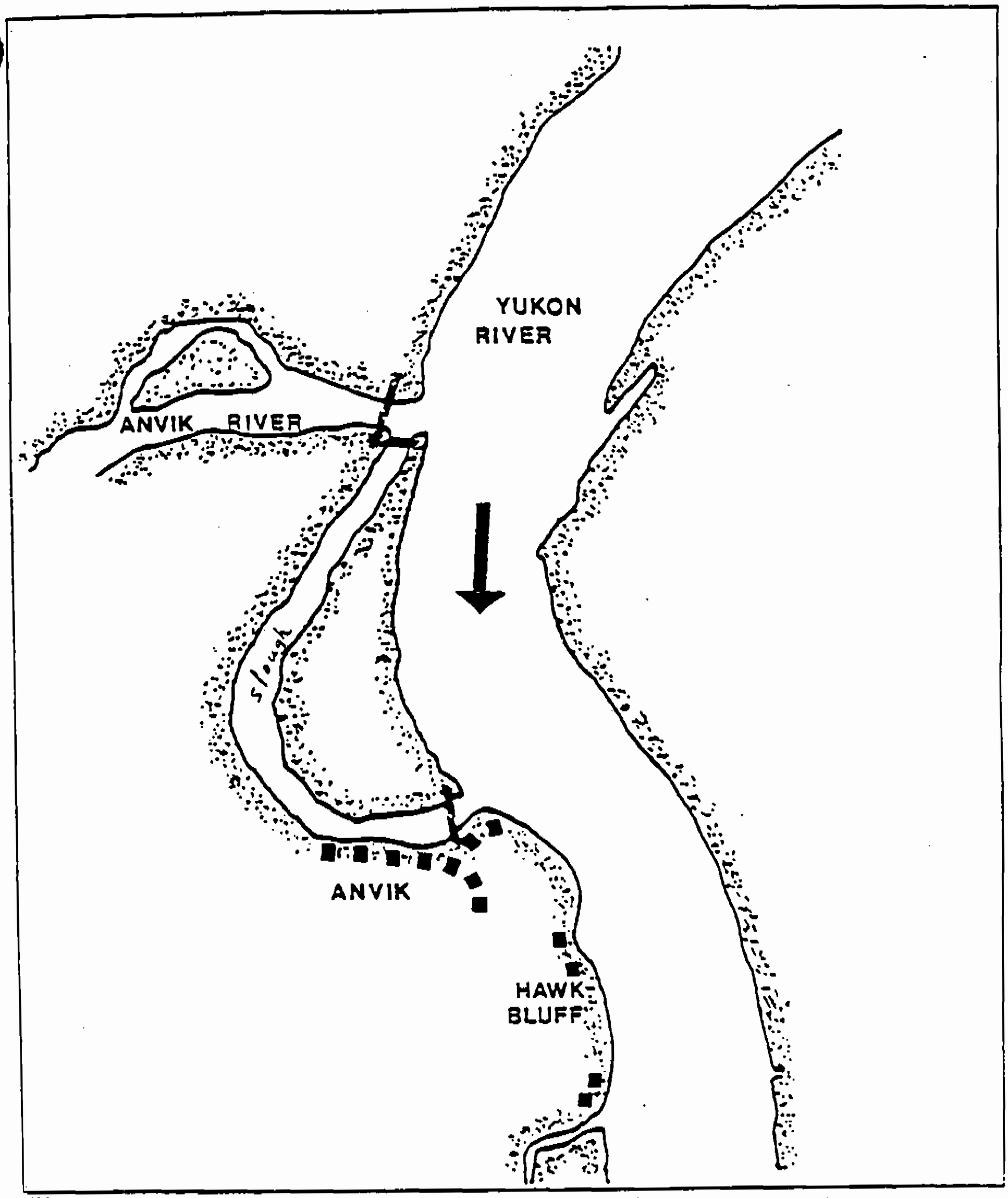

Figure 13. Closed waters of Anvik River mouth. (5AAC 05.350. (CLOSED WATERS (8) waters of the Anvik River upstream of a line between department regulatory markers placed on each side of the river at its mouth). Markers (6) placed north and south banks of the Anvik River mouth and at upstream and downstream mouths of slough (Old Anvik River Channel).

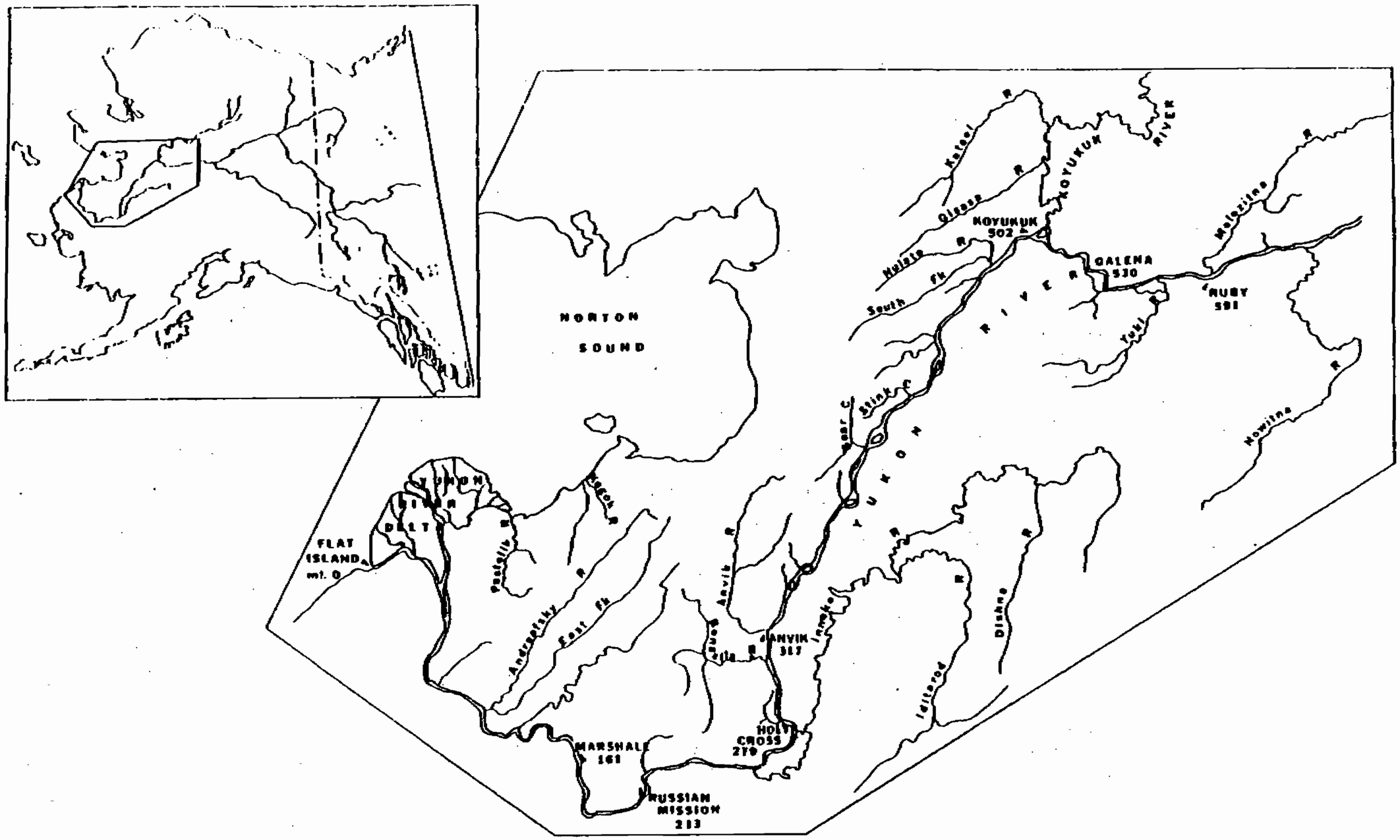

Figure 14. The lower Yukon River drainage.

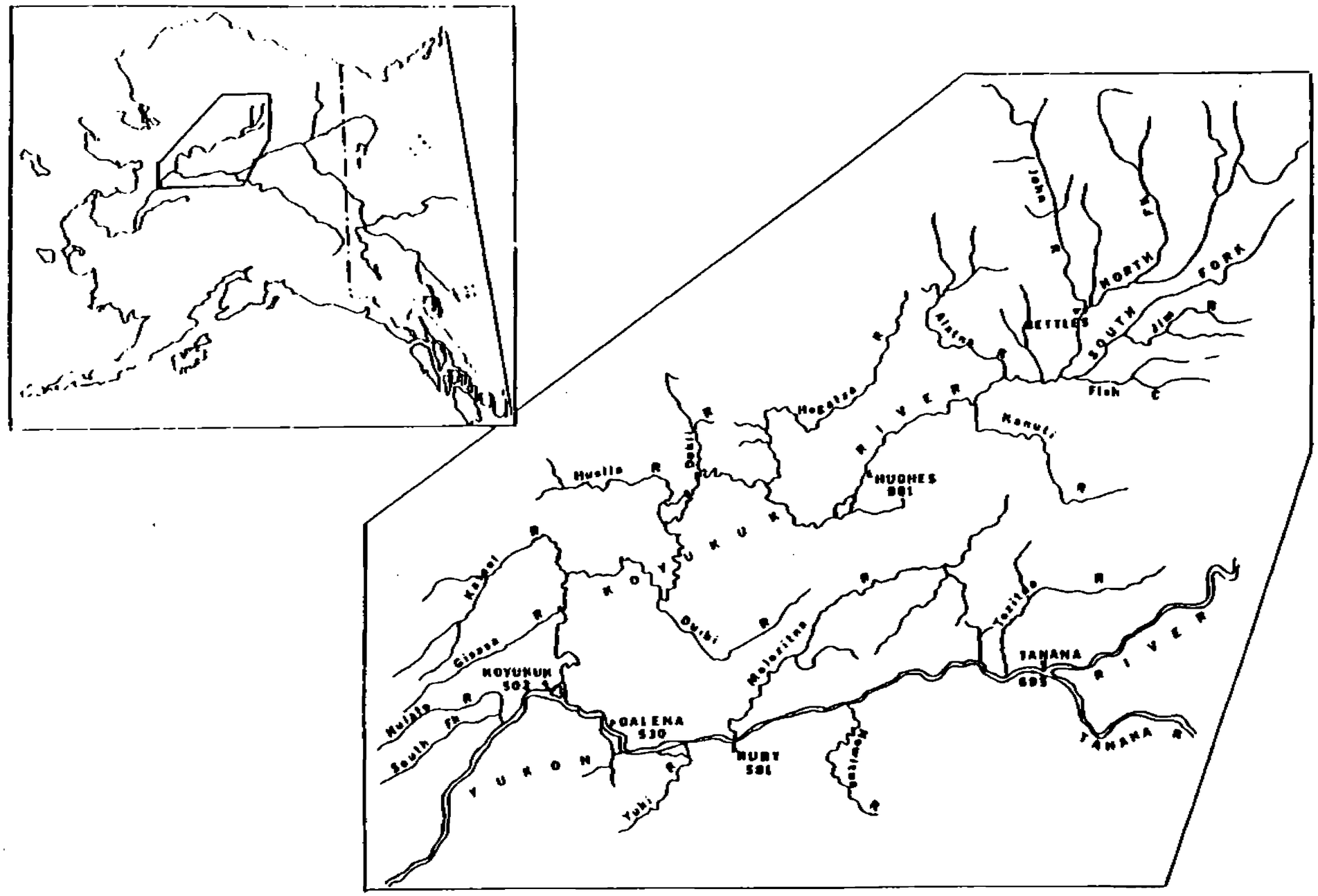

Figure 15. The Koyukuk River drainage.

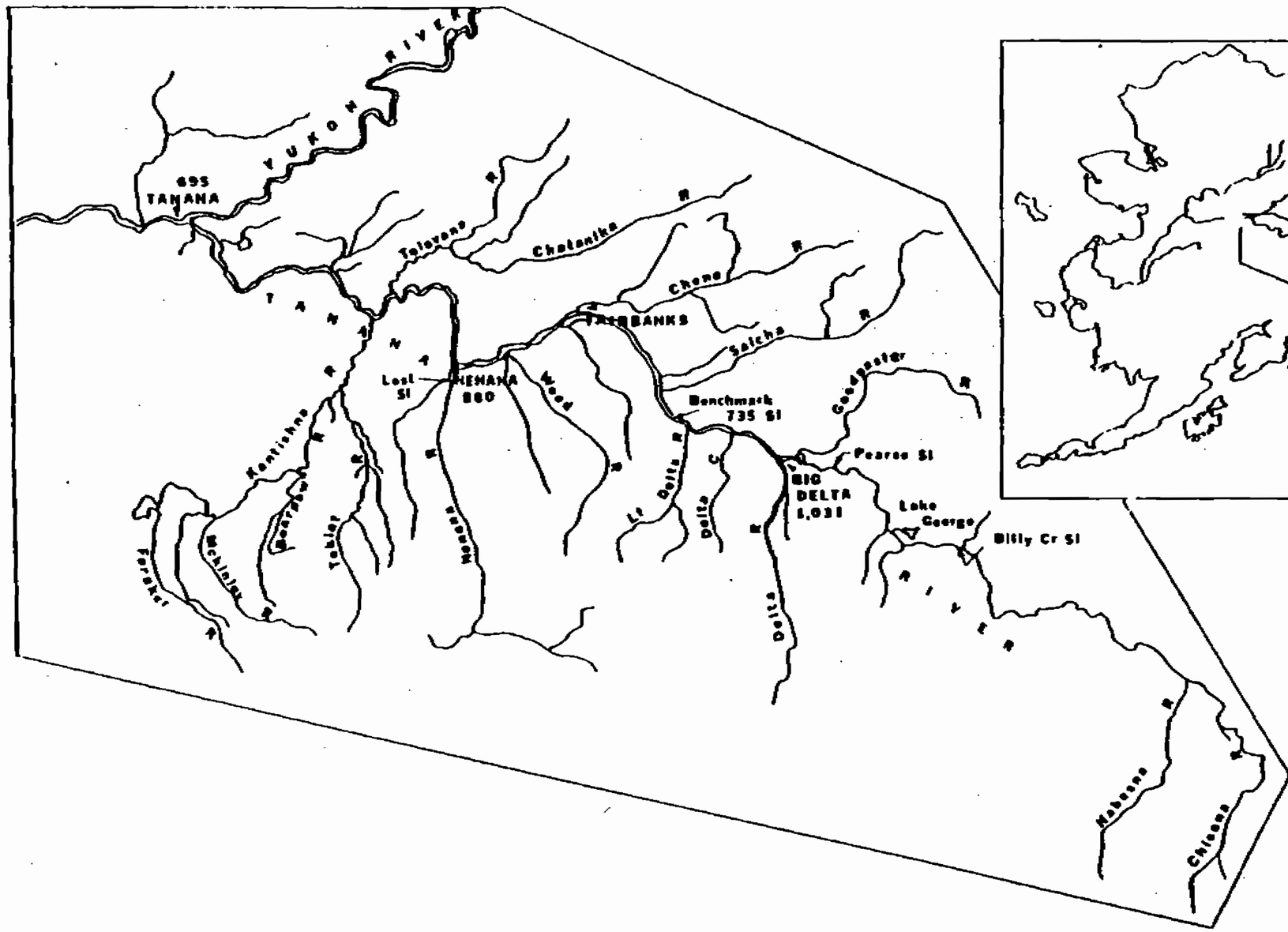

Figure 16. The Tanana River drainage.

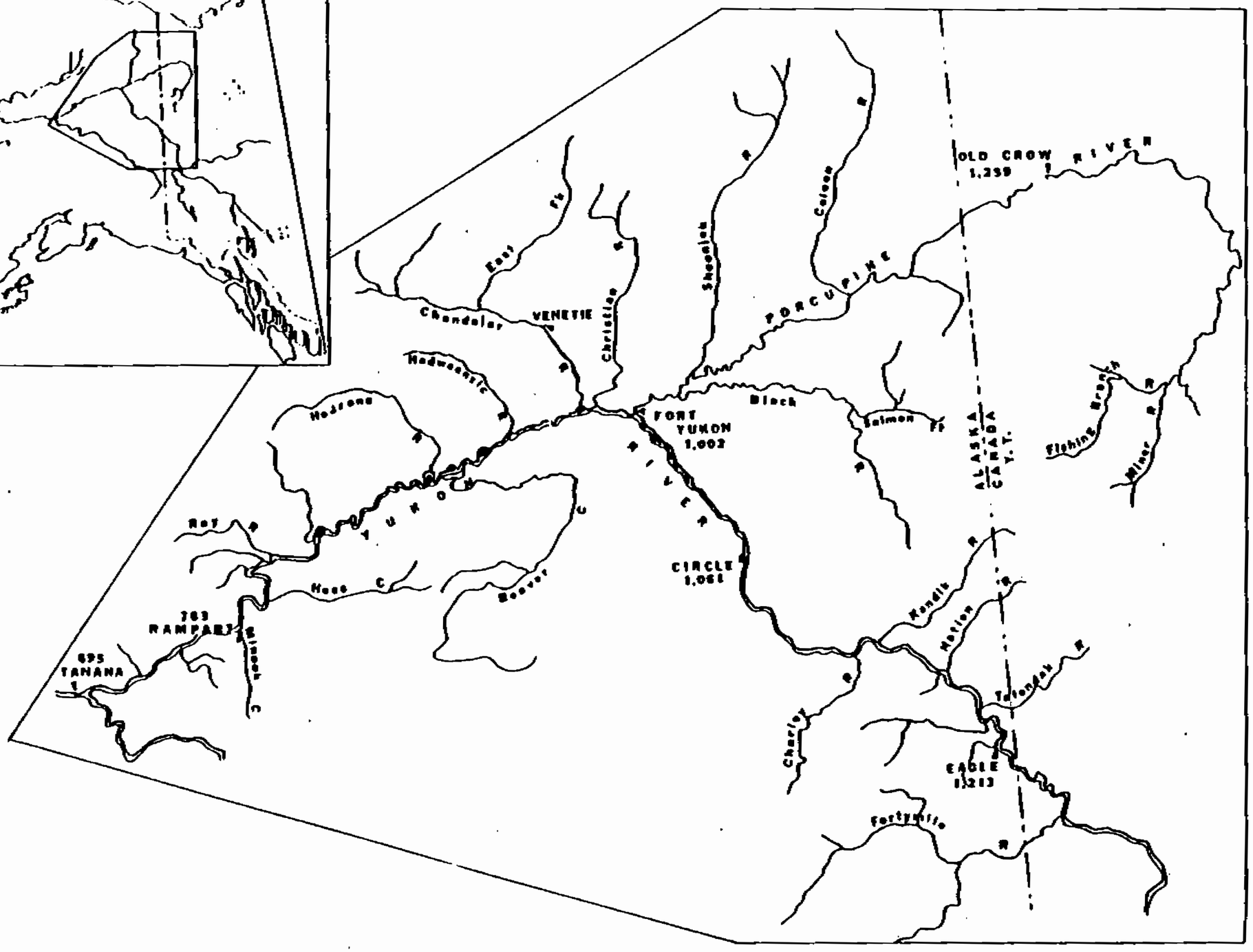

Figure 17. The middle Yukon River and Porcupine River drainage.

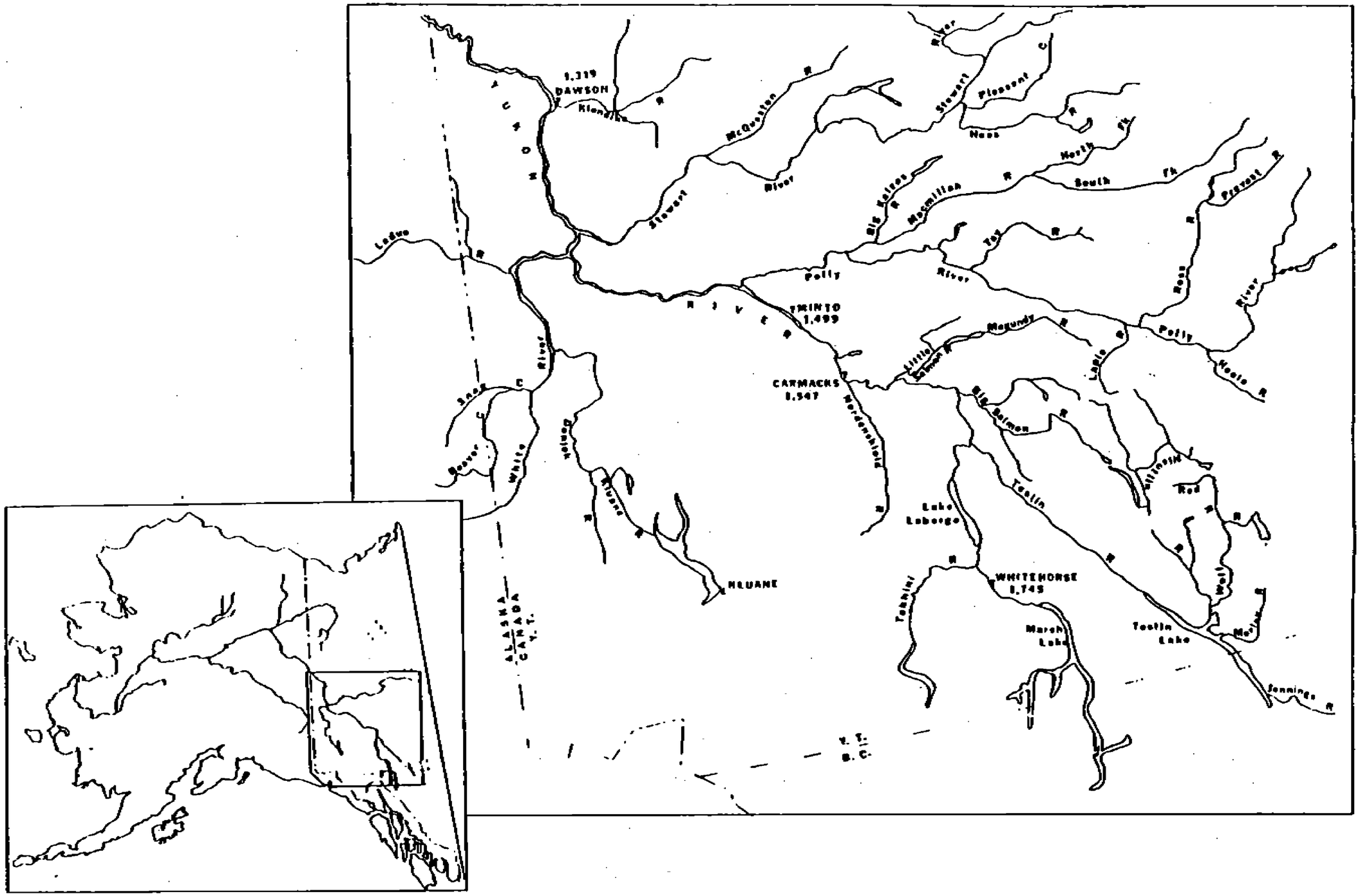

Figure 18. The upper Yukon River drainage.

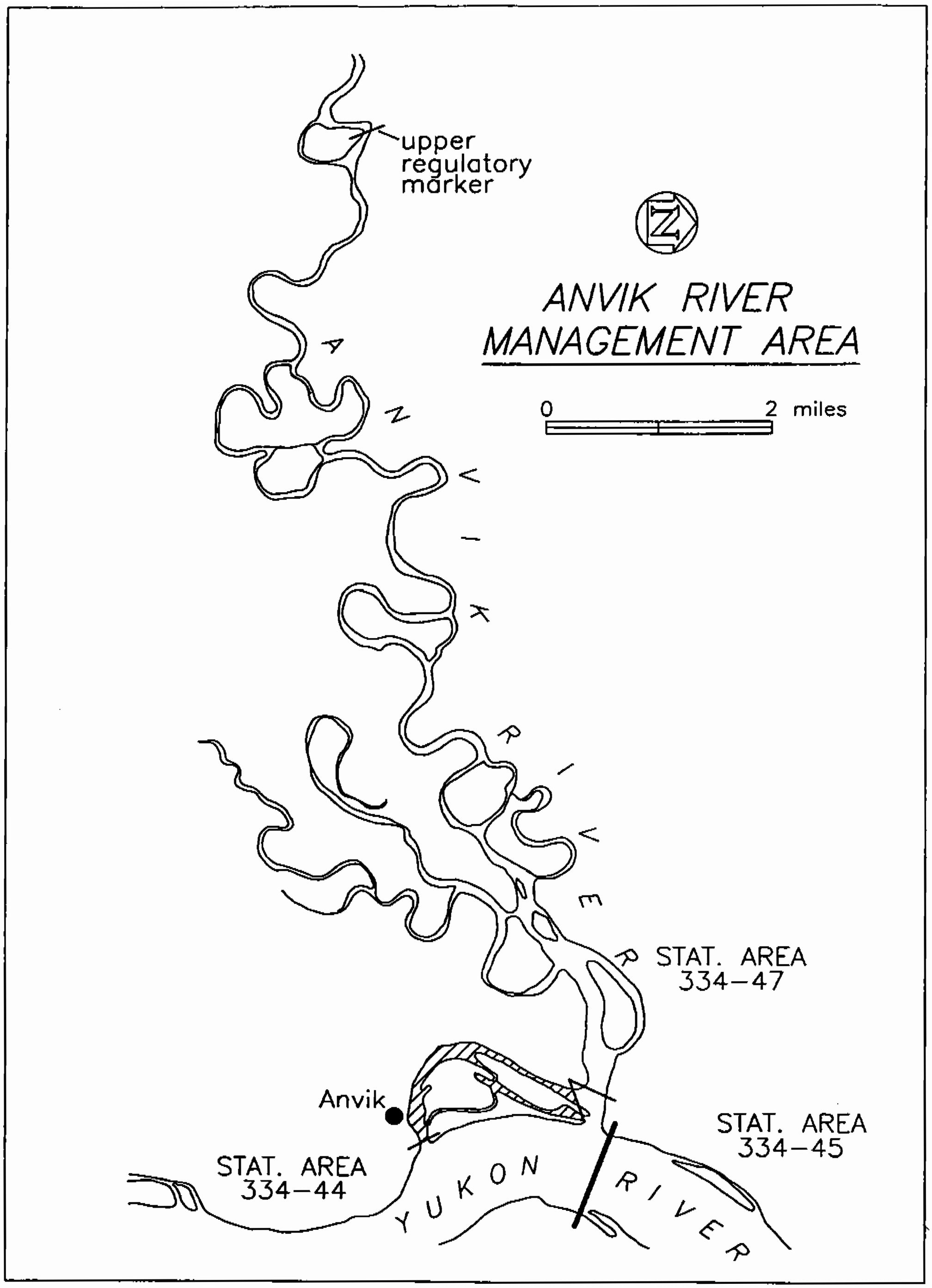

Figure 19. Anvik River Management Area.

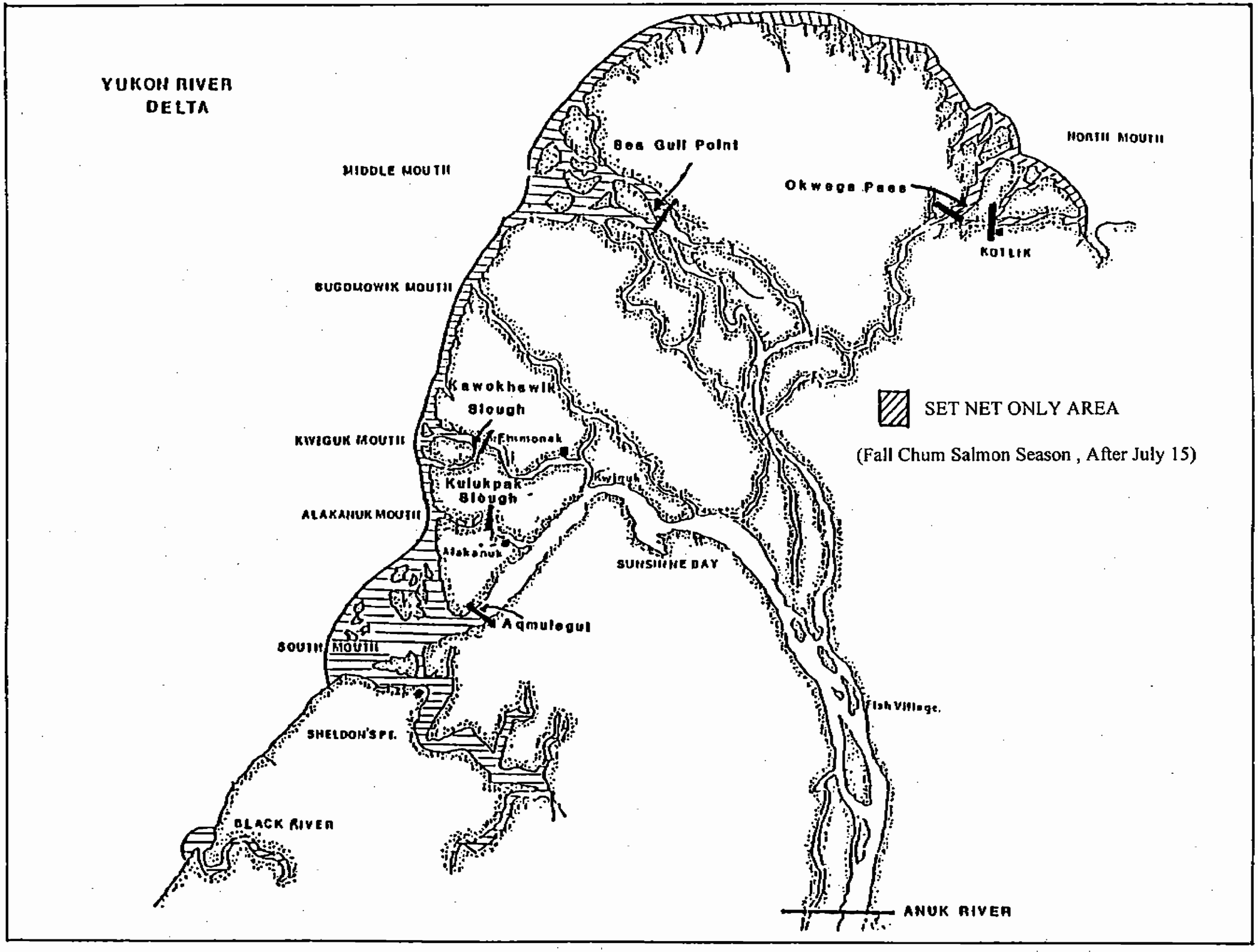

Figure 20. Set Net Only area of District 1, lower Yukon area.

APPENDIX A

YUKON RIVER DRAINAGE WIDE SALMON

Appendix A.1. List of indigenous fishes found in the Yukon Area.[a]

Species Code [b]	Scientific Name	Common Name
601	*Lampetra japonica*	Arctic Lamprey
570	*Stenodus leucichthys*	Inconnu(Sheefish)
588	*Coregonus nasus*	Broad Whitefish
589	*Coregonus pidschian*	Humpback Whitefish
583	*Coregonus sardinella*	Least Cisco
585	*Coregonus laurettae*	Bering Cisco
586	*Prosopium cylindraceum*	Round Whitefish
587	*Prosopium coulteri*	Pygmy Whitefish
610	*Thymallus arcticus*	Arctic Grayling
550	*Salvelinus namaycush*	Lake Trout
520	*Salvelinus alpinus*	Arctic Char
530	*Salvelinus malma*	Dolly Varden
410	*Oncorhynchus tshawytscha*	Chinook Salmon
420	*Oncorhynchus nerka*	Sockeye Salmon
430	*Oncorhynchus kisutch*	Coho Salmon
440	*Oncorhynchus gorbuscha*	Pink Salmon
450	*Oncorhynchus keta*	Chum Salmon
513	*Osmerus mordax*	Rainbow Smelt
514	*Hypomesus olidus*	Pond Smelt
500	*Esox lucius*	Northern Pike
630	*Dallia pectoralis*	Alaska Blackfish
650	*Couesius plumbeus*	Lake Chub
640	*Catostomus catostomus*	Longnose Sucker
670	*Percopsis omiscomaycus*	Trout Perch
590	*Lota lota*	Burbot(lush)
661	*Pungitius pungitius*	Ninespine Stickleback
162	*Cottus cognatus*	Slimy Sculpin
ESTUARINE		
113	*Eleginus gracilis*	Saffron Cod
122	*Liopsetta glacialis*	Arctic Flounder
127	*Limanda aspera*	Yellowfin Sole
129	*Platichthys stellatus*	Starry Flounder
192	*Hexagrammos stelleri*	Whitespotted Greenling
230	*Clupea harengus pallasi*	Pacific Herring
516	*Mallotus villosus*	Capelin
NA	*Megalocottus platycephalus*	Sculpin

[a] Includes fishes found in the Yukon River drainage in Canada.
[b] The species code is a three-digit number that identifies the type of fish caught on harvest fish tickets.

Appendix A.2. Yukon River drainage mileages.

Location	Mileage from Mouth
NORTH MOUTH (APOON PASS)	
Kotlik	6
Hamilton	26
MIDDLE MOUTH (KWIKPAK, KAWANAK PASS)	
Choolunawick	16
Akers Camp	26
New Hamilton	34
SOUTH MOUTH (KWIKLUAK PASS)	
Mouth, Black River	-18
Flat Island	0
Sheldon Point	5
Tin Can Point	8
Alakanuk	17
Emmonak-Kwiguk (Kwiguk Pass)	24
Sunshine Bay	24
Aproka Pass (upstream mouth)	35
Kwikpak Pass (upstream mouth)	44
Head of Passes	48
Fish Village	52
Mouth, Anuk River	63
(District 1/2 Boundary)	
Patsys Cabin	71
Mountain Village	87
Old Andreafsky	97
Pitkas Point	103
Mouth, Andreafsky River	104
St. Marys	107
Pilot Station	122
Mouth, Atcheulinguk (Chulinak) River	126
Pilot Village	138
Marshall (Fortuna Ledge)	161
Upstream Mouth Owl Slough	163
Ingrihak	170
Ohogamuit	185
Toklik	191
(District 2/3 Boundary)	
Kakamut	193
Russian Mission	213
Dogfish Villaage	227
Paimuit	251
Mouth, Innóko River (South Slough)	274
Shageluk	328
Holikachuk	383
Holy Cross	279
Mouth, Koserefski River	286
Old Paradise Village	301
(District 3/4 Boundary)	
Mouth, Bonasila River	306
Anvik	317
Mouth, Anvik River	318
Grayling	336
Mouth, Thompson Creek	349
Blackburn	370
Eagle Slide	402
Mouth, Rodo River	447
Kaltag	450
Mouth, Nulato River	483
Nulato	484
Koyukuk	502
Mouth, Koyukuk River	508
Mouth, Gisasa River	564
Huslia	711
Mouth, Dakli River	755
Mouth, Hogatza River	780
Hughes	881
Mouth, Kanuti River	935
Alatna (Mouth, Alatna R.)	956
Allakaket	956
Mouth, South Fork	986
Mouth, John River	1,117
Bettles	1,121
Middle Fork	1,141
Cold Foot	1,174
Wiseman	1,186
Bishop Rock	514
Prospect Point	519
Galena	530
Whiskey Creek	555
Mouth, Yuki River	562
Ruby	581
Mouth, Melozitna River	583
Horner Hot Springs	605
Kokrines	608
Mouth, Nowitna River	612
Birches	647
Kallands-Mouth of Illinois Creek	664
(District 4/5 Boundary)	
Mouth, Tozitna River	681
Tanana Village	695
Mouth, Tanana River	695
(District 5/6 Boundary)	
Manley Hot Springs	765
Mouth, Kantishna River	793
Mouth, Toklat River	838
Mouth, Sushana R.	850
Mouth, Bearpaw River	887
Outlet, L. Minchumina	959
Minto	835
Nenana	860
Mouth, Nenana River	860
Mouth, Wood River	894
Rosie Creek Bluffs	912

Appendix A.2. (continuation page 2 of 2)

Location	Mileage from Mouth
Mouth, Chena R.(Fairbanks)	920
Mouth, Salcha River	965
Benchmark #735 Slough	991
Mouth, Little Delta R.	1,000
Mouth, Delta Creek	1,014
Mouth, Clear Creek (Richardson-Clearwater)	1,015
Mouth, Shaw Creek	1,021
Mouth, Delta River (Big Delta)	1,031
Delta Junction	1,041
Mouth, Goodpaster River	1,049
Bluff Cabin Slough	1,050
Outlet, Clearwater Lake	1,052
Outlet, Clearwater Crk (Delta Clearwater)	1,053
Mouth, Gerstle River	1,059
Outlet, Healy Lake	1,071
Outlet, Lake George	1,086
Tanacross	1,128
Outlet, Tetlin Lake	1,188
Mouth, Nabesna River	1,210
Northway Junction	1,214
Mouth, Chisana River	1,215
Mouth, Sheep Creek	1,297
Rampart Rapids	731
Rampart	763
Mouth, Hess Creek	789
Mouth, Ray River	817
Highway Bridge - Pipeline Crossing	820
Mouth, Dall River	841
Stevens Village	847
Mouth, Hodzana River	897
Beaver	932
Mouth Hadweenzic River	952
Mouth, Chandalar River (Venetie Landing)	982
Venetie	1,025
Fort Yukon	1,002
Mouth, Porcupine River	1,002
Mouth, Black River	1,026
Chalkyitsik	1,084
Mouth, Salmon Fork R.	1,142
Mouth, Sheenjek River	1,054
Mouth, Coleen River	1,157
Mouth, Salmon Trout R.	1,193
U.S. - Canadian Border	1,219
Old Crow	1,259
Fishing Branch R. spawning area	1,600
Circle	1,061
Woodchopper	1,110
Mouth, Charley River	1,124
Mouth, Kandik River	1,135
Mouth, Nation River	1,166
Mouth, Tatonduk River	1,186
Mouth, Seventymile River	1,194
Eagle	1,213

Location	Mileage from Mouth
U.S.-Canadian border	1,224
Mouth, Fortymile River	1,269
Dawson	1,319
Mouth, Klondike River	1,320
Mouth, Sixty Mile River	1,369
Mouth, Stewart River	1,375
McQuesten	1,455
Stewart Crossing	1,491
Mayo	1,520
Mouth, Hess River	1,594
Mouth, White River	1,386
Mouth, Donjek River	1,455
Mouth Kluane River	1,541
Outlet Kluane L.	1,587
Burwash Landing	1,595
Kluane	1,625
Fort Selkirk	1,477
Mouth, Pelly River	1,478
Pelly Crossing	1,410
Mouth, MacMillan River	1,442
Ross River	1,602
Minto	1,499
Mouth Tatchun Creek	1,530
Carmacks	1,547
Mouth, Little Salmon River	1,583
Mouth, Big Salmon River	1,621
Mouth, N. Big Salmon R.	1,641
Mouth, S. Big Salmon R.	1,657
Outlet, Big Salmon Lake	1,714
Mouth, Teslin River	1,654
Roaring Bull Rapids	1,707
Johnson's Crossing (Outlet, Teslin L.)	1,756
Teslin	1,780
Mouth Nisutlin River	1,788
Mouth, Sidney Creek	1,837
Mouth, Hundred Mi. Creek	1,851
Mouth, NcNeil River	1,887
Outlet, Nisutlin Lake	1,892
Outlet, Lake Laberge	1,679
Inlet, Lake Laberge	1,712
Mouth, Takhini River	1,718
Whitehorse	1,745
Outlet, Marsh Lake	1,764
Mouth, M'Clintock River	1,769
Outlet, Little Atlin L.	1,788
Outlet, Atlin Lake	1,812
Atlin	1,844
Tagish	1,786
Outlet, Tagish Lake	1,788
Carcross (Outlet L.Bennett)	1,810
Bennett	1,835

Appendix A.3. Alaskan and Canadian total utilization of Yukon River salmon, 1903-1994.

	Alaska [a,b]			Canada [c]			Total		
Year	Chinook	Other Salmon	Total	Chinook	Other Salmon	Total	Chinook	Other Salmon	Total
1903						4,666			4,666
1904									
1905									
1906									
1907									
1908						7,000			7,000
1909						9,238			9,238
1910									
1911									
1912									
1913						12,133			12,133
1914						12,573			12,573
1915						10,466			10,466
1916						9,566			9,566
1917									
1918	12,239	1,500,065	1,512,304			7,066	12,239	1,500,065	1,519,370
1919	104,822	738,790	843,612			1,800	104,822	738,790	845,412
1920	78,467	1,015,655	1,094,122			12,000	78,467	1,015,655	1,106,122
1921	69,646	112,098	181,744			10,840	69,646	112,098	192,584
1922	31,825	330,000	361,825			2,420	31,825	330,000	364,245
1923	30,893	435,000	465,893			1,833	30,893	435,000	467,726
1924	27,375	1,130,000	1,157,375			4,560	27,375	1,130,000	1,161,935
1925	15,000	259,000	274,000			3,900	15,000	259,000	277,900
1926	20,500	555,000	575,500			4,373	20,500	555,000	579,873
1927		520,000	520,000			5,366		520,000	525,366
1928		670,000	670,000			5,733		670,000	675,733
1929		537,000	537,000			5,226		537,000	542,226
1930		633,000	633,000			3,660		633,000	636,660
1931	26,693	565,000	591,693			3,473	26,693	565,000	595,166
1932	27,899	1,092,000	1,119,899			4,200	27,899	1,092,000	1,124,099
1933	28,779	603,000	631,779			3,333	28,779	603,000	635,112
1934	23,365	474,000	497,365			2,000	23,365	474,000	499,365
1935	27,665	537,000	564,665			3,466	27,665	537,000	568,131
1936	43,713	560,000	603,713			3,400	43,713	560,000	607,113
1937	12,154	346,000	358,154			3,746	12,154	346,000	361,900
1938	32,971	340,450	373,421			860	32,971	340,450	374,281
1939	28,037	327,650	355,687			720	28,037	327,650	356,407
1940	32,453	1,029,000	1,061,453			1,153	32,453	1,029,000	1,062,606
1941	47,608	438,000	485,608			2,806	47,608	438,000	488,414
1942	22,487	197,000	219,487			713	22,487	197,000	220,200
1943	27,650	200,000	227,650			609	27,650	200,000	228,259
1944	14,232		14,232			986	14,232		15,218
1945	19,727		19,727			1,333	19,727		21,060
1946	22,782		22,782			353	22,782		23,135
1947	54,026		54,026			120	54,026		54,146
1948	33,842		33,842				33,842		33,842
1949	36,379		36,379				36,379		36,379
1950	41,808		41,808				41,808		41,808
1951	56,278		56,278				56,278		56,278
1952	38,637	10,868	49,505				38,637	10,868	49,505
1953	58,859	385,977	444,836				58,859	385,977	444,836
1954	64,545	14,375	78,920				64,545	14,375	78,920
1955	55,925		55,925				55,925		55,925
1956	62,208	10,743	72,951				62,208	10,743	72,951
1957	63,623		63,623				63,623		63,623
1958	75,625	337,500	413,125	11,000	1,500	12,500	86,625	339,000	425,625
1959	78,370		78,370	8,434	3,098	11,532	86,804	3,098	89,902
1960	67,597		67,597	9,653	15,608	25,261	77,250	15,608	92,858

-Continued-

	Alaska [a,b]			Canada [c]			Total		
Year	Chinook	Other Salmon	Total	Chinook	Other Salmon	Total	Chinook	Other Salmon	Total
1961	141,152	461,597	602,749	13,246	9,076	22,322	154,398	470,673	625,071
1962	105,844	434,663	540,507	13,937	9,436	23,373	119,781	444,099	563,880
1963	141,910	429,396	571,306	10,077	27,696	37,773	151,987	457,092	609,079
1964	109,818	504,420	614,238	7,408	12,187	19,595	117,226	516,607	633,833
1965	134,706	484,587	619,293	5,380	11,789	17,169	140,086	496,376	636,462
1966	104,887	309,502	414,389	4,452	13,192	17,644	109,339	322,694	432,033
1967	146,104	352,397	498,501	5,150	16,961	22,111	151,254	369,358	520,612
1968	118,632	270,818	389,450	5,042	11,633	16,675	123,674	282,451	406,125
1969	105,027	424,399	529,426	2,624	7,776	10,400	107,651	432,175	539,826
1970	93,019	585,760	678,779	4,663	3,711	8,374	97,682	589,471	687,153
1971	136,191	547,448	683,639	6,447	16,911	23,358	142,638	564,359	706,997
1972	113,098	461,617	574,715	5,729	7,532	13,261	118,827	469,149	587,976
1973	99,670	779,158	878,828	4,522	10,135	14,657	104,192	789,293	893,485
1974	118,053	1,229,678	1,347,731	5,631	11,646	17,277	123,684	1,241,324	1,365,008
1975	76,883	1,307,037	1,383,920	6,000	20,600	26,600	82,883	1,327,637	1,410,520
1976	105,582	1,026,908	1,132,490	5,025	5,200	10,225	110,607	1,032,108	1,142,715
1977	114,338	1,090,330	1,204,668	7,527	12,479	20,006	121,865	1,102,809	1,224,674
1978	129,465	1,631,479	1,760,944	5,881	9,566	15,447	135,346	1,641,045	1,776,391
1979	159,232	1,631,072	1,790,304	10,375	22,084	32,459	169,607	1,653,156	1,822,763
1980	197,665	1,730,893	1,928,558	22,846	23,718 [d]	46,564	220,511	1,754,611	1,975,122
1981	188,477	2,097,826	2,286,303	18,109	22,781 [d]	40,890	206,586	2,120,607	2,327,193
1982	152,808	1,265,360	1,418,168	17,208	16,091 [d]	33,299	170,016	1,281,451	1,451,467
1983	198,436	1,678,380	1,876,816	18,952	29,490 [d]	48,442	217,388	1,707,870	1,925,258
1984	162,683	1,547,270	1,709,953	16,795	29,767 [d]	46,562	179,478	1,577,037	1,756,515
1985	187,327	1,657,176	1,844,503	19,301	41,515 [d]	60,816	206,628	1,698,691	1,905,319
1986	146,004	1,757,290	1,903,294	20,364	14,793 [d]	35,157	166,368	1,772,083	1,938,451
1987	188,386	1,244,884	1,433,270	17,614	44,786 [d]	62,400	206,000	1,289,670	1,495,670
1988	148,979	2,313,931	2,462,910	21,427	33,915 [d]	55,342	170,406	2,347,846	2,518,252
1989	157,824	2,272,375	2,430,199	17,944	23,490 [d]	41,434	175,768	2,295,865	2,471,633
1990	150,351	1,047,979	1,198,330	19,238	34,302 [d]	53,540	167,114	1,059,943	1,251,870
1991	153,499	1,321,534	1,475,033	20,607	35,653 [d]	56,260	174,106	1,357,187	1,531,293
1992	169,641	878,869	1,048,510	17,893	21,175 [d]	39,068	187,534	900,044	1,087,578
1993	163,078	342,197	505,275	16,611	14,090 [d]	30,701	179,689	356,287	535,976
1994	170,034	574,725	744,759	21,218	38,342 [d]	59,560	191,252	613,067	804,319

[a] Catch in number of salmon. Includes estimated number of salmon harvested for the commercial production of roe.
[b] Commercial and subsistence harvest, and ADF&G test fishery sales combined in numbers of fish, including "equivalent fish" (typically 1 lb of roe per female) converted from roe sales. See ADF&G 1985 Yukon Area Annual Management Report for data sources and methods of catch estimation used for some years.
[c] Commercial, Aboriginal Fishery, Domestic, and sport catches combined.
[d] Includes the Old Crow Aboriginal fishery harvest of coho salmon.

Appendix A.4. Commercial chinook salmon sales and estimated harvest by district and country, Yukon River drainage, 1961-1994.

	Lower Yukon Area [a]				Upper Yukon Area [a]														
					District 4			District 5			District 6			Subtotal					
Year	District 1	District 2	District 3	Subtotal	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Alaska Total	Canada Total	Grand Total
1961	84,466	28,026	4,368	117,860	-	-	-	-	-	-	-	-	-	1,804	-	1804	119,864	3,446	123,110
1962	67,099	22,224	4,687	94,010	-	-	-	-	-	-	-	-	-	724	-	724	94,734	4,037	98,771
1963	85,004	24,221	7,020	116,245	-	-	-	-	-	-	-	-	-	803	-	803	117,048	2,283	119,331
1964	67,555	20,246	4,705	92,506	-	-	-	-	-	-	-	-	-	1,081	-	1,081	93,587	3,208	96,795
1965	89,268	23,763	3,204	116,235	-	-	-	-	-	-	-	-	-	1,863	-	1,863	118,098	2,265	120,363
1966	70,788	16,927	3,612	91,327	-	-	-	-	-	-	-	-	-	1,988	-	1,988	93,315	1,942	95,257
1967	104,350	20,239	3,618	128,207	-	-	-	-	-	-	-	-	-	1,449	-	1,449	129,656	2,187	131,843
1968	79,465	21,392	4,543	105,400	-	-	-	-	-	-	-	-	-	1,126	-	1,126	106,526	2,212	108,738
1969	71,688	14,756	3,595	90,039	-	-	-	-	-	-	-	-	-	988	-	988	91,027	1,640	92,667
1970	56,648	17,141	3,705	77,494	-	-	-	-	-	-	-	-	-	1,651	-	1,651	79,145	2,611	81,756
1971	86,042	19,226	3,490	108,758	-	-	-	-	-	-	-	-	-	1,749	-	1,749	110,507	3,178	113,685
1972	70,052	17,855	3,841	91,748	-	-	-	-	-	-	-	-	-	1,092	-	1,092	92,840	1,769	94,609
1973	56,981	13,859	3,204	74,044	-	-	-	-	-	-	-	-	-	1,309	-	1,309	75,353	2,199	77,552
1974 [d]	71,840	17,948	3,480	93,268	685	-	685	2,863	-	2,863	1,473	-	1,473	4,821	-	4,821	98,089	1,808	99,897
1975	44,565	11,315	4,177	60,077	389	-	389	2,872	-	2,872	500	-	500	3,761	-	3,761	63,838	3,000	66,838
1976	62,410	16,556	4,148	83,114	409	-	409	3,151	-	3,151	1,102	-	1,102	4,662	-	4,662	87,776	3,500	91,276
1977	69,915	16,722	3,965	90,602	985	-	985	4,162	-	4,162	1,008	-	1,008	6,155	-	6,155	96,757	4,720	101,477
1978	59,006	32,924	2,916	94,846	608	-	608	3,079	-	3,079	635	-	635	4,322	-	4,322	99,168	2,975	102,143
1979	75,007	41,498	5,018	121,523	1,989	-	1,989	3,389	-	3,389	772	-	772	6,150	-	6,150	127,673	6,175	133,848
1980	80,382	50,004	5,240	145,626	1,521	-	1,521	4,891	-	4,891	1,947	-	1,947	8,359	-	8,359	153,985	9,500	163,485
1981	99,506	45,781	4,023	149,310	1,347	-	1,347	6,374	-	6,374	987	-	987	8,708	-	8,708	158,018	8,593	166,611
1982	74,450	39,132	2,609	116,191	1,087	-	1,087	5,385	-	5,385	981	-	981	7,453	-	7,453	123,644	8,640	132,284
1983	95,457	43,228	4,106	142,792	601	-	601	3,608	-	3,608	911	-	911	5,118	-	5,118	147,910	13,027	160,937
1984	74,671	36,697	3,039	114,407	981	-	981	3,669	-	3,669	867	-	867	5,497	-	5,497	119,904	9,885	129,789
1985	90,011	48,365	2,588	140,964	684	-	684	3,418	-	3,418	1,142	-	1,142	5,224	-	5,224	146,188	12,573	158,761
1986	53,035	41,849	901	95,785	502	-	502	2,733	-	2,733	950	-	950	4,185	-	4,185	99,970	10,797	110,767
1987	76,643	47,458	2,039	126,140	1,524	-	1,524	3,758 [e]	-	3,758	3,336 [f]	-	3,336	8,620	-	8,620	134,760	10,864	145,624
1988	56,120	35,120	1,767	93,007	3,159	-	3,159	3,436	-	3,436	762	-	762	7,357	-	7,357	100,364	13,217	113,581
1989	61,570 [g]	33,166	1,645	96,381	2,790	-	2,790	3,286	-	3,286	1,741	-	1,741	7,817	-	7,817	104,198	9,789	113,987
1990	51,199 [h]	33,061	2,341	86,601	3,536	8	3,538	3,353	47	3,365	1,757	1,676	2,158	8,646	1,731	9,059	95,660	11,324	106,984
1991	56,332 [i]	39,260 [j]	2,344	97,936	2,446	2,222	3,582	3,810	62	3,626	686	1,545	1,072	6,942	3,629	8,480	106,416	10,906	117,322
1992	74,212 [k]	36,139 [m]	1,819	114,170	1,651	2,273	2,394	3,852	7	3,855	572	884	753	6,075	3,164	7,002	121,172	10,877	132,049
1993	49,286	37,293	1,501	88,080	1,349	701	1,577	3,008	0	3,008	1,113	1,313	1,445	5,470	2,014	6,030	94,110	10,350	104,460
1994	62,241	41,692	1,114	105,047	2,216	564	2,443	3,739	10	3,744	2,135	1,620	2,606	8,090	2,394	8,793	113,840	12,028	125,868
5 Yr Ave 1984-88	70,096	41,898	2,067	114,061	1,362	-	1,362	3,403	-	3,403	1,412	-	1,412	6,177	-	6,177	120,237	11,467	131,704
5 Yr Ave 1989-93	58,520	36,184	1,930	96,634	2,354	-	2,776	3,482	-	3,468	1,174	1,084	1,433	6,990	2,148	7,678	104,311	10,649	114,960

[a] Harvest reported in numbers of fish sold in the round and pounds of roe sold. Since 1990, efforts were made to seperate chinook roe from summer chum roe. Does not include department test fish sales.
[b] All fish sold in the round. Includes department test fish sales prior to 1988.
[c] The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.
[d] In 1974, District 4 was subdivided to include Districts 5 and 6.
[e] Includes the illegal sales of 653 chinook salmon.
[f] Includes the illegal sales of 2,136 chinook salmon.
[g] Includes the illegal sales of 3,211 chinook salmon.
[h] Includes the illegal sales of 1,101 chinook salmon.
[i] Includes the illegal sales of 2,711 chinook salmon.
[j] Includes the illegal sales of 284 chinook salmon.
[k] Includes the illegal sales of 1,218 chinook salmon.
[m] Includes the illegal sales of 207 chinook salmon.

Appendix A.5. Commercial summer chum salmon sales and estimated harvest by area and district, Yukon River drainage, 1967-1994.

	Lower Yukon Area [b]				Upper Yukon Area												
					District 4			District 5			District 6			Subtotal			
Year	District 1	District 2	District 3	Subtotal	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Total Harvest
1967	9,453	1,425	57	10,935	-	-	-	-	-	-	-	-	-	0	0	0	10,935
1968	12,995	1,407	68	14,470	-	-	-	-	-	-	-	-	-	0	0	0	14,470
1969	56,886	5,080	-	61,966	-	-	-	-	-	-	-	-	-	0	0	0	61,966
1970	117,357	19,649	-	137,006	-	-	-	-	-	-	-	-	-	0	0	0	137,006
1971	93,928	6,112	50	100,090	-	-	-	-	-	-	-	-	-	0	0	0	100,090
1972	114,234	20,907	527	135,668	-	-	-	-	-	-	-	-	-	0	0	0	135,668
1973	221,644	63,402	463	285,509	-	-	-	-	-	-	-	-	-	0	0	0	285,509
1974 [d]	466,004	74,152	1,721	541,877	27,866	-	27,866	6,831	-	6,831	13,318	-	13,318	48,015	0	48,015	589,892
1975	416,323	99,139	-	517,462	165,054	-	165,054	12,997	-	12,997	14,782	-	14,782	192,833	0	192,833	710,295
1976	273,204	99,190	9,802	382,196	211,307	-	211,307	774	-	774	6,617	-	6,617	218,698	0	218,698	600,894
1977	250,652	105,679	3,412	359,743	169,541	-	169,541	1,274	-	1,274	4,317	-	4,317	175,132	0	175,132	534,875
1978	393,785	227,548	27,003	648,336	364,184	16,920	381,104	4,892	605	5,497	34,814	8,236	43,050	403,890	25,761	429,651	1,077,987
1979	369,934	172,836	40,015	582,787	169,430	35,317	204,747	8,608	1,009	9,617	18,491	3,891	22,382	196,529	40,217	236,746	819,533
1980	391,252	308,704	44,782	744,738	147,560	135,824	283,384	456	-	456	35,855	3,282	39,137	183,871	139,106	322,977	1,067,715
1981	507,158	351,878	54,471	913,507	59,718	187,032	330,445	1,236	49	1,285	32,477	1,987	34,464	93,431	189,068	366,194	1,279,701
1982	249,516	182,344	4,086	435,946	3,647	151,281	257,719	213	21	234	21,597	1,517	23,114	25,457	152,819	281,067	717,013
1983	451,164	248,092	14,600	713,856	6,672	148,125	255,388	42	1,856	1,898	24,309	18	24,327	31,023	149,999	281,613	995,469
1984	292,676	236,931	1,087	530,694	1,009	166,842	276,070	645	47	692	58,249	335	58,584	57,903	167,224	335,346	866,040
1985	247,486	188,099	1,792	437,377	12,007	247,085	427,483	700	-	700	66,913	1,540	68,453	79,620	248,625	496,636	934,013
1986	381,127	288,427	442	669,996	300	269,545	465,535	690	-	690	50,483	2,146	52,629	51,473	271,691	518,854	1,188,850
1987	222,698	174,876	3,501	401,275	29,991	121,474	209,800	362	44	406	10,810	450	11,060	40,963	121,968	221,266	622,541
1988	645,322	424,461	13,965	1,083,748	24,051	254,526	490,074	722	363	1,085	40,129	1,646	41,775	64,902	256,535	532,934	1,616,682
1989	544,373 [f]	343,032	7,578	894,983	18,554	283,305	510,244	154	373	527	42,115	4,871	46,986	60,823	288,549	557,757	1,452,740
1990	146,725	131,755	643	279,123	12,364	105,723	222,550	11	594	671	11,127 [g]	3,059	14,633	23,502	109,376	238,054	517,177
1991	140,470 [h]	175,149	8,912	324,531	6,381	137,232	309,644	4	28	35	18,197	4,716	23,892	24,582	141,976	333,571	658,102
1992	177,329 [i]	147,129 [j]	65	324,523	2,659	110,809	211,396	102	295	430	5,029	1,892	7,228	7,790	112,996	219,054	543,577
1993	73,659	19,332	463	93,454	27	22,447	42,957	0	0	0	3,041	515	3,705	3,068	22,962	46,662	140,116
1994	42,332	12,869	35	55,236	3,611	69,717	171,607	229	212	464	21,208	7,828	31,434	25,048	97,757	203,505	258,741
5 Yr Ave 1984-88	357,902	262,559	4,157	624,618	13,472	211,894	374,192	624	91	715	44,877	1,223	46,100	58,972	213,209	421,007	1,045,625
5 Yr Ave 1989-93	216,511	163,279	3,532	383,323	7,997	131,903	259,358	54	258	333	15,902	3,011	19,329	23,953	135,172	279,020	662,342

[a] Harvest reported in numbers of fish sold in the round and pounds of roe. Roe sales may include some pink and chinook salmon roe. Does not include department test fish sales.
[b] All sales are fish in the round. Includes department test fish sales prior to 1988.
[c] The estimated harvest is the fish sold in the round plus the estimated number of females caught to produce the roe sold. In addition, the estimated harvest for District 4 includes the estimated number of unsold males harvested
[d] In 1974, District 4 was subdivided to include Districts 5 and 6.
[f] Includes the illegal sales of 150 summer chum salmon in District 1.
[g] Does not include 1,233 female summer chum salmon sold in Subdistrict 6-C with roe extracted and roe sold separately. These fish are included in estimated harvest to produce roe sold.
[h] Includes the illegal sales of 1,023 summer chum salmon.
[i] Includes the illegal sales of 31 summer chum salmon.
[j] Includes the illegal sale of 91 summer chum salmon.

Appendix A.6. Commercial fall chum salmon sales and estimated harvest by district and country, Yukon River drainage, 1961-1994.

	Lower Yukon Area[a]				Upper Yukon Area[a]														
					District 4			District 5			District 6			Subtotal					
Year	District 1	District 2[b]	District 3	Subtotal	Numbers	Roe	Estimated Harvest[c]	Numbers	Roe	Estimated Harvest[c]	Numbers	Roe	Estimated Harvest[c]	Numbers	Roe	Estimated Harvest[c]	Alaska Numbers	Canada Total	Grand Total
1961	42,461	-	-	42,461	-	-	-	-	-	-	-	-	-	0	0	0	42,461	3,276	45,737
1962	53,118	-	-	53,118	-	-	-	-	-	-	-	-	-	0	0	0	53,118	936	54,052
1963	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	2,196	2,196
1964	8,347	-	-	8,347	-	-	-	-	-	-	-	-	-	0	0	0	8,347	1,929	10,276
1965	22,936	-	-	22,936	-	-	-	-	-	-	-	-	-	381	0	381	23,317	2,071	25,388
1966	69,838	-	1,209	71,045	-	-	-	-	-	-	-	-	-	0	0	0	71,045	3,157	74,202
1967	36,451	-	1,823	38,274	-	-	-	-	-	-	-	-	-	0	0	0	38,274	3,343	41,617
1968	49,857	-	3,068	52,925	-	-	-	-	-	-	-	-	-	0	0	0	52,925	453	53,378
1969	128,866	-	1,722	130,588	-	-	-	-	-	-	-	-	-	722	0	722	131,310	2,279	133,589
1970	200,306	4,658	3,285	208,449	-	-	-	-	-	-	-	-	-	1,146	0	1,146	209,595	2,479	212,074
1971	188,533	-	-	188,533	-	-	-	-	-	-	-	-	-	1,061	0	1,061	189,594	1,761	191,355
1972	136,711	12,898	1,313	150,922	-	-	-	-	-	-	-	-	-	1,254	0	1,254	152,176	2,532	154,708
1973	173,763	45,304	-	219,067	-	-	-	-	-	-	-	-	-	13,003	0	13,003	232,090	2,806	234,896
1974[d]	176,036	53,640	552	230,128	9,219	-	9,219	23,551	-	23,551	26,884	-	26,884	59,648	0	59,648	289,776	2,544	292,320
1975	168,183	51,868	5,590	215,439	13,868	-	13,868	27,212	-	27,212	18,692	-	18,692	59,570	0	59,570	275,009	2,500	277,509
1976	105,851	21,212	4,250	131,313	1,742	-	1,742	5,387	-	5,387	17,946	-	17,946	25,077	0	25,077	156,390	1,000	157,390
1977	131,758	51,994	15,851	199,603	13,980	-	13,980	25,730	-	25,730	18,673	-	18,673	58,383	0	58,383	257,986	3,990	261,976
1978	127,947	51,646	11,527	191,120	10,988	1,721	12,709	21,018	5,220	26,238	13,259	3,687	16,946	45,265	10,628	55,891	247,011	3,356	250,367
1979	109,408	94,042	25,955	229,403	45,899	3,199	52,098	47,459	8,097	55,556	34,185	7,170	41,355	130,643	18,466	149,009	378,412	9,054	387,466
1980	108,829	83,881	13,519	204,229	27,978	4,347	32,325	41,771	605	42,376	19,452	68	19,520	89,201	5,020	94,221	298,450	9,000	307,450
1981	167,834	154,883	19,043	341,760	12,082	1,311	13,393	68,820	8,955	93,575	25,989	3,019	29,008	124,891	11,285	135,976	477,736	15,260	492,996
1982	97,484	96,581	5,815	199,880	3,894	167	4,061	13,593	42	13,635	6,820	596	7,416	24,307	805	25,112	224,992	11,312	236,304
1983	124,371	85,645	10,018	220,034	4,462	1,983	6,445	43,993	0	43,993	34,089	3,101	37,190	82,564	5,084	87,628	307,662	25,990	333,652
1984	78,751	70,803	6,429	155,983	7,625	2,215	9,840	24,060	57	24,117	20,564	56	20,620	52,249	2,328	54,577	210,560	22,932	233,492
1985	129,948	40,490	5,164	175,602	24,452	2,525	26,977	25,338	0	25,338	42,352	0	42,352	92,142	2,525	94,667	270,269	35,746	306,015
1986	59,352	51,307	2,793	113,452	2,046	0	2,046	22,053	395	22,448	1,892	182	2,074	25,990	577	26,567	140,019	11,464	151,483
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40,591	40,591
1988	44,890	31,845	2,090	78,825	15,662	1,421	17,083	16,989	0	16,989	21,844	1,806	23,650	54,495	3,227	57,722	136,547	30,263	166,810
1989	74,235	97,656	15,332	187,125	11,776	3,407	15,183	18,216	3,989	22,204	49,090	7,353	56,443	79,081	14,749	93,830	280,955	17,549	298,504
1990	25,269	37,077	3,715	66,061	4,989	2,351	6,166	7,776	1,058	8,976	43,162[e]	7,535	50,976	55,949	10,944	66,117	134,178	27,537	161,715
1991	59,724	102,828	9,213	171,565	3,737	1,616	6,091	27,355	3,625	32,114	26,195	14,154	44,446	59,287	19,395	82,653	254,218	31,404	285,622
1992	0	0	0	0	0	0	0	0	0	0	15,721	2,806	19,022	15,721	2,806	19,022	19,022	18,576	37,598
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,762	7,762
1994	0	0	0	0	0	0	0	3,630	0	3,630	1	3,276	4,369	3,631	3,276	7,999	7,999	30,035	38,034
5 Yr. Ave 1984-88	62,588	38,889	3,295	104,772	9,957	1,232	11,189	17,888	90	17,778	17,530	409	17,739	44,975	1,731	46,707	151,479	28,199	179,678
5 Yr. Ave 1989-93	31,846	47,453	5,852	84,950	4,100	1,476	5,886	10,670	1,734	12,859	27,236	8,370	34,178	42,008	9,579	52,724	137,675	20,566	158,240

[a] Sales reported in numbers of fish sold in the round and pounds of unprocessed roe, which may include small amounts of coho salmon roe. Since 1990, efforts were made to separate coho roe from fall chum roe. Does not include department test fish sales.

[b] All fish sold in the round. Includes department test fish sales prior to 1988.

[c] The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.

[d] In 1974, District 4 was subdivided to include Districts 5 and 6.

[e] Does not include 884 female fall chum salmon sold in Subdistrict 6-C with roe extracted and roe sold separately. Females are accounted for in the estimated harvest to produce roe sold.

Appendix A.7. Commercial coho salmon sales by district, Yukon River drainage in Alaska, 1961-1994.

	Lower Yukon Area [b]				Upper Yukon Area [a]												
					District 4			District 5			District 6			Subtotal			
Year	District 1	District 2	District 3	Subtotal	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Number	Roe	Estimated Harvest [c]	Total Harvest
1961	2,855	-	-	2,855	-	-		-	-	-	-	-	-	0	0	0	2,855
1962	22,926	-	-	22,926	-	-		-	-	-	-	-	-	0	0	0	22,926
1963	5,572	-	-	5,572	-	-		-	-	-	-	-	-	0	0	0	5,572
1964	2,446	-	-	2,446	-	-		-	-	-	-	-	-	0	0	0	2,446
1965	350	-	-	350	-	-		-	-	-	-	-	-	0	0	0	350
1966	19,254	-	-	19,254	-	-		-	-	-	-	-	-	0	0	0	19,254
1967	9,925	-	1,122	11,047	-	-		-	-	-	-	-	-	0	0	0	11,047
1968	13,153	-	150	13,303	-	-		-	-	-	-	-	-	0	0	0	13,303
1969	13,989	-	1,009	14,998	-	-		-	-	-	-	-	-	0	0	95	15,093
1970	12,632	-	-	12,632	-	-		-	-	-	-	-	-	0	0	556	13,188
1971	12,165	-	-	12,165	-	-		-	-	-	-	-	-	0	0	38	12,203
1972	21,705	508	-	22,211	-	-		-	-	-	-	-	-	0	0	22	22,233
1973	34,860	1,781	-	36,641	-	-		-	-	-	-	-	-	0	0	0	36,641
1974 [d]	13,713	176	-	13,889	0	-	0	1,409	-	1,409	1,479	-	1,479	2,888	0	2,888	16,777
1975	2,288	200	-	2,488	0	-	0	5	-	5	53	-	53	58	0	58	2,546
1976	4,064	17	-	4,081	0	-	0	0	-	0	1,103	-	1,103	1,103	0	1,103	5,184
1977	31,720	5,319	538	37,577	0	-	0	2	-	2	1,284	-	1,284	1,286	0	1,286	38,863
1978	16,460	5,835	758	23,053	32	-	32	1	-	1	3,066	-	3,066	3,099	0	3,099	26,152
1979	11,369	2,850	-	14,219	165	-	165	0	-	0	2,791	-	2,791	2,946	0	2,946	17,165
1980	4,829	2,660	-	7,489	30	-	30	0	-	0	1,226	-	1,226	1,256	0	1,256	8,745
1981	13,129	7,848	419	21,396	0	-	0	0	-	0	2,284	-	2,284	2,284	0	2,284	23,680
1982	15,115	14,179	87	29,381	15	-	15	0	-	0	7,780	-	7,780	7,795	0	7,795	37,176
1983	4,595	2,557	-	7,152	0	-	0	0	-	0	6,168	-	6,168	6,168	0	6,168	13,320
1984	29,472	43,064	621	73,157	1,095	-	1,095	0	-	0	7,688	-	7,688	8,783	0	8,783	81,940
1985	27,676	17,125	171	44,972	938	-	938	0	-	0	11,762	-	11,762	12,700	0	12,700	57,672
1986	24,824	21,197	793	46,814	0	-	0	0	-	0	441	-	441	441	0	441	47,255
1987	0	0	0	0	0	-	0	0	-	0	0	-	0	0	0	0	0
1988	36,028	34,758	1,419	72,205	2	-	2	8	-	8	13,972	-	13,972	13,982	0	13,982	86,187
1989	22,987	38,402	3,988	65,377	3	-	3	84	-	84	16,084	-	16,084	16,171	0	16,171	81,548
1990	12,160	16,405	918	29,483	0	-	0	0	-	0	11,549 [f]	4,042	14,804	11,549	4,042	14,804	44,287
1991	54,095	40,898	1,905	96,898	14	0	14	0	0	0	6,268	4,299	9,774	6,282	4,299	9,788	106,686
1992	0	0	0	0	0	0	0	0	0	0	6,556	1,680	7,979	6,556	1,680	7,979	7,979
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	120	5,588	4451	120	5,588	4,451	4,451
5 Yr Ave 1984-88	23,600	23,229	601	47,430	407	-	407	-	-	-	6,773	-	6,773	7,181	-	7,181	54,611
5 Yr Ave 1989-93	17,848	19,141	1,362	38,352	3	-	3	17	0	17	8,091	2,004	9,728	8,112	2,004	9,748	48,100

[a] Sales reported in numbers of fish sold in the round and pounds of roe. Since 1990, efforts were made to seperate coho and fall chum salmon roe. Does not include department test fish sales.
[b] All sales are fish in the round. Includes department test fish sales prior to 1988.
[c] The estimated harvest is the fish sold in the round plus the estimated number of females caught to produce the roe sold.
[d] In 1974, District 4 was subdivided to inlude Districts 5 and 6.
[f] Does not include 438 female coho salmon sold in District 6-C with roe extracted and roe sold separately. These fish are included in estimated harvest to produce roe sold.

Appendix A.8. Commercial Fisheries Entry Commission (CFEC) salmon permits issued by gear type, Yukon Area, 1976-1994.[a]

	Lower Yukon Set or Drift Gillnet		Upper Yukon Set Gillnet		Upper Yukon Fishwheel		Total	
Year	Permits Issued	Permits Fished	Permits Issued	Permits Fished	Permits Issued	Permits Fished	Permits Issued	Permits Fished
1976	678	[b]	118	[b]	169	[b]	[b]	[b]
1977	700	609	69	44	160	130	929	783
1978	699	650	71	47	158	137	928	834
1979	708	661	70	50	165	129	943	840
1980	709	654	71	52	163	128	943	834
1981	711	666	70	45	162	125	943	836
1982	710	664	76	45	166	111	952	820
1983	708	655	73	40	164	115	945	810
1984	708	674	73	39	159	99	940	812
1985	708	664	71	40	159	113	938	817
1986	707	670	71	30	161	101	939	801
1987	706	656	71	33	161	108	938	797
1988	707	677	71	43	160	124	938	844
1989	707	682	70	42	160	127	937	851
1990	708	675	71	35	157	116	936	826
1991	708	680	72	36	155	110	935	826
1992	707	679	71	32	165	111	943	822
1993	707	682	72	35	166	88	945	805
1994	707	659 [c]	72	31 [c]	165	74 [c]	944	764 [c]

[a] Information obtained from CFEC unless otherwise indicated. Includes permanent and interim-use permits.
[b] Information unavailable.
[c] Data source: ADF&G.

Appendix A.9. Number of commercial salmon fishing gear operators (permit holders) by district, Yukon area, 1971-1994. a

Chinook and Summer Chum Salmon Season

	Lower Yukon Area b				Upper Yukon Area				
Year	District 1	District 2	District 3	Subtotal	District 4	District 5	District 6	Subtotal	Total
1971	405	154	33	592	-	-	-	-	592
1972	426	153	35	614	-	-	-	-	614
1973	438	167	38	643	-	-	-	-	643
1974	396	154	42	592	27	31	20	78	670
1975	441	149	37	627	93	52	36	181	808
1976	453	189	42	684	80	46	29	155	839
1977	392	188	46	626	87	41	18	146	772
1978	429	204	22	655	80	45	35	160	815
1979	425	210	22	657	87	34	30	151	808
1980	407	229	21	657	79	35	33	147	804
1981	448	225	23	696	80	43	26	149	845
1982	450	225	21	696	74	44	20	138	834
1983	455	225	20	700	77	34	25	136	836
1984	444	217	20	613	54	31	27	112	725
1985	425	223	18	666	74	32	27	133	799
1986	441	239	7	672	75	21	27	123	795
1987	440	239	13	659	87	30	24	141	800
1988	456	250	22	678	95	28	33	156	834
1989	445	243	16	687	98	32	29	159	846
1990	453	242	15	679	92	27	23	142	821
1991	489	253	27	678	85	32	22	139	817
1992	438	263	19	679	90	28	19	137	816
1993	448	238	6	682	75	30	18	123	805
1994	414	250	7	659	55	28	20	103	762

Fall Chum and Coho Salmon Season

	Lower Yukon Area b				Upper Yukon Area				
Year	District 1	District 2	District 3	Subtotal	District 4	District 5	District 6	Subtotal	Total
1971	352	-	-	352	-	-	-	-	352
1972	353	75	3	431	-	-	-	-	431
1973	445	183		628	-	-	-	-	628
1974	322	121	6	449	17	23	22	62	511
1975	428	185	12	625	44	33	33	110	735
1976	422	194	28	644	18	36	44	98	742
1977	337	172	37	546	28	34	32	94	640
1978	429	204	28	661	24	43	30	97	758
1979	458	220	32	710	710	31	44	37	112	822
1980	395	232	23	650	650	33	43	26	102	752
1981	462	240	21	723	723	30	50	30	110	833
1982	445	218	15	678	678	15	24	25	64	742
1983	312	224	18	554	554	13	29	23	65	619
1984	327	216	12	536	555	18	39	26	83	619
1985	345	222	13	559	580	22	39	25	86	645
1986	282	231	14	510	527	1	21	16	38	548
1987 c	-	-	-	-	0	-	-	-	-	-
1988	328	233	13	563	574	20	20	32	72	635
1989	332	229	22	550	583	20	24	28	72	622
1990	301	227	19	529	547	11	11	27	49	578
1991	319	238	19	540	576	8	21	25	54	594
1992 c	-	-	-	-	0	-	-	22	22	22
1993 c	-	-	-	-		-	-	-	-	-
1994	-	-	-	-		-	1	11	12	12

-Continued-

Appendix A.9. (page 2 of 2).

COMBINED SEASON

	Lower Yukon Area [b]				Upper Yukon Area				
Year	District 1	District 2	District 3	Subtotal	District 4	District 5	District 6	Subtotal	Total
1971	473	154	33	660	-	-	-	27	687
1972	476	153	35	664	-	-	-	-	664
1973	529	205	38	772	-	-	-	47	819
1974	485	190	42	717	28	43	27	98	815
1975	491	197	39	727	95	57	46	198	925
1976	482	220	44	746	96	62	56	214	960
1977	402	208	54	609	96	53	39	188	797
1978	472	221	29	650	82	53	38	173	823
1979	461	230	33	661	90	49	40	179	840
1980	432	247	27	654	88	51	38	177	831
1981	507	257	26	666	94	56	31	181	847
1982	455	244	22	664	76	53	27	156	820
1983	458	235	26	655	79	47	31	157	812
1984	453	236	26	676	58	45	33	136	812
1985	434	247	24	666	76	48	33	157	823
1986	444	259	18	672	75	30	27	132	804
1987	440	239	13	659	87	30	24	141	800
1988	460	260	24	683	97	35	38	170	853
1989	452	257	23	687	99	38	32	169	856
1990	459	258	22	679	92	31	30	153	832
1991	497	272	29	680	85	33	28	146	826
1992	438	263	19	679	90	28	25	143	822
1993	448	238	6	682	75	30	18	123	805
1994	414	250	7	659	55	28	20	103	762

[a] Actual number of gear operators which delivered. Some individual fishermen in the Lower Yukon Area may have operated in more than one district during the year.

[b] Total number of permits by season, and combined seasons are the unique number of permits fished from 1984-1993. Prior year totals are additive for Districts 1, 2, and 3.

[c] No commercial salmon fishing season, except in District 6 in 1992 and in Subdistrict 5-D and District 6 in 1994.

Appendix A.10. Commercial salmon pack by species and type of processing, Yukon Area, 1960-1994. [a]

	Cases (48#)			Fresh-Frozen (round wt. in lbs.)			Cured Chinook		Cured Chum		Salmon Roe
Year	Chinook	Coho	Chum	Chinook	Coho	Chum	Tierces	Half Tierces	Tierces	Half Tierces	(lbs.)
1960	13,000			[b]	[b]	[b]	250	180			
1961	19,474			[b]	[b]	[b]	504	146			
1962	15,959	512	1,760	[b]	[b]	[b]	464	280			
1963	16,400	1,190		[b]	[b]	[b]	[b]	[b]			
1964	12,041			[b]	17,000	66,770	537	499			
1965	18,149			275,000	2,500	160,500	670	67			
1966	14,026	836	2,812	414,000	61,355	301,240	398	60			
1967	21,503		126	475,900	66,400	366,496	627	96			1,755
1968	19,499		816	561,690	93,154	454,409	351	170			21,000
1969	9,560	1,104	4,499	423,597	26,973 [c]	829,586 [c]	647	95	15		29,000
1970	6,431	1,002	6,413	716,600	12,900	1,725,000	447	191	51		26,300
1971	6,500	502	3,213	1,058,034	45,836	1,432,455	659	229	139		55,177
1972	7,418	1,005	6,249	1,002,395	83,960	1,495,922	497	147			85,278
1973	5,227	1,008	9,902	1,339,317	181,928	2,929,532	61	133		72	137,594
1974	6,660	603	21,074	1,062,666	58,816	3,879,300	381	56	57		208,842
1975	5,297	40	14,226	781,902	13,299	4,751,941	80	53	45	119	201,404
1976	3,921	80	11,375	1,398,779	29,778	4,256,679	93	92	72	10	226,893
1977	4,642	415	9,428	1,513,484	270,241	4,877,918	180	237	26		210,568
1978	5,711	74	9,340	1,473,354	168,241	8,639,156	222	117	7	75	261,422
1979	6,277	22	7,854	2,014,156	108,011	8,098,075	112	91		2	410,540
1980	8,764	130	15,783	3,341,262	56,295	8,781,062	29	18		37	579,927
1981	1,107	378	11,573	3,686,238	130,097	11,398,680	25	13	9	28	507,550
1982		7	751	2,790,456	246,500	4,992,877		19		1	584,053
1983		198	1,181	3,000,843	72,447	10,637,613	5	39		7	426,220
1984		5	1,768	2,426,205	590,526	5,516,532		36		16	468,244
1985				2,953,199	409,725	5,462,462		9		20 [d]	476,024
1986				2,012,324	299,054	5,960,857		15		28 [e]	502,952
1987				2,830,312	0	3,013,889		36			286,099
1988 [f]				1,970,879	624,734	9,111,943		10		22 [g]	577,748
1989 [f]				2,005,949	585,216	8,864,714		6		16	303,298
1990 [f]				1,846,081	283,504	3,166,199		3		1,368 [i]	261,016
1991 [h]				2,047,188	708,902	3,978,482				2,547 [i]	350,174
1992				2,537,833	40,685	2,398,093					260,590
1993				1,905,414	0	634,931					97,630
1994				2,260,301	744	528,666					183,873

[a] Pack represents type of processing when fish were shipped out of districts.
[b] Information not available.
[c] Includes approximately 11,600 and 110,500 (round weight) of coho and chum salmon respectively, as salted fish for Japanese market.
[d] Additionally 13 half tierces of coho salmon were packed.
[e] Additionally 2 half tierces of coho salmon were packed.
[f] Does not include District 6 test fish sales.
[g] Additionally 1 half tierce of coho salmon was packed.
[h] Beginning in 1991, no ADF&G test fish sales are included.
[i] Chum salmon are represented in pounds of salted fillets.

Appendix A.11. Dollar value estimates of Yukon Area commercial salmon fishery, 1961-1994.

	Exvessel Value of Harvest to Fishermen[a]					Wholesale Value	State Tax
Year	Chinook	Coho	Chum	Roe	Total	of Pack [b]	Revenues [c]
1961	420,900	1,400	14,700	-	437,000	1,292,300	37,500
1962	330,300	11,500	20,100	-	361,900	1,275,250	50,400
1963	409,500	2,800	-	-	412,300	1,500,400	42,000
1964	351,000	1,200	2,200	-	354,400	1,203,800	35,000
1965	531,400	200	10,700	-	542,300	1,412,700	42,000
1966	419,900	9,600	25,000	-	454,500	1,308,100	37,000
1967	583,700	5,500	17,200	-	606,400	1,864,800	41,700
1968	494,300	6,700	34,000	-	535,000	1,655,200	47,000
1969	415,000	8,200	96,000	-	519,200	1,976,200	40,000
1970	401,300	10,300	211,500	-	623,100	2,113,100	45,000
1971	590,100	10,000	182,900	-	783,000	2,106,600	42,000
1972	547,800	20,400	215,800	-	784,000	2,405,200	45,300
1973	561,400	46,500	609,100	-	1,217,000	4,453,900	62,800
1974	881,300	28,400	1,011,300	-	1,921,000	6,035,900	84,100
1975	589,000	3,500	1,201,400	-	1,793,900	4,939,700	87,100
1976	983,500	8,600	1,158,900	-	2,151,000	6,815,500	96,900
1977	1,928,400	143,000	1,997,300	-	4,068,700	10,499,400	151,000
1978	2,133,700	79,200	3,101,800	-	5,314,700	14,194,800	179,400
1979	3,008,000	84,400	4,527,100	-	7,619,500	19,048,800	248,600
1980	3,639,300	21,800	2,311,600	365,200	5,871,300	14,678,250	205,400
1981	4,635,500	91,900	5,323,300	601,100	10,651,800	26,629,500	322,500
1982	3,871,300	153,700	2,693,800	422,500	7,141,300	17,853,250	222,000
1983	4,198,600	29,000	2,499,800	257,400	6,984,800	17,462,000	230,000
1984	3,620,400	268,800	1,498,000	301,800	5,689,000	14,222,500	194,000
1985	4,389,100	202,600	1,952,700	487,200	7,031,600	17,579,000	227,100
1986	3,238,500	212,500	2,232,400	565,400	6,248,800	15,622,000	205,200
1987	5,521,100	0	1,372,400	270,800	7,164,300	17,910,750	232,700
1988	5,605,800	769,400	5,880,200	1,123,300	13,378,700	33,446,750	420,800
1989	5,289,900	357,300	3,194,700	1,338,200	10,180,100	25,450,250	332,000
1990	4,920,600	162,700	887,700	546,900	6,517,900	16,294,750	222,900
1991 [d]	7,214,390	310,993	1,335,258	683,448	9,544,089	23,860,223	324,323
1992 [d]	10,117,092	15,867	661,702	537,210	11,331,871	28,329,678	377,956
1993 [d]	4,986,151	0	240,641	207,131	5,433,923	13,584,808	201,018
1994 [d]	4,286,089	357	184,639	315,602	4,786,687	11,966,718	181,601
5-Year-Avg 1989-93	6,505,627	169,372	1,264,000	662,578	8,601,577	21,503,942	291,639

a Includes Lower Yukon test fish sales, unless otherwise noted.
b Based on type of processing when fish were shipped out of the area.
c Estimated processors tax and vessel and crewmember license fees. Does not include CFEC permit fee.
d Does not include test fish sales.

Appendix A.12. Estimated average prices paid to fishermen, Yukon Area, 1964-1994.

	Lower Yukon Area				Upper Yukon Area								
Year	Chinook	Summer Chum	Fall Chum	Coho	Chinook	Chinook Roe	Summer Chum	Summer Chum Roe	Fall Chum	Fall Chum Roe	Coho	Coho Roe	Salmon Roe
1964	0.17		0.03										
1965	0.20												
1966	0.20												
1967	0.19	0.05	0.05	0.07									
1968	0.18	0.06	0.06										
1969	0.19	0.08	0.08	0.08									
1970	0.22	0.09	0.09	0.12									
1971	0.24	0.10	0.10	0.12									
1972	0.24	0.11	0.11	0.13									
1973	0.30	0.16	0.16	0.18									
1974	0.38	0.21	0.21	0.25	0.50		0.15		0.13		0.15		0.75
1975	0.42	0.20	0.20	0.21	0.92		0.17		0.14		0.17		1.16
1976	0.51	0.24	0.24	0.27	0.74		0.19		0.16		0.19		1.33
1977	0.85	0.40	0.45	0.50	1.37		0.27	2.66	0.22		0.27		2.66
1978	0.90	0.45	0.47	0.60	0.87		0.24	•	0.25		0.24		•
1979	1.09	0.52	0.68	0.80	1.00		0.25	3.00	0.29		0.25		3.00
1980	1.04	0.20	0.28	0.36	0.85		0.23	2.50	0.27		0.29		2.50
1981	1.20	0.40	0.55	0.60	1.00		0.20	3.00	0.35		0.35		3.00
1982	1.41	0.40	0.55	0.69	1.02		0.18	2.75	0.28		0.37		2.75
1983	1.40	0.34	0.34	0.35	1.08		0.16	1.66	0.19		0.31		1.66
1984	1.50	0.26	0.32	0.50	0.95		0.23	1.78	0.26		0.24		1.78
1985	1.50	0.35	0.47	0.53	0.86		0.23	1.94	0.25		0.33		1.94
1986	1.63	0.38	0.49	0.71	0.89		0.22	2.08	0.14		0.21		2.08
1987	1.98	0.49	-	-	0.79		0.19	2.22	-		-		2.22
1988	2.97	0.66	1.01	1.38	1.04		0.23	4.33	0.32		0.37		4.33
1989	2.77	0.34	0.50	0.66	0.84		0.24	4.41	0.28		0.35		4.41
1990	2.84	0.24	0.45	0.66	0.72		0.11	4.41	0.29		0.34		4.38
1991	3.70	0.36	0.34	0.44	0.70	2.92	0.18	4.21	0.23	3.56	0.30	2.50	4.03
1992	4.12	0.27	-	-	0.91	2.82	0.30	4.53	0.39	4.50	0.39	2.18	4.45
1993	2.70	0.38	-	-	1.06	5.52	0.35	8.53	-	-	-	-	8.29
1994	2.07	0.21	-	-	0.92	3.11	0.20	3.77	0.16	1.50	0.48	1.50	3.57

• Data unavailable.

Appendix A.13. Average weight of commercial salmon catch in pounds, Yukon Area, 1964-1994. [a]

	Lower Yukon Area				Upper Yukon Area			
Year	Chinook	Summer Chum	Fall Chum	Coho	Chinook	Summer Chum	Fall Chum	Coho
1964	22.6							
1965	23.0							
1966	23.0							
1967	24.0			7.3				
1968	26.5							
1969	23.9			6.7				
1970	22.3			7.1				
1971	22.6			6.9				
1972	24.6	6.6	7.6	7.1				
1973	24.5	6.8	7.9	7.1				
1974	23.7	6.5	7.5	7.0	17.3	6.7	7.7	6.7
1975	22.0	6.5	7.5	7.2	17.7	6.6	8.0	6.6
1976	21.9	6.5	7.5	6.6	18.4	6.4	8.0	7.5
1977	23.9	7.0	8.0	7.5	17.6	6.5	8.0	6.5
1978	24.0	7.1	7.7	7.0	20.2	6.8	7.4	6.4
1979	20.9	7.4	7.4	7.3	20.2	6.6	7.7	6.5
1980	22.5	6.9	6.9	6.4	16.0	6.6	7.7	6.5
1981	24.8	7.5	8.0	6.8	23.7	7.1	7.4	5.7
1982	23.0	7.1	7.7	6.7	21.4	7.1	7.5	6.5
1983	20.5	7.2	7.9	7.0	19.1	6.6	7.7	6.0
1984	20.5	6.8	7.5	7.0	19.6	6.4	7.3	6.1
1985	20.3	6.7	7.7	7.4	18.4	6.1	7.5	6.4
1986	20.2	6.9	7.2	6.3	19.7	6.1	8.0	6.0
1987	21.7	6.8			20.0	6.8		
1988	19.6	7.0	7.9	7.3	18.6	6.9	7.9	6.6
1989	19.9	7.2	7.5	7.3	17.9	6.8	7.4	6.0
1990	19.6	7.3	7.7	6.8	16.8	6.9	7.0	6.2
1991	20.4	6.7	7.4	7.0	17.6	6.5	6.8	5.7
1992	21.5	6.9			19.9	5.6	6.8	6.2
1993	20.5	6.6			17.8	7.2		
1994	20.3	6.5			15.7	5.8	6.2	6.2

[a] Information not available for some years. Data obtained from age-length-weight samples or fish ticket entries.

Appendix A.14 Commercial chinook salmon harvest taken under quotas or guideline harvest ranges (GHR), Lower Yukon Area, 1974-1994.

Year	Districts 1 and 2		District 3	
	Catch	GHR	Catch	Quota/GHR
1974	-	-	3,480	3,000
1975	-	-	4,177	3,000
1976	-	-	4,148	3,000
1977	-	-	3,965	3,000
1978	-	-	2,916	2,000
1979 [a]	-	-	5,018	1,800-2,200
1980	-	-	5,240	1,800-2,200
1981	145,287	60,000-120,000	4,023	1,800-2,200
1982	113,582	60,000-120,000	2,609	1,800-2,200
1983	138,686	60,000-120,000	4,106	1,800-2,200
1984	111,368	60,000-120,000	3,039	1,800-2,200
1985	138,376	60,000-120,000	2,588	1,800-2,200
1986	94,884	60,000-120,000	901	1,800-2,200
1987	124,101	60,000-120,000	2,039	1,800-2,200
1988	91,240	60,000-120,000	1,767	1,800-2,200
1989	94,736	60,000-120,000	1,645	1,800-2,200
1990	84,260	60,000-120,000	2,341	1,800-2,200
1991	95,592	60,000-120,000	2,344	1,800-2,200
1992	112,351	60,000-120,000	1,819	1,800-2,200
1993	86,579	60,000-120,000	1,501	1,800-2,200
1994	103,933	60,000-120,000	1,114	1,800-2,200

[a] Beginning in 1979, quotas were replaced by guideline harvest ranges.

Appendix A.15. Estimated commercial chinook salmon harvest taken under quotas or guideline harvest ranges (GHR), Upper Yukon Area, 1974-1994.

	District 4		Subdistricts 5-ABC		Subdistricts 5-D		District 6	
Year	Estimated Harvest [a]	Quota/GHR	Estimated Harvest [a]	Quota/GHR	Estimated Harvest [a]	Quota/GHR	Estimated Harvest [a]	Quota/GHR
1974	685	1,000	2,663	3,000 [b]			1,473	1,000
1975	389	1,000	2,872	3,000 [b]			500	1,000
1976	409	1,000	3,151	3,000 [b]			1,102	1,000
1977	985	1,000	4,162	3,000 [b]			1,008	1,000
1978	608	1,000	3,079	3,000 [b]			635	1,000
1979 [c]	1,989	900-1,100	3,389	2,700-3,300 [b]			772	900-1,100
1980	1,521	900-1,100	4,891	2,700-3,300 [b]			1,947	900-1,100
1981	1,347	2,250-2,850	5,625	2,400-2,800	749	300-500	987	600-800
1982	1,087	2,250-2,850	4,690	2,400-2,800	695	300-500	981	600-800
1983	601	2,250-2,850	3,370	2,400-2,800	236	300-500	911	600-800
1984	961	2,250-2,850	3,285	2,400-2,800	384	300-500	867	600-800
1985	664	2,250-2,850	2,984	2,400-2,800	434	300-500	1,142	600-800
1986	502	2,250-2,850	2,427	2,400-2,800	306	300-500	950	600-800
1987	1,524	2,250-2,850	2,539	2,400-2,800	566	300-500	1,202	600-800
1988	3,159	2,250-2,850	2,975	2,400-2,800	461	300-500	762	600-800
1989	2,790	2,250-2,850	2,901	2,400-2,800	385	300-500	1,741	600-800
1990	3,538	2,250-2,850	2,822	2,400-2,800	543	300-500	2,156	600-800
1991	3,582	2,250-2,850	3,272	2,400-2,800	554	300-500	1,072	600-800
1992	2,394	2,250-2,850	3,398	2,400-2,800	457	300-500	753	600-800
1993	1,577	2,250-2,850	2,608	2,400-2,800	400	300-500	1,445	600-800
1994	2,443	2,250-2,850	3,294	2,400-2,800	450	300-500	2,606	600-800

[a] The estimated harvest includes the number of fish sold in the round plus the estimated number of females harvested to produce the roe sold.
[b] Quota or guideline harvest range for District 5.
[c] In 1979, quotas were replaced by guideline harvest ranges.

Appendix A.16. Commercial summer chum salmon harvest taken under guideline harvest ranges (GHR), Lower Yukon Area, 1990-1994.

Year	Districts 1 and 2		District 3	
	Catch	GHR	Catch	GHR
1990	278,480	251,000-755,000	643	6,000-19,000
1991	315,619	251,000-755,000	8,912	6,000-19,000
1992	324,458	251,000-755,000	65	6,000-19,000
1993	92,991	251,000-755,000	463	6,000-19,000
1994	55,201	251,000-755,000	35	6,000-19,000

Appendix A.17. Estimated commercial summer chum salmon harvest taken under guideline harvest ranges (GHR), Upper Yukon Area, 1990-1994.

Year	Subdistrict 4-A		Anvik River [a]	Subdistrict 4-BC		District 5		District 6	
	Estimated Harvest [b]	GHR	Pounds of Roe	Estimated Harvest [b]	GHR	Estimated Harvest [c]	GHR	Estimated Harvest [c]	GHR
1990	197,621	113,000-338,000		24,929	16,000-47,000	671	1,000-3,000	14,833	13,000-38,000
1991	290,255	113,000-338,000		19,389	16,000-47,000	35	1,000-3,000	23,892	13,000-38,000
1992	184,171	113,000-338,000		27,225	16,000-47,000	430	1,000-3,000	7,228	13,000-38,000
1993	38,196	113,000-338,000		4,761	16,000-47,000	0	1,000-3,000	3,705	13,000-38,000
1994	131,794	113,000-338,000	19,532	17,239	16,000-47,000	464	1,000-3,000	31,434	13,000-38,000

[a] No guideline harvest range established for Anvik River Management Area in 1994.
[b] Subdistrict 4-A and 4-B and C harvest includes estimated harvest of females and incidental males to produce roe sold.
[c] Estimated harvest includes the estimated number of females to produce roe sold.

Appendix A.18. Commercial fall chum salmon harvest taken under quotas or guideline harvest ranges (GHR), Lower Yukon Area, 1974-1994.

	Districts 1, 2, and 3	
Year	Catch	Quota/GHR
1974	230,128	200,000
1975	215,439	200,000
1976	131,313	200,000
1977	199,603	200,000
1978	191,120	200,000
1979 [a]	229,403	120,000-220,000
1980	204,229	120,000-220,000
1981	341,760	120,000-220,000
1982	199,880	120,000-220,000
1983	220,034	120,000-220,000
1984	155,983	120,000-220,000
1985	175,602	120,000-220,000
1986	113,452	0-110,000
1987	0	0-110,000
1988	78,825	0-110,000
1989	187,125	0-110,000
1990	66,061	60,000-220,000
1991	171,565	60,000-220,000
1992	0	60,000-220,000
1993	0	60,000-220,000
1994	0	60,000-220,000

[a] Beginning in 1979 quotas were replaced by guideline harvest ranges.

Appendix A.19. Estimated commercial fall chum and coho salmon combined harvest taken under quotas or guideline harvest ranges (GHR), Upper Yukon Area, 1974-1994.

Year	District 4		Subdist. 4-BC		District 5		Subdistricts 5-ABC		Subdistrict 5-D		District 6	
	Estimated Harvest [a]	GHR	Estimated Harvest [a]	GHR	Estimated Harvest [a]	GHR	Estimated Harvest [a]	GHR	Estimated Harvest [a]	GHR	Estimated Harvest [a]	GHR
1974	9,213	10,000	-	-	24,960	25,000	-	-	-	-	28,363	15,000
1975	13,666	10,000	-	-	27,217	25,000	-	-	-	-	18,745	15,000
1976	1,742	10,000	-	-	5,387	25,000	-	-	-	-	19,051	15,000
1977	13,980	10,000	-	-	25,732	25,000	-	-	-	-	19,957	15,000
1978	12,741	10,000	-	-	26,237	25,000	-	-	-	-	20,012	15,000
1979 [b]	-	-	52,253	10,000-40,000	55,556	10,000-40,000	-	-	-	-	44,146	7,500-22,500
1980	-	-	32,355	10,000-40,000	42,376	10,000-40,000	-	-	-	-	20,746	7,500-22,500
1981	-	-	13,393	10,000-40,000	93,575	-	[c]	8,000-36,000	[c]	2,000-4,000	31,292	5,500-20,500
1982	-	-	4,076	10,000-40,000	13,635	-	[c]	8,000-36,000	[c]	2,000-4,000	15,196	5,500-20,500
1983	-	-	6,445	10,000-40,000	-	-	40,901	8,000-36,000	3,092	2,000-4,000	43,358	5,500-20,500
1984	-	-	10,935	10,000-40,000	-	-	21,147	8,000-36,000	2,970	2,000-4,000	28,308	5,500-20,500
1985	-	-	27,915	10,000-40,000	-	-	23,160	8,000-36,000	2,178	2,000-4,000	54,114	5,500-20,500
1986	-	-	2,045	0-20,000	-	-	21,105	0-18,000	1,343	0-2,000	2,515	0-10,250
1987	-	-	0	0-20,000	-	-	0	0-18,000	0	0-2,000	0	0-10,250
1988	-	-	17,085	0-20,000	-	-	14,217	0-18,000	2,780	0-2,000	37,622	0-10,250
1989	-	-	15,186	0-20,000	-	-	18,976	0-18,000	3,312	0-2,000	72,527	0-10,250
1990	-	-	8,166	5,000-40,000	-	-	6,243	4,000-36,000	2,733	1,000-4,000	65,779	2,750-20,500
1991	-	-	6,105	5,000-40,000	-	-	28,900	4,000-36,000	3,214	1,000-4,000	54,222	2,750-20,500
1992	-	-	0	5,000-40,000	-	-	0	4,000-36,000	0	1,000-4,000	27,001	2,750-20,500
1993 [d]	-	-	0	5,000-40,000	-	-	0	4,000-36,000	0	1,000-4,000	0	2,750-20,500
1994	-	-	0	5,000-40,000	-	-	0	4,000-36,000	3,630	1,000-4,000	4,369	2,750-20,500

[a] The estimated harvest is the number of fish sold in the round plus the estimated number of females harvested to produce the roe sold.
[b] In 1979, quotas were replaced by guideline harvest ranges.
[c] Harvest by subdistrict not available.
[d] Regulations were changed to exclude coho salmon from GHR beginning in 1993.

Appendix A.20. Yukon River chinook salmon total utilization in numbers of fish by district, area and country, 1961-1994. a

	District 1					District 2				District 3			Lower Yukon Area Subtotals				
Year	Subsist	Comm b,c	Personal Use	ADF&G Test Fish	Total	Subsist	Comm b,c	ADF&G Test Fish	Total	Subsist	Comm	Total	Subsist	Comm	Personal Use	ADF&G Test Fish	Total
1961		84,466			84,466		29,026		29,026		4,368	4,368		117,860			117,860
1962		67,099			67,099		22,224		22,224		4,687	4,687		94,010			94,010
1963		85,004			85,004		24,221		24,221		7,020	7,020		116,245			116,245
1964		67,555			67,555		20,246		20,246		4,705	4,705		92,506			92,506
1965		89,268			89,268		23,763		23,763		3,204	3,204		116,235			116,235
1966		70,788			70,788		16,927		16,927		3,612	3,612		91,327			91,327
1967		104,350			104,350		20,239		20,239		3,618	3,618		128,207			128,207
1968		79,465			79,465		21,392		21,392		4,543	4,543		105,400			105,400
1969		71,688			71,688		14,756		14,756		3,595	3,595		90,039			90,039
1970		56,648			56,648		17,141		17,141		3,705	3,705		77,494			77,494
1971		86,042			86,042		19,226		19,226		3,490	3,490		108,758			108,758
1972		70,052			70,052		17,855		17,855		3,841	3,841		91,748			91,748
1973		56,981			56,981		13,859		13,859		3,204	3,204		74,044			74,044
1974		71,840			71,840		17,948		17,948		3,480	3,480		93,268			93,268
1975		44,585			44,585		11,315		11,315		4,177	4,177		60,077			60,077
1976		62,410			62,410		16,556		16,556		4,148	4,148		83,114			83,114
1977		69,915			69,915		16,722		16,722		3,965	3,965		90,602			90,602
1978	5,246	59,006			64,252	3,964	32,924		36,888	3,902	2,916	6,818	13,112	94,846			107,958
1979	2,879	75,007			77,886	4,268	41,498		45,766	3,263	5,018	8,281	10,410	121,523			131,933
1980	3,669	90,382			94,051	3,674	50,004		53,678	4,783	5,240	10,023	12,126	145,626			157,752
1981	2,282	99,506			101,788	3,580	45,781		49,361	4,001	4,023	8,024	9,863	149,310			159,173
1982	2,311	74,450			76,761	2,109	39,132		41,241	3,359	2,609	5,968	7,779	116,191			123,970
1983	6,263	95,457			101,720	9,065	43,229		52,294	4,910	4,106	9,016	20,238	142,792			163,030
1984	4,624	74,671			79,295	7,172	36,697		43,869	4,394	3,039	7,433	16,190	114,407			130,597
1985	3,071	90,011			93,082	3,468	48,365		51,833	3,342	2,588	5,930	9,881	140,964			150,845
1986	5,275	53,035			58,310	6,483	41,849		48,332	4,252	901	5,153	16,010	95,785			111,795
1987	7,278	76,643	0		83,921	9,866	47,458		57,324	4,661	2,039	6,700	21,805	126,140	0		147,945
1988	3,938	56,120	67	989	61,114	3,823	35,120	68	39,011	4,443	1,767	6,210	12,204	93,007	67	1,057	106,335
1989	4,565	61,570	286	794	67,215	7,147	33,166	59	40,372	4,746	1,645	6,391	16,458	96,381	286	853	113,978
1990	6,619	51,199	450	1,063	59,331	9,546	33,061	152	42,759	4,031	2,341	6,372	20,196	86,601	450	1,215	108,462
1991	5,925	56,332		485	62,742	7,617	39,260	113	46,990	2,998	2,344	5,342	16,540	97,936	0	598	115,074
1992	5,141	74,212		930	80,283	7,074	38,139	0	45,213	4,773	1,819	6,592	16,988	114,170	0	930	132,088
1993	10,423	49,286		1,408	61,117	11,516	37,293	164	48,973	6,474	1,501	7,975	28,413	88,080	0	1,572	118,065
1994	6,654	62,241		1,561	70,456	9,034	41,692	70	50,796	5,858	1,114	6,972	21,546	105,047	0	1,631	128,224
Avg Harvest:																	
1989-1993	6,535	58,520	368	936	66,138	8,580	36,184		44,861	4,604	1,930	6,534	19,719	96,634	147	1,034	117,533
1984-1993	5,686	64,308	201	945	70,641	7,371	39,041	93	46,468	4,411	1,998	6,410	17,469	105,347	115	1,038	123,518

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	District 4				District 5					District 6						Upper Yukon Area Subtotals					
Year	Subsist	Comm	Comm-Related d	Total	Subsist	Comm b	Comm-Related d	Personal Use	Total	Subsist	Comm b	Comm-Related d	Personal Use	ADF&G Test Fish	Total	Subsist	Comm	Comm-Related d	Personal Use	ADF&G Test Fish	Total
1961																	1,804	0			1,804
1962																	724	0			724
1963																	803	0			803
1964																	1,081	0			1,081
1965																	1,863	0			1,863
1966																	1,988	0			1,988
1967																	1,449	0			1,449
1968																	1,126	0			1,126
1969																	988	0			988
1970																	1,651	0			1,651
1971																	1,749	0			1,749
1972																	1,092	0			1,092
1973																	1,309	0			1,309
1974		685	0	685		2,663	0		2,663		1,473	0					4,821	0			4,821
1975		389	0	389		2,872	0		2,872		500	0					3,761	0			3,761
1976		409	0	409		3,151	0		3,151		1,102	0					4,662	0			4,662
1977		985	0	985		4,162	0		4,162		1,008	0					6,155	0			6,155
1978	5,549	608	0	6,157	10,405	3,079	0		13,484	1,231	635	0			1,866	17,185	4,322	0			21,507
1979	7,265	1,989	0	9,254	11,997	3,389	0		15,386	1,333	772	0			2,105	20,595	6,150	0			26,745
1980	11,088	1,521	0	12,609	17,684	4,891	0		22,575	1,826	1,947	0			3,773	30,598	8,359	0			38,957
1981	4,442	1,347	0	5,789	13,300	6,374	0		19,674	2,085	987	0			3,072	19,827	8,708	0			28,535
1982	5,077	1,087	0	6,164	12,859	5,385	0		18,244	2,443	981	0			3,424	20,379	7,453	0			27,832
1983	9,754	601	0	10,355	16,780	3,606	0		20,386	2,706	911	0			3,617	29,240	5,118	0			34,358
1984	7,650	961	0	8,611	14,989	3,669	0		18,658	3,599	867	0			4,466	26,238	5,497	0			31,735
1985	7,425	664	0	8,089	15,090	3,418	0		18,508	7,375	1,142	0			8,517	29,890	5,224	0			35,114
1986	9,583	502	0	10,085	15,944	2,733	0		18,677	3,701	950	0			4,651	29,228	4,185	0	0		33,413
1987	7,961	1,524	0	9,485	17,556	3,758	0	1,706	23,020	4,096	3,338	0			7,434	29,613	8,620	0	1,706		39,939
1988	9,619	3,159	0	12,778	17,200	3,436	0	1,435	22,071	4,884	762	0	623	24	6,293	31,703	7,357	0	2,058	24	41,142
1989	9,106	2,790	0	11,896	20,336	3,286	0	1,877	25,499	2,546	1,741	0	453	440	5,180	31,988	7,817	0	2,330	440	42,575
1990	11,184	3,536	2	14,722	14,589	3,353	12	1,693	19,647	2,618	1,757	399	451	833	6,058	28,391	8,646	413	2,144	833	40,427
1991	11,289	2,446	1,136	14,871	16,429	3,810	16		20,255	2,515	686	386		91	3,678	30,233	6,942	1,538	0	91	38,804
1992	8,509	1,651	743	10,903	17,691	3,852	3		21,546	2,438	572	181		32	3,223	28,638	6,075	927	0	32	35,672
1993	12,042	1,349	228	13,619	22,111	3,008	0		25,119	2,709	1,113	332	426	0	4,580	36,862	5,470	560	426	0	43,318
1994	10,821	2,216	227	13,264	19,628	3,739	5		23,372	2,568	2,135	471		0	5,174	33,017	8,090	703	0	0	41,810
Avg Harvest:																					
1989-1993	10,426	2,354	422	13,202	18,231	3,462	6	1,785	22,413	2,565	1,174	260	443	279	4,544	31,222	6,990	688	980	279	40,159
1984-1993	9,437	1,858	211	11,506	17,194	3,432	3	1,678	21,300	3,648	1,293	130	488	237	5,408	30,278	6,583	344	1,083	237	38,214

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	Yukon Area Totals							Canada: Yukon Territories							Total Yukon River Drainage						
								Mainstem Yukon													
								Non-Commercial													
Year	Subsist	Comm	Comm-Related d	Personal Use	ADF&G Test Fish	Sport Fish f	Total	Domestic	Aboriginal	Sport g	Comm	Total	Old Crow Aboriginal	Total	Subsist. h	Comm	Comm-Related d	Personal Use	ADF&G Test Fish	Sport Fish	Total
1961	21,488	119,664	0				141,152		9,300		3,446	12,746	500	13,246	31,288	123,110					154,398
1962	11,110	94,734	0				105,844		9,300		4,037	13,337	600	13,937	21,010	98,771					119,781
1963	24,862	117,048	0				141,910		7,750		2,283	10,033	44	10,077	32,656	119,331					151,987
1964	16,231	93,587	0				109,818		4,124		3,208	7,332	76	7,408	20,431	96,795					117,226
1965	16,608	118,098	0				134,706		3,021		2,265	5,286	94	5,380	19,723	120,363					140,086
1966	11,572	93,315	0				104,887		2,445		1,942	4,387	65	4,452	14,082	95,257					109,339
1967	16,448	129,656	0				146,104		2,920		2,187	5,107	43	5,150	19,411	131,843					151,254
1968	12,106	106,526	0				118,632		2,800		2,212	5,012	30	5,042	14,936	108,738					123,674
1969	14,000	91,027	0				105,027		957		1,640	2,597	27	2,624	14,984	92,667					107,651
1970	13,874	79,145	0				93,019		2,044		2,611	4,655	8	4,663	15,926	81,756					97,682
1971	25,684	110,507	0				136,191		3,260		3,178	6,438	9	6,447	28,953	113,685					142,638
1972	20,258	92,840	0				113,098		3,960		1,769	5,729		5,729	24,218	94,609					118,827
1973	24,317	75,353	0				99,670		2,319		2,199	4,518	4	4,522	26,640	77,552					104,192
1974	19,964	98,089	0				118,053	406	3,342		1,808	5,556	75	5,631	23,787	99,897					123,684
1975	13,045	63,838	0				76,883	400	2,500		3,000	5,900	100	6,000	16,045	66,838					82,883
1976	17,806	87,776	0				105,582	500	1,000		3,500	5,000	25	5,025	19,331	91,276					110,607
1977	17,581	96,757	0			156	114,494	531	2,247		4,720	7,498	29	7,527	20,388	101,477				156	122,021
1978	30,297	99,168	0			523	129,988	421	2,485		2,975	5,881		5,881	33,203	102,143				523	135,869
1979	31,005	127,673	0			554	159,232	1,200	3,000		6,175	10,375		10,375	35,205	133,848				554	169,607
1980	42,724	153,985	0			956	197,665	3,500	7,546	300	9,500	20,846	2,000	22,846	55,770	163,485				1,256	220,511
1981	29,690	158,018	0			769	188,477	237	8,879	300	8,593	18,009	100	18,109	38,906	166,611			0	1,069	206,586
1982	28,158	123,644	0			1,006	152,808	435	7,433	300	8,640	16,808	400	17,208	36,426	132,264			0	1,306	170,016
1983	49,478	147,910	0			1,048	198,436	400	5,025	300	13,027	18,752	200	18,952	55,103	160,937			0	1,348	217,388
1984	42,428	119,904	0			351	162,683	260	5,850	300	9,885	16,295	500	16,795	49,038	129,789			0	651	179,478
1985	39,771	146,188	0			1,368	187,327	478	5,800	300	12,573	19,151	150	19,301	46,199	158,761			0	1,668	206,628
1986	45,238	99,970	0	0		796	146,004	342	8,625	300	10,797	20,064	300	20,364	54,505	110,767			0	1,096	166,368
1987	51,418	134,760	0	1,706		502	188,386	330	6,069	300	10,864	17,563	51	17,614	57,868	145,624		1,706	0	802	206,000
1988	43,907	100,364	0	2,125	1,081	944	148,421	282	7,178	650	13,217	21,327	100	21,427	51,467	113,581		2,125	1,081	1,594	169,848
1989	48,446	104,198	0	2,616	1,293	1,053	157,606	400	6,930	300	9,789	17,419	525	17,944	56,301	113,987		2,616	1,293	1,353	175,550
1990	48,587	95,247	413	2,594	2,048	544	149,433	247	7,109	300	11,324	18,980	258	19,238	56,201	106,571	413	2,594	2,048	844	168,671
1991	46,773	104,678	1,538	0	689	773	154,651	227	9,011	300	10,906	20,444	163	20,607	56,174	115,784	1,538		689	1,073	175,258
1992	45,626	120,245	927	0	962	431	168,191	277	6,349	300	10,877	17,803	100	17,903	52,352	131,122	927		962	731	186,094
1993	65,275	93,550	560	426	1,572	1,695	163,078	243	5,576	300	10,350	16,469	142	16,611	71,236	103,900	560	426	1,572	1,995	179,689
1994	54,563	113,137	703	0	1,631	2,281	172,315	373	8,089	300	12,028	20,790	428	21,218	63,453	125,165	703	0	1,631	2,581	193,533
Avg Harvest:																					
1989-1993	50,941	103,624	688	1,127	1,313	899	158,592	279	6,995	300	10,649	18,223	238	18,461	58,453	114,273	860	1,879	1,313	1,199	177,052
1984-1993	47,747	111,930	344	1,183	1,274	846	162,578	309	6,850	335	11,058	18,552	229	18,780	55,134	122,989	860	1,893	765	1,181	181,358

a Subsistence harvest not available by district until 1978.
b Includes estimates of illegal sales (refer to Appendix A.4).
c Includes department test fish sales prior to 1988.
d Commercial related refers to the estimated harvest of female chinook salmon to produce roe sold.
f Estimated sport fish harvest for Alaskan portion of the Yukon River drainage. A majority of the sport fish harvest occurs in the Tanana River drainage (District 6).
g Canadian sport fish harvest unknown prior to 1980.
h Includes Alaskan subsistence harvest and Canadian Domestic and Aboriginal harvests.

Appendix A.21. Yukon River summer chum salmon total utiliztion in numbers of fish by district and area, 1961-1994. a

	District 1					District 2					District 3			Lower Yukon Area Subtotals				
Year	Subsist	Comm b	Personal Use	ADF&G Test Fish	Total	Subsist	Comm b	ADF&G Test Fish	Total		Subsist	Comm	Total	Subsist	Comm	Personal Use	ADF&G Test Fish	Total
1961		0					0					0			0			
1962		0					0					0			0			
1963		0					0					0			0			
1964		0					0					0			0			
1965		0					0					0			0			
1966		0					0					0			0			
1967		9,453			9,453		1,425		1,425			57	57		10,935			10,935
1968		12,995			12,995		1,407		1,407			68	68		14,470			14,470
1969		56,886			56,886		5,080		5,080			0	0		61,966			61,966
1970		117,357			117,357		19,649		19,649			0	0		137,006			137,006
1971		93,928			93,928		6,112		6,112			50	50		100,090			100,090
1972		114,234			114,234		20,907		20,907			527	527		135,668			135,668
1973		221,644			221,644		63,402		63,402			463	463		285,509			285,509
1974		466,004			466,004		74,152		74,152			1,721	1,721		541,877			541,877
1975		418,323			418,323		99,139		99,139			0	0		517,462			517,462
1976		273,204			273,204		99,190		99,190			9,802	9,802		382,196			382,196
1977		250,652			250,652		105,679		105,679			3,412	3,412		359,743			359,743
1978	30,897	393,785			424,682	21,684	227,548		249,232		1,706	27,003	28,709	54,287	648,336			702,623
1979	16,144	369,934			386,078	23,276	172,838		196,114		2,946	40,015	42,961	42,366	582,787			625,153
1980	15,972	391,252			407,224	13,681	308,704		322,385		3,242	44,782	48,024	32,895	744,738			777,633
1981	11,310	507,158			518,468	14,218	351,878		366,096		4,929	54,471	59,400	30,457	913,507			943,964
1982	18,452	249,516			267,968	18,442	182,344		200,786		5,840	4,086	9,926	42,734	435,946			478,680
1983	24,679	451,164			475,843	27,396	248,092		275,488		4,609	14,600	19,209	56,684	713,856			770,540
1984	28,459	292,676			321,135	26,996	236,931		263,927		7,351	1,087	8,438	62,806	530,694			593,500
1985	24,349	247,486			271,835	19,795	188,099		207,894		3,687	1,792	5,479	47,831	437,377			485,208
1986	38,854	381,127			419,981	41,496	288,427		329,923		5,528	442	5,970	85,878	669,996			755,874
1987	30,760	222,898	0		253,658	33,134	174,876		208,010		4,161	3,501	7,662	68,055	401,275	0		469,330
1988	28,934	645,322	416	2,876	677,548	28,787	424,461	711	453,959		5,830	13,965	19,795	63,551	1,083,748	416	3,587	1,151,302
1989	52,844	544,373	381	3,408	601,006	39,703	343,032	930	383,665		3,982	7,578	11,560	96,529	894,983	381	4,338	996,231
1990	36,999	146,725	256	2,186	186,166	28,453	131,755	752	160,960		3,003	643	3,646	68,455	279,123	256	2,938	350,772
1991	27,790	140,470		1,373	169,633	20,703	175,149	703	196,555		1,865	8,912	10,777	50,358	324,531		2,076	376,965
1992	33,239	177,329		1,918	212,486	24,731	147,129	0	171,860		4,332	65	4,397	62,302	324,523		1,918	388,743
1993	34,285	73,659		1,379	109,323	25,417	19,332	490	45,239		3,376	463	3,839	63,078	93,454		1,869	158,401
1994	44,753	42,332		2,769	89,854	28,652	12,869	443	41,964		2,339	35	2,374	75,744	55,236		3,212	134,192
Avg Harvest:																		
1989-1993	37,031	216,511			255,723	22,662	163,279		191,656		3,312	3,532	6,844	68,144	383,323		2,628	454,222
1984-1993	33,651	287,207	263	2,190	322,277	28,922	212,919	598	242,199		4,312	3,845	8,156	66,884	503,970	263	2,788	572,633

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	District 4					District 5					District 6						Upper Yukon Area Subtotals					
Year	Subsist c	Comm	Comm-Related d	Anvik River	Total	Subsist f	Comm	Comm-Related g	Personal Use	Total	Subsist f	Comm	Comm-Related g	Personal Use	ADF&G Test Fish	Total	Subsist	Comm	Comm-Related	Personal Use	ADF&G Test Fish	Total
							0	0				0	0					0	0			
1961		0	0				0	0				0	0					0	0			
1962		0	0				0	0				0	0					0	0			
1963		0	0				0	0				0	0					0	0			
1964		0	0				0	0				0	0					0	0			
1965		0	0				0	0				0	0					0	0			
1966		0	0				0	0				0	0					0	0			
1967		0	0				0	0				0	0					0	0			
1968		0	0				0	0				0	0					0	0			
1969		0	0				0	0				0	0					0	0			
1970		0	0				0	0				0	0					0	0			
1971		0	0				0	0				0	0					0	0			
1972		0	0				0	0				0	0					0	0			0
1973		0	0				0	0				0	0					0	0			0
1974		27,866	0		27,866		6,831	0		6,831		13,318	0			13,318		48,015	0			48,015
1975		165,054	0		165,054		12,997	0		12,997		14,782	0			14,782		192,833	0			192,833
1976		211,307	0		211,307		774	0		774		6,617	0			6,617		218,698	0			218,698
1977		169,541	0		169,541		1,274	0		1,274		4,317	0			4,317		175,132	0			175,132
1978	93,139	364,184	16,920		474,243	20,423	4,892	605		25,920	3,534	34,814	8,236			46,584	117,096	403,890	25,761			546,747
1979	88,423	169,430	35,317		293,170	22,869	8,608	1,009		32,486	2,312	18,491	3,891			24,694	113,604	196,529	40,217			350,350
1980	119,790	147,560	135,824		403,174	8,594	456	0		9,050	6,426	35,655	3,262			45,563	134,810	183,671	139,106			457,787
1981	50,953	59,718	270,727		381,398	27,259	1,236	49		28,544	8,960	32,477	1,987			43,424	87,172	93,431	272,763			453,366
1982	57,967	3,647	254,072		315,686	9,770	213	21		10,004	6,942	21,597	1,517			30,056	74,679	25,457	255,610			355,746
1983	46,713	6,672	248,716		302,101	22,067	42	1,856		23,985	23,696	24,309	18			48,023	92,496	31,023	250,590			374,109
1984	49,230	1,009	277,061		327,300	31,488	645	47		32,180	23,106	56,249	335			79,690	103,824	57,903	277,443			439,170
1985	59,839	12,007	415,476		487,322	26,996	700	0		27,696	23,078	66,913	1,540			91,531	109,913	79,620	417,016			606,549
1986	59,730	300	465,235		525,265	21,833	690	0	0	22,523	14,896	50,483	2,146			67,525	96,459	51,473	467,381			615,313
1987	56,926	29,991	179,809		266,726	20,544	362	44	4,262	25,212	25,153	10,610	450			36,213	102,623	40,963	180,303	4,262		326,151
1988	95,384	24,051	466,023		585,458	28,960	722	363	567	30,612	8,686	40,129	1,646	1,242	0	51,703	133,030	64,902	468,032	1,809		667,773
1989	49,777	18,554	491,690		560,021	12,981	154	373	295	13,803	7,868	42,115	4,871	1,215	6,267	62,336	70,626	60,823	496,934	1,510	6267	636,160
1990	33,052	12,364	210,186		255,602	9,817	11	660	641	11,129	4,285	11,127	3,706	930	5,325	25,373	47,154	23,502	214,552	1,571	5325	292,104
1991	38,949	6,381	303,263		348,593	24,164	4	31		24,199	5,069	18,197	5,695		1,858	30,819	68,182	24,562	308,989	0	1858	403,611
1992	41,079	2,659	208,737		252,475	12,612	102	328		13,042	9,504	5,029	2,199		49	16,781	63,195	7,790	211,264	0	49	282,298
1993	24,259	27	42,930		67,216	11,245	0	0		11,245	6,798	3,041	664	674	0	11,177	42,302	3,068	43,594	674	0	89,638
1994	33,716	3,611	167,996		205,323	12,506	229	235		12,970	10,544	21,208	10,226		0	41,978	56,766	25,048	178,457	0	0	260,271
Avg Harvest																						
1989-1993	37,423	7,997	251,361		296,781	14,164	54	278	468	14,684	6,705	15,902	3,427			29,297	58,292	23,953	255,067			340,762
1984-1993	50,823	10,734	306,041		367,598	20,064	339	185	1,153	21,164	12,844	30,389	2,325	1,015	2,250	47,315	83,731	41,463	308,551	1,404	2,700	436,077

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	Yukon Area Totals						
Year	Subsist	Comm	Comm-Related	Personal Use	ADF&G Test Fish	Sport Fish h	Total
1961	305,317	0	0				305,317
1962	261,856	0	0				261,856
1963	297,094	0	0				297,094
1964	361,080	0	0				361,080
1965	336,848	0	0				336,848
1966	154,508	0	0				154,508
1967	206,233	10,935	0				217,168
1968	133,880	14,470	0				148,350
1969	156,191	61,966	0				218,157
1970	166,504	137,006	0				303,510
1971	171,487	100,090	0				271,577
1972	108,006	135,668	0				243,674
1973	161,012	285,509	0				446,521
1974	227,811	589,892	0				817,703
1975	211,888	710,295	0				922,183
1976	186,872	600,894	0				787,766
1977	159,502	534,875	0			316	694,693
1978	171,383	1,052,226	25,761			451	1,249,821
1979	155,970	779,316	40,217			328	975,831
1980	167,705	928,609	139,106			483	1,235,903
1981	117,629	1,006,938	272,763			612	1,397,942
1982	117,413	461,403	255,610			780	835,206
1983	149,180	744,879	250,590			998	1,145,647
1984	166,630	588,597	277,443			585	1,033,255
1985	157,744	516,997	417,016			1,267	1,093,024
1986	182,337	721,469	467,381	0		895	1,372,082
1987	170,678	442,238	180,303	4,262		846	798,327
1988	196,581	1,148,650	468,032	2,225	3,587	1,037	1,820,112
1989	167,155	955,806	496,934	1,891	10,605	2,131	1,634,522
1990	115,609	302,625	214,552	1,827	8,263	472	643,348
1991	118,540	349,113	308,989	0	3,934	1,037	781,613
1992	125,497	332,313	211,264	0	1,967	1,308	672,349
1993	105,380	96,522	43,594	674	1,869	564	248,603
1994	132,510	60,284	178,457	0	3,212	350	394,813
Avg Harvest:							
1989-1993	126,436	407,276	255,067			1,102	796,087
1984-1993	150,615	545,433	308,551	1,360	5,038	1,014	1,009,724

[a] Subsistence harvest estimates not available by district until 1978. Harvests prior to 1977 were estimated because catches of salmon other than chinook salmon were not differentiated by species.

[b] Includes estimates of illegal sales (refer to Appendix A.4). Includes department test fish sales prior to 1988.

[c] In 1978 and 1979, the commercial related harvest was subtracted from the subsistence harvest because it was assumed this harvest was included in the reported subsistence harvest. From 1980 through 1987, the District 4 subsistence harvest was also reduced to account for commercial related harvests being reported in the subsistence harvest. It was calculated that 80.2% of the reported subsistence harvest (excluding Innoko and Koyukuk River catches) was commercial related. Beginning in 1988, subsistence surveys documented subsistence only fishing catches and commercial related use separately.

[d] In District 4, commercial related refers to the estimated number of females and incidental males harvested to produce roe sold.

[f] From 1978 through 1986, the commercial related harvest was subtracted from the subsistence harvest in Districts 5 and 6 because it was assumed that this harvest was included in the reported subsistence harvest during that time period.

[g] In District 5 and 6, commercial related refers to the number of females harvested to produce roe sold.

[h] Estimated sport fish harvest for all chum salmon in Alaskan portion of the drainage. A majority of the sport fish harvest occurs in the Tanana River drainage (District 6).

Appendix A.22. Yukon River fall chum salmon total utilization in numbers of fish, by district, area and country, 1961-1994. a

	District 1					District 2				District 3			Lower Yukon Area Subtotals				
Year	Subsist	Comm b	Personal Use	ADF&G Test Fish	Total	Subsist	Comm b	ADF&G Test Fish	Total	Subsist	Comm	Total	Subsist	Comm	Personal Use	ADF&G Test Fish	Total
1961		42,461			42,461				0			0		42,461			42,461
1962		53,116			53,116				0			0		53,116			53,116
1963					0				0			0		0			0
1964		8,347			8,347				0			0		8,347			8,347
1965		22,936			22,936				0			0		22,936			22,936
1966		69,836			69,836				0		1,209	1,209		71,045			71,045
1967		36,451			36,451				0		1,823	1,823		38,274			38,274
1968		49,857			49,857				0		3,068	3,068		52,925			52,925
1969		128,866			128,866				0		1,722	1,722		130,588			130,588
1970		200,306			200,306		4,858		4,858		3,285	3,285		208,449			208,449
1971		188,533			188,533				0			0		188,533			188,533
1972		136,711			136,711		12,898		12,898		1,313	1,313		150,922			150,922
1973		173,783			173,783		45,304		45,304			0		219,087			219,087
1974		176,036			176,036		53,540		53,540		552	552		230,128			230,128
1975		158,183			158,183		51,666		51,666		5,590	5,590		215,439			215,439
1976		105,851			105,851		21,212		21,212		4,250	4,250		131,313			131,313
1977		131,758			131,758		51,994		51,994		15,851	15,851		199,603			199,603
1978	390	127,947			128,337	1,297	51,646		52,943	266	11,527	11,793	1,953	191,120			193,073
1979	15,788	109,406			125,194	14,662	94,042		108,704	2,443	25,955	28,398	32,893	229,403			262,296
1980	7,433	106,829			114,262	12,435	83,881		96,316	2,320	13,519	15,839	22,188	204,229			226,417
1981	15,540	167,834			183,374	11,770	154,883		166,653	2,893	19,043	21,936	30,203	341,760			371,963
1982	10,016	97,484			107,500	9,511	96,581		106,092	1,659	5,815	7,474	21,186	199,880			221,066
1983	8,238	124,371			132,609	10,341	85,645		95,986	2,863	10,018	12,881	21,442	220,034			241,476
1984	8,885	78,751			87,636	11,394	70,803		82,197	2,233	6,429	8,662	22,512	155,983			178,495
1985	13,275	129,948			143,223	11,544	40,490		52,034	2,290	5,164	7,454	27,109	175,602			202,711
1986	9,000	59,352			68,352	13,483	51,307		64,790	1,785	2,793	4,578	24,268	113,452			137,720
1987	18,467	0	0		18,467	13,454	0		13,454	2,853	0	2,853	34,774	0	0		34,774
1988	5,475	44,890	5	639	51,009	8,600	31,845	16	40,461	1,747	2,090	3,837	15,822	78,825	5	655	95,307
1989	4,914	74,235	18	3,641	82,808	10,015	97,558	348	107,921	1,019	15,332	16,351	15,948	187,125	18	3,989	207,080
1990	5,335	25,269	60	2,068	32,732	6,187	37,077	96	43,360	2,056	3,715	5,771	13,578	66,061	60	2,164	81,863
1991	3,935	59,724		2,455	66,114	5,628	102,628	96	108,352	615	9,213	9,828	10,178	171,565	0	2,551	184,294
1992	5,216	0		0	5,216	7,382	0	0	7,382	1,493	0	1,493	14,091	0	0	0	14,091
1993	7,770	0		0	7,770	3,094	0	0	3,094	1,238	0	1,238	12,102	0	0	0	12,102
1994	4,887	0		0	4,887	4,151	0	0	4,151	676	0	676	9,714	0	0	0	9,714
Avg Harvest:																	
1984-1993	8,227	47,217			56,333	9,078	43,171		52,305	1,733	4,474	6,207	19,038	94,861		1,560	114,844
1989-1993	5,434	31,846	39	1,633	38,928	6,461	47,453	108	54,022	1,284	5,652	6,936	13,179	84,950	16	1,741	99,886

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	District 4				District 5					District 6						Upper Yukon Area Subtotals					
Year	Subsist c	Comm	Comm-Related d	Total	Subsist c	Comm	Comm-Related d	Personal Use	Total	Subsist c	Comm	Comm-Related d	Personal Use	ADF&G Test Fish	Total	Subsist	Comm	Comm-Related	Personal Use	ADF&G Test Fish	Total
1961								0	0							0	0	0	0	0	0
1962								0	0							0	0	0	0	0	0
1963								0	0							0	0	0	0	0	0
1964								0	0							0	0	0	0	0	0
1965								0	0							0	381	0	0	0	381
1966								0	0							0	0	0	0	0	0
1967								0	0							0	0	0	0	0	0
1968								0	0							0	0	0	0	0	0
1969								0	0							0	722	0	0	0	722
1970								0	0							0	1,146	0	0	0	1,146
1971								0	0							0	1,061	0	0	0	1,061
1972								0	0							0	1,254	0	0	0	1,254
1973								0	0							0	13,003	0	0	0	13,003
1974		9,213	0	9,213		23,551	0	0	23,551		26,884	0	0	0	26,884	0	59,648	0	0	0	59,648
1975		13,666	0	13,666		27,212	0	0	27,212		18,692	0	0	0	18,692	0	59,570	0	0	0	59,570
1976		1,742	0	1,742		5,387	0	0	5,387		17,948	0	0	0	17,948	0	25,077	0	0	0	25,077
1977		13,980	0	13,980		25,730	0	0	25,730		18,673	0	0	0	18,673	0	58,383	0	0	0	58,383
1978	8,931	10,988	1,721	21,640	46,485	21,016	5,220	0	72,721	26,870	13,259	3,687	0	0	43,816	82,286	45,263	10,628	0	0	138,177
1979	34,697	48,899	3,199	86,795	102,695	47,459	8,097	0	158,251	44,596	34,185	7,170	0	0	85,951	181,988	130,543	18,466	0	0	330,997
1980	19,328	27,978	4,347	51,653	75,861	41,771	605	0	118,237	50,260	19,452	68	0	0	69,780	145,449	89,201	5,020	0	0	239,670
1981	18,812	12,082	1,311	32,205	104,612	86,620	6,955	0	198,187	23,613	25,989	3,019	0	0	52,621	147,037	124,691	11,285	0	0	283,013
1982	20,152	3,894	167	24,213	71,786	13,593	42	0	85,421	18,968	6,820	596	0	0	26,384	110,906	24,307	805	0	0	136,018
1983	32,246	4,482	1,963	38,691	105,103	43,993	0	0	149,096	29,073	34,089	3,101	0	0	66,263	166,422	82,564	5,064	0	0	254,050
1984	28,937	7,625	2,215	38,777	98,376	24,060	57	0	122,493	22,670	20,564	56	0	0	43,290	149,983	52,249	2,328	0	0	204,560
1985	22,750	24,452	2,525	49,727	117,125	25,338	0	0	142,463	36,963	42,352	0	0	0	79,315	176,838	92,142	2,525	0	0	271,505
1986	26,496	2,045	0	28,541	87,729	22,053	395	0	110,177	24,973	1,892	182	0	0	27,047	139,198	25,990	577	0	0	165,765
1987	41,901	0	0	41,901	141,335 [1]	0	0	15,750	157,085	124,587 [2]	0	0	3,316	0	127,903	307,823	0	0	19,066	0	326,889
1988	16,958	15,662	1,421	34,041	84,209	16,989	0	1,762	102,960	34,597	21,844	1,806	2,114	27,008	87,369	135,764	54,495	3,227	3,876	27,008	224,370
1989	24,544	11,776	3,407	39,727	112,001	18,215	3,989	3,294	137,499	58,654	49,090	7,353	1,770	16,984	133,851	195,199	79,081	14,749	5,064	16,984	311,077
1990	19,241	4,989	3,177	27,407	90,513	7,778	1,198	3,723	103,212	44,568	43,182	7,793	1,393	7,060	103,996	154,322	55,949	12,168	5,116	7,060	234,615
1991	20,875	3,737	2,354	26,966	74,002	27,355	4,759		106,116	40,469	28,195	16,253	0	1,385	86,302	135,346	59,287	23,366	0	1,385	219,384
1992	22,097	0	0	22,097	45,701	0	0		45,701	25,713	15,721	3,301	0	1,407	46,142	93,511	15,721	3,301	0	1,407	113,940
1993	11,043	0	0	11,043	43,764	0	0		43,764	9,853	0	0	163	0	10,016	64,660	0	0	163	0	64,823
1994	13,511	0	0	13,511	66,396	3,630	0		70,026	33,597	1	4,368	0	0	37,966	113,504	3,631	4,368	0	0	121,503
Avg Harvest:																					
1984-1993	23,484	7,029	1,510	32,023	89,476	14,179	1,040	3,504	107,147	42,305	22,284	3,674	876	5,384	74,523	155,264	43,491	6,224	3,329	5,384	213,693
1989-1993	19,560	4,100	1,788	25,448	73,196	10,670	1,989	3,509	87,258	35,851	27,238	6,940	665	5,367	76,061	128,608	42,008	10,717	2,069	5,367	188,768

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	Alaska Yukon Area Totals						Canadian Totals						Yukon Drainage (Alaska/Canada) Totals					
							Old Crow	Mainstem Yukon River					Subsist or					
Year	Subsist	Comm	Comm-Related	Personal Use	ADF&G Test Fish	Total	Aboriginal	Aboriginal	Domestic	Comm	Subtotal	Total	Non-Com h	Comm	Comm-Related	Personal Use	ADF&G Test Fish	Total
1961	101,772	42,461	0			144,233	2,000	3,800		3,276	7,076	9,076	107,572	45,737	0			153,309
1962	87,285	53,116	0			140,401	2,000	6,500		936	7,436	9,436	95,785	54,052	0			149,837
1963	99,031	0	0			99,031	20,000	5,500		2,196	7,696	27,696	124,531	2,196	0			126,727
1964	120,360	8,347	0			128,707	6,058	4,200		1,929	6,129	12,187	130,618	10,276	0			140,894
1965	112,283	23,317	0			135,600	7,535	2,183		2,071	4,254	11,789	122,001	25,388	0			147,389
1966	51,503	71,045	0			122,548	8,605	1,430		3,157	4,587	13,192	61,538	74,202	0			135,740
1967	68,744	38,274	0			107,018	11,768	1,850		3,343	5,193	16,961	82,362	41,617	0			123,979
1968	44,627	52,925	0			97,552	10,000	1,180		453	1,633	11,633	55,807	53,378	0			109,185
1969	52,063	131,310	0			183,373	3,377	2,120		2,279	4,399	7,776	57,560	133,589	0			191,149
1970	55,501	209,595	0			265,096	620	612		2,479	3,091	3,711	56,733	212,074	0			268,807
1971	57,162	189,594	0			246,756	15,000	150		1,761	1,911	16,911	72,312	191,355	0			263,667
1972	36,002	152,176	0			188,178	5,000	0		2,532	2,532	7,532	41,002	154,708	0			195,710
1973	53,670	232,090	0			285,760	6,200	1,129		2,806	3,935	10,135	60,999	234,896	0			295,895
1974	93,776	289,776	0			383,552	7,000	1,636	466	2,544	4,646	11,646	102,878	292,320	0			395,198
1975	86,591	275,009	0			361,600	11,000	2,500	4,600	2,500	9,600	20,600	104,691	277,509	0			382,200
1976	72,327	156,390	0			228,717	3,100	100	1,000	1,000	2,100	5,200	76,527	157,390	0			233,917
1977	82,771	257,986	0			340,757	5,560	1,430	1,499	3,990	6,919	12,479	91,260	261,976	0			353,236
1978	84,239	236,383	10,628			331,250	5,000	482	728	3,356	4,566	9,566	90,449	239,739	10,628			340,816
1979	214,881	359,946	18,466			593,293		11,000	2,000	9,084	22,084	22,084	227,881	369,030	18,466			615,377
1980	167,637	293,430	5,020			466,087	6,000	3,218	4,000	9,000	16,218	22,218	180,855	302,430	5,020			488,305
1981	177,240	466,451	11,285			654,976	3,000	2,410	1,611	15,260	19,281	22,281	184,261	481,711	11,285			677,257
1982	132,092	224,187	805			357,084	1,000	3,096	683	11,312	15,091	16,091	136,871	235,499	805			373,175
1983	187,864	302,598	5,064			495,526	2,000	1,200	300	25,990	27,490	29,490	191,364	328,588	5,064			525,016
1984	172,495	208,232	2,328			383,055	4,000	1,800	535	22,932	25,267	29,267	178,830	231,164	2,328			412,322
1985	203,947	267,744	2,525			474,216	3,500	1,740	279	35,746	37,765	41,265	209,466	303,490	2,525			515,481
1986	163,466	139,442	577			303,485	657	2,200	222	11,464	13,886	14,543	166,545	150,906	577			318,028
1987	342,597	0	0	19,066		361,663	135	3,622	132	40,591	44,345	44,480	346,486	40,591	0	19,066		406,143
1988	151,586	133,320	3,227	3,881	27,663	319,677	1,071	1,882	349	30,263	32,494	33,565	154,888	163,583	3,227	3,881	27,663	353,242
1989	211,147	266,206	14,749	5,082	20,973	518,157	2,909	2,462	100	17,549	20,111	23,020	216,618	283,755	14,749	5,082	20,973	541,177
1990	167,900	122,010	12,168	5,176	9,224	316,478	2,410	3,675	0	27,537	31,212	33,622	173,985	149,547	12,168	5,176	9,224	350,100
1991	145,524	230,852	23,366	0	3,936	403,678	1,576	2,438	0	31,404	33,842	35,418	149,538	262,256	23,366	0	3,936	439,096
1992	107,602	15,721	3,301	0	1,407	128,031	1,935	304	0	18,576	18,880	20,815	109,841	34,297	3,301	0	1,407	148,846
1993	76,762	0	0	163	0	76,925	1,668	4,660	0	7,762	12,422	14,090	83,090	7,762	0	163	0	91,015
1994	123,218	3,631	4,368	0	0	131,217	2,654	5,319	0	30,035	35,354	38,008	131,191	33,666	4,368	0	0	169,225
Avg Harvest:																		
1984-1993	174,303	138,353	6,224	4,767	10,534	328,537	1,986	2,478	162	24,382	27,022	29,009	178,929	162,735	6,224	4,767	10,534	357,545
1989-1993	141,787	126,958	10,717	2,084	7,108	288,654	2,100	2,708	20	20,566	23,293	25,393	146,614	147,523	10,717	2,084	7,108	314,047

[a] Subsistence harvest estimates not available by district until 1978. Subsistence harvests prior to 1977 were estimated because catches of salmon other than chinook salmon were not differentiated by species. Minimum estimates of fall chum subsistence catches for 1961-1978 because surveys were conducted prior to the end of the fishing season.

[b] Includes department test fish sales prior to 1988.

[c] From 1978 through 1988, the commercial related harvest was subtracted from the subsistence harvest in Districts 4, 5 and 6 because it was assumed that this harvest was included in the reported subsistence harvest during that time period. Beginning in 1989, subsistence surveys documented subsistence only fishing catches and commercial related use separately.

[d] In Districts 4, 5 and 6, commercial related refers to the estimated number of females harvested to produce roe sold.

[f] Includes an estimated 95,768 fall chum salmon illegally sold in District 5.

[g] Includes an estimated 119,168 fall chum salmon illegally sold in District 6.

[h] Includes Alaskan subsistence harvest and Canadian Domestic and Aboriginal harvests.

Appendix A.23. Coho salmon total utilization in numbers of fish, Yukon River drainage, Alaska and Yukon Territories, 1978-1994. a

	District 1					District 2				District 3			Lower Yukon Area Subtotals				
Year	Subsist	Comm b	Personal Use	ADF&G Test Fish	Total	Subsist	Comm b	ADF&G Test Fish	Total	Subsist	Comm	Total	Subsist	Comm	Personal Use	ADF&G Test Fish	Total
1961		2,855			2,855		0		0		0	0		2,855			2,855
1962		22,926			22,926		0		0		0	0		22,926			22,926
1963		5,572			5,572		0		0		0	0		5,572			5,572
1964		2,446			2,446		0		0		0	0		2,446			2,446
1965		350			350		0		0		0	0		350			350
1966		19,254			19,254		0		0		0	0		19,254			19,254
1967		9,925			9,925		0		0		1,122	1,122		11,047			11,047
1968		13,153			13,153		0		0		150	150		13,303			13,303
1969		13,989			13,989		0		0		1,009	1,009		14,998			14,998
1970		12,632			12,632		0		0		0	0		12,632			12,632
1971		12,165			12,165		0		0		0	0		12,165			12,165
1972		21,705			21,705		506		506		0	0		22,211			22,211
1973		34,860			34,860		1,781		1,781		0	0		36,641			36,641
1974		13,713			13,713		176		176		0	0		13,889			13,889
1975		2,288			2,288		200		200		0	0		2,488			2,488
1976		4,064			4,064		17		17		0	0		4,081			4,081
1977		31,720			31,720		5,319		5,319		538	538		37,577			37,577
1978	1,142	16,460			17,602	598	5,835		6,433	223	758	981	1,963	23,053			25,016
1979	3,184	11,369			14,553	1,132	2,850		3,982	12	0	12	4,328	14,219			18,547
1980	1,808	4,829			6,637	4,801	2,660		7,461	91	0	91	6,700	7,489			14,189
1981	3,769	13,129			16,898	3,736	7,848		11,584	490	419	909	7,995	21,396			29,391
1982	11,192	15,115			26,307	10,229	14,179		24,408	675	87	762	22,096	29,381			51,477
1983	3,590	4,595			8,185	6,072	2,557		8,629	917	0	917	10,579	7,152			17,731
1984	6,095	29,472			35,567	7,066	43,064		50,130	740	621	1,361	13,901	73,157			87,058
1985	3,246	27,676			30,922	4,834	17,125		21,959	376	171	547	8,456	44,972			53,428
1986	2,725	24,824			27,549	9,140	21,197		30,337	781	793	1,574	12,646	46,814			59,460
1987	6,396	0	0		6,396	6,894	0		6,894	682	0	682	13,972	0	0		13,972
1988	4,389	36,028	0	407	40,824	7,104	34,758	18	41,880	1,539	1,419	2,958	13,032	72,205	0	425	85,662
1989	5,077	22,987	59	1,685	29,808	5,039	38,402	120	43,561	537	3,988	4,525	10,653	65,377	59	1,805	77,894
1990	3,301	12,160	8	1,194	16,663	6,344	16,405	30	22,779	1,026	918	1,944	10,671	29,483	8	1,224	41,386
1991	1,808	54,095		2,094	57,997	3,297	40,898	86	44,281	1,340	1,905	3,245	6,445	96,898		2,180	105,523
1992	5,426	0		0	5,426	6,587	0	0	6,587	1,253	0	1,253	13,266	0		0	13,266
1993	2,343	0		0	2,343	1,695	0	0	1,695	240	0	240	4,278	0		0	4,278
1994	3,272	0		0	3,272	3,881	0	0	3,881	226	0	226	7,379	0		0	7,379
Avg Harvest:																	
1984-1993	4,081	20,724		897	25,350	5,800	21,185		27,010	851	982	1,833	10,732	42,891			54,193
1989-1993	3,591	17,848	13	995	22,447	4,592	19,141	47	23,781	879	1,362	2,241	9,063	38,352	13	1,042	48,469

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	District 4				District 5					District 6						Upper Yukon Area Subtotals					
Year	Subsist	Comm	Comm-Related c	Total	Subsist	Comm	Comm-Related c	Personal Use	Total	Subsist	Comm	Comm-Related c	Personal Use	ADF&G Test Fish	Total	Subsist	Comm	Comm-Related c	Personal Use	ADF&G Test Fish	Total
1961																					
1962																					
1963																					
1964																					
1965																					
1966																					
1967																					
1968																					
1969																	95	0			95
1970																	556	0			556
1971																	38	0			38
1972																	22	0			22
1973																	0	0			0
1974		0	0			1,409	0		1,409		1,479	0			1,479		2,888	0			2,888
1975		0	0			5	0		5		53	0			53		58	0			58
1976		0	0			0	0		0		1,103	0			1,103		1,103	0			1,103
1977		0	0			2	0		2		1,284	0			1,284		1,286	0			1,286
1978	145	32	0	177	970	1	0		971	4,709	3,066	0			7,775	5,824	3,099	0			8,923
1979	259	155	0	414	595	0	0		595	4,612	2,791	0			7,403	5,466	2,946	0			8,412
1980	7,734	30	0	7,764	561	0	0		561	5,163	1,226	0			6,389	13,458	1,256	0			14,714
1981	2,259	0	0	2,259	1,713	0	0		1,713	9,261	2,284	0			11,545	13,233	2,284	0			15,517
1982	2,952	15	0	2,967	3,428	0	0		3,428	7,418	7,780	0			15,198	13,798	7,795	0			21,593
1983	3,946	0	0	3,946	2,448	0	0		2,448	6,932	6,168	0			13,100	13,326	6,168	0			19,494
1984	2,867	1,095	0	3,962	17,467	0	0		17,467	14,785	7,688	0			22,473	35,119	8,783	0			43,902
1985	3,949	938	0	4,887	8,098	0	0		8,098	11,761	11,762	0			23,523	23,808	12,700	0			36,508
1986	2,631	0	0	2,631	5,870	0	0		5,870	13,321	441	0			13,762	21,822	441	0			22,263
1987	3,551	0	0	3,551	11,842 d	0	0	58	11,900	53,006 f	0	0	2,465		55,471	68,399	0	0	2,523		70,922
1988	4,842	2	0	4,844	19,755	8	0	103	19,866	30,201	13,972	0	1,147	13,295	58,615	54,798	13,982	0	1,250	13,295	83,325
1989	4,030	3	0	4,033	7,187	84	0	82	7,353	18,841	16,084	0	731	2,140	37,796	30,058	16,171	0	813	2,140	49,182
1990	3,614	0	0	3,614	11,562	0	0	18	11,580	17,613	11,549	3,255	1,155	1,426	34,998	32,789	11,549	3,255	1,173	1,426	50,192
1991	4,451	14	0	4,465	4,931	0	0		4,931	21,561	6,268	3,506		791	32,126	30,943	6,282	3,506		791	41,522
1992	8,725	0	0	8,725	12,376	0	0		12,376	17,554	6,556	1,423		1,629	27,162	38,655	6,556	1,423		1,629	48,263
1993	1,206	0	0	1,206	5,984	0	0		5,984	4,304	0	0		0	4,304	11,494	0	0		0	11,494
1994	3,652	0	0	3,652	4,174	0	0		4,174	29,389	120	4,331		0	33,840	37,215	120	4,331		0	41,666
Avg Harvest:																					
1984-1993	3,987	205	0	4,192	10,507	9	0		10,543	20,295	7,432	818			31,023	34,789	7,646	818			45,757
1989-1993	4,405	3	0	4,409	8,408	17	0	20	8,445	15,975	8,091	1,637	377	1,197	27,277	28,788	8,112	1,637		1,197	40,131

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	Alaska Yukon Area Totals							Canadian Totals						Yukon Drainage (Alaska/Canada) Totals						
								Old Crow	Mainstem Yukon River											
Year	Subsist	Comm	Comm-Related c	Personal Use	ADF&G Test Fish	Sport Fish g	Total	Aborginal	Aborginal	Domestic	Comm	Total	Total	Subsist or Non-Comm h	Comm	Comm-Related c	Personal Use	ADF&G Test Fish	Sport Fish	Total
1961	9,192	2,855					12,047							9,192	2,855					12,047
1962	9,480	22,926					32,406							9,480	22,926					32,406
1963	27,699	5,572					33,271							27,699	5,572					33,271
1964	12,187	2,446					14,633							12,187	2,446					14,633
1965	11,789	350					12,139							11,789	350					12,139
1966	13,192	19,254					32,446							13,192	19,254					32,446
1967	17,164	11,047					28,211							17,164	11,047					28,211
1968	11,613	13,303					24,916							11,613	13,303					24,916
1969	7,776	15,093	0				22,869							7,776	15,093					22,869
1970	3,966	13,188	0				17,154							3,966	13,188	0				17,154
1971	16,912	12,203	0				29,115							16,912	12,203	0				29,115
1972	7,532	22,233	0				29,765							7,532	22,233	0				29,765
1973	10,236	36,641	0				46,877							10,236	36,641	0				46,877
1974	11,646	16,777	0				28,423							11,646	16,777	0				28,423
1975	20,708	2,546	0				23,254							20,708	2,546	0				23,254
1976	5,241	5,184	0				10,425							5,241	5,184	0				10,425
1977	16,333	38,863	0			112	55,308							16,333	38,863	0			112	55,308
1978	7,787	26,152	0			302	34,241							7,787	26,152	0			302	34,241
1979	9,794	17,165	0			50	27,009							9,794	17,165	0			50	27,009
1980	20,158	8,745	0			67	28,970	1,500				0	1,500	21,658	8,745	0			67	30,470
1981	21,228	23,680	0			45	44,953	500				0	500	21,728	23,680	0			45	45,453
1982	35,894	37,176	0			97	73,167					0	0	35,894	37,176	0			97	73,167
1983	23,905	13,320	0			199	37,424					0	0	23,905	13,320	0			199	37,424
1984	49,020	81,940	0			831	131,791	500				0	500	49,520	81,940	0			831	132,291
1985	32,264	57,672	0			808	90,744	250				0	250	32,514	57,672	0			808	90,994
1986	34,468	47,255	0			1,535	83,258	300				0	300	34,768	47,255	0			1,535	83,558
1987	82,371	0	0	2,523		1,292	86,186	306				0	306	85,200	0	0	2,523		1,292	89,015
1988	67,830	86,187	0	1,250	13,720	2,420	171,407	350				0	350	69,430	86,187	0	1,250	13,720	2,420	173,007
1989	40,711	81,548	0	872	3,945	1,811	128,887	470				0	470	42,053	81,548	0	872	3,945	1,811	130,229
1990	43,460	41,032	3,255	1,181	2,650	1,947	93,525	680				0	680	45,321	41,032	3,255	1,181	2,650	1,947	95,386
1991	37,388	103,180	3,506		2,971	2,775	149,820	235				0	235	37,623	103,180	3,506		2,971	2,775	150,055
1992	51,921	6,556	1,423		1,629	1,666	63,195	495				0	495	52,416	6,556	1,423		1,629	1,666	63,690
1993	15,772	0	0		0	897	16,669	60				0	60	15,832	0	0		0	897	16,729
1994	44,594	120	4,331		0	1,893	50,938	332			2	2	334	44,926	122	4,331		0	1,893	51,272
Avg Harvest:																				
1984-1993	45,521	50,537		832	4,153	1,598	101,548	365				0	365	46,468	50,537	818			1,598	102,495
1989-1993	37,850	46,463	1,637	411	2,239	1,819	90,419	388				0	388	38,649	46,463	1,637	411	2,239	1,819	91,218

[a] Subsistence harvest estimates not available by district until 1978. Subsistence harvests prior to 1977 were estimated because catches of salmon other than chinook salmon were not differentiated by species. Minimum estimates of coho subsistence catches for 1961-1976 because surveys were conducted prior to the end of the fishing season.

[b] Includes department test fish sales prior to 1988.

[c] In Districts 4, 5 and 6, commercial related refers to the estimated number of females harvested to produce roe sold.

[d] Includes an estimated 5,015 coho salmon illegally sold in District 5.

[f] Includes an estimated 31,276 coho salmon illegally sold in District 6.

[g] Estimated sport fish harvest for Alaskan portion of the Yukon River drainage. A majority of the sport fish harvest occurs in the Tanana River drainage (District 6).

[h] Includes Alaskan subsistence harvest and Canadian Aboriginal harvest.

Appendix A.24. Percent age composition of combined commercial and subsistence salmon harvest, Yukon River drainage, 1982-1994. [a]

Species	Year	Sample Size	Age In Years 3	4	5	6	7	8	Total
Chinook Salmon	1982	3,795	0.2	6.8	18.5	58.3	15.9	0.3	100.0
	1983	3,801	0.0	6.6	21.0	62.9	9.4	0.0	100.0
	1984	3,700	0.0	3.7	27.0	56.0	13.1	0.1	100.0
	1985	4,567	0.1	5.7	13.2	69.4	11.3	0.3	100.0
	1986	5,785	0.3	3.9	27.2	42.8	25.1	0.6	100.0
	1987	5,300	0.0	4.2	8.4	72.5	14.5	0.3	100.0
	1988	5,108	0.1	14.8	22.8	31.5	29.4	1.4	100.0
	1989	3,901	0.5	7.2	30.3	51.1	10.2	0.6	99.9
	1990	3,416	0.0	17.2	26.9	49.4	6.3	0.2	100.0
	1991	3,879	0.0	5.8	45.1	42.6	6.4	0.1	100.0
	1992	3,772	0.1	8.1	20.1	68.6	3.1	0.0	100.0
	1993	4,034	0.2	15.8	25.4	50.5	8.0	0.0	100.0
	1994	3,692	0.3	4.1	47.2	44.5	3.8	0.0	99.9
Summer Chum Salmon	1982	3,419	2.0	61.2	34.4	2.4			100.0
	1983	4,110	1.0	53.8	44.4	0.8			100.0
	1984	2,722	2.0	73.7	23.9	0.5			100.0
	1985	2,472	1.4	68.6	29.2	0.8			100.0
	1986	3,473	0.1	29.1	69.8	1.0			100.0
	1987	2,184	0.4	60.8	31.8	6.9			100.0
	1988	5,112	0.0	70.1	29.1	0.8			100.0
	1989	3,778	0.4	38.7	60.5	0.4			100.0
	1990	3,155	0.4	38.3	58.9	2.4			100.0
	1991	5,015	1.3	48.0	49.8	0.9			100.0
	1992	4,303	0.2	31.0	65.0	3.8			100.0
	1993	2,011	0.4	47.5	47.7	4.5			100.1
	1994	3,820	0.1	51.3	46.6	2.0			100.0
Fall Chum Salmon	1982	2,918	6.5	58.6	34.5	0.3			100.0
	1983	1,735	0.7	91.4	8.0	0.0			100.0
	1984	1,902	6.6	55.6	37.5	0.4			100.0
	1985	2,801	5.2	83.4	11.0	0.4			100.0
	1986	1,715	7.4	89.6	2.5	0.5			100.0
	1987	1,513	5.0	77.1	17.5	0.4			100.0
	1988	4,030	4.1	45.7	46.6	3.5			99.9
	1989	4,939	1.0	87.0	11.8	0.2			100.0
	1990	2,351	2.8	74.9	21.7	0.6			100.0
	1991	5,314	2.7	75.4	21.7	0.2			100.0
	1992	3,069	1.2	45.9	51.8	1.1			100.0
	1993	1,616	0.1	62.8	35.2	1.8			99.9
	1994	1,295	2.4	66.4	31.1	0.1			100.0
Coho Salmon	1982	320	4.1	87.3	8.6				100.0
	1983	121	4.1	91.7	4.1				100.0
	1984	619	12.9	73.7	13.4				100.0
	1985	462	14.1	76.3	9.6				100.0
	1986	491	2.2	88.6	9.2				100.0
	1987	0							0.0
	1988	1,091	12.2	85.5	2.3				100.0
	1989	749	20.0	74.5	5.5				100.0
	1990	428	28.9	67.1	3.9				99.9
	1991	615	8.3	91.6	0.1				100.0
	1992	920	24.1	74.4	1.6				100.1
	1993	522	15.5	83.5	1.0				100.0
	1994	752	22.9	76.2	0.9				100.0

[a] Age composition estimated from samples collected from each gear type, by district and fishery, or from samples from adjacent fisheries and/or test fisheries of the same gear type. Fisheries for which no appropriate samples were available were not apportioned to age.

Appendix A.25. Percent of total Yukon River chinook salmon harvest (Alaska and Canada combined) attributed to region of origin, 1982-1994. [a]

Year	Lower River Stocks [b] (U.S)	Middle River Stocks [c] (U.S)	Canadian-Spawned Stocks	Total
1982	15	23	62	100
1983	12	39	49	100
1984	29	36	35	100
1985	31	20	49	99
1986	26	6	68	100
1987	17	19	64	100
1988	27	12	61	101
1989	26	16	58	100
1990	19	22	59	100
1991	26	28	46	100
1992	18	23	59	100
1993	22	13	65	100
1994	16	24	60	100
5-Year Avg. 1989-1993	22	20	57	100
10-Year Avg. 1984-1993	24	19	56	100

[a] Based on analysis of chinook salmon scale patterns, age composition, and geographic distribution of catches and escapements.

[b] Lower River stocks include tributary streams that drain the Andreafsky Hills and Kaltag Mountains between rivermiles 100 and 500.

[c] Middle River stocks include the Upper Koyukuk River and Tanana River tributaries.

Appendix A.26. Associated environmental and salmon catch data, Yukon River, 1961-1994.

Year	Average Nome April Air Temp. (F)	Tanana River Nenana Ice Breakup	Iceout Yukon Delta Area	First Chinook Caught Delta Area [b]	First Chinook Caught Kuskokwim River [b]	First Chinook Caught District 1 Commercial Fishery	First Summer Chum Caught Delta Area [b]	First Summer Chum Caught District 1 Commercial Fishery
1961	18	5/05	[a]	6/05	[a]	6/05	[a]	-
1962	18	5/12	6/10	6/07 [c]	[a]	6/11	[a]	-
1963	18	5/05	5/29	[a]	[a]	6/03	[a]	-
1964	13	5/20	>6/12	[a]	[a]	6/15	[a]	-
1965	20	5/07	6/01	6/06	5/31	6/07	[a]	-
1966	15	5/08	6/06	6/09	5/27 [g]	6/10	[a]	-
1967	23	5/04	[a]	5/20	5/20	6/02	5/30	6/09
1968	14	5/08	[a]	[a]	5/26	6/03	6/05	6/07
1969	22	4/28	5/25	5/26	5/23	6/02	6/02	6/02
1970	15	5/04	late May	6/06	5/21	6/06	6/05	6/11
1971	13	5/08	6/05	6/11	6/06	6/11	6/15	6/15
1972	12	5/10	6/03	6/09	6/05	6/09	6/11	6/10
1973	18	5/04	6/01	5/30 [d]	5/27	6/05	6/05	6/07
1974	21	5/06	late May	5/27	5/23	6/03	6/01	6/03
1975	13	5/10	6/01	6/01	5/26	6/09	6/13	6/13
1976	10	5/02	6/01	6/12	6/01	6/14	6/13	6/14
1977	9	5/06	6/01	6/09	5/31	6/11	6/11	6/13
1978	25	4/30	5/20	5/26	5/18	6/08	5/26	6/08
1979	26	4/30	5/20	5/24	5/16	6/04	5/28	6/04
1980	24	4/29	5/19	5/27 [e]	5/17	6/09	5/31	6/09
1981	24	4/30	5/18	5/25	5/22	6/05	5/28	6/05
1982	12	5/10	6/02	6/06	6/01	6/14	6/06	6/14
1983	25	4/29	5/21	5/25	5/23	6/09	5/30	6/09
1984	12	5/09	6/01	6/02 [f]	5/25	6/18	6/08	6/08
1985	1	5/11	6/05	6/14	6/03	6/24	6/16	6/24
1986	12	5/08	6/01	6/06	5/29	6/14 [h]	6/07	6/14
1987	19	5/05	5/31	5/31	5/24	6/15	6/04	6/15
1988	23	4/27	5/20	5/27	5/16	6/09 [h]	5/27	6/09
1989	25	5/01	5/31	5/29 [i]	5/25	6/13 [h]	6/03	6/13
1990	26	4/24	5/28	5/29	5/22	6/14	5/31	6/14
1991	25	5/01	5/24	5/29	5/20	6/13	5/29	6/13
1992	22 [j]	5/14	5/30 [k]	6/13	5/23	6/20	6/13	6/20
1993	28	4/23	5/19	5/26	5/19	6/14	5/28	6/14
1994	20	4/29	5/22	5/24	5/16	6/13	5/25	6/13

[a] Information not available.
[b] Subsistence or test net fishery.
[c] Caught 6/09 Mt. Village, back calculated arrival date to mouth.
[d] Caught 6/03 Pilot Station, back calculated arrival date to mouth.
[e] Caught 5/23 Marshall, back calculated arrival date to mouth.
[f] Caught 6/05 Pitkas Point, back calculated arrival date to mouth.
[g] Caught 6/01 Kalskag, back calculated arrival date to mouth.
[h] Special six inch maximum mesh size fishing period.
[i] Caught 6/01 St. Marys, back calculated arrival date to mouth.
[j] Average May air temperature was 8.2 degrees farenthgeht below normal.
[k] The mainstem Yukon River was ice free on this date, but ice remained along the coast until June 10.

Appendix A.27. Total catch and estimated catch of Western Alaska (including Canadian Yukon) chinook salmon (in thousands of fish) taken in Japanese high seas salmon gillnet fisheries and total catch of chinook salmon taken in foreign and joint-venture trawl fisheries, 1964-1994.

	Japanese Mothership Gillnet		Japanese Landbased Driftnet		Japanese Total Gillnet		Bering Sea-Aleutian Area Trawl			Gulf of Alaska Trawl		
Year	Western Alaska Origin	Total	Western Alaska Origin	Total	Western Alaska Origin	Total	Foreign	Joint Venture/U.S. Groundfish [d]	Total	Foreign	Joint Venture/U.S. Groundfish [e]	Total
1964	179	410	40	208	219	618						
1965	106	185	20	102	126	287						
1966	108	208	22	118	130	326						
1967	71	128	22	115	93	243						
1968	244	362	18	97	262	459						
1969	367	554	17	88	384	642						
1970	312	437	28	148	340	585						
1971	132	206	27	139	159	345						
1972	189	261	20	107	209	368						
1973	56	119	31	165	87	284						
1974	208	361	36	188	244	549						
1975	108	162	20	137	128	299						
1976	117	285	42	201	159	486						
1977	55	93	31	146	86	239				4.8		4.8
1978	36	105	63	210	99	315	39.1		39.1	[a]		
1979	69	126	45	162	114	286	100.4		100.4	16.9	1.0	17.9
1980	416	704	22	160	438	864	113.2	1.9	115.1	31.6	0.2	31.8
1981	30	88	55	190	85	278	36.7	0.3	37.0	28.6	0.0	28.6
1982	45	107	41	165	86	272	13.9	1.7	15.6	[a]	3.5	5.9
1983	31	87	44	178	75	265	9.8	0.5	10.3	5.9	9.4	9.4
1984	36	82	21	92	57	174	[a]	[a]	[b]	11.1	63.2	74.3
1985	25	66	22	100	47	167	[b]	[b]	[b]	0.3	13.6	13.6
1986	24	60	20	76	44	137	0.3	4.0	4.3		18.0	18.0
1987	20	39	[b]	74	[b]	116	[b]	[b]	[b]		[b]	[b]
1988	23	26	[b]	47	[b]	73		[b]	[b]		[b]	[b]
1989	[b]	16	[b]	51	[b]	67		8.6	8.6			
1990	-	-	-	-	[b]	23 [f]		14.1	14.1		16.9	16.9
1991	-	-	-	-	[b]	45 [f]		35.0	35.0		37.6	37.6
1992 [g]	-	-	-	-	-	-		37.7	37.7		16.0	16.0
1993 [g]	-	-	-	-	-	-		39.5	39.5		24.7	24.7
1994	-	-	-	-	-	-		[b]	[b]		[b]	[b]

[a] Species composition unknown.
[b] Information not available.
[c] Longline harvest only, no trawling conducted in 1986.
[d] Joint-venture harvest reported through 1989 (fishery ended in 1990). U.S. ground fish fishery harvest reported beginning in 1990.
[e] Joint-venture harvest reported through 1988 when fishery ended. U.S. ground fish fishery harvest reported beginning in 1990.
[f] Japanese mothership fishery converted to "nontraditional landbased salmon fishery".
[g] U.S. fishery entirely replaced directed foreign and joint-venture groundfish harvests.

APPENDIX B

LOWER YUKON AREA SALMON

Appendix B.1. List of emergency orders pertaining to the Districts 1, 2 and 3 and Anvik River Management Area salmon fishery, 1994.

E.O. Number	Effective Date	Action Taken	Comments
3-LY-S-01-94	June 13	Opened the commercial salmon season effective 6:00 p.m. Monday, June 13 in District 1. Also established the taking of salmon for commercial purposes only with gillnets of eight inch or greater mesh size.	Approximately two weeks of chinook salmon passage should provide adequate escapement from this portion of the return. Due to the projected below average chum salmon run, it was warranted to establish mesh size specifications allowing the use of only eight inch or greater mesh size gillnets to reduce the mortality of chum salmon.
3-LY-S-02-94	June 13	Established a 6-hour commercial fishing period in District 1 from 6:00 p.m. Monday, June 13 until 12:00 midnight Monday, June 13.	The chinook salmon run appeared to be similar to the 1990 run with abundance increasing rapidly after a protracted build up at the beginning of the run. The summer chum run appeared to be below average in abundance with an unusually low percentage of age-4 fish at 9% compared to the average of 20%. Based on the projection of a below average summer chum run, fishers were requested to use chums caught during commercial fishing periods for subsistence needs, if possible, in order to reduce the overall harvest of chum salmon.
3-LY-S-03-94	June 15	Opened the commercial salmon season effective 6:00 p.m. Wednesday, June 15 in District 2. Also established the taking of salmon for commercial purposes only with gillnets of eight inch or greater mesh size.	Approximately two weeks of chinook salmon passage should provide adequate escapement from this portion of the run. Due to the projected below average chum salmon run, it was warranted to establish mesh size specifications allowing the use of only eight inch or greater mesh size gillnets to reduce the mortality of chum salmon.
3-LY-S-04-94	June 15	Established a 6-hour commercial fishing period in District 2 from 6:00 p.m. Wednesday, June 15 until 12:00 midnight Wednesday, June 15.	The chinook salmon run appeared to be similar to the 1990 run with abundance increasing rapidly after a protracted build up at the beginning of the run. The summer chum run appeared to be below average in abundance with an unusually low percentage of age-4 fish at 9% compared to the average of 20%. Based on the projection of a below average summer chum run, fishers

			were requested to use chums caught during commercial fishing periods for subsistence needs, if possible, in order to reduce the overall harvest of chum salmon.
3-LY-S-05-94	June 16	Established a 9-hour commercial fishing period in District 1 from 6:00 p.m. Thursday, June 16 until 3:00 a.m. Friday, June 17.	Test fishing CPUE data indicated an average chinook salmon run. Summer chum abundance appeared to be below average. The commercial harvest was reduced from the more typical 12 hours duration in order to reduce the incidental harvest of chum salmon.
3-LY-S-06-94	June 22	Opened the commercial salmon season effective 6:00 p.m. Wednesday, June 22 in District 3. Also established the taking of salmon for commercial purposes only with gillnets of eight inch or greater mesh size.	Based on the assessment of an average chinook salmon run and subsistence catches of chinook salmon in Russian Mission, opening the commercial salmon fishing season in District 3 was warranted. Because of the projection of a below average to poor summer chum run, only gillnets of eight inch or greater mesh size were allowed. Fishers were requested to use chums caught during commercial fishing periods for subsistence needs if possible, to reduce the mortality of chum salmon.
3-LY-S-07-94	June 22	Established a 12-hour commercial fishing period in District 3 from 6:00 p.m. Wednesday, June 22 until 6:00 a.m. Thursday, June 23.	Based on average chinook salmon abundance and historical effort, a 12-hour period was warranted.
3-LY-S-08-94	June 20	Established a 9-hour commercial fishing period in District 2 from 12:00 midnight Monday, June 20 until 9:00 a.m. Tuesday, June 21.	The estimated harvest was 44,000 chinook and 11,800 summer chum salmon. In order to provide adequate escapement from this portion of the chinook salmon run, the commercial fishing period typically scheduled for 6:00 p.m. Sunday June 19 in District 2 was delayed until Tuesday morning.

3-LY-S-09-94	June 22	Established a 9-hour commercial fishing period in District 1 from 6:00 p.m. Wednesday, June 22 until 3:00 a.m. Thursday, June 23.	The estimated commercial harvest for Districts 1 and 2 was 58,000 chinook and 17,000 summer chum. In order to provide adequate escapement from this portion of the chinook salmon run the commercial fishing period normally scheduled for 6:00 p.m. Monday, June 20 in District 1 was delayed until 6:00 p.m. Wednesday. Fishermen were notified that all chum salmon caught during commercial fishing periods might now be sold because of the projected run size of 1.2 to 2.2 million summer chums based on sonar passage to date.
3-LY-S-10-94	June 26	Established a 9-hour commercial fishing period in District 2 from 6:00 p.m. Sunday, June 26 until 3:00 a.m. Monday, June 27.	The chinook salmon run was assessed to be average to above average in abundance at this time based on test fishing CPUE and the Pilot Station sonar passage estimate of 87,000 fish. Fishermen were notified that all chum salmon caught during commercial fishing periods might now be sold because of the projected run size of 1.2 to 2.2 million summer chums based on sonar passage to date.
3-LY-S-11-94	June 26	Established a 12-hour commercial fishing period in District 3 from 6:00 p.m. Sunday, June 26 until 6:00 a.m. Monday, June 27.	Based on the commercial harvest of 597 chinook salmon through June 25 and average to above average abundance, a 12-hour period was warranted in District 3.
3-LY-S-12-94	June 27	Amended emergency order numbers 3-LY-S-01-94, 3-LY-S-03-94 and 3-LY-S-06-94 by rescinding gillnet specifications allowing the take of salmon only with gillnets of eight inch or greater mesh size in Districts 1,2 and 3 effective 6:00 p.m. June 27.	The summer chum salmon run was projected to be 1.3 to 2.2 million fish based on the Pilot Station sonar passage data. It was anticipated that spawning escapements and subsistence needs would be met. Therefore, gillnet specifications allowing the use of eight inch or greater mesh size were removed.

3-LY-S-13-94	June 27	Established a 6-hour commercial fishing period in District 1 with unrestricted mesh size gillnets from 6:00 p.m. Monday, June 27 until 12:00 midnight Monday, June 27.	The estimated commercial harvest for Districts 1 and 2 was 85,000 chinook and 31,000 summer chum. Based on the assessment of an average to above average chinook run and projected run size of 1.3 to 2.2 million summer chum salmon, a 6-hour commercial fishing period with unrestricted mesh size gillnets was warranted.
3-LY-S-14-94	July 3	Established a 6-hour commercial fishing period in District 2 with unrestricted mesh size gillnets from 6:00 p.m. Sunday, July 3 until 12:00 midnight Sunday, July 3.	Commercial fishing was suspended in the Lower Yukon Area since June 27 to allow evaluation of chinook and summer chum run strength. The estimated commercial harvest for Districts 1 and 2 was 99,000 chinook and 39,000 summer chum. Based on the assessment of an average to above average chinook run and projected run size of 1.8 to 2.2 million summer chum salmon, a 6-hour commercial fishing period with unrestricted mesh size gillnets was warranted.
3-LY-S-15-94	July 4	Established a 9-hour commercial fishing period with gillnets restricted to six inch or less mesh size from 6:00 p.m. Monday, July 4 until 3:00 a.m. Tuesday, July 5.	Based on the projected run size of 1.8 to 2.2 million summer chum salmon and escapement counts at Anvik, Nulato, Kaltag and Andreafsky Rivers, a 9-hour commercial fishing period with gillnets restricted to six inch or smaller mesh size was warranted.
3-LY-S-16-94	July 15	Closed the early commercial salmon fishing season in District 1, 2 and 3 of the lower Yukon Area effective 12:00 midnight Friday, July 15.	Closed the Lower Yukon Area commercial salmon fishing season to be consistent with fall chum salmon management plan regulations.

3-LY-S-17-94	July 9	Opened the lower 12 miles of the Anvik River to commercial take of chum salmon for an 8-hour period from 6:00 p.m. Saturday, July 9 until 2:00 a.m. Sunday, July 10.	The Anvik River escapement goal is 500,000 or more summer chum salmon. Commercial fishing was allowed based on an escapement of 580,000 summer chums through July 7 and a projected total escapement of 995,000 fish. Emergency regulations allowed the set gillnet and fish wheel fishery to include set gillnets, fish wheels, beach seines, hand purse seines, and dipnets in the Anvik River. Set gillnet gear was limited to one gillnet not to exceed 150 feet in length and no larger than 5 1/4 inch mesh size. Additionally, CFEC permit holders could sell no more than 400 chum salmon or 400 pounds of roe each commercial fishing period.
3-LY-S-18-94	July 10	Opened the lower 12 miles of the Anvik River to commercial take of chum salmon for an 8-hour period from 6:00 p.m. Sunday, July 10 until 2:00 a.m. Monday, July 11.	Based on the Anvik River escapement of 722,000 summer chum salmon through July 9 and projected total escapement of 1,098,000 fish, commercial fishing was warranted.
3-LY-S-19-94	July 12	Opened the lower 12 miles of the Anvik River to commercial take of chum salmon for two 8-hour periods from 6:00 p.m. Tuesday, July 12 until 2:00 a.m. Wednesday, July 13; and from 6:00 p.m. Wednesday, July 13 until 2:00 a.m. Thursday, July 14.	Based on the Anvik River escapement of 880,000 summer chum salmon through July 11 and projected total escapement of 1,118,000 fish, commercial fishing was warranted.
3-LY-S-20-94	July 16	Opened the lower 12 miles of the Anvik River to commercial take of chum salmon for two 12-hour periods from 9:00 p.m. Saturday, July 16 until 9:00 a.m. Sunday, July 17; and from 9:00 p.m. Sunday, July 17 until 9:00 a.m. Monday, July 18.	Based on the Anvik River escapement of 979,000 summer chum salmon through July 15 and projected total escapement of 1,147,000 fish, commercial fishing was warranted.

3-LY-S-21-94	August 6	Reduced the amount of subsistence fishing time allowed in the Coastal District and Districts 1, 2 and 3 by establishing two 24-hour subsistence salmon fishing periods per week closure effective 6:00 p.m. Saturday, August 6. Salmon could not be taken for subsistence use from 6:00 p.m. Saturdays until 6:00 p.m. Sundays and 6:00 p.m. Tuesdays until 6:00 p.m. Wednesdays. Subsistence fishing in the tributary waters of the Yukon River, and the fresh water tributaries of the Coastal District were not affected by this emergency order and remained open seven days per week.	The Yukon River Drainage Fall Chum Salmon Management Plan was adopted by the Board at the March 1994 BOF meeting and identified that a minimum return of 600,000 fall chum salmon was needed to allow for normal subsistence fishing schedules and corresponding harvest levels. Based on sonar passage and test net fishing catch rates, the end of the season passage fall chum salmon was estimated to be less than 600,000 fish. Despite Sport Fish closures and no commercial fisheries, the 1994 inseason projection of less than 600,000 fall chum salmon would not support normal subsistence harvest levels and still meet spawning escapement and rebuilding needs throughout the drainage. In order to reduce the subsistence harvest, subsistence fishing time restrictions in the Yukon River drainage were warranted.
3-LY-S-22-94	August 13	Reduced the amount of subsistence fishing time allowed in the Coastal District and Districts 1, 2 and 3 by establishing 48-hours of subsistence salmon fishing per week effective 6:00 p.m. Saturday, August 13. Subsistence fishing in the tributary waters of the Yukon River, and the fresh water tributaries of the Coastal District were not affected by this emergency order and remained open seven days per week.	Subsistence salmon fishing in Districts 1,2, and 3, and in the Coastal District was open for four 12-hour periods per week from 6:00 a.m. until 6:00 p.m. on Tuesdays, Wednesdays, Fridays, and Saturdays.

3-LY-S-23-94	August 13	Allowed subsistence gillnet fishermen to take whitefish, suckers and other nonsalmon species in the marine waters of the Coastal District and in the Yukon River and its adjoining sloughs in Districts 1, 2 and 3, effective August 13, with only gillnets of a maximum of 150 feet in length and 4 inches or smaller stretch mesh during subsistence salmon fishing closures.	Regulations adopted by the Board of Fisheries provided the department with emergency order authority to establish the length of a gillnet of a four inch maximum mesh size for subsistence gillnets. This restriction provided protection to chum salmon and still allowed subsistence fishermen the opportunity to fish for whitefish and resident species which were believed to be in normal abundance.
3-LY-S-24-94	August 18	Closed subsistence salmon fishing in the marine waters of the Coastal District and the Yukon River and its adjoining sloughs in Districts 1, 2 and 3 effective 6:00 p.m. Thursday, August 18. Also established two 12-hour "livebox" or chute equipped fish wheel subsistence fishing periods per week. This emergency order did not affect subsistence fishing in the tributaries of the Yukon River and the fresh water tributaries of the Coastal District which remained open seven days per week.	The Yukon River Drainage Fall Chum Salmon Management Plan was adopted by the Board at the March 1994 BOF meeting and identified that a minimum return of 4000,000 fall chum salmon were needed to meet esacapement and rebuilding needs throughout the drainage. Based on sonar passage and test net fishing catch rates to date, the current end of the season passage projection is 417,000 fall chum salmon; leaving only a small level of harvestable surplus. With lower portions of the Yukon River having had an opportunity to harvest fall chum salmon, and fall chum salmon now available to subsistence fishermen in the upper portion of the drainage, it was appropriate to close the Lower Yukon Area to subsistence fishing at this time.
3-LY-S-25-94	August 29	Opened subsistence salmon fishing in the marine waters of the Coastal District effective 12:01 a.m. Monday, August 29 and in the Yukon River Districts 1, 2 and 3 effective 12:01 a.m. Thursday, September 1.	The majority of fall chum salmon had migrated through the Lower Yukon Area. Therefore, it was warranted to open subsistence salmon fishing for coho salmon.

Appendix B.2. Commercial catches of chinook and summer chum salmon by mesh size, Districts 1 and 2, Lower Yukon Area, 1961-1994. [a]

	Unrestricted Mesh Size [b]				6 inch Max. Mesh Size [c]	
	Chinook			Summer Chum	Chinook	Summer Chum
Year	District 1	District 2	Total	Districts 1 and 2	Districts 1 and 2	Districts 1 and 2
1961	84,466	29,026	113,492	-	-	-
1962	67,099	22,224	89,323	-	-	-
1963	85,004	24,221	109,225	-	-	-
1964	67,555	20,246	87,801	-	-	-
1965	89,268	23,763	113,031	-	-	-
1966	70,788	16,927	87,715	-	-	-
1967	104,350	20,239	124,589	10,919	-	-
1968	79,465	21,392	100,857	14,402	-	-
1969	70,588	14,756	85,344	41,418	97	15,437
1970	56,469	17,141	73,610	104,705	57	16,623
1971	84,397	19,226	103,623	42,189	1,176	57,851
1972	68,059	17,317	85,376	78,698	1,991	37,881
1973 [d]	52,790	12,479	65,269	89,841	5,168	196,540
1974	69,457	17,464	86,921	349,758	1,631	227,507
1975	41,550	9,064	50,614	148,919	4,162	345,472
1976	56,392	15,296	71,688	267,075	7,631	128,431
1977	65,745	15,328	81,073	157,909	4,720	205,634
1978	53,198	28,872	82,070	275,512	7,737	354,603
1979	61,790	33,347	95,137	136,973	22,136	434,188
1980	78,157	42,755	120,912	95,876	19,474	605,679
1981	88,038	37,660	125,698	163,979	18,648	758,767
1982	70,743	35,656	106,399	225,106	6,887	217,563
1983	76,280	30,798	107,078	121,927	31,002	590,329
1984	65,101	29,355	94,456	242,076	16,394	287,531
1985 [e]	76,106	38,194	114,300	170,345	22,445	265,240
1986	42,922	36,603	79,525	231,372	15,307	438,182
1987	62,147	40,127	102,274	128,017	21,827	269,757
1988	32,792	20,009	52,801	225,049	39,469	848,321
1989 [f]	32,180	21,494	53,674	126,360	38,548	765,233
1990 [f]	42,092	24,000	66,092	99,588	18,147	281,418
1991 [f]	52,074	36,290	88,364	108,986	4,145	205,610
1992 [f]	54,569	28,679	83,248	81,458	27,678	242,878
1993	47,084	37,293	84,377	47,488	2,202	45,503
1994	61,633	41,692	103,325	39,832	608	15,369
10 Yr. Ave. (1974-1983)	66,135	26,624	92,759	194,303	12,403	386,817
10 Yr. Ave. (1984-1993)	50,707	31,204	81,911	146,074	20,616	364,967

[a] ADF&G test fishery sales included, 1961-1990. ADF&G test fishery sales not included, 1991-1993.
[b] Primarily 8 to 8-1/2 inch mesh size used during early June to early July.
[c] Catch through July 15-20, relatively few chinook and summer chum salmon taken after these dates.
[d] Six inch maximum mesh size regulation beginning late June to early July became effective in 1973.
[e] Six inch maximum mesh size regulation by emergency order during commercial fishing season became effective in 1985.
[f] Only includes information from fish ticket database; does not include salmon purchased illegally.
[h] 8 inch or greater mesh size restriction was in effect until June 27 and fishers were requested to take chum salmon home fo subsistence use until June 22 in order to reduce the harvest of chums.

Appendix B.3. Chinook salmon commercial catch data by period, chinook salmon season (unrestricted mesh size), District 1, Lower Yukon Area, 1974-1994.

	Period and Cumulative Catch [a,b]									
Date	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
06/01										
06/02										
06/03										
06/04										
06/05	3.5 (3.5)					6.1 (6.1)				
06/06										
06/07								11.1 (11.1)		
06/08	7.5 (11.0)					4.9 (11.0)				
06/09					2.5 (2.5)			15.6 (26.7)		
06/10							6.8 (6.8)			22.3 (22.3)
06/11		0.2 (0.2)								
06/12	14.7 (25.7)					19.5 (30.5)		14.5 (41.2)		
06/13					5.8 (8.3)					
06/14		0.4 (0.6)		0.04 (0.04)			26.1 (32.9)			12.7 (35.0)
06/15	11.1 (36.8)								5.6 (5.6)	
06/16			0.1 (0.1)			9.3 (39.8)		18.3 (59.5)		
06/17					17.6 (25.9)		14.6 (47.5)			28.6 (63.6)
06/18		1.1 (1.7)		2.6 (2.6)					12.4 (18.0)	
06/19	18.8 (55.6)		3.2 (3.3)			16.7 (56.5)		28.5 (88.0)		
06/20					7.5 (33.4)					
06/21		5.7 (7.4)		10.4 (13.0)			26.2 (73.7)			12.7 (76.3)
06/22	2.9 (58.5)					5.3 (61.8)			20.0 (38.0)	
06/23			9.6 (12.9)				4.5 (78.2)			
06/24					14.4 (47.8)					
06/25		17.1 (24.5)		26.3 (39.3)					7.1 (45.1)	
06/26	7.2 (65.7)		15.4 (28.3)							
06/27		9.8 (34.3)			5.4 (53.2)					
06/28				17.7 (57.0)						
06/29	3.8 (69.5)								18.1 (63.2)	
06/30			13.8 (42.1)							
07/01		7.3 (41.6)		8.7 (65.7)						
07/02			14.3 (56.4)						7.5 (70.7)	
07/03										
07/04										
07/05										
07/06										
07/07										
07/08										

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Appendix B.3. (page 2 of 2).

	Period and Cumulative Catch [a,b]										
Date	1984	1985	1986	1987	1988	1989 [c]	1990 [d]	1991 [e]	1992 [f]	1993	1994
06/01											
06/02											
06/03											
06/04											
06/05											
06/06											
06/07											
06/08											
06/09											
06/10											
06/11											
06/12											
06/13											13.5 (13.5)
06/14					5.9 (5.9)			17.1 (17.1)			
06/15							19.0 (19.0)			9.1 (9.1)	
06/16				13.0 (13.0)		18.9 (18.9)					23.0 (36.5)
06/17					16.0 (21.9)						
06/18								15.1 (32.2)		23.0 (32.1)	
06/19	13.7 (13.7)			22.5 (35.5)							
06/20			21.7 (21.7)			10.8 (29.7)			11.5 (11.5)		
06/21					10.9 (32.8)			4.7 (36.9)		10.4 (42.5)	
06/22	18.8 (32.5)					2.5 (32.2)	15.0 (34.0)		22.1 (33.6)		13.8 (50.3)
06/23				15.0 (50.5)							
06/24			10.2 (31.9)								
06/25		23.6 (23.6)						9.3 (46.2)			
06/26	16.1 (48.6)			11.6 (62.1)					10.0 (43.6)		
06/27											11.2 (61.5)
06/28		33.7 (57.3)								2.9 (45.4)	
06/29	16.5 (65.1)						6.5 (40.4)				
06/30			5.6 (37.5)								
07/01										1.6 (47.0)	
07/02		18.8 (76.1)						5.9 (52.1)	11.0 (54.6)		
07/03							1.7 (42.1)				
07/04			5.4 (42.9)								
07/05											
07/06											
07/07											
07/08											

[a] Catch by period in thousands of fish.
[b] Cumulative catch during unrestricted mesh size fishing periods in thousands of fish.
[c] Does not include 3,211 chinook salmon sold illegally.
[d] Does not include 1,101 chinook salmon sold illegally.
[e] Does not include 2,711 chinook salmon sold illegally.
[f] Does not include 1,218 chinook salmon sold illegally.

Appendix B.4. Chinook salmon commercial catch data by period, chinook salmon season (unrestricted mesh size), District 2, Lower Yukon Area, 1978-1994

	Period and Cumulative Catch [a,b]																
Date	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991 [d]	1992 [c]	1993	1994
06/01																	
06/02																	
06/03																	
06/04		1.6 (1.6)															
06/05																	
06/06																	
06/07		1.4 (3.0)															
06/08				7.6 (7.6)													
06/09	4.8 (4.8)		3.9 (3.9)														
06/10																	
06/11		5.1 (6.1)		11.4 (19.0)													
06/12	3.2 (8.0)		7.8 (11.7)														
06/13						6.0 (6.0)											
06/14																	
06/15		14.2 (22.3)		10.5 (29.5)													8.2 (8.2)
06/16	4.3 (12.3)		10.9 (22.6)			7.3 (13.3)					2.7 (2.7)						
06/17					4.0 (4.0)									11.5 (11.5)		10.6 (10.6)	
06/18		3.9 (26.2)		8.2 (37.7)						9.5 (9.5)			10.3 (10.3)				
06/19	7.8 (20.1)											11.0 (11.0)					
06/20			8.1 (30.7)			10.6 (23.9)					9.0 (11.7)			9.6 (21.1)			18.2 (26.4)
06/21		7.2 (33.4)			7.8 (11.8)		5.6 (5.6)									14.1 (24.7)	
06/22										12.2 (21.7)		7.5 (18.5)			5.5 (5.5)		
06/23	4.1 (24.2)		12.0 (42.7)			6.9 (30.8)			14.5 (14.5)		8.3 (20.0)						
06/24					11.8 (23.7)								7.7 (18.0)	6.7 (27.8)	13.0 (18.5)		
06/25							14.4 (20.0)			10.9 (32.5)		3.0 (21.5)				6.8 (31.5)	11.2 (37.6)
06/26	4.7 (28.9)													4.1 (31.9)			
06/27								7.0 (7.0)	12.3 (26.8)							3.2 (33.7)	
06/28					3.4 (27.1)		9.4 (29.4)								7.4 (25.9)		
06/29										7.6 (40.1)							
06/30																2.6 (36.0)	
07/01					8.8 (35.7)			18.3 (25.3)									
07/02									7.4 (34.2)				4.5 (22.4)				
07/03																	4.1 (41.7)
07/04								12.9 (38.2)						4.4 (36.3)			
07/05													1.8 (24.0)				
07/06																	
07/07									2.4 (36.6)								
07/08															2.8 (28.7)		

[a] Catch by period in thousands of fish.
[b] Cumulative catch during unrestricted mesh size fishing periods in thousands of fish.
[c] Does not include 207 chinook salmon caught illegally.
[d] Does not include 284 chinook salmon caught illegally.

Appendix B.5. Commercial chinook salmon catches by statistical area, Lower Yukon Area, 1974-1994.

	District 1								
Year	334-11	334-12	334-13	334-14	334-15	334-16	334-17	334-18	Total
1974	2,935	30,174	6,984	3,987	12,721	2,048	6,826	6,165	71,840
1975	6,396	15,844	8,763	314	1,720	606	6,879	4,063	44,585
1976	8,333	27,937	7,507	851	5,101	1,415	6,164	5,102	62,410
1977	11,278	16,787	8,866	1,216	15,214	1,550	7,109	7,895	69,915
1978	886	12,237	4,135	4,388	22,019	3,738	7,533	4,070	59,006
1979	1,017	13,152	4,149	5,782	12,839	10,960	18,976	8,202	75,077
1980	464	12,832	3,235	9,224	30,737	12,333	13,654	7,903	90,382
1981	6,639	12,875	2,975	8,976	19,730	15,158	22,251	10,902	99,506
1982	3,439	11,268	2,842	9,038	9,331	7,295	18,185	13,052	74,450
1983	7,919	23,523	8,161	14,961	9,416	5,297	19,172	7,008	95,457
1984	14,385	15,320	2,598	6,297	11,123	1,434	19,089	4,425	74,671
1985	4,233	22,696	12,160	2,492	12,806	3,955	25,144	6,525	90,011
1986	4,187	7,954	3,494	5,430	10,258	1,422	15,948	4,342	53,035
1987	14,656	12,056	8,703	3,533	6,780	3,250	18,573	9,092	76,643
1988	6,780	11,154	6,023	4,274	14,123	618	8,703	5,434	57,109
1989 [a]	2,213	5,703	4,794	3,999	12,682	7,303	18,037	4,422	59,153
1990 [b]	1,473	7,315	4,478	4,257	12,486	2,794	14,619	3,739	51,161
1991 [c]	1,689	4,244	1,624	3,451	12,664	6,251	18,243	5,455	53,621
1992 [d]	11,302	12,601	9,001	6,313	5,880	2,285	18,233	7,379	72,994
1993	3,642	7,368	4,342	3,324	11,407	2,346	9,380	7,477	49,286
1994	4,176	6,723	5,037	3,888	14,580	1,686	17,575	8,576	62,241

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District 2							District 3			
Year	334-21	334-22	334-23	334-24	334-25	Total	Year	334-31	334-32	Total
1974	6,344	5,611	2,624	3,369	-	17,948	1974	1,423	2,057	3,480
1975	3,282	3,045	2,785	2,203	-	11,315	1975	2,791	1,386	4,177
1976	5,083	4,490	3,031	3,952	-	16,556	1976	1,827	2,321	4,148
1977	6,577	4,584	2,110	3,451	-	16,722	1977	1,617	2,348	3,965
1978	9,004	7,953	5,248	8,499	2,220	32,924	1978	746	2,170	2,916
1979	10,698	11,214	6,733	7,573	5,280	41,498	1979	2,195	2,823	5,018
1980	11,544	12,903	8,259	9,591	7,707	50,004	1980	2,039	3,201	5,240
1981	12,341	13,275	7,024	5,950	7,191	45,781	1981	1,241	2,782	4,023
1982	10,567	9,236	5,262	8,932	5,135	39,132	1982	896	1,713	2,609
1983	12,433	10,424	7,779	6,260	6,333	43,229	1983	1,335	2,771	4,106
1984	9,179	11,573	4,668	5,752	5,525	36,697	1984	900	2,139	3,039
1985	11,843	18,584	4,877	4,613	8,448	48,365	1985	854	1,734	2,588
1986	11,138	15,326	3,450	4,336	7,599	41,849	1986	606	295	901
1987	14,195	9,672	5,663	6,376	11,552	47,458	1987	1,698	341	2,039
1988	6,191	11,605	4,721	6,784	5,887	35,188	1988	1,387	380	1,767
1989	5,257	12,380	4,647	4,411	6,530	33,225	1989	1,623	22	1,645
1990	5,592	10,675	3,741	8,514	4,691	33,213	1990	2,128	213	2,341
1991 [e]	9,330	10,423	5,332	6,552	7,339	38,976	1991	1,214	1,130	2,344
1992 [f]	9,014	11,647	4,135	11,311	1,825	37,932	1992	1,160	659	1,819
1993	8,641	9,223	6,118	6,085	7,226	37,293	1993	1,478	23	1,501
1994	9,223	14,350	4,514	8,734	4,871	41,692	1994	1,114	0	1,114

[a] Does not include 3,211 chinook and 150 summer chum salmon sold illegally.
[b] Does not include 1,101 chinook salmon sold illegally.
[c] Does not include 2,711 chinook and 1,023 summer chum salmon sold illegally.
[d] Does not include 1,218 chinook and 31 summer chum salmon sold illegally.
[e] Does not include 284 chinook salmon sold illegally.
[f] Does not include 207 chinook and 91 summer chum salmon sold illegally.

Appendix B.6. Commercial summer chum salmon catch and effort data, Districts 1 and 2, Lower Yukon Area, 1967-1994. [a]

	District 1					District 2				
Year	Duration	Days Fished	Boat Hours	Catch	(Catch/Boat Hour)	Duration	Days Fished	Boat Hours	Catch	(Catch/Boat Hour)
1967	6/08-6/27	11.0	77,208	9,494	0.12	-	-	-	-	-
1968	6/06-7/03	14.0	91,380	12,995	0.14	6/13-7/02	10.5	27,600	1,407	0.05
1969	6/02-6/28	12.5	84,864	8,840	0.10	6/15-7/01	8.0	16,620	5,024	0.30
1970	6/11-7/03	10.5	58,056	87,169	1.50	6/14-7/03	9.0	15,756	17,536	1.11
1971	6/14-7/03	10.5	73,032	36,077	0.49	6/20-7/05	8.5	17,832	6,112	0.34
1972	6/08-7/01	12.5	79,236	69,658	0.88	6/15-7/01	8.5	19,296	9,040	0.47
1973 [c]	6/07-7/11	14.5	100,284	191,840	1.91	6/10-7/14	14.5	36,000	56,481	1.57
1974	6/03-7/13	16.5	114,624	461,025	4.02	6/05-7/16	15.5	35,316	72,281	2.05
1975	6/09-7/16	15.0	86,304	394,447	4.57	6/11-7/18	10.5	21,024	99,139	4.72
1976	6/14-7/14	12.0	90,658	272,493	3.01	6/20-7/16	11.0	32,624	99,190	3.04
1977	6/13-7/12	12.0	63,036	232,427	3.69	6/19-7/15	10.0	27,048	102,759	3.80
1978	6/08-7/15	13.5	100,008	393,785	3.94	6/08-7/14	13.5	44,376	218,196	4.92
1979	6/04-7/14	13.5	106,680	369,934	3.47	6/03-7/13	13.5	44,748	172,838	3.86
1980	6/09-7/15	12.8	89,412	391,252	4.38	6/08-7/17	12.5	48,060	308,704	6.42
1981	6/06-7/14	12.0	94,656	507,158	5.36	6/07-7/16	12.0	46,560	351,458	7.55
1982	6/14-7/13	9.5	81,240	248,950	3.06	6/16-7/16	10.0	37,920	180,321	4.76
1983	6/09-7/15	11.0	94,920	451,164	4.75	6/12-7/18	11.0	44,712	248,092	5.55
1984	6/18-7/13	8.0	67,776	292,676	4.32	6/20-7/16	8.0	32,208	234,677	7.29
1985 [b]	6/24-7/15	6.3	52,116	247,486	4.75	6/26-7/18	7.3	27,834	188,099	6.76
1986	6/14-7/15	8.5	66,768	381,127	5.71	6/15-7/14	7.5	33,954	288,427	8.49
1987	6/15-7/10	6.0	53,736	222,898	4.15	6/17-7/09	5.0	26,124	174,876	6.69
1988	6/09-7/15	6.8	55,692	648,198	11.64	6/12-7/14	6.8	33,456	425,172	12.71
1989	6/13-7/14	5.3	65,280	547,781 [g]	8.39	6/15-7/13	4.5	22,314	343,962	15.41
1990 [h]	6/14-7/03	2.3	21,267	148,911	7.00	6/18-7/05	2.4	12,333	132,507	10.74
1991	6/13-7/05	3.0	28,224	140,470 [f]	4.98	6/16-7/07	3.0	15,126	175,149	11.58
1992	6/20-7/09	2.9	30,222	177,329 [e]	5.87	6/22-7/08	2.3	14,202	147,129 [d]	10.36
1993	6/14-7/01	2.0	21,504	73,659	3.43	6/16-6/30	1.8	9,996	19,332	1.93
1994	6/13-7/05	1.6	16,146	42,332	2.62	6/15-7/03	1.3	7,500	12,869	1.72

[a] Chinook and summer chum salmon caught after the specified dates are not included.
[b] Six inch maximum mesh size regulation by emergency order during commercial fishing season became effective in 1985.
[c] Includes 31 summer chum salmon sold illegally.
[d] Includes 91 summer chum salmon sold illegally.
[e] Six inch maximum mesh size regulation during late June to early July became effective in 1973.
[f] Includes 1,023 summer chum salmon sold illegally.
[g] Includes 150 summer chum salmon sold illegally.
[h] Includes ADF&G test fish sales through 1990.

Appendix B.7. Commercial summer chum salmon catches by statistical area, Lower Yukon Area, 1983-1994.

	District 1								
Year	334-11	334-12	334-13	334-14	334-15	334-16	334-17	334-18	Total
1983	42,165	112,074	37,976	64,556	29,841	22,918	96,512	45,122	451,164
1984	42,264	81,295	14,888	38,285	22,485	5,838	64,320	23,301	292,676
1985	13,696	53,540	26,127	10,047	33,133	10,381	73,948	26,614	247,486
1986	39,468	102,887	35,315	52,980	26,732	6,807	85,798	31,140	381,127
1987	34,852	51,350	22,794	15,109	21,646	7,786	45,911	23,450	222,898
1988	72,408	148,578	79,248	60,956	61,752	13,239	129,938	82,070	648,189
1989 [a]	29,129	89,794	40,036	71,576	118,908	20,468	136,669	41,051	547,631
1990 [f]	23,453	35,542	15,326	12,369	10,931	1,513	39,575	10,202	148,911
1991 [b]	13,767	32,621	5,223	11,133	11,560	23,213	34,775	7,155	139,447
1992 [c]	24,094	39,225	22,293	16,717	12,000	2,500	40,353	20,116	177,298
1993	13,123	17,869	9,745	8,672	2,920	661	9,196	11,473	73,659
1994	11,208	6,340	5,165	2,389	3,602	290	8,693	4,645	42,332

	District 2					
Year	334-21	334-22	334-23	334-24	334-25	Total
1983	57,740	71,821	56,499	31,027	31,005	248,092
1984	46,261	91,790	43,116	36,076	19,688	236,931
1985	32,911	87,687	24,983	18,911	23,607	188,099
1986	44,393	129,569	36,304	47,179	30,982	288,427
1987	48,734	54,459	19,157	22,988	29,538	174,876
1988	74,252	140,291	56,302	88,393	65,934	425,172
1989	46,224	140,571	48,986	54,542	53,639	343,962
1990 [f]	15,414	37,585	25,132	34,980	19,396	132,507
1991	46,378	70,188	32,584	14,915	11,084	175,149
1992 [d]	31,399	59,401	22,107	31,085	3,046	147,038
1993	5,444	3,711	4,445	2,920	2,812	19,332
1994	4,100	5,314	1,435	1,395	625	12,869

	District 3		
Year	334-31	334-32	Total
1983	3,106	11,494	14,600
1984	447	640	1,087
1985	872	920	1,792
1986	442	0	442
1987	3,418	83	3,501
1988	11,463	2,502	13,965
1989	7,548	30	7,578
1990	562	81	643
1991	3,347	5,565	8,912
1992	63	2	65
1993	460	3	463
1994	35	0	35

[a] Does not include 150 summer chum salmon sold illegally.
[b] Does not include 1,023 summer chum salmon sold illegally.
[c] Does not include 31 summer chum salmon sold illegally.
[d] Does not include 91 summer chum salmon sold illegally.
[f] Includes ADF&G test fish sales through 1990.

Appendix B.8. Commercial fall chum and coho salmon catch and effort data, District 1, Lower Yukon Area, 1961-1994. [a]

				Fall Chum		Coho	
Year	Duration	Days Fished [b]	Boat Hours	Catch	(Catch/Boat Hour)	Catch	(Catch/Boat Hour)
1961	8/01-8/31	16	14,772	42,461	2.87	2,855	0.19
1962	8/01-9/03	21	46,950	53,116	1.13	22,926	0.49
1963	8/09-9/06	18	2,100	no purchases		5,572	2.65
1964	8/03-8/27	17	8,346	8,347	1.00	2,446	0.29
1965	8/02-8/04	[c]	[c]	22,936	[c]	350	[c]
1966	7/25-9/10	28	41,994	69,836	1.66	19,254	0.46
1967	7/24-8/27	21	19,272	36,451	1.89	9,925	0.51
1968	7/22-8/28	22	47,232	49,857	1.06	13,153	0.28
1969	7/21-8/23	20	39,408	128,866	3.27	13,989	0.35
1970	7/20-8/26	22	56,160	200,306	3.57	12,632	0.22
1971	7/22-8/28	22	85,344	178,744	2.09	12,165	0.14
1972	7/20-8/26	22	81,726	134,752	1.65	21,705	0.27
1973	7/19-8/25	22	107,136	173,783	1.62	34,860	0.33
1974	7/18-8/14	12	41,868	137,235	3.28	13,713	0.33
1975	7/21-8/16	12	52,128	158,183	3.03	2,288	0.04
1976	7/19-8/13	11	55,026	91,091	1.66	4,064	0.07
1977	7/18-8/23	11	50,568	129,486	2.56	31,720	0.63
1978	7/17-8/29	13	56,184	127,947	2.28	16,460	0.29
1979	7/19-8/14	8	47,352	101,400	2.14	11,369	0.24
1980	7/17-8/19	7	24,216	106,829	4.41	4,819	0.20
1981	7/16-8/17	7	35,520	167,834	4.73	13,129	0.37
1982	7/19-8/13	8	40,944	91,271	2.23	15,114	0.37
1983 [d]	7/18-8/12	6	25,848	124,371	4.81	4,560	0.18
1984 [d]	7/16-8/17	6	21,240	78,751	3.71	29,472	1.39
1985 [d]	7/18-8/13	5	20,592	124,801	6.06	27,674	1.34
1986 [f]	8/04-8/22	4	13,662	59,352	4.34	24,824	1.82
1987	No Openings						
1988 [g]	8/08-8/30	3	9,408	45,529	4.84	36,435	3.87
1989 [h]	7/27-8/25	5	20,161	77,876	3.86	24,672	1.22
1990 [g,i]	7/23-8/20	3	7,392	27,337	3.70	13,354	1.81
1991 [h]	7/29-8/27	3	19,500	59,724	3.67	54,095	3.32
1992	No Openings						
1993	No Openings						
1994	No Openings						

[a] Prior to 1986, some coho and fall chum salmon may have been caught prior to specified dates.
[b] One day is equivalent to 24 hours during open fishing period.
[c] Information unavailable.
[d] District was divided into a Set Net Only (24 hour) area and a Gill Net (12 hour) area.
[f] District was divided into a Set Net Only (24 or 12 hour) area and a Gill Net (12 or 6 hour) area.
[g] District was divided into a Set Net Only (12 hour) area and a Gill Net (6 hour) area.
[h] District was divided into a Set Net Only (16 or 12 hour) area and a Gill Net (9 or 6 hour) area.
[i] Includes ADF&G test fish sales through 1990.

Appendix B.9. Fall chum and coho salmon commercial catch and effort in the Setnet Only and Gillnet areas, District 1, Lower Yukon Area, 1983-1994. [a]

	Setnet Area			Gillnet Area			Total		
Year	No. of Fishermen	Catch	Average Catch per Fisherman	No. of Fishermen	Catch	Average Catch per Fisherman	No. of Fishermen	Catch	Average Catch per Fisherman
				Fall Chum Salmon					
1983	137	46,583	340	175	61,649	352	312	108,232	347
1984	137	34,817	254	164	24,307	148	301	59,124	196
1985	159	64,838	408	153	53,694	351	312	118,532	380
1986	122	28,449	233	160	30,903	193	282	59,352	210
1987 [b]									
1988	120	21,971	183	208	23,558	113	328	45,529	139
1989	103	26,865	261	219	51,011	233	322	77,876	242
1990 [c]	83	7,553	91	218	19,784	91	301	27,337	91
1991	67	19,769	295	252	39,955	159	319	59,724	187
1992 [b]									
1993 [b]									
1994 [b]									
				Coho Salmon					
1983	137	1,021	7	175	3,536	20	312	4,557	15
1984	137	15,077	110	164	14,390	88	301	29,467	98
1985	159	12,841	81	153	14,832	97	312	27,673	89
1986	122	9,334	77	160	15,490	97	282	24,824	88
1987 [b]									
1988	120	13,408	112	208	23,027	111	328	36,435	111
1989	103	6,443	63	219	18,227	83	322	24,670	77
1990 [c]	83	2,033	24	218	11,321	52	301	13,354	44
1991	67	19,497	291	252	34,598	137	319	54,095	170
1992 [b]									
1993 [b]									
1994 [b]									
				Combined					
1983	137	47,604	347	175	65,185	372	312	112,789	362
1984	137	49,894	364	164	38,697	236	301	88,591	294
1985	159	77,679	489	153	68,526	448	312	146,205	469
1986	122	37,783	310	160	46,393	290	282	84,176	298
1987 [b]									
1988	120	35,379	295	208	46,585	224	328	81,964	250
1989	103	33,308	323	219	69,238	316	322	102,546	318
1990 [c]	83	9,586	115	218	31,105	143	301	40,691	135
1991	67	39,266	586	252	74,553	296	319	113,819	357
1992 [b]									
1993 [b]									
1994 [b]									

[a] Prior to 1986, some harvests of fall chum and coho salmon occurred before setnet only area designation went into effect.
[b] Season closed.
[c] Includes ADF&G test fish sales through 1990.

Appendix B.10. Fall chum salmon commercial catch data by period, District 1, Lower Yukon Area, 1978-1994.

	Period and Cumulative Catch [a]																
Date	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
07/18	6.3 (6.3)		4.2 (4.2)					6.3 (6.3)									
07/19						16.1 (16.1)											
07/20		6.0 (6.0)			4.3 (4.3)												
07/21	5.1 (11.4)			6.0 (6.0)													
07/22			6.6 (10.8)														
07/23					27.8 (32.1)												
07/24		7.2 (13.2)		1.3 (7.3)									1.0 (1.0)				
07/25	52.8 (64.2)		10.4 (21.2)														
07/26																	
07/27		14.8 (28.0)			4.0 (36.1)								1.6 (2.6)				
07/28	2.6 (67.0)			57.3 (64.6)								4.4 (4.4)					
07/29			15.3 (36.5)			3.0 (19.1)											
07/30					11.7 (47.8)									15.3 (15.3)			
07/31		9.7 (37.7)	1.4 (37.9)	23.2 (87.8)			18.3 (18.3)						1.7 (4.5)				
08/01	14.4 (81.4)											0.2 (4.5)					
08/02						18.5 (37.6)		2.2 (8.5)						3.0 (18.3)			
08/03		17.5 (55.2)					17.1 (35.4)						11.2 (15.7)				
08/04	0.4 (81.8)				7.9 (55.7)							46.8 (53.3)					
08/05			8.2 (44.1)			23.7 (61.3)			11.4 (11.4)								
08/06					1.2 (56.9)			15.2 (23.7)						7.4 (25.7)			
08/07		37.8 (93.0)	13.5 (57.6)				1.8 (37.2)						7.5 (23.2)				
08/08	1.4 (83.2)								7.5 (18.9)			3.8 (57.2)					
08/09						44.0 (105.3)		35.8 (59.5)			32.5 (32.5)			9.2 (34.9)			
08/10		1.3 (94.3)			13.7 (70.6)												
08/11	1.6 (84.8)		5.2 (62.8)									2.5 (59.7)					
08/12					20.7 (91.3)	19.1 (124.4)			10.6 (29.4)								
08/13				43.6 (131.6)				85.3 (124.8)						1.4 (36.3)			
08/14		7.1 (101.4)	1.6 (64.6)				11.8 (49.0)										
08/15	1.4 (86.2)								18.2 (45.6)			14.9 (74.7)					
08/16														4.1 (40.4)			
08/17							10.1 (59.1)										
08/18	10.2 (96.4)			3.9 (135.5)													
08/19			42.2 (106.8)						5.8 (51.4)		0.5 (33.0)						
08/20													4.1 (27.3)	2.8 (43.2)			
08/21																	
08/22	21.8 (118.3)								8.0 (59.4)			2.9 (77.6)					
08/23											6.9 (39.9)			14.7 (57.9)			
08/24																	
08/25	4.4 (122.7)											0.3 (77.9)					
08/26											4.1 (44.0)						
08/27														1.8 (59.7)			
08/28																	
08/29	5.2 (127.9)																
08/30											1.5 (45.5)						

[a] Period and cumulative catches in thousands of fish. Fall chum salmon run usually well underway in the lower Yukon River by July 18. Season closures occurred in the following years:
[b] Some harvests of fall chum salmon occurred before 7/18.

1981: Season closed 8/01-8/12.
1983: Season closed 7/20-7/27.
1984: Season closed 7/18-8/01 and 8/08-8/12.
1985: Season closed 7/20-7/31.
1988: Season closed 7/16-8/03.
1987: Season closed.
1988: Season closed 7/16-8/07.
1989: Season closed 7/15-7/26.
1990: Season closed 7/04-7/22 and 8/08-8/19.
1991: Season closed 7/15-7/28.
1992: Season closed.
1993: Season closed.
1994: Season closed.

Appendix B.11. Commercial fall chum salmon catches by statistical area, Lower Yukon Area, 1983-1994.

	District 1								
Year	334-11	334-12	334-13	334-14	334-15	334-16	334-17	334-18	Total
1983	135	10,300	2,224	10,460	35,824	19,985	24,816	20,627	124,371
1984	315	24,914	2,488	16,234	13,536	6,873	9,390	5,001	78,751
1985	594	34,332	6,035	36,885	43,022	1,485	5,898	1,697	129,948
1986	376	9,891	3,032	2,683	21,058	4,091	12,004	6,217	59,352
1987	0	0	0	0	0	0	0	0	0
1988	10,217	6,953	2,625	206	6,692	3,905	9,526	5,405	45,529
1989	0	2,929	1,420	5,577	26,611	17,477	15,526	8,336	77,876
1990	255	3,690	501	1,167	7,927	5,618	4,695	3,484	27,337
1991	75	11,976	3,036	5,586	9,968	8,040	11,880	9,163	59,724
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0

	District 2					
Year	334-21	334-22	334-23	334-24	334-25	Total
1983	17,245	4,673	24,132	22,072	17,523	85,645
1984	10,951	22,942	7,622	19,183	10,105	70,803
1985	9,131	10,607	3,530	5,859	11,363	40,490
1986	6,472	16,377	5,212	11,352	11,894	51,307
1987	0	0	0	0	0	0
1988	5,077	13,215	5,385	4,283	3,901	31,861
1989	12,005	34,268	15,001	19,029	17,603	97,906
1990	6,311	8,298	5,403	10,147	7,014	37,173
1991	10,584	23,195	14,291	28,306	26,252	102,628
1992	0	0	0	0	0	0
1993	0	0	0	0	0	0
1994	0	0	0	0	0	0

	District 3		
Year	334-31	334-32	Total
1983	4,607	5,411	10,018
1984	6,429	0	6,429
1985	4,173	991	5,164
1986	2,793	0	2,793
1987	0	0	0
1988	1,748	342	2,090
1989	15,153	179	15,332
1990	1,863	1,852	3,715
1991	7,209	2,004	9,213
1992	0	0	0
1993	0	0	0
1994	0	0	0

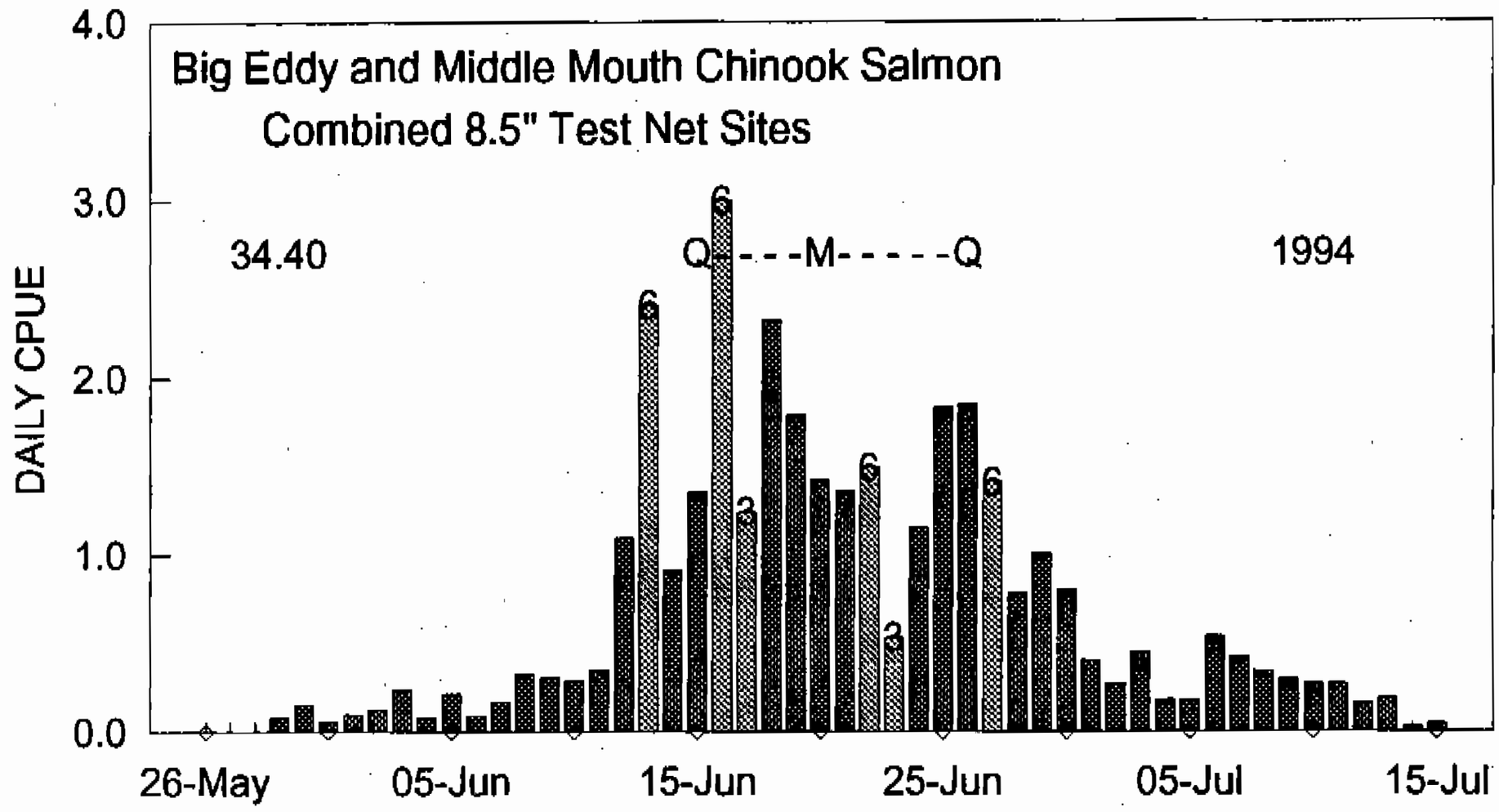
a Includes ADF&G test fish sales through 1990.

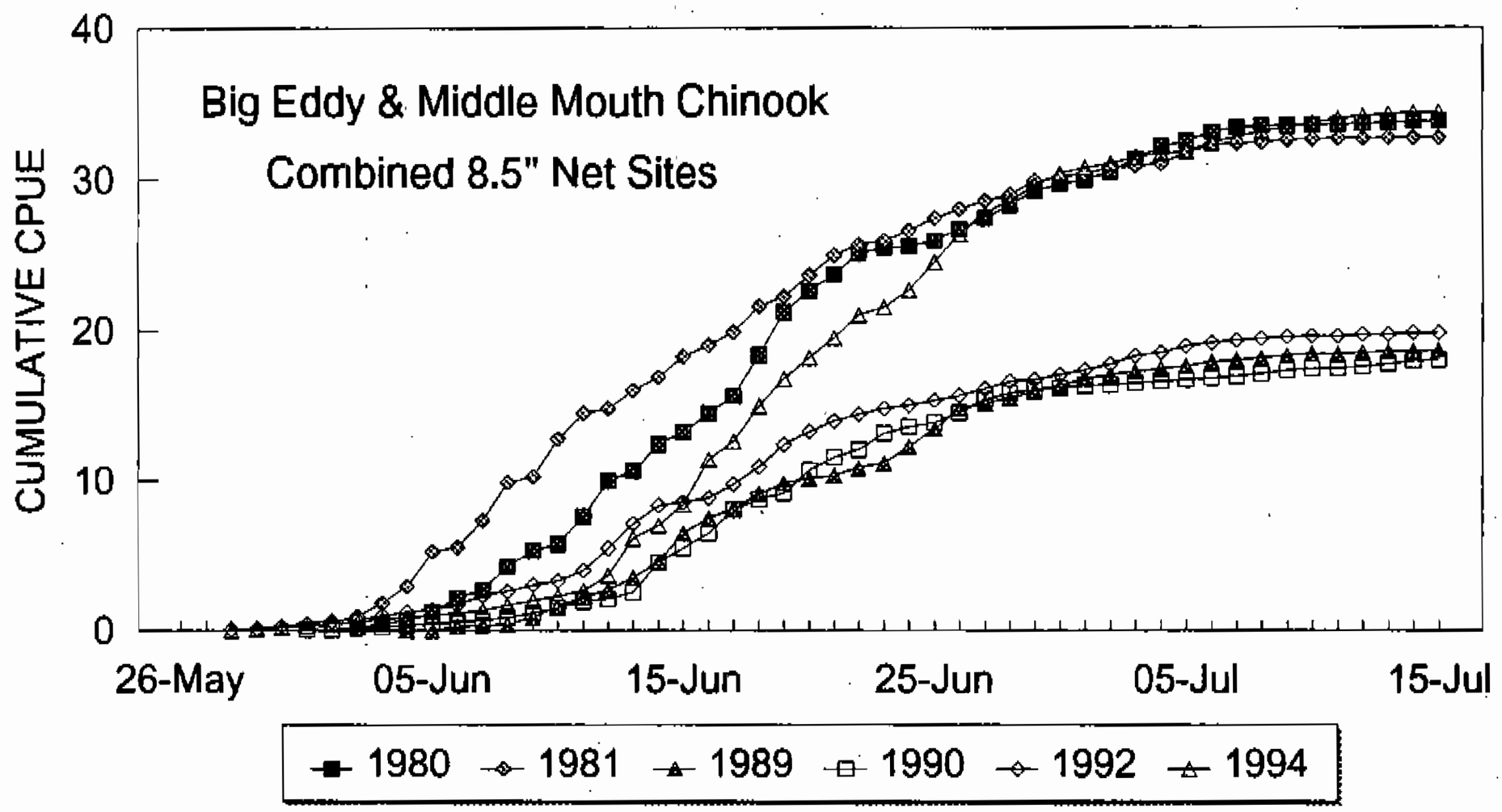
Appendix B.12. Value of commercial salmon fishery to Lower Yukon Area fishermen, 1977-1994.

	Chinook		Summer Chum			Fall Chum		Coho			
Year	$/lb.	Dollars	$/lb.	Dollars	Subtotal Value	$/lb.	Dollars	$/lb.	Dollars	Subtotal Value	Total Value
1977	0.85	1,841,033	0.40	1,007,280	2,848,313	0.45	718,571	0.50	140,914	859,485	3,707,798
1978	0.90	2,048,674	0.45	2,071,434	4,120,108	0.47	691,854	0.60	96,823	788,677	4,908,785
1979	1.09	2,763,433	0.52	2,242,564	5,005,997	0.68	1,158,485	0.80	83,466	1,241,951	6,247,948
1980	1.04	3,409,105	0.20	1,027,738	4,436,843	0.28	394,162	0.36	17,374	411,536	4,848,379
1981	1.20	4,420,669	0.40	2,741,178	7,161,847	0.55	1,503,744	0.60	87,385	1,591,129	8,752,976
1982	1.41	3,768,107	0.40	1,237,735	5,005,842	0.55	846,492	0.69	135,828	982,320	5,988,162
1983	1.40	4,093,562	0.34	1,734,270	5,827,832	0.34	591,011	0.35	17,497	608,508	6,436,340
1984	1.50	3,510,923	0.26	926,922	4,437,845	0.32	374,359	0.50	256,050	630,409	5,068,254
1985	1.50	4,294,432	0.35	1,032,700	5,327,132	0.47	634,616	0.53	176,254	810,870	6,138,002
1986	1.63	3,165,078	0.38	1,746,455	4,911,533	0.49	399,321	0.71	211,942	611,263	5,522,796
1987	1.98	5,428,933	0.48	1,313,618	6,742,551	-	0	-	0	0	6,742,551
1988	2.97	5,463,800	0.66	5,001,100	10,464,900	1.01	638,700	1.38	734,400	1,373,100	11,838,000
1989	2.77	5,181,700	0.34	2,217,700	7,399,400	0.50	713,400	0.66	323,300	1,036,700	8,436,100
1990	2.84	4,820,859	0.24	497,571	5,318,430	0.45	238,165	0.66	137,302	375,467	5,693,897
1991	3.70	7,128,300	0.36	782,300	7,910,600	0.34	438,310	0.44	300,182	738,492	8,649,092
1992	4.12	9,957,002	0.27	606,976	10,563,978	-	0	-	0	0	10,563,978
1993	2.70	4,884,044	0.37	226,772	5,110,815	-	0	-	0	0	5,110,815
1994	2.07	4,169,270	0.21	79,206	4,248,476	-	0	-	0	0	4,248,476
5 Yr Ave 1989-1993	3.23	6,394,381	0.32	866,264	7,260,645	0.26	277,975	0.35	152,157	430,132	7,690,776

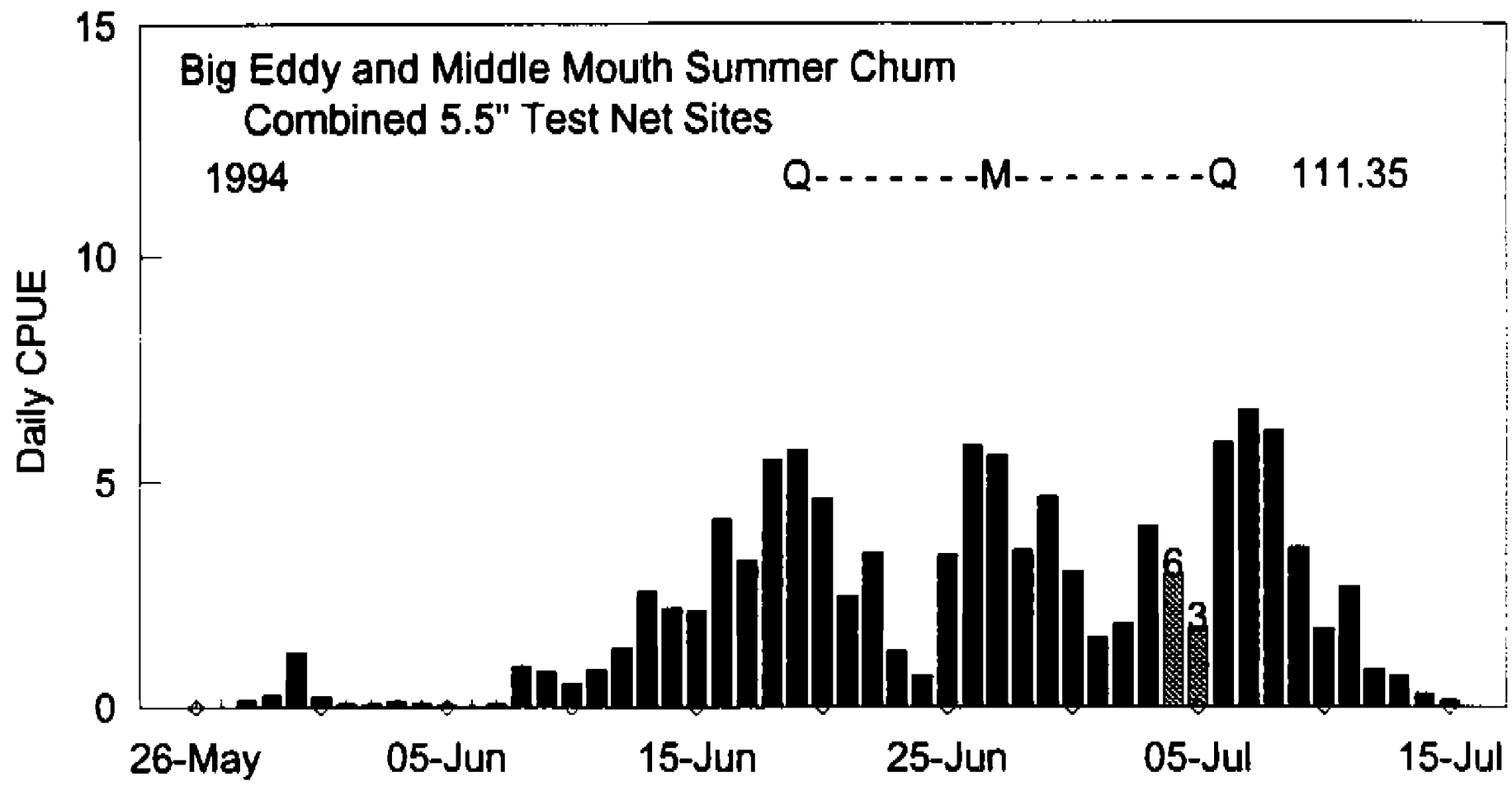
Appendix B.13.. Lower Yukon River test fish data by day, Big Eddy and Middle Mouth set gillnet test fishing projects, summer fishing season, 1994.

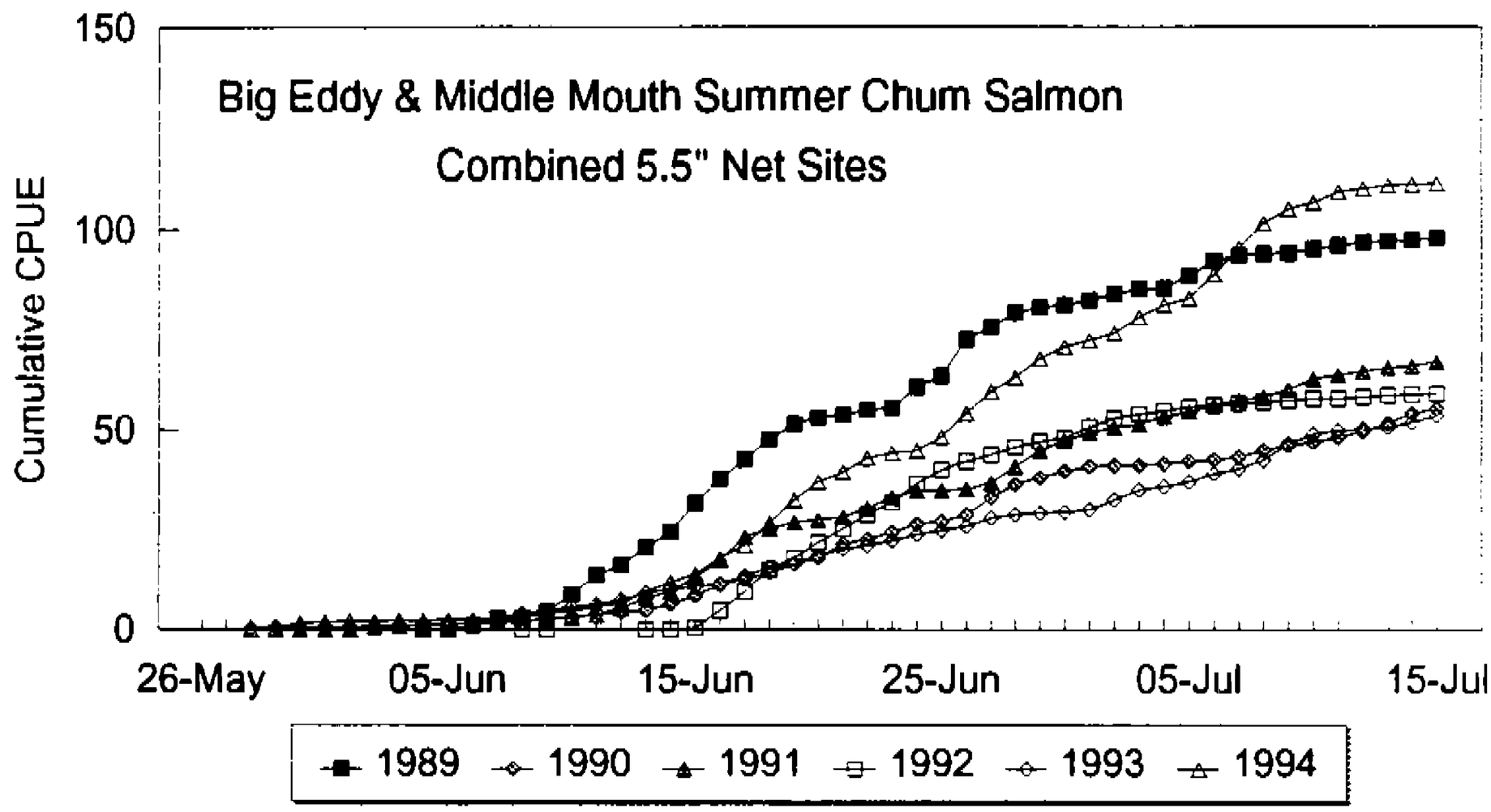
	Big Eddy & Middle Mouth Set Nets															
	Sites 1 & 2 8.5 in set gillnets					Sites 3 & 4 5.5 in set gillnets						Sites 3 & 4 5.5 in set gillnets			
	Chinook Salmon					Summer Chum Salmon						Chinook Salmon			
Date	Daily Catch	Daily CPUE	Cum CPUE	Day Number	Quartile Day	Hours Fished	Daily Catch	Daily CPUE	Cum CPUE	Day Number	Average Quartile Day	Daily Catch	Daily CPUE	Cum CPUE	
26-May															
27-May															
28-May	0	0.00	0.00			6	1	0.17	0.17			0	0.00	0.00	
29-May	4	0.08	0.08			24	7	0.29	0.46			0	0.00	0.00	
30-May	7	0.15	0.23			24	30	1.25	1.71	1		6	0.25	0.25	
31-May	3	0.06	0.29			48	12	0.25	1.96	2		1	0.02	0.27	
01-Jun	5	0.10	0.39			48	4	0.08	2.04	3		6	0.13	0.40	
02-Jun	9	0.13	0.52			72	6	0.08	2.12	4		9	0.13	0.53	
03-Jun	17	0.24	0.76			72	11	0.15	2.27	5		9	0.13	0.66	
04-Jun	6	0.08	0.84			72	8	0.11	2.38	6		3	0.04	0.70	
05-Jun	16	0.22	1.06	1		72	5	0.07	2.45	7		6	0.08	0.78	
06-Jun	9	0.09	1.15	2		96	2	0.02	2.47	8		4	0.04	0.82	
07-Jun	16	0.17	1.32	3		96	9	0.09	2.56	9		5	0.05	0.87	
08-Jun	32	0.33	1.65	4		96	89	0.93	3.49	10		12	0.13	1.00	
09-Jun	30	0.31	1.96	5		96	77	0.80	4.29	11		15	0.16	1.16	
10-Jun	28	0.29	2.25	6		96	52	0.54	4.83	12		10	0.10	1.26	
11-Jun	34	0.35	2.60	7		96	80	0.83	5.66	13		21	0.22	1.48	
12-Jun	105	1.09	3.69	8		96	127	1.32	6.98	14		47	0.49	1.97	
13-Jun	231	2.41	6.10	9		96	248	2.58	9.56	15		69	0.72	2.69	
14-Jun	87	0.91	7.01	10		96	209	2.18	11.74	16		37	0.39	3.08	
15-Jun	130	1.35	8.36	11		96	205	2.14	13.88	17		79	0.82	3.90	
16-Jun	288	3.00	11.36	12		96	400	4.17	18.05	18		130	1.35	5.25	
17-Jun	119	1.24	12.60	13		96	310	3.23	21.28	19		100	1.04	6.29	
18-Jun	224	2.33	14.93	14		96	524	5.46	26.74	20		127	1.32	7.61	median
19-Jun	172	1.79	16.72	15	median	96	547	5.70	32.44	21		90	0.94	8.55	
20-Jun	136	1.42	18.14	16		96	442	4.60	37.04	22		80	0.83	9.38	
21-Jun	131	1.36	19.50	17		96	237	2.47	39.51	23		74	0.77	10.15	
22-Jun	143	1.49	20.99	18		96	327	3.41	42.92	24		50	0.52	10.67	
23-Jun	51	0.53	21.52	19		96	121	1.26	44.18	25		22	0.23	10.90	
24-Jun	110	1.15	22.67	20		96	68	0.71	44.89	26		47	0.49	11.39	
25-Jun	176	1.83	24.50	21		96	324	3.38	48.27	27		72	0.75	12.14	
26-Jun	178	1.85	26.35	22		96	556	5.79	54.06	28		40	0.42	12.56	
27-Jun	135	1.41	27.76	23		96	535	5.57	59.63	29	median	30	0.31	12.87	
28-Jun	75	0.78	28.54	24		96	332	3.46	63.09	30		16	0.17	13.04	
29-Jun	97	1.01	29.55	25		96	448	4.67	67.76	31		27	0.28	13.32	
30-Jun	77	0.80	30.35	26		96	289	3.01	70.77	32		20	0.21	13.53	
01-Jul	38	0.40	30.75	27		96	150	1.56	72.33	33		19	0.20	13.73	
02-Jul	26	0.27	31.02	28		96	178	1.85	74.18	34		10	0.10	13.83	
03-Jul	43	0.45	31.47	29		96	383	3.99	78.17	35		14	0.15	13.98	
04-Jul	17	0.18	31.65	30		96	283	2.95	81.12	36		10	0.10	14.08	
05-Jul	17	0.18	31.83	31		96	169	1.76	82.88	37		9	0.09	14.17	
06-Jul	52	0.54	32.37	32		96	561	5.84	88.72	38		11	0.11	14.28	
07-Jul	40	0.42	32.79	33		96	630	6.56	95.28	39		3	0.03	14.31	
08-Jul	33	0.34	33.13	34		96	586	6.10	101.38	40		5	0.05	14.36	
09-Jul	29	0.30	33.43	35		96	337	3.51	104.89	41		4	0.04	14.40	
10-Jul	26	0.27	33.70	36		96	167	1.74	106.63	42		5	0.05	14.45	
11-Jul	26	0.27	33.97	37		96	256	2.67	109.30	43		0	0.00	14.45	
12-Jul	15	0.16	34.13	38		96	83	0.86	110.16	44		2	0.02	14.47	
13-Jul	18	0.19	34.32	39		96	67	0.70	110.86	45		6	0.06	14.53	
14-Jul	3	0.03	34.35	40		96	31	0.32	111.18	46		0	0.00	14.53	
15-Jul	5	0.05	34.40	41		96	16	0.17	111.35	47		1	0.01	14.54	
Total	3,269		34.4				10,539		111.3			1,363		14.54	





Appendix B.14. Lower Yukon River combined chinook salmon set net (8.5 inch mesh) test fishing cumulative CPUE for selected years (above) and daily CPUE in 1994 (below). Solid bars indicate days during which commercial fishing was allowed. The number above the bars indicates hours open to fishing.



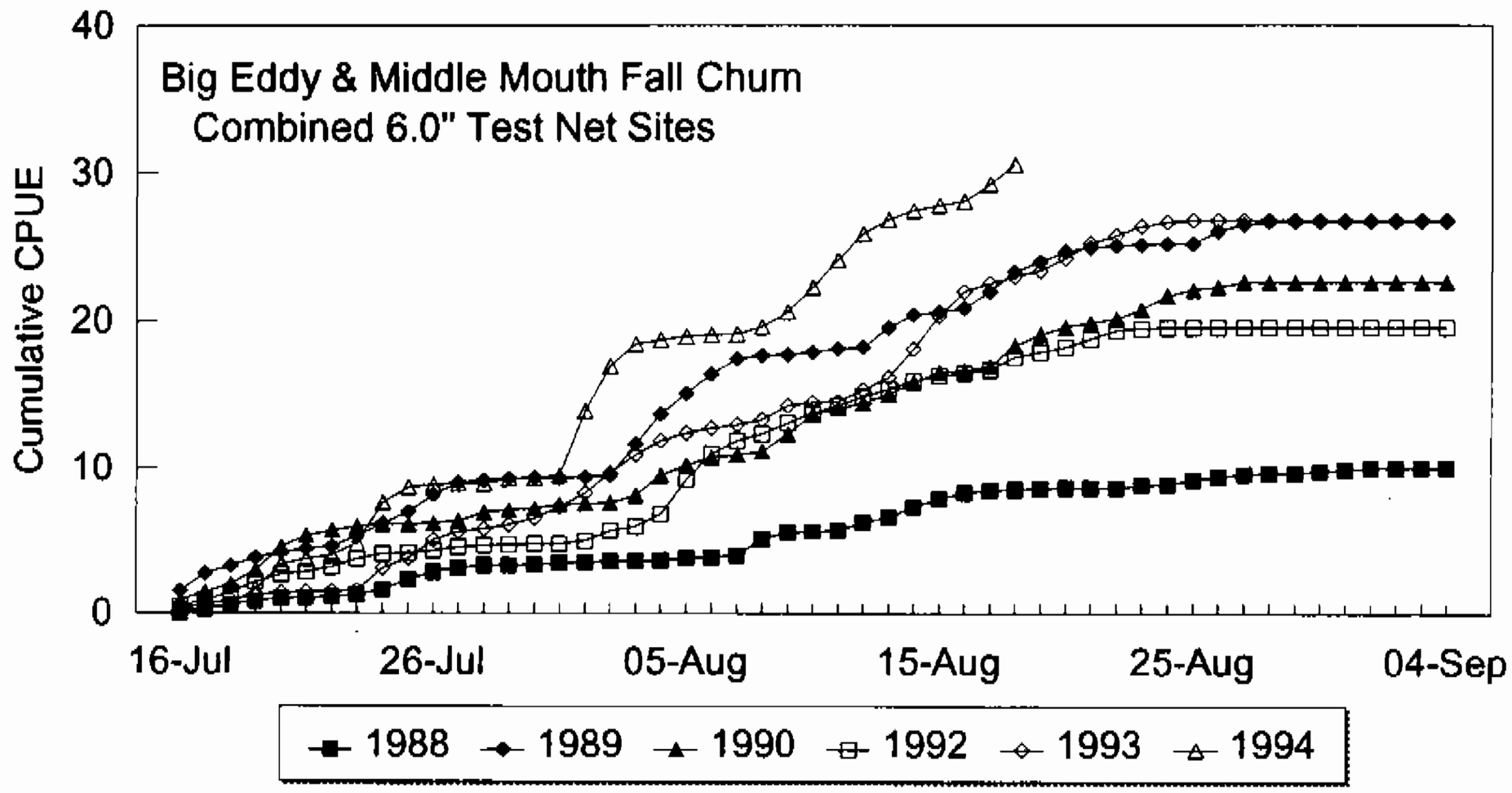


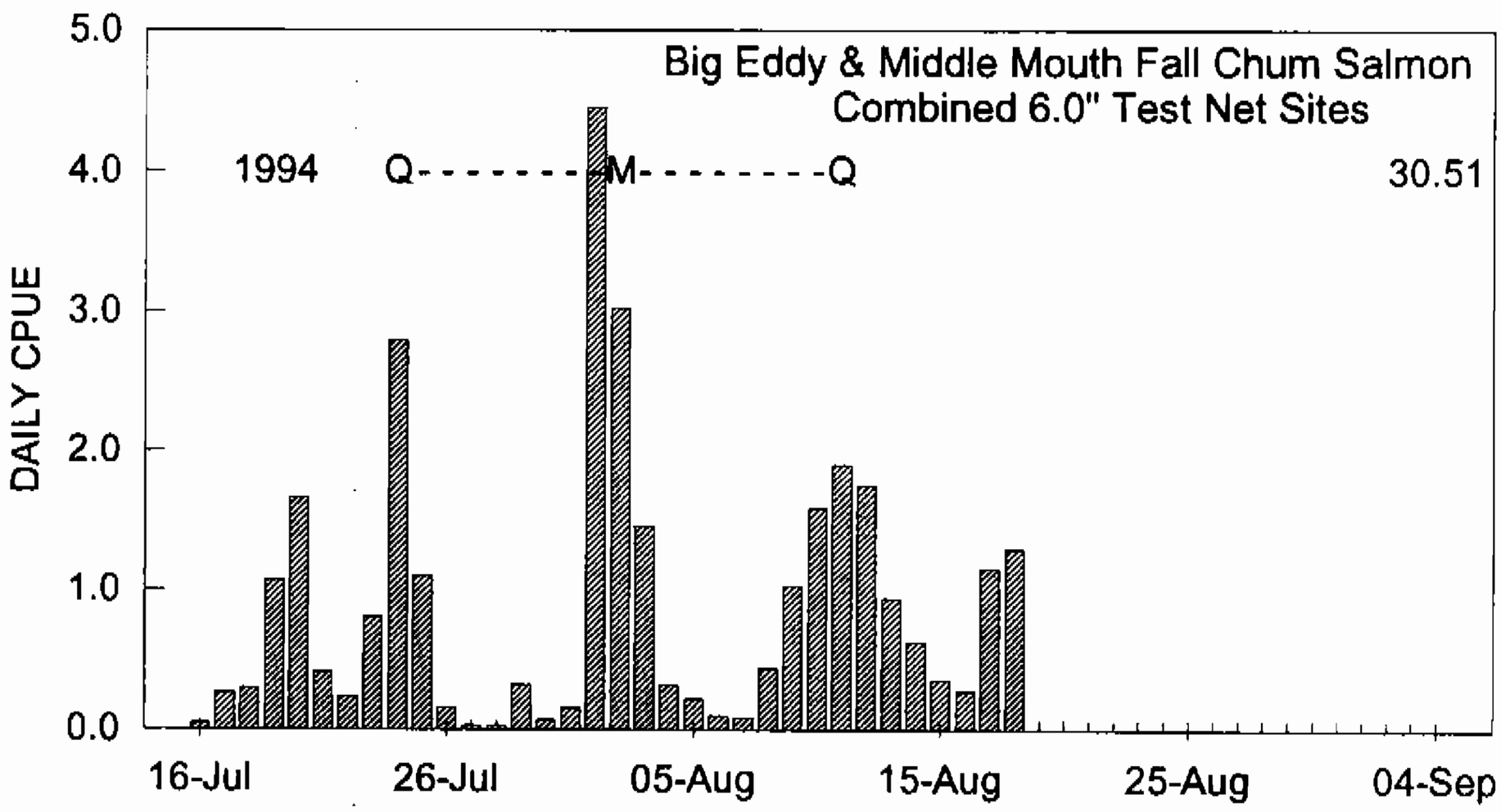
Appendix B.15. Lower Yukon River combined summer chum salmon set net (5.5 inch mesh) test fishing cumulative CPUE for selected years (above) and daily CPUE in 1994 (below). Solid bars indicate days during which commercial fishing was allowed. The number above the bars indicates hours open to fishing.

Appendix B.16. Lower Yukon River fall chum and coho salmon combined setnet test fishing catches and CPUE, 1994.

								Middle Mouth site 3 - 6.0" Net						
	Fall Chum Salmon			Coho Salmon				Fall Chum Salmon			Coho Salmon			
Date	Daily Catch	Daily CPUE	Cum CPUE	Daily Catch	Daily CPUE	Cum CPUE	% Coho	Daily Catch	Daily CPUE	Cum CPUE	Daily Catch	Daily CPUE	Cum CPUE	% Coho
16-Jul	5	0.05	0.05	0	0.00	0.00	0.0	net not fished						
17-Jul	26	0.27	0.32	0	0.00	0.00	0.0							
18-Jul	29	0.30	0.62	0	0.00	0.00	0.0							
19-Jul	103	1.07	1.69	0	0.00	0.00	0.0							
20-Jul	159	1.66	3.35	0	0.00	0.00	0.0							
21-Jul	39	0.41	3.76	1	0.01	0.01	2.5							
22-Jul	23	0.24	4.00	1	0.01	0.02	4.2							
23-Jul	78	0.81	4.81	1	0.01	0.03	1.3							
24-Jul	268	2.79	7.60	6	0.06	0.09	2.2							
25-Jul	106	1.10	8.70	3	0.03	0.12	2.8							
26-Jul	15	0.16	8.86	0	0.00	0.12	0.0							
27-Jul	3	0.03	8.89	2	0.02	0.14	40.0							
28-Jul	3	0.03	8.92	3	0.03	0.17	50.0							
29-Jul	31	0.32	9.24	9	0.09	0.26	22.5							
30-Jul	7	0.07	9.31	5	0.05	0.31	41.7							
31-Jul	15	0.16	9.47	6	0.06	0.37	28.6							
01-Aug	427	4.45	13.92	47	0.49	0.86	9.9							
02-Aug	290	3.02	16.94	89	0.93	1.79	23.5							
03-Aug	140	1.46	18.40	66	0.69	2.48	32.0							
04-Aug	31	0.32	18.72	28	0.29	2.77	47.5							
05-Aug	21	0.22	18.94	30	0.32	3.09	59.6							
06-Aug	10	0.10	19.04	24	0.25	3.34	70.6							
07-Aug	9	0.09	19.13	58	0.60	3.94	86.6							
08-Aug	42	0.44	19.57	106	1.10	5.04	71.6							
09-Aug	99	1.03	20.60	173	1.80	6.84	63.6							
10-Aug	153	1.63	22.23	241	2.51	9.35	60.71							
11-Aug	182	1.39	23.62	129	1.34	10.69	49.24							
12-Aug	168	1.75	25.37	223	2.32	13.01	57.03							
13-Aug	90	0.94	26.31	175	1.82	14.83	66.04							
14-Aug	60	0.63	26.94	143	1.49	16.32	70.44							
15-Aug	35	0.36	27.30	144	1.50	17.82	80.45							
16-Aug	27	0.28	27.58	96	1.00	18.82	78.05							
17-Aug	111	1.16	28.74	215	2.24	21.06	65.95							
18-Aug	125	1.30	30.04	381	3.97	25.03	75.30							
19-Aug														
20-Aug														
21-Aug														
22-Aug														
23-Aug														
24-Aug														
25-Aug														
26-Aug														
27-Aug														
28-Aug														
29-Aug														
30-Aug														
31-Aug														
01-Sep														
02-Sep														
03-Sep														
04-Sep														
	2,884	30.04		2,406	25.03		45.48	0	0.00		0	0.00		0.0

Appendix B.17. Lower Yukon River, Big Eddy and Middle Mouth combined fall chum salmon setnet (6.0 inch mesh) test fishing cumulative CPUE for selected years (above) and daily CPUE in 1994 (below). Solid bars indicate days during which commercial fishing was allowed. The number above the bars indicate hours open to fishing.





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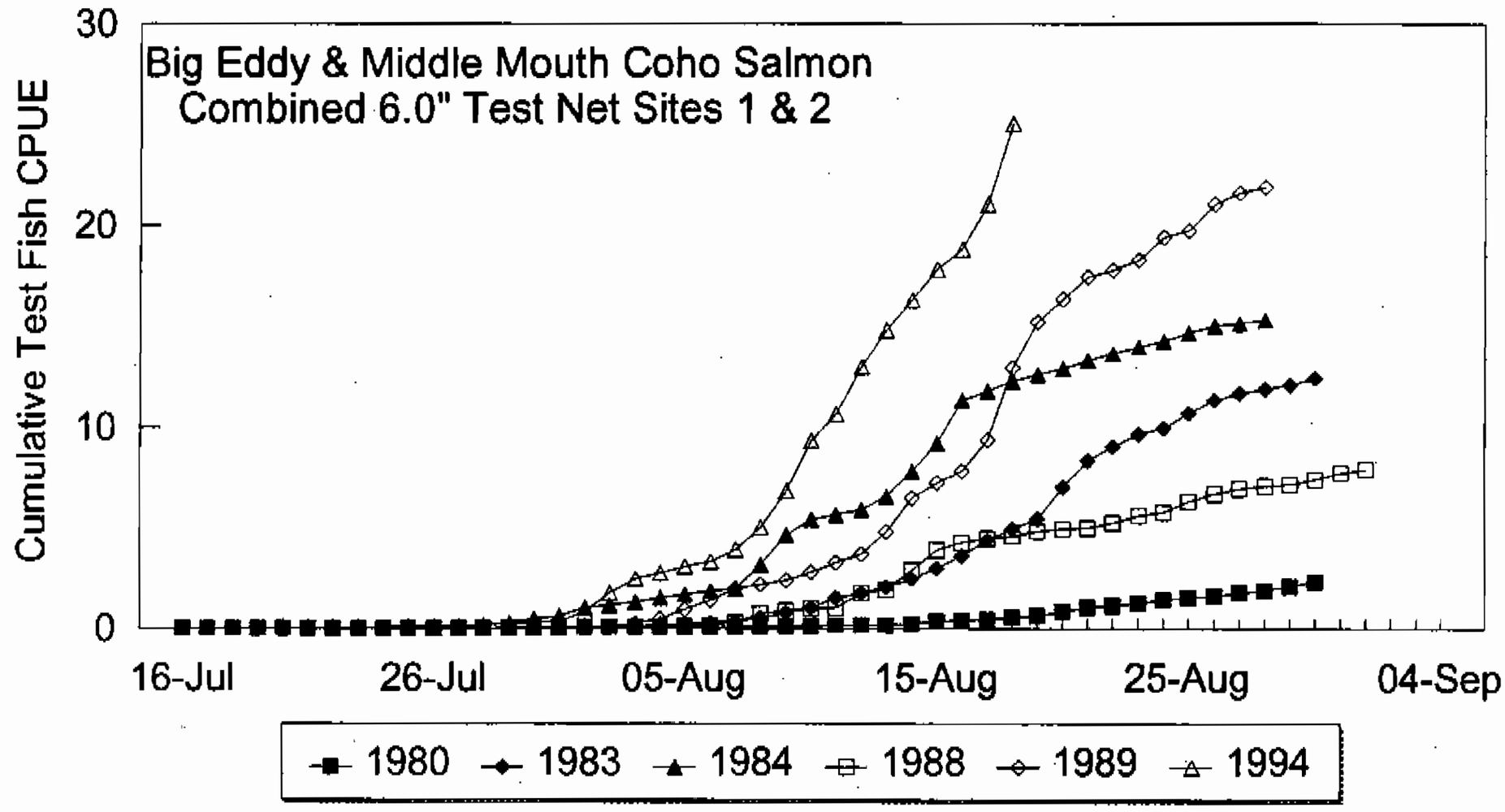
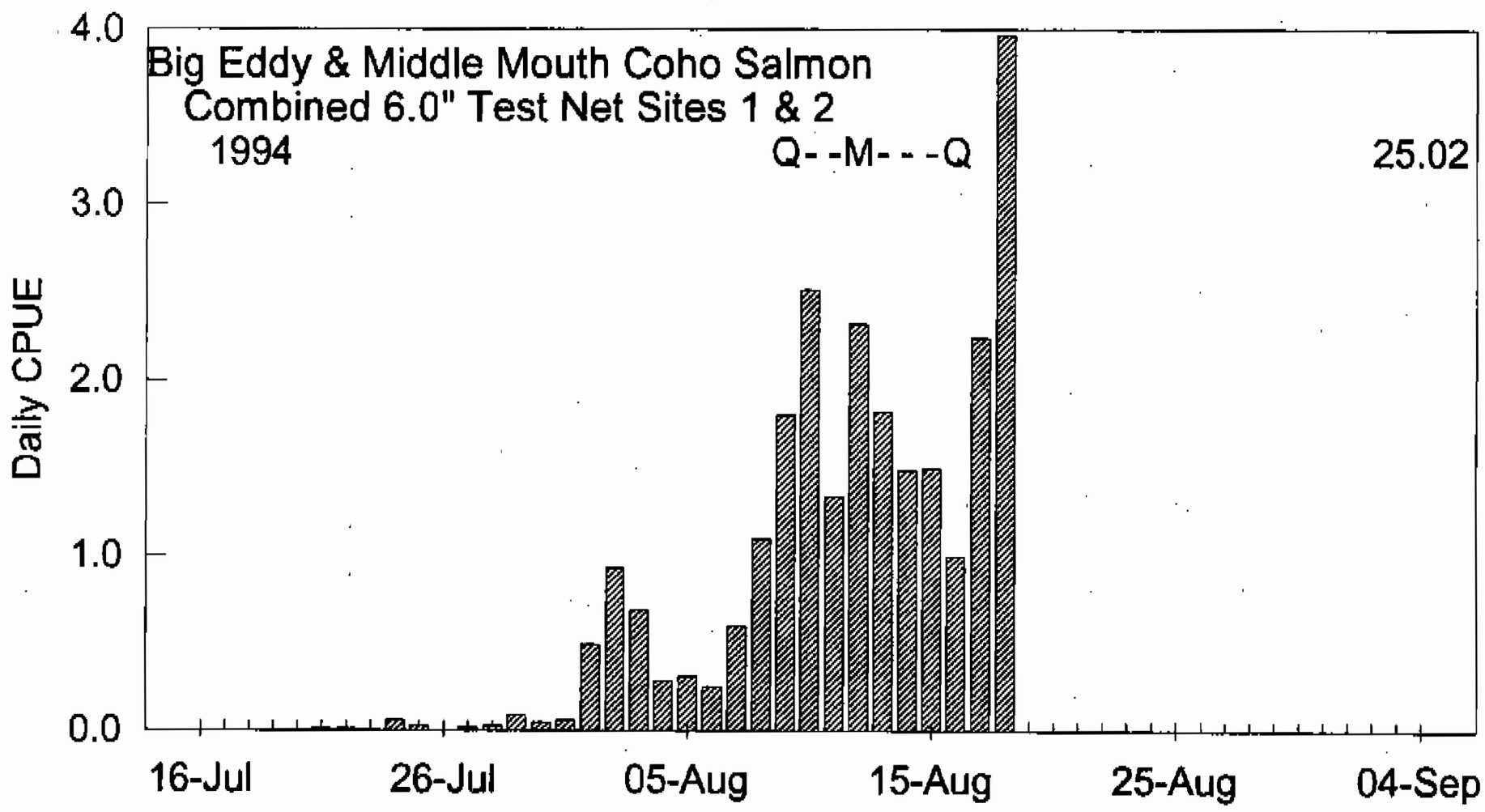
Appendix B.18. Lower Yukon River, Big Eddy and Middle Mouth combined coho salmon setnet (6.0 inch mesh) test fishing cumulative CPUE for selected years (above) and daily CPUE in 1994 (below). Solid bars indicate days during which commercial fishing was allowed. The number above the bars indicate hours open to fishing.





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APPENDIX C

UPPER YUKON AREA SALMON

Appendix C.1. List of emergency orders pertaining to the Districts 4, 5 and 6, salmon fishery (Anvik River Management Area included with Districts 1, 2 and 3 in Appendix B.1.), 1994.

E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-UY-01-94	June 16	Allowed uninterrupted subsistence salmon fishing in Subdistricts 4-B&C from Thursday, June 16, until 24 hours prior to the opening of the commercial salmon fishing season.	Prior to June 15, subsistence fishermen were allowed uninterrupted subsistence fishing time. On June 15, the Subdistricts 4-B&C subsistence fishing schedule was altered by regulation to two 48-hour periods per week. This change normally coincided with the opening of the Subdistrict 4-B&C commercial salmon fishing season; however, since 1990 the opening of the commercial salmon season in Subdistricts 4-B&C have been considerably later than June 15. To allow additional subsistence fishing time, uninterrupted Subdistrict 4-B&C subsistence salmon fishing was allowed until 24 hours prior to the commercial salmon season in these subdistricts.
3-UY-02-94	June 22	Opened the Yukon Area Subdistricts 4-B&C commercial salmon fishing season and established a schedule of two 48-hour commercial salmon fishing periods per week.	Based on department test net catches, department sonar counts at river mile 123, subsistence harvest reports, and commercial catches in Districts 1 and 2, the Yukon River chinook run strength appeared to be near average as forecasted. The department targeted the mid-point of the GHR for chinook salmon and continued to monitor the summer chum salmon run. With early chinook salmon needs being fulfilled and a commercially harvestable surplus of chinook salmon available, a commercial fishery in Subdistricts 4-B&C was warranted.
3-UY-03-94	July 5	Opened the commercial salmon fishing season in Yukon Area Subdistricts 5-AB&C effective 6:00 p.m. Tuesday, July 5, 1994. Also established the first commercial salmon fishing period from 6:00 p.m. Tuesday, July 5, until 6:00 p.m. Wednesday, July 6, a 24-hour period.	The preseason projection for the 1994 Yukon River chinook salmon return was anticipated to be near average. Based on department test net catches and preliminary lower Yukon River commercial catch statistics, the 1994 chinook salmon return appeared to be average or above average. With initial subsistence needs fulfilled and a harvestable surplus of chinook salmon available, a commercial fishery was warranted.

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-UY-04-94	July 7	Opened the Yukon Area Subdistrict 4-A commercial salmon fishing season and established the first commercial salmon fishing period which began at 6:00 p.m. Thursday, July 7, until 6:00 a.m. Friday, July 8, 1994; a 12-hour period.	The preseason projection for the 1994 Yukon River summer chum salmon return was anticipated to be below average to critically low. Based on department test net catches, sonar counts at river mile 123, subsistence harvest reports, and commercial catches in Districts 1 and 2, the Yukon River summer chum salmon run strength appeared to be substantially better than projected. It was projected that the 1994 summer chum salmon run would reach 1.8 to 2.2 million fish and 1.5 million chum salmon were estimated to have entered the Yukon River to date. This level of salmon abundance should allow for a limited summer chum salmon directed commercial fishery in Subdistrict 4-A. Commercial harvests in this subdistrict will be dependent on the allowable commercial surplus above the 1,200,000 needed for escapement and subsistence needs. With initial subsistence needs fulfilled, the opportunity for additional subsistence needs to be fulfilled from the commercial fishery, and a harvestable commercial surplus of summer chum salmon available, a commercial fishery was warranted.
3-UY-05-94	July 6	Terminated the two 48-hour commercial salmon fishing periods in Subdistricts 4-B&C until further notice.	Based on department test net catches, department sonar counts at river mile 123, and commercial and subsistence harvest reports, a commercially harvestable surplus of chinook and summer chum salmon is available in the Yukon River. The department targeted the mid-point to the upper end of the Subdistricts 4-B&C GHR for chinook salmon, and continued to monitor the summer chum salmon run to determine the amount available to the commercial fishery in Subdistricts 4-B&C. So as not to exceed the upper end of the commercial chinook salmon GHR during later summer chum salmon directed commercial periods, the two 48-hour periods per week commercial fishing schedule was terminated.
3-UY-06-94	July 7	Extended the Yukon Area Subdistrict 4-A commercial salmon fishing period an additional 12 hours.	Based on department test net catches and department sonar counts at river mile 123, subsistence harvest reports, and commercial catches in Districts 1 and 2, the Yukon River summer chum salmon run will reach 2.0 to 2.2 million fish. This level of salmon abundance allowed for a limited summer chum salmon directed commercial fishery in the Yukon River.

E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-UY-16-94	July 18	Established the fourth commercial salmon fishing period in Subdistrict 4-A from 6:00 p.m. Monday, July 18, until 6:00 p.m. Tuesday, July 19, 1994, a 24-hour fishing period.	With an estimated total of 56,000 pounds of summer chum salmon roe sold during the first three Subdistrict 4-A commercial openings; the escapement objective met for the Anvik River; the escapement objectives appearing to be met in non-Anvik River systems; a harvestable commercial surplus of summer chum salmon available; and a decrease in fishing effort from previous years, a fourth commercial fishing period of 24 hours in duration was warranted.
3-UY-17-94	July 19	Closed the Yukon Area Subdistrict 4-A commercial salmon fishing season effective 6:00 p.m. Tuesday, July 19, 1994.	With and estimated 63,000 pounds of summer chum salmon roe sold during four Subdistrict 4-A commercial openings, and having reached the inseason targeted harvest level, observing the declining commercial market quality of the roe, and the incidental harvest of fall chum salmon during the recent commercial opening, it was appropriate to close Subdistrict 4-A to commercial fishing.
3-UY-18-94	July 22	Established the second commercial salmon fishing period in Subdistricts 6-AB&C from 6:00 p.m. Friday, July 22, until 12 noon Sunday, July 24, 1994, a 42-hour fishing period.	With chinook salmon escapement objectives met for the Chena and Salcha Rivers; summer chum salmon subsistence needs being met; summer chum salmon escapement counts for the Chena and Salcha Rivers being better than 1993; and a harvestable commercial surplus of summer chum salmon available; a second commercial fishing period was warranted.
3-UY-19-94	July 29	Established the third commercial salmon fishing period in Subdistricts 6-AB&C from 6:00 p.m. Friday, July 29, until 12 noon Sunday, July 31, 1994, a 42-hour fishing period.	With chinook salmon escapement objectives met for the Chena and Salcha Rivers; summer chum salmon subsistence needs being met; summer chum salmon escapement counts for the Chena and Salcha Rivers being substantially better than 1993; and a harvestable commercial surplus of summer chum salmon available; a third commercial fishing period was warranted.
3-UY-20-94	August 5	Established the fourth commercial salmon fishing period in Subdistricts 6-AB&C from 6:00 p.m. Friday, August 5, until 12 noon Sunday, August 7, 1994, a 42-hour fishing period.	With chinook salmon escapement objectives met for the Chena and Salcha Rivers; summer chum salmon subsistence needs being met; summer chum salmon escapement counts for the Chena and Salcha Rivers being substantially better than 1993; and a harvestable commercial surplus of summer chum salmon available; a fourth commercial fishing period was warranted.

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-UY-21-94	August 6	Reduced the subsistence salmon fishing time allowed in Subdistrict 4-A of the Yukon River by establishing a two, 24-hour subsistence salmon fishing period per week closure. Effective 6:00 p.m. Saturday, August 6, salmon could not be taken for subsistence purposes from 6:00 p.m. Saturdays until 6:00 p.m. Sundays, and from 6:00 p.m. Tuesdays until 6:00 p.m. Wednesdays. Subsistence fishing in the tributary waters of Subdistrict 4-A, such as the Koyukuk River, were not affected by this emergency order and remained open seven days per week.	The Yukon River Drainage Fall Chum Salmon Management Plan was adopted by the board at the March 1994 BOF meeting and identified that a minimum return of 600,000 fall chum salmon was needed to allow for normal subsistence fishing schedules and corresponding harvest levels. Based on sonar passage and test net fishing catch rates, the end of the season passage of all chum salmon was estimated to be less than 600,000 fish. Despite Sport Fish closures and no commercial fisheries, the 1994 inseason projection of less than 600,000 fall chum salmon would not support normal subsistence harvest levels and still meet spawning escapement and rebuilding needs throughout the drainage. In order to reduce the subsistence harvest, subsistence fishing time restrictions in the Yukon River drainage were warranted.
3-UY-22-94	August 8	Established the fifth commercial salmon fishing period in Subdistricts 6-AB&C from 6:00 p.m. Monday, August 8, until 12 noon Wednesday, August 10, 1994, a 42-hour fishing period.	With chinook salmon escapement objectives met for the Chena and Salcha Rivers; summer chum salmon subsistence needs being met; summer chum salmon escapement counts for the Chena and Salcha Rivers being substantially better than 1993; aerial escapement objective for the Salcha River achieved; and a harvestable commercial surplus of summer chum salmon available, a fifth commercial fishing period was warranted.
3-UY-23-94	August 13	Reduced the subsistence fishing time allowed in District 4 and in Subdistricts 5-B&C of the Yukon River by establishing 48-hours of subsistence salmon fishing per week. Subsistence fishing in the tributary waters of District 4 downstream of the Koyukuk River were not affected by the emergency order and remained open seven days per week.	Effective 6:00 p.m. Saturday, August 13, subsistence salmon fishing in District 4 and in Subdistrict 5-C would open for two 24-hour periods per week. In District 4 and Subdistrict 5-C, subsistence salmon fishing opened at 6:00 p.m. on Tuesdays until 6:00 p.m. on Wednesdays, and from 6:00 p.m. on Fridays until 6:00 p.m. on Saturdays. The subsistence salmon fishing schedule in Subdistrict 5-B was opened for four 12-hour periods per week beginning at 6:00 p.m. Tuesdays until 6:00 a.m. Wednesdays, from 6:00 p.m. Wednesdays until 6:00 a.m. Thursdays, from 6:00 p.m. Fridays until 6:00 a.m. Saturdays, and from 6:00 p.m. Saturdays until 6:00 a.m. Sundays.

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-UY-24-94	August 13	Effective 6:00 p.m. Saturday, August 13, subsistence gillnet fishermen fishing for whitefish, suckers, and other nonsalmon species in the Yukon River and adjoining sloughs below the Koyukuk River, and within the Yukon River drainage upstream and including the Koyukuk River, were only allowed to fish with gillnets of a maximum of 150 feet in length and 4 inches or less in stretch mesh during subsistence salmon fishing closures. Also, fish wheels could not be used to fish for whitefish and other nonsalmon species during closed subsistence salmon fishing periods.	Regulations adopted by the Board of Fisheries provided the department with emergency order authority to establish the length of a gillnet of a four inch maximum mesh size management option for subsistence gillnets. This restriction provides protection to chum salmon and still allows subsistence fishermen the opportunity to fish for whitefish and resident species which are believed to be in normal abundance.
3-UY-25-94	August 18	Closed personal use salmon fishing in District 6, the Tanana River drainage, effective 6:00 p.m. Thursday, August 18, 1994.	Based on sonar passage and test net fishing catch rates, the current end of the season passage projection was 417,000 fall chum salmon. It appeared that only a very small level of harvestable surplus was available from the 1994 fall chum salmon return for the subsistence fisheries. No commercial fishing for fall chum salmon had been allowed on the Yukon River this season. The projected 1994 fall chum salmon return would not support the normal subsistence harvest and meet escapement objectives. Restrictions and closures to the subsistence fishery were being scheduled. To conserve chum salmon, the Division of Sport Fish issued an E.O. that closed the taking of chum salmon by the recreational fishery throughout the Yukon River drainage effective August 13. The only personal use salmon fishery within the Yukon River drainage occurred in District 6 of the Tanana River drainage. To conserve chum salmon, the personal use salmon fisheries was closed.

E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-UY-26-94	August 18	This emergency order closed subsistence salmon fishing in District 4, except in the tributary waters of District 4 downstream of the Koyukuk River; reduced the subsistence salmon fishing time allowed in Districts 5 and 6 by establishing 24 hours of subsistence salmon fishing per week in Subdistricts 5A&B from 6:00 p.m. Tuesday until 6:00 a.m. Wednsday, and from 6:00 p.m. Wednesday until 6:00 a.m. Thursday, and Subdistricts 5C&D and District 6 from 6:00 p.m. Tuesday until 6:00 p.m. Wednesday; and established two 12-hour "livebox" or "live-chute" equipped fish wheel subsistence fishing periods from 6:00 a.m. to 6:00 p.m. Friday, and from 6:00 a.m. to 6:00 p.m. Saturday.	The Yukon River Drainage Fall Chum Salmon Management Plan was adopted by the board at the March 1994 BOF meeting and identified that a minimum return of 400,000 fall chum salmon were needed to meet escapement and rebuilding needs throughout the drainage. Based on sonar passage and test net fishing catch rates to date, the current end of the season passage projection is 417,000 fall chum salmon; leaving only a small level of harvestable surplus. With lower portions of the Yukon River having had an opportunity to harvest fall chum salmon, and fall chum salmon now available to subsistence fishermen in the upper portion of the drainage, it was appropriate to allow the upper portions of the Yukon River drainage the opportunity to harvest any remaining surplus.
3-UY-27-94	August 29	Opened subsistence salmon fishing in District 4, except for tributary waters downstream of the Koyukuk River, and established a 24 hours per week fishing schedule from 6:00 p.m. Tuesday until 6:00 p.m Wednesday; continued the subsistence salmon fishing allowed in Districts 5 & 6, but, at the request of fishermen, altered the previously announced 24 hours of subsistence salmon fishing per week schedule to 8:00 p.m. Tuesday until 8:00 a.m. Wednesday, and from 8 p.m. Wednesday until 8:00 a.m. Thursday. District 6 remained the same as previously scheduled; continued the previously established two 12-hour "livebox" or "live-chute" equipped fish wheel subsistence fishing periods per week schedule, but, at the request of fishermen, altered the schedule to operation of fish wheels equipped with the above to operate from 8:00 a.m. to 8:00 p.m. Fridays and Saturdays.	Questions in the accuracy of the sonar passage had been raised. During the most recent evaluation of the sonar on August 20-25, it was determined that the transducer aiming on the south bank was not optimum, resulting in missing a percentage of fish passage. The closures of the directed fall chum salmon subsistence fisheries within District 4 were repealed by this emergency order and replaced with a 24-hour-per-week schedule from 6:00 p.m. Tuesday until 6:00 p.m. Wednesday, and, at fishermen's request, altered the previously announced 24-hour subsistence salmon fishing per week schedule in Districts 5 & 6.

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-UY-28-94	September 4	Increased the opportunity for subsistence salmon fishing in Districts 4, 5, and 6 by allowing an additional 24-hours of subsistence salmon fishing per week to the previously established schedule from 6:00 p.m. Sunday until 6:00 p.m. Monday. Also continued the two 12-hour "livebox" or "live-chute" equipped fish wheel subsistence fishing periods.	Questions in the accuracy of the sonar passage had been raised. During the most recent evaluation of the sonar on August 20-25, it was determined that the transducer aiming on the south bank was not optimum, resulting in missing a percentage of fish passage. The sonar passage estimate was considered a minimum number.
3-UY-29-94	September 5	Established normal subsistence salmon fishing schedules by repealing the subsistence salmon fishing restrictions established by Emergency Order 3-UY-27-94. Also opened the personal use salmon fishery by repealing Emergency Order 3-UY-25-94 that closed the fishery.	Questions in the accuracy of the sonar passage had been raised. During the most recent evaluation of the sonar on August 20-25, it was determined that the transducer aiming on the south bank was not optimum, resulting in missing a percentage of fish passage. The sonar passage estimate was considered a minimum number.
3-UY-30-94	September 16	Increased the opportunity for subsistence salmon fishing in the Old Minto Area by allowing a seven-days-per-week subsistence salmon fishing schedule instead of the five-days-per-week schedule.	By regulation, the current subsistence salmon fishing schedule in the Old Minto Area of Subdistrict 6-B is five days a week. At the request of the Tanana Chiefs Conference, Inc. and a representative of the Minto IRA Council, this E.O. increased the subsistence salmon fishing opportunities in the Old Minto Area.
3-UY-31-94	September 19	Opened the Yukon Area Subdistrict 5-D commercial salmon fishing season and established two 48-hour commercial salmon fishing periods in that portion of Subdistrict 5-D upstream of Seventeen Mile Slough from 6:00 p.m. Monday, September 19, until 6:00 p.m. Wednesday, September 21, and from 6:00 p.m. Thursday, September 22, until 6:00 p.m. Saturday, September 24, 1995.	Questions in the accuracy of the sonar passage had been raised. During the most recent evaluation of the sonar on August 20-25, it was determined that the transducer aiming on the south bank was not optimum, resulting in missing a percentage of fish passage. The sonar passage estimate was considered a minimum number, but because of earlier subsistence salmon fishing restrictions, Fort Yukon subsistence fishermen raised concerns over their ability to meet their subsistence salmon needs. Because of these concerns, it was inappropriate to allow a commercial fishery below these subsistence fisheries. This E.O. established a commercial fishery above the village of Fort Yukon.

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E.O. NUMBER	EFFECTIVE DATE	ACTION TAKEN	COMMENTS
3-UY-32-94	September 19	Opened the Yukon Area Subdistricts 6-B&C commercial salmon fishing season and established a 24-hour commercial salmon fishing period. In that portion of Subdistrict 6-B, upstream of a point 3 miles upstream of the mouth of Totchaket Slough and Subdistrict 6-C from 6:00 p.m. Monday, September 19, until 6:00 p.m. Tuesday, September 20.	Because of questions in the accuracy of the sonar passage. during the most recent evaluation of the sonar on August 20-25, it was determined that the transducer aiming on the south bank was not optimum, resulting in missing a percentage of fish passage. The sonar passage estimate was considered a minimum number, but because of earlier subsistence salmon fishing restrictions, Fort Yukon and Minto subsistence fishermen raised concerns over their ability to meet their subsistence salmon needs. Because of these concerns, it was inappropriate to allow a commercial fishery below these subsistence fisheries. This E.O. established a commercial fishery above the Old Minto Area on the Tanana River.
3-UY-33-94	September 19	Altered subsistence salmon fishing times in that portion of Subdistrict 6-B upstream of Old Minto and in Subdistrict 6-C: salmon could be taken by subsistence fishermen from 6:00 p.m. Monday, Sept. 19, until 6:00 p.m. Tuesday, Sept. 20, a 24-hour period; salmon could also be taken by subsistence fishermen from 6:00 p.m. Thursday, Sept. 22, until 12 noon Sunday, Sept. 25, a 66-hour period. The subsistence fishing schedule remained unaltered in Subdistrict 6-A and in that portion of Subdistrict 6-B below and in the Old Minto.	Additional subsistence fishing time was scheduled during the following subsistence-fishing-only period to compensate for the 18 hours of subsistence fishing time lost in the upper portion of Subdistricts 6-B&C because of the time reduction associated with the 24-hour commercial period.
3-UY-34-94	September 26	Extended the Yukon Area Subdistrict 5-D commercial salmon fishing season and established a third 48-hour commercial salmon fishing period. In that portion of Subdistrict 5-D upstream of Seventeen Mile Slough may take salmon from 6:00 p.m. Monday, September 26, until 6:00 p.m. Wednesday, September 28.	Beacause of questions in the accuracy of the sonar passage, during the most recent evaluation of the sonar on August 20-25, it was determined that the transducer aiming on the south bank was not optimum, resulting in missing a percentage of fish passage. Sonar passage estimate was considered a minimum number, but because of earlier subsistence salmon fishing restrictions, Fort Yukon subsistence fishermen raised concerns over their ability to meet their subsistence salmon needs. Because of these concerns, it was inappropriate to allow a commercial fishery below these subsistence fisheries. This E.O. established the third commercial fishery above the village of Fort Yukon and allowed the additional, harvestable surplus of fall chum salmon to be taken.

Appendix C.2. Commercial salmon sales and estimated harvest by statistical area, all gears combined, Upper Yukon Area, 1994. a

BEACH SEINE, PURSE SEINE, SET GILLNET AND FISH WHEEL COMBINED

Statistical Area	Number of Fishermen b	Chinook			Summer Chum			Fall Chum			Coho		
		Number	Roe	Estimated	Number	Roe	Estimated	Number	Roe	Estimated	Number	Roe	Estimated
334-42	12	389	374	539	2,844	6,455	14,803 c	0	0	0	0	0	0
334-43	14	1,827	176	1,897	767	929	2,436 c	0	0	0	0	0	0
334-44	12	0	0	0	0	18,095	35,543 c	0	0	0	0	0	0
334-45	12	0	0	0	0	15,091	30,307 c	0	0	0	0	0	0
334-46	18	0	14	7	0	29,615	65,944 c	0	0	0	0	0	0
334-47 d	20	0	0	0	0	19,532	22,574	0	0	0	0	0	0
Subtotal District 4	*55*	*2,216*	*564*	*2,443*	*3,611*	*89,717*	*171,607*	*0*	*0*	*0*	*0*	*0*	*0*
334-51	0	0	0	0	0	0	0	0	0	0	0	0	0
334-52	9	1,648	10	1,653	133	212	368	0	0	0	0	0	0
334-53	16	1,641	0	1,641	96	0	96	0	0	0	0	0	0
334-54	0	0	0	0	0	0	0	0	0	0	0	0	0
334-55	3	450	0	450	0	0	0	3,630	0	3,630	0	0	0
Subtotal District 5	*28*	*3,739*	*10*	*3,744*	*229*	*212*	*464*	*3,630*	*0*	*3,630*	*0*	*0*	*0*
334-61	2	0	0	0	5,114	0	5,114	0	0	0	0	0	0
334-62	14	1,941	1,513	2,333	13,805	5,643	21,182	0	3,239	4,319	0	5,398	4,184
334-63	4	194	307	273	2,289	2,185	5,138	1	37	50	120	190	267
Subtotal District 6	*20*	*2,135*	*1,820*	*2,606*	*21,208*	*7,828*	*31,434*	*1*	*3,276*	*4,369*	*120*	*5,588*	*4,451*
Total Upper Yukon Area	103	8,090	2,394	8,793	25,048	97,757	203,505	3,631	3,276	7,999	120	5,588	4,451

a Harvest reported in numbers of fish sold in the round and pounds of salmon roe sold. Unless otherwise noted, the estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.

b Number of unique permits fished by statistical area, district or area. Totals may not add up due to transfers between statistical areas.

c The estimated harvest of summer chum salmon for District 4, except Statistical Area 334-47 (Anvik River), is the estimated number of males and females harvested to produce the roe sold.

d Statistical Area 334-47 (Anvik River) is the only location beach seines and purse seine gear is allowed.

Appendix C.3. Commercial set gillnet salmon sales and estimated harvest by statistical area, Upper Yukon Area, 1994. a

SET GILLNET

Statistical Area	Number of Fishermen b	Chinook			Summer Chum			Fall Chum			Coho		
		Number	Roe	Estimated	Number	Roe	Estimated	Number	Roe	Estimated	Number	Roe	Estimated
334-42	1	30	0	30	0	0	0 c	0	0	0	0	0	0
334-43	1	119	77	152	0	3	6 c	0	0	0	0	0	0
334-44	6	0	0	0	0	9,757	19,215 c	0	0	0	0	0	0
334-45	4	0	0	0	0	3,216	6,423 c	0	0	0	0	0	0
334-46	2	0	0	0	0	148	342 c	0	0	0	0	0	0
334-47 d	4	0	0	0	0	1,227	1,404	0	0	0	0	0	0
Subtotal District 4	*15*	*149*	*77*	*182*	*0*	*14,351*	*27,390*	*0*	*0*	*0*	*0*	*0*	*0*
334-51	0	0	0	0	0	0	0	0	0	0	0	0	0
334-52	3	377	0	377	0	45	50	0	0	0	0	0	0
334-53	10	673	0	673	2	0	2	0	0	0	0	0	0
334-54	1	0	0	0	0	0	0	0	0	0	0	0	0
334-55	2	78	0	78	0	0	0	0	0	0	0	0	0
Subtotal District 5	*14*	*1,128*	*0*	*1,128*	*2*	*45*	*52*	*0*	*0*	*0*	*0*	*0*	*0*
334-61	1	0	0	0	609	0	609	0	0	0	0	0	0
334-62	1	0	32	8	2	0	2	0	0	0	0	0	0
334-63	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal District 6	*2*	*0*	*32*	*8*	*611*	*0*	*611*	*0*	*0*	*0*	*0*	*0*	*0*
Total Upper Yukon Area	31	1,277	109	1,318	613	14,396	28,053	0	0	0	0	0	0

a Harvest reported in numbers of fish sold in the round and pounds of salmon roe sold. Unless otherwise noted, the estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.

b Number of unique permits fished by statistical area, district or area. Totals may not add up due to transfers between statistical areas.

c The estimated harvest of summer chum salmon for District 4, except Statistical Area 334-47 (Anvik River), is the estimated number of males and females harvested to produce the roe sold.

d Does not include 15 beach seine fishermen that harvested 14,558 pounds of chum salmon roe with an estimated harvest of 16,828 chum salmon; and 5 purse seine fishermen that harvested 3,747 pounds of chum salmon roe with an estimated harvest of 4,342 chum salmon.

Appendix C.4. Commercial fish wheel salmon sales and estimated harvest by statistical area, Upper Yukon Area, 1994. a

FISH WHEEL

Statistical Area	Number of Fishermen b	Chinook			Summer Chum			Fall Chum			Coho		
		Number	Roe	Estimated	Number	Roe	Estimated	Number	Roe	Estimated	Number	Roe	Estimated
334-42	11	359	374	509	2,844	6,455	14,803 c	0	0	0	0	0	0
334-43	3	1,708	99	1,745	767	926	2,430 c	0	0	0	0	0	0
334-44	6	0	0	0	0	8,338	16,328 c	0	0	0	0	0	0
334-45	8	0	0	0	0	11,875	23,884 c	0	0	0	0	0	0
334-46	16	0	14	7	0	29,467	65,602 c	0	0	0	0	0	0
334-47 d	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal District 4	*41*	*2,067*	*487*	*2,261*	*3,611*	*57,061*	*123,047*	*0*	*0*	*0*	*0*	*0*	*0*
334-51	0	0	0	0	0	0	0	0	0	0	0	0	0
334-52	7	1,271	10	1,276	133	167	318	0	0	0	0	0	0
334-53	6	968	0	968	94	0	94	0	0	0	0	0	0
334-54	0	0	0	0	0	0	0	0	0	0	0	0	0
334-55	3	372	0	372	0	0	0	3,630	0	3,630	0	0	0
Subtotal District 5	*15*	*2,611*	*10*	*2,616*	*227*	*167*	*412*	*3,630*	*0*	*3,630*	*0*	*0*	*0*
334-61	1	0	0	0	4,505	0	4,505	0	0	0	0	0	0
334-62	13	1,941	1,481	2,325	13,803	5,643	21,180	0	3,239	4,319	0	5,398	4,184
334-63	4	194	307	273	2,289	2,185	5,138	1	37	50	120	190	267
Subtotal District 6	*18*	*2,135*	*1,788*	*2,598*	*20,597*	*7,828*	*30,823*	*1*	*3,276*	*4,369*	*120*	*5,588*	*4,451*
Total Upper Yukon Area	74	6,813	2,285	7,475	24,435	65,056	154,282	3,631	3,276	7,999	120	5,588	4,451

a Harvest reported in numbers of fish sold in the round and pounds of salmon roe sold. Unless otherwise noted, the estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.

b Number of unique permits fished by statistical area, district or area. Totals may not add up due to transfers between statistical areas.

c The estimated harvest of summer chum salmon for District 4, except Statistical Area 334-47 (Anvik River), is the estimated number of males and females harvested to produce the roe sold.

d Does not include 15 beach seine fishermen that harvested 14,558 pounds of chum salmon roe with an estimated harvest of 16,828 chum salmon; and 5 purse seine fishermen that harvested 3,747 pounds of chum salmon roe with an estimated harvest of 4,342 chum salmon.

Appendix C.5. Commercial chinook salmon sales and estimated harvest by statistical area, Subdistrict 4-A, Upper Yukon Area, 1974 - 1994.

	334-41			334-44			334-45			334-46			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	0	-	0	-	-	-	-	-	-	-	-	-	0	-	0
1975	15	-	15	-	-	-	-	-	-	-	-	-	15	-	15
1976	44	-	44	-	-	-	-	-	-	-	-	-	44	-	44
1977	317	-	317	-	-	-	-	-	-	-	-	-	317	-	317
1978	183	-	183	-	-	-	-	-	-	-	-	-	183	-	183
1979	785	-	785	-	-	-	-	-	-	-	-	-	785	-	785
1980	352	-	352	-	-	-	-	-	-	-	-	-	352	-	352
1981	106	-	106	-	-	-	-	-	-	-	-	-	106	-	106
1982	78	-	78	-	-	-	-	-	-	-	-	-	78	-	78
1983	0	-	0	-	-	-	-	-	-	-	-	-	0	-	0
1984	2	-	2	-	-	-	-	-	-	-	-	-	2	-	2
1985	0	-	0	-	-	-	-	-	-	-	-	-	0	-	0
1986	11	-	11	-	-	-	-	-	-	-	-	-	11	-	11
1987	91	-	91	-	-	-	-	-	-	-	-	-	91	-	91
1988	19	-	19	-	-	-	-	-	-	-	-	-	19	-	19
1989	59	-	59	-	-	-	-	-	-	-	-	-	59	-	59
1990 d	-	-	-	0	8	2	0	0	0	52	0	52	52	8	54
1991	-	-	-	0	67	35	0	7	4	69	88	114	69	162	153
1992	-	-	-	0	0	0	0	15	9	0	71	41	0	86	50
1993	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
1994	-	-	-	0	0	0	0	0	0	0	14	7	0	14	7
Previous Five Year Average 1989-1993	-	-	-	-	-	-	-	-	-	-	-	-	36	-	63

a Harvest reported in numbers of fish sold in the round.
b Pounds of salmon roe sold. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.
c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Since 1990, the estimated number of females that produce the roe sold is based on a District 4 sampling program that estimated average roe weight per female by statistical area, by period and gear type.
d In 1990, Subdistrict 4-A (Statistical Area 334-41) was subdivided into Statistical Areas 334-44, 334-45 and 334-46.

Appendix C.6. Commercial chinook salmon sales and estimated harvest by statistical area, Subdistricts 4-B and 4-C, Upper Yukon Area, 1974 - 1994.

	334-42			334-43			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	685	-	685	-	-	-	685	-	685
1975	374	-	374	-	-	-	374	-	374
1976	365	-	365	-	-	-	365	-	365
1977	668	-	668	-	-	-	668	-	668
1978	425	-	425	-	-	-	425	-	425
1979 d	370	-	370	834	-	834	1,204	-	1,204
1980	549	-	549	620	-	620	1,169	-	1,169
1981	867	-	867	374	-	374	1,241	-	1,241
1982	497	-	497	512	-	512	1,009	-	1,009
1983	382	-	382	219	-	219	601	-	601
1984	272	-	272	687	-	687	959	-	959
1985	318	-	318	346	-	346	664	-	664
1986	100	-	100	391	-	391	491	-	491
1987	999	-	999	434	-	434	1,433	-	1,433
1988	1,599	-	1,599	1,541	-	1,541	3,140	-	3,140
1989	696	-	696	2,035	-	2,035	2,731	-	2,731
1990	784	0	784	2,700	0	2,700	3,484	0	3,484
1991	916	386	1,113	1,461	1,674	2,316	2,377	2,060	3,429
1992	623	482	818	1,028	1,705	1,526	1,651	2,187	2,344
1993	190	279	269	1,159	422	1,308	1,349	701	1,577
1994	389	374	539	1,827	176	1,897	2,216	550	2,436
Previous Five Year Average 1989-1993	642	-	736	1,677	-	1,977	2,318	-	2,713

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Since 1990, the estimated number of females that produce the roe sold is based on a District 4 sampling program that estimated average roe weight per female by statistical area, by period and gear type.

d In 1979, Statistical Area 334-42 was subdivided into Statistical Areas 334-42 and 334-43.

Appendix C.7. Commercial chinook salmon sales and estimated harvest by statistical area, Subdistricts 5-A, 5-B and 5-C, Upper Yukon Area, 1974 - 1994.

	334-51			334-52			334-53			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	2,284	-	2,284	379	-	379	-	-	-	2,663	-	2,663
1975	2,602	-	2,602	270	-	270	-	-	-	2,872	-	2,872
1976	2,843	-	2,843	308	-	308	-	-	-	3,151	-	3,151
1977	4,013	-	4,013	149	-	149	-	-	-	4,162	-	4,162
1978	2,838	-	2,838	241	-	241	-	-	-	3,079	-	3,079
1979	3,389	-	3,389	0	-	0	-	-	-	3,389	-	3,389
1980	4,554	-	4,554	337	-	337	-	-	-	4,891	-	4,891
1981 d	97	-	97	3,051	-	3,051	2,477	-	2,477	5,625	-	5,625
1982	61	-	61	2,352	-	2,352	2,277	-	2,277	4,690	-	4,690
1983	0	-	0	632	-	632	2,738	-	2,738	3,370	-	3,370
1984	128	-	128	1,589	-	1,589	1,568	-	1,568	3,285	-	3,285
1985	0	-	0	1,142	-	1,142	1,842	-	1,842	2,984	-	2,984
1986	0	-	0	1,552	-	1,552	875	-	875	2,427	-	2,427
1987	0	-	0	1,183	-	1,183	1,356	-	1,356	2,539	-	2,539
1988	0	-	0	1,498	-	1,498	1,477	-	1,477	2,975	-	2,975
1989	31	-	31	1,411	-	1,411	1,459	-	1,459	2,901	-	2,901
1990	0	0	0	1,630	47	1,642	1,180	0	1,180	2,810	47	2,822
1991	56	0	56	1,724	62	1,740	1,476	0	1,476	3,256	62	3,272
1992	0	0	0	1,276	7	1,279	2,119	0	2,119	3,395	7	3,398
1993	0	0	0	1,124	0	1,124	1,484	0	1,484	2,608	0	2,608
1994	0	0	0	1,648	10	1,653	1,641	0	1,641	3,289	10	3,294
Previous Five Year Average 1989-1993	17	-	17	1,433	23	1,439	1,544	-	1,544	2,994	-	3,000

a Harvest reported in numbers of fish sold in the round. Does not include estimates of illegal sales in 1987 of 653 chinook salmon.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (Statistical Area 334-52) were subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54). In 1990, Subdistrict 5-D (Statistical Area 334-54) was further subdivided into Statistical Areas 334-54 and 334-55.

Appendix C.8. Commercial chinook salmon sales and estimated harvest by statistical area, Subdistrict 5-D, Upper Yukon Area, 1974 - 1994.

	334-54			334-55			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	-	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	-
1981 d	749	-	749	-	-	-	749	-	749
1982	695	-	695	-	-	-	695	-	695
1983	236	-	236	-	-	-	236	-	236
1984	384	-	384	-	-	-	384	-	384
1985	434	-	434	-	-	-	434	-	434
1986	306	-	306	-	-	-	306	-	306
1987	566	-	566	-	-	-	566	-	566
1988	461	-	461	-	-	-	461	-	461
1989	385	-	385	-	-	-	385	-	385
1990 e	194	0	194	349	0	349	543	0	543
1991	192	0	192	362	0	362	554	0	554
1992	0	0	0	457	0	457	457	0	457
1993	0	0	0	400	0	400	400	0	400
1994	0	0	0	450	0	450	450	0	450
Previous Five Year Average 1989-1993	154	-	154	-	-	-	468	-	468

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (Statistical Area 334-52) was subdivided to include two additional subdistricts, Subdistrict 5-C (statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54).

e In 1990, Subdistrict 5-D (Statistical Area 334-54) was subdivided into two statistical areas, (Statistical Areas 334-54 and 334-55).

Appendix C.9. Commercial chinook salmon sales and estimated harvest by statistical area, District 6, Upper Yukon Area, 1974 - 1994.

	334-61			334-62			334-63			**Total**		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	111	-	111	1,102	-	1,102	260	-	260	1,473	-	1,473
1975	77	-	77	153	-	153	270	-	270	500	-	500
1976	490	-	490	320	-	320	292	-	292	1,102	-	1,102
1977	405	-	405	365	-	365	238	-	238	1,008	-	1,008
1978	34	-	34	58	-	58	543	-	543	635	-	635
1979	102	-	102	336	-	336	334	-	334	772	-	772
1980	92	-	92	1,588	-	1,588	267	-	267	1,947	-	1,947
1981	438	-	438	366	-	366	183	-	183	987	-	987
1982	414	-	414	309	-	309	258	-	258	981	-	981
1983	249	-	249	364	-	364	298	-	298	911	-	911
1984	0	-	0	375	-	375	492	-	492	867	-	867
1985	15	-	15	560	-	560	567	-	567	1,142	-	1,142
1986	0	-	0	597	-	597	353	-	353	950	-	950
1987	0	-	0	600	-	600	602	-	602	1,202	-	1,202
1988	305	-	305	253	-	253	204	-	204	762	-	762
1989	809	-	809	614	-	614	318	-	318	1,741	-	1,741
1990	326	0	326	1,243	1,354	1,565	188	322	265	1,757	1,676	2,156
1991	117	0	117	450	1,365	791	119	180	164	686	1,545	1,072
1992	39	0	39	371	679	510	162	205	204	572	884	753
1993	57	0	57	810	1,213	1,116	246	100	272	1,113	1,313	1,445
1994	0	0	0	1,941	1,513	2,333	194	307	273	2,135	1,820	2,606
Previous Five Year Average 1989-1993	270	-	270	698	-	919	207	-	245	1,174	-	1,433

a Harvest reported in numbers of fish sold in the round. Does not include estimates of illegal sales in 1987 of 2,136 chinook salmon.
b Pounds of salmon roe sold. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.
c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Since 1990, the estimated number of females that produce the roe sold is based on a District 6 sampling program that estimated average roe weight per female by period.

Appendix C.10. Commercial summer chum salmon sales and estimated harvest by statistical area, Subdistrict 4-A, Upper Yukon Area, 1974 - 1994.

	334-41					334-44					334-45				
		Roe Expansion					Roe Expansion					Roe Expansion			
Year	Number a	Roe b	Males c	Females d	Estimated Harvest e	Number a	Roe b	Males c	Females d	Estimated Harvest e	Number a	Roe b	Males c	Females d	Estimated Harvest e
1974	f	0	0	0	f	-	-	-	-	-	-	-	-	-	-
1975	f	0	0	0	f	-	-	-	-	-	-	-	-	-	-
1976	f	0	0	0	f	-	-	-	-	-	-	-	-	-	-
1977	f	0	0	0	f	-	-	-	-	-	-	-	-	-	-
1978	f	16,920	0	16,920	f	-	-	-	-	-	-	-	-	-	-
1979	f	35,117	0	35,117	f	-	-	-	-	-	-	-	-	-	-
1980	f	119,957	0	119,957	f	-	-	-	-	-	-	-	-	-	-
1981	f	160,757	123,266 g	160,757	f	-	-	-	-	-	-	-	-	-	-
1982	1,032	137,611	95,788	137,611	234,431	-	-	-	-	-	-	-	-	-	-
1983	3,407	130,013	90,740	130,013	224,160	-	-	-	-	-	-	-	-	-	-
1984	51	148,519	98,962	148,519	247,532	-	-	-	-	-	-	-	-	-	-
1985	5,130	222,149	157,062	222,149	384,341	-	-	-	-	-	-	-	-	-	-
1986	0	236,856	172,222	236,856	409,078	-	-	-	-	-	-	-	-	-	-
1987	29,314	110,977	51,379	110,977	191,670	-	-	-	-	-	-	-	-	-	-
1988	19,070	230,276	167,594	256,718 h	443,382	-	-	-	-	-	-	-	-	-	-
1989	14,397	270,039	170,322	301,383 i	486,102	-	-	-	-	-	-	-	-	-	-
1990 j	-	-	-	-	-	0	27,628	24,484	31,409	55,893	427	28,181	24,153	32,166	56,746
1991	-	-	-	-	-	88	39,281	37,164	47,574	84,826	79	43,087	42,445	53,401	95,925
1992	-	-	-	-	-	0	20,444	13,192	22,383	35,575	0	35,312	26,463	40,142	66,605
1993	-	-	-	-	-	0	6,234	4,308	7,334	11,642	0	6,081	4,246	7,230	11,476
1994 k	-	-	-	-	-	0	18,095	12,937	22,606	35,543	0	15,091	11,031	19,276	30,307
Previous Five Year Average 1989-1993	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- Continued -

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	334-46					334-47					Total				
		Roe Expansion					Roe Expansion					Roe Expansion			
Year	Number a	Roe b	Males c	Females d	Estimated Harvest e	Number a	Roe b	Males c	Females d	Estimated Harvest e	Number a	Roe b	Males c	Females d	Estimated Harvest e
1974	-	-	-	-	-	-	-	-	-	-	f	0	0	0	f
1975	-	-	-	-	-	-	-	-	-	-	f	0	0	0	f
1976	-	-	-	-	-	-	-	-	-	-	f	0	0	0	f
1977	-	-	-	-	-	-	-	-	-	-	f	0	0	0	f
1978	-	-	-	-	-	-	-	-	-	-	f	16,920	0	16,920	f
1979	-	-	-	-	-	-	-	-	-	-	f	35,117	0	35,117	f
1980	-	-	-	-	-	-	-	-	-	-	f	119,957	0	119,957	f
1981	-	-	-	-	-	-	-	-	-	-	f	160,757	123,266 g	160,757	f
1982	-	-	-	-	-	-	-	-	-	-	1,032	137,611	95,786	137,611	234,431
1983	-	-	-	-	-	-	-	-	-	-	3,407	130,013	90,740	130,013	224,160
1984	-	-	-	-	-	-	-	-	-	-	51	148,519	98,962	148,519	247,532
1985	-	-	-	-	-	-	-	-	-	-	5,130	222,149	157,062	222,149	384,341
1986	-	-	-	-	-	-	-	-	-	-	0	236,856	172,222	236,856	409,078
1987	-	-	-	-	-	-	-	-	-	-	29,314	110,977	51,379	110,977	191,670
1988	-	-	-	-	-	-	-	-	-	-	19,070	230,276	167,594	256,718 h	443,382
1989	-	-	-	-	-	-	-	-	-	-	14,397	270,039	170,322	301,383 i	486,102
1990 j	10,750	39,732	29,490	44,742	84,982	-	-	-	-	-	11,177	95,541	78,127	108,316	197,621
1991	5,122	45,863	47,563	56,819	109,504	-	-	-	-	-	5,289	128,231	127,172	157,794	290,255
1992	0	43,945	32,502	49,489	81,991	-	-	-	-	-	0	99,701	72,158	112,013	184,171
1993	0	8,170	5,579	9,499	15,078	-	-	-	-	-	0	20,485	14,133	24,063	38,196
1994 k	0	29,615	28,825	37,119	65,944	0	19,532	0	22,574	22,574	0	82,333	52,794	101,574	154,368
Previous Five Year Average 1989-1993	-	-	-	-	-	-	-	-	-	-	6,173	122,799	92,382	140,714	239,269

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of chinook salmon roe. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated number of unsold males that were caught and not sold while harvesting the females that produced the roe sold. Prior to 1981, it was assumed that all males were sold in the round. Since 1981, all fish sold in the round are assumed to be males. For the years 1981 through 1985, the estimated percentage of males in the harvest was based on percentage of males observed in the department Stink Creek test fish wheel catches (1981 - .434; 1982 - .413; 1983-.420; 1984-.400; and 1985 - .422). For the years 1986 through 1988, the estimated number of males in the harvest was based on the average percentage of males observed in the Stink Creek test fishery for the years 1981 through 1985 (average of .421). For the year 1989, the estimated percentage of males in the harvest was .38. Since 1990, the estimated number of unsold males that produce the roe sold is based on a District 4 sampling program that estimated average percent males in the harvest by statistical area, by period and gear type.

d The estimated number of females to produce the roe sold. Unless otherwise noted, prior to 1991, the roe expansion assumes 1.0 pound of roe per female. Since 1991, the estimated number of females that produce the roe sold is based on a District 4 sampling program that estimated average roe weight per female by statistical area, by period and gear type.

e Estimated harvest is the number of fish sold in the round plus the estimated number of females and the estimated number of unsold males harvested to produce the roe sold.

f Information not available.

g Assumes no males were sold in the round.

h Roe expansion assumes .897 pound of roe per female.

i Roe expansion assumes .896 pound of roe per female.

j In 1990, Subdistrict 4-A (Statistical Area 334-41) was subdivided into Statistical Areas 334-45 and 334-46.

k In 1994, Statistical Area 334-47 was included in Subdistrict 4-A and it represents the Anvik River Fisheries Management Area.

Appendix C.11. Commercial summer chum salmon sales and estimated harvest by statistical area, Subdistricts 4-B and 4-C, Upper Yukon Area, 1974-1994.

	334-42					334-43					Total				
		Roe Expansion					Roe Expansion					Roe Expansion			
Year	Number a	Roe b	Females c	Males d	Estimated Harvest e	Number a	Roe b	Females c	Males d	Estimated Harvest e	Number a	Roe b	Females c	Males d	Estimated Harvest e
1974	g	0	0	-	g	-	-	-	-	-	g	0	0	0	g
1975	g	0	0	-	g	-	-	-	-	-	g	0	0	0	g
1976	g	0	0	-	g	-	-	-	-	-	g	0	0	0	g
1977	g	0	0	-	g	-	-	-	-	-	g	0	0	0	g
1978	g	0	0	-	g	-	-	-	-	-	g	0	0	0	g
1979 h	g	200	200	-	g	g	0	0	-	g	g	200	200	g	g
1980	g	14,385	14,385	-	g	g	1,482	1,482	-	g	g	15,867	15,867	g	g
1981	g	23,677	23,677	-	g	g	2,598	2,598	-	g	g	26,275	26,275	g	g
1982	1,059	12,550	12,550	-	13,609	1,556	1,120	1,120	-	2,676	2,615	13,670	13,670	7,003	23,288
1983	3,265	17,549	17,549	-	20,814	0	563	563	-	563	3,265	18,112	18,112	9,851	31,228
1984	659	15,184	15,184	-	15,843	299	3,139	3,139	-	3,438	958	18,323	18,323	11,257	30,538
1985	1,785	19,306	19,306	-	21,091	5,092	5,630	5,630	-	10,722	6,877	24,936	24,936	11,329	43,142
1986	241	29,169	29,169	-	29,410	59	3,520	3,520	-	3,579	300	32,689	32,689	23,468	56,457
1987	593	9,956	9,956	-	10,549	84	541	541	-	625	677	10,497	10,497	6,956	18,130
1988	4,592	21,766	24,265 i	-	26,358	389	2,484	2,769 i	-	3,158	4,981	24,250	27,034 i	14,677	46,692
1989	2,940	9,915	11,066 k	-	12,855	1,217	3,351	3,740 k	-	4,957	4,157	13,266	14,806 k	5,179	24,142
1990	1,091	6,600	7,799	-	8,890	96	3,582	4,434	-	4,530	1,187	10,182	12,233	11,509	24,929
1991	1,092	8,282	8,996	-	10,088	0	719	781	-	781	1,092	9,001	9,777	8,520	19,389
1992	1,363	9,010	9,616	-	10,979	1,296	2,098	2,902	-	4,198	2,659	11,108	12,518	12,048	27,225
1993	0	1,851	2,134	-	4,445	27	111	140	-	316	27	1,962	2,274	2,460	4,761
1994	2,844	6,455	-	-	14,803	767	929	-	-	2,436	3,611	7,384	-	-	17,239
Previous Five Year Average 1989-19	1,297	7,132	7,922		9,451	527	1,972	2,399		2,956	1,824	9,104	10,322	7,943	20,089

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of chinook salmon roe. Since 1990, efforts were made to seperate chinook salmon roe from the summer chum salmon sold.

c The estimated number of females to produce the roe sold. Unless otherwise noted, prior to 1991, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of female that produce the roe sold is based on a District 4 sampling program that estimated average roe weight per female by statistical area, by period and gear type.

d Estimated number of males caught but not sold. Total males caught but not sold calculated the same as for District 4-A (using sex ratio and sales in the round assumed to be male chum salmon).

e The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold.

f The total estimated harvest is the fish sold in the round plus estimated number of females harvested to produce roe sold plus the estimated number of males caught but not sold.

g Information not available by statistical area.

h In 1979, Statistical Area 334-42 was subdivided into Statistical Areas 334-42 and 334-43.

i Roe expansion assumes .897 pound of roe per female.

k Roe expansion assumes .896 pound of roe per female.

Appendix C.12. Commercial summer chum salmon sales and estimated harvest by statistical area, Subdistricts 5-A, 5-B and 5-C, Upper Yukon Area, 1974 - 1994.

	334-51			334-52			334-53			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	d	0	d	d	0	d	-	-	-	6,831	0	6,831
1975	d	0	d	d	0	d	-	-	-	12,997	0	12,997
1976	d	0	d	d	0	d	-	-	-	774	0	774
1977	d	0	d	d	0	d	-	-	-	1,274	0	1,274
1978	d	605	d	d	0	d	-	-	-	4,892	605	5,497
1979	d	1,009	d	d	0	d	-	-	-	8,608	1,009	9,617
1980	d	0	d	d	0	d	-	-	-	456	0	456
1981 e	d	0	d	d	49	d	d	0	d	1,236	49	1,285
1982	d	21	d	d	0	d	d	0	d	213	21	234
1983	0	242	242	37	269	306	5	1,345	1,350	42	1,856	1,898
1984	50	0	50	578	47	625	12	0	12	640	47	687
1985	0	0	0	700	0	700	0	0	0	700	0	700
1986	0	0	0	682	0	682	8	0	8	690	0	690
1987	0	0	0	362	44	406	0	0	0	362	44	406
1988	0	0	0	717	337	1,054	5	26	31	722	363	1,085
1989	0	0	0	112	204	316	1	169	170	113	373	486
1990	0	0	0	0	225	250	5	350	394	5	575	644
1991	0	0	0	0	28	31	4	0	4	4	28	35
1992	0	0	0	30	295	358	72	0	72	102	295	430
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	133	212	368	96	0	96	229	212	464
Previous Five Year Average 1989-1993	0	0	0	28	150	191	16	104	128	45	254	319

a Harvest reported in numbers of fish sold in the round.
b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of chinook salmon roe. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.
c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.
d Information not available.
e In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (statistical Area 334-52) were subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54). In 1990, Subdistrict 5-D (Statistical Area 333-54) was further subdivided into Statistical Areas 334-54 and 334-55.

Appendix C.13. Commercial summer chum salmon sales and estimated harvest by statistical area, Subdistrict 5-D, Upper Yukon Area, 1974 - 1994.

	334-54			334-55			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	-	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	-
1981 d	e	0	e	-	-	-	e	0	e
1982	e	0	e	-	-	-	e	0	e
1983	0	0	0	-	-	-	0	0	0
1984	5	0	5	-	-	-	5	0	5
1985	0	0	0	-	-	-	0	0	0
1986	0	0	0	-	-	-	0	0	0
1987	0	0	0	-	-	-	0	0	0
1988	0	0	0	-	-	-	0	0	0
1989	41	0	41	-	-	-	41	0	41
1990 f	6	19	27	0	0	0	6	19	27
1991	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
Previous Five Year Average 1989-1993	9	4	14	-	-	-	9	4	14

a Harvest reported in numbers of fish sold in the round.
b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of chinook salmon roe. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.
c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.
d In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (Statistical Area 334-52) were subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54).
e Information not available.
f In 1990, Subdistrict 5-D (Statistical Area 334-54) was subdivided into two statistical areas, (Statistical Areas 334-54 and 334-55).

Appendix C.14. Commercial summer chum salmon sales and estimated harvest by statistical area, District 6, Upper Yukon Area, 1974 - 1994.

	334-61			334-62			334-63			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number	Roe b	Estimated
1974	d	0	d	d	0	d	d	0	d	13,318	0	13,318
1975	d	0	d	d	0	d	d	0	d	14,782	0	14,782
1976	d	0	d	d	0	d	d	0	d	6,617	0	6,617
1977	d	0	d	d	0	d	d	0	d	4,317	0	4,317
1978	d	1,468	d	d	6,116	d	d	652	d	34,814	8,236	43,050
1979	d	d	d	d	d	d	d	d	d	18,491	3,891	22,382
1980	d	0	d	d	2,272	d	d	1,010	d	35,855	3,282	39,137
1981	d	0	d	d	925	d	d	1,062	d	32,477	1,987	34,464
1982	d	0	d	d	1,027	d	d	490	d	21,597	1,517	23,114
1983	1,923	0	1,923	21,646	18	21,664	740	0	740	24,309	18	24,327
1984	3,769	0	3,769	42,231	152	42,383	10,249	183	10,432	56,249	335	56,584
1985	809	0	809	51,132	142	51,274	14,972	1,398	16,370	66,913	1,540	68,453
1986	4,697	0	4,697	31,647	1,711	33,358	14,139	435	14,574	50,483	2,146	52,629
1987	2,167	0	2,167	6,882	349	7,231	1,561	101	1,662	10,610	450	11,060
1988	7,978	71	8,049	24,911	1,165	26,076	7,240	410	7,650	40,129	1,646	41,775
1989	16,483	61	16,544	18,960	4,277	23,237	6,672	533	7,205	42,115	4,871	46,986
1990	2,862	12	2,877	6,028	1,637	8,011	2,237 e	1,410	3,945	11,127 e	3,059	14,833
1991	4,742	0	4,742	10,100	2,653	13,304	3,355	2,063	5,846	18,197	4,716	23,892
1992	1,327	0	1,327	3,446	1,684	5,409	256	208	492	5,029	1,892	7,228
1993	1,156	0	1,156	1,603	315	2,009	282	200	540	3,041	515	3,705
1994	5,114	0	5,114	13,805	5,643	21,182	2,289	2,185	5,138	21,208	7,828	31,434
Previous Five Year Average 1989-1993	5,314	15	5,329	8,027	2,113	10,394	2,560	883	3,606	15,902	2,948	27,709

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of chinook salmon roe. Since 1990, efforts were made to separate chinook salmon roe from the summer chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 6 sampling program that estimated average roe weight per female by period.

d Information not available.

e Does not include 1,233 female summer chum salmon sold with roe extracted and roe sold separately. Females are accounted for in the roe expansion.

Appendix C.15. Commercial fall chum salmon sales and estimated harvest by statistical area, District 4, Upper Yukon Area, 1974 - 1994.

	334-41			334-42			334-43			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	0	0	0	9,213	0	9,213	-	-	-	9,213	0	9,213
1975	d	0	d	d	0	d	-	-	-	13,666	0	13,666
1976	462	0	462	1,280	0	1,280	-	-	-	1,742	0	1,742
1977 e	d	0	d	d	0	d	-	-	-	13,980	0	13,980
1978	-	-	-	d	1,721	d	-	-	-	10,988	1,721	12,709
1979 f	-	-	-	d	3,199	d	d	0	d	48,899	3,199	52,098
1980	-	-	-	d	1,789	d	d	2,558	d	27,978	4,347	32,325
1981	-	-	-	d	1,311	d	d	0	d	12,082	1,311	13,393
1982	-	-	-	958	20	978	2,936	147	3,083	3,894	167	4,061
1983	-	-	-	3,681	1,591	5,272	801	372	1,173	4,482	1,963	6,445
1984	-	-	-	2,961	1,222	4,183	4,664	993	5,657	7,625	2,215	9,840
1985	-	-	-	14,468	891	15,359	9,984	1,634	11,618	24,452	2,525	26,977
1986	-	-	-	2,045	0	2,045	0	0	0	2,045	0	2,045
1987	-	-	-	0	0	0	0	0	0	0	0	0
1988	-	-	-	10,157	703	10,860	5,505	718	6,223	15,662	1,421	17,083
1989	-	-	-	9,819	2,023	11,842	1,957	1,384	3,341	11,776	3,407	15,183
1990	-	-	-	3,406	1,680	5,676	1,583	671	2,490	4,989	2,351	8,166
1991	-	-	-	2,998	490	3,718	739	1,126	2,373	3,737	1,616	6,091
1992	-	-	-	0	0	0	0	0	0	0	0	0
1993	-	-	-	0	0	0	0	0	0	0	0	0
1994	-	-	-	0	0	0	0	0	0	0	0	0
Previous Five Year Average 1989-1993	-	-	-	3,245	839	4,247	856	636	1,641	4,100	1,475	5,888

a Harvest reported in numbers of fish sold in the round.
b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of coho salmon roe. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.
c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 4 sampling program that estimated average roe weight per female by period, by statistical area and gear type.
d Information not available.
e In 1977, was the last year Subdistrict 4-A (Statistical Area 334-41), by regulation, was allowed a late season.
f In 1979, Statistical Area 334-42 was subdivided into Statistical Areas 334-42 and 334-43.

Appendix C.16. Commercial fall chum salmon sales and estimated harvest by statistical area, Subdistricts 5-A, 5-B and 5-C, Upper Yukon area, 1974-1994.

	334-51			334-52			334-53			Unapportioned		Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a		Number a	Roe b	Estimated c
1974	23,551	0	23,551	0	0	0	-	-	-	0		23,551	0	23,551
1975	d	0	d	d	0	d	-	-	-	27,212		27,212	0	27,212
1976	5,319	0	5,319	68	0	68	-	-	-	0		5,387	0	5,387
1977	d	0	d	d	0	d	-	-	-	25,730		25,730	0	25,730
1978	d	3,946	d	d	1,274	d	-	-	-	21,016	f	21,016	5,220	26,236
1979	d	8,097	d	d	0	d	-	-	-	47,459	f	47,459	8,097	55,556
1980	d	605	d	d	0	d	-	-	-	41,771	f	41,771	605	42,376
1981 e	d	178	d	d	6,760	d	d	17	d	86,620	f	86,620	6,955	93,575
1982	d	0	d	d	23	d	d	19	d	13,593	f	13,593	42	13,593
1983	3,143	0	3,143	19,771	0	19,771	17,987	0	17,987	0		40,901	0	40,901
1984	1,415	0	1,415	10,329	0	10,329	9,403	0	9,403	0		21,147	0	21,147
1985	565	0	565	9,263	0	9,263	13,332	0	13,332	0		23,160	0	23,160
1986	1,332	0	1,332	11,907	395	12,302	7,471	0	7,471	0		20,710	395	21,105
1987	0	0	0	0	0	0	0	0	0	0		0	0	0
1988	0	0	0	9,684	0	9,684	4,533	0	4,533	0		14,217	0	14,217
1989	372	60	432	9,937	3,327	13,264	4,987	209	5,196	0		15,296	3,596	18,892
1990	0	0	0	5,169	945	6,243	0	0	0	0		5,169	945	6,243
1991	0	0	0	14,968	3,625	19,727	9,173	0	9,173	0		24,141	3,625	28,900
1992	0	0	0	0	0	0	0	0	0	0		0	0	0
1993	0	0	0	0	0	0	0	0	0	0		0	0	0
1994	0	0	0	0	0	0	0	0	0	0		0	0	0
Previous Five Year Average 1989-1993	74	12	86	6,015	1,579	7,847	2,832	42	2,874	0		8,921	1,633	10,807

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of coho salmon roe. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d Information not available by statistical area.

e In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (statistical Area 334-52) was subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D Statistical Area (Statistical Area 334-54) and Subdistrict 5-D (Statistical Area 334-54) was further subdivided into Statistical Areas 334-54 and 334-55.

f Includes harvest in Subdistrict 5-D.

Appendix C.17. Commercial fall chum salmon sales and estimated harvest by statistical area, Subdistricts 5-D, Upper Yukon Area, 1974 - 1994.

	334-54			334-55			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	-	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	-
1981 d	e	0	e	-	-	-	e	0	e
1982	e	0	e	-	-	-	e	0	e
1983	3,092	0	3,092	-	-	-	3,092	0	3,092
1984	2,913	57	2,970	-	-	-	2,913	57	2,970
1985	2,178	0	2,178	-	-	-	2,178	0	2,178
1986	1,343	0	1,343	-	-	-	1,343	0	1,343
1987	0	0	0	-	-	-	0	0	0
1988	2,772	0	2,772	-	-	-	2,772	0	2,772
1989	2,919	393	3,312	-	-	-	2,919	393	3,312
1990 f	1,758	113	1,882	851	0	851	2,609	113	2,733
1991	1,846	0	1,846	1,368	0	1,368	3,214	0	3,214
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	3,630	-	3,630	3,630	0	3,630
Previous Five Year Average 1989-1993	1,305	101	1,408	-	-	-	1,748	101	1,852

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of coho salmon roe. Since 1990, efforts were made to separate coho salmon roe from fall chum salmon roe.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pounds of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (Statistical Area 334-52) was subdivided to include two additional subdistricts, Subistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54).

e Information not available.

f In 1990, Subdistrict 5-D (Statistical Area 334-54) was subdivided into two statistical areas, (Statistical Areas 334-54 and 334-55).

Appendix C.18. Commercial fall chum salmon sales and estimated harvest by statistical area, District 6, Upper Yukon Area, 1974 - 1994.

	334-61			334-62			334-63			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	d	d	d	d	d	d	d	d	d	26,884	0	26,884
1975	d	0	d	d	0	d	d	0	d	18,692	0	18,692
1976	d	0	d	d	0	d	d	0	d	17,948	0	17,948
1977	d	0	d	d	0	d	d	0	d	18,673	0	18,673
1978	4,704	1,826	6,530	8,036	1,680	9,716	519	181	700	13,259	3,687	16,946
1979	d	d	d	d	d	d	d	d	d	34,185	7,170	41,355
1980	d	0	d	d	53	d	d	15	d	19,452	68	19,520
1981	d	0	d	d	2,784	d	d	235	d	25,989	3,019	29,008
1982	706	0	706	4,586	596	5,182	1,528	0	1,528	6,820	596	7,416
1983	3,526	0	3,526	23,096	3,009	26,105	7,467	92	7,559	34,089	3,101	37,190
1984	5,617	0	5,617	11,809	0	11,809	3,138	56	3,194	20,564	56	20,620
1985	1,462	0	1,462	34,663	0	34,663	6,227	0	6,227	42,352	0	42,352
1986	176	0	176	1,345	182	1,527	371	0	371	1,892	182	2,074
1987	0	0	0	0	0	0	0	0	0	0	0	0
1988	4,500	0	4,500	13,617	1,035	14,652	3,727	771	4,498	21,844	1,806	23,650
1989	14,870	173	15,043	25,650	7,050	32,700	8,570	130	8,700	49,090	7,353	56,443
1990	9,254	0	9,254	28,932	6,617	35,776	4,996 e	918	5,945	43,182 e	7,535	50,975
1991	3,278	0	3,278	21,834	12,253	35,904	3,083	1,901	5,266	28,195	14,154	44,448
1992	0	0	0	13,713	1,816	15,852	2,008	990	3,170	15,721	2,806	19,022
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	3,239	4,319	1	37	50	1	3,276	4,369
Previous Five Year Average 1989-1993	5,480	35	5,515	18,026	5,547	24,046	3,731	788	4,616	27,238	6,370	34,178

a Harvest reported in numbers of fish sold in the round.
b Pounds of salmon roe sold. Prior to 1990, roe production may include small amounts of coho salmon roe. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.
c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pounds of roe per female. Since 1990, the estimated number of females that produce the for sold is based on a District 6 sampling program that estimated average roe weight per female by period.
d Information not available.
e Does not include 884 female fall chum salmon sold with roe extracted and roe sold separately. Females are accounted for in the roe expansion.

Appendix C.19. Commercial coho salmon sales and estimated harvest by statistical area, District 4, Upper Yukon Area, 1974 - 1994.

	334-41			334-42			334-43			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	0	-	0	0	-	0	-	-	-	0	-	0
1975	0	-	0	0	-	0	-	-	-	0	-	0
1976	0	-	0	0	-	0	-	-	-	0	-	0
1977 d	0	-	0	0	-	0	-	-	-	0	-	0
1978	-	-	-	32	-	32	-	-	-	32	-	32
1979 e	-	-	-	155	-	155	0	-	0	155	-	155
1980	-	-	-	f	-	f	f	-	f	30	-	30
1981	-	-	-	0	-	0	0	-	0	0	-	0
1982	-	-	-	0	-	0	15	-	15	15	-	15
1983	-	-	-	0	-	0	0	-	0	0	-	0
1984	-	-	-	412	-	412	683	-	683	1,095	-	1,095
1985	-	-	-	153	-	153	785	-	785	938	-	938
1986	-	-	-	0	-	0	0	-	0	0	-	0
1987	-	-	-	0	-	0	0	-	0	0	-	0
1988	-	-	-	2	-	2	0	-	0	2	-	2
1989	-	-	-	0	-	0	3	-	3	3	-	3
1990	-	-	-	0	0	0	0	0	0	0	0	0
1991	-	-	-	11	0	11	3	0	3	14	0	14
1992	-	-	-	0	0	0	0	0	0	0	0	0
1993	-	-	-	0	0	0	0	0	0	0	0	0
1994	-	-	-	0	0	0	0	0	0	0	0	0
Previous Five Year Average 1989-1993	-	-	-	2	-	2	1	-	1	3	-	3

a Harvest reported in numbers of fish sold in the round.
b Pounds of salmon roe sold. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.
c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 4 sampling program that estimated average roe weight per female by period, by statistical area and gear type.
d 1977 was the last year Subdistrict 4-A (Statistical Area 334-41). by regulation, was allowed a late season.
e In 1979, Statistical Area 334-42 was subdivided into Statistical Areas 334-42 and 334-43.
f Information not available.

Appendix C.20. Commercial coho salmon sales and estimated harvest by statistical area, Subdistricts 5-A, 5-B and 5-C, Upper Yukon Area, 1974 - 1994.

	334-51			334-52			334-53			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	d	-	d	d	-	d	d	-	d	1,409	-	1,409
1975	5	-	5	0	-	0	-	-	-	5	-	5
1976	0	-	0	0	-	0	-	-	-	0	-	0
1977	2	-	2	0	-	0	-	-	-	2	-	2
1978	1	-	1	0	-	0	-	-	-	1	-	1
1979	0	-	0	0	-	0	-	-	-	0	-	0
1980	0	-	0	0	-	0	-	-	-	0	-	0
1981 e	0	-	0	0	-	0	0	-	0	0	-	0
1982	0	-	0	0	-	0	0	-	0	0	-	0
1983	0	-	0	0	-	0	0	-	0	0	-	0
1984	0	-	0	0	-	0	0	-	0	0	-	0
1985	0	-	0	0	-	0	0	-	0	0	-	0
1986	0	-	0	0	-	0	0	-	0	0	-	0
1987	0	-	0	0	-	0	0	-	0	0	-	0
1988	0	-	0	0	-	0	0	-	0	0	-	0
1989	0	-	0	0	-	0	84	-	84	84	-	84
1990	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0
Previous Five Year Average 1989-1993	0	-	0	0	-	0	17	-	17	17	-	17

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d Information not available.

e In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (Statistical Area 334-52) were subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54). In 1990, Subdistrict 5-D (Statistical Area 334-54) was further subdivided into Statistical Areas 334-54 and 334-55.

Appendix C.21. Commercial coho salmon sales and estimated harvest by statistical area, Subdistrict 5-D, Upper Yukon Area, 1974 - 1994.

	334-54			334-55			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	-	-	-	-	-	-	-	-	-
1975	-	-	-	-	-	-	-	-	-
1976	-	-	-	-	-	-	-	-	-
1977	-	-	-	-	-	-	-	-	-
1978	-	-	-	-	-	-	-	-	-
1979	-	-	-	-	-	-	-	-	-
1980	-	-	-	-	-	-	-	-	-
1981 d	0	-	0	-	-	-	0	-	0
1982	0	-	0	-	-	-	0	-	0
1983	0	-	0	-	-	-	0	-	0
1984	0	-	0	-	-	-	0	-	0
1985	0	-	0	-	-	-	0	-	0
1986	0	-	0	-	-	-	0	-	0
1987	0	-	0	-	-	-	0	-	0
1988	8	-	8	-	-	-	8	-	8
1989	0	-	0	-	-	-	0	-	0
1990 e	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0
Previous Five Year Average 1989-1993	0	-	0	-	-	-	0	-	0

a Harvest reported in numbers of fish sold in the round.

b Pounds of salmon roe sold. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.

c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to 1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 5 sampling program that estimated average roe weight per female by period.

d In 1981, Subdistrict 5-A (Statistical Area 334-51) and Subdistrict 5-B (Statistical Area 334-52) were subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-52) was subdivided to include two additional subdistricts, Subdistrict 5-C (Statistical Area 334-53) and Subdistrict 5-D (Statistical Area 334-54).

e In 1990, Subdistrict 5-D (Statistical Area 334-54) was subdivided into two statistical areas, (Statistical Areas 334-54 and 334-55).

Appendix C.22. Commercial coho salmon sales and estimated harvest by statistical area, District 6, Upper Yukon Area, 1974 - 1994.

	334-61			334-62			334-63			Total		
Year	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c	Number a	Roe b	Estimated c
1974	d	-	d	d	-	d	d	-	d	1,479	-	1,479
1975	0	-	0	0	-	0	53	-	53	53	-	53
1976	d	-	d	d	-	d	d	-	d	1,103	-	1,103
1977	252	-	252	766	-	766	266	-	266	1,284	-	1,284
1978	521	-	521	2,450	-	2,450	95	-	95	3,066	-	3,066
1979	465	-	465	2,059	-	2,059	267	-	267	2,791	-	2,791
1980	423	-	423	632	-	632	171	-	171	1,226	-	1,226
1981	535	-	535	1,335	-	1,335	414	-	414	2,284	-	2,284
1982	1,004	-	1,004	6,449	-	6,449	327	-	327	7,780	-	7,780
1983	745	-	745	5,048	-	5,048	375	-	375	6,168	-	6,168
1984	1,608	-	1,608	5,360	-	5,360	720	-	720	7,688	-	7,688
1985	432	-	432	9,628	-	9,628	1,702	-	1,702	11,762	-	11,762
1986	30	-	30	370	-	370	41	-	41	441	-	441
1987	0	-	0	0	-	0	0	-	0	0	-	0
1988	1,240	-	1,240	10,372	-	10,372	2,360	-	2,360	13,972	-	13,972
1989	2,818	-	2,818	10,181	-	10,181	3,085	-	3,085	16,084	-	16,084
1990	3,173	0	3,173	7,096	3,559	9,951	1,280 e	483	1,680	11,549	4,042	14,804
1991	0	0	0	4,572	3,737	7,620	1,696	562	2,154	6,268	4,299	9,774
1992	0	0	0	5,731	1,267	6,800	825	413	1,179	6,556	1,680	7,979
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	5,398	4,184	120	190	267	120	5,588	4,451
Previous Five Year Average 1989-1993	1,198	-	1,198	5,516	-	6,910	1,377	-	1,620	8,091	-	9,728

a Harvest reported in numbers of fish sold in the round.
b Pounds of salmon roe sold. Since 1990, efforts were made to separate coho salmon roe from the fall chum salmon roe sold.
c The estimated harvest is the fish sold in the round plus the estimated number of females to produce the roe sold. Prior to1990, the roe expansion assumed 1.0 pound of roe per female. Since 1990, the estimated number of females that produce the roe sold is based on a District 6 sampling program that estimated average roe weight per female by period.
d Information not available.
e Does not include 438 female coho salmon sold with roe extracted and roe sold separately. Females are accounted for in the roe expansion calculation.

Appendix C.23. Value of commercial salmon fishery to Upper Yukon Area fishermen, 1977-1994.

Year	Chinook			Summer Chum			Fall Chum			Coho			Total
	$/lb	$/lb Roe	Value	$/lb	$/lb Roe	Value	$/lb	$/lb Roe	Value	$/lb	$/lb Roe	Value	Value
1977	1.37		148,766	0.27	2.66	306,481	0.22		102,170	0.27		2,251	559,668
1978	0.87		66,472	0.24	N/A	655,738	0.25		103,091	0.24		6,105	831,406
1979	1.00		124,230	0.25	3.00	444,924	0.29		347,814	0.25		6,599	923,567
1980	0.85		113,662	0.23	2.50	627,249	0.27		198,088	0.29		2,374	941,373
1981	1.00		206,380	0.20	3.00	699,876	0.35		356,805	0.35		4,568	1,267,629
1982	1.02		162,699	0.18	2.75	452,837	0.28		53,258	0.37		18,786	687,580
1983	1.08		105,584	0.16	1.66	281,883	0.19		128,950	0.31		11,472	527,889
1984	0.95		102,354	0.23	1.78	382,776	0.26		103,417	0.24		12,823	601,370
1985	0.86		82,644	0.23	1.94	593,801	0.25		178,125	0.33		26,797	881,367
1986	0.89		73,363	0.22	2.08	634,091	0.14		30,309	0.21		556	738,319
1987	0.79		136,196	0.19	2.22	323,611	-		0	-		0	459,807
1988	1.04		142,284	0.23	4.33	1,213,991	0.32		151,300	0.37		34,116	1,541,691
1989	0.84		108,178	0.24	4.41	1,377,117	0.28		223,996	0.35		33,959	1,743,250
1990	0.72		105,295	0.11	4.41	506,611	0.34		174,965	0.34		37,026	823,897
1991	0.70	2.92	97,140	0.18	4.21	627,177	0.23	3.56	157,831	0.30	2.50	21,556	903,704
1992	0.91	2.82	168,999	0.30	4.53	525,204	0.39	4.50	54,161	0.39	2.18	19,529	767,893
1993	1.06	5.52	113,217	0.35	8.53	203,762	-	-	0	-	-	0	316,979
1994	0.92	3.11	124,270	0.20	3.77	396,685	0.16	1.50	8,517	0.48	1.50	8,739	538,211
5 Yr Avg 1989-1993	0.85		118,566	0.24	5.22	647,974	0.25		122,191	0.28		22,414	911,145

Appendix C.24. Summary of test fishing projects conducted in the Upper Yukon Area, 1994.

a. Location:

1. North Bank Tanana Test Fish Wheel was located on the north bank of the Yukon River approximately one mile upstream from the village of Tanana and was funded by Bering Sea Fisherman's Association.

2. South Bank Tanana Test Fish Wheel was located on the south bank of the Yukon River approximately 7 miles downstream from the mouth of the Tanana River, near the village of Tanana and was funded by Bering Sea Fisherman's Association.

3. Manley Test Fish Wheel was located on the north bank of the Tanana River approximately 7 miles downstream from the village of Manley Hot Springs.

4. Nenana Test Fish Wheel was located on the north bank of the Tanana River approximately 15 miles downstream from the village of Nenana.

b. Objective: To provide inseason salmon run timing and species composition information past the test fish wheel site. Test fish wheel catches also provide limited information on the relative strength of the salmon run.

c. Results:

1. The North Bank Tanana Test Fish Wheel operated from August 15 through September 13, 1994. During the operation of the test fish wheel, it was estimated that a total of 12,400 fall chum salmon and 35 coho salmon were caught.

2. The South Bank Tanana Test Fish Wheel operated from August 18 through September 30, 1994. During the operation of the test fish wheel, it was estimated that a total of 17,144 fall chum salmon and 2,192 coho salmon were caught.

3. The Manley Test Fish Wheel operated from August 21 through September 30, 1994. During the operation of the test fish wheel, it was estimated that a total of 14,868 fall chum salmon and 1,637 coho salmon were caught.

4. The Nenana Test Fish Wheel operated from August 1, through September 22, 1994. During the operation of the test fish wheel, it was estimated that a total of 890 summer chum, 3,831 fall chum and 1,272 coho salmon were caught.

APPENDIX D

YUKON RIVER SALMON SUBSISTENCE AND PERSONAL USE

Appendix D.1. Estimated Yukon River chinook salmon subsistence harvest in numbers of fish by village, 1983-1994. a

Village	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1984-1988 Average	1989-1993 Average
Sheldon Pt.	1,021	802	143	592	1,173	302	165	756	445	388	561	606	602	463
Alakanuk	1,582	1,028	517	1,027	1,180	738	820	871	1,044	623	2,562	1,045	898	1,184
Emmonak	2,436	2,099	1,382	1,754	2,518	1,786	1,598	1,873	1,311	2,336	4,372	2,384	1,908	2,298
Kotlik	1,224	695	1,029	1,902	2,407	1,112	1,982	3,119	3,125	1,794	2,913	2,505	1,429	2,587
Retained From Commercial											15	114		
Mouth to Anuk River Subtotal	6,263	4,624	3,071	5,275	7,278	3,938	4,565	6,619	5,925	5,141	10,423	6,654	4,837	6,535
Mt. Village	1,875	1,217	672	1,367	2,252	740	2,001	1,792	1,171	1,249	3,217	1,511	1,250	1,886
Pitkas Pt./St. Marys	2,432	2,663	778	1,717	2,457	1,378	2,184	2,476	2,488	2,604	3,043	3,191	1,799	2,559
Pilot Station	2,703	1,116	896	1,452	2,593	674	1,498	3,786	2,681	1,818	2,661	1,977	1,346	2,489
Marshall	2,055	2,176	1,122	1,947	2,564	1,031	1,464	1,492	1,277	1,403	2,592	2,277	1,768	1,646
Retained From Commercial											3	78		
Anuk River to Owl Slough Subtotal	9,065	7,172	3,468	6,483	9,866	3,823	7,147	9,546	7,617	7,074	11,516	9,034	6,162	8,580
Russian Mission	2,634	1,938	974	1,747	2,036	1,850	2,367	1,694	1,349	1,282	3,273	1,793	1,709	1,993
Holy Cross	2,276	2,456	2,368	2,505	2,625	2,593	2,379	2,337	1,649	3,491	3,191	4,040	2,509	2,609
Retained From Commercial											10	25		
Owl Slough to Bonasila R. Subtotal	4,910	4,394	3,342	4,252	4,661	4,443	4,746	4,031	2,998	4,773	6,474	5,858	4,218	4,604
Lower Yukon Total	20,238	16,190	9,881	16,010	21,805	12,204	16,458	20,196	16,540	16,988	28,413	21,546	15,218	19,719
Anvik	744	576	405	959	428	211	418	481	619	389	663	424	516	514
Grayling	951	879	903	1,837	1,322	1,571	1,082	144	874	1,074	1,045	1,843	1,302	844
Kaltag	652	487	669	1,080	1,117	1,168	1,306	2,244	1,866	1,084	1,260	1,653	904	1,552
Nulato	1,135	966	1,063	1,835	1,573	1,986	2,079	2,788	2,500	1,596	1,660	1,735	1,485	2,125
Koyukuk	966	1,009	194	569	609	711	1,003	876	885	510	853	589	618	825
Galena	1,477	1,226	1,329	1,046	1,270	1,982	1,374	3,134	2,574	1,870	1,732	1,834	1,371	2,137
Ruby/Kokrines	2,346	1,107	1,657	1,263	927	1,402	1,016	811	971	498	3,263	1,539	1,271	1,312
Retained From Commercial											978	203		
Bonasila R. to Illinois Cr. Subtotal	8,271	6,250	6,220	8,589	7,246	9,031	8,278	10,478	10,269	7,021	11,454	9,820	7,467	9,504
Shageluk *Innoko River Subtotal*				53	47	104	32	62	189	218	128	291	68	126
Huslia	459	169	144	82	182	89	177	198	198	751	232	239	133	311
Hughes	318	856	778	296	177	29	181	90	146	29	88	107	427	107
Allakaket/Alatna c	706	375	283	563	309	366	438	356	451	437	139	364	379	364
Bettles							0	0	16	53	1	0		14
Koyukuk River Subtotal	1,483	1,400	1,205	941	668	484	796	644	811	1,270	460	710	940	796
District 4 Subtotal	9,754	7,650	7,425	9,583	7,961	9,619	9,106	11,184	11,289	8,509	12,042	10,821	8,448	10,426

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Appendix D.1. (page 2 of 2)

Village	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1984-1988 Average	1989-1993 Average
Tanana	5,547	2,682	1,248	1,672	4,021	3,537	3,008	2,284	2,483	2,477	3,362	2,999	2,632	2,723
Rampart	1,070	876	1,302	1,700	2,815	3,145	3,177	1,481	988	2,802	1,956	1,354	1,968	2,081
Fairbanks (permits) d e	2,672	2,499	1,865	1,762	613	0	200	420	982	1,394	1,514	1,920	1,348	902
Stevens Village	2,531	2,177	2,763	2,839	2,076	2,845	3,101	1,295	2,035	1,887	1,754	2,814	2,540	2,014
Birch Creek						0	0		196	44	0	119	0	60
Beaver	220	553	506	708	466	940	1,694	721	713	1,564	1,557	850	635	1,250
Ft. Yukon	1,887	3,608	2,900	3,083	3,950	2,245	4,898	4,051	5,585	4,122	6,361	4,727	3,157	5,003
Circle/Central (permits) e	648	545	2,259	2,233	1,614	2,034	1,785	1,951	1,871	1,752	955	1,617	1,737	1,663
Eagle (permits) e	2,183	1,998	2,247	1,915	1,988	2,333	2,385	1,742	1,193	1,040	753	1,234	2,096	1,423
Other (permits) e, f								615	374	571	437	602		499
Retained From Commercial											746	868		
Illinois Cr. to U.S. Can. Border Subtotal	16,758	14,938	15,090	15,912	17,543	17,079	20,248	14,560	16,420	17,653	19,395	19,104	16,112	17,655
Venetie	22	51		32	13	121	88	29	9	35	2,716	524	54	575
Chalkyitsik				0	0	0	0	0	0	3	0	0	0	1
Chandalar/Black Rivers Subtotal	22	51		32	13	121	88	29	9	38	2,716	524	54	576
District 5 Subtotal	16,780	14,989	15,090	15,944	17,556	17,200	20,336	14,589	16,429	17,691	22,111	19,628	16,166	18,231
Manley g	990	282	744	621	40	572	992	1,169	401	551	238	480	452	670
Minto g	275	440	1,386	350	374	466	366	100	134	142	468	316	603	242
Nenana g	966	2,556	4,919	2,093	3,151	3,846	1,188	1,265	1,599	1,267	693	759	3,313	1,202
Fairbanks (permits) e, h	475	321	326	637	531	0	0	64	378	402	273	775	363	227
Other g, i						0	0	0	3	76	0	40	0	16
Retained From Commercial											1,037	198		
Tanana River Subtotal	2,706	3,599	7,375	3,701	4,096	4,884	2,546	2,618	2,515	2,438	2,709	2,568	4,731	2,565
Upper Yukon Total	29,240	26,238	29,890	29,228	29,613	31,703	31,988	28,391 k	30,233 k	28,638 k	36,862 k	33,017 k	29,334	31,222
Alaska Total	49,478	42,428	39,771	45,238	51,418	43,907	48,446	48,587	46,773	45,626	65,275	54,563	44,552	50,941

a 1961-1981 data available from 1981 Yukon Area Annual Management Report. Beginning in 1988 subsistence salmon harvest estimates have been generated from a stratified random sample of village households.
b The village was not surveyed, harvest estimates were calculated from calendar and post card replies.
c Alatna combined with Allakaket.
d Catches by Fairbanks subsistence permit holders that fished in District 5 near the Yukon River bridge crossing.
e Salmon catches expanded for permits not returned and household interviews (1981-1989). Beginning in 1990, reported harvest is from returned permits only.
f Other permit holders that fished in District 5 but did not reside in the villages listed.
g Permits required beginning in 1988 for Subdistricts 6-A and 6-B. In 1988 and 1989, permit and household interview data were expanded. Beginning in 1990, reported harvest is from returned permits only.
h Catches by Fairbanks subsistence permit holders that fished in the Tanana River. Permits required beginning in 1964 for the Tannana River upstream of Wood River.
i Other permit holders that fished in District 6 but did not reside in the villages listed.
k Estimated chinook salmon carcasses available for subsistence use as a by product of commercial roe sales are documented in total utilization tables.

Appendix D.2. Estimated Yukon River summer chum salmon subsistence harvest in numbers of fish by village, 1983-1994. a

Village	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1984-1988 Average	1989-1993 Average
Sheldon Pt.	1,690	2,701	1,717	4,755	2,460	2,589	4,314	1,458	2,226	1,415	2,362	1,941	2,844	2,355
Alakanuk	9,347	10,095	7,702	11,280	9,913	6,992	12,108	7,265	8,058	9,951	8,935	5,947	9,196	9,263
Emmonak	8,401	10,053	8,742	12,618	11,177	10,528	22,985	15,215	8,401	12,296	15,568	13,060	10,624	14,893
Kotlik	5,241	5,610	6,188	10,201	7,210	8,825	13,437	13,061	9,105	9,577	7,121	11,197	7,607	10,460
Retained From Commercial											299	12,608		
Mouth to Anuk River Subtotal	24,679	28,459	24,349	38,854	30,760	28,934	52,844	36,999	27,790	33,239	34,285	44,753	30,271	36,972
Mt. Village	10,183	8,665	6,745	11,468	12,456	9,248	15,869	9,950	4,743	7,864	10,505	3,938	9,716	9,786
Pitkas Pt./St. Marys	8,569	11,019	7,556	14,986	12,402	10,501	13,124	9,515	9,284	8,555	7,406	11,231	11,293	9,577
Pilot Station	4,683	3,236	3,133	7,870	4,279	4,242	6,783	6,698	4,634	6,236	5,641	5,450	4,552	5,998
Marshall	3,961	4,076	2,361	7,172	3,997	4,796	3,927	2,290	2,042	2,076	1,745	2,288	4,480	2,416
Retained From Commercial											120	5,745		
Anuk River to Owl Slough Subtotal	27,396	26,996	19,795	41,496	33,134	28,787	39,703	28,453	20,703	24,731	25,417	28,652	30,042	27,777
Russian Mission	1,576	2,227	1,817	3,136	2,283	2,794	2,229	2,146	837	3,331	1,838	801	2,451	2,076
Holy Cross	3,033	5,124	1,870	2,392	1,878	3,036	1,753	857	1,028	1,001	1,517	1,479	2,860	1,231
Retained From Commercial											21	59		
Owl Slough to Bonasila R. Subtotal	4,609	7,351	3,687	5,528	4,161	5,830	3,982	3,003	1,865	4,332	3,376	2,339	5,311	3,307
Lower Yukon Total	56,684	62,806	47,831	85,878	68,055	63,551	96,529	68,455	50,358	62,302	63,078	75,744	65,624	68,056
Anvik	20,592	22,433	24,950	41,581	28,887	12,607	410	2,032	876	1,142	1,735	907	26,092	1,239
Grayling	22,958	28,060	23,937	35,284	21,264	22,634	14,570	1,430	8,094	3,605	1,137	1,418	26,236	5,767
Kaltag	27,674	1,800	26,965	24,667	28,550	3,592	632	6,956	2,287	1,204	1,116	3,683	17,115	2,439
Nulato	11,130	232	16,315	10,349	16,299	10,201	200	502	159	889	15	975	10,679	353
Koyukuk	14,440	5,215	9,666	6,250	9,718	284	381	283	2,326	1,130	230	2,039	6,227	870
Galena	5,789	19,480	16,212	6,618	11,776	7,413	6,216	1,760	3,493	3,232	2,477	1,198	12,300	3,436
Ruby/Kokrines	8,804	4,282	13,556	7,883	8,786	4,010	1,844	351	1,352	2,420	1,459	4,586	7,703	1,485
Retained From Commercial														
Bonasila R. to Illinois Cr. Subtotal	111,387	81,502	131,601	132,632	125,280	60,741	24,253	13,314	18,587	13,622	8,169	14,806	106,351	15,589
Shageluk *Innoko River Subtotal*				6,710	8,015	8,779	8,842	6,518	3,680	5,267	4,183	6,212	7,835	5,698
Huslia	18,588	12,550	13,430	10,516	11,042	14,895	10,005	7,368	7,857	13,670	8,343	6,014	12,487	9,449
Hughes	1,905	14,744	12,788	7,280	4,369	2,445	3,687	509	1,257	1,625	827	1581	8,325	1,581
Allakaket/Alatna b	4,165	4,169	7,564	8,934	8,700	8,524	2,915	5,319	7,413	6,858	2,703	5,058	7,578	5,042
Bettles							75	24	155	37	34	45		65
Koyukuk River Subtotal	24,658	31,463	33,782	26,730	24,111	25,864	16,682	13,220	16,682	22,190	11,907	12,698	28,390	16,136
District 4 Subtotal	136,045	112,965	165,383	166,072	157,406	95,384	49,777	33,052	38,949	41,079	24,259	33,716	142,576	37,423

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Appendix D.2. (page 2 of 2)

Village	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1984-1988 Average	1989-1993 Average
Tanana	5,552	10,620	11,148	11,646	10,876	13,972	7,756	5,905	2,779	4,553	4,245	7,022	11,652	5,048
Rampart	3,698	7,650	5,133	1,450	2,434	3,383	28	58	20	4,494	1,489	559	4,010	1,218
Fairbanks (permits) c, d	2,194	4,065	2,027	1,382	1,493	0	0	25	1,068	706	465	360	1,793	453
Stevens Village	5,051	5,952	3,046	3,116	1,446	865	2,375	1,671	1,385	460	653	459	2,885	1,309
Beaver	100	167	263	0	657	214	124	108	2,355	12	134	655	260	547
Ft. Yukon	7,142	3,032	4,410	3,264	1,187	7,717	1,760	145	11,974	1,700	3,830	2,043	3,922	3,882
Circle/Central (permits) d	73	0	930	459	2,078	871	361	1,267	51	356	85	106	868	424
Eagle (permits) d	133	49	39	516	417	1,273	547	361	607	23	32	38	459	314
Other (permits) d, e								187	32	291	24	21		134
Retained From Commercial											159	676		
Illinois Cr. to U.S. Can. Border Subtotal	23,943	31,535	26,996	21,833	20,588	28,295	12,951	9,727	20,271	12,595	11,116	11,939	25,849	13,327
Venetie	0	0		0	0	701	30	0	3,393	0	129	567	175	710
Chalkyitsik				0	0	327	0	90	500	17	0	0	109	121
Chandalar/Black Rivers Subtotal	0	0		0	0	1,028	30	90	3,893	17	129	567	284	832
District 5 Subtotal	23,943	31,535	26,996	21,833	20,588	29,323	12,981	9,817	24,164	12,612	11,245	12,506	26,134	14,159
Manley f	7,245	1,260	856	604	267	3,731	2,457	2,250	1,716	850	1,310	1,405	1,344	1,717
Minto f	7,414	5,042	5,291	1,587	1,383	947	1,425	500	748	625	367	509	2,850	733
Nenana f	6,779	13,962	15,825	10,827	21,214	5,654	3,986	1,383	1,499	6,372	5,019	1,352	13,496	3,652
Fairbanks d, g	2,276	3,177	2,646	4,024	1,461	0	0	152	1,096	1,342	97	3,693	2,262	537
Other f, h						0	0	0	10	315	0	67	0	65
Retained From Commercial											5	3,518		
Tanana River Subtotal	23,714	23,441	24,618	17,042	24,325	10,332	7,868	4,285	5,069	9,504	6,798	10,544	19,952	6,704
Upper Yukon Total i	183,702	167,941	216,997	204,947	202,319	135,039	70,626	47,154	68,182	63,195	42,302	56,766	188,661	58,286
Alaska Total	240,386	230,747	264,828	290,825	270,374	198,590	167,155	115,609	118,540	125,497	105,380	132,510	254,285	126,342

a 1961-1981 chum salmon data available from 1981 Yukon Annual Management Report. Beginning in 1988 subsistence salmon harvest estimates have been generated from a stratified random sample of village households. District 4 summer chum salmon subsistence harvest estimates prior to 1988 and Districts 5 and 6 prior to 1989 included commercially caught summer chum salmon carcasses retained for subsistence use. Beginning in 1988 and 1989, efforts were made to exclude commercial carcasses from subsistence harvest estimates.

b Alatna combined with Allakaket.

c Catches by Fairbanks subsistence use permit holders that fished in District 5 near the Yukon River bridge crossing.

d Salmon catches expanded for permits not returned and household interviews (1981-1989). Beginning in 1990, reported harvest is from returned permits only.

e Other permit holders that fished in District 5 but did not reside in the villages listed.

f Permits required beginning in 1988 for Subdistricts 6-A and 6-B. In 1988 and 1989, permit and household interview data were expanded. Beginning in 1990, reported harvest is from returned permits only.

g Catches by Fairbanks subsistence use permit holders that fished in the Tanana River. Permits required beginning in 1964 for the Tanana River upstream of Wood River

h Other permit holders that fished in District 6 but did not reside in the villages listed.

i Estimated summer chum salmon carcasses available for subsistence use as a by product of commercial roe sale are documented in total utilization tables.

Appendix D.3. Estimated Yukon River fall chum salmon subsistence harvest in numbers of fish by village, 1983-1994. a

Village	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1984-1988 Average	1989-1993 Average
Sheldon Pt.	233	555	713	259	882	289	586	102	84	490	158	25	450	284
Alakanuk	903	1,219	2,603	2,030	3,748	1,194	430	267	193	401	182	73	1,799	295
Emmonak	2,715	3,329	4,539	2,746	8,160	1,792	840	2,353	2,027	1,628	1,507	3,441	3,428	1,671
Kotlik	4,387	3,782	5,420	3,965	5,677	2,200	3,058	2,613	1,631	2,697	5,923	1,348	3,507	3,184
Mouth to Anuk River Subtotal	8,238	8,885	13,275	9,000	18,467	5,475	4,914	5,335	3,935	5,216	7,770	4,887	9,184	5,434
Mt. Village	4,065	3,497	3,591	2,947	4,897	1,880	4,641	1,566	1,473	1,052	1,113	797	2,802	1,969
Pitkas Pt./St. Marys	3,138	3,927	3,315	5,401	3,966	2,533	1,970	956	2,202	77	708	1,356	3,190	1,183
Pilot Station	1,302	832	1,957	1,663	583	1,372	1,872	1,941	1,062	3,526	1,017	1,527	1,068	1,884
Marshall	1,836	3,138	2,681	3,472	4,008	2,815	1,532	1,724	891	2,727	256	471	2,686	1,426
Anuk River to Owl Slough Subtotal	10,341	11,394	11,544	13,483	13,454	8,600	10,015	6,187	5,628	7,382	3,094	4,151	9,746	6,461
Russian Mission	773	860	1,266	637	1,255	1,151	308	878	425	648	172	11	862	486
Holy Cross	2,090	1,373	1,024	1,148	1,598	596	711	1,178	190	845	1,066	665	957	798
Owl Slough to Bonasila R. Subtotal	2,863	2,233	2,290	1,785	2,853	1,747	1,019	2,056	615	1,493	1,238	676	1,818	1,284
Lower Yukon Total	21,442	22,512	27,109	24,268	34,774	15,822	15,948	13,578	10,178	14,091	12,102	9,714	20,748	13,179
Anvik	902	720	2,125	913	394	136	168	583	452	894	420	155	715	503
Grayling	3,847	1,950	3,106	4,204	4,750	1,760	830	1,405	3,616	2,993	2,083	811	2,628	2,185
Kaltag	2,833	1,330	1,570	2,024	7,474	2,293	1,654	2,327	2,834	2,522	704	630	2,449	2,008
Nulato	3,159	1,675	4,240	1,762	2,200	1,673	2,436	3,546	1,637	1,910	571	1,109	1,925	2,020
Koyukuk	1,120	1,560	798	2,195	2,492	587	2,460	860	2,761	2,817	2,052	1,049	1,272	2,190
Galena	4,259	7,270	4,476	4,819	10,509	4,308	6,436	3,202	5,525	2,393	3,255	3,963	5,230	4,162
Ruby/Kokrines	12,319	8,505	6,717	7,101	11,000	5,171	6,599	3,352	2,856	4,499	1,085	5,553	6,416	3,678
Bonasila R. to Illinois Cr. Subtotal	28,439	23,010	23,032	23,018	38,819	15,928	20,583	15,275	19,681	18,028	10,170	13,270	20,635	16,747
Shageluk *Innoko River Subtotal*			0	370	434	0	4	0	0	865	211	186	161	216
Huslia	3,528	6,306	276	808	585	1,697	1,728	846	411	1,286	258	55	1,612	906
Hughes	327	1,280	1,260	1,422	586	311	260	70	270	325	169	0	810	219
Allakaket/Alatna b	1,915	556	707	878	1,477	443	1,969	3,050	513	1,579	235	0	677	1,469
Bettles							0	0	0	14	0	0		3
Koyukuk River Subtotal	5,770	8,142	2,243	3,108	2,648	2,451	3,957	3,966	1,194	3,204	662	55	3,099	2,597
District 4 Subtotal	34,209	31,152	25,275	26,496	41,901	18,379	24,544	19,241	20,875	22,097	11,043	13,511	23,894	19,560

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Village	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1984-1988 Average	1989-1993 Average
Tanana	41,630	42,690	28,113	32,049	41,825	55,998	40,845	41,145	40,868	19,365	23,103	34,681	33,446	33,065
Rampart	5,627	4,395	19,619	3,950	5,092	3,600	2,472	10,818	5,801	5,701	3,272	1,007	6,109	5,613
Fairbanks (permits) c, d	12,865	12,920	13,874	11,708	5,264		7	82	2,022	2,491	930	2,870	8,753	1,106
Stevens Village	3,502	4,932	11,679	4,150	7,538	1,451	6,633	3,857	2,481	150	862	45	4,958	2,797
Beaver	6,004	0	1,761	3,321	5,750	96	7,242	757	7	361	692	2,069	1,821	1,812
Ft. Yukon	3,967	7,525	12,719	8,543	15,200	2,766	27,790	11,627	7,467	2,284	2,380	6,827	7,792	10,310
Circle/Central (permits) d	3,687	3,107	4,096	3,650	7,691	4,396	4,478	6,804	6,413	6,379	349	4,581	3,823	4,885
Eagle (permits) d	20,021	18,519	25,264	16,027	19,678	14,800	11,557	8,027	7,985	5,630	2,070	8,263	15,715	7,054
Other (permits) d, e								529	100	0	1,750	0	0	595
Illinois Cr. to U.S. Can. Border Subtotal	97,303	94,088	117,125	83,398	108,038	83,107	101,024	83,646	73,144	42,361	35,408	60,343	82,418	67,236
Venetie	7,800	4,345		3,193	2,774	34	7,977	5,377	758	3,066	7,881	4,302	2,587	5,012
Chalkyitsik				1,533	2,686	1,068	3,000	1,490	100	274	475	1,751	1,762	1,068
Chandalar/Black Rivers Subtotal	7,800	4,345		4,726	5,460	1,102	10,977	6,867	858	3,340	8,356	6,053	4,349	6,080
District 5 Subtotal	105,103	98,433	117,125	88,124	113,498	84,209	112,001	90,513	74,002	45,701	43,764	66,396	86,767	73,315
Manley f	11,400	2,196	6,560	5,905	4,267	6,899	21,087	25,860	13,243	7,010	3,215	13,722	4,305	14,083
Minto f	6,489	4,025	4,642	545	5,419	2,615	2,005	3,652	5,276	3,017	301	1,419	3,449	2,850
Nenana f	11,685	13,520	22,901	15,902	26,909	26,889	25,340	12,464	17,932	13,253	5,929	11,201	17,687	14,984
Fairbanks (permits) d, g	2,600	2,985	2,860	2,803	0	0	0	309	1,671	1,394	56	5,006	1,441	686
Other f, h							10,222	2,283	2,347	1,039	352	2,249	0	3,249
Tanana River Subtotal	32,174	22,726	36,963	25,155	36,595	36,403	58,654	44,568	40,469	25,713	9,853	33,597	26,882	35,851
Upper Yukon Total i	171,486	152,311	179,363	139,775	191,994	138,991	195,199	154,322	135,346	93,511	64,660	113,504	137,543	128,727
Alaska Total	192,928	174,823	206,472	164,043	226,768	154,813	211,147	167,900	145,524	107,602	76,762	123,218	158,290	141,906

a 1961-1981 chum salmon data available from 1981 Yukon Annual Management Report. Beginning in 1988 subsistence salmon harvest estimates have been generated from a stratified random sample of village households. Includes commercial related harvest to produce roe sold, 1982-1988.
b Alatna combined with Allakaket.
c Catches by Fairbanks subsistence use permit holders that fished in District 5 near the Yukon River bridge crossing.
d Salmon catches expanded for permits not returned and household interviews (1981-1989). Beginning 1990, reported harvest is from returned permits only.
e Other permit holders that fished in District 5 but did not reside in the villages listed.
f Permits required beginning in 1988 for Subdistricts 6-A and 6-B. In 1988 and 1989, permit and household interview data were expanded. Beginning in 1990, reported harvest is from returned permits only.
g Catches by Fairbanks subsistence permit holders that fished in the Tanana River. Permits required beginning in 1964 for the Tanana River upstream of Wood River.
h Other permits holders that fished in District 6 but did not reside in the villages listed.

Appendix D.4. Estimated Yukon River coho salmon subsistence harvest in numbers of fish by village, 1983-1994. a

Village	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1984-1988 Average	1989-1993 Average
Sheldon Pt.	170	245	49	237	308	169	487	78	35	441	78	52	202	224
Alakanuk	438	776	894	1,518	1,116	634	334	156	391	966	138	94	988	397
Emmonak	1,290	3,659	1,552	732	3,497	1,578	1,259	1,283	801	666	196	959	2,204	841
Kotlik	1,692	1,415	751	238	1,475	2,008	2,997	1,784	581	3,353	1,931	2,167	1,177	2,129
Mouth to Anuk River Subtotal	3,590	6,095	3,246	2,725	6,396	4,389	5,077	3,301	1,808	5,426	2,343	3,272	4,570	3,591
Mt. Village	2,500	982	1,527	828	2,481	1,314	2,385	1,754	868	1,971	447	968	1,426	1,485
Pitkas Pt./St. Marys	1,529	2,024	1,113	4,832	1,740	3,147	971	515	1,617	2,771	451	978	2,571	1,265
Pilot Station	638	1,114	710	1,514	300	876	379	1,968	553	300	477	811	903	735
Marshall	1,405	2,946	1,484	1,966	2,373	1,767	1,304	2,107	259	1,545	320	1,124	2,107	1,107
Anuk River to Owl Slough Subtotal	6,072	7,066	4,834	9,140	6,894	7,104	5,039	6,344	3,297	6,587	1,695	3,881	7,008	4,592
Russian Mission	540	740	276	679	423	604	20	688	396	1,148	152	55	544	481
Holy Cross	377	0	100	102	259	935	517	338	944	105	88	171	279	398
Owl Slough to Bonasila R. Subtotal	917	740	376	781	682	1,539	537	1,026	1,340	1,253	240	226	824	879
Lower Yukon Total	10,579	13,901	8,456	12,646	13,972	13,032	10,653	10,671	6,445	13,266	4,278	7,379	12,401	9,063
Anvik	250	40	272	296	405	97	40	236	347	202	115	95	222	188
Grayling	1,275	97	0	860	599	692	969	10	1,363	859	164	36	450	673
Kaltag	0	0	0	229	0	0	792	501	1,260	2,105	334	245	46	998
Nulato	0	0	510	69	85	234	276	845	75	435	37	27	180	334
Koyukuk	40	200	120	154	894	10	110	162	307	1,877	70	305	276	505
Galena	759	452	1,072	465	1,349	1,029	415	572	422	1,398	124	803	873	586
Ruby/Kokrines	1,122	1,631	1,719	339	0	2,169	1,069	974	410	1,299	308	1,957	1,172	812
Bonasila R. to Illinois Cr. Subtotal	3,446	2,420	3,693	2,412	3,332	4,231	3,671	3,300	4,184	8,175	1,152	3,468	3,218	4,096
Shageluk *Innoko River Subtotal*				173	72	128	0	0	0	296	39	137	124	67
Huslia	475	12	0	31	124	201	150	235	150	233	9	47	74	155
Hughes	0	400	138	0	0	104	91	43	9	21	3	0	128	33
Allakaket/Alatna b	25	35	118	15	23	178	118	36	108	0	3	0	74	53
Bettles							0	0	0	0	0	0		0
Koyukuk River Subtotal	500	447	256	46	147	483	359	314	267	254	15	47	276	242
District 4 Subtotal	3,946	2,867	3,949	2,631	3,551	4,842	4,030	3,614	4,451	8,725	1,206	3,652	3,618	4,405

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Village	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1984-1988 Average	1989-1993 Average
Tanana	2,312	16,898	7,384	4,691	6,680	16,922	5,518	8,580	4,448	11,406	5,576	2,587	10,515	7,106
Rampart	47	120	513	110	81	842	87	591	58	75	38	99	333	170
Fairbanks (permits) c, d	78	254	13	709	6	0	0	5	8	34	0	25	196	9
Stevens Village	0	145	182	67	0	604	208	479	0	20	0	0	200	141
Beaver	0	0	1	124	0	164	774	172	1	398	135	10	58	296
Ft. Yukon	11	33	3	118	41	370	406	727	380	341	5	963	113	372
Circle/Central (permits) d	0	0	0	37	0	41	1	206	5	54	10	30	16	55
Eagle (permits) d	0	17	2	6	0	11	0	0	0	3	85	0	7	18
Other (permits) d, e						0	165	450	12	0	0	0	0	125
Illinois Cr. to U.S. Can. Border Subtotal	2,448	17,467	8,098	5,862	6,808	18,954	7,159	11,210	4,912	12,331	5,849	3,714	11,438	8,292
Venetie	0	0		0	17	0	2	348	12	45	135	4	4	108
Chalkyitsik				8	2	801	26	4	7	0	0	456	270	7
Chandalar/Black River Subtotal	0	0		8	19	801	28	352	19	45	135	460	275	116
District 5 Subtotal	2,448	17,467	8,098	5,870	6,827	19,755	7,187	11,562	4,931	12,376	5,984	4,174	11,712	8,408
Manley f	1,350	1,566	1,926	538	1,467	2,103	5,310	7,574	6,361	4,725	1,535	10,410	1,520	5,101
Minto f	0	800	1,144	1,058	671	2,729	1,179	818	526	614	300	2,616	1,280	687
Nenana f	4,352	10,270	7,614	10,090	19,592	25,369	7,593	7,381	10,171	8,895	1,314	9,387	14,587	7,071
Fairbanks (permits) d, g	1,230	2,149	1,077	1,635	0	0	0	66	2,501	2,281	0	2,103	972	970
Other f, h							4,759	1,774	2,002	1,039	1,155	1,973		2,146
Retained from commercial												2,900		
Tanana River Subtotal	6,932	14,785	11,761	13,321	21,730	30,201	18,841	17,613	21,561	17,554	4,304	29,389	18,360	15,975
Upper Yukon Total	13,326	35,119	23,808	21,822	32,108	54,798	30,058	32,789 i	30,943 i	38,655 i	11,494 i	37,215	33,690	28,788
Alaska Total	23,905	49,020	32,264	34,468	46,080	67,830	40,711	43,460	37,388	51,921	15,772	44,594	46,091	37,850

a 1961-1981 coho salmon data available from 1981 Yukon Annual Management Report. Beginning in 1988 subsistence salmon harvest estimates have been generated from a stratified random sample of village households.
b Alatna combined with Allakaket.
c Catches by Fairbanks subsistence use permit holders that fished in District 5 near the Yukon River bridge crossing.
d Salmon catches expanded for permits not returned and household interviews (1981-1989). Beginning 1990, reported harvest is from returned permits only.
e Other permit holders that fished in District 5 but did not reside in the villages listed.
f Permits required beginning in 1988 for Subdistricts 6-A and 6-B. In 1988 and 1989, permits and household interview data were expanded. Beginning in 1990, reported harvest is from returned permits only.
g Catches by Fairbanks subsistence use permit holders that fished in the Tanana River. Permits required beginning in 1964 for the Tanana River upstream of Wood River.
h Other permit holders that fished in District 6 but did not reside in the villages listed.
i Estimated coho salmon carcasses available for subsistence use as a by product of commercial roe sales are documented in total utilization tables.

Appendix D.5. Estimated subsistence salmon harvest for Scammon and Hooper Bay, 1987-1994.

	Scammon Bay				Hooper Bay				Total			
Year	Chinook	Summer Chum	Fall Chum	Coho	Chinook	Summer Chum	Fall Chum	Coho	Chinook	Summer Chum	Fall Chum	Coho
1987	838	6,200	117	64	2,738	23,468	105	69	3,576	29,668	222	133
1988	489	8,171	551	326	1,099	23,059	1,711	1,523	1,588	31,230	2,262	1,849
1989	-	-	-	-	-	-	-	-	-	-	-	-
1990	-	-	-	-	-	-	-	-	-	-	-	-
1991	-	-	-	-	-	-	-	-	-	-	-	-
1992	948	3,795	79	31	503	12,900	127	28	1,451	16,695	206	59
1993	1,199	4,692	7	40	230	16,106	113	0	1,429	20,798	120	40
1994	668	4,347	63	80	157	10,556	284	1	825	14,903	347	81

Appendix D.6. Subsistence salmon catches taken under authority of a permit in District 5, Upper Yukon Area, 1974-1994. a

Upper Yukon River (Hess Creek to Dall River) Subsistence Salmon Fishery b

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches c	Chinook	Summer Chum d	Fall Chum d	Coho
1974	29	e	e	591		1,857	1,271
1975	19	e	e	727		778	70
1976	28	e	18	531		974	e
1977	38	e	e	467		2,567	e
1978	57	e	e	1,333		9,735	e
1979	55	e	41	2,194		12,374	e
1980	70	e	67	1,350		6,488	36
1981	57	e	24	1,095		12,034	e
1982	64	e	44	1,935		11,328	20
1983	68	e	46	2,672		15,059	e
1984	67	e	54	4,676		27,869	399
1985	55	e	42	2,618		21,832	33
1986	76	e	58	3,827		18,690	759
1987 f	16	e	14	1,818	2,091	7,631	6
1988	24	21	18	1,747	2,097	3,183	606
1989	26	20	13	2,483	574	1,157	309
1990 g	26	25	16	2,033	3,493	1,109	455
1991	52	46	34	2,529	1,295	3,953	20
1992	45	42	33	2,241	975	2,491	34
1993	49	47	36	3,767	492	2,915	16
1994	50	49	36	3,073	384	2,911	25

Upper Yukon River (22 Mi Slough to U.S./Canada Border) Subsistence Salmon Fishery

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches c	Chinook	Summer Chum d	Fall Chum d	Coho
1979	75	e	6	4,063		30,475	114
1980	48	e	39	3,649		18,477	6
1981	71	e	51	4,510		38,333	e
1982	60	e	61	3,833		15,432	e
1983	53	e	52	2,831		23,708	e
1984	58	e	54	2,543		21,675	17
1985	59	e	36	2,419		19,059	2
1986	40	e	52	4,148		20,701	43
1987 f	51	51	58	3,602	2,495	27,369	0
1988	58	57	50	2,783	2,134	9,078	101
1989	59	56	42	1,186	68	7,515	1
1990 g	81	75	54	3,746	1,629	14,992	206
1991	70	69	48	3,219	658	14,898	5
1992	85	79	54	2,984	409	12,009	57
1993	79	79	49	1,910	118	2,419	95
1994	79	76	51	3,093	145	12,844	30

a Salmon catches expanded for permits not returned (1974-1987). Beginning in 1988, reported harvest from returned permits only.
b Includes catches from Stevens Village and Rampart.
c Some fishermen reporting catches did not have permits.
d Summer chum and fall chum salmon undifferentiated from 1974-1986.
e Information not available.
f Personal use fishery established only for fall chum salmon in 1987.
g Some fishermen may have had personal use catches due to changes in the subsistence law. No personal use permits have been issued since 1990.

Appendix D.7. Subsistence salmon catches taken under authority of a permit, in the Tanana River drainage, 1973-1994. a

Tanana River (Subdistrict 6-A) Subsistence Salmon Fishery b, c

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches	Chinook	Summer Chum	Fall Chum	Coho
1988	28	24	18	845	1,389	9,165	3,455
1989 d	29	28	24 e	651	1,918	25,266	5,292
1990 d	42	36	26	1,369	2,250	27,957	8,408
1991	45	41	31	420	1,716	17,472	8,486
1992	38	35	26	508	450	5,999	5,028
1993 d	42	41	22	331	784	2,617	1,317
1994	37	37	30	576	3,793	18,076	12,449

Tanana River (Subdistrict 6-B) Subsistence Salmon Fishery

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches	Chinook	Summer Chum	Fall Chum	Coho
1988	75	66	52	3,721	3,167	18,902	18,906
1989 f	60	51	37 e	455	363	18,506	8,453
1990 f	70	58	38	1,234	1,966	16,332	9,155
1991 f	87	78	51	1,796	2,373	21,629	11,971
1992 f	98	89	57	1,587	7,820	18,782	11,409
1993	99	89	38	1,341	5,976	7,166	2,987
1994	102	94	49	1,337	2,035	13,726	12,480

Upper Tanana River (Upstream of Wood River) Subsistence Salmon Fishery

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches	Chinook	Summer Chum	Fall Chum	Coho
1973	22	g	4	26	771	886	h
1974	70	g	g	38	1,373	1,580	h
1975	36	g	g	32	751	864	h
1976	110	g	g	31	1,314	1,512	h
1977	89	g	33	81	118	607	h
1978	160	g	126	126	2,729	1,188	h
1979	246	g	199	264	2,384	4,459	h
1980	315	g	254	282	3,729	4,059	h
1981	346	g	228	440	3,239	5,770	h
1982	330	g	209	451	2,708	4,521	h
1983	259	g	147	475	2,276	3,830	h
1984	308	g	212	321	3,177	5,134	h
1985	291	g	155	326	2,646	3,937	h
1986	323	g	211	637	4,031	4,437	h
1987 i	217	g	123	531	2,739	0	0
1988	0	0	0	0	0	0	0
1989	2	2	2	5	0	39	0
1990 j	20	19	6	15	69	279	50
1991	157	149	104	299	980	1,368	1,103
1992	160	157	94	343	1,234	932	1,117
1993 k	10	10	8	0	0	5	0
1994	152	149	110	457	1,198	1,802	1,560

a Salmon catches expanded for permits not returned (1973-1987). Beginning in 1988, reported harvest from returned permits only. Note, for some years, some households fished in more than one area and some were issued permits for two areas.
b Includes Kantishna River catches.
c Permit requirement for Subdistricts 6-A and 6-B went into effect in 1988; however, very few permits were issued in 1988, and not all fishermen had permits in 1989.
d Includes salmon given away as part of the Departments test fishing projects in Manley.
e Some fishermen reporting catches did not have permits.
f Includes salmon given away as part of the Departments test fishing projects in Nenana.
g Information not available.
h Fall chum and coho salmon were not reported as separate species from 1973-1987.
i Personal use fishery established for nonrural residents beginning in July of 1987.
j Some fishermen had both personal use and subsistence permits since the McDowell Decision which became effective July 1990 stated that all Alaskan residents were eligible subsistence participants.
k Personal use fishery established for those fishing for salmon in this area (fall chum are from incidental subsistence whitefish and sucker permits).

Appendix D.8. Personal use salmon catches taken under authority of a permit in the Lower Yukon Area, and in District 5, Upper Yukon Area, 1987-1994. a

Lower Yukon Personal Use Salmon Fishery

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches	Chinook	Summer Chum	Fall Chum	Coho
1987	0	0	0			0	
1988	17	14	10	67	416	5	0
1989	26	23	12	286	381	18	59
1990	19	16	15	450	256	60	8
1991	0	0	0	0	0	0	0
1992	Regulations did not provide for a personal use fishery.						
1993	Regulations did not provide for a personal use fishery.						
1994	Regulations did not provide for a personal use fishery.						

Upper Yukon River (Hess Creek to Dall River) Personal Use Salmon Fishery

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches b	Chinook	Summer Chum	Fall Chum	Coho
1987	42	c	33	1,674	4,262	15,750	58
1988	45	42	35	1,435	567	1,762	103
1989	45	42	32	1,877	295	3,294	82
1990 d	41	36	26	1,529	641	3,723	18
1991	0	0	0	0	0	0	0
1992	Regulations did not provide for a personal use fishery.						
1993	Regulations did not provide for a personal use fishery.						
1994	Regulations did not provide for a personal use fishery.						

Upper Yukon River (22 Mi Slough to U.S./Canada Border) Personal Use Salmon Fishery

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches b	Chinook	Summer Chum	Fall Chum	Coho
1987	2	2	2	32	0	0	0
1988	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0
1990	4	4	3	164	0	0	0
1991	0	0	0	0	0	0	0
1992	Regulations did not provide for a personal use fishery.						
1993	Regulations did not provide for a personal use fishery.						
1994	Regulations did not provide for a personal use fishery.						

a Personal use fishery during 1987 applied to nonrural residents harvesting only fall chum. Beginning in 1988, nonrural personal use fishing applied to all salmon species and reported harvest is from returned permits only. Effective July 1, 1990 all Alaskan residents became eligible for subsistence fishing permits.
b Some fishermen reporting catches did not have permits.
c Information not available.
d Includes personal use catches of two chinook salmon taken by one permittee from a non-permit area below Rampart.

Appendix D.9. Personal use salmon catches taken under authority of a permit in the Tanana River drainage, 1987-1994. a

Tanana River (Subdistrict 6-A) Personal Use Fishery

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches	Chinook	Summer Chum	Fall Chum	Coho
1987	0	0	0			0	
1988	1	1	0	0	0	0	0
1989	1	1	1	0	4	0	0
1990	1	1	0	0	0	0	0
1991	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0
1993	Regulations did not provide for a personal use fishery.						
1994	Regulations did not provide for a personal use fishery.						

Tanana River (Subdistrict 6-B) Personal Use Fishery

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches	Chinook	Summer Chum	Fall Chum	Coho
1987	0	0	0			0	
1988	1	1	1	306	60	40	22
1989	1	1	1	56	220	0	0
1990	4	4	3	9	12	40	35
1991	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0
1993	Regulations did not provide for a personal use fishery.						
1994	Regulations did not provide for a personal use fishery.						

Upper Tanana River (Upstream of Wood River) Personal Use Fishery

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches	Chinook	Summer Chum	Fall Chum	Coho
1987	132 b	c	60 d			3,316	2,465
1988	208	162	120	317	1,182	2,074	1,125
1989	175	160	112	397	991	1,770	731
1990	152	144	102	442	918	1,353	1,120
1991	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0
1993	137	135	81	426	674	163	0
1994	Regulations did not provide for a personal use fishery.						

a Personal use fishery during 1987 applied to nonrural residents harvesting only fall chum. Beginning in 1988, nonrural personal use fishing applied to all salmon species and reported harvest is from returned permits only. Effective July 1, 1990 all Alaskan residents became eligible for subsistence fishing permits. In 1993, the board established the Fairbanks Nonsubsistence Area in which personal use was allowed. In 1994, a Superior Court decision invalidated the Fairbanks Nonsubsistence Area and subsistence fishing regulation were re-established.

b Represents 60 former subsistence fishermen who were reissued permits to fish fall chum salmon for personal use.

c Information not available.

d Some fishing families used both subsistence and personal-use permits.

Appendix D.10. Subsistence and personal use chum salmon carcasses taken under authority of a permit, Tanana River drainage, 1973-1994.

Upper Tanana R. (Big Delta area) Subsistence and Personal Use Chum Salmon Carcass Fishery

Year	No. of Permits Issued	No. of Permits Returned	Number Reporting Catches	Fall Chum Carcasses
1973	16	a	8	1,561
1974	21	a	a	1,974
1975	26	a	a	2,573
1976	36	a	a	3,441
1977	46	a	29	5,816
1978	70	a	43	2,517
1979	32	a	25	4,582
1980	57	a	36	4,915
1981	43	a	27	5,030
1982	37	a	13	1,690
1983	45	a	29	5,357
1984	31	a	14	2,353
1985	30	a	14	2,111
1986	27	a	19	2,276
1987 b	20	17	13	1,931
1988 b	22	20	15	2,100
1989 b	12	12	10	1,785
1990 b	7	7	3	750
1991	8	4	3	741
1992	10	10	9	1,897
1993 b,c	0	0	0	0
1994	4	4	4	250

a Information not available.
b Personal use permits 1987-1990 and 1993, all other years subsistence permits.
c The department did not issue Delta River carcass permits to reduce spawning habitat disturbances.

APPENDIX E

YUKON RIVER SALMON ESCAPEMENT

Appendix E.1. Yukon River salmon spawning escapement goals for selected species and streams, 1994.

Stream	Escapement Goals a			
	Chinook	Summer Chum	Fall Chum	Coho
Andreafsky River				
East Fork	>1,500	>109,000		
West Fork	>1,400	>116,000		
Anvik River				
Aerial				
Mainstem (entire drainage)	>1,300			
Yellow River to McDonald Creek	> 500			
Goblet Creek to McDonald Creek		>356,000		
Sonar		>500,000 b		
Nulato River				
North Fork	> 800	> 53,000		
South Fork	> 500			
Hogatza River				
Clear Creek		> 8,000		
Caribou Creek		> 9,000		
Gisasa River	> 600			
Chena River				
Mainstem from Flood Control Dam to Middle Fork	>1,700			
Salcha River				
TAPS to Caribou Creek	>2,500	> 3,500		
Sheenjek River			> 64,000 c	
Fishing Branch River (YT, Canada)			50,000-120,000 d	
Toklat River			> 33,000 c	
Delta River Index Areas			> 11,000 c	>9,000 j
Mainstem Yukon River in Y.T., Canada b	33,000-43,000 f,g		> 80,000 g,h	

a Index streams have been designated because of their importance as spawning areas and/or by their geographic location with respect to other unsurveyable salmon spawning streams in the general area. Escapement goals represent the approximate number of desired spawners considered necessary to maintain the historical yield from the stocks and are based upon historical performance, i.e., they are predicated upon some measure of historic average. Unless otherwise indicated, escapement goals are based upon aerial survey index estimates which do not represent total escapement but do reflect annual spawner abundance when using standard survey methods under acceptable survey conditions. These survey goals represent the latest review and revision by ADF&G (March 1992), unless otherwise noted.

b Escapement goals of total spawning abundance based upon sonar, weir mark-and-recapture, or expansions from inseason point estimates.

c Escapement goals developed by ADF&G for November 1990 U.S./Canada JTC meeting.

d Escapement goals developed by JTC in October 1987. (see page 42 of the October 6-8, 1987 JTC report).

f Escapement goals developed by JTC in March 1987. Additionally, a stabilization escapement goal for years 1990-1995 of 18,000 chinook salmon has been agreed to by the U.S. and Canada.

g Estimated total spawning escapement excluding the Porcupine River (estimated mainstem Yukon River border passage minus Canadian harvests).

h Escapement goals developed by JTC in November 1990.

j Escapement goals established by ADG&G in March 1993.

Appendix E.2. Yukon River salmon spawning escapement indices and population estimates by species, 1994.

Stream (drainage)[a]	Date	Survey Rating	Chinook	Summer Chum	Fall Chum	Coho
Andreafsky River						
East Fork	7/24	Incomplete	(300)	–	–	–
Weir count[b]	6/29-8/1	Late start up	7,801	200,981	(Est. 300,000-600,000 Pinks)	
West Fork	7/24	Incomplete	(213)	–	–	–
	Subtotal		7,801	200,981	–	–
Mountain Village Stream	7/24	Poor	57	–	(Many Pink Salmon)	
Yukon River (Pilot Station)						
Main River (Sonar)*	6/4-9/8		(141,000)	(1,997,000)	(407,000)	(191,000)
Anvik River						
Aerial Counts						
Mainstem Yellow Ri-McDonald Cr	7/23	Poor	913	–	–	–
Sonar Estimate	6/19-7/23		–	1,124,689	–	–
	Subtotal		913	1,124,689	–	–
Blackburn Creek[c]	7/20	Good	0	741	(512 Live Pink Salmon)	
Kaltag River						
Tower (4-H & Youth Development)	6/20-7/28		241[d]	47,295[d]	–	–
Nulato River						
Tower	6/29-7/23		1,795[d]	148,762[d]	–	–
Total Yukon River (downstream of Koyukuk River)			10,807	1,522,468	0	0
Koyukuk River Drainage						
Gisasa River	7/26	Fair	(2,775)	(6,827)	–	–
Weir count[b]	7/11-8/10	Late start up	2,888	51,116	(200 Pink Salmon)	
	Subtotal		2,888	51,116		
Dakli River	7/26	Good	0	19	–	–
Wheeler Creek	7/26	Good	36	25,422	–	–
	Subtotal		36	25,441	–	–
Hogatza River						
Caribou Creek-upper portion (ADF&G)[a]	7/21	Good	0	(271)	–	–
Caribou Creek (aerial)[a]	7/13	Poor	1	2,812	–	
Bear Creek[b,c]	7/4	Poor	0	8	–	
Clear Creek[a]	7/13	Good	0	5,228	–	
Aloha Creek[a]	7/13	Fair	0	207	–	–
	Subtotal		1	8,255	–	–
Henshaw Creek	7/26	Fair	526	2,165	–	–
South Fork Koyukuk River	7/25	Fair	168	10	–	–
Jim River	7/25	Fair	360	314	–	–
	Subtotal		528	324	–	–
Total Koyukuk River			3,979	87,301	0	0
Melozi Hot Springs Creek	7/27	Good	43	3,212	–	–
Total Yukon River (downstream of Tanana River)			14,829	1,612,981	0	0

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Appendix E. 2. (page 2 of 4)

Stream (drainage)[a]	Date	Survey Rating	Chinook	Summer Chum	Fall Chum	Coho
Lower Tanana River Drainage						
Kantishna River Drainage						
Toklat River (aerial - upstream sonar)	9/27	Poor/Incomplete	--	--	(9,419)	(3)
Toklat River Sonar	8/13-10/4				(64,433 * salmon counts)	
Barton Creek Weir[f]	8/19-10/5		3	1	37	298
Barton Creek (aerial - below weir)	7/28; 9/27	Flyover, Good	417	--	(7)	(699)
Floodplain vic Roadhouse[g]	10/13-18	Fair-Good	--	--	(43,581)	121
Geiger Creek[c]	10/17	Good	--	--	(6,453)	410
Sushana River[c]	10/18	Good	--	--	(21,470)	86
Population Estimate[h]			--	--	76,057	--
	Subtotal		420	1	76,094	915
Bearpaw River	7/28	Good	390	79	--	--
Birch River						
Hult Creek[i]	8/18; 9/23		7	--	200	--
Nenana River Drainage						
(Aerial - immed upstream of Teklanika R)	9/27	Good	--	--	2	1,648
Seventeen Mile Slough	7/28, 10/30	Good, Good	90	226	21	2,909
Lost Slough (east floodplain)	10/30	Good	--	--	5	944
Wood Creek Weir[j]	9/16-27		--	--	--	1,317
June Creek[c]	10/6	Good	--	--	41	432
Panguingue Creek[c]	10/6	Good	--	--	--	50
Lignite Spring[c]	10/6	Good	--	--	1	252
	Subtotal		90	226	70	7,552
Chatanika River	7/31	Fair	372	436	--	--
Chena River						
Mainstem River (aerial)			--	--	--	--
MCD to Middle Fk (aerial/index area)	8/4	Fair - Poor	(1,570)	(1,137)	--	--
Slough #1 (Foot Survey)	8/11	Good	(3)	(427)	--	--
Slough #2 (Foot Survey)	8/11	Good	(11)	(118)	--	--
Slough #3 (Foot Survey)	8/11	Good	0	(120)	--	--
Slough #4 (Foot Survey)	8/11	Good	(3)	(317)	--	--
Population Estimate[k,l]	7/1-8/12		11,877	9,984	--	--
	Subtotal		11,877	9,984	--	--
Salcha River						
Mainstem River (aerial)	7/29; 7/31	Good, Good	(11,823)	(4,916)	--	--
TAPS to Caribou Cr. (index area)	7/29	Good	(11,189)	(4,575)	--	--
Slough #1 (Foot Survey)	8/9	Good	0	(41)	--	--
Slough #2 (Foot Survey)	8/9	Good	(8)	(672)	--	--
Slough #3 (Foot Survey)	8/9	Good	(23)	(1,261)	--	--
Slough #4 (Foot Survey)	8/9	Good	(16)	(2,845)	--	--
Population Estimate[k,l]	7/1-8/12		18,399	39,450	--	--
	Subtotal		18,399	39,450	--	--
Total Lower Tanana River			31,555	50,176	76,364	8,467

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Appendix E.2. (page 3 of 4)

Stream (drainage) [a]	Date	Survey Rating	Chinook	Summer Chum	Fall Chum	Coho
Upper Tanana River Drainage						
Richardson Clearwater River [k]	10/26	Good	--	--	(50)	(5,800)
Richardson Clearwater River	11/7	Incomplete	--	--	69	1,913
Mainstem Tanana sloughs						
Slough vic of Silver Fox Lodge	11/7	Fair	--	--	46	28
Open water vic of Little Delta R mo	11/7	Fair	--	--	200	0
Sloughs across from Timber	11/7	Poor	--	--	225	0
Clear Creek (heads near Whitestone) [k]	10/26	Good	--	--	0	850
Tanana Ri channel by Whitestone Farm [k]	10/26	Good	--	--	600	50
Delta River (aerial) [k]	10/26	Good	--	--	(22,500)	200
Foot Survey (peak count)	10/31	Good	--	--	(20,173)	0
Population estimate [m]			--	--	23,777	--
South Bank Tanana [k]	10/26	Good	--	--	12,500	0
Goodpaster River	7/31	Fair	1,392	17	--	--
Bluff Cabin Slough (BCS) [k]	10/26	Good	--	--	(4,000)	(200)
Bluff Cabin Slough (BCS)	11/7	Fair	--	--	2,277	16
Bluff Cabin Spring	11/7	Fair	--	--	--	45
Clearwater Lake Outlet Slough [k]	10/26	Good	--	--	(5,600)	0
Clearwater Lake Outlet	11/7	Fair	--	--	944	152
Clearwater Lake Outlet [k,p]	10/24	Fair	--	--	25	3,425
Clearwater Lake and inlets (aerial) [k]	10/24	Good	--	--	0	1,270
Delta Clearwater River [k,p]	10/24	Fair	--	--	250	62,675
Tributaries (aerial) [k]	10/27		--	--	0	17,565
Onemile Slough-aerial	11/7	Fair	--	--	394	65
Other upper Tanana sloughs from upper end onemile slough to 4 miles upstr.	11/7	Good	--	--	653	1
Total Upper Tanana River			1,392	17	41,960	88,255
Total Tanana River			32,947	50,193	118,324	96,722
Chandalar River					(Flooded Out)	
Porcupine River Drainage						
Black River [i]	10/1		--	--	60	--
Sheenjek River						
Sonar Estimate	8/8-9/28		--	--	153,013 *	--
Fishing Branch River						
Weir Passage [q]	8/26-10/25		--	--	65,247	--
Total Porcupine River			0	0	218,320	0
Yukon River (Eagle)						
Main River HTI Sonar (split beam)					(3rd Year - Developmental)	
Total Alaskan Portion of Drainage			47,776	1,663,174	271,397 [r]	96,722

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Appendix E.2. (page 4 of 4)

Stream (drainage) [a]	Date	Survey Rating	Chinook	Summer Chum	Fall Chum	Coho
Yukon Territory Streams [q]						
White River						
Donjek River			--	--	--	--
Kluane River	10/20	Fair	--	--	10,734	--
Tincup Creek	8/23	Poor	101	--	--	--
Koldern River		Flyby	--	--	20	--
	Subtotal		101	--	10,754	--
Pelly River Drainage						
Ross River	8/19	Fair	506	--	--	--
Tatchum Creek [c]	8/22	Fair	477	--	--	--
Little Salmon River	8/16	Good	726	--	--	--
Big Salmon River						
Big Salmon Lake to vicinity Souch Cr	8/25	Excellent	1,764	--	--	--
Teslin River Drainage						
Mainstem vicinity Boswell Cr	11/01	Poor	--	--	209	--
Nisutlin River						
Mainstem (Sidney Cr-100 mile Cr)	8/25	Good	389	--	--	--
Wolf River (Wolf Lk-Fish Cr)	8/25	Excellent	393	--	--	--
	Subtotal		782	--	209	--
Whitehorse Fishway Counts	7/29-9/3		1,577 [s]	--	--	--
Michie Creek Weir	8/8-9/7		(586)	--	--	--
Mainstem Yukon River						
Tatchum Creek to Ft. Selkirk	10/17	Poor	--	--	1,429	--
Border Passage Estimate [v, w]			(46,680)*	--	(133,712)*	--
	Subtotal		--	--	1,429	--
Total Yukon Territory (observed)			5,933	--	77,639 [r]	--
Total Yukon Territory (estimated) [x]			(25,890)*	--	(98,358)*	--
Yukon River Drainage Totals			53,709	1,663,174	77,639	96,722

[a] Estimates are from aerial surveys (peak count) unless otherwise indicated; carcass counts included. Data in parentheses are not included in totals or subtotals.

[b] USFWS estimate.

[c] Foot survey

[d] Numbers represent "net" upstream movement (i.e., upstream minus downstream passage). Projects started late due to high water.

[e] BLM estimate.

[f] An additional 1,500 - 2,000 coho salmon estimated passing the weir site in a 24 hr period, beginning at approximately noon on October 4.

[g] Combination foot and aerial survey.

[h] Population estimate based upon timing of ground surveys of the Toklat Springs area salmon streamlife data.

[i] Survey by Dennis Miller; a long-time aerial salmon survey pilot for CFMDD in Interior Alaska.

[j] Sex composition was 29% females. A total of 144 coho (60 males; 84 females) were used in egg take.

[k] Sport Fish Division estimate.

[l] Population estimate based upon expanded counting tower observations.

[m] Population estimate based upon replicate foot surveys and salmon streamlife data.

[p] Boat survey.

[q] Canada Department of Fisheries and Oceans (DFO) estimate.

[r] Total for Alaskan portion of drainage does not include Fishing Branch River. Total for Yukon Territory includes Fishing Branch River.

[s] Approximately 1,339 of the chinook salmon which returned to the fishway were passed. A total of 78 females and 118 males were taken for hatchery brood stock. An additional 42 fish were culled for coded-wire tags. The number of clipped chinook salmon which returned to the fishway totaled 895, however some clipped fish re-ascended the fishway, and hence, were counted more than once.

[v] Population estimate based upon survey mark and recapture study.

[w] Canadian border passage estimate for Yukon Territory streams excluding the Fishing Branch River. Canadian harvest has not been removed; these are "border" escapement estimates.

[x] Canadian estimated spawning escapement for Yukon Territory streams excluding the Fishing Branch River; from DFO tagging study (border passage estimate minus Canadian harvest).

* Preliminary

Appendix E.3. Sonar estimates of salmon passage on the mainstem Yukon River at Pilot Station, 1986-1994.

Year	Dates of Operation	Chinook	Summer Chum	Fall Chum	Coho	Pink	Other Fish [a]
1986	6/09-9/12	169,068	1,932,868	583,439	210,066	1,082,000	314,362
1987	6/09-9/06	116,126	826,384	596,410	227,982	13,000	90,289
1988	6/02-9/14	120,652	1,772,839	424,356	263,053	612,000	205,114
1989	6/04-9/11	91,548	1,603,647	605,843	169,358	3,000	320,881
1990	6/05-9/04	156,028	931,498	545,963 [b]	241,023 [b]	206,000	282,167 [c]
1991	6/05-9/01	75,681	1,232,874	596,922 [b]	70,725 [b]	[d]	302,724 [c]
1992 [f]	-	-	-	-	-	-	-
1993 [g]	6/04-8/31	137,239	949,776	295,303	40,474	[d]	367,542 [c]
1994 [h]	6/04-9/08	141,029	1,997,186	407,389	191,115	[d]	271,000 [c]

[a] "Other Fish" may include pink salmon, which are abundant in even-numbered years, whitefish, sheefish, northern pike, and other species.
[b] Includes an estimate of offshore fish passage beyond the insonified zone. This estimate was based on down-looking sonar transects conducted across the width of the river and onshore gillnet test fishing data.
[c] Does not include fish (primarily pink salmon and whitefish) passing within the first few near shore meters along the left (shore) bank.
[d] Pink salmon passage estimate unavailable. Included in "Other Fish" category.
[f] Project did not operate.
[g] New sonar equipment was used beginning in 1993 which provided greater insonification ranges and reduced attenuation problems.
[h] Preliminary.

Appendix E.4. Chinook salmon escapement counts for selected Alaskan spawning stocks in the Yukon River drainage, 1961-1994. [a]

	Andreafsky River			Anvik River		Nulato River			Gisasa River		Chena River			Salcha River	
	East Fork		West	Aerial		Aerial		Mainstem			Pop. Est.	Aerial		Pop. Est.	Aerial	
Year	Aerial	Tower or Weir Cnt	Fork Aerial	River[b]	Index Area[b]	North Fork[c]	South Fork	Tower Counts	Aerial	Weir	or Tower Counts	River	Index Area[d]	or Tower Counts	River	Index Area[f]
1961	1,003			1,226		376 [g]	167		266 [g]						2,878	
1962	675 [g]		762 [g]									61 [g, h]			937	
1963												137 [g]				
1964	867		705												450	
1965			344 [g]	650 [g]											408	
1966	361		303	638											800	
1967			276 [g]	336 [g]												
1968	380		383	310 [g]											739	
1969	274 [g]		231 [g]	296 [g]											461 [g]	
1970	665		574 [g]	368								6 [g]			1,882	
1971	1,904		1,682									193 [g, h]			158 [g]	
1972	798		582 [g]	1,198								138 [g, h]			1,193	1,034
1973	825		788	613								21 [g]			391	352 [j]
1974			285	471 [g]		55 [g]	23 [g]		161			1,016 [h]	959 [h]		1,857	1,620
1975	993		301	730		123	81		385			316 [h]	262 [h]		1,055	950 [j]
1976	818		643	1,053		471	177		332			531	496		1,641	1,473
1977	2,008		1,499	1,371		286	201		255			563			1,202	1,052
1978	2,487		1,062	1,324		498	422		45 [g]			1,726			3,499	3,258
1979	1,180		1,134	1,484		1,093	414		464			1,159 [g]			4,789	4,310 [j]
1980	958 [g]		1,500	1,330	1,192	954 [g]	369 [g]		951			2,541			6,757	6,126
1981	2,146 [g]		231 [g]	807 [g]	577 [g]		791					600 [g]			1,237	1,121
1982	1,274		851						421			2,073			2,534	2,346
1983				653 [g]	376 [g]	526	480		572			2,553	2,336		1,961	1,803
1984	1,573 [g]		1,993	641 [g]	574 [g]							501	494		1,031	906
1985	1,617		2,248	1,051	720	1,600	1,180		735			2,553	2,262		2,035	1,860
1986	1,954	1,530 [k]	3,158	1,118	918	1,452	1,522		1,346		9,065 [m]	2,031	1,935		3,368	3,031 [j]
1987	1,608	2,011 [k]	3,261	1,174	879	1,145	493		731		6,404 [m]	1,312	1,209	4,771 [m]	1,898	1,671
1988	1,020	1,339 [k]	1,448	1,805	1,449	1,061	714		797		3,346 [m]	1,966	1,760	4,562 [m]	2,761	2,553
1989	1,399		1,089	442 [g]	212 [g]						2,666 [m]	1,260	1,185	3,294 [m]	2,333	2,136
1990	2,503		1,545	2,347	1,595	568 [g]	430 [g, n]		884 [g]		5,603 [m]	1,436	1,402	10,728 [m]	3,744	3,429
1991	1,938		2,544	875 [g]	625 [g]	767	1,253		1,690		3,025 [m]	1,277 [g]	1,277 [g]	5,608 [m]	2,212 [g]	1,925 [g]
1992	1,030 [g]		2,002 [g]	1,536	931	348	231		910		5,230 [m]	625 [g]	799 [g]	7,862 [m]	1,484 [g]	1,436 [g]
1993	5,855		2,765	1,720	1,526	1,844	1,181		1,573		12,241 [k]	2,943	2,660	10,007 [k]	3,636	3,562
1994 [v]	300 [g]	7,801 [p, r]	213 [g]		913 [g]			1,795 [s]	2,775	2,888 [p, t]	12,006 [k]	1,570	1,570	18,376 [k]	11,823	11,189
E.O.[w]	>1,500		>1,400	>1,300[x]	>500[x]	>800	>500		>600				>1,700			>2,500

[a] Data obtained by aerial survey unless otherwise noted. Only peak counts are listed. Survey rating is fair to good, unless otherwise noted. Latest table revision: November 16, 1994.
[b] From 1961-1970, river count data are from aerial surveys of various segments of the mainstem Anvik River. From 1972-1979, counting tower operated; mainstem aerial survey counts below the tower were added to tower counts. From 1980-present, aerial survey counts for the river are best available minimal estimates for the entire Anvik River drainage. Index area counts are from the mainstem Anvik River between the Yellow River and McDonald Creek.
[c] Includes mainstem counts below the confluence of the North and South Forks, unless otherwise noted.
[d] Chena River index area for assessing the escapement objective is from Moose Creek Dam to Middle Fork River.
[f] Salcha River index area for assessing the escapement objective is from the TAPS crossing to Caribou Creek.
[g] Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.
[h] Boat survey.
[j] Data unavailable for index area. Calculated from historic (1972-91) average ratio of index area counts to total river counts (0.90:1.0).
[k] Tower Counts
[m] Population estimate
[n] Mainstem counts below the confluence of the North and South Forks Nulato River included in the South Fork counts.
[p] Weir Counts
[r] Weir installed on June 29; first full day of counts June 30.
[s] Tower counts delayed until June 29 because of high, turbid water. First full day of counts occurred on June 30.
[t] Weir installed on July 11; first full day of counts July 12.
[v] Preliminary.
[w] Interim escapement objectives. Established March, 1992.
[x] Interim escapement objective for the entire Anvik River drainage is 1,300 salmon. Interim escapement objective for mainstem Anvik River between the Yellow River and McDonald Creek is 500 salmon.

Appendix E.5. Chinook salmon escapement counts for selected spawning areas in the Canadian portion of the Yukon River drainage, 1961-1994.

Year	Tincup Creek	Tatchun River [a,b]	Little Salmon River	Big Salmon River [c]	Nisutlin River [d]	Ross River [f]	Wolf River [g]	Whitehorse Fishway [h]	Canada Mainstem Tagging Estimate [j]
1961								1,068	
1962								1,500	
1963								483	
1964								595	
1965								903	
1966		7 [k]						563	
1967								533	
1968			173 [k]	857 [k]	407 [k]	104 [k]		414	
1969			120	286	105			334	
1970		100		670	615		71 [k]	625	
1971		130	275	275	650		750	856	
1972		80	126	415	237		13	391	
1973		99	27 [k]	75 [k]	36 [k]			224	
1974		192		70 [k]	48 [k]			273	
1975		175		153 [k]	249		40 [k]	313	
1976		52		86 [k]	102			121	
1977		150	408	316 [k]	77			277	
1978		200	330	524	375			725	
1979		150	489 [k]	632	713		183 [k]	1,184	
1980		222	286 [k]	1,436	975		377	1,383	
1981		133	670	2,411	1,626	949	395	1,555	
1982		73	403	758	578	155	104	473	19,790
1983	100	264	101 [k]	540	701	43 [k,n]	95	905	28,989
1984	150	153	434	1,044	832	151 [k]	124	1,042	27,616 [m]
1985	210	190	255	801	409	23 [k]	110	508	10,730
1986	228	155	54 [k]	745	459 [k]	72 [n]	109	557	16,415
1987	100	159	468	891	183	180 [k]	35	327	13,260
1988	204	152	368	765	267	242	66	405	23,118
1989	88	100	862	1,662	695	433 [p]	146	549	25,201
1990	83	643	665	1,806	652	457 [k]	188	1,407	37,699
1991			326	1,040		250	201 [r]	1,266	20,743
1992	73	106	494	617	241	423	110 [r]	758	25,497
1993		183	184	572	339	400	168 [r]	668	28,558
1994 [s]	101 [k]	477	726	1,764	389	506	393 [r]	1,577	25,890
E.O.									33,000 - 43,000 [t]

[a] Data obtained by aerial survey unless otherwise noted. Only peak counts are listed. Survey rating is fair to good, unless otherwise noted. Latest table revision: November 23, 1994.
[b] All foot surveys except 1978 (boat survey) and 1986 (aerial survey).
[c] For 1968, 1970, and 1971 counts are from mainstem Big Salmon River. For all other years counts are from the mainstem Big Salmon River between Big Salmon Lake and the vicinity of Souch Creek.
[d] One Hundred Mile Creek to Sidney Creek.
[f] Big Timber Creek to Lewis Lake.
[g] Wolf Lake to Red River.
[h] Includes 50, 90, 292, 506, 243, 288 fin-clipped hatchery-origin salmon in 1988, 1989, 1990, 1991, 1992, and 1993, respectively.
[j] Estimated total spawning escapement excluding Porcupine River (estimated border escapement minus the Canadian catch).
[k] Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.
[m] Estimate derived by dividing the annual 5-area (Whitehorse Fishway, Big Salmon, Nisutlin, Wolf, Tatchun) count by the average proportion of the annual 5-area index count to the estimated spawning escapements from the DFO tagging study for years 1982, 1983, and 1985-1989.
[n] Information on area surveyed is unavailable.
[p] Counts are for Big Timber Creek to Sheldon Lake.
[r] Counts are for Wolf Lake to Fish Lake outlet.
[s] Preliminary. Area surveyed unknown.
[t] Interim escapement objective. Stabilization escapement objective for years 1990 - 1995 is 18,000 salmon.

Appendix E.6. Summer chum salmon escapement counts for selected spawning areas in the Yukon River drainage, 1973-1994.

	Andreafsky River							Nulato River										
	East Fork			Anvik River			Kaltag Cr.	Aerial					Hogalza River[a] (Clear & Caribou Creeks)		Chena River		Salcha River	
Year	Aerial[a]	Sonar, Tower, or Weir Cnts	West Fork[a]	Tower & Aerial[b]	Sonar	Rodo River[a]	Tower Counts	South Fork	North Fork[c]	Mainstem Tower Counts	Gisasa River Aerial	Gisasa River Weir		Tozitna River[a]	Aerial	Tower	Aerial	Tower
1973	10,149 [d]		51,835	86,665 [d]											79 [d]		290	
1974	3,215 [d]		33,578	201,277		16,137		29,016	29,334		22,022			1,823	4,349		3,510	
1975	223,485		235,954	845,485		25,335		51,215	87,280		56,904		22,355	3,512	1,670		7,573	
1976	105,347		118,420	406,166		38,258		9,230 [d]	30,771		21,342		20,744	725 [d]	685		6,484	
1977	112,722		63,120	262,854		16,118		11,385	58,275		2,204 [d]		10,734	761 [d]	610		677 [d]	
1978	127,050		57,321	251,339		17,845		12,821	41,659		9,280 [d]		5,102	2,262	1,609		5,405	
1979	66,471		43,391	61,830 [d]	280,537			1,506	35,598		10,962		14,221		1,025 [d]		3,060	
1980	36,623 [d]		114,759		492,676			3,702 [d]	11,244 [d]		10,388		19,786	580	338		4,140	
1981	81,555	147,312 [g]			1,486,182			14,348							3,500		8,500	
1982	7,501 [d]	181,352 [g]	7,267 [d]		444,581						334 [d]		4,984 [d]	874	1,509		3,756	
1983		110,608 [g]			362,912			1,263 [d]	19,749		2,356 [d]		28,141	1,604	1,097		716 [d]	
1984	95,200 [d]	70,125 [g]	238,565		891,028								184 [d]		1,861		9,810	
1985	66,146		52,750		1,080,243	24,576		10,494	19,344		13,232		22,566	1,030	1,005		3,178	
1986	83,931	167,614 [h]	99,373		1,189,602			16,848	47,417		12,114			1,778	1,509		8,028	
1987	6,687 [d]	45,221 [h]	35,535		455,876			4,094	7,163		2,123		5,669 [d]		333		3,657	
1988	43,056	68,937 [h]	45,432		1,125,449	13,872		15,132	26,951		9,284		6,890	2,983	432		2,889 [d]	
1989	21,460 [d]				636,906										714 [d]		1,574 [d]	
1990	11,519 [d]		20,426 [d]		403,627	1,941 [d]		3,196 [d, j]	1,419 [d]		450 [d]		2,177 [d]	36	245 [d]		450 [d]	
1991	31,886		46,657		847,772	3,977		13,150	12,491		7,003		9,947	93	115 [d]		154 [d]	
1992	11,308 [d]		37,808 [d]		775,626	4,465		5,322	12,358		9,300		2,986	794	848 [d]		3,222	
1993	10,935 [d]		9,111 [d]		517,409	7,867		5,486	7,698		1,581			970	168	5,487	212	5,563
1994 [y]		200,981 [n, p]			1,124,689		47,295			148,762 [r]	6,827	51,116 [s]			1,137	9,984	4,679	39,450
E.O.[t]	>109,000		>116,000		>500,000[v]				>53,00 [x]				>17,00 [x]				>3,500	

[a] Data obtained by aerial survey unless otherwise noted. Only peak counts are listed. Latest table revision November 16, 1994.
[b] From 1972-1979 counting tower operated; mainstem aerial survey counts below the tower were added to tower counts.
[c] Includes mainstem counts below the confluence of the North and South Forks, unless otherwise noted.
[d] Incomplete survey and/or poor survey timing or conditions resulted in minimal or inaccurate count.
[f] Boat survey
[g] Sonar count.
[h] Tower count.
[j] Mainstem counts below the confluence of the North and South Forks Nulato River included in the South Fork counts.
[k] Tower Count
[n] Weir Count
[p] Weir installed on June 29. First full day of counts occurred on June 30.
[r] Tower counts delayed until June 29 because of high, turbid water. First full day of counts occurred on June30.
[s] Weir installed on July 11. First full day of counts occurred on July 12.
[t] Interim escapement objective.
[v] The Anvik River Escapement Objective was rounded upward to 500,000 from 487,000 in March, 1992.
[w] Interim escapement objective for North Fork Nulato River only.
[x] Consists of Clear and Caribou Creeks interim escapement objectives of 9,000 and 8,000, respectively.
[y] Preliminary.

Appendix E.7. Fall chum salmon escapement counts for selected spawning areas in Alaskan and Canadian portions of the Yukon River drainage, 1971-1994 [a]

Year	Alaska				Canada					
	Toklat River [b]	Delta River [c]	Chandalar River [d]	Sheenjek River [d, f]	Fishing Branch River [g]	Mainstem Yukon River Index [g, h]	Koidern River [g]	Kluane River [g, j]	Teslin River [g, k]	Mainstem Tagging Estimate [m]
1971					312,800					
1972		5,384			35,125 [n]			198 [p, r]		
1973		10,469			15,989 [s]	383		2,500		
1974	41,798	5,915		89,966 [t]	32,525 [s]			400		
1975	92,265	3,734 [v]		173,371 [t]	353,282 [s]	7,671		362 [r]		
1976	52,891	6,312 [v]		26,354 [t]	36,584			20		
1977	34,887	16,876 [v]		45,544 [t]	88,400			3,555		
1978	37,001	11,136		32,449 [t]	40,800			0 [r]		
1979	158,336	8,355		91,372 [t]	119,898			4,640 [r]		
1980	26,346	5,137		28,933 [t]	55,268			3,150		
1981	15,623	23,508		74,560	57,386 [w]			25,806		
1982	3,624	4,235		31,421	15,901	1,020 [x]		5,378		31,958
1983	21,869	7,705		49,392	27,200	7,560		8,578 [r]		90,875
1984	16,758	12,411		27,130	15,150	2,800 [y]	1,300	7,200	200	56,633 [z]
1985	22,750	17,276 [v]		152,768	56,016 [s]	10,760	1,195	7,538	356	62,010
1986	17,976	6,703 [v]	59,313	84,207 [aa]	31,723 [s]	825	14	16,686	213	87,940
1987	22,117	21,180	52,416	153,267 [aa]	48,956 [s]	6,115	50	12,000		80,776
1988	13,436	18,024	33,619	45,206 [aa]	23,597 [s]	1,550	0	6,950	140	36,786
1989	30,421	21,342 [v]	69,161	99,116 [aa]	43,834 [s]	5,320	40	3,050	210 [p]	35,750
1990	34,739	8,992 [v]	78,631	77,750 [aa]	35,000 [ab]	3,651	1	4,683	739	51,755
1991	13,487	32,905 [v]		86,496 [ac]	37,733 [s]	2,426	53	11,675	468	78,461
1992	14,070	8,893 [v]		78,808 [ac]	22,517 [s]	4,438	4	3,339	450	49,082
1993	27,838	19,857		42,922 [ac]	28,798 [s]	2,620	0	4,610	555	29,868
1994 [ad]	76,057	23,777 [v]		153,000 [ac]	65,247 [s]	1,429 [p]	20 [p]	10,734	209 [p]	98,358
E.O. [ag]	> 33,000	> 11,000		> 64,000 [ah]	50,000 - 120,000					> 80,000

continued

[a] Latest table revision November, 22 1994.
[b] Expanded total abundance estimates for upper Toklat River index area using stream life curve (SLC) developed with 1987-1993 data. Index area includes Geiger Creek, Sushana River, and mainstem floodplain sloughs from approximately 0.25 mile upstream of roadhouse to approximately 1.25 mile downstream of roadhouse.
[c] Estimates are a total spawner abundance, generally from using spawner abundance curves and streamlife data.
[d] Side-scan sonar estimate, unless otherwise indicated.
[f] Within the Canadian Porcupine River drainage. Total escapement estimated using weir to aerial survey expansion factor of 2.72, unless otherwise indicated.
[g] Aerial survey count unless otherwise indicated.
[h] Tatchun Creek to Fort Selkirk.
[j] Duke River to end of spawning sloughs below Swede Johnston Creek.
[k] Boswell Creek area (5 km below to 5 km above confluence).
[m] Excludes Fishing Branch River escapement (estimated border passage minus Canadian removal).
[n] Weir installed on September 22. Estimate consists of a weir count of 17,190 after September 22, and a tagging passage estimate of 17,935 prior to weir installation.
[p] Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.
[r] Foot survey
[s] Weir count.
[t] Total escapement estimate using sonar to aerial survey expansion factor of 2.22.
[v] Population estimate from replicate foot surveys and stream life data.
[w] Initial aerial survey count was doubled before applying the weir/aerial expansion factor of 2.72 since only half of the spawning area was surveyed.
[x] Boat survey.
[y] Total index area not surveyed. Survey included the mainstem Yukon River between Yukon Crossing to 30 km below Fort Selkirk.
[z] Escapement estimate based on mark-recapture program unavailable. Estimate based on assumed average exploitation rate.
[aa] Expanded estimates for period approximating second week August through middle fourth week September, using Chandalar River run timing data.
[ab] Weir was not operated. Although only 7,541 chum salmon were counted on a single survey flown October 26, a population estimate of approximately 27,000 fish was made through date of survey, based upon historic average aerial-to-weir expansion of 28%. Actual population of spawners was reported by DFO as between 30,000 - 40,000 fish considering aerial survey timing.
[ac] Total abundance estimates are for the period approximating second week August through middle fourth week of September . Comparatively escapement estimates prior to 1986 are considered more conservative; approximating the period of end of August through middle week of September.
[ad] Preliminary.
[ag] Interim escapement objective.
[ah] Based on escapement estimates for years 1974-1990.

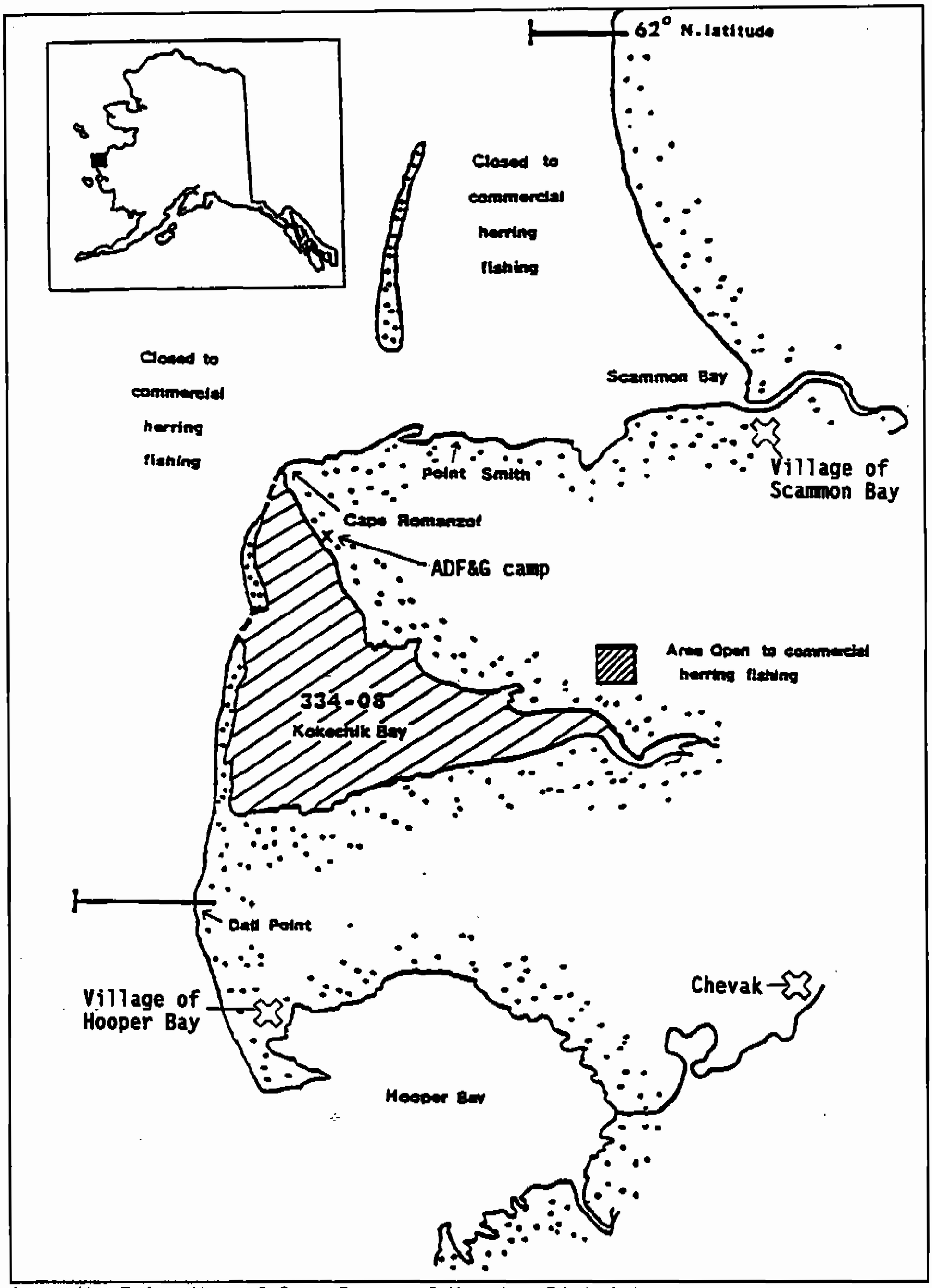
Appendix E.8. Coho salmon escapement counts for selected spawning areas in the Yukon River drainage, 1972-1994. [a]

Year	Andreafsky River			Kantishna River		Nenana River Drainage						
	East Fork	West Fork	Anvik River	Geiger Creek	Barton Creek	Lost Slough	Nenana Mainstem[b]	Wood Creek[c]	Seventeen Slough	Delta Clearwater River[f, g]	Clearwater Lake and Outlet	Richardson Clearwater River
1972										630	417	454 [k]
1973										3,322	551 [f]	375 [f]
1974						1,388			27	3,954 [j]	560	652 [f]
1975						943			956	5,100	1,575 [f, h]	4 [k]
1976			467 [k]	25 [j]		118			281	1,920	1,500 [f, h]	80 [k]
1977			81 [k]	60		524		310 [b]	1,167	4,793	730 [f, h]	327
1978						350		300 [b]	466	4,798	570 [f, h]	
1979						227			1,987	8,970	1,015 [f, h]	372
1980				3 [j]		499		1,603 [b]	592	3,946	1,545 [f, h]	611
1981	1,657 [k]					274		849 [n, r]	1,005	8,563 [p]	459 [k]	550
1982				81				1,436 [n, r]		8,365 [p]		
1983				42		766		1,042 [n]	103	8,019 [p]	253	88
1984				20 [j]		2,677		8,826 [n]		11,061	1,368	428
1985				42 [j]		1,584		4,470 [n]	2,081	5,358	750	
1986				5	496	794		1,664 [n]	218 [d, h]	10,857	3,577	146 [k]
1987				1,175		2,511		2,387 [n]	3,802	22,300	4,225 [f, h]	
1988	1,913	830	1,203	159	437	348		2,046 [n]		21,600	825 [f, h]	
1989				155	12 [k]			412 [n]	824 [k]	11,000	1,600 [f, h]	483
1990				211		688	1,308		15 [k]	8,325	2,375 [f, h]	
1991				427	467 [k]	564	447		52	23,900	3,150 [f, h]	
1992				77	55 [k]	372			490	3,963	229 [f, h]	500 [f]
1993				138	141	484	419	666 [n, s]	581	10,875	3,525 [f, h]	
1994 [t]				410	2,000 [n, w]	944	1,648	1,317 [n, x]	2,909	62,675 [y]	3,425 [f, h]	5,800 [f]
E.O.										>9,000 [u]		

[a] Only peak counts presented. Survey rating is fair to good, unless otherwise noted. Latest table revision: November 29, 1994.
[b] Foot survey.
[c] Mainstem Nenana River between confluences of Lost Slough and Teklanika River.
[d] Surveyed by F.R.E.D.
[f] Surveyed by Sport Fish Division.
[g] Boat survey counts in the lower 17.5 river miles, unless otherwise indicated.
[h] Boat Survey.
[i] Aerial survey.
[k] Poor survey.
[n] Weir count.
[p] Expanded estimate based on partial survey counts and historic distribution of spawners from 1977-1980.
[r] Coho weir was operated at the mouth of Clear Creek (Shores Landing).
[s] Weir project terminated on October 4. Weir normally operated until mid to late October.
[t] Preliminary.
[u] Interim escapement objective established March, 1993, based on boat survey counts of coho salmon in the lower 17.5 river miles during the period October 21-27.
[w] A total of 298 coho salmon were passed between September 11 and October 4. However, it was estimated that 1,500 to 2,000 coho salmon passed the weir site within a 24-hour period beginning at approximately noon on October 4. Weir operated from August 18 through morning of October 5, 1994.
[x] Weir project terminated September 27. Weir normally operated until mid-October.
[y] An additional 17,565 coho salmon were counted by helicopter in the Delta Clearwater outside of the normal mainstem index area.

APPENDIX F

CAPE ROMANZOF HERRING DISTRICT FISHERY



Appendix F.1. Map of Cape Romanzof Herring District.

Appendix F.2. Commercial herring catch and effort data by fishing period, Cape Romanzof District, 1994.

			Number			Period Catch (st)			
Date	Time of Fishery	Hours Fished	Fishermen	Vessels	Landings	Bait	Sac Roe	Total	Roe
May 23-24	2315-0015	1.0	48	47	48	0.0	56.0	56.0	8.11
May 24-25	2330-0230	3.0	55	54	155	0.0	276.5	276.5	9.27
May 25-26	2200-0100	3.0	43	43	48	0.0	123.5	123.5	9.41
Total		7.0	55	54	251	0.0	456.0	456.0	9.17

Appendix F.3. List of Lower Yukon Area emergency orders pertaining to the Cape Romanzof Herring District, 1994.

E.O. Number	Effective Date	Action Taken	Comments
3-LY-H-01-94	May 23	Established a 1 hour commercial herring fishing period beginning 11:15 p.m.Monday,May 23 until 12:15 a.m. Tuesday, May 24. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	Test fishing crew began catching herring on May 18. The first spawn was documented on May 19. Test Samples indicated a majority of herring were ripe.
3-LY-H-02-94	May 24	Established a 2-hour commercial herring fishing period beginning 11:30 p.m. Tuesday, May 24 until 1:30 a.m. Wednesday, May 25. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	Herring samples obtained by commercial fishermen indicated a majority of the fish were ripe with an average roe recovery of 8.3%.
3-LY-H-03-94	May 25	Extends the 2-hour commercial herring fishing period established by emergency order 3-LY-H-02-94 by one hour.	In consideration of ripe herring and a high roe recovery, a one hour extension to the commercial fishing period was warranted.
3-LY-H-04-94	May 25	Established a 3-hour commercial herring fishing period beginning 10:00 p.m.Wednesday, May 25 until 1:00 a.m. Thursday, May 26. Also restricted gear to no more than 50 fathoms and one gillnet per vessel.	The preseason harvest projection was 414 st. The cumulative harvest to date was 261 st.

Appendix F.4. Commercial Pacific herring fishery data, Cape Romanzof District, 1980-1994.

	1980	1981	1982	1983 a	1984	1985	1986	1987 b	1984	1989	1990	1991	1992	1993	1994
Catch (st)	611	720	657	816	1,185	1,299	1,865	1,342	1,119	926	329	526	530	371	456
Hours Fished	326	120	180	144	90	60	42	8	11	13	3	5	6	12.5	7
Percent Roe Recovery	9.8	8.0	9.3	9.0	8.6	8.3	9.2	8.9	9.1	9.3	8.4	8.8	8.0	9.6	9.2
Estimated Value ($ millions)	0.13	0.21	0.22	0.37	0.31	0.55	1.14	1.00	1.02	0.49	0.15	0.21	0.16	0.11	0.12
Number of Buyers	2	4	2	3	3	2	5	9	6	6	4	2	2	2	2
Number of Fishermen	69	111	75	63	66	73	97	157	113	115	95	80	73	41	55
Number of Boats	54	82	50	57	59	69	90	152	108	110	90	79	73	41	54
Percent Effort by Local Fishermen c	70	81	85	92	99	91	84	53	63	87	76	96	97	95	95
Number of Boats with Shakers d	12	11	10	2	1	2	12	22	0	0	0	0	0	0	0
Percent Harvest by Local Fishermen	40	60	84	88	100	94	70	33	60	82	77	97	96	91	92
Biomass Estimate e	3,000	4,900	4,900	5,500	6,100	7,000	7,500	7,200	6,600	4,400	4,500	4,500	4,500	4,000	5,000
Exploitation Rate	20.4	14.7	13.4	14.8	19.4	18.6	24.9	18.6	17.0	21.0	7.3	11.7	11.8	9.3	9.1

a Exclusive Use Regulation into effect.
b Last year hydraulic shakers were allowed
c Local fishermen described as residents of Chevak, Scammon Bay, and Hooper Bay.
d Numbers of boats using shakers were estimated.
e Biomass estimate is a qualitative estimate of herring abundance, except for aerial survey biomass estimate in 1987.

Appendix F.5. Pacific herring processors and associated data, Cape Romanzof District, 1994.

Commecial Operation (Processing location/ buying station)	Representative	Product	Processing/Tendering Vessels
Icicle Seafoods P.O. Box 79003 Seattle, WA 98119	Kelly Pettingill	Sac Roe Herring (Frozen)	M/V Gandil M/V Chichagof
NorQuest Fisheries 4225 23rd Ave. W. Seattle, WA 98119	Marty Jacques	Sac Roe Herring (Frozen)	P/V Lafayette P/V Pribilof M/V Afognak M/V Zingaro M/V Shypoke

Appendix F.6. Test sample data collected by commercial fishermen, Cape Romanzof District, 1994.

Capture Date/Time	Mesh Size (inches)	Sample Size Wt.(kg)	Sample Size No.	% Female	Female % Gonad Maturity Green	Ripe	Spent	% Roe	Capture Location
May 22	2 1/2	10.0	32	34	0	91	9	7.4	onshore 1 mile north of ADF&G camp (Tim's camp)
7:15 p.m. -	2 1/2	10.0	32	31	0	90	10	6.0	1/2 mile south of ADF&G camp (South Point)
8:30 p.m.	3	10.0	25	40	0	90	10	9.4	onshore 1 mile north of ADF&G camp (Tim's camp)
	3	10.0	25	28	14	86	0	5.5	onshore 1 mile north of ADF&G camp (Tim's camp)
	3	10.0	25	28	57	43	0	2.8	1/2 mile south of cape
	3	8.0	23	39	0	78	22	8.7	combined from above 2 samples
	Subtotal	58.0	162	33	13	81	6	6.6	
May 23	3 1/8	10.0	26	38	0	100	0	7.5	onshore 1 mile north of ADF&G camp (Tim's camp)
8:30 a.m. -	3 1/8	10.0	25	52	8	92	0	11.5	
9:00 a.m.	3 1/8	10.0	28	29	0	100	0	6.5	
	Subtotal	30.0	79	39	3	97	0	8.5	
May 23 10:30 a.m.	3		90	54	sex ratio only				1/2 mile south of ADF&G camp (South Point)
May 23	3 1/16	10.0	26	54	14	86	0	10.0	offshore near tender, 1 mile north of ADF&G camp
2:00 p.m.	3 1/16	10.0	23	26	0	100	0	4.5	
	3 1/16	10.0	25	40	10	90	0	9.5	
	3 1/16	10.0	27	41	18	82	0	8.3	
	3 1/16	10.0	23	57	15	85	0	10.1	
	Subtotal	50.0	124	44	13	87	0	8.5	
May 23	3	10.0	26	42	0	100	0	10.5	offshore in front of ADF&G camp
9:15 p.m.	3	10.0	25	44	9	91	0	10.0	1/2 mile south of ADF&G camp (South Point)
	3	10.0	26	50	15	85	0	9.5	
9:30 p.m.	3	10.0	25	32	0	100	0	9.1	1/2 mile north of ADF&G camp (North Point)
	3	10.0	25	40	0	100	0	8.7	
	3	10.0	27	44	0	92	8	10.3	
	3	10.0	31	32	10	70	20	5.3	
8:30 p.m.	3 1/16	10.0	24	63	7	93	0	14.0	1 mile north of ADF&G camp (Tim's camp)
	3 1/16	10.0	24	38	0	100	0	9.0	
	3 1/16	10.0	24	46	9	91	0	10.5	
	3 1/16	10.0	25	40	0	100	0	9.0	
	Subtotal	110.0	282	42	5	92	3	9.6	

-Continued-

Appendix F.6. (continued)

Capture Date/Time	Mesh Size (inches)	Sample Size Wt.(kg)	Sample Size No.	% Female	Female % Gonad Maturity Green	Female % Gonad Maturity Ripe	Female % Gonad Maturity Spent	% Roe	Capture Location
May 24	3	10.0	27	30	0	100	0	6.7	1/2 mile south of ADF&G camp (South Point)
10:00 a.m. -	2 1/2	10.0	31	48	0	100	0	10.1	
10:30 a.m.	3	10.0	25	20	0	100	0	4.3	onshore 1 mile north of ADF&G camp (Tim's camp)
	2 1/2	10.0	32	28	0	100	0	6.5	
	Subtotal	40.0	115	32	0	100	0	6.9	
May 24	3 1/16	10.0	25	48	0	100	0	11.4	1 mile north of ADF&G camp (Tim's camp)
11:30 a.m.	3 1/16	10.0	24	38	0	100	0	9.1	
	3 1/16	10.0	25	40	0	100	0	9.5	
	3 1/16	10.0	25	44	9	91	0	9.2	
	Subtotal	40.0	99	42	2	98	0	9.8	
May 24	3	10.0	25	28	0	100	0	6.5	onshore 1/2 mile south of camp (South Point)
2:00 p.m. -	3	10.0	25	56	7	93	0	11.8	
3:00 p.m.	3	10.0	26	35	0	100	0	6.2	onshore 300m north of camp (North Point)
	3	10.0	25	40	10	90	0	7.2	
	3	10.0	26	58	0	100	0	8.3	onshore 1 mile north of camp (Tim's camp)
	3	10.0	27	41	0	91	9	8.1	
	Subtotal	60.0	154	43	3	95	2	8.3	
May 25	3	10.0	26	27	0	100	0	7.1	onshore 1 mile north of ADF&G camp (Tim's camp)
2:30 p.m. -	3	10.0	25	52	8	92	0	12.0	
4:00 p.m.	3	10.0	26	54	0	100	0	12.4	onshore 300m north of camp (North Point)
	3	10.0	25	48	0	100	0	10.0	
	3	10.0	25	52	0	100	0	10.4	onshore 1/2 mile south of camp (South Point)
	3	10.0	25	44	0	100	0	8.5	
	Subtotal	60.0	152	46	1	99	0	10.1	
May 25 2:30 p.m.	2 1/2	10.0	33	45	0	80	20	6.9	onshore 1 mile north of ADF&G camp (Tim's camp)

Appendix F.7. Subsistence herring harvest (st) and effort data, Cape Romanzof, 1975-1994. a

	Scammon Bay		Chevak		Hooper Bay		Totals	
Year	Harvest(st)	Number of Fishermen	Harvest(st)	Number of Fishermen	Harvest(st)	Number of Fishermen	Harvest(st)	Fishing Families
1975	-	-	-	-	3	34	3	34
1976	1	4	1	9	3	28	5	41
1977	-	-	<1	2	2	28	2	30
1978	1	1	-	-	4	28	5	29
1979	6	21	2	21	3	42	11	84
1980	3	18	4	20	4	23	11	61
1981	8	16	2	9	4	20	14	45
1982	4	15	2	10	5	18	11	43
1983	3	14	1	5	5	18	9	37
1984	4	16	3	7	4	23	11	46
1985	2	12	2	12	4	20	8	44
1986	2	17	1	19	4	4	7	40
1987	1	9	1	6	1	10	3	25
1988	2	7	2	6	4	19	7	32
1989	1	7	<1	1	2	16	3	24
1990	2	5	1	3	6	24	8	32
1991	1	7	<1	3	2	8	3	18
1992	1	10	<1	4	2	16	4	30
1993	3	17	<1	1	2	24	5	42
1994	1	9	2	16	3	23	6	48

a Subsistence survey results are believed to reflect harvest trends, however, reported catches reflect minimum figures since all fishermen cannot be contacted.

Apendix F.8. Aerial survey biomass estimates of Pacific herring, Cape Romanzof District, 1994.

Date	Flight No	Flight Hrs.	Survey Rating b	Spawn No.	Spawn Length (miles)	Biomass (st) Estimates by Index Area a KOK	SCB	Total
May 20	1	0.58	3	1	0.20	493.9	555.9	1,049.8
May 21	2	0.67	2	3	0.25	619.0	1,697.3	2,316.3
May 26	3	0.33	5	0	0.00	0.0	0.0	0.0
May 27	4	0.25	5	0	0.00	0.0	862.8	862.8
June 7	5	0.83	4	1	0.10	55.8	340.5	396.3
Total		2.66		5	0.55			

a Index Areas: KOK-Kokechik Bay and offshore waters from Cape Romanzof to Hooper Bay.
SCB-Scammon Bay (Cape Romanzof to Kun River)

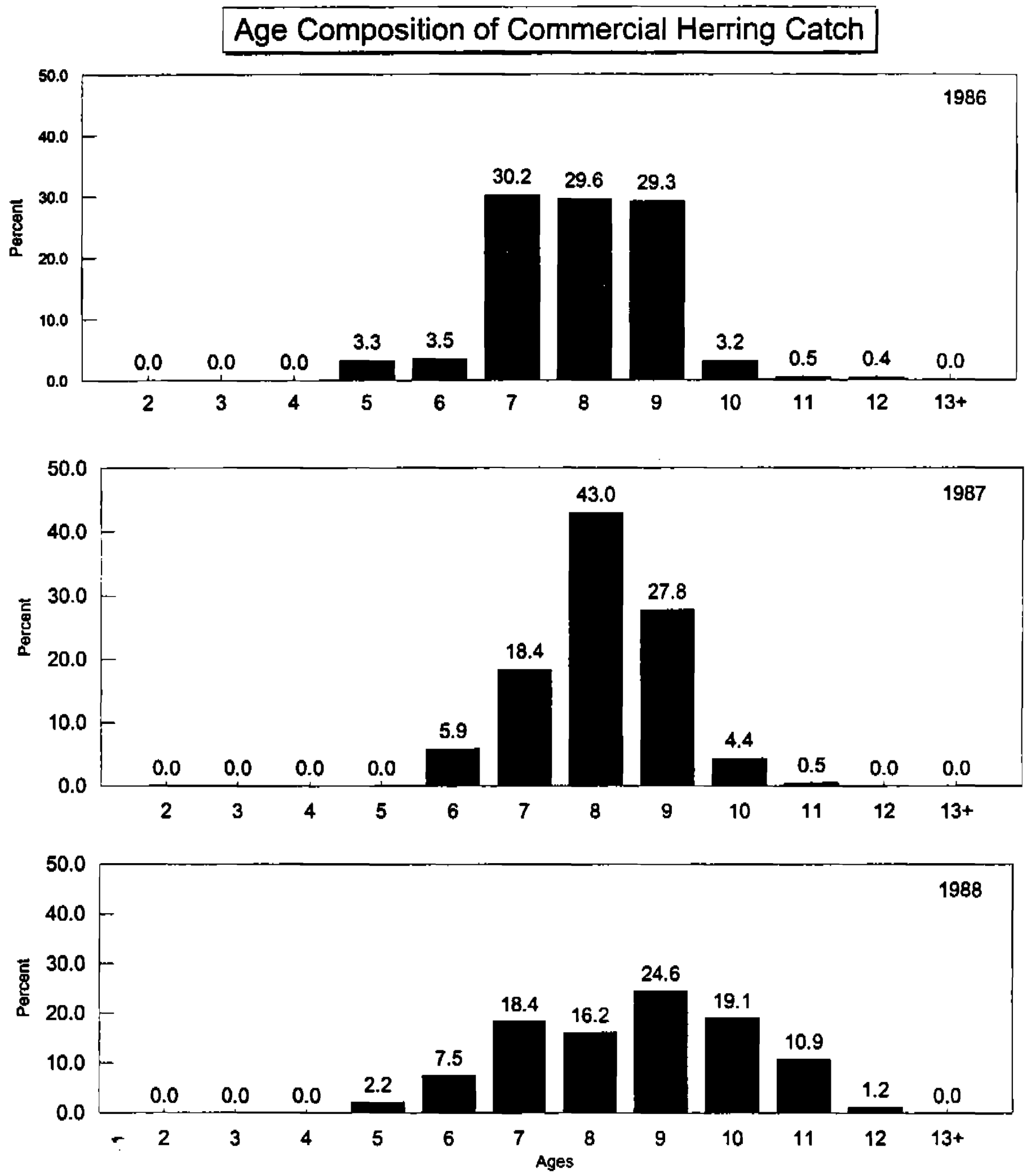
b Survey Rating
1=Excellent (calm, no glare)
2=Good (light ripple, uneven lighting, easy to see schools)
3=Fair (light chop, some glare or shadows, relatively easy to see schools)
4=Poor (rough seas, strong glare, difficult to see schools)
5=Unsatisfactory

Appendix F.9. Percent age composition of herring sampled from commercial harvest, Cape Romanzof District, 1980-1994.[a]

Year	Number Sampled[b]	Age in Years												Total[c]
		2	3	4	5	6	7	8	9	10	11	12	13+	
1980	374	0.0	2.4	20.1	5.1	38.0	9.9	23.0	0.5	0.3	0.5	0.3	0.0	100.1
1981	315	0.0	0.3	55.9	25.1	1.6	11.7	2.2	3.2	0.0	0.0	0.0	0.0	100.0
1982	604	0.0	0.2	13.7	66.4	13.2	1.2	3.3	1.0	1.0	0.0	0.0	0.0	100.0
1983	913	0.0	0.0	15.8	29.8	45.1	6.7	0.4	1.6	0.4	0.1	0.0	0.0	99.9
1984	543	0.0	0.0	0.6	17.3	35.2	41.3	2.9	1.7	0.6	0.4	0.2	0.0	100.2
1985	583	0.0	0.0	6.5	8.9	34.6	29.3	16.6	3.4	0.5	0.0	0.0	0.0	99.8
1986	570	0.0	0.0	0.0	3.3	3.5	30.2	29.6	29.3	3.2	0.5	0.4	0.0	100.0
1987	407	0.0	0.0	0.0	0.0	5.9	18.4	43.0	27.8	4.4	0.5	0.0	0.0	100.0
1988	414	0.0	0.0	0.0	2.2	7.5	18.4	16.2	24.6	19.1	10.9	1.2	0.0	100.1
1989	702	0.0	0.0	0.0	0.6	3.3	13.0	29.8	11.5	18.5	15.0	7.5	0.9	100.1
1990	287	0.0	0.0	0.0	0.7	9.1	10.8	21.6	23.7	9.8	13.2	7.7	3.5	100.1
1991	591	0.0	0.0	0.0	0.2	1.0	29.1	17.4	15.4	13.4	9.0	8.6	5.9	100.0
1992	401	0.0	0.0	0.0	0.0	1.0	1.0	27.7	17.5	17.5	16.7	7.5	11.1	100.0
1993	819	0.0	0.0	0.0	0.7	3.5	2.6	2.0	29.8	13.4	14.8	16.6	16.6	100.0
1994	452	0.0	0.0	0.0	0.0	4.4	6.6	4.0	6.6	29.0	16.6	14.4	18.4	100.0

[a] Data from Age, Size, and Sex Composition ADF&G Technical Data Reports.
[b] Number sampled shown are number of fish which could be aged.
[c] Totals may not equal 100% due to rounding errors.

Appendix F.10. Age composition of Pacific herring sampled from the commercial harvest, Cape Romanzof District, 1986-1994.



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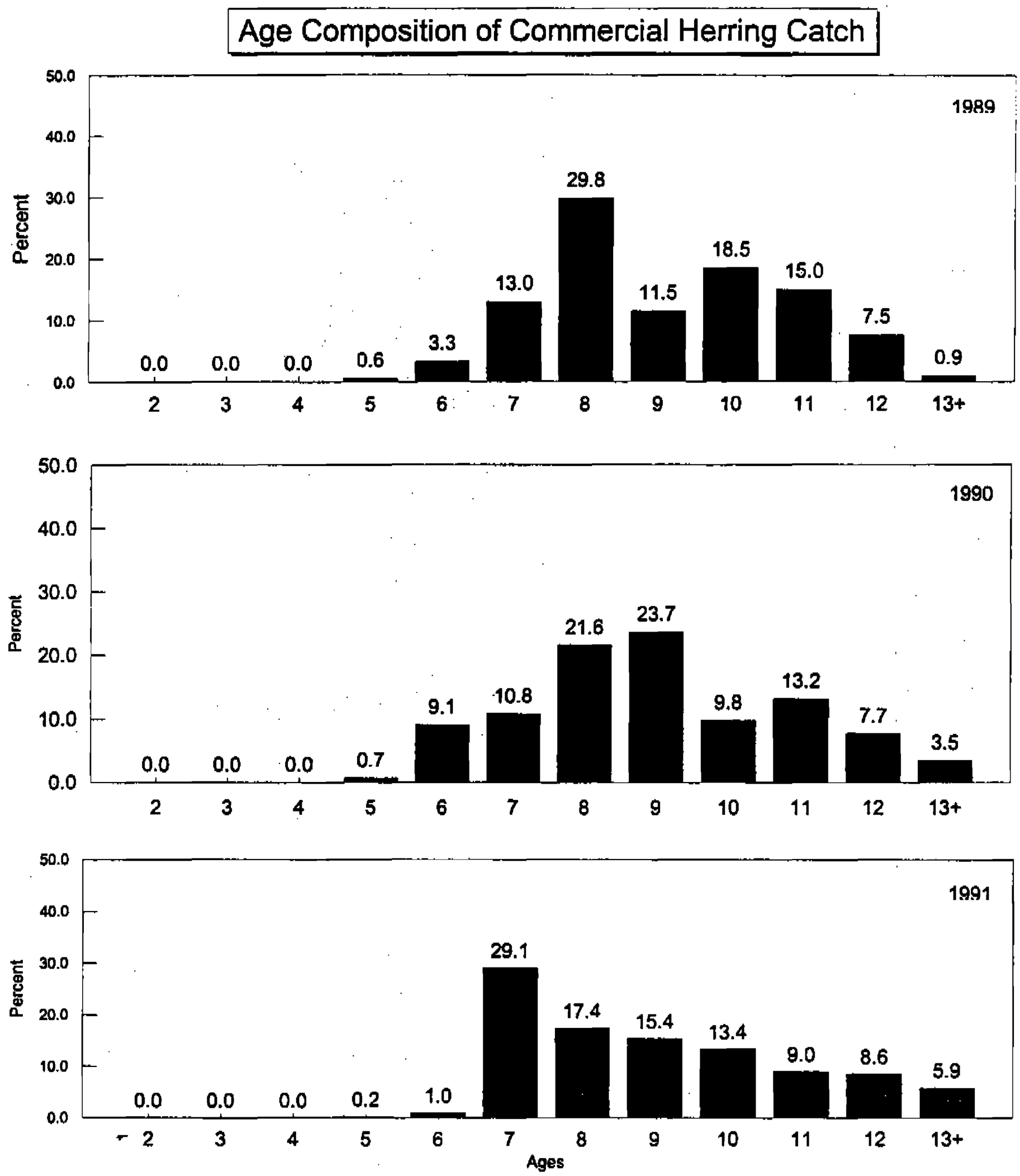
Appendix F.10. (page 2 of 3).



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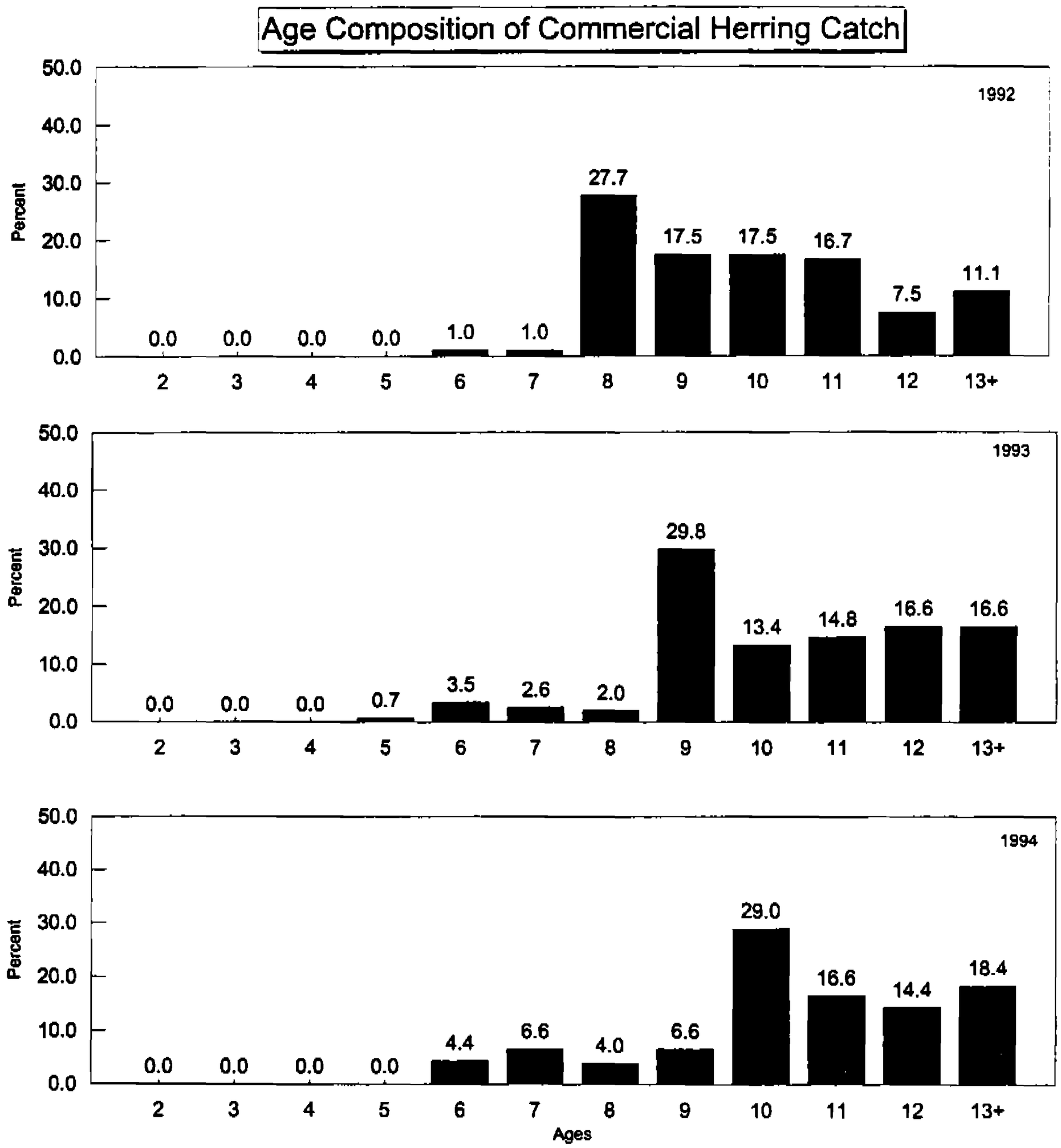
Appendix F.10. (page 3 of3).

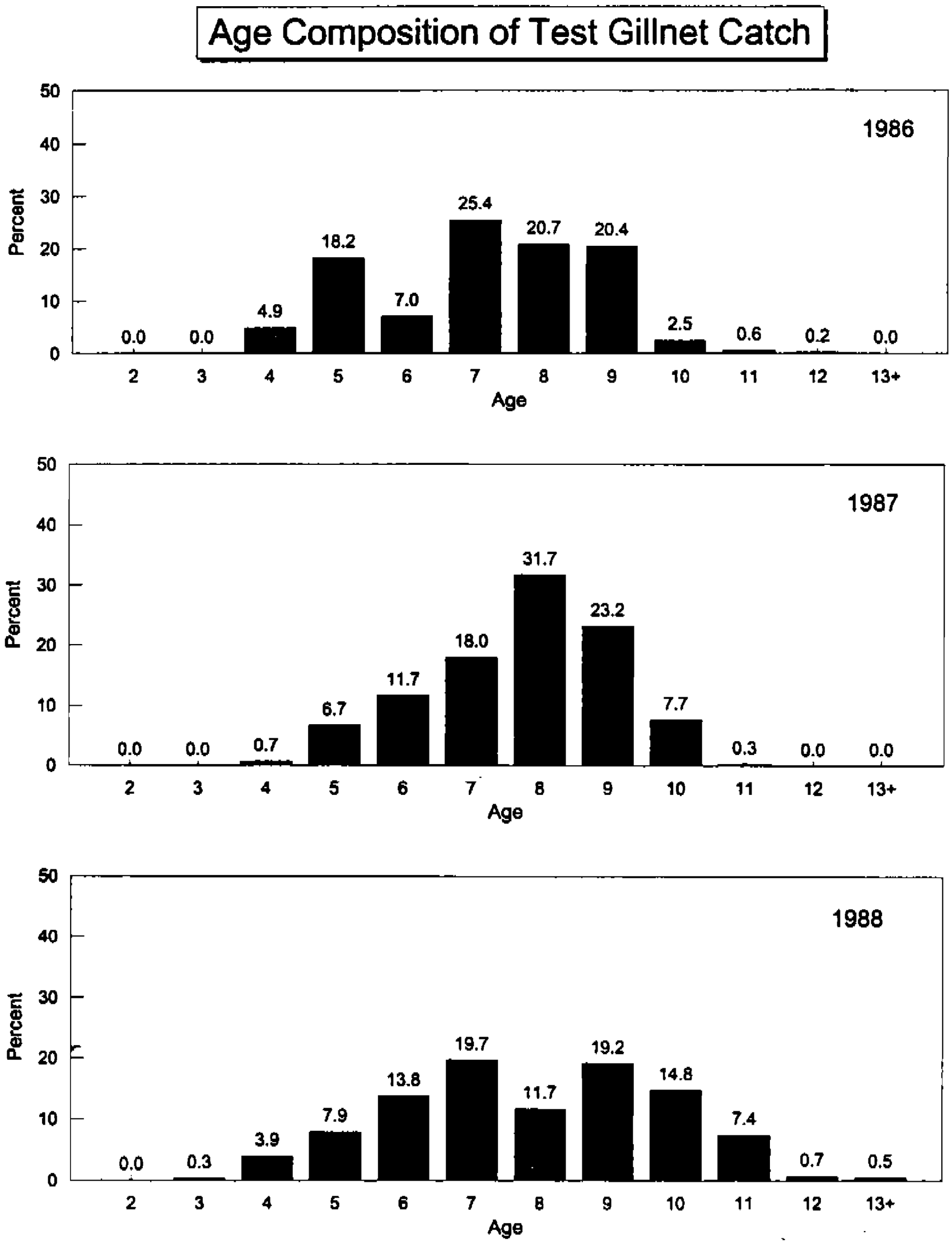


Appendix F.11. Percent age composition of herring sampled from variable mesh gillnet catches, Cape Romanzof District, 1980-1994. [a,b]

Year	Number Sampled [c]	Age in Years												Total [d]
		2	3	4	5	6	7	8	9	10	11	12	13+	
1980	447	0.4	19.2	17.0	2.0	27.3	6.9	25.3	0.4	0.4	0.4	0.4	0.0	99.7
1981	589	0.0	7.8	55.3	13.2	1.5	10.4	4.8	6.3	0.2	0.0	0.3	0.2	100.0
1982	611	0.7	7.5	20.3	39.3	9.5	1.8	7.4	7.2	5.6	0.7	0.0	0.2	100.2
1983	829	0.0	0.6	21.2	25.2	39.8	5.3	1.4	3.9	1.9	0.5	0.1	0.0	99.9
1984	735	0.0	1.5	5.7	26.9	19.3	36.1	4.8	3.5	1.6	0.3	0.3	0.0	100.0
1985	531	0.0	1.7	21.8	6.4	22.8	16.9	26.2	2.8	0.8	0.6	0.0	0.0	100.0
1986	511	0.0	0.0	4.9	18.2	7.0	25.4	20.7	20.4	2.5	0.6	0.2	0.0	99.9
1987	690	0.0	0.0	0.7	6.7	11.7	18.0	31.7	23.2	7.7	0.3	0.0	0.0	100.0
1988	608	0.0	0.3	3.9	7.9	13.8	19.7	11.7	19.2	14.8	7.4	0.7	0.5	99.9
1989	378	0.0	0.5	1.9	17.5	9.0	13.2	17.7	7.4	11.6	13.2	6.9	1.0	99.9
1990	1,011	0.0	1.0	4.7	3.6	24.6	11.2	12.7	17.5	7.7	9.4	5.3	2.3	100.0
1991	1,152	0.0	0.1	3.0	3.9	3.0	29.3	13.9	15.0	13.4	7.3	6.3	4.8	100.0
1992	994	0.0	0.0	6.4	4.6	4.7	2.0	19.4	12.7	20.6	12.9	7.7	8.8	99.8
1993	1,263	0.0	0.7	2.3	16.9	10.5	5.8	3.9	20.0	10.1	13.6	8.4	7.9	100.1
1994	1,246	0.0	0.0	3.1	2.9	23.8	13.6	5.1	4.7	17.1	9.1	9.3	11.2	99.9

a Data from Age, Size, and Sex Composition ADF&G Technical Data Reports, except for 1991 - 1994, which have not beenpublished yet.
b Variable mesh test gill net samples include Kokechik Bay and Scammon Bay fish sampled combined.
c Number sampled shown are number of fish which could be aged.
d Totals may not equal 100% due to rounding errors.

Appendix F.12. Age composition of Pacific herring sampled from variable mesh gillnet catches, Cape Romanzof District, 1986-1994.



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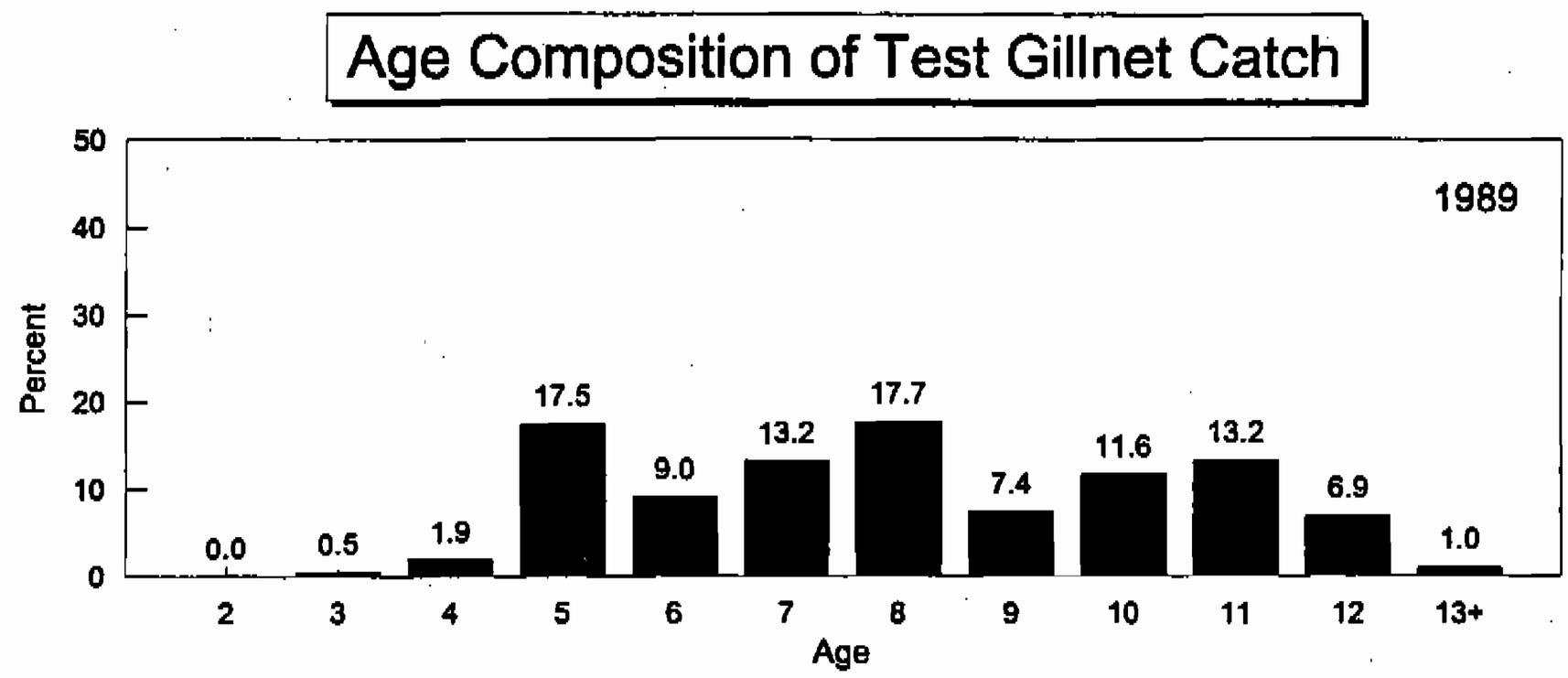
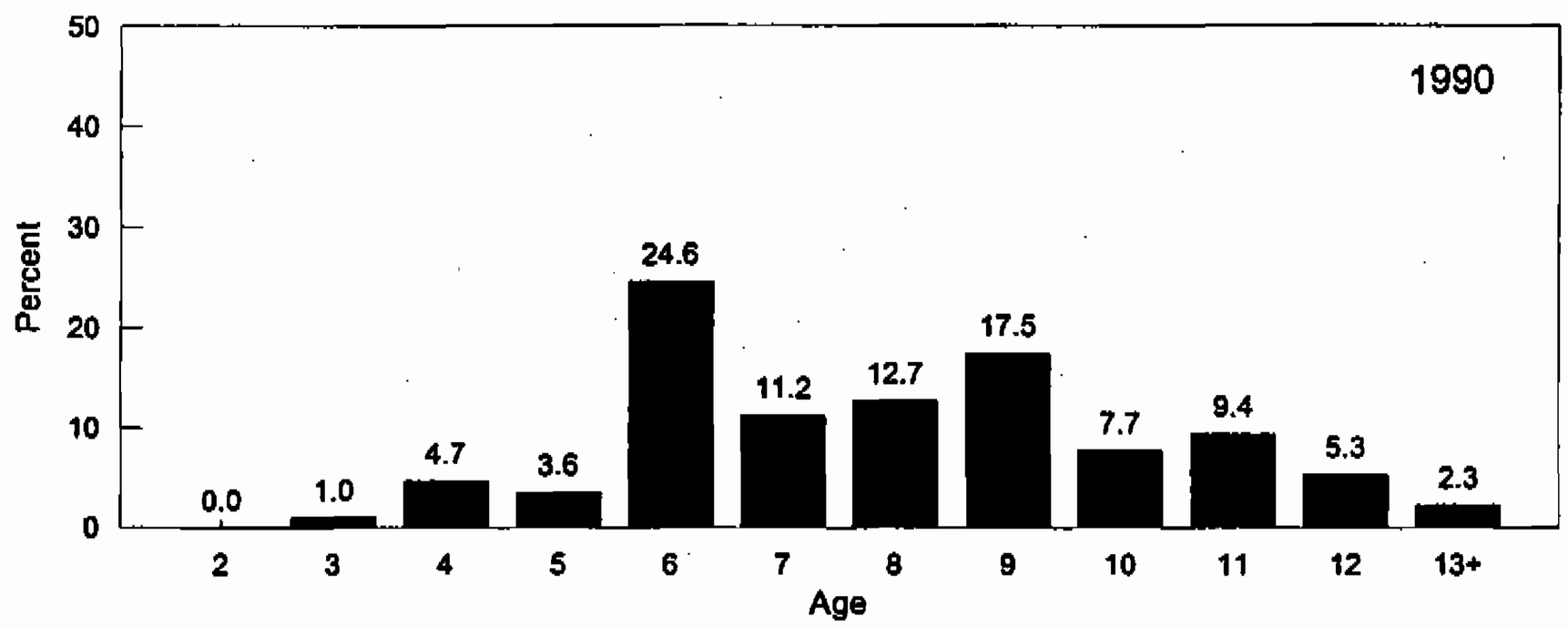
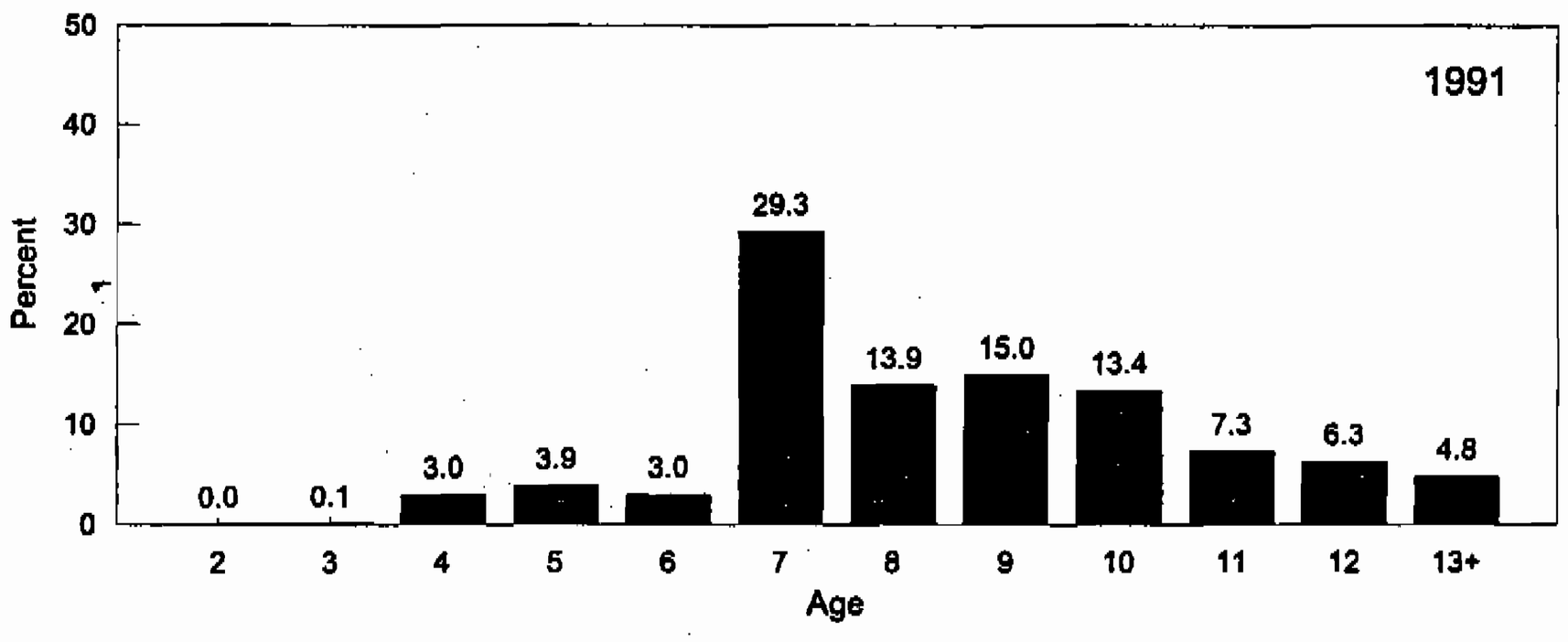
Appendix F.12. (page 2 of 3).







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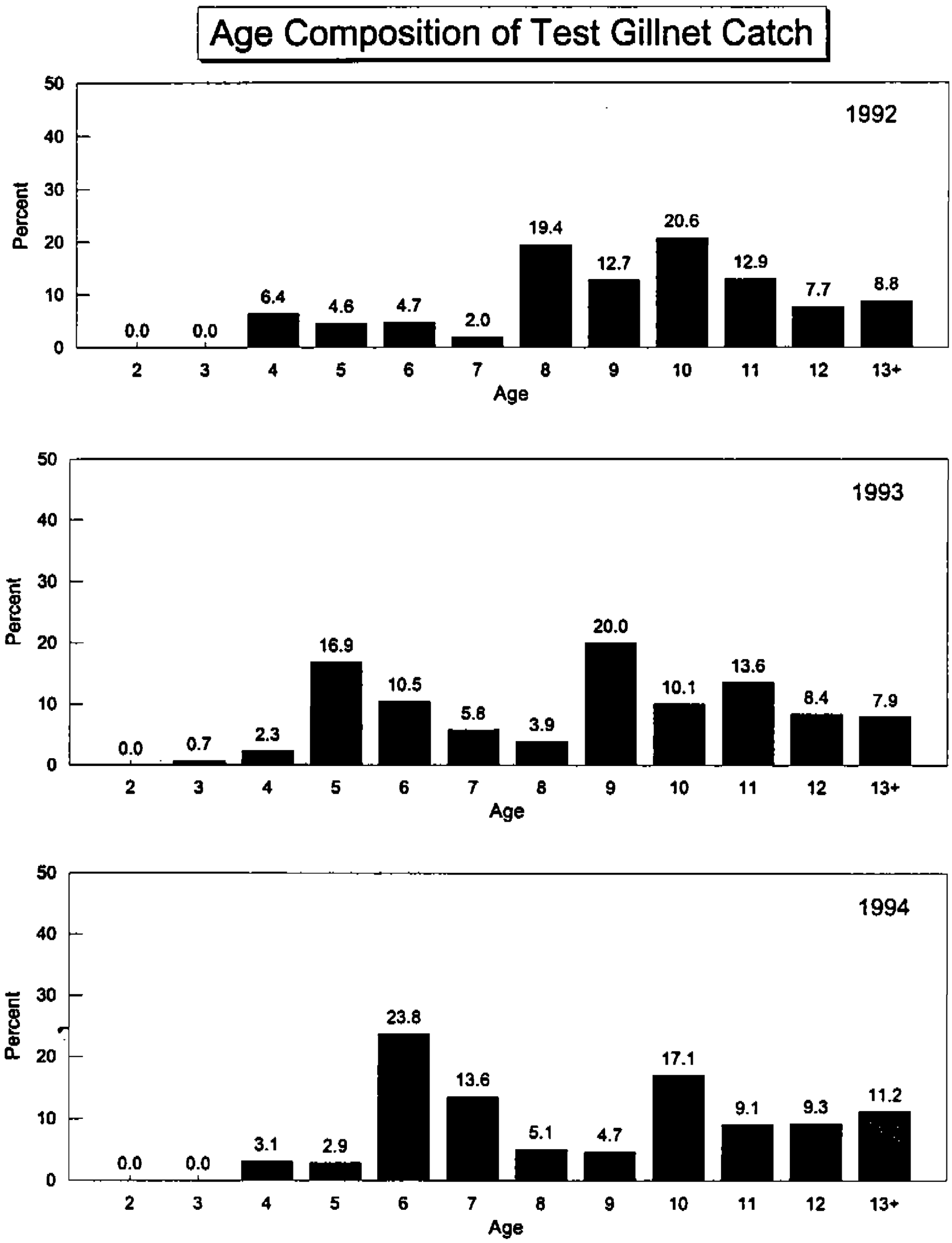
Appendix F.12. (page 3 of 3).



APPENDIX G

YUKON AREA FRESHWATER FISHERIES

Appendix G.1. Commercial freshwater fishery catches, Lower Yukon Area, 1978-1994.

	Sheefish		Whitefish		Burbot		Pike	Lamprey	Blackfish
Year	Number	Pounds	Number	Pounds	Number	Pounds	Pounds	Pounds	Pounds
1978	0	0	19	87	0	0	0	0	0
1979	5	39	23	55	0	0	0	0	0
1980	283	2,265	78	250	0	0	0	0	293
1981	299	2,812	779	2,875	0	0	9	0	0
1982	754	6,161	1,633	6,214	102	482	0	0	0
1983	395	2,692	163	648	0	0	0	0	0
1984	94	762	794	2,362	0	0	0	0	0
1985	358	3,081	1,514	4,586	0	0	0	0	0
1986	0	0	1,533	5,845	0	0	0	80	0
1987	0	0	2,144	7,564	0	0	0	0	0
1988	0	0	696	2,171	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0
1990	0	0	180	260	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
1992	0	0	95	640	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0
1994	0	0	157	471	0	0	0	0	0

Appendix G.2. Colville River commercial whitefish catches, Northern Area, 1964-1994. [a]

Year	Broad Whitefish	Humpback Whitefish	Arctic Cisco ("kaktok")	Least Cisco ("herring")
1964	2,951 [b]		16,000	9,000
1965	3,000 [b]		50,000	
1966	2,500 [b]		40,000	
1967 [g]				
1968	3,130		42,055	18,180
1969 [g]				
1970	2,080 [b]		19,602	25,930
1971	3,815	132	38,016	22,713
1972	3,850	1,497	37,333	13,283
1973	2,161		71,569	25,188
1974	3,117	2,316	35,601	13,813
1975	2,201	1,946	28,291	20,778
1976	2,172	1,815	31,659	34,620
1977	443	1,431	31,796	14,961
1978 [c]	20 [d]	1,102	17,292	21,589
1979	[d]	1,831	8,684	24,984
1980	[d]	4,231	14,657	31,459
1981	1,035	469	38,206	16,584
1982	1,662	201	15,067 [e]	25,746 [e]
1983	[d]	408 [d]	18,162	35,322
1984	789	179	27,686	13,076
1985	401	191	23,679	17,595
1986 [f]	0	18	29,895	9,444
1987 [f]	5	1,989	24,769	10,922
1988	429	6,733	10,287	23,910
1989	71	6,575	17,877	23,303
1990	0	5,694	19,374	21,003
1991	0	1,240	13,805	5,697
1992	126	5,209	20,939	6,962
1993	20	5,339	31,310	6,037
1994	0	6,056	8,958	10,176

[a] Numbers reflect fish harvested with the intent of commercial sale.
[b] Includes small numbers of humpback whitefish.
[c] Also reported taken were 1 chinook, 2 sockeye, 9 chum, and 118 pink salmon.
[d] No fishing effort during June or July.
[e] No fishing effort during November or December.
[f] No fishing effort during July or December.
[g] No data available.

Average weights: Broad whitefish 5.1 lbs.
Least cisco 0.9 lbs.
Arctic cisco 1.0 lbs.

Appendix G.3. Commercial freshwater fishery catches, Upper Yukon Area, 1971-1994.[a]

	Healy Lake[1]		Lake Minichumina		Tanana River				Yukon River			
	Whitefish		Whitefish		Burbot		Whitefish		Burbot		Whitefish	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1971			3,277	9,831								
1972	2,605	3,950	718	2,154								
1973	2,187	3,915	1,697	5,037								
1974	1,885	3,390	854	2,562								
1975	1,357	2,375										
1976	1,440	2,625										
1977	-	-										
1978	-	-										
1979	1,336	2,306										
1980	data unavailable											
1981	no effort											
1982	no effort											
1983	no effort											
1984	no effort				-	76						
1985	no effort											
1986	no effort						72	-				
1987	no effort											
1988	no effort						837	-				
1989	no effort								1	-	-	2,070
1990	no effort		no effort		1	-	809	-	0	0	985	2,078
1991	no effort		no effort									
1992	no effort		0	0	0	0	0	0	0	0	0	0
1993	no effort											
1994	no effort		no effort		0	0	921	1,400	0	0	0	0

[a] Numbers reflect fish harvested with the intent of commercial sale.

Appendix G.4. Whitefish sales during the commercial salmon fishing season, by district and period, Upper Yukon Area, 1994.

District 4

Period	Date	Number of Permits	Whitefish	Pounds
1	6/22-6/24	1	1	4

District 5

Period	Date	Number of Permits	Whitefish	Pounds
1	7/05-7/06	2	60	119
2	7/08-7/09	2	48	96
Subtotal		2	108	215

District 6

Period	Date	Number of Permits	Whitefish	Pounds
1	7/11-7/13	3	44	95
2	7/22-7/24	2	27	62
3	7/29-7/31	1	68	135
4	8/05-8/07	2	70	141
Subtotal		4	209	433
Upper Yukon Area Total		7	318	652

Appendix G.5. Freshwater finfish sales during the commercial salmon fishing season by district, Upper Yukon Area, 1988-1994.

	District 4		District 5				District 6	
	Whitefish		Whitefish		Sheefish		Whitefish	
Year	Number	Pounds	Number	Pounds	Number	Pounds	Number	Pounds
1988	170	977	1,432	1,497	94	689	205	208
1989								
1990								
1991								
1992	2,635	2,455	580	1,379 [a]	0	0	199	499
1993	0	0	59	48	0	0	140	300
1994	1	4	108	215	0	0	209	433

[a] Sales of 950 pounds of whitefish did not include number of fish.

Appendix G.6. Subsistence and personal use freshwater finfish catches taken under authority of a permit, Yukon Area, 1994. a

Permit Fishing Area	Permit Type	Issued	Returned	Percent Returned	Fished b	Whitefish	Sheefish	Burbot	Pike	Suckers	Grayling
District 5											
Yukon River near Haul Road Bridge	SY-#-94	50	49	98%	36	118	277	1	11	0	0
Yukon River near Circle and Eagle	SE-#-94	79	76	96%	51	356	5	7	44	0	0
District 6											
Tanana River Fishing Subdistrict 6A	SA-#-94	34	34	100%	28	1,432	0	34	52	0	0
Tanana River Fishing Subdistrict 6B	SB-#-94	102	94	92%	49	785	0	36	51	0	0
Tanana River Fishing Subdistrict 6C	SC-#-94	145	142	98%	107	97	3	13	9	0	0
Tanana River Upstream of Subdistrict 6C	SU-#-94	7	7	100%	3	151	0	8	51	0	0
Kantishna River Fishing Subdistrict 6A	SK-#-94	3	3	100%	2	15	0	0	1	0	0
Tolovana River Pike	ST-#-94	48	47	98%	24	472	76	97	995	68	3
Tanana River Whitefish	SW-#-94	1	1	100%	1	83	0	0	0	0	0
Total		469 c	453	97%	301 d	3,509	361	196	1,214	68	3

a Does not include permit information returned after March 20, 1995.
b The number of fishermen who fished for salmon and freshwater finfish based on returned permits.
c Includes 43 households that were issued permits for two different areas and includes 45 Minto households issued salmon permits.
d Includes 14 households that fished in two different permit areas.

Attachment 1. Regulation Changes Adopted by the Alaska Board of Fisheries in March, 1994.

Following the failure of the 1993 chum salmon runs in Western Alaska, state biologists and the Board of Fisheries identified several options for conserving and rebuilding chum stocks region wide. These proposals represented an aggressive effort by the department and fishermen to protect and conserve chum salmon for future use. On March 22-28, 1994 the Alaska Board of Fisheries adopted new commercial and subsistence fishing regulations intended to conserve chum salmon. The new regulations affecting the Yukon Area are listed below.

Subsistence Regulations

5 AAC 01.210 Fishing Seasons and Periods.

During the commercial fishing season, Subdistrict 4-A was included in the subsistence fishing schedule with Districts 1, 2, and 3, to separate the commercial and subsistence fishing periods.

In Districts 1, 2, 3, and Subdistrict 4-A salmon may not be taken for subsistence

(1) during the 24 hours immediately before the opening of the commercial salmon fishing season; and

(2) 18 hours immediately before, during, and 12 hours after each weekly fishing period of the commercial fishing season.

Since, subsistence and commercial fishing times are now separated in Subdistrict 4-A, the following language was deleted from the regulations because it is no longer applicable.

(b) (2) (A) in Subdistrict 4-A from June 15 through August 1, salmon may not be taken from 6:00 p.m. Sunday until 6:00 p.m. Tuesday and from 6:00 p.m. Wednesday until 6:00 p.m. Friday.

5 AAC 01.220. Lawful Gear and Gear Specifications.

New regulations allow fishermen to target non-salmon species and salmon species other than chum salmon, while protecting chum salmon.

(f) (1) (5) only gillnets of four inch mesh or less or eight inch mesh or greater may be used during periods established by emergency order for the conservation of chum salmon; the length of a gillnet of four inch or less mesh, will be established by emergency order.

(f) (1) (6) during fishing periods established by emergency order for the conservation of chum salmon, fish wheels may be operated only as follows:

(A) a live box must be constructed so that it contains no less than 45 cubic feet of water volume while in operation;

(B) while in operation, a livebox must be checked at least once every 12 hours, and all chum salmon caught must be returned alive to the water;

(C) for the purpose of this subsection, a "livebox" is a submerged container, attached to the fish wheel, that will keep fish caught by the fish wheel alive.

5 AAC 01.249. The 1994 Yukon River Drainage Fall Chum Salmon Management Plan.

This management plan is to ensure adequate escapement of fall chum salmon into the Yukon River drainage and to provide management guidelines to the department. The plan will be in effect from July 16 through December 31 each year as follows:

(1) when the projected run size is less than 400,000 chum salmon, the department shall close the commercial, sport, personal-use, and subsistence directed chum salmon fisheries;

(2) when the projected run size is from 400,000 to 475,000, the department may open a subsistence fishery of up to 24 hours of fishing per week;

(3) when the projected run size is from 475,001 to 550,000 chum salmon, the department may open a subsistence fishery of up to 48 hours of fishing per week;

(4) when the projected run size is from 550,001 to 600,000 chum salmon, the department may open a subsistence fishery of up to 120 hours of fishing per week;

(5) when the projected run size is greater than 600,000 chum salmon, the department may open the subsistence fishery to the fishing seasons and periods specified in 5 AAC 01.210 and 5 AAC 05.367, open a personal-use fishery of up to 84 hours of fishing per week, and a sport fishery to allow for the retention of chum salmon; and

(6) when the projected run size is greater than 650,000 chum salmon, the department may allow for a commercial fishery with the harvest distributed by district or subdistrict proportional to the established guideline harvest range; harvest levels below the low end of the guideline harvest range will be distributed by district or subdistrict proportional to the mid-point of the guideline harvest range.

5 AAC 01.248. The 1994 Toklat River Fall Chum Salmon Rebuilding Management Plan.

(a) The Board of Fisheries finds that a comprehensive long-term management plan is necessary to promote sustained yield of Toklat River fall chum salmon stocks. The lack of complete resource information concerning the Toklat River fall chum salmon stock limits the ability of the board to develop a long-term management approach at this time. The Yukon River Drainage Fisheries Association presented to the board a Toklat River Fall Chum Salmon Rebuilding Management Plan which contained recommended management actions that will aid in the rebuilding effort of the Toklat River fall chum salmon stock. The objective of the plan is to achieve the minimum escapement objective of 33,000 fall chum salmon on the Toklat River spawning grounds. To accomplish this objective, the department shall implement the following provisions:

(1) from August 15 through May 15, the Toklat River drainage is closed to sport, personal use, and subsistence fishing;

(2) in the Kantishna River, the following subsistence permit requirements apply:

(A) from August 15 through December 31, the subsistence salmon harvest limit in the Kantishna River is 2,000 chum salmon;

(B) from August 15 through December 31, the annual possession limit for the holder of a Kantishna River subsistence salmon fishing permit is 450 chum salmon; until the fishery harvest limit is reached, permits for additional salmon may be issued by the department;

(C) salmon may be taken only by set gillnet or fish wheel; after August 15, once the allowable fishery harvest limit of 2,000 chum salmon is reached, only fish wheel equipped with liveboxes may be operated as follows:

(i) a livebox must be constructed so that it contains no less than 45 cubic feet of water volume while in operation;

(ii) while in operation, a livebox must be checked at least once every 12 hours, and all chum salmon caught must be returned alive to the water;

(iii) for the purpose of this subsection, a "livebox" is a submerged container, attached to the fish wheel, that will keep fish caught by the fish wheel alive;

(3) the fishery management strategy is to allow a commercial harvest that is lower than the maximum harvest level that could be supported by the Yukon River fall chum salmon return;

(4) in Subdistricts 5-A and 6-A, during the commercial fall chum salmon season there may not be more than one 24-hour commercial period per week;

(5) in Subdistrict 5-A, following the commercial salmon season closure, salmon may be taken by subsistence fishing from 6:00 p.m. Tuesday until 6:00 p.m. Sunday.

(b) The provisions of this section supersede corresponding commercial, sport, personal use, and subsistence regulations in 5 AAC.

Commercial Regulations

5 AAC 05.200. Fishing Districts and Subdistricts.

The Board adopted language that incorporated the coastal areas of the Yukon Area which are not included in District 1 as a district for management purposes. This portion of the coastal Yukon

Area may have subsistence fishing restrictions established for the conservation of summer and fall chum salmon returning to the Yukon River.

(h) Coastal District: all waters between the latitude of the western most point of the Naskonat Peninsula and the latitude of Canal Point Light, not included in (a) - (f) of this section.

5 AAC 05.331. Gillnet Specifications and Operations.

This new regulation allows the department to establish commercial fishing periods with a minimum mesh size of 8 inches to target chinook salmon while protecting chum salmon.

(g) Notwithstanding (b) - (d) of this section, when determined by the department for the conservation of chum salmon, in District 1 through 6 salmon may be taken only with gillnets of eight inch or greater mesh during periods established by emergency order.

5 AAC 05.350. Closed Waters

This new language identifies when the department will move the regulatory markers at the mouth of the Andreafsky River farther downstream towards the mainstem Yukon River.

(4) waters of the Andreafsky River upstream of a line from department regulatory markers placed on each side of the river at its mouth; <u>the boundary markers may be moved if the department determines there are conservation concerns for chum salmon;</u>

5 AAC 05.368. Anvik River Chum Salmon Fishery Management Plan.

The Board established the Anvik River chum salmon management plan in order to allow a fishery in the mouth of the Anvik River which will allow a harvest of surplus Anvik River summer chum salmon and conserve summer chum stocks that are bound for other tributaries. The department plans on evaluating this fishery and reporting back to the Board in November 1994.

The department shall manage the Anvik River chum salmon fishery in accordance with the following guidelines:

(1) the department may open a portion of the Anvik River by emergency order to take chum salmon after the department projects that the escapement objective of 500,000 or more chum salmon will be achieved;

(2) only beach seine and dip nets may be used to take chum salmon in any portion of the Anvik River opened under (1) of this section;

(3) any king salmon taken must be returned to the water alive;

(4) a buyer or processor must purchase chum salmon taken from the Anvik River in the round.

5 AAC 39.225. Arctic-Yukon-Kuskokwim Region Chum Salmon Rebuilding Management Plan.

(a) This management plan is to foster sustained yield management to rebuild Arctic-Yukon-Kuskokwim Region chum salmon stocks. The board has identified conservation concerns for several Arctic-Yukon-Kuskokwim Region chum salmon stocks that have been depressed in recent years, and special conservation action will be needed to ensure sustained yield for these stocks.

(b) The guiding principles for this management plan are as follows:

(1) savings of chum salmon, resulting from regulatory actions in a fishery to reduce the interception of chum salmon, should be allowed to pass through subsequent fisheries to the spawning areas as needed to maintain sustained yield for future years;

(2) any regulatory action designed to conserve chum salmon should consider a companion provision to promote opportunity for full utilization of other species;

(3) the board and department should work toward reducing the bycatch of chum salmon originating in the Arctic-Yukon-Kuskokwim Region in ocean trawl fisheries.

(c) The regulatory provisions for the rebuilding Arctic-Yukon-Kuskokwim Region chum salmon stocks are set out in 5 AAC 01, 03, 04, 05, 07, and 09.