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YUKON AREA COMMERCIAL AND SUBSISTENCE SALMON FISHERIES

1992 MANAGEMENT PLAN

By

Alaska Department of Fish and Game

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INTRODUCTION

This management plan was developed to inform fishermen, processors, and other interested persons of the status of the 1992 Yukon River salmon runs and strategies that may be used to manage the various salmon fisheries. The Division of Commercial Fisheries of the Alaska Department of Fish and Game is responsible for the management of commercial and subsistence fisheries in the Yukon Area. Five species of Pacific salmon occur in the Yukon River, with chum salmon being the most abundant. The chum salmon return is made up of an early (summer chum) run and a later (fall chum) run.

The Yukon Area includes all waters of the Yukon River drainage in Alaska and coastal waters from Canal Point Light, near Cape Stephens, to the Naskonat Peninsula. For management purposes, the area is divided into six districts and 10 subdistricts (Figure 1). Commercial fishing occurs along the entire 1,200 mile length of the Yukon River in Alaska, and in the lower 220 miles of the Tanana River. The Lower Yukon Area (Districts 1, 2, and 3) includes the coastal waters of the delta and that portion of the 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 US/Canada border, including the lower 220 miles of the Tanana River. Commercial, Indian Food Fish, and Domestic fisheries also occur in Canada, with fishery management activities conducted by the Canadian Department of Fisheries and Oceans (DFO).

Subsistence fishing occurs throughout most of the Yukon River drainage. Subsistence use has the highest priority among beneficial uses of the resource. A majority of the commercial fishermen take salmon for both commercial and subsistence purposes. In order to enforce commercial fishing regulations, it is necessary to place some restrictions on the subsistence fishery. Throughout the fishing season, however, substantially more fishing time is allowed for subsistence than for commercial purposes.

In 1986, the subsistence law was amended to limit subsistence hunting and fishing to rural Alaska residents. To allow continued participation in salmon fisheries by residents of non-rural communities, the Alaska Board of Fisheries created personal use salmon fisheries. In December 1989, the Alaska Supreme Court overturned the 1986 subsistence law as unconstitutional, and since July 1, 1990, all state residents qualify as subsistence users. Since the 1990 season, all fishermen that had been required to have personal use permits have fished under subsistence regulations.

Management of the Yukon River commercial salmon fishery is complex because of the difficulty in determining run size, harvesting of mixed stocks, increasing efficiency of the commercial fleet, and allocation issues. The overall goal of the department's research and management program is to manage the various salmon runs for optimum sustained yield under the policies set forth by the Alaska Board of Fisheries. However, escapement levels required to produce maximum sustained yields cannot be determined at this time due to the lack of an adequate

database. Current escapement objectives in the Yukon River drainage are based on historic escapement trends in key spawning index areas which are surveyed or counted annually. In most cases, the average historic escapement level for each index area is considered a minimum escapement objective to be met or exceeded each season.

Due to the mixed stock nature of the fishery, some tributary populations may be under- or over harvested in relation to their actual abundance. Based on current knowledge, it is impossible to manage individual stocks independently, and there is concern that some spawning populations may be reduced to very low levels. Primary management tools are guideline harvest ranges, established by the Alaska Board of Fisheries, and emergency orders, which are used to open and close the commercial fishing seasons, establish fishing period frequency and duration, and establish mesh size restrictions. In general, based upon evaluation of run abundance, the department attempts to manage the commercial fisheries such that each district's harvest is proportionately similar within their respective guideline harvest ranges.

STATUS OF STOCKS AND FISHERY

Chinook Salmon

The Yukon River commercial salmon fishery in Alaska dates back to 1918. Commercial chinook salmon catches have ranged from 64,000 to 158,000 fish since 1961 (Table 1), and the recent 5-year average (1986-1990) is 106,670 fish (lower river districts 99,345, upper river districts 7,325). The majority of the commercial harvest occurs in Districts 1 and 2. The recent 5-year average chinook salmon subsistence harvest in Alaska is 49,663 fish (Table 2). The majority of the subsistence harvest occurs in the Upper Yukon Area. The commercial fishery in Canada harvests an average of 11,198 chinook salmon annually (1986-1990) (Table 3). Throughout the Yukon River drainage, the recent 5-year average chinook salmon subsistence harvest is approximately 60,861 fish (Tables 2 and 3).

Both summer chum salmon and chinook salmon enter the mouth of the river from late May through the middle of July. Chinook salmon spawning stocks are widely distributed throughout the Yukon River drainage (Tables 4 and 5). Stock identification studies indicate that approximately 57% of the chinook salmon harvest in Alaska is of Canadian origin. Information acquired through scale pattern analysis (SPA), and tagging studies indicate that Canadian chinook salmon stocks have undergone unacceptably high harvest rates in recent years. These harvest rates were estimated to range from 69% to 91% in recent years. Based on studies in other areas, harvest rates in excess of 67% will likely result in a serious decline in chinook salmon abundance. Efforts to reduce this exploitation rate have resulted in increased Canadian mainstem Yukon River spawning escapements during the past four years.

Due to the lack of reliable total population estimates, exploitation rates cannot be accurately estimated at this time for Alaskan chinook salmon stocks. Aerial survey escapement data indicate that spawning escapement objectives for middle river stocks (primarily Tanana River drainage) have not been met during some recent years, however, escapement objectives for lower river stocks (Yukon River drainage below the Koyukuk River) have generally been achieved in recent years. It should be understood that caution must be used when comparing aerial survey results between years due to the variability inherent to this methodology.

Summer Chum Salmon

Summer chum salmon commercial harvests have greatly increased during the past decade. The recent 5-year average (1986-1990) commercial harvest is 716,547 fish in-the-round and 209,624 pounds of roe (Table 1). The majority of the commercial harvest takes place in Districts 1 and 2, and Subdistrict 4-A. The Subdistrict 4-A fishery is primarily a salmon roe fishery. Approximately 249,303 summer chum salmon are taken annually (1986-1990 average) for subsistence use throughout the drainage (Table 2). The majority of the subsistence harvest occurs in the Upper Yukon Area.

The Andreafsky and Anvik Rivers are the major summer chum salmon-producing rivers (Table 6). Escapements of over one million summer chum salmon have been documented by sonar in the Anvik River. The Koyukuk, Nulato, and Tanana Rivers are also important summer chum salmon-producing systems. Summer chum salmon escapements in the Anvik River were above escapement objectives in 1988, 1989 and 1991, however, spawning escapements to other Yukon River tributaries, based on limited aerial survey information, generally appear to have been below average during the past four years.

Fall Chum Salmon

The 1986-1990 average commercial harvest was 133,734 and 25,481 fall chum salmon in Alaska and Canada, respectively (Table 1 and 3). Approximately 221,000 fall chum salmon have been taken annually (1986-1990 average) for subsistence use throughout the drainage (Tables 2 and 3).

Fall chum salmon enter the Yukon River from mid-July through early September. Major spawning areas are located in the Tanana and Porcupine River drainage, and the Canadian portion of the Yukon River drainage (Table 7). Historical tagging studies conducted near Galena and Ruby indicated that the early segment of fall chum salmon may be bound primarily for the Porcupine River and Canadian portion of the Yukon River. The later segment of the fall chum salmon run, although likely mixed with other stocks, is believed to be destined primarily for the Tanana River drainage. Stock identification studies, using protein genetics, are presently

underway to improve our understanding of fall chum salmon timing by spawning stock in the fishery.

During the 1980's, there was concern for the health of fall chum salmon stocks because spawning escapements were below objective levels from 1982 through 1984. Additional regulatory restrictions adopted by the Board of Fisheries in 1983 and 1986 resulted in generally improved spawning escapements during the late 1980's. However, spawning populations in the Toklat River, Fishing Branch River, and the Yukon River mainstem in Canada have shown less improvement than other spawning areas.

Coho Salmon

Typically, coho salmon are taken incidentally to the more numerous fall chum salmon. The 1986-1990 average Alaskan commercial catch is 51,983 fish (Table 1). The commercial harvest of coho salmon is dependent upon the timing of the fall chum salmon fishing season. Annual subsistence catches throughout the drainage are approximately 56,000 fish.

Coho salmon begin entering the Yukon River during early August, and the run continues into September. Spawning occurs discontinuously throughout the drainage with the largest known spawning concentrations documented in tributaries of the upper Tanana River drainage (Table 8).

U.S./Canada Treaty Negotiations

Negotiations were initiated in 1985 between the U.S. and Canada regarding a Yukon River salmon treaty. Substantial progress has been made to date on several issues, but some important issues remain to be settled.

A six year stabilization program, ending after the 1995 season, has been agreed to for chinook salmon in the Yukon mainstem 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. During the stabilization period, the U.S. will endeavor to deliver to the Canadian border on the mainstem Yukon River 34,800 to 37,800 chinook salmon annually, and Canada will manage its 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. This is a total harvest range, including both commercial and non-commercial harvests.

The management agencies are to develop a chinook salmon rebuilding program to begin in 1996 for the purpose of achieving a more optimal spawning escapement level in the future. The Joint Technical Committee (JTC), made up of Canadian and Alaskan fisheries 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 for fall chum salmon in the Yukon mainstem in Canada. The objective of the program is to rebuild the stock by achieving a spawning escapement of 80,000 or more 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 it's fall chum salmon fisheries on the mainstem Yukon River within a guideline harvest range of 23,600 in years of weak returns to 32,600 in years of strong returns. Once again, this is a total harvest range, including both commercial and non-commercial harvests. 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 1992, the U.S. will endeavor to deliver at least 74,600 chum salmon to the border.

The latest round of negotiations was held in Anchorage during March 23-27, 1992. Current U.S. and Canada negotiating positions on harvest shares after rebuilding and deeming are quite far apart. Deeming refers to the determination of ownership each country has to salmon spawned in Canadian portions of the Yukon River. The two countries have been discussing the establishment of a restoration and enhancement fund. Such a fund would be used to help restore and enhance Yukon River salmon stocks through cooperative programs. Progress was made in discussions regarding Porcupine River salmon stocks in Canada. The two countries agreed not to initiate new fisheries on the Porcupine River for an eight-year period and to consider rebuilding and improving management of Canadian Porcupine River fall chum stocks.

OUTLOOK FOR 1992

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 1986, the primary brood year (age 6 in 1992), were judged to be below average in magnitude in Canada, and average to above average in Alaska. Survival and production of the 1986 brood year is apparently above average based on observations of a higher than normal contribution of 5-year-old fish in the 1991 return. It is expected that the 1992 return of 5-year-olds will be about average based on escapements which ranged from below average in Canada to above average in Alaska during 1987. The return of 7-year-old fish (1985 year class) is expected to be average as the return of this year class in 1991 as 6-year-old fish was average. Overall, the 1992 chinook salmon return is anticipated to be average to slightly above average in run strength. The commercial harvest in Alaska is expected to total 86,000 to 107,000 chinook

salmon (80,000-100,000 fish in the Lower Yukon Area, 6,000-7,000 fish in the Upper Yukon Area).

Summer Chum Salmon

Summer chum salmon return primarily as 4-year-old fish, although substantial 5-year-old returns can result from brood years with high survival rates. The return of 4-year-old fish in 1992 will be dependent on production from the 1988 brood year. In 1988, summer chum salmon escapements ranged from below average in non-Anvik River stocks to above average in the Anvik River. The return of 5-year-old fish in 1992 is expected to be below average in strength based upon the below average return of 4-year-old fish in 1991. In summary, based on evaluation of brood year run size data and assuming average survival, it is expected that the Yukon River summer chum salmon return in 1992 will be below average to average in magnitude. The commercial harvest is expected to be 600,000-800,000 summer chum salmon, (386,000-515,500 fish in the Lower Yukon Area, 214,000-284,500 fish in the Upper Yukon Area) which is below the mid-point of the river-wide guideline harvest range. However, because of the mixed stock nature of the fishery and the Anvik River stock being expected to be the primary contributor to the return, it will be difficult to optimize the harvest and the anticipated harvest may not be achieved.

Fall Chum Salmon

Similar to summer chum salmon, fall chum salmon return primarily as 4-year-old fish. Escapements in 1988 (the brood year which will produce 4-year-old fish in 1992) were below average except for the upper Tanana River stocks (Delta River index area). Therefore, a below average return of 4-year-olds in 1992 is expected. The return of 5-year-old fish is expected to be above average, overall, based on the contribution of age 4 fall chum salmon in the 1991 harvest, and generally above average escapements in 1987. In summary, based on evaluation of brood year escapements, and assuming average survival rates, the overall fall chum salmon return is expected to be below average in 1992. The commercial harvest is anticipated to range from 0 to 75,000 fall chums (approximately 60,000 in the Lower Yukon Area, and 15,000 fall chum and coho salmon combined in the Upper Yukon Area). However, the rebuilding effort underway with the Canadians for the Yukon River mainstem stock, and the continued slow recovery of the Toklat River stocks combine to result in the increased possibility of a severely restricted commercial fishery or not allowing a fall season commercial fishery in 1992. With the exception of the upper Tanana River, commercial fishing may only occur if run size exceeds the low expectations. If the abundance of upper Tanana River stocks is similar to recent years, the commercial harvest could be near the recent average harvest in Subdistricts 6-B and 6-C.

Coho Salmon

Coho salmon return primarily as 4-year-old fish. Comprehensive escapement information for coho salmon is lacking, but escapement surveys in the Tanana River system indicated above average escapement in 1988. The commercial coho salmon harvest will be dependent on the timing and frequency of fishing periods allowed for fall chum salmon.

NEW REGULATIONS

There are new regulations this year that will affect the management of Yukon River fisheries. The following regulations were adopted by the Alaska Board of Fisheries in Bethel in February 1992.

Commercial

The Board modified the definition of a fish wheel to include the wording with no more than four baskets on a single axle. The Board transferred the management authority of the Northern Area from Kotzebue to the Yukon Area. This was a house keeping proposal meant to change the regulation to accurately reflect existing management actions. A new reporting requirement, adopted by the Board, requires commercial fishermen to report the number of salmon harvested during commercial fishing periods and retained for subsistence use on an ADF&G fish ticket. The Board adopted a housekeeping proposal which clarified the date of July 15 as the separation date between the early season and late season for Districts 1, 2 and 3. The Board passed regulations which allow commercial salmon fishing seasons and fishing periods to be established by emergency order in the Upper Yukon Area. The Board also adopted a regulation which removed the fixed dates that specified when six-inch or smaller mesh size gill nets might be required in District 4.

Subsistence

Due to the uncertainty which currently surrounds subsistence issues, the Board elected to defer all subsistence proposals except those which dealt with conservation concerns. The department expressed concern for the Toklat River fall chum salmon stock. The Board removed the Toklat River and that portion of the Kantishna River downstream of the Toklat River from the closed waters section of the regulations, but stipulated that from August 15 through December 31 only fish wheels with live boxes are legal gear, and all chum salmon must be returned alive to the river. This new regulation will allow the opportunity to harvest coho salmon in this area.

MANAGEMENT STRATEGY-LOWER YUKON AREA (DISTRICTS 1, 2, AND 3)

Commercial Fisheries

Chinook and Summer Chum Salmon

Management of the chinook and summer chum salmon runs is made difficult by the overlapping run timing of these species. The harvest of summer chum salmon, for example, can be largely a function of management strategies and actions applied to the chinook salmon fishery. The chinook and summer chum salmon harvests are managed by field announcement to schedule season openings and closures, fishing periods, and gill net mesh size restrictions. The Alaska Board of Fisheries has established a chinook salmon guideline harvest range of 60,000 to 120,000 fish for Districts 1 and 2 combined, and 1,800 to 2,200 for District 3. The guideline harvest range for summer chum salmon is 251,000 to 755,000 fish for Districts 1 and 2 combined, and 6,000 to 19,000 fish for District 3.

The directed commercial chinook salmon fishery will open by emergency order on a staggered basis beginning with District 1, when increasing subsistence and/or test-net catches have occurred over a 7 to 10 day period. This strategy of allowing the early portion of the run to build, prior to commercial fishing, provides for uninterrupted subsistence fishing in the Lower Yukon Area, and allows passage of a portion of the early run segment out of the lower Yukon districts. The fish that pass out of the lower districts are bound primarily for middle and upper river areas and are subject to intensive harvest pressure along the entire course of their migration.

Unrestricted mesh size fishing periods are anticipated to be 12 hours in duration. In District 1, fishing periods are expected to begin at 6:00 p.m. on Mondays and Thursdays and continue until 6:00 a.m. the following day. It is expected that fishing periods, in Districts 2 and 3, will begin at 6:00 p.m. Wednesdays and Sundays and continue until 6:00 a.m. the following day. District 3 fishing periods may vary from this schedule, because it has a separate guideline harvest range.

Test fishing, commercial catch, and age composition information will be monitored to judge salmon run abundance and timing. If run strength and harvest levels develop as anticipated, the use of unrestricted mesh size gill nets will cease when the combined Districts 1 and 2 harvest approaches 60,000-70,000 chinook salmon. The harvest of chinook salmon in gill nets restricted to 6-inch maximum mesh size will be included in the guideline harvest range. It is expected that the total commercial harvest of chinook salmon will be approximately 80,000 to 100,000 fish for Districts 1 and 2 combined.

Beginning in 1985, summer chum salmon directed fishing periods have been implemented early in the season if the return: 1) is judged to be at least average in strength, and 2) occurs with similar timing to the chinook salmon return. Normally, these fishing periods are 6 to 12 hours

in duration, and are established prior to or during the chinook salmon directed season. It is not anticipated that summer chum salmon directed fishing periods will be scheduled during this time period in 1992. Following the chinook salmon directed fishery, 6-inch maximum mesh size fishing periods are anticipated to be 12 hours in duration depending on the strength of the summer chum salmon return. As with other salmon stocks, an effort will be made to spread the harvest out over the run, so that no one segment is overexploited. It is anticipated that the summer chum salmon harvest should be between the lower end and the mid-point of the guideline harvest ranges due to the anticipated below average to average return. There is a possibility that an unrestricted mesh size fishing period, or periods may be established during early July, if the summer chum return appears to be below average. This strategy may be utilized if additional harvest of chinook salmon can be allowed and a lower exploitation rate on summer chum salmon is necessary.

The summer season commercial fishery will close July 15, or earlier, depending on the magnitude of the run. An earlier closure may be necessary because of below average summer chum salmon escapements in the Andreafsky River in recent years. The District 3 commercial fishing season may close prior to the other districts because of lower marketability of fish late in the run and to provide for increased subsistence fishing opportunity. Since Districts 1 and 2 have combined guideline harvest ranges, the overall harvest level will determine when the directed chinook and summer chum salmon seasons end. It may not be possible to allow an equal amount of fishing time for each district.

Fall Chum Salmon

The fall chum salmon guideline harvest range for Districts 1, 2, and 3 is 60,000-220,000 fish. The department will monitor in-season abundance using the lower Yukon test fishery and subsistence catches. These data, in combination with the pre-season projection, will constitute the basis for decisions regarding management of these stocks. The sonar project at Pilot Station will be testing new equipment in July or August, and no passage estimates will be available. The new technology should be operational in 1993.

The preseason projection is for a poor fall chum return. It is expected that the commercial fishing season will not reopen during the fall season. A determination of whether commercial fishing will be allowed in the Lower Yukon Area will be made by approximately August 4.

If commercial fishing is allowed, period length will likely be 12 hours in the Set Net Only Area of District 1, and 6 hours duration in the remainder of the Lower Yukon Area. Fishermen will be required to register for the Set Net Only Area prior to the opening of the fall commercial fishing season. Fishing periods in the Set Net Only Area will probably be scheduled to occur overnight, while fishing periods in the remainder of the Lower Yukon Area will be scheduled for daylight hours.

Coho Salmon

Coho and fall chum salmon runs overlap to a considerable extent. Because of this overlap, and because of the overriding importance of the fall chum run, the harvest of coho salmon will be a function of management strategies directed towards fall chum salmon in 1992.

Subsistence Fisheries

In the Lower Yukon Area, salmon may be taken by subsistence fishermen seven days per week until 24 hours prior to the opening and 24 hours after the closure of the commercial fishing season. During the commercial fishing season, subsistence fishing is allowed only during open commercial fishing periods. In addition, 24 hour subsistence only fishing periods will be established every other weekend during the commercial season through July 15, and each weekend during the fall commercial fishing season. If more subsistence fishing time is needed, subsistence only fishing periods will be announced by emergency order. Fishermen are reminded to fill out their subsistence catch calendars. If you would like to receive a subsistence catch calendar, contact the ADF&G office in Emmonak.

MANAGEMENT STRATEGY-UPPER YUKON AREA (DISTRICTS 4, 5, AND 6)

Commercial Fisheries

Commercial fisherman are prohibited from transferring between the three Upper Yukon Area districts. Fishermen can move freely between subdistricts within the registered district. Commercial fishermen are automatically registered in the district where they make their first delivery of the season.

Reporting salmon purchases in a timely manner is essential for the management of these fisheries. The Department of Fish and Game requires all processors and buyers of salmon to register with the Fairbanks office prior to purchasing salmon in the Upper Yukon Area (as authorized by 5AAC 39.130). Registered salmon buyers are required to provide a verbal report of their salmon purchases within 18 hours following the closure of a commercial fishing period. Buyers are also required to mail or deliver fish tickets to the department within 36 hours following the closure of a commercial fishing period. If there is incomplete reporting, the department may delay commercial fishing until the needed harvest reports are received.

Prior to 1992, the District 4 commercial fishing season opened by regulation between June 15 and June 25. During the February 1992 Board of Fisheries meeting, a regulation was adopted which removed specific dates and allows the District 4 commercial fishing season to be opened by emergency order. Because of the below average to average summer chum salmon projection for the 1992 season, the department anticipates that the commercial salmon season in District 4 will probably open no earlier than Wednesday, July 1. This strategy will allow distribution of the run throughout the district and reduce the harvest of earlier running spawning stocks.

The Board also adopted a regulation to allow commercial fishing periods to be established by emergency order. Past regulations provided two 48 hour commercial and subsistence fishing periods per week in District 4, beginning at 6:00 p.m. Sunday and 6:00 p.m. Wednesday. It is anticipated that the commercial periods this season will continue to open at 6:00 p.m. Sunday and/or 6:00 p.m. Wednesday. Once the commercial season opens, depending upon run strength and targeted commercial harvest, Subdistrict 4-A is anticipated to have one or two 24-hour periods per week. Subdistricts 4-B and 4-C are anticipated to remain on two 48-hour periods per week. If subsistence fishermen are unable to meet their subsistence needs due to the commercial fishing schedule, additional subsistence only fishing time will be allowed.

Chinook and Summer Chum Salmon

In the Upper Yukon Area, the chinook and summer chum salmon season is often called the early season. The District 4 chinook salmon guideline harvest range is 2,250 to 2,850 fish. Based on preseason projections, the department will manage for the mid-point of the chinook salmon guideline harvest range. The early season in District 4 will close when the targeted chinook or summer chum salmon harvest is reached.

The Subdistrict 4-A summer chum salmon guideline harvest range is 113,000 to 338,000 fish, or the roe equivalent of 61,000 to 183,000 pounds. The Board of Fisheries has established a roe cap in Subdistrict 4-A of 183,000 pounds of roe. If Subdistrict 4-A salmon roe sales reach the cap during a fishing season, then only the sale of fish in the round will be allowed. Subdistricts 4-B and 4-C have a combined guideline harvest range of 16,000 to 47,000 summer chum salmon. Based on the preseason projection, the summer chum harvest is expected to range near the lower end to the mid-point of the guideline harvest ranges (169,250-225,500 fish in Subdistrict 4-A and 43,750-31,500 fish in Subdistricts 4-B and 4-C combined).

Fall Chum and Coho Salmon

In the Upper Yukon Area, the fall chum and coho salmon season is often called the late season. Current regulations do not allow a commercial late season for fall chum salmon in Subdistrict 4-A. The guideline harvest range is 5,000 to 40,000 fall chum and coho salmon combined for Subdistricts 4-B and 4-C. Usually, the fall commercial fishing season in Subdistricts 4-B and

4-C opens by emergency order after August 1. However, with the 1992 projection for a poor fall chum salmon return, it is anticipated that Subdistricts 4-B and 4-C will not open during the fall season. It is expected that a determination regarding opening the fall season fishery will be made by mid-August.

District 5

The department will open and close the District 5 commercial salmon season by emergency order. The commercial salmon season will open once the chinook salmon run is distributed throughout the area. Assessment of run abundance and timing from downstream commercial fishing districts, along with department test fisheries and subsistence catch reports, will provide information to determine the season opening. It is anticipated that fishing periods in Subdistricts 5-A, 5-B, and 5-C during the early season will initially be 48-hours in duration. Similar to recent years, the Subdistrict 5-A, 5-B, and 5-C late season commercial fishing periods will be 24 hours in duration.

For Subdistrict 5-D, similar to the last two years, the department will use emergency order authority to reduce the Subdistrict 5-D commercial fishing schedule to 48-hour periods. This will allow the department to monitor and maintain the harvest within the guideline harvest range.

Chinook and Summer Chum Salmon

Subdistricts 5-A, 5-B, and 5-C have a guideline harvest range of 2,400 to 2,800 chinook salmon. The Board of Fisheries also established a separate guideline harvest range of 300 to 500 chinook salmon for Subdistrict 5-D. In addition, there is a District 5 guideline harvest range of 1,000 to 3,000 summer chum salmon. Based on the preseason projection, the department will be managing for the mid-point of the chinook salmon, and the lower end to mid-point of the summer chum salmon guideline harvest ranges. In years with average returns and normal run timing, the first commercial fishing period in Subdistricts 5-A, 5-B, and 5-C should occur between June 25 and July 5.

In Subdistrict 5-D, the first commercial fishing period in years with average returns and normal run timing should occur between July 1 and July 10. The early season in Subdistrict 5-D will close once the mid-point of the chinook salmon guideline harvest range is reached.

Fall Chum and Coho Salmon

Subdistricts 5-A, 5-B, and 5-C have a guideline harvest range of 4,000 to 36,000 fall chum and coho salmon combined. In years with average returns and normal run timing, the first commercial fishing period should occur in mid-August. Based on a preseason projection of a poor fall chum salmon return, it is anticipated that the Subdistrict 5-A, 5-B, and 5-C late season

fishery will not open in 1992 unless the fall chum salmon return is larger than expected. It is expected that a determination regarding opening of the District 5 fall season will be made by mid-August.

For Subdistrict 5-D, the Board of Fisheries established a separate guideline harvest range of 1,000 to 4,000 fall chum and coho salmon combined. In years with average returns and normal run timing, the first commercial fishing period in Subdistrict 5-D should occur in early September. However, similar to Subdistricts 5-A, 5-B, and 5-C, it is not expected that Subdistrict 5-D will open during the fall season in 1992.

District 6

In the spring of 1988, the Board of Fisheries held a special session in Fairbanks to discuss and evaluate the fishery management plan for the Tanana River. At this meeting, the Board of Fisheries instructed the department to continue to manage District 6 on the basis of guideline harvest ranges. However, the Board of Fisheries did sanction managing District 6 as a terminal fishery area. This allows the department to exceed guideline harvest ranges in years when additional commercial fishing will not jeopardize achieving escapement objectives or meeting subsistence needs.

Currently, the Tanana River inseason run strength and timing indicators are limited. These include, test fish wheel catches near the villages of Manley Hot Springs and Nenana, aerial surveys, and the performance of the commercial and subsistence fisheries. Although the Tanana River test fishery program appears to show promise for inseason evaluation of run strength and timing, a limited database of only four years exists for these sites. Additionally, aerial assessment of spawning escapement areas depends on favorable weather and water conditions. Due to the limited database and management tools available, the department must be conservative in allowing harvests to exceed established guideline harvest ranges. In years when in-season monitoring projects are unavailable, the department will use established guideline harvest ranges in managing District 6 fishery harvest levels.

Chinook and Summer Chum Salmon

The opening of the District 6 chinook and summer chum salmon commercial fishing season will be by emergency order. Similar to the last two seasons, the opening of the commercial fishing season will be delayed and all subdistricts will open at the same time. The purpose of delaying season opening is to allow the early portion of the chinook salmon migration to pass through the fishery before commercial fishing begins for the later running summer chum salmon.

District 6 has a guideline harvest range of 600 to 800 chinook and 13,000 to 38,000 summer chum salmon. If the preseason projections are confirmed, the early season is expected to close

once the mid-point of the chinook salmon guideline harvest range or the lower end to mid-point of the summer chum salmon guideline harvest range is taken. District 6 commercial fishing may resume if inseason indicators show that additional commercial fishing will not jeopardize achieving the chinook and summer chum salmon escapement objectives or meeting subsistence needs.

During years of average run timing, the first commercial fishing period in District 6 would occur in mid-July. During the early season in District 6, and unless altered by emergency order, there will be two 42-hour commercial fishing periods per week, from 6:00 p.m. Friday until 12:00 noon Sunday, and from 6:00 p.m. Monday until 12:00 noon Wednesday. The department will close the early season no later than August 10.

Fall Chum and Coho Salmon

District 6 has a guideline harvest range of 2,750 to 20,500 fall chum and coho salmon combined. In most years, the entire district has opened by emergency order once the run is distributed throughout the district. Typically, in years of average return size and normal run timing, the first, late season commercial fishing period would occur in mid-September. Regulations provide for no more than one 42-hour period in Subdistricts 6-B and 6-C, and no more than one 24-hour period in Subdistrict 6-A per week during the late season.

With the discouraging 1992 projection for the Yukon River fall chum salmon returns, it is anticipated that Subdistrict 6-A will not open during the fall season. A decision regarding opening the fall season in Subdistrict 6-A is expected to be made by mid-September. It is anticipated that a commercial harvest may occur only in the Upper Tanana River Subdistricts 6-B and 6-C. The upper Tanana River drainage is the only place where the parent year escapement objectives were obtained. The late commercial fishing season in District 6 will close once the mid-point to upper end of the fall chum salmon guideline harvest range of 2,750 to 20,500 fall chum salmon is harvested. The department may allow additional commercial fishing once the targeted harvest is taken, but only if inseason indicators show that additional commercial fishing will not jeopardize meeting fall chum salmon escapement and subsistence needs.

The coho salmon return is projected to be above average. The migratory timing of coho salmon is somewhat later, but does overlap with the fall chum salmon run. The commercial harvest of coho salmon is a function of the timing, frequency, and duration of the periods established for the more numerous fall chum salmon. Fall chum salmon will continue to be the primary species of management concern.

Subsistence Fishery

Fishermen are reminded to keep track of their subsistence fish on their subsistence catch calendar or subsistence fishing permit. If you do not receive a calendar in the mail, and would like to receive one, contact the Fairbanks office.

District 4

Subsistence salmon fishing is allowed seven days per week before the opening of the District 4 commercial season. Subsistence salmon fishing is prohibited 24 hours before the opening and 24 hours after the closure of the commercial salmon season. Beginning 24 hours after the closure of the commercial salmon season, subsistence fishermen may take salmon seven days per week.

Once the District 4 commercial salmon season opens, managers will attempt to have the subsistence fishing schedule coincide with allowable commercial periods. During the commercial salmon season in District 4, it is anticipated that commercial fishing periods will begin at 6:00 p.m. Sunday and/or at 6:00 p.m. Wednesday. Subsistence fishing time in Subdistrict 4-A is anticipated to be a minimum of two 24-hour periods per week, with additional drift fishing time allowed upstream of Stink Creek. Subsistence fishing time in Subdistricts 4-B and 4-C is anticipated to continue as two 48-hour periods per week, unless altered by emergency order. Additionally, for any commercial salmon fishing closures of greater than five days in duration during the commercial salmon season, subsistence fishermen may take salmon from 6:00 p.m. Sunday until 6:00 p.m. Friday.

District 5

Similar to District 4, subsistence fishermen may take salmon seven days per week before the opening of the commercial salmon season. Subsistence fishermen may not take salmon 24 hours before the opening and 24 hours after the closure of the commercial salmon season. Once the commercial fishing season opens in Subdistricts 5-A, 5-B, and 5-C, an attempt will be made to have subsistence fishing periods coincide with the commercial fishing schedule.

For any commercial salmon fishing closures of greater than five days in duration during the commercial salmon season in Subdistricts 5-A, 5-B, and 5-C, subsistence fishermen may take salmon from 6:00 p.m. Tuesday until 6:00 p.m. Sunday. In Subdistrict 5-D, subsistence fishermen may take salmon seven days per week throughout the season.

In portions of District 5, regulation requires subsistence fishermen to obtain subsistence salmon fishing permits. Permit areas include the Yukon River bridge area from Hess Creek to the Dall River and the Yukon River drainage upstream of Fort Yukon to the Canadian border. Permits

can be obtained from Department of Fish and Game office in Fairbanks. Regulations require all permit holders to report harvest information at the end of the fishing season.

District 6

Regulations require subsistence salmon fishermen in the Tanana River drainage to obtain subsistence permits. Permits can be obtained from the Department of Fish and Game office in Fairbanks. Subsistence permit holders fishing in the upper portion of Subdistrict 6-B and all of Subdistrict 6-C are required to report the number of salmon taken to the department each week. Permit holders can report their catch by record-a-phone at 452-7466. All other Tanana River permit holders are required to report harvest information at the end of the fishing season by returning their expired permit to the Department of Fish and Game office in Fairbanks.

During the entire District 6 fishing season, it is anticipated that subsistence fishermen may take salmon from 6:00 p.m. Monday until 12:00 noon Wednesday, and from 6:00 p.m. Friday until 12:00 noon Sunday, unless altered by emergency order. Additionally, in the subdistrict adjacent to the Fairbanks area, Subdistrict 6-C, there is a fishery harvest limit. The subsistence fishery harvest limit in Subdistrict 6-C is 750 chinook salmon, 5,000 summer chum salmon, and 5,200 fall chum and coho salmon combined. If this harvest limit is reached, the subsistence fishery in Subdistrict 6-C will be closed.

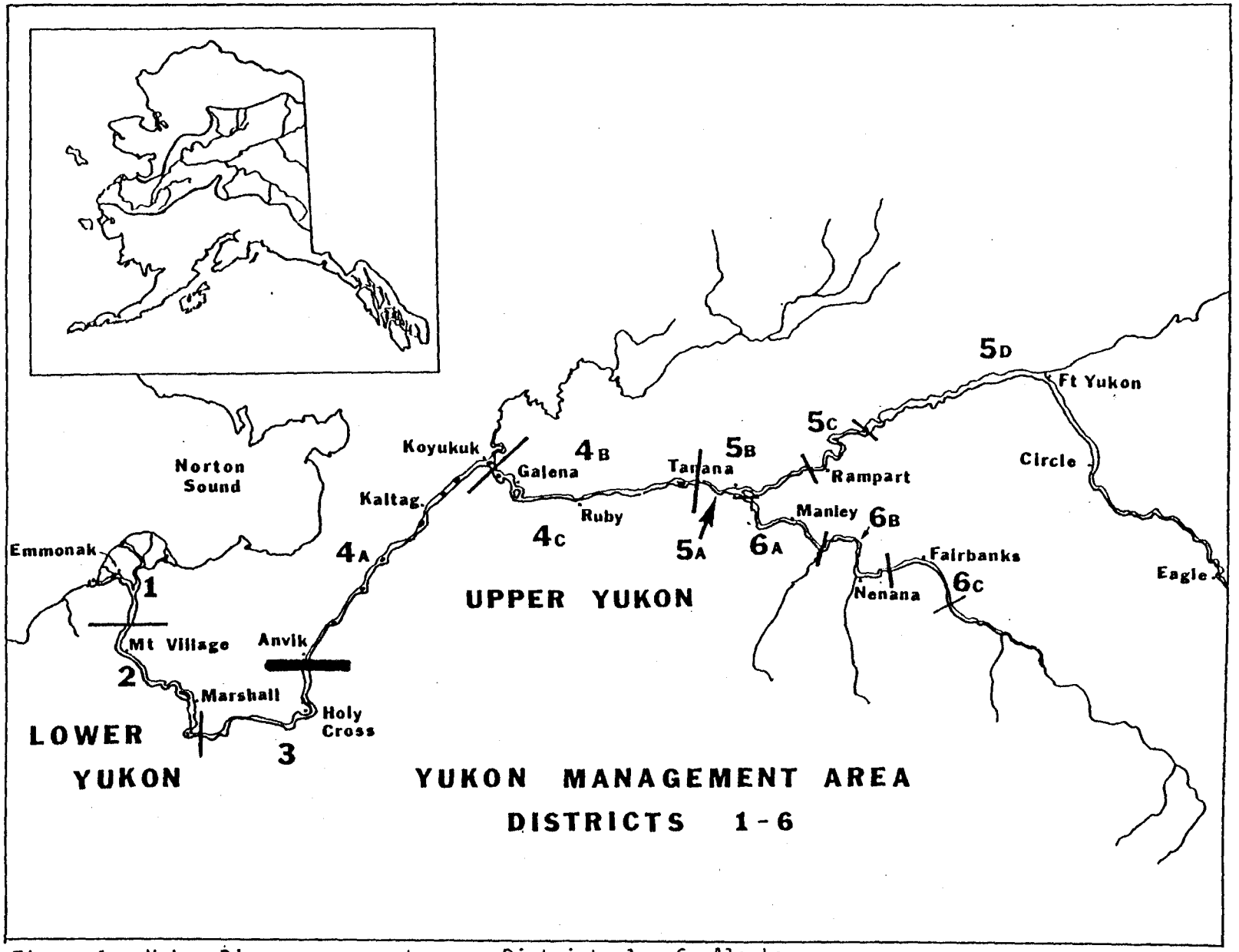

Figure 1. Yukon River management area, Districts 1 - 6, Alaska.

Table 1. Alaskan commercial sales of Yukon River salmon, 1961–1991.[a]

Year	Chinook		Summer Chum		Fall Chum		Coho	
	Numbers	Roe	Numbers	Roe	Numbers	Roe	Numbers	Roe
1961	119,664	–	–	–	42,461	–	2,855	–
1962	94,734	–	–	–	53,116	–	22,926	–
1963	117,048	–	–	–	0	–	5,572	–
1964	93,587	–	–	–	8,347	–	2,446	–
1965	118,098	–	–	–	23,317	–	350	–
1966	93,315	–	–	–	71,045	–	19,254	–
1967	129,656	–	10,935	–	38,274	–	11,047	–
1968	106,526	–	14,470	–	52,925	–	13,303	–
1969	91,027	–	61,966	–	131,310	–	15,093	–
1970	79,145	–	137,006	–	209,595	–	13,188	–
1971	110,507	–	100,090	–	189,594	–	12,203	–
1972	92,840	–	135,668	–	152,176	–	22,233	–
1973	75,353	–	285,509	–	232,090	–	36,641	–
1974	98,089	–	589,892	–	289,776	–	16,777	–
1975	63,838	–	710,295	–	275,009	–	2,546	–
1976	87,776	–	600,894	–	156,390	–	5,184	–
1977	96,757	–	534,875	–	257,986	–	38,863	–
1978	99,168	–	1,052,226	25,761	236,383	10,628	26,152	–
1979	127,673	–	779,316	40,217	359,946	18,466	17,165	–
1980	153,985	–	928,609	139,106	293,430	5,020	8,745	–
1981	158,018	–	1,006,938	189,068	466,451	11,285	23,680	–
1982	123,644	–	461,403	152,819	224,187	805	37,176	–
1983	147,910	–	744,879	149,999	302,598	5,064	13,320	–
1984	119,904	–	588,597	167,224	208,232	2,328	81,940	–
1985	146,188	–	516,997	248,625	267,744	2,525	57,672	–
1986	99,970	–	721,469	271,691	139,442	577	47,255	–
1987	134,760 [d]	–	442,238	121,968	0	0	0	–
1988 [b]	101,421	–	1,152,237	256,535	133,975	3,227	86,612	–
1989 [b]	101,840	–	959,994	288,549	270,195	14,749	83,353	–
1990 [b]	95,361	1,731	306,796 [c]	109,376	125,058 [f]	10,944	42,694 [g]	4,042
1991 [c]	101,240	3,829	346,828	141,976	230,852	19,395	103,180	4,299
5 Yr Avg 1986–90 Alaska	106,670		716,547	209,624	133,734	5,899	51,983	–
5 Yr Avg 1986–90 Lower Yukon	99,345		667,968	0	90,454	0	43,467	–
5 Yr Avg 1986–90 Upper Yukon	7,325		48,579	209,624	43,280	5,899	8,516	–

[a] Sales reported in numbers of fish sold in the round and pounds of unprocessed roe.
[b] Does not include District 6 test fishing sales.
[c] Does not include test fishing sales.
[d] Includes 653 and 2,136 chinook salmon illegally sold in District 5 and 6, respectively.
[e] Includes sales of 1,278 female salmon sold with roe extracted and sold seperately.
[f] Includes sales of 884 female salmon sold with roe extracted and sold seperately.
[g] Includes sales of 438 female salmon sold with roe extracted and sold seperately.

Table 2. Alaskan subsistence catch of Yukon River drainage salmon, 1961–1991.

Year	Chinook [a,b]	Summer Chum [a,b]	Fall Chum [a,b]	Coho [a,b]	Total
1961	21,488	305,317	101,772	9,192	437,769
1962	11,110	261,856	87,285	9,480	369,731
1963	24,862	297,094	99,031	27,699	448,686
1964	16,231	361,080	120,360	12,187	509,858
1965	16,608	336,848	112,283	11,789	477,528
1966	11,572	154,508	51,503	13,192	230,775
1967	16,448	206,233	68,744	17,164	308,589
1968	12,106	133,880	44,627	11,613	202,226
1969	14,000	156,191	52,063	7,776	230,030
1970	13,874	166,504	55,501	3,966	239,845
1971	25,684	171,487	57,162	16,912	271,245
1972	20,258	108,006	36,002	7,532	171,798
1973	24,317	161,012	53,670	10,236	249,235
1974	19,964	227,811	93,776	11,646	353,197
1975	13,045	211,888	86,591	20,708	332,232
1976	17,806	186,872	72,327	5,241	282,246
1977	17,581	159,502	82,771	16,333	276,187
1978	30,297	197,144	94,867	7,787	330,095
1979	31,005	196,187	233,347	9,794	470,333
1980	42,724	272,398	172,657	20,158	507,937
1981	29,690	208,284	188,525	21,228	447,727
1982	28,158	260,969	132,897	35,894	457,918
1983	49,478	240,386	192,928	23,895	506,687
1984	42,428	230,747	174,823	49,020	497,018
1985	39,771	264,828	206,472	32,264	543,335
1986	45,238	290,825	164,043	34,468	534,574
1987	53,124	275,914	361,663 [c]	84,894 [d]	775,595
1988	46,559	311,724	159,703	69,138	587,124
1989	51,280	249,582	216,693	41,510	559,065
1990	52,113	118,471	182,033	47,816	400,433
1991 [e]	47,225	117,208	139,576	35,822	339,831
5 Yr Avg 1986–90 Alaska	49,663	249,303	216,827 [f]	55,565	571,358
5 Yr Avg 1986–90 Lower Yukon	17,416	76,681	20,883	12,208	127,188
5 Yr Avg 1986–90 Upper Yukon	32,247	172,622	195,944 [f]	43,357	444,170

[a] Catches estimated for 1961–1976 since catches of salmon other than chinook salmon were not differentiated by species until 1977.

[b] Minimum estimates for 1961–1978 because surveys were typically conducted well before the end of the fishing season.

[c] Includes estimates of catches (110,369 summer chum) from illegal salmon and salmon roe sales in District 5 and 6.

[d] Includes estimates of catches (36,272 coho) from illegal salmon and salmon roe sales in District 5 and 6.

[e] 1991 data is preliminary.

[f] Does not include estimate of illegal sales (182,567 fish) in five year (1986–1990) average.

Table 3. Canadian catch of Yukon River drainage chinook and fall chum salmon, 1961–1991. [a]

Year	Chinook			Fall Chum		
	Commercial	Non-Commercial [b,c]	Total	Commercial	Non-Commercial [b]	Total
1961	3,446	9,800	13,246	3,276	5,800	9,076
1962	4,037	9,900	13,937	936	8,500	9,436
1963	2,283	7,794	10,077	2,196	25,500	27,696
1964	3,208	4,200	7,408	1,929	10,258	12,187
1965	2,265	3,115	5,380	2,071	9,718	11,789
1966	1,942	2,510	4,452	3,157	10,035	13,192
1967	2,187	2,963	5,150	3,343	13,618	16,961
1968	2,212	2,830	5,042	453	11,180	11,633
1969	1,640	984	2,624	2,279	5,497	7,776
1970	2,611	2,052	4,663	2,479	1,232	3,711
1971	3,178	3,269	6,447	1,761	15,150	16,911
1972	1,769	3,960	5,729	2,532	5,000	7,532
1973	2,199	2,323	4,522	2,806	7,329	10,135
1974	1,808	3,823	5,631	2,544	9,102	11,646
1975	3,000	3,000	6,000	2,500	18,100	20,600
1976	3,500	1,525	5,025	1,000	4,200	5,200
1977	4,720	2,807	7,527	3,990	8,489	12,479
1978	2,975	2,906	5,881	3,356	6,210	9,566
1979	6,175	4,200	10,375	9,084	13,000	22,084
1980	9,500	13,346	22,846	9,000	13,218	22,218
1981	8,593	9,516	18,109	15,260	7,021	22,281
1982	8,640	8,568	17,208	11,312	4,779	16,091
1983	13,027	5,925	18,952	25,990	3,500	29,490
1984	9,885	6,910	16,795	22,932	6,335	29,267
1985	12,573	6,728	19,301	35,746	5,519	41,265
1986	10,797	9,567	20,364	11,464	3,029	14,493
1987	10,864	6,800	17,664	40,591	3,889	44,480
1988	13,217	8,210	21,427	30,263	3,302	33,565
1989	9,789	8,155	17,944	17,549	5,471	23,020
1990	11,324	7,903	19,227	27,537	6,085	33,622
1991	10,906	7,705	18,611	30,784	7,261	38,045
5 Yr Avg 1986–90	11,198	8,127	19,325	25,481	4,355	29,836

[a] Catch in numbers of fish.
[b] Indian Food Fish, Domestic, and Sport fisheries combined.
[c] Sport fish harvest unknown prior to 1980.

Table 4. Chinook salmon escapement counts for selected U.S. spawning stocks in the Yukon River drainage, 1961–1991.[a]

Year	Andreafsky River		Anvik River[b]		Nulato River	Gisasa River	Chena River			Salcha River		
	East Fork	West Fork	Aerial	Tower			Population Estimate	River	Index Area[c]	Population Estimate	River	Index Area[d]
1961	1,003	–	1,226	–	543[f]	266[f]	–	–	–	–	2,878	–
1962	675[f]	762[f]	–	–	–	–	–	61[f,g]	–	–	937	–
1963	–	–	–	–	–	–	–	137[f]	–	–	–	–
1964	867	705	–	–	–	–	–	–	–	–	450	–
1965	–	344[f]	650[f]	–	–	–	–	–	–	–	408	–
1966	361	303	638	–	–	–	–	–	–	–	800	–
1967	–	276[f]	336[f]	–	–	–	–	–	–	–	–	–
1968	380	383	310[f]	–	–	–	–	–	–	–	739	–
1969	274[f]	231[f]	296[f]	–	–	–	–	–	–	–	461[f]	–
1970	665	574[f]	368	–	–	–	–	6[f]	–	–	1,882	–
1971	1,904	1,682	–	–	–	–	–	193[f,g]	–	–	158[f]	–
1972	798	582[f]	–	1,198	–	–	–	138[f,g]	–	–	1,193	1,034
1973	825	788	–	613	–	–	–	21[f]	–	–	391	–
1974	–	285	–	471[f]	78[f]	161	–	1,016[g]	959[g]	–	1,857	1,620
1975	993	301	–	730	204	385	–	316[g]	262[g]	–	1,055	–
1976	818	643	–	1,153	648	332	–	531	496	–	1,641	1,473
1977	2,008	1,499	–	1,371	487[f]	255	–	563	–	–	1,202	1,052
1978	2,487	1,062	–	1,324	920	45[f]	–	1,726	–	–	3,499	3,258
1979	1,180	1,134	–	1,484	1,507	484	–	1,159[f]	–	–	4,789	–
1980	958[f]	1,500	1,192	–	1,323[f]	951	–	2,541	–	–	6,757	6,126
1981	2,146[f]	231[f]	577[f]	–	791[f]	–	–	600[f]	–	–	1,237	1,121
1982	1,274	851	–	–	–	421	–	2,073	–	–	2,534	2,346
1983	–	–	376[f]	–	1,006	572	–	2,553	2,336	–	1,961	1,803
1984	1,573[f]	1,993	574[f]	–	–	–	–	501	494	–	1,031	906
1985	1,617	2,248	720	–	2,780	735	–	2,553	2,262	–	2,035	1,860
1986	1,954	3,158	918	–	2,974	1,346	9,065	2,031	1,935	–	3,368	–
1987	1,608	3,281	879	–	1,638	731	6,404	1,312	1,209	4,771	1,898	1,671
1988	1,020	1,448	1,449	–	1,775	797	3,346	1,966	1,760	4,562	2,761	2,553
1989	1,399	1,089	212[f]	–	–	–	2,666	1,280	1,185	3,294	2,333	2,136
1990	2,503	1,545	1,595	–	998	884[f]	5,603	1,436	1,402	10,728	3,744	3,429
1991	1,938	2,544	625[f]	–	2,020	1,690	3,025	1,277[f]	1,277[f]	5,608	2,120[f]	1,922[f]
E.O.[b]	>1,500	>1,400	>500[j]	–	>1,300[k]	>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.

[b] From 1961–1970, aerial survey count data are from various segments of the mainstem Anvik River. From 1971–1979, mainstem aerial survey counts below the tower were added to tower counts. From 1980–present, aerial survey counts are from the mainstem Anvik River between the Yellow River and McDonald Creek.

[c] Chena River index area for assessing the escapement objective is from Moose Creek Dam to Middle Fork River.

[d] Salcha River index area for assessing the escapement objective is from the TAPS crossing to Caribou Creek.

[f] Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.

[g] Boat survey.

[b] Interim escapement objectives. Established March, 1992.

[j] Interim escapement objective for the mainstem Anvik River between the Yellow River and McDonald Creek. Interim escapement objective for the entire Anvik River is 1,300 salmon.

[k] Interim escapement objective for the South Fork Nulato River = 500 salmon; for the North Fork Nulato River = 800 salmon.

Table 5. Chinook salmon escapement counts for selected Canadian spawning stocks in the Yukon River drainage, 1961–1991.[a]

Year	Tincup Creek	Tatchun River[b]	Little Salmon River	Big Salmon River[c]	Nisutlin River[d]	Wolf River[f]	Whitehorse Fishway[g]	Canada Mainstem Tagging Estimate[h]
1961	–	–	–	–	–	–	1,068	–
1962	–	–	–	–	–	–	1,500	–
1963	–	–	–	–	–	–	483	–
1964	–	–	–	–	–	–	595	–
1965	–	–	–	–	–	–	903	–
1966	–	7[i]	–	–	–	–	563	–
1967	–	–	–	–	–	–	533	–
1968	–	–	173[i]	857[i]	407[i]	–	414	–
1969	–	–	120	286	105	–	334	–
1970	–	100	–	670	615	71[i]	625	–
1971	–	130	275	275	650	750	856	–
1972	–	80	126	415	237	13	391	–
1973	100	99	27[i]	75[i]	36[i]	–	224	–
1974	–	192	–	70[i]	48[i]	–	273	–
1975	–	175	–	153[i]	249	40[i]	313	–
1976	–	52	–	86[i]	102	–	121	–
1977	–	150	408	316[i]	77	–	277	–
1978	–	200	330	524	375	–	725	–
1979	–	150	489[i]	632	713	183[i]	1,184	–
1980	–	222	286[i]	1,436	975	377	1,383	–
1981	–	133	670	2,411	1,626	395	1,555	–
1982	–	73	403	758	578	104	473	19,790
1983	100	264	101[i]	540	701	95	905	28,989
1984	150	153	434	1,044	832	124	1,042	27,616[k]
1985	210	190	255	801	409	110	508	10,730
1986	228	155	54[i]	745	459[i]	109	557	16,415
1987	100	159	468	891	183	35	327	13,210
1988	204	152	368	765	267	66	405	23,118
1989	88	100	862	1,662	695	146	549	25,201
1990	83	643	665	1,806	652	188	1,407	37,707
1991	–	–	326	1,040	–	201[m]	1,266	22,582[a]
E.O.[p]								33,000–43,000

[a] Data obtained by aerial survey unless otherwise noted. Only peak counts are listed. Survey rating is fair to good, unless otherwise noted.

[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 South Creek.

[d] One Hundred Mile Creek to Sidney Creek.

[f] Wolf Lake to Red River.

[g] Includes 50, 90, 292, and 506 fin–clipped hatchery–origin salmon in 1988, 1989, 1990, and 1991 respectively.

[h] Estimated total spawning escapement excluding Porcupine River (estimated border escapement minus the Canadian catch).

[i] Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.

[k] Estimate derived by dividing the 1984 5–area (Whitehorse Fishway, Big Salmon, Nisutlin, Wolf, Tatchun) count by the average proportion of the 5–area index count to the estimated spawning escapements from the DFO tagging study for years 1982, 1983, and 1985–1990.

[m] Wolf Lake to Fish Lake outlet.

[a] Preliminary

[p] Interim escapement objective.

Table 6. Summer chum salmon escapement counts for selected spawning areas in the Yukon River drainage, 1973–1991.[a]

Year	Andreafsky River			Anvik River		Nulato River					
	East Fork										
	Aerial	Sonar or Tower	West Fork	Tower & Aerial	Sonar	South Fork	North Fork[b]	Gisasa River	Hogatza River	Chena River	Salcha River
1973	10,149 [c]	–	51,835	86,665 [c]	–	–	–	–	–	79 [c]	–
1974	3,215 [c]	–	33,578	201,277	–	29,016	29,334	22,022	–	4,349	3,510
1975	223,485	–	235,954	845,485	–	51,215	87,280	56,904	22,355	1,670	7,573
1976	105,347	–	118,420	406,166	–	9,230 [c]	30,771	21,342	20,744	685	6,474
1977	112,722	–	63,120	262,854	–	11,385	58,275	2,204 [c]	10,734	610	677 [c]
1978	127,050	–	57,321	251,339	–	12,821	41,659	9,280 [c]	5,102	1,609	5,405
1979	66,471	–	43,391	–	280,537	1,506	35,598	10,962	14,221	1,025 [c]	3,060
1980	36,823 [c]	–	114,759	–	492,676	3,702 [c]	11,244 [c]	10,388	19,786	338	4,140
1981	81,555	147,312 [d]	–	–	1,486,182	14,348	–	–	–	3,500	8,500
1982	7,501 [c]	181,352 [d]	7,267 [c]	–	444,581	–	–	334 [c]	4,984 [c]	1,509	3,756
1983	–	110,608 [d]	–	–	362,912	1,263 [c]	19,749	2,356 [c]	28,141	1,097	716 [c]
1984	95,200 [c]	70,125 [d]	238,565	–	891,028	–	–	–	–	1,861	9,810
1985	66,146	–	52,750	–	1,080,243	10,494	19,344	13,232	22,566	1,005	3,178
1986	83,931	167,614 [f]	99,373	–	1,189,602	16,848	47,417	12,114	–	1,509	8,028
1987	6,687 [c]	45,221 [f]	35,535	–	455,876	4,094	7,163	2,123	5,669 [c]	333	3,657
1988	43,056	68,937 [f]	45,432	–	1,125,449	15,132	26,951	9,284	6,890	432	2,889 [c]
1989	21,460 [c]	–	–	–	636,906	–	–	–	–	714 [c]	1,574 [c]
1990	11,519 [c]	–	20,426 [c]	–	403,627	3,196 [c,g]	1,419 [c]	450 [c]	2,177 [c]	100 [c]	450 [c]
1991	31,886	–	46,657	–	847,772	13,150	12,491	7,003	9,947	10 [c]	154 [c]
E.O.[h]	>109,000	–	>116,000	–	>500,000 [j]	–	>53,000 [k]	–	>17,000 [m]	–	>3,500

[a] Data obtained by aerial survey unless otherwise noted. Only peak counts are listed.
[b] Includes mainstem counts below the confluence of the North and South Forks, unless otherwise noted.
[c] Incomplete survey and/or poor survey timing or conditions resulted in minimal or inaccurate count.
[d] Sonar count.
[f] Tower count.
[g] Mainstem counts below the confluence of the North and South Forks Nulato River included in the South Fork counts.
[h] Interim escapement objective.
[j] The Anvik River Escapement Objective was rounded upward to 500,000 from 487,000 in March, 1992.
[k] Interim escapement objective for North Fork Nulato River only.
[m] Includes Caribou and Clear Creeks with escapement objectives of 8,000 and 9,000, respectively.

Table 7. Fall chum salmon escapement counts for selected spawning areas in the Yukon River drainage, 1974–1991.

Year	Upper Toklat River[a]	Delta River[b]	Chandalar River[c]	Sheenjek River[c]	Fishing Branch River[d]	Canada Mainstem Tagging Estimate[f]
1974	43,484	5,915	–	89,966 [g]	32,525 [h]	–
1975	90,984	3,734 [j]	–	173,371 [g]	353,282 [h]	–
1976	53,882	6,312 [j]	–	26,354 [g]	36,584	–
1977	36,462	16,876 [j]	–	45,544 [g]	88,400	–
1978	37,057	11,136	–	32,449 [g]	40,800	–
1979	179,627	8,355	–	91,372 [g]	119,898	–
1980	26,373	5,137	–	28,933 [g]	55,268	–
1981	15,775	23,508	–	74,560 [g]	57,386 [k]	–
1982	3,601	4,235	–	31,421	15,901	31,958
1983	20,807	7,705	–	49,392	27,200	90,875
1984	16,511	12,411	–	27,130	15,150	56,633 [m]
1985	22,805	17,276 [j]	–	152,768	56,016 [h]	62,010
1986	18,903	6,703 [j]	59,313	83,197	31,723 [h]	87,990
1987	22,141	21,180	52,416	140,086	48,956 [h]	80,776
1988	13,324	18,024	33,619	41,073	23,597 [h]	36,786
1989	30,447	21,342 [j]	69,161	101,748 [n]	43,834 [h]	35,750
1990	33,672	8,992 [j]	78,631	65,721 [q]	35,000 [p]	51,735
1991 [q]	13,197	32,905 [j]	–	90,000	37,733 [h]	76,447
E.O.[r]	> 33,000	> 11,000	–	> 64,000	50,000 – 120,000	> 80,000

[a] Total escapement estimates using Delta River migratory time density curve and percentage of live salmon present by survey date in upper Toklat River area.

[b] Total escapement estimates made from migratory time density curve (see Barton 1986), unless otherwise indicated.

[c] Sonar estimate.

[d] Total escapement estimates using weir to aerial survey expansion factor of 2.72, unless otherwise indicated.

[f] Excludes Fishing Branch River escapment (estimated border passage minus Canadian removal).

[g] Total escapement estimates using sonar to aerial survey expansion facor of 2.221.

[h] Weir estimate.

[j] Population estimate from replicate foot surveys and stream life data.

[k] 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.

[m] Escapement estimate based on mark–recapture program unavailable. Estimate based on assumed average exploitation rate.

[n] Includes a passage estimate of 20,000 salmon prior to initation of sonar monitoring operations.

[p] Weir was not operated. Although only 7,541 chum salmon were counted on a single survey flown October 26, a population estimate of approxiately 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 in view of aerial survey timing.

[q] Preliminary

[r] Interim escapement objective.

Table 8. Coho salmon escapement for selected spawning areas in the Yukon River drainage, 1972–1991.[a]

Year	Andreafsky River		Anvik River	Kantishna River		Nenana River Drainage				Delta Clearwater River[d,f]	Clearwater Lake and Outlet	Richardson Clearwater River
	East Fork	West Fork		Geiger Creek	Barton Creek	Lost Slough	Nenana Mainstem[b]	Wood Creek[c]	17–Mile Slough			
1972	–	–	–	–	–	–	–	–	–	630	417	454 [g]
1973	–	–	–	–	–	–	–	–	–	3,322	551 [d]	375 [d]
1974	–	–	–	–	–	1,388	–	–	27	3,954	560	652 [d]
1975	–	–	–	–	–	943	–	–	956	5,100	1,575 [d,f]	4 [g]
1976	–	–	467 [g]	25 [h]	–	118	–	–	281	1,920	1,500 [d,f]	80 [g]
1977	–	–	81 [g]	60	–	524	–	310 [h]	1,167	4,793	730 [d,f]	327
1978	–	–	–	–	–	350	–	300 [h]	466	4,798	570 [d,f]	–
1979	–	–	–	–	–	227	–	–	1,987	8,970	1,015 [d,f]	372
1980	–	–	–	3 [h]	–	499	–	1,603 [h]	592	3,946	1,545 [d,f]	611
1981	1,657 [g]	–	–	–	–	274	–	849 [j]	1,005	8,563 [k]	459 [g]	550
1982	–	–	–	81 [h]	–	–	–	1,436 [j]	–	8,365 [k]	–	–
1983	–	–	–	42 [h]	–	766	–	1,044 [j]	103	8,019 [k]	253	88
1984	–	–	–	20	–	2,677	–	8,805 [j]	–	11,061	1,368	428
1985	–	–	–	42	–	1,584	–	3,775 [j]	2,081	5,358	750	–
1986	–	–	–	5 [h]	496	794	–	1,664 [j]	218 [e,f]	10,857	3,577	146 [g]
1987	–	–	–	1,175 [h]	–	2,511	–	2,450 [j]	3,802	22,300	4,225 [d,f]	–
1988	1,913	830	830	159 [h]	437	348	–	2,046 [j]	–	21,600	825 [d,f]	–
1989	–	–	–	155 [h]	12 [g]	–	–	412 [j]	824 [g]	11,000	1,600 [d,f]	483
1990	–	–	–	211 [h]	–	688	1,308	–	15 [g]	8,325	2,375 [d,f]	–
1991 [k]	–	–	–	427 [h]	467 [g]	564	447	–	52	23,900	3,150 [d,f]	–

[a] Only peak counts presented. Survey rating is fair to good, unless otherwise noted.
[b] Mainstem Nenana River between confluences of Lost Slough and Teklanika River.
[c] Surveyed by F.R.E.D.
[d] Surveyed by Sport Fish Division.
[f] Boat survey.
[g] Poor survey.
[h] Foot survey.
[j] Weir count.
[k] Population estimate.
[m] Preliminary