

ALASKA DEPARTMENT OF FISH AND GAME  
DIVISION OF COMMERCIAL FISHERIES

ANNUAL SALMON MANAGEMENT REPORT

1980

KUSKOKWIM AREA

STAFF

BETHEL OFFICE -- P. O. BOX 90  
DeeDee A.S. Jonrowe (Kuskokwim Area Biologist)  
Rae Baxter (Kuskokwim Project Biologist)

ANCHORAGE REGIONAL OFFICE, -- 333 Raspberry Road  
Dan Schneiderhan (Kuskokwim Project Biologist)

## TABLE OF CONTENTS

	<u>Page</u>
PREFACE.....	iv
KUSKOKWIM AREA.....	1
Area and district Boundaries.....	1
Fishery Resources.....	1
Commercial Fishery.....	1
Subsistence Fishery.....	2
Management.....	2
AREA SUMMARY OF THE 1980 COMMERCIAL FISHERIES.....	4
Fishing Effort.....	4
Commercial Catches.....	4
Buyers and Processors.....	5
Economic Value.....	5
Enforcement.....	5
KUSKOKWIM RIVER (DISTRICTS 1 & 2).....	5
Commercial Fishery.....	5
King Salmon.....	7
District 1.....	7
District 2.....	8
Chum Salmon.....	8
District 1.....	8
Coho Salmon.....	9
District 1.....	9
Subsistence Fishing.....	9
Methods.....	9
Catch and Effort.....	10
Escapement.....	11
QUINHAGAK (DISTRICT 4).....	11
Commercial Fishery.....	11
Subsistence Fishery.....	12
Escapement.....	12
GOODNEWS BAY (DISTRICT 5).....	12
Commercial Fishery.....	12
Subsistence Fishery.....	13
Escapement.....	13
OUTLOOK FOR 1981.....	13
King Salmon.....	13
Chum Salmon.....	14
Coho Salmon.....	14
Pink Salmon.....	14

## INDEX TO FIGURES AND TABLES

		<u>Page</u>
Figure 1.	Kuskokwim area map.....	
Table 1.	Kuskokwim River distances .....	15-16
Table 2.	Fishes commonly found in the Kuskokwim area.....	17
Table 3.	Kuskokwim area emergency orders, 1980.....	18-20
Table 4.	Kuskokwim area project summaries, 1980.....	21-22
Table 5.	Kuskokwim area processors and associated data, 1980....	23-24
Table 6.	Kuskokwim area entry permits issued by village, 1980...	25
Table 7.	Kuskokwim area commercial and subsistence salmon catches by species and statistical area, 1980.....	26
Table 8.	Average weight of salmon taken in the Kuskokwim area commercial fishery, 1980.....	27
✓Table 9.	Commercial salmon catch data, lower Kuskokwim River (district 1, 335-10) all gear combined, 1980.....	28
Table 10.	Commercial salmon catch data, lower Kuskokwim River (district 1, 335-11), all gear combined, 1980.....	29
Table 11.	Commercial salmon catch data, lower Kuskokwim River (district 1, 335-12), all gear combined, 1980.....	30
✓Table 12.	Commercial salmon catch data, upper Kuskokwim River (district 2, 335-20), all gear combined, 1980.....	31
Table 13.	Age and sex composition of Kuskokwim area king salmon sampled at various locations, 1980.....	32
Table 14.	Kuskokwim area subsistence fishery summary, 1980.....	33
✓Table 15.	Commercial salmon catch data, Quinhagak (district 4, 335-40), all gear combined, 1980.....	34
✓Table 16.	Commercial salmon catch data, Goodnews Bay (district 5, 335-50), all gear combined, 1980.....	35
Table 17.	Aerial salmon escapement survey in the Kuskokwim Area, 1980.....	36

INDEX TO APPENDIX TABLES

	<u>Page</u>
A. Table 1. Kuskokwim area commercial and subsistence salmon catches, 1913-1980.....	37
A. Table 2. Kuskokwim area commercial effort by district, 1970-1980.....	38
A. Table 3. Kuskokwim area commercial catch by drainage, 1960-1980.....	39
A. Table 4. Kuskokwim area commercial king salmon catches by district, 1960-1980.....	40
A. Table 5. Commercial salmon pack by species in round weight (lbs) Kuskokwim Area, 1968-1980.....	41
A. Table 6. Mean salmon weights and prices paid to fishermen, Kuskokwim area, 1964-1980.....	42
A. Table 7. Dollar value estimates of Kuskokwim area commercial fishery, 1964-1980.....	43
A. Table 8. Utilization of Kuskokwim River king salmon, 1960-1980..	44
A. Table 9. Commercial king salmon catches by fishing period during the king salmon season, Kuskokwim River (district 1, 335-10), 1974-1980.....	45
A. Table 10. Utilization of Kuskokwim River chum salmon, 1960-1980..	46
A. Table 11. Commercial chum salmon catches by fishing period during the chum salmon season, Kuskokwim River (district 1, 335-10), 1971-1980.....	47
A. Table 12. Commercial coho salmon catches by week, lower Kuskokwim River (district 1, 335-10), 1974-1980.....	48-49
A. Table 13. Kuskokwim River subsistence king salmon catches by village, 1960-1980.....	50
A. Table 14. Kuskokwim River subsistence "other salmon" catches by village, 1960-1980.....	51-52
A. Table 15. Subsistence fishing historical summary, Kuskokwim River 1980.....	53
A. Table 16. Quinhagak subsistence fishery historical summary, 1967-1980.....	54
A. Table 17. King salmon escapement counts, Kuskokwim River drainage, 1970-1980.....	55-57

## PREFACE

This report presents all available information concerning the management of commercial and subsistence salmon fisheries in the Kuskokwim area. Although data from many special research projects are included in this report, complete documentation of these projects and results will be presented in separate reports.

Data presented in this report supercedes information found in previous management reports. An attempt has been made to correct errors in previous reports and previously unrecorded data have been incorporated into this report which are so indicated by appropriate footnotes.

This report is organized into the following major sections:

- A. Area Introduction. This is a general and brief description of the area, inhabitants, fishery resources, fisheries and management practices.
- B. Area Summary. This section summarizes current year data for the area and makes comparisons with previous years.
- C. District Reports. There are several unique and separate fisheries in the area and separate comprehensive reports are presented for each.

In order to facilitate use of this report, the tabular data has been separated into current year tables and appendix tables where annual comparisons are made. The text for each major section is followed by current year tables and then appendix tables.

Effort and catch per unit effort are derived as follows: Total boat (or fisherman) hours are computed by arbitrarily assuming that if a fishing boat delivers in any 24 hour fishing period, it fished the entire period. If the period was more than 24 hours long, then the vessel is assumed to have fished the complete period for as many hours as was open to commercial fishing. The resulting figure, total fisherman hours, is then divided into the catch during the same period to obtain catch per fisherman (or boat) hour.

Total fishermen (or boats) is the total number of fishermen making deliveries, irrespective of the number of deliveries made or of days fished during a particular "season". There are a number of fishermen who deliver only once or twice during the entire season.

"Total days fished" is the total number of hours open for commercial fishing during the season divided by 24.

Commercial catch information presented for the current year is derived from field data and not from finalized computer tabulations. Commercial catch data through 1975 are derived from final computer tabulations.

## KUSKOKWIM AREA

### INTRODUCTION

#### Area and District Boundaries

The Kuskokwim area includes all waters of the Kuskokwim River drainage and all waters of Alaska between Cape Newenham and the Naskonat Peninsula. The present commercial salmon fishing area is divided into four districts: district 1 (lower Kuskokwim River from Eek Island to Mishevik Slough below Tuluksak); district 2 (middle Kuskokwim River from the Yukon-Kuskokwim portage to the Kolmakof River near Aniak); district 4 (approximately five miles of shoreline adjacent to the village of Quinhagak); and district 5 (Goodnews Bay). District 3 (upper Kuskokwim River above the Kolmakof River) has been closed to commercial fishing since 1966 (Figure 1). Table 1 shows the relative distances, in river miles, from three sites on the Kuskokwim River to various locations in the area.

#### Fishery Resources

All five species of Pacific salmon are indigenous to the area: chinook or "king" salmon (*Oncorhynchus tshawytscha*), sockeye or "red" salmon (*O. nerka*), coho or "silver" salmon (*O. kisutch*), pink or "humpback" salmon (*O. gorbuscha*) and chum or "dog" salmon (*O. keta*). The largest population of kings, chums and cohos are found in the Kuskokwim River drainage, while reds and pinks are more numerous in the Kanektok and Goodnews River systems.

Other important species common to the area include: inconnu or "sheefish" (*Stenodus leucichthys*) several species of whitefish and cisco (*Coregonus* sp.), Alaska blackfish (*Dallia pectoralis*), northern pike (*Esox lucius*) and burbot or "lush" (*Lota lota*). Additional species are listed in Table 2.

#### Commercial Fishery

Although the Kuskokwim area commercial fishery is the oldest in the AYK region with catches reported as early as 1913, commercial fishing did not mature for a half-century. For many years, small commercial mild-cure operations were conducted in or near Kuskokwim Bay while the Kuskokwim River fishery remained virtually undeveloped. During the 1930's when dog teams were intensely utilized for freight hauling, a "quasi-commercial" fishery operated in the McGrath area for the sale of dried, subsistence caught salmon for dog food. However, this fishery declined with the dog teams and the Kuskokwim area experienced little additional commercial effort until Alaska became a state more than twenty years later.

Commercial salmon fishing activity has grown significantly since statehood as area fishermen have been making the difficult transition from a subsistence culture to a cash economy. This has affected fishing effort, resulting in a tremendous expansion in fishermen numbers and in increased, sustained effort. Fishing vessels have remained virtually unchanged over the years, but increased utilization of highly mobile

nylon drift nets has greatly improved the efficiency of the fleet (Appendix Table 1). The overall expansion of the commercial fishery could not have been accomplished without improvements in processing and tendering facilities that have occurred throughout the area.

King, red, coho, pink and chum salmon are of primary commercial significance in the Kuskokwim area. Although these fish are commercially utilized locally, the vast majority are transported from the area as a fresh or frozen product. Sheefish and whitefish are harvested incidentally to the salmon catch, and a limited fall and winter "whitefish" fishery is conducted to satisfy local market requirements.

### Subsistence Fishery

Area residents have long depended upon the fishery resources as a source of food. Until relatively recently, traditional fishing methods and materials limited the size and scope of the fishery. Spears, dip nets, fish traps, and willow or caribou strip gill nets were slowly supplanted by more efficient linen gill nets. This enabled the fishery to expand tremendously. Whitefish, cisco, blackfish, pike, burbot, and sheefish have been historically utilized along with salmon, particularly chum salmon. Since statehood, improvements in fishing gear, notably the introduction of nylon gill net webbing, have increased the availability and importance of king salmon. Estimated peak subsistence salmon harvest levels were reached during the 1930's coincidental with peak activity of the quasi-commercial McGrath fishery, but records indicate a continuing decline of this fishery into the 1940's. Little catch data is available for the twenty year period prior to statehood (Appendix Table 1).

Today the value of the subsistence fishery to local people remains as important as money realized from the commercial fishery. However, several factors, as yet not totally defined, are affecting the complexion of the subsistence fishery. These factors include:

- (1) Increasing commercialization of subsistence products.
- (2) Cultural changes of local residents.
- (3) Various State and Federal social-aid programs.

Any management of the Kuskokwim area fishery resources must take into account the growing and changing requirements of the subsistence fishery.

### Management

The Division of Commercial Fisheries of the Alaska Department of Fish and Game is responsible for the management of the commercial and subsistence fisheries within the Kuskokwim area. The permanent staff assigned to this area includes one management biologist and two research biologists. In addition, 10-15 temporary summer employees are hired each season to assist the permanent staff in conducting various management and research studies.

The main objective of the Department's program is to manage the commercial salmon fisheries on a sustained yield basis in addition to obtaining needed information to determine the potential for commercial fisheries on under-utilized species such as burbot and whitefish. Present commercial salmon fishing regulations are still relatively restrictive in order to insure that sufficient salmon are provided for subsistence fishery and spawning ground requirements.

The basic regulation that governs the commercial salmon harvest in all districts is the scheduled weekly fishing period. Commercial fishing is normally allowed from 6 to 12 hours a week during the open season, dependent upon the district and species involved. Fishing effort usually occurs during the entire run and not just during any particular segment of the run. Duration of the actual fishing period is dependent upon fishing conditions, the strength of the runs or spawning escapements as determined by special studies conducted by the Department.

Due to the vast size of the area and the turbid nature of many streams, accurate estimates of the size of salmon runs and the spawning escapements are difficult to obtain. Fishery management is also hampered by the relative lack of comparative catch and return information since all the fisheries have been expanding through regulation changes since their initiation in 1961 and 1962. The management problem is further compounded by having to provide sufficient escapement after commercial fishing for the important subsistence fishery as well as for spawning purposes.

For these reasons the present commercial fishery is still considered to be somewhat experimental in nature. It has been a policy of the Alaska Department of Fish and Game to maintain recent levels of commercial utilization for a few years in order to establish definite trends in subsistence utilization and to obtain more information on the relationship between the salmon catch and return.

If there is no apparent change in run size, it is the Department's policy to increase commercial utilization once trends in declining subsistence utilization can be established. It should be pointed out that increases in commercial fishing effort and efficiency have occurred and may balance any immediate decline in subsistence utilization with the result that present regulations will be maintained or even made more restrictive.

A brief list of emergency orders and regulations promulgated during 1980 is presented in Table 3.

Regulatory changes enacted by the Alaska Board of Fisheries at their December meeting in Anchorage are shown in Table 4.

Table 5 lists special studies undertaken during 1980 and include a summary of objectives and results.

A unique problem in the area is the so-called language barrier. Many of the older native people cannot read or speak English. Therefore, the staff must use translators when conducting the many public meetings that are annually conducted throughout the area. In addition, many

special regulation notices are distributed in both the English and Eskimo languages. While it may normally take only half an hour or so to conduct a public meeting or hearing in English, it usually takes two to three times that long when Eskimo translators are used. To assist in the information and education program, during the summer months a weekly fishery program is broadcast over radio KYUK in Bethel. Additionally, the Department contributes to a weekly newspaper, The Tundra Drums.

## AREA SUMMARY OF THE 1980 COMMERCIAL FISHERIES

In recent years, fishermen participation levels have risen in general. The lower Kuskokwim River (district 1) and the Quinhagak area (district 4) have become the centers for most Kuskokwim district fishermen. This is due to the close proximity to the population centers and the liberal harvest goals associated with these fisheries. The district 2 (middle Kuskokwim River) and district 5 (Goodnews Bay area) fisheries have remained fairly stable in terms of the number of fishermen working in these areas. This is due to the relative remoteness of these fisheries and smaller harvest levels for these districts. Appendix Table 2 shows the effort levels in each district over the past nine years.

Ninety-nine percent of all Kuskokwim entry permit holders were residents of the area (Table 7). These fishermen move freely between districts so registration data does not correspond with the total number of fishermen who fished each district. The total number of fishermen making deliveries at least once in each district was: 335-10, 663; 335-20, 43; 335-40, 169; and 335-50, 48 (Appendix Table 2).

Entry permit holders are issued permanent registration numbers which do not change during the life of the individual fishermen. Whenever actual numbers of fishermen are given in this report, they refer to data obtained from permanent registration numbers.

### Commercial Catches

The 1980 commercial salmon catch of 1,010,152 was the largest ever recorded and was 31% above the previous record 1978 harvest. This catch also exceeded the previous five-year average of 693,093 fish (Appendix Table 1). Species composition was 48,242 kings; 42,213 reds; 327,908 cohos; 30,306 pinks; and 561,483 chum salmon (Table 8).

An average king salmon harvest put the 1980 catch at 4% less than the previous five year average (Appendix Table 1). The chum salmon catch was the largest on record as was the red and coho salmon harvest. The pink salmon returns were fairly strong in spite of the fairly low catches reported during 1980 season.

Commercial catches of all species were strongly influenced by intense, consistently high fishing effort, increased fleet efficiency, and good runs of salmon.

Average 1980 salmon weights are presented in Table 9.

## Buyers and Processors

Table 6 includes all buyers and processors that operated during 1980 in the district. Appendix Table 5 compares the 1980 pack to previous years and Appendix Table 6 presents the mean salmon weights and the prices paid to fishermen for the last fifteen years.

## Economic Value

Commercial fishermen received approximately \$2,725,134 for their catch in 1980 (Appendix Table 7) while a minimum of \$275,000 in wages was estimated to have been earned by processing plant employees and tenderboat operators.

## Enforcement

Fishermen were cited for the following types of violations during the season: fishing without proper licensing and closed waters violations of both a subsistence and a commercial nature.

The single largest enforcement problem that has persisted for the past several years has been illegal commercial fishing in the Goodnews River and now Kanektok River. Both Fish and Game and Fish and Wildlife Protection will have to put more emphasis on this problem in the future.

As in the past, the Department of Fish and Game vigorously pursued a program of informing the public of impending closures by utilizing the local radio station, CB radio, telephone and by personal contact.

## KUSKOKWIM RIVER (DISTRICTS 1 & 2)

### Commercial Fishery

The greatest amount of fishing effort and the largest commercial salmon catches occur within the 108-mile long district 1, (stat. area 335-10). There are 12 villages and at least 15 temporary fish camps located within the boundaries of this district. A majority of the district residents utilize the fishery resources for both commercial and subsistence purposes.

Set gill nets and drift gill nets are the legal types of commercial gear that can be operated in the Kuskokwim River. The gill nets cannot exceed 50 fathoms in length. After June 25, a six inch maximum mesh size restriction is in effect in the commercial chum salmon fishery located below the City of Bethel.

Lower Kuskokwim River commercial fishermen operate highly mobile drift gill nets. This type of fishing is conducted by laying out 35 to 50 fathoms of gill net from a skiff and then drifting with the river current. Drift net fishing requires a section of river that is relatively free of snags. Set gill nets are not utilized to a great extent by commercial fishermen and are used mainly for subsistence fishing. Commercial set gill nets are fished in small eddies along the bank of the Kuskokwim River and larger eddies out in the main river. Set gillnetting is done with much shorter nets, usually 5 to 15 fathoms in length, which tend to be more poorly constructed than do the drift gill nets.

Although there are no mesh size restrictions regarding nets operated in the lower district through June 25, most nets used during this time consist of 8-1/2 inch stretched mesh webbing. After June 25, a six inch stretched mesh size limitation is in effect and most nets consist of 5-1/4 - 5-1/2 inch stretched mesh. Depths of king salmon nets are restricted to a maximum of 35 meshes deep for nets over six inches in stretched mesh and a maximum of 45 meshes for nets six inches or smaller in stretched mesh measure.

Kuskokwim River skiffs are long and narrow with a high bow. Generally, boats vary from 16 to 32 feet (23-foot average) in length and 2-1/2 - 3 feet in deck width. Boats are generally poor for fishing as they are unstable, too narrow for a stern roller, and the sides and stern are generally too low to carry too much of a load. In recent years however, more sophisticated vessels are entering the fishery including jet boats and larger diesel vessels that are used to fish herring on the coast.

Several important regulations affecting commercial fishing efforts on the Kuskokwim River are:

- 1) Until June 26, commercial fishing periods are regulated by emergency order. This allows scheduling of the king salmon harvest throughout a greater portion of the run. This is necessary because of the intensive nature of the king salmon fishery.
- 2) Commercial fishing periods are limited to two 6-hour periods each week during the chum salmon season. This helps offset the increased effort and efficiency of the fleet and distributes the allowable harvests over a greater portion of the salmon run.
- 3) Commercial fishing is allowed only below Bethel (the lower 86 miles of river) during the "chum salmon season" (June 26 - July 31). Only gill nets of six-inch stretch mesh or less can be operated during this time. Restricting fishing to the lower portion of the district enhances fish quality, helps prevent excessive harvest and wastage, and allows subsistence demands to be met. The gill net mesh restriction minimizes the capture of king salmon, particularly the larger, more fecund females.
- 4) Subsistence fishing is prohibited for 24 hours before, during, and for 6 hours after each commercial fishing period in district 1 prior to June 25 and August 1 to August 31. During the "chum salmon season" (June 25 - July 31), only the lower district below Bethel is affected. This regulation reduces the sale of illegal salmon and provides for a more even escapement distribution. It also reduces fish wastage, as subsistence fishermen are required to check their gear at regular intervals throughout the commercial fishing season.
- 5) After July 31, commercial fishing periods are again regulated by emergency order. This allows fishing effort to be regulated according to the magnitude of the variable coho salmon run. It also allows fishing time to be altered to insure maximum fishermen safety during poor weather conditions in August.

A limited commercial fishery is also conducted in the 65 mile long district 2. Commercial fishermen in this district are limited to catch quotas of 2,000 king and a combined total of 2,000 red and chum salmon and 2,000 coho salmon. The majority of commercial catches are taken in the Kalskag area, while the remainder of the district is primarily devoted to subsistence fishing. Set gill nets and drift gill nets are found in this district, however, set gill netting predominates.

King Salmon: Only since statehood have king salmon stocks been used significantly by Kuskokwim River fishermen. King salmon commercial and subsistence harvests averaged only 56,237 fish for the 10-year period 1960-1969, but increased to 85,160 during 1975-1979. Effort decreased slightly during the 1980 season and total utilization was 95,781 fish (Appendix Table 8); this is the second highest number ever recorded.

Annual commercial catches ranged between 30,000 and 40,000 king salmon from 1968-1972. A guideline harvest was instituted within this range in an attempt to stabilize the fishery until additional data regarding run size and escapement was obtained. The small runs experienced during the years 1974, 1975 and 1976 may indicate the 30,000-40,000 harvest range was too optimistic. Commercial harvests since 1974 have ranged from about 19,000-45,000 and the current guideline harvest for the entire river is 25,000 fish during the "king salmon season". A few thousand additional fish are taken during later seasons when fishing is directed on other species.

The "king salmon season" in the lower district is not opened until subsistence catches indicate the early portion of the king salmon run has reached the Kalskag-Aniak area and relatively good sustained catches are being made at the Department's test fishing site at Kwegooyuk (56 river miles below Bethel). The late opening of the king salmon season helps to prevent over-harvest of the early run and gives subsistence fishermen an opportunity to begin fishing without interference from the commercial fishery.

In 1980 the ice on the Kuskokwim River first moved on May 4 at Bethel, and the river was completely free of ice by May 10. The first reported king salmon was caught on May 17 at Bethel.

The commercial king salmon season consisted of two 6 hour commercial fishing periods. The season started on June 12 and ended June 18. Fishing time has been restricted during recent years (with the exception of 1978) due to increased fishing effort, gear efficiency and competition among fishermen. This aggressive fishing effort by the fleet was primarily responsible for the short season.

The comparative run magnitude of king salmon in the Kuskokwim River can be characterized as average in 1980.

Commercial fishing effort during the king salmon season in district 1 totalled 553 fishermen, a 10% decrease over record 1978 levels. Fishermen hours decreased to 5,662 and the number of equivalent days fished was 0.5 (Appendix Table 9). The catch per vessel hour figure of 4.8 was the second highest on record. An additional 7,372 king salmon were taken incidentally during the later chum and coho salmon seasons bringing the total commercial harvest in district 1 to approximately 34,184 fish (Table 10).

The district 2 commercial fishery was opened for 18 hours during June 23-July 9 when 1,697 kings were taken. Forty-one fishermen made commercial landings during the 1980 king salmon season (Table 13). The commercial catch therefore totaled 1,697 which is 38% less than the previous 5 year average king salmon catch in district 2.

The total king salmon commercial catch for the Kuskokwim River numbered 35,881, and was similar to the previous 5 year average catch (Appendix Table 8).

Data from the Department's test fishing site indicated that the king salmon run peaked about June 15-20 and was about average in magnitude.

Chum Salmon: Prior to 1971, chum salmon catches represented only fish taken incidentally to the king and coho salmon fisheries. A commercial chum fishery was initiated in 1971 due to several factors:

- 1) Early subsistence catch estimations during 1924-1943 indicate an average annual catch of 448,000 chum salmon, compared to an average 221,000 chum salmon taken yearly during 1960-1970. This represents a reduction of 227,000 fish per year. This subsistence harvest reduction is believed to have been largely influenced by lessening dependence on subsistence fishing.
- 2) There is a minimum of 16 known chum salmon spawning tributaries in the Kuskokwim River system. Most of these streams cannot be surveyed annually due to fund limitations and adverse stream or weather conditions. Usually, not more than three tributary streams can be adequately surveyed in any given season, but as many as 185,000 spawning chums have been counted. This indicated a significant chum salmon population.
- 3) Commercial catches were believed to be able to provide additional information regarding the size, timing and magnitude of the chum salmon run in addition to age, sex and size composition.

Total utilization figures (commercial plus subsistence) have increased steadily since the inception of the commercial chum salmon fishery with a total of 561,483 fish being caught in 1980. This figure is substantially above the previous 1977 record harvest, and is 48% above the previous five-year average (Appendix Table 10).

The "chum salmon season" in district 1 is normally opened after June 25 below markers placed at the City of Bethel. Commercial fishermen must use nets of 6-inch or smaller stretched mesh. The delayed opening dates combined with the mesh restriction minimizes incidental harvests of king salmon, while restricting commercial fishing to the lower portion of district 1 allows subsistence fishermen to meet their requirements.

The 1980 commercial chum salmon season in district 1 consisted of four-6-hour fishing periods. Due to an exceptionally early run of chum salmon (first chum caught in Bethel on June 4th), the season was opened on June 23, three days prior to the published opening date of June 26 and was terminated on the 9th of July.

This season's commercial catch of 450,076 indicated an exceptionally strong run based on comparative catch and escapement information (Tables 10-12). The catch reflects a record harvest and was 54% above the

previous five year average of 245,637. Commercial fishing effort totaled 579 fishermen, a decrease from the record levels of 1978 and 1979, and is 3% above the previous five year average. Catch per unit effort data for commercial catches was as high as 54 fish per fishermen hour during the June 26th period and was substantially above average for the entire season. Test fishing catches were also above average.

Historically fishermen have not differentiated red and chum salmon either in their commercial or subsistence catches. For this reason the true magnitude of the red and chum salmon runs in the main Kuskokwim River has not been accurately assessed. In recent years fishermen processors and the Department of Fish and Game have been working together to properly identify each species. During the 1981 season efforts will be increased by use of an extensive local information and education program, more species composition sampling during the commercial fishery, and training programs for local processors and their tender operators.

District 2 was reopened for a special chum salmon period due to the large catch taken throughout the subsistence fishery and the escapement observed. Fishermen were allowed an additional six hours of commercial fishing on July 9. Twenty-one fishermen landed 11,911 chum salmon during this period (Table 13). A total of 16,617 chums were taken during the open commercial king, chum and coho seasons, which reflected a record catch and 14,617 above the present 2,000 fish quota.

#### Coho Salmon:

The commercial coho salmon season in district 1 opened on August 4. Fishermen were allowed two 6 hour fishing periods per week totaling 48 hours for the season. Consistently heavy effort dictated these series of shorter periods rather than the long fishing periods of the past. Total effort for the season 586 boats, reflected a 4% decrease over the 1979 record.

The total coho season catch this season was 219,174 fish. This was the second largest catch and reflects a 8% decrease from the 1977 record catch of 237,658 fish but remains 24% higher than the previous 5-year average.

In district 2 of the Kuskokwim River the coho season opened for 12 hours on August 14. 2,868 salmon were harvested by 12 fishermen (Table 13).

#### Subsistence Fishery

Methods: The annual survey of the Kuskokwim River subsistence fishery was initiated in 1960. During the early years, the Department utilized "smokehouse counts" to determine total utilization of subsistence caught fish. In an effort to determine additional timing and magnitude data, the Department began using "subsistence catch calendars" which are distributed to fishermen prior to the fishing season. Subsistence fishermen enter their daily catches of salmon and non-salmon species on the calendar. During July and August a Department crew utilizes a cabin skiff to travel more than 360 river miles (Eek to Swift River) to collect catch data from the individual fishermen in addition to recording certain

information from non-fishing families. After the river survey is completed, catch questionnaires are sent to those fishermen not individually contacted. In 1980 interviews were conducted by Division of Commercial Fisheries.

In the 1969 Annual Report, a review is presented regarding methods used to obtain subsistence harvest and related information. All subsistence information presented in tabular form in this report, except in Appendix Table 17 represents "expanded data". This includes those families known to have fished but for one reason or another were not personally contacted by the survey crew. Catch data for these families are assumed to be the same as the averages for the particular village and are included in most of the tables.

Reported coho salmon catches are very minimal as the coho salmon run occurs after the survey is completed. Most of the coho salmon catch data is obtained from the return of catch calendars. Prior to 1969, little effort was made to determine the coho salmon harvest. The coho salmon estimates are not included in the comparative catch tables.

Catch and Effort: The Kuskokwim River system's harvest included 59,509 king salmon, 165,172 chum salmon, and 37,542 coho utilized by 798 fishing families during 1980 (Table 15).

The king salmon harvest was the second largest since 1970 and was 22 percent above the 1974-79 average. The 1980 king salmon catch was also 21 percent above the 1974-77 "roe sale years" average of 46,926 (Appendix Table 13).

The chum salmon harvest was 20% smaller than the 1960-73 average catch and 17% smaller than the 1974-79 average catch (Appendix Table 14).

The public relations aspect of the annual subsistence fishery survey is important to the success of the survey itself and the Department's management program. By any method tested, the results of the voluntary contribution of the people to this program are as accurate as the people are capable of giving. The major problem is that many of the fishermen are illiterate and speak only Eskimo and have to relay much of the catch information through their school age children.

There is still a moderate sale or trading of dried salmon on the Kuskokwim River, but is not documented. People from the coastal delta villages still bring their pokes of seal oil to trade for dried fish. The lower river dried fish are now primarily being used for human consumption.

The use of the fishwheel to capture salmon is slowly disappearing from the Kuskokwim River. Only 10 fishwheels were used along the survey route in 1980, compared to 30 in 1965 and 65 in 1960. The fishwheel is being replaced by the more mobile gill net, which involves a lot less time and effort to operate. The use of gill nets is a relatively new technique for most Kuskokwim River residents. The efficiency of the two types of gear is difficult to evaluate, as large catches are often made with both.

## Escapement

Kuskokwim River drainage escapement estimates from aerial surveys have proved difficult and costly to obtain. Varying stream and weather conditions, in addition to pilot and observer skills, often make the data difficult to interpret (Appendix Table 18). Although aerial surveys will be continued for some streams, emphasis will be placed on obtaining accurate escapement figures by use of counting towers or weirs on several "key" spawning tributaries.

All the Kuskokwim River aerial survey results for 1980 are presented in Table 18. Escapements of kings, chums and reds were about average as documented by limited aerial surveys. It should be noted that survey efforts were again hampered in 1980 by high and turbid stream conditions. Surveys were not possible for several of the major salmon spawning streams. The Kogrukluk tower operation was discontinued in 1979. An established percentage of the Holitna weir counts can be used to obtain the same information formerly supplied by the tower operation. Unfortunately the Holitna weir was severely hampered by unseasonal high water and operated for only four days during early July.

### QUINHAGAK (DISTRICT 4)

#### Commercial Fishery

The Quinhagak fishery is one of two located south of the Kuskokwim River mouth (Figure 1). This fishery has traditionally been very sporadic due to unreliable processing facilities, however, the commercial fishery has stabilized during the past few seasons.

Fishing regulations for this district are very similar to those found on the Kuskokwim River, except that there are no distinct fishing seasons. Beginning with the 1971 season, the basic fishing period was reduced from two 24-hour periods to two 12-hour periods per week. Commercial fishing is allowed only in Kuskokwim Bay waters. This is necessary to ensure escapement of adequate numbers of salmon up the narrow Kanektok River. The vast majority of gear operated consists of drift gill nets that are fished at low tide in "gutters" located two to five miles offshore and are fished next to shore at high tide. Most of the fishing takes place near the mouth of the Kanektok River.

The Kanektok River king salmon run is later than that of the Kuskokwim River and for this reason the Quinhagak fishery opening is delayed until mid-June. The delayed opening prevents possible interception of Kuskokwim River fish and aids in preventing overharvest of the king salmon run.

Fishermen were required to use small mesh gear (6-inch stretched mesh or smaller) during the entire commercial fishing season. This was necessary primarily to prevent selective harvesting of the larger, more productive king salmon by the large mesh nets. However, the mesh limitation was also designed to increase harvests of the more abundant "other salmon" species (i.e. red, pink, chum, and coho).

The season was opened on June 12 with two 12-hour fishing periods a week continuing until June 30, when an additional 12-hour period was added to the schedule. The additional period is normally implemented in July in order to harvest the more numerous chum and red salmon (Table 16). The 1980 chum and coho catches were at record levels and all catches were above the recent 5 year averages with the exception of the king salmon catch (Appendix Table 3). A total of 10,387 kings, 13,221 reds, 62,610 cohos, 21,671 pinks, and 65,984 chums totalling a record 183,873 fish were taken. Commercial fishing effort totalled 194 fishermen, a 25% decrease from the record 1977 levels, but still above the previous 5 year average.

### Subsistence Fishery

Observations by the staff indicate that dependence on subsistence fishing has remained at a fairly stable level of the past 6 years. Accurate comparable subsistence data has not always been available for the Quinhagak subsistence fishery in recent years. Apparently the greatest amount of fishing effort occurs in the Kanektok River by rod and reel during most of the summer and with gillnets after the commercial fishing season when mostly coho salmon are taken.

Methods used to tabulate catches made by Quinhagak fishermen were similar to those used for the Kuskokwim River survey. A total of 76 Quinhagak fishing families reported catching 1,940 kings, 1,992 small salmon (chums and reds), and 5,279 coho. The large documented coho catch is a reflection of a more complete survey conducted later in the season.

Appendix Table 17 shows comparative catch data for 1967-80.

### Escapement

Escapement counts made during aerial surveys of the Kanektok River system are shown in Table 18. Weather conditions were good for 1980 aerial survey in the Quinhagak district. The king escapements appeared slightly above average in magnitude and record counts of red and coho salmon were made. Chum salmon were observed in good numbers as was the pink salmon counts.

## GOODNEWS BAY (DISTRICT 5)

### Commercial Fishery

Traditionally, the male residents from the villages of Goodnews Bay and Platinum have gone to Bristol Bay each summer to fish or work in the canneries, leaving the women and children home to fish for subsistence purposes. Prior to 1968, there are no records indicating that commercial salmon harvests were ever made in Goodnews Bay. The Department held public meetings in the area during the early 1960's regarding the possibility of initiation of a commercial fishery, but the negative response from village residents plus the absence of salmon buyers precluded this development.

In late August of 1968, the commercial salmon fishing was opened by emergency order in Goodnews Bay. This commercial fishery was created as

a result of a request from area residents and Department surveys, which indicated that a small harvestable supply of salmon was available. The fishery has been sporadic in nature due to inconsistent processing capabilities and inclement weather.

The commercial salmon season was opened June 12. The harvest was composed of 1,974 kings, 28,632 reds, 43,256 cohos, 7,832 pinks, and 11,748 chums, totalling a record 93,442 fish. Catches of red and coho were at record levels and reds, coho, pink and chum salmon were all above the previous 5-year average.

A total of 48 fishermen made commercial landings in 1980, an increase of 18 fishermen from 1979 level.

Division of Fish and Wildlife Protection officers initiated periodic patrols to control the illegal fishing in the lower Goodnews River during the 1980 season. Several cases were made later in the season resulting in some compliance with the regulations. A problem is still present however during the month of August.

### Subsistence Fishery

Accurate subsistence data has been lacking in the district 5 fishery in recent years. During the 1980 survey a total of 55 fishing families reported harvesting 498 king, 1,823 small salmon, and 4,514 coho salmon.

Escapement: Aerial surveys revealed above average escapement for king and chum salmon and record numbers of red, pink and coho salmon present in the Goodnews system. Based on these observations and comparative catch information escapement of all species in the Goodnews River appeared very good (Appendix Table 17).

## OUTLOOK FOR 1981

### KING SALMON

Western Alaska king salmon, including those from the Kuskokwim River, continue to be intercepted by foreign high seas fishing fleets. The relatively small king salmon catch in 1978 and 1979 by the Japanese mothership gillnet fleet was thought to be the result of recent treaty restrictions. However, this fleet in 1980 made a record catch of 704,000 king salmon of which 388,000 were estimated to be of western Alaska origin. The relatively unrestricted foreign trawl fishery in the Bering Sea captured an additional 110,000 king salmon in 1980 with the majority of this catch composed of western Alaska stocks. Therefore a minimum total of nearly 500,000 western Alaska king salmon were intercepted by foreign high seas fishing fleets in 1980 which exceeded the domestic fisheries harvest. This interception estimate does not include unreported dead loss from high seas gillnets which may amount to as much as one-third of the reported catch or possible interceptions by other foreign fleets (Gulf of Alaska trawl fisheries, Japanese landbased gillnet fishery).

The majority of king salmon taken by the foreign high seas fleets are 4 year old fish (average weight of 6 pounds) with a smaller number of 5 year old fish. The major impact of the 1980 interceptions will

occur when adult fish return to western Alaska in 1981 and 1982. There is limited evidence that the large high seas catch in 1980 was due to increased abundance and that future king salmon returns to domestic fisheries will be average or better in magnitude. However interceptions of this magnitude pose a serious management risk and an economic loss to the domestic fisheries of several million dollars.

#### CHUM SALMON

Chum salmon will return as three, four and five year old fish from the 1977, 1976 and 1975 brood years. The majority of the run will be composed of four year olds which are the progeny of 1976 spawners. Little comparative escapement information is available, but escapements past the Kobrukluuk River counting tower during 1975-77 were average in magnitude.

The projected chum salmon run in 1980 is expected to be average to above average in magnitude.

#### COHO SALMON

There is little information available to assess coho salmon abundance in 1980. The majority of cohos mature at four years of age with a few maturing at five years. Due to a lack of funding, very few coho salmon escapement surveys can be made.

Relatively high catches and catch per unit effort were attained in this fishery in 1977, 1978, and 1979, due to large returns and more intense fishing efforts in these years. In 1975 and 1976, the parent years for the 1980 return catches and catch per unit effort were far below those experienced during the past 3 years. Due to the changed nature of the fishery since 1975 and 1976, and the lack of escapement data on this species, it is unclear whether the run magnitude in 1975 and 1976 was comparable to the three succeeding years.

However, it appears likely that parent year escapements were adequate and that the environmental factors favoring freshwater and ocean survival for the past 3 years will also favorably influence returns in 1980. The 1980 return is therefore anticipated to be average or above average in magnitude.

#### PINK SALMON

Pink salmon returns during even-years (1976, 1978, 1980, etc.) are normally good.

Table 1. Kuskokwim River Distances

	Distances from:			
	Mouth		Bethel	
	Kilometer	Miles	Kilometer	Miles
<u>Kuskokwim River</u>				
Kuskokwim River Mouth, 60.08°N, 162.42°W	0.0	0.0	-126.1	-78.4
Eek Island, North End, 60° 10'	27.1	17.0	- 99.0	-61.5
Eek River	35.5	22.1	-100.0	-62.1
Kwegooyuk	38.3	23.8	- 87.78	-54.5
Kinak River	47.7	29.6	- 78.4	-48.7
Tuntutuliak Village	56.8	35.3	- 87.6	-54.4
Kialik River	59.5	37.0	- 66.6	-41.4
Fowler Island	84.3	52.4	- 41.8	-26.0
Johnson River	94.1	58.4	- 32.1	-19.9
Napakiak Village	104.3	64.8	- 21.9	-13.6
Napaskiak Village	114.5	71.2	- 11.6	- 7.2
Oscarville Village	115.3	71.6	- 10.8	- 6.7
Bethel City	126.1	78.4	0.0	0.0
Gweek River	144.7	89.9	18.6	11.6
Kwethluk Village	158.9	98.7	32.8	20.4
Akiachuk Village	169.0	105.0	42.9	26.6
Kasigluk River	174.5	108.4	48.3	30.0
Kisaralik River	175.7	109.2	49.6	30.8
Akiak Village	189.8	117.9	63.6	39.5
Mishevik Slough	197.6	122.8	71.4	44.4
Tuluksak Village	218.4	135.7	92.3	57.3
Mud Creek Slough	298.2	185.3	172.0	106.9
Lower Kalskag Village	304.7	189.3	178.6	111.0
Kalskag Village	308.7	191.8	182.6	113.5
Aniak Village, Aniak River	362.2	225.1	236.1	146.7
Chuathbaluk Village	375.4	233.3	249.3	154.9
Kolmakof River	395.8	246.0	269.7	167.6
Napaimiut Village	409.8	254.6	283.7	176.3
Holokuk River	414.6	257.6	288.5	179.3
Oskawalik River	449.0	279.0	322.9	200.6
Crooked Creek Village	467.2	290.3	341.1	211.9
Georgetown Village, George River	496.7	308.6	370.5	230.2
Red Devil Village	526.0	326.9	399.9	248.5
Sleetmute Village	538.6	334.7	412.5	256.3
Holitna River	541.2	336.3	415.1	257.9
Stony River Village	585.2	363.6	459.0	285.2
Stony River	586.9	364.7	460.8	286.3
Swift River	612.1	380.4	486.0	302.0
Tatlawiksuk River	617.1	383.4	491.0	305.1
Devil's Elbow	645.3	401.0	519.2	322.6

	Distances from:			
	Mouth		Bethel	
	Kilometer	Miles	Kilometer	Miles
Vinassale	735.8	460	610	381
McGrath Village	811	507	685	428
Middle Fork	885	553	759	474
Big River	896.1	560	770	481
Pitka Fork	916	572	790	494
Medfra Village	922.7	577	797	499
South Fork	927	579	801	501
Nikolai Village	993.6	621	868	542
East Fork	938	586	812	508
North Fork	938	586	812	508
Swift Fork	1,129.1	706	1,003	627
Telida Village	1,178.2	736	1,052	658
Highpower Co.	1,193.1	746	1,067	667
Fish Cr.	1,277.4	798	1,151	719
North Fork Lake	1,326.8	829	1,201	751
Top of Kuskokwim Drainage	1,490.0	931	1,364	852

Table 2. Fishes commonly found in the Kuskokwim Area.

Species code	Genre species	Common name
161	<i>Cottus aleoticus</i>	Coastrange Sculpin
162	<i>Cottus cognatus</i>	Slimy Sculpin
410	<i>Oncorhynchus tshawytscha</i>	King Salmon
420	<i>Oncorhynchus nerka</i>	Red Salmon
430	<i>Oncorhynchus kisutch</i>	Coho Salmon
440	<i>Oncorhynchus gorbuscha</i>	Pink Salmon
450	<i>Oncorhynchus keta</i>	Chum Salmon
500	<i>Esox lucius</i>	Pike
513	<i>Osmerus eperlanus</i>	Boreal Smelt
514	<i>Hypomesus olidus</i>	Pond Smelt
520	<i>Salvelinus alpinus</i>	Arctic Char
530	<i>Salvelinus malma</i>	Dolly Varden
541	<i>Salmo gairdneri</i>	Rainbow Trout
550	<i>Salvelinus namaycush</i>	Lake Trout
570	<i>Stenodus leucichthys</i>	Shee
581	<i>Coregonus nasus</i>	Broad Whitefish
582	<i>Coregonus pidschian</i>	Humpback Whitefish
583	<i>Coregonus sardinella</i>	Least Cisco
584	<i>Coregonus autumnalis</i>	Arctic Cisco
585	<i>Prosopium cylindraceum</i>	Round Whitefish
590	<i>Lota lota</i>	Burbot, Lush
601	<i>Lampetra japonica</i>	Arctic lamprey
610	<i>Thymallus arcticus</i>	Arctic Grayling
630	<i>Dallia pectoralis</i>	Blackfish
640	<i>Catostomus catostomus</i>	Longnose Sucker
650	<i>Hybopsis plumbea</i>	Lake Chub
660	<i>Gasterosteus aculeatus</i>	3-spine Stickleback
661	<i>Pungitius pungitius</i>	9-spine Stickleback
670	<i>Percopsis omiscomaycus</i>	Trout-perch

ESTUARINE

113	<i>Eleginus gracilis</i>	Saffron Cod
121	<i>Pleuronectes stellatus</i>	Starry Flounder
122	<i>Liopsetta glacialis</i>	Arctic Flounder
166	<i>Oligocottus maculosus</i>	Sculpin
200	<i>Hippoglossus stenolepis</i>	Pacific Halibut
230	<i>Clupea pallasii</i>	Pacific Herring
516	<i>Mallotus villosus</i>	Caplin

Table 3. Kuskokwim Area Emergency Orders, 1980.

<u>E.O. No.</u>	<u>Date</u>	<u>Action Taken</u>	<u>Justification</u>
1	12 May	Opened Goodnews Bay to Commercial herring fishing beginning at 12:01 AM May 12, 1980	Aerial Surveys in district indicated presence of herring for several days
2	17 May	Closed Commercial herring fishing in Security Cove district effective 6 PM May 17, 1980	Aerial surveys indicated substantial decline in herring abundance
3	19 May	Reopened Security Cove district to Commercial herring fishing beginning 12 PM May 19, 1980	Aerial surveys revealed improvement in herring abundance.
4	23 May	Closed commercial and subsistence herring fishing in Security Cove district	Herring harvest has exceeded approximately 20% of the estimated biomass
5	23 May	Closed Goodnews Bay district to commercial herring fishing effective 12 PM May 24, 1980	Unable to resurvey the herring biomass and commercial harvest had exceeded harvest guideline
6	27 May	Reopened Security Cove district to commercial herring fishing for 24 hrs effective 12 PM May 27, 1980 thru 12 PM May 28, 1980 and opened subsistence herring fishing in this district 12 PM May 27, 1980 until further notice.	Aerial assessment of herring abundance has not been possible and commercial catches prior to closure indicated arrival of "new" fish
7	12 June	Opened commercial salmon fishing in District 1 and establishes first commercial salmon fishing period beginning 6 PM until midnight June 12, 1980	King salmon present in sufficient numbers
8	12 June	Opened Quinhagak and Goodnews Bay districts to commercial salmon fishing and established twice weekly periods from 6 PM Monday until 6 AM Tuesday and from 6 PM Thursday until 6 AM Friday	King salmon present in sufficient numbers
9	18 June	Established second commercial King salmon fishing period in District 1 from 6 PM till Midnight June 18, 1980	King Salmon present in sufficient numbers

<u>E. O. No.</u>	<u>Date</u>	<u>Action Taken</u>	<u>Justification</u>
10	23 June	Established early chum period from 6 PM until midnight June 23, 1980 and reduced the size of the commercial fishery to that area from Bethel down to the North end of Eek Island in Dis. 1. Mandates the use of 6-inch or smaller mesh gear	Early chum/sockeye run sufficient numbers. Regulations prohibit commercial use of over 6" mesh gill nets after June 25
11	23 June	Opened commercial fishing in District 2, establishing first commercial fishing period in this district beginning 6PM Monday, June 23 until 6 AM Tuesday, June 24, 1980	King Salmon present in sufficient numbers
12	23 June	Decreased area subject to subsistence closure 24 hrs before and 6 hours after each period	During chum season commercial fishermen are restricted to lower portion of District 1
13	30 June	Continues fishing season and increases fishing time to 3, 12 hr periods in district 4 and 5	low prices, little fishing effort, early run timing, and large escapements
14	30 June	Decreased the amount of weekly fishing time in District 1 by allowing for only one six hour open commercial fishing period.	Chum escapement difficult to assess and commercial catch nearing the harvest guideline
15	9 July	Allowed for an additional 6 hr commercial chum fishing period in district 1, from 6 PM until midnight Wednesday July 9, 1980	Chum salmon present in sufficient numbers
16	9 July	Opened the commercial chum fishing for 6 hours from 6 PM until midnight in District 2	Chum Salmon present in sufficient numbers.
17	25 July	Establishes daylight fishing schedules in Quinhagak and Goodnews bay district; Monday, Wednesday, Friday 6 AM - 6 PM	Allows maximum daylight fishing hours to facilitate fishermen safety
18	30 July	Changed the hours that commercial fishing periods opened and closed in district 5, Goodnews bay area, establishing 3 - 12 hr fishing periods from 4AM to 4 PM on Monday, Wednesday and Fridays	Fishermen and buyers requested 2 additional daylight hours after the end of the commercial period to facilitate quicker movement of the fish and hence assist with a better quality product.

<u>E.O. No.</u>	<u>Date</u>	<u>Action Taken</u>	<u>Justification</u>
19	4 Aug	Reopened district 1 to commercial fishing and scheduled 2 - 6 hr fishing periods a week	Sufficient numbers of cohos present
20	14 Aug	Opened commercial coho fishing in district 2, for one 12 hr period from 9 AM until 9 PM August 14, 1980	sufficient numbers of cohos present
21	15 Aug	Established that commercial fishing in District 5, Goodnews Bay area will open and close 2 hrs later, and will now open from 6 AM until 6 PM on Mondays, Wednesdays, and Fridays. Did not alter the total weekly fishing time.	Allows maximum daylight fishing hrs to again facilitate fishermen safety
22	23 Aug	Changes the hours that commercial fishing opened and closed in District 5 and added an additional 12 hour commercial fishing period a week. This district was open from 8 AM until 8 PM on Monday, Wednesday, Fridays, and Saturdays beginning Aug. 23.	Coho salmon present in sufficient numbers and hours accommodate necessary enforcement activities.
23	1 Sept.	Established 4 - 12 hr commercial fishing periods in District 4 from 8 AM until 8 PM on Monday, Wednesday, Friday, and Saturdays beginning September 1, 1980	Coho salmon present in sufficient numbers and hours accommodate necessary enforcement activities.

Table 4. Kuskokwim Area Project Summaries, 1980

1. Kuskokwim River Test Fishing.

- a. Location: Kwegooyuk on the east bank of the mouth of the Kuskokwim River located 56 river miles downstream from Bethel.
- b. Objectives: Determine run timing and relative abundance of kings, red and chum salmon.
- c. Results: The 1980 project captured 1,033 kings, 2,058 chums and 1,409 sockeye, totaling 4,500 salmon between May 25 and July 15. The king catch was average and the chum catch, substantially above average and was indicative of run magnitude which was judged excellent based on other escapement parameters.

2. Ignatti Weir.

- a. Location: Upper Holitna River, about 1.5 miles below the Kogrukluuk River.
- b. Objectives: Develop a portable weir and trap to enumerate salmon escapement by species and sex and to obtain salmon for sampling without causing harm to the fish.
- c. Results: Overall salmon escapement was average but the proportion of female king salmon was very low. The expanded totals were 11,299 king, 2,708 sockeye, 16,204 chum and 2 pink salmon. Sex ratios for king, sockeye and chum salmon were (male:female) 82:18, 50:50, and 66:34, respectively.

3. Aniak Sonar

- a. Location: 20 miles up the Aniak River from its confluence with the Kuskokwim River.
- b. Objectives: 1) Determine feasibility of using the side scan sonar as an inseason salmon management tool on the lower Kuskokwim River, and 2) determine salmon run timing and population characteristics.

Total season count of 759,279 salmon were enumerated. A drift gill-net program was incorporated in order to evaluate these counts and the following break down by species was derived: Kings 38,384; chums 669,466; cohos 51,429; reds and pinks were present but insignificant.

4. Commercial Salmon Catch Sampling.

- a. Location: Bethel, Quinhagak and Goodnews Bay.
- b. Objectives: Obtain age, sex and size information for commercial caught fish.

Table 4. Kuskokwim Area Project Summaries, 1980 (Continued)

- c. Results: Samples of all species were sampled, analyzed and presented in separate reports.

5. Aerial Surveys

- a. Location: Kuskokwim River drainage (and Kuskokwim Bay).
- b. Objectives: Determine if spawning escapements for king and chum salmon are adequate.
- c. Results: Due to poor surveying weather and turbid stream conditions only four of the nearly 20 targeted streams were surveyed.

6. Fan Scan Sonar

- a. Location: Three miles upriver from Bethel on the north bank of the Kuskokwim River.
- b. Objectives: 1) Determine feasibility of using the fan scan sonar as an inseason salmon management tool on the Lower Kuskokwim River, and 2) determine salmon migration thru the commercial fishery.
- c. Results: During the period of operation in June, July, and August the sonar system counted chum, king and coho salmon. The system has promise for meeting the stated project objectives. Further testing and verification will take place in 1981.

Table 5. Kuskokwim Area Processors and Associated Data. 1980

Commercial Operator	Product	Subdistrict
Alaska Sea Farm Products 305 Boniface Anchorage, AK 99503	Fresh Salmon Red Coho	1
Akiachak Limited Akiachak, Alaska 99551	Freshwater Coho	1
Athmauthuak Fish Processors Athmauthluak, AK	Freshwater King Red Coho Pink Chum	
Ball Bros. Inc. General Delivery Dillingham, Alaska 99576	Fresh Salmon King Red Chum Coho Pink	5
Chet Clark Fish Products Ltd Box 19 Aniak, AK 99557	Fresh Salmon King Coho Chum	2
J. B. Crow & Sons PO Box 567 Bethel, AK 99559	Fresh Salmon King Red Coho Pink Chum	1,2,4
Elm Corporation DBA Elm Fisheries Terry Yager PO Box 888 Bethel, AK 99559	Fresh Salmon King Red Coho Pink Chum	1,4,5
Glacier Seafoods Inc. 1112 54th Ave. E Tacoma, Washington	Fresh Salmon Coho Pink Chum	4
K & A Fisheries c/o Larry Peterson Aniak, AK 99557	Fresh Salmon King Red Coho Chum	1,2

Table 5. Kuskokwim Area Processors and Associated Data, 1980 (Cont'd)

Commercial Operator	Product	Subdistrict
Kachemak Seafoods, Inc. PO Box 129 Togiak, AK 99678	Fresh Salmon Red Coho Pink Chum	5
Kemp & Paulucci Seafoods 4832 West Superior Street Box 6506 Duluth, Minnesota 55806	Frozen Salmon King Red Chum Coho Pink	1,4
Pal-Gon Fisheries Box 106 Girdwood, AK 99587	Fresh Salmon King Coho Chum	1,4,5
Patson Fisheries Box 445 Bethel, AK 99559	Fresh Salmon King Red Chum Coho	1
Salamatof Seafoods, Inc. Drawer 4220 Kenai, AK 99611	Fresh Salmon King Red Coho Pink Chum	5
Whitney Fidalgo Seafoods Inc. 2360 W. Commodore Way Box 99008 Seattle, WA 98199	Fresh Salmon King Red Coho Pink Chum	4

Table 6. Kuskokwim Area entry permits issued by village, 1980. <sup>1/</sup>

Village	Number of Entry Permits
Akiachak	41
Akiak	25
Aniak	10
Atmauthluak	31
Bethel	163
Chauthbaluk	2
Chefornak	3
Eek	35
Goodnews Bay	33
Kalskag	5
Kasigluk	39
Kipnuk	13
Kongiganak	23
Kwethluk	69
Kwigillingok	14
Lower Kalskag	3
McGrath	1
Napakiak	49
Napaskiak	27
Nunapitchuk	44
Oscarville	6
Platinum	4
Quinhagak	81
Tuluksak	24
Tuntutuliak	48
Anchorage	3
St. Marys	1
Juneau	1
Manokatak	1
Trappers Creek	2
Mt. Village	1
Nome	1
Total Permits issued by 1 September 1980	803

Table 7. Kuskokwim area commercial and subsistence salmon catches by species and statistical area, 1980.

<u>District</u>	<u>King</u>	<u>Red</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u> <sup>1/</sup>	<u>Total</u>
<u>335-10 Lower Kuskokwim</u>					467,134	
Commercial	34,184		219,174		<del>467,134</del>	785,868
Subsistence <sup>2/</sup>	47,710		28,511		109,863	186,084
Total	81,894		247,685		560,479	971,952
<u>335-20 Middle Kuskokwim</u>						
Commercial	1,697		2,868		16,617	21,182
Subsistence <sup>2/</sup>	10,063		4,834		29,216	44,113
Total	11,760		7,702		45,833	65,295
<u>335-30 Upper Kuskokwim</u>						
Commercial						
Subsistence <sup>2/</sup>	1,736		4,197		26,093	32,026
Total	1,736		4,197		26,093	32,026
<u>Subtotal Kuskokwim River</u>					483,751	
Commercial	35,881		222,042		<del>467,233</del>	725,156
Subsistence <sup>2/</sup>	59,509		37,542		165,172	262,223
Total	95,390		259,584		632,405	987,369
					648,900	
<u>335-40 Quinhagak River</u>						
Commercial	10,387	13,221	62,610	21,671	65,984	173,873
Subsistence <sup>2/</sup>	1,974		5,279		1,992	9,211
Total	12,327	13,221	67,889	21,671	67,976	183,004
<u>335-50 Goodnews Bay</u>						
Commercial	1,974	28,632	43,256	7,832	9,314	91,008
Subsistence	498		4,514			6,835
Total	2,472	28,632	47,770	7,832	9,314	97,843
<u>Total Kuskokwim Area</u>						
Commercial	48,242	41,853	327,908	29,503	542,531	990,037
Subsistence <sup>2/</sup>	61,947		47,335		168,981	278,269
Total	110,189	41,853	375,243	29,503	711,518	1,268,306

1/ Subsistence catches contain small numbers of red and pink salmon

2/ Expanded data.

Table 8. Average weight of salmon taken in the Kuskokwim area commercial fishery, 1980. 1/

<u>Subdistrict</u>	<u>Statistical Area</u>	<u>King</u>	<u>Average Weights by Species</u> <sup>2/</sup>			<u>Chum</u>
			<u>Red</u>	<u>Coho</u>	<u>Pink</u>	
Kuskokwim River:	335-10					
	335-20	13.0 (5.9)	6.6 (3.1)	6.4 (2.9)	3.9 (1.6)	6.4 (2.9)
Quinhagak:	335-40	14.5 (6.6)	6.4 (2.9)	7.5 (3.4)	3.5 (1.6)	6.2 (2.8)
Goodnews Bay:	335-50	17.0 (7.7)	7.1 (3.2)	7.7 (3.5)	3.7 (1.7)	6.9 (3.1)

1/ Data obtained from processor weights, randomly sampled.

2/ Pounds (kilograms).

Table 9. Commercial salmon catch data, lower Kuskokwim River (District 1, Stat. Area 335-10), all gear combined, 1980.

Period Code	Date of Landing	Hours Open to Fishing	Fishermen	Fishermen Hours	Catch					Catch/Fisherman Hour		
					King	Red	Coho	Pink	Chum	King	Coho	Chum
1	6/12 Period	6	469	2,814	9,891	2			711	3.5		0.3
2	6/18 Period	6	468	2,808	16,921	24			5,940	6.0		2.1
	Subtotal <u>1/</u>	12	553	5,622	26,812	26			6,651	4.8		1.2
3	6/23 Period	6	436	2,616	4,777				105,825	1.8		40.5
4	6/26 Period	6	408	2,448	1,460	23			131,945	0.6		53.9
5	7/2 Period	6	383	2,298	498				122,613	0.2		53.4
6	7/9 Period	6	431	2,586	445	4		2	90,233	0.2		34.9
	Subtotal <u>2/</u>	24	579	9,948	7,180	27		2	450,616	0.7		45.2
7	8/4 Period	6	375	2,250	54	73	9,889	329	2,697	0.0	4.4	1.2
8	8/7 Period	6	455	2,730	45	67	36,126	188	2,098	13.2	0.8	
9	8/11 Period	6	482	2,892	33	64	35,178	97	4,350	0.0	12.2	1.5
10	8/14 Period	6	439	2,634	23	38	28,211	90	366	0.0	10.7	0.1
11	8/18 Period	6	441	2,646	12	25	43,748	38	179	0.0	16.5	0.1
12	8/21 Period	6	419	2,514	10	26	33,274	35	94	0.0	13.2	0.0
13	8/25 Period	6	370	2,220	12	9	19,264	11	64	0.0	8.7	0.0
14	8/28 Period	6	319	1,914	3	5	13,484	13	19	0.0	7.0	0.0
	Subtotal <u>3/</u>	48	586	19,800	192	307	219,174	801	9,867	0.0	11.1	0.5
	Grand Total	84	663	35,370	34,184	360	219,174	803	467,134	1.0	6.2	13.2

1/ King season 6/12-6/18   2/ Chum season 6/23-7/9   3/ Coho season 8/4-8/28

Table 10. Commercial salmon catch data, lower Kuskokwim River downstream of Napakiak (District 1, Stat. Area 335-11), all gear combined, 1980.

Period Code	Date of Landing	Hours Open to Fishing	Fishermen	Fishermen Hours	Catch					Catch/Fisherman Hour		
					King	Red	Coho	Pink	Chum	King	Coho	Chum
1	6/12 Period	6	205	1,230	5,893				180	4.8		0.2
2	6/18 Period	6	160	960	6,247	6			1,996	6.5		2.1
	Subtotal 1/	12	236	2,190	12,140	6			2,176	5.5		1.0
3	6/23 Period	6	238	1,428	2,671				58,605	1.9		41.0
4	6/26 Period	6	161	966	532				46,146	0.6		47.8
5	7/2 Period	6	141	846	186				40,549	0.2		47.9
6	7/9 Period	6	180	1,080	147				37,910	0.1		30.1
	Subtotal 2/	24	367	4,320	3,536				183,210	0.8		42.4
7	8/4 Period	6	151	906	23	26	5,626	225	795	0.0	6.2	0.9
8	8/7 Period	6	167	1,002	12	27	10,121	63	403	0.0	10.1	0.4
9	8/11 Period	6	165	990	9	19	10,335	41	241	0.0	10.4	0.2
10	8/14 Period	6	141	846	14	13	10,520	39	133	0.0	12.4	0.2
11	8/18 Period	6	129	774	2	4	9,948	9	29	0.0	12.9	0.1
12	8/21 Period	6	111	666	4	13	5,917	16	30	0.0	8.9	0.1
13	8/25 Period	6	101	606	3	7	3,766	7	7	0.0	6.2	0.0
14	8/28 Period	6	55	330	0	2	1,962	5	4	0.0	6.0	0.0
	Subtotal 3/	48	273	6,120	68	117	58,195	405	642	0.0	9.5	0.3
	Grand Total	84	436	12,630	15,744	117	58,195	405	187,028	1.2	4.6	14.8

1/ King season 6/12-6/18 2/ Chum season 6/23-7/9 3/ Coho season 8/4-8/28

Table 11. Commercial salmon catch data Lower Kuskokwim River upstream of Napakiak (District 1, Stat. Area 335-12), all gear combined, 1980.

Period Code	Date of Landing	Hours Open to Fishing	Fishermen	Fishermen Hours	Catch					Catch/Fisherman Hour		
					King	Red	Coho	Pink	Chum	King	Coho	Chum
1	6/12 Period	6	265	1,590	3,998	2			531	2.5		0.3
2	6/18 Period	6	314	1,884	10,674	18			3,944	5.7		2.1
	Subtotal 1/	12	358	3,474	14,672	20			4,475	4.2		1.3
3	6/23 Period	6	223	1,338	2,106				47,220	1.6		25.3
4	6/26 Period	6	279	1,674	928	23			85,799	0.6		51.3
5	7/2 Period	6	272	1,632	312				82,064	0.2		50.3
6	7/9 Period	6	316	1,806	298	4	2		52,323	0.2		27.6
	Subtotal 2/	24	427	6,540	3,644	27	2		267,406	0.6		40.9
7	8/4 Period	6	226	1,356	31	47	4,263	104	1,902	0.0	3.1	1.4
8	8/7 Period	6	288	1,728	33	40	26,005	125	1,695	0.0	15.1	1.0
9	8/11 Period	6	317	1,902	24	45	24,843	56	4,109	0.0	13.0	2.1
10	8/14 Period	6	300	1,800	9	25	17,691	51	233	0.0	9.8	0.1
11	8/18 Period	6	314	1,884	9	21	33,800	29	150	0.0	17.9	0.1
12	8/21 Period	6	310	1,860	6	13	27,357	19	64	0.0	14.7	0.0
13	8/25 Period	6	270	1,620	9	2	15,498	4	57	0.0	9.6	0.0
14	8/28 Period	6	264	1,584	3	3	11,522	8	15	0.0	7.3	0.0
	Subtotal 3/	48	480	13,734	124	196	160,979	396	8,225	0.0	11.7	0.6
	Grand Total	84	556	23,748	18,440	243	160,979	398	280,106	0.8	6.8	11.8

1/ King season 6/12-6/18 2/ Chum season 6/23-7/9 3/ Coho season 8/4-8/28

Table 12. Commercial salmon catch data, Middle Kuskokwim River (District 2, Stat. Area 335-20), all gears combined, 1980.

Period Code	Date of Landing	Hours Open to Fishing	Fishermen	Fishermen Hours	Catch					Catch/Fisherman Hour			
					King	Red	Coho	Pink	Chum	King	Coho	Chum	
1	6/23 <u>1/</u> Period	12	37	444	1,482					4,004	3.3	9.0	
2	7/9 <u>2/</u> Period	6	21	<del>126</del>	215					11,911	1.7	94.5	
3	8/14 <u>3/</u> Period	12	12	144 <sup>570</sup>			2,868			702	0.0	19.9	4.9
Grand Total		30	43	714	1,697		2,868			16,617	2.4	4.0	23.3

1/ King season      2/ Chum season      3/ Coho season

Table ... Age and sex composition of Kuskokwim area king salmon sampled at various locations, 1980.

Area (gear)	Combined Age Classes			Age 4 <sub>2</sub>		Age 5 <sub>2</sub>		Age 6 <sub>2</sub>		Age 7 <sub>2</sub>	
	Sex	No.	%	No.	%	No.	%	No.	%	No.	%
Kwegooyuk <u>2/</u> (8-1/2" mesh set gillnet)	Male	320	61.0	32	6.1	215	41.0	68	13.0	5	1.0
	Female	205	39.0	-	-	90	17.1	108	20.5	7	1.3
	Total	525	100.0	32	6.1	305	58.1	176	33.5	12	2.3
Kwegooyuk <u>2/</u> (5-1/2" mesh set gillnet)	Male	320	61.0	32	6.1	215	41.0	68	1.3	5	1.0
	Female	205	39.0	0	0.0	90	17.1	108	20.6	7	1.3
	Total	525	100.0	32	6.1	305	58.1	176	21.9	12	2.3
Bethel <u>1/</u> (8-1/2" mesh Gillnet)	Male	198	71.0	29	10.4	140	50.4	27	9.7	2	0.7
	Female	80	28.8	-	-	41	14.7	34	12.2	5	1.8
	Total	278	100.0	29	10.4	181	65.1	61	21.9	7	2.5
Quinhagak <u>1/</u> (6" mesh gillnet)	Male	381	66.6	162	28.3	139	24.3	45	7.0	5	0.9
	Female	191	33.4	-	-	101	17.7	76	13.3	14	2.4
	Total	572	100.0	162	28.3	240	42.0	121	20.3	19	3.3
Holitna weir <u>3/</u>	Male	53	84.0	19	3.0	27	4.3	4	6	3	5.0
	Female	10	16.0	0	0	3	.5	5	8	2	3.0
	Total	63	100.0	19	3.0	30	4.8	9	1.4	5	8.0

1/ Commercial catch sample.

2/ Test fish samples.

3/ Weir samples.

Table 14. Kuskokwim Area Subsistence Fishery Summary, 1980.

Estimated catch and family data, fishing families only.

Village	Families	People	Dogs	Snow Machines	King Salmon	Small/ Salmon	Coho Salmon	Fish wheels
Eek	34	175	78	57	1557	743	1434	0
Tuntutuliak	35	203	106	61	2545	8305	656	0
Kasigluk	39	269	179	67	1704	5172	512	0
Numapitchuk	40	244	160	76	2612	6354	272	0
Atmautluak	29	184	146	47	1288	4405	389	0
Napakiak	43	237	223	56	2582	6102	2021	0
Oscarville	8	41	24	12	477	1363	32	0
Napaskiak	35	196	84	55	3160	7391	0	0
Bethel	205	1218	654	209	12591	22593	10605	0
Kwethluk	67	421	326	91	7627	18188	6376	0
Akiachuk	51	315	241	85	5405	11481	3691	0
Akiak	25	156	344	31	3355	10125	471	0
Tuluksak	27	194	181	34	2807	7641	2052	0
Lower Kalskag	31	190	128	51	3917	7903	1000	0
Upper Kalskag	16	96	68	18	1889	6020	912	0
Aniak	40	166	246	62	2750	13091	976	1
Chuathbaluk	14	72	79	23	1507	2202	1946	1
Napamute	2	14	9	3	90	2531	518	0
Crooked Creek	18	88	75	18	654	7165	0	1
Georgetown	1	12	7	5	93	1042	0	1
Red Devil	8	29	50	10	255	4651	482	2
Sleetmute	12	63	31	15	220	1670	1133	0
Sleetmute, Holitna	11	33	94	11	92	6207	1924	0
Stony River	7	52	40	8	332	2827	140	4
<u>TOTALS</u>	798	4,668	3,573	1,105	59,509	165,172	37,542	10
Quinhagak	76	396	105	109	1,940	1,992	5,279	0
Platinum	11	28	16	16	192	0	248	0
Goodnews Bay	44	205	107	75	306	1,823	4,266	0

Table 15. Commercial salmon catch data Quinhagak (District 4, Stat. Area 334-40), all gear combined 1980.

Period Code	Date of Landing	Hours Open to Fishing	Fishermen	Fishermen Hours	Catch				Catch/Fisherman Hour					
					King	Red	Coho	Pink	Chum	King	Coho	Red	Chum	
1	6/12	6												
	6/13	6												
2	Period	12	24	288	420				61	1.5			2.1	
	6/16	6												
	6/17	6												
3	Period	12	45	540	1,506	22			327	2.8			0.6	
	6/19	6												
	6/20	6												
4	Period	12												
	6/23	6												
	6/24	6												
5	Period	12	48	576	1,866	198			2,176	3.2		4.3	3.8	
	6/26	6												
	6/27	6												
6	Period	12	55	660	1,496	1,390			6,330	2.3		2.1	9.6	
	6/30	6												
	7/1	6												
7	Period	12	70	840	2,464	1,384		10	11,776	2.9		1.7	14.0	
	7/2	6												
	7/3	6												
8	Period	12	33	396	237	384			2,061	0.6		1.0	5.2	
	7/4	6												
	7/5	6												
9	Period	12	49	588	269	1,729			4,666	0.5		2.9	7.9	
	7/7	6												
	7/8	6												
10	Period	12	50	600	273	2,285			4,262	0.5		3.8	7.1	
	7/9	6												
	7/10	6												
11	Period	12	51	612	384	1,824		1,051	7,541	0.6		2.9	12.3	
	7/11	6												
	7/12	6												
12	Period	12	81	972	550	1,861		1,905	10,134	0.6		1.9	10.4	
	7/14	6												
	7/15	6												
13	Period	12	60	720	186	554		1,750	4,988	0.3		0.8	6.9	
	7/16	6												
	7/17	6												
14	Period	12	101	1,212	226	932		8,106	7,514	0.2		0.8	6.2	
	7/18	6												
	7/19	6												
	Period	12	3	36				9	92				1.6	
15	7/21	6												
	7/22	6												
16	Period	12												
	7/23	6												
	7/24	6												
17	Period	12	74	888	140	33		1,347	2,451	0.2		0.0	2.8	
	7/25	6												
	7/26	6												
18	Period	12	57	684	109	56	16	1,923	2,543	0.2			3.7	
	7/28	6												
19	Period	12	54	648	112	92	352	1,684	1,329	0.2	0.5	0.1	2.1	
	7/30	6												
20	Period	12												
	8/1	6												
21	Period	12												
	8/4	6												
22	Period	12	46	552	35	187	864	764	331	0.1	1.6	0.3	0.6	
	8/6	6												
23	Period	12	48	576	10	35	2,139	385	44	0.0	3.7	0.1	0.1	
	8/8	6												
24	Period	12	61	612	29	73	4,975	479	111	0.1	8.1	0.1	0.2	
	8/11	6												
25	Period	12	73	876	22	75	3,863	457	74	0.0	4.4	0.1	0.1	
	8/13	6												
26	Period	12	76	912	9	44	3,350	404	71	0.0	3.7	0.1	0.1	
	8/15	6												
27	Period	12	58	696	11	14	8,627	129	25	0.0	12.4	0.0	0.0	
	8/18	6												
28	Period	12	66	792	8	16	6,469	192	22	0.0	8.2			
	8/20	6												
29	Period	12	71	852	11	15	6,959	159	19		8.2			
	8/22	6												
30	Period	12	69	828	5	6	5,231	149	6		6.3			
	8/25	6												
31	Period	12	64	768	2	5	6,095	54	8		7.9			
	8/27	6												
32	Period	12	82	984	4	3	3,474	27	6		3.5			
	8/29	6												
33	Period	12	61	732	2	2	3,055	23	9		4.2			
	9/1	6												
34	Period	12	65	780	0	1	2,365	14	0		3			
	9/3	6												
35	Period	12	50	600	0	1	2,017	15	2		3.4			
	9/5	6												
36	Period	12	41	492	1	0	1,809	7	1		3.7			
	9/6	6												
	Period	12	27	324	0	0	950	6	4		2.9			
	Grand Total	432	169	21,636	10,387	13,221	62,610	21,051	68,984	0.5	2.9	0.6	3.2	

Table 16. Commercial salmon catch data, Goodnews Bay (District 5, Stat. Area 335-50), all gear combined 1980.

Period Code	Date of Landing	Hours Open to Fishing	Fishermen	Fishermen Hours	Catch				Catch/Fisherman Hour					
					King	Red	Coho	Pink	Chum	King	Coho	Red	Chum	
1	6/12	6												
	6/13	6												
2	Period 6/16	12	9	108	51	43				0.5	0.4			
	6/17	6												
3	Period 6/19	12	12	144	268	126				1.9	0.0	0.9		
	6/20	6												
4	Period 6/23	12	Strike											
	6/24	6												
5	Period 6/26	12	Strike											
	6/27	6												
6	Period 6/30	12	12	144	485	858	858	7	256	3.4	6.0	1.8		
	7/1	6												
7	Period 7/2	12	23	276	633	2,387			944	2.3	8.7	3.4		
	7/3	6												
8	Period 7/4	12	15	180	241	2,025			1,263	1.3	11.3	7.0		
	7/5	6												
9	Period 7/7	12	15	180	146	2,633			1,300	0.8	14.6	7.2		
	7/8	6												
10	Period 7/9	12	26	312	62	2,677			1,432	0.2	8.6	4.6		
	7/10	6												
11	Period 7/11	12	17	204	80	1,444			851	0.4	7.1	4.2		
	7/12	6												
12	Period 7/14	12	24	288	70	2,634			1,063	0.2	9.2	3.1		
	7/15	6												
13	Period 7/16	12	25	300	126	2,160			1,141	0.4	7.2	3.8		
	7/17	6												
14	Period 7/18	12	27	324	28	2,063	788		1,184	0.1	6.4	3.7		
	7/19	6												
	7/21	12	30	360	18	1,851			352	1,077	0.1	5.3	3.0	
	7/22	6												
16	Period 7/23	12	23	276	15	1,569	541		295	0.1	5.7	1.1		
	7/24	6												
17	Period 7/25	12	22	264	13	912	413		186	0.1	3.5	0.7		
	7/26	6												
18	Period 7/28	12	15	180	8	588	323		125	0.0	3.3	0.7		
	7/29	6												
19	Period 7/30	12	23	276	11	730	25	562	176		0.1	2.6	0.6	
	7/31	6												
20	Period 8/1	12	21	252	8	852	36	809	125		0.1	3.4	0.5	
	8/4	6												
21	Period 8/4	12	17	204	6	610	83	587	95		0.4	3.0	0.5	
	8/6	6												
22	Period 8/6	12	16	192	9	376	314	266	28		1.6	2.0	0.2	
	8/8	6												
23	Period 8/8	12	21	252	3	361	702	371	33		2.8	1.4	0.1	
	8/11	6												
24	Period 8/11	12	24	288	8	369	663	322	21		2.3	1.3	0.1	
	8/13	6												
25	Period 8/13	12	24	288	4	200	1,240	368	26		4.3	0.7	0.1	
	8/15	6												
26	Period 8/15	12	27	324	4	106	3,314	197	33	10.2	0.2	0.3	0.1	
	8/18	6												
27	Period 8/18	12	25	200	0	23	2,681	71	11		8.9	0.1		
	8/20	6												
28	Period 8/20	12	27	324	1	37	4,007	30	0		12.4	0.1		
	8/22	6												
29	Period 8/22	12	22	264	4	24	2,475	46	2		9.4	0.1		
	8/23	6												
30	Period 8/23	12	25	300	2	29	2,779	19	2		9.3	0.1		
	8/25	6												
31	Period 8/25	12	24	288	1	37	3,709	36			12.8	0.1		
	8/27	6												
32	Period 8/27	12	32	384	2	40	4,751	51	5		12.4	0.1		
	8/29	6												
33	Period 8/29	12	35	420	0	58	4,972	53	3		11.8	0.1		
	8/30	6												
34	Period 8/30	12	34	408	6	28	3,926	39	2		9.6	0.1		
	9/1	6												
35	Period 9/1	12	25	300	5	43	2,698	35	1		9.0	0.1		
	9/13	6												
36	Period 9/13	12	22	264	1	22	2,097	19	3		7.9	0.1		
	9/5	6												
37	Period 9/5	12	20	240	3	41	1,538	23	0		6.4	0.2		
	9/6	6												
38	Period 9/6	12	15	180	1	38	1,154	18	1		6.4	0.2		
	Grand Total	456	48	9,504	2,331	28,632	43,256	7,832	11,748	0.3	4.6	3.0	1.2	

Table 17. Aerial salmon escapement surveys in the Kuskokwim area, 1980.

	Survey Conditions	Date	Kings	Reds	Cohos	Pinks	Chums
<b>KUSKOKWIM BAY</b>							
<u>Goodnews River System</u>	Fair	7-21-80	2,392	49,165	26,528 (8-21-80)	159,977	7,611
<u>Kanektok River System</u>	Fair	7-22-80	6,172	113,931	69,325 (8-22-80)	399,195	25,950
<b>KUSKOKWIM RIVER</b>							
<u>Aniak River System</u>	Poor	7-23-80	1,379	-	7,656 (9-8-80)	-	16,075
<u>Kwethluk River System</u>	Unable to survey	7-16-79	822				4,839
<sup>2</sup> <u>Kisaralik River System</u>	Unable to survey	7-23-79	38				600 <sup>1</sup>
<u>Holitna River System</u>	Unable to survey						
<u>Can Creek</u>	Unable to survey						
<u>Cheeneetnuk River</u>	Unable to survey	8-9-79	57				
<u>Gagaryah River</u>	Poor	7-20-80	181	-	-	-	-
<u>Salmon River</u>	Fair	7-20-80	1,450		89 (9-25-80)		

Appendix Table 1. Kuskokwim area commercial and subsistence salmon catches, 1913-1980.

Year	Commercial Catch						Subsistence Catch <sup>1/</sup>		
	King	Red	Coho	Pink	Chum	Total	King	Other Salmon <sup>2/</sup>	Total
1913	7,800					7,800			
1914		2,667				2,667			
1915									
1916	949					949			
1917	7,878					7,878			
1918	3,055					3,055			
1919	4,836					4,836			
1920	34,853					34,853			
1921	9,854					9,854			
1922	8,944	6,120				15,064			180,000
1923	7,254					7,254			
1924	19,253	900	7,167		7,167	34,487	14,700	203,148	217,848
1925	1,664	5,800				7,514	10,800	230,850	241,650
1926								738,576	738,576
1927								286,254	286,254
1928								481,090	481,090
1929								560,196	560,196
1930	7,515	2,448				9,963		538,650	538,650
1931	8,541					8,541		389,367	389,367
1932	9,339					9,339		746,415	746,415
1933							6,290	433,998	440,288
1934							20,800	597,132	617,932
1935	6,448		8,296			14,744	22,930	554,040	576,970
1936	624					624	33,500	549,423	582,923
1937	480					480		537,111	537,111
1938	624		828			1,452	10,153	400,242	410,395
1939	134					134	14,000	125,425	139,425
1940	247		500			747	8,000	415,523	423,523
1941	187		674			861	8,000	415,523	423,523
1942							6,400	325,339	331,739
1943							6,400	325,800	332,200
-----									
1946	2,288		674			2,962			
1947	5,356					5,356			
-----									
1951	4,210					4,210			
1954	57					57			
1959	3,760					3,760			
1960	5,969	5,649	5,498		3	17,119	20,361	327,297	347,658
1961	23,246	2,308	5,090	91	18,864	49,599	30,910	185,447	216,357
1962	20,867	10,313	12,598	4,340	45,707	93,831	14,642	165,626	180,268
1963	18,571		15,660			34,231	37,246	141,550	178,796
1964	21,230	13,422	28,992	939	707	65,290	30,853	214,942	245,795
1965	24,965	1,886	12,191		4,242	43,284	31,143	323,002	354,145
1966	25,823	1,030	22,985	268	2,610	52,716	53,606	201,002	254,608
1967	29,986	652	58,239		8,235	97,112	61,224	252,447	313,671
1968	43,157	5,884	154,302	75,818	19,694	298,845	34,986	301,531	336,517
1969	64,777	10,362	110,473	1,251	50,377	237,240	43,732	245,299	289,031
1970	65,082	12,654	62,245	27,422	60,566	227,979	71,376	263,746	335,112
1971	44,936	6,054	10,006	13	99,423	160,432	45,465	130,329	175,794
1972	55,482	4,312	23,880	1,952	97,197	182,823	43,335	131,514	174,849
1973	51,374	5,224	152,408	634	184,207	393,847	41,697	211,468	253,165
1974	30,670	29,003	179,579	60,052	196,127	495,431	29,590	321,358	350,848
1975 <sup>3/</sup>	27,799	17,535	109,814	899	223,532	379,579	51,045	180,429	231,474
1976	49,262	14,636	112,130	39,998	231,877	447,903	60,603	239,461	300,064
1977	58,256	18,621	263,728	434	298,959	639,998	58,163	218,824	276,987
1978	63,194	13,734	247,271	61,968	282,044	668,211	38,209 <sup>4/</sup>	137,489 <sup>4/</sup>	175,698 <sup>4/</sup>
1979	53,314	39,463	308,683	574	297,167	699,201	57,283	190,582	247,865
1980	48,242	42,213	327,908	30,306	561,483	1,010,152	59,900	105,000	
Previous 5 yr avg.	50,365	20,798	206,325	20,774	266,716	693,093	47,524	219,500	257,024

<sup>1/</sup> Subsistence catches for 1960-1976 have been revised and corrected.

<sup>2/</sup> Primarily chum salmon.

<sup>3/</sup> Final catch data used.

<sup>4/</sup> Goodnews Bay not surveyed.

Appendix Table 2. Kuskokwim Area, Commercial Effort by District, 1970-1980 <sup>1/</sup>

<u>District 1</u> Year	King Season	Chum Season	Coho Season	Total
1970	361	2/	266	387
1971	418	216	83	422
1972	405	176	245	425
1973	456	341	411	530
1974	606	467	516	666
1975	472	540	533	737
1976	561	517	516	674
1977	563	522	572	653
1978	615	617	597	723
1979	591	617	613	685
1980	553	579	586	663
Previous 5 year ave.	560	563	566	694

<u>District 2</u> Year	King Season	Chum Season	Coho Season	Total
1970	10	2/	11	18
1971	22	2/	2/	22
1972	12	2/	2/	12
1973	28	2/	2/	28
1974	36	2/	16	37
1975	38	2/	2/	38
1976	55	2/	11	57
1977	83	54	24	105
1978	28	2/	16	43
1979	41	2/	20	43
1980	37	21	12	43
Previous 5 year ave.	49	15	16	58

<u>District 4</u> Year	Total	<u>Subdistrict 5</u> Year	Total
1970	88	1970	35
1971	61	1971	16
1972	107	1972	14
1973	109	1973	21
1974	196	1974	49
1975	127	1975	50
1976	181	1976	40
1977	258	1977	34
1978	200	1978	35
1979	206	1979	30
1980	169	1980	48
Previous 5 year ave.	194	Previous 5 year ave.	40

<sup>1/</sup> Number of actual fishing vessels.

<sup>2/</sup> No commercial fishing allowed.

Appendix Table 3. Kuskokwim area commercial catch by drainage, 1960-1980.

Kuskokwim River <sup>1/</sup>	King	Red	Coho	Pink	Chum	Total
1960	5,969	0	2,498	0		8,467
1961	18,918	0	5,044	0		23,962
1962	15,341	0	12,432	0		27,773
1963	12,016	0	15,660	0		27,676
1964	17,149	0	28,613	0		45,762
1965	21,989	0	12,191	0		34,180
1966	25,545	0	22,985	0		48,530
1967	29,986	0	56,313	0	148	86,447
1968	34,278	0	127,306	0	187	161,771
1969	43,997	322	83,765	0	7,165	135,249
1970	39,290	117	38,601	44	1,664	79,716
1971	40,274	2,606	5,253	0	68,914	117,047
1972	39,454	102	22,579	8	78,619	140,762
1973	32,838	369	130,876	33	148,746	312,862
1974	18,664	136	147,269	37	171,887	337,984
1975 <sup>4/</sup>	21,720	23	81,945	10	181,840	285,538
1976	30,735	2,971	88,501	133	177,864	300,204
1977	35,830	9,379	241,364	203	248,721	535,451
1978	45,641	733	213,393	5,832	248,656	514,255
1979	38,966	1,054	219,060	78	261,874	521,032
1980	35,881	360	222,012	803	483,211	742,297
5 year average	37,411	2,899	196,872	1,410	284,065	522,648

  

Quinhagak (Kanektok River <sup>2/</sup>	King	Red	Coho	Pink	Chum	Total
1960	0	5,649	3,000	0	0	8,649
1961	4,328	2,308	46	90	18,854	25,636
1962	5,526	10,313	0	4,340	45,707	65,886
1963	6,555	0	0	0	0	6,555
1964	4,081	13,422	379	939	707	19,528
1965	2,976	1,886	0	0	4,242	9,104
1966	278	1,030	0	268	2,610	4,186
1967	0	652	1,926	0	8,087	10,665
1968	8,879	5,884	21,511	75,818	19,497	131,589
1969	16,802	3,784	15,077	953	38,206	74,822
1970	18,629	5,393	16,850	15,195	46,556	102,623
1971	4,185	3,118	2,982	13	30,208	40,506
1972	15,880	3,286	376	1,878	17,247	38,667
1973	14,993	2,783	16,515	277	19,680	54,248
1974	8,704	19,510	10,979	43,642	15,298	98,133
1975 <sup>4/</sup>	3,928	8,584	10,742	486	35,233	58,973
1976	14,110	6,090	13,777	31,412	43,659	109,048
1977	19,090	5,519	9,028	202	43,707	77,546
1978	12,335	7,589	20,114	47,033	24,798	111,869
1979	11,144	18,828	47,525	25,295	25,995	103,787
1980	10,387	13,221	62,610	21,671	65,984	173,873
5 year average	13,413	10,249	30,611	20,123	40,829	115,225

  

Goodnews Bay (Goodnews River <sup>3/</sup>	King	Red	Coho	Pink	Chum	Total
1968			5,485			5,485
1969	3,978	6,256	11,631	298	5,006	27,169
1970	7,163	7,144	6,974	12,183	12,346	45,630
1971	477	330	1,771	0	301	2,879
1972	264	924	925	66	1,331	3,510
1973	3,543	2,072	5,017	324	15,781	26,737
1974	3,302	9,357	21,340	16,373	8,942	59,314
1975 <sup>4/</sup>	2,151	8,928	17,127	403	6,459	35,068
1976	4,417	5,575	9,852	8,453	10,354	38,651
1977	3,336	3,723	13,335	29	6,531	26,954
1978	5,218	5,412	13,764	9,103	8,590	42,087
1979	3,204	19,581	42,098	201	9,298	74,382
1980	1,974	28,632	43,256	7,832	11,748	93,442
Year Average	3,630	12,585	24,461	5,124	9,314	55,103

1/ Includes subdistricts 335-10, 335-20 and 335-30. Commercial fishing in 335-30 has been prohibited since 1966.

2/ Subdistrict 335-40.

3/ Subdistrict 335-50 and includes Chagvan Bay.

4/ Final catch data used.

Appendix Table 4. Kuskokwim area commercial king salmon catches, by district, 1960-1980.

Total catch							
Year	335-10 <sup>1/</sup>	335-20 <sup>1/</sup>	335-30	335-40	335-50	335-60	Total
1960	2,927	1,231	1,811	0			5,969
1961	15,820	1,551	1,547	4,328			23,246
1962	13,306	2,035	0	5,526			20,867
1963	9,095	2,921	0	6,555			18,571
1964	15,754	1,395	0	4,081			21,230
1965	21,452	537	0	2,976			24,965
1966	25,212	333	0	278			25,823
1967	29,367	615		0			29,986
1968	33,451	826		8,879	0		43,157
1969	43,141	853		16,802	3,978	7	64,777
1970	37,715	1,463		18,629	7,163		65,082
1971	35,421	2,439		4,185	477		44,936
1972	37,699	1,755		15,880	264		55,482
1973	28,194	2,244		14,993	3,543		51,374
1974	16,031	951		8,704	3,302		30,670
1975	18,235	1,319		3,928	2,151		27,799
1976	20,010	3,316		14,110	4,417		49,262
1977	28,685	3,975		19,090	3,336		55,086
1978	36,139	2,087		12,335	5,218		55,779
1979	24,633	2,913		11,144	3,204		41,894
1980	26,812	1,697		10,387	1,974		40,655

Previous 5 year average	25,540	2,722		12,121	3,665		45,964
-------------------------------	--------	-------	--	--------	-------	--	--------

<sup>1/</sup> King salmon season only.

Appendix Table 6. Mean salmon weights and prices paid to fishermen, Kuskokwim area, 1964-1980.

Year	King	Mean weights-lbs. (kgs)			Chum
		Coho	Red	Pink	
1964	23.2 (10.5)	6.5 (3.0)	5.8 (2.6)		6.1 (2.8)
1965	21.7 (9.9)	6.5 (3.0)	6.6 (3.0)		
1966	23.2 (10.5)	6.7 (3.0)			
1967	27.8 (12.6)	5.9 (2.7)	7.4 (3.4)		7.0 (3.2)
1968	23.8 (10.8)	7.2 (3.3)	6.2 (2.8)	4.0 (1.8)	7.9 (3.6)
1969	19.6 (8.9)	7.3 (3.3)	6.2 (2.8)	3.6 (1.6)	5.8 (2.6)
1970	18.9 (8.6)	7.3 (3.3)	5.4 (2.5)	3.3 (1.5)	6.1 (2.8)
1971	26.2 (11.9)	6.1 (2.8)	6.9 <sup>1/</sup> (3.1)	<u>2/</u>	6.4 (2.9)
1972	24.7 (11.2)	6.4 (2.9)	<u>2/</u>	<u>2/</u>	6.5 (3.0)
1973	26.7 (12.1)	5.8 (2.6)	<u>2/</u>	<u>2/</u>	6.8 (3.1)
1974	17.1 (7.7)	7.5 (3.4)	6.3 (2A)	4.1 (1.9)	6.8 (3.1)
1975	14.9 (6.8)	8.2 (3.7)	<u>2/</u>	<u>2/</u>	6.4 (2.9)
1976	17.0 (7.7)	7.8 (3.5)	6.7 (3.0)	3.5 (1.6)	7.0 (3.2)
1977	22.7 (10.3)	7.8 (3.5)	8.3 (3.8)	3.9 (1.8)	7.3 (3.3)
1978	24.2 (11.0)	7.1 (3.2)	6.5 (3.0)	3.9 (1.8)	8.9 (4.0)
1979	16.6 (7.5)	7.9 (3.6)	6.9 (3.1)	3.9 (1.8)	7.0 (3.2)
1980	14.1 (6.4)	6.9 (3.1)	6.7 (3.0)	3.6 (1.6)	6.4 (2.9)

Year	King	Mean prices (per fish)			Chum
		Coho	Red	Pink	
1964	\$3.25	\$ .35	\$ .50	\$	\$
1965	<sup>1/</sup>				
1966	3.00	.40	.50	.10	.10
1967	3.55	.52	.40		.25
1968	3.74	.67	.60	.20	.35
1969	3.80	.76	.91	.22	.43
1970	3.78	1.03	1.15	.26	.51
1971	<sup>3/</sup> 4.53	.82	.71	<u>2/</u>	.50
1972	4.92	1.00	.88	.25	.54
1973	6.83	1.50	2.32	.53	1.28
1974	7.96	2.00	2.15	.93	1.71
1975	8.05	2.54	<u>2/</u>	<u>2/</u>	1.67
1976	10.82	3.12 <sup>4/</sup>	2.85	.88	1.89
1977	26.11	5.07	3.74	.98	3.29
1978	12.09	2.85	3.18	.48	2.83
1979	10.96	5.93	3.66	.43	2.59
1980	6.70	4.43	2.08	.45	1.51

<sup>1/</sup> Samples available only for two periods - 7/1-2 - 7/5-6.

<sup>2/</sup> Information unavailable.

<sup>3/</sup> Information not available for 335-50 (Goodnews) only fished one day.

<sup>4/</sup> Information not available for 335-40 (Quinhagak).

Appendix Table 5. Commercial salmon pack by species in round weight (lbs), Kuskokwim area, 1968-1980. <sup>1/</sup>

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
<u>Fresh or frozen</u>										
king	794,682	1,032,863	1,113,890	801,628	1,400,243	1,371,685	566,941	159,845	935,652	1,326,773
red	36,480	25,351	68,116	30,635	4,319	37,816	179,768	108,216	95,761	154,706
coho	1,090,690	322,254	453,125	64,457	152,832	883,966	1,245,132	670,598	809,916	2,009,171
pink	303,270	3,413	90,703		6,442	2,092	246,134	2,809	133,911	1,678
chum	146,230	249,007	367,715	678,173	631,781	1,252,607	1,220,496	1,350,936	1,609,718	2,185,549
<u>Salmon roe, (lbs. of finished product.)</u>	<u>2/</u>	56,926	42,958	64,136	62,963	165,574	<u>2/</u>	43,113	120,405 <sup>3/</sup>	109,105 <sup>3/</sup>
<u>Subsistence roe (lbs. of raw product).</u>									157,151	167,155

41.

	<u>1978</u>	<u>1979</u>	<u>1980</u>
<u>Fresh or frozen</u>			
king	1,530,461	999,043	617,137
red	89,489	320,541	290,251
coho	1,758,213	2,418,186	2,234,781
pink	241,523	2,290	107,719
chum	2,508,123	2,059,686	3,471,378
<u>Salmon roe, (lbs of finished product)</u>	142,496 <sup>3/</sup>		110,806

<sup>1/</sup> Pack represents type of processing when fish were shipped out of district.

<sup>2/</sup> Information not available.

<sup>3/</sup> Raw product

Appendix Table 7. Dollar value estimates of Kuskoquim district commercial fishery, 1964-1980 <sup>1/</sup>

Year	Gross Value of catch to fishermen	Wages earned <sup>2/</sup>	Total income to district	Wholesale value of pack <sup>3/</sup>	Tax revenues to state
1964	\$ 83,030.00	\$	\$	\$ 409,700.00	\$ 6,100.00
1965	90,950.00			370,000.00	8,200.00
1966	87,466.00			406,500.00	8,100.00
1967	138,647.00	20,000.00	158,647.00	727,000.00	
1968	290,370.00	40,000.00+	330,370.00+	1,135,000.00	17,000.00
1969	297,233.00	60,435.00+	357,668.00		
1970	362,470.00	127,327.00	489,797.00	1,300,000.00	20,000.00
1971	371,220.00	80,510.00	451,730.00	672,180.00	16,770.00
1972	360,727.00	85,895.00	447,622.00		
1973	827,735.00	150,000.00+	977,735.00	3,600,000.00	32,000.00
1974	1,056,042.00	150,000.00+	1,206,042.00		
1975	899,178.00	165,000.00+	1,064,178.00	2,000,000.00	25,000.00
1976	1,380,229.00	175,000.00+	1,555,229.00		
1977	3,891,950.00	200,000.00+	4,091,950.00		
1978	2,337,470.00	250,000.00+	2,587,470.00		
1979	3,678,000.00	275,000.00+	3,953,000.00+		
1980	2,725,134.00	300,000.00	3,025,134.00		

<sup>1/</sup> Information not available for wages earned during 1964-1966.

<sup>2/</sup> Includes wages paid to tenderboat operators, processing plant employees in district.

<sup>3/</sup> Based on type of processing when fish were shipped out of the district.

Appendix Table 8. Utilization of Kuskokwim River king salmon, 1960-1980.

Year	Commercial Catch <u>1/</u>	Subsistence Catch <u>2/</u>	Total Utilization
1960	5,969	20,361	26,330
1961	18,918	30,910	49,828
1962	15,341	14,642	29,983
1963	12,016	37,246	49,262
1964	17,149	29,017	46,166
1965	21,989	27,143	49,132
1966	25,545	49,606	75,151
1967	29,986	57,875	87,861
1968	34,278	30,230	64,508
1969	43,997	40,138	84,135
1970	39,290	69,204	108,494
1971	40,274	42,926	83,200
1972	39,454	40,145	79,599
1973	32,838	38,526	71,365
1974	18,664	26,665	45,329
1975	21,720	47,784	69,504
1976	30,735	58,185	88,920
1977	35,830	55,577	91,407
1978	45,641	35,881	81,522
1979	38,966	55,524	94,490
1980	35,881	59,900	95,781
Previous 5 yr. average	34,578	50,590	85,169

1/ Subdistricts 335-10, 335-20 and 335-30 to the Swift River.

2/ Catches are expanded and include all villages surveyed each year.  
Data includes a few villages and not included in comparative catch tables.



Appendix Table 10. Utilization of Kuskokwim River chum salmon, 1960-1980. <sup>3/</sup>

Year	Commercial Catch <u>1/</u>	Subsistence Catch <u>2/</u>	Total Utilization
1960		327,297	327,297
1961		185,447	185,447
1962		165,626	165,626
1963		141,550	141,550
1964		189,660	189,660
1965		283,459	283,459
1966		174,660	174,660
1967	148	205,263	205,411
1968	187	260,023	260,210
1969	7,165	198,628	205,793
1970	1,664	245,550	247,214
1971	68,914	116,391	185,305
1972	78,619	120,316	198,935
1973	143,746	179,259	328,005
1974	171,887	277,170	449,057
1975	181,840	176,389	360,560
1976	177,864	227,765	405,629
1977	248,721	213,418	462,139
1978	248,656	131,049	379,705
1979	261,874	160,836	422,710
1980	483,751	163,196	646,947
Previous 5 yr. average	223,791	179,252	463,426

1/ Subdistricts 335-10 and 335-20.

2/ Catches are expanded and include all villages surveyed each year, 335-10, 335-20 and 335-30 to the Swift River.

3/ Includes minimal numbers of red, pink and coho salmon.

Appendix Table 11. Commercial chum salmon catches by fishing period during the chum salmon season Kuskokwim River (District 1, statistical area 335-10), 1971-1980.

Fishing periods	1971			1972			1973			1974			1975		
	Catch	Boats	C.F.H. <sup>1/</sup>	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.	Catch	Boats	C.F.H.
June 22-25							19,073	202	7.9	27,017	267	16.9			
June 25-27							47,258	250	7.9				31,114	253	20.5
June 28-30	11,386	150	6.3	9,863	87	9.4	47,258	250	7.9				31,114	253	20.5
July 1-3	8,949	111		19,084	115	13.8	21,410	242	7.4	55,356	380	12.1	34,417	374	15.3
July 4-6	17,672	104		19,839	101	16.8	31,056	212	12.2	27,211	282	8.0			
July 7-9	12,603	93					24,593	217	9.4	50,672	376	11.2	38,752	368	17.6
July 10-12	2,550	18		13,972	113	10.3							39,791	301	22.0
July 13-15	8,000	69		6,290	80	6.5							20,945	329	10.6
July 16-18										6,661	190	5.8			
July 19-21	5,989	71													
<b>Total</b>	<b>67,149</b>	<b>216</b>	<b>9.1</b>	<b>69,048</b>	<b>176</b>	<b>11.6</b>	<b>143,390</b>	<b>341</b>	<b>8.7</b>	<b>166,917</b>	<b>467</b>	<b>11.0</b>	<b>165,049</b>	<b>540</b>	<b>16.9</b>
Associated Data															
Fishermen hrs. <sup>2/</sup>		7,392			5,952			16,476			15,198			9,750	
Days open to fishing <sup>3/</sup>		3.5			2.5			3.0			2.0			1.25	

  

Fishing periods	1976			1977			1978			1979			1980		
	Catch	Boats	C.F.H.												
June 22-25										32,295	502	10.7	105,825	436	40.3
June 25-27										53,648	531	16.8	131,945	408	53.9
June 28-30	42,464	348	20.3	40,321	378	17.8	44,296	449	16.4	48,643	542	14.9			
July 1-3	44,024	415	17.7	58,884	409	24.0	36,793	442	13.9	83,164	542	25.6	122,613	383	53.4
July 4-6				37,500	331	19.0	26,629	476	9.3						
July 7-9	48,669	381	21.3	56,943	368	25.8	48,031	485	8.3				90,233	431	34.9
July 10-12	21,153	377	9.4				-	-	-	32,434	520	10.4			
July 13-15	14,176	265	8.9	24,765	385	10.7	48,931	428	9.5						
July 16-18							14,935	422	5.9						
July 19-21															
<b>Total</b>	<b>170,486</b>	<b>5.7</b>	<b>15.9</b>	<b>218,413</b>	<b>522</b>	<b>14.0</b>	<b>219,615</b>	<b>617</b>	<b>10.1</b>	<b>250,184</b>	<b>617</b>	<b>15.8</b>	<b>450,616</b>	<b>579</b>	<b>45.3</b>
Associated Data															
Fishermen hrs. <sup>2/</sup>		10,716			15,660			21,690			15,822			9,948	
Days open to fishing <sup>3/</sup>		1.25			1.25			2			1.25			1	

1/ Catch per fisherman hour.

2/ Number of fishermen multiplied by hours open to fishing.

3/ One day is equivalent to 24-hours of fishing time.

Appendix Table 12. Commercial coho salmon catches by week, lower Kuskokwim River (Subdistrict 1, stat. area 335-10).  
1974-1980.

Date	1974				1975				1976			
	Catch	Fisher- men	Fisher- man hrs	C.F.H.	Catch	Fisher- men	Fisher- man hrs	C.F.H.	Catch	Fisher- men	Fisher- man hrs	C.F.H.
Aug 1-8	9,576	267	3,444	2.8	2,346	148	888	2.6	10,534	286	6,864	1.5
Aug 9-15	59,090	444	31,968	1.9	12,171 <sup>2/</sup>	293	14,064	0.9	29,728	400	19,200	1.5
Aug 12-21	58,066	396	28,512	2.0	18,020	362	17,376	1.0	28,664	387	18,576	1.5
Aug 19-29	12,301	263	18,936	0.6	33,128	387	18,576	1.8	14,543	300	14,400	1.0
Aug 26-Sep 3	5,360	107	7,704	0.7	16,280	274	13,152	1.2	4,420	174	7,308	0.6
Sep 3-9	430	25	1,815	0.2								
Totals	144,823	516	92,379	1.2	81,945	533	64,056	1.3	87,889	516	66,348	1.3

(Continued)

Appendix Table 12. Commercial coho salmon catches by week, lower Kuskokwim River (district 1, stat. area 335-10), 1974-1980. (continued)

Date	Catch	1977		C.F.H.
		Fisher- men	Fisher- man hrs	
Aug 1-8	23,987	360	8,640	2.8
Aug 9-15	91,474 <sup>3/</sup>	487	23,376	3.9
Aug 12-21	60,935	438	10,512	5.8
Aug 19-29	25,589 <sup>4/</sup>	378	4,536	5.6
Aug 26-Sept 3	16,980 <sup>5/</sup>	361	4,332	3.9
Sept 3-9	11,874 <sup>6/</sup>	264	3,168	3.8
	6,819 <sup>7/</sup>	204	2,448	2.8
<b>Totals</b>	<b>237,658</b>	<b>572</b>	<b>57,012</b>	<b>4.2</b>

Date	Catch	1978		C.F.H.
		Fisher- men	Fisher- man hrs	
Aug 1	6,311	297	3,564	1.7
Aug 4	9,455	364	4,368	2.2
Aug 8	20,501	433	5,196	5.5
Aug 11	42,428	485	5,820	7.3
Aug 15	48,950	476	5,712	8.6
Aug 18	29,485	434	5,208	5.7
Aug 22	22,287	396	4,752	4.7
Aug 25	11,168	293	3,516	3.2
Aug 29	12,215	250	3,000	4.1
<b>Totals</b>	<b>210,790</b>	<b>597</b>	<b>41,136</b>	<b>5.2</b>

Date	Catch	1979		C.F.H.
		Fisher- men	Fisher- man hrs.	
Aug 2	52,276	478	5,736	9.1
Aug 5	53,797	480	2,880	18.7
Aug 9	26,422	497	2,982	8.9
Aug 13	27,915	463	2,778	10.1
Aug 16	21,675	467	2,802	7.7
Aug 20	19,445	390	2,340	8.3
Aug 23	5,376	328	1,968	2.7
Aug 27	6,342	310	3,720	1.7
Aug 30	2,182	179	2,148	1.0
<b>Totals</b>	<b>215,430</b>	<b>613</b>	<b>27,354</b>	<b>7.9</b>

Date	Catch	1980		C.F.H.
		Fisher- men	Fisher- man hrs.	
Aug 1 <sup>+</sup>	9,889	375	2,250	4.4
Aug 7	36,126	455	2,730	13.2
Aug 11	35,178	482	2,892	12.2
Aug 14	28,211	439	2,634	10.7
Aug 18	43,748	441	2,646	16.5
Aug 21	33,274	419	2,514	13.2
Aug 25	19,254	370	2,220	8.7
Aug 28	13,484	319	1,914	7.0
	219,174			

<sup>3/</sup> Aug 8-10. <sup>4/</sup> Aug 18. <sup>5/</sup> Aug 25. <sup>7/</sup> Aug 29.

Appendix Table 13. Kuskokwim River subsistence king salmon catches by village, 1960-1980.

Village	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Kwigillingok, Kipnuk, Kongiganak						1/					
Eek	1,474 <sup>3/</sup>	2,238 <sup>3/</sup>	1,060 <sup>3/</sup>	2,697 <sup>3/</sup>	1,857	2,737	2,872	4,375	2,760	2,037	2,065
Tuntutuliak	226	2,226	842	2,853	1,826	1,978	3,061	3,338	2,026	2,195	3,558
Kasigluk	135	1,215	127	1,302	4/	513	1,875	2,766	1,360	2,888	3,931
Nunapitchuk	683	2,042	848	1,874	636	490	2,875	1,926	1,360	2,279	4,680
Atmauthluak <sup>5/</sup>											1,205
Napaklak	1,830	2,573	2,191	3,148	2,677	1,670	3,592	3,922	2,317	3,546	4,960
Oscarville	1,968	282	75	309	339	678	301	1,327	393	457	542
Napaskiak	536	1,258	759	1,569	2,201	1,412	2,935	3,091	1,647	2,227	3,446
Bethel	1,923	4,150	1,378	7,019	4,114	3,342	7,604	11,772	4,900	7,472	17,026
Kwethluk	2,692	3,763	2,329	5,050	3,262	4,538	6,135	6,889	3,549	3,187	7,932
Akiakchak	1,826	3,052	1,800	2,533	3,488	3,952	4,967	5,543	3,415	2,602	7,022
Akiak	1,865	3,159	906	2,869	2,495	1,774	3,941	3,790	1,332	1,275	3,290
Tuluksak	737	1,486	493	1,295	572	1,019	1,559	1,710	1,048	1,131	1,995
Lower Kalskag	961	571	805	2,661	710	841	1,918	1,733	1,463	2,083	2,146
Upper Kalskag	667	1,049	7/	7/	1,143	719	1,333	1,699	1,404	1,623	734
Aniak	1,057	688	185	602	1,104	494	2,002	1,415	467	1,406	2,136
Chuathbaluk	64	54	10	30	74	29	139	217	40	180	219
Napamute	20	16	44	52	134	2	78	60	100	19	22
Crooked Creek	747	518	561	859	1,358	363	1,249	638	77	541	684
Georgetown	10/	10/	10/	10/	10/	10/	12	10/	10/	9	2
Red Devil	10/	40	144	228	314	10/	182	10/	111	142	232
Sleetmute	465	222	9/	9/	9/	491	149	343	200	267	161
Stony River	435	25	31	67	299	101	632	364	191	2,187	105
Totals	20,361	30,910	14,642	37,246	29,017	27,143	49,606	57,875	30,230	40,138	69,204

Village	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1960-	1974-
											1973	1980
											Average	Average
Kwigillingok, Kipnuk, Kongiganak	241	10	75	10/	10/	197	743	75	0	0	330	145
Eek	1,882	1,969	1,981	2,356	2,110	3,232	2,675	1,807	2,003	1,557	2,286	2,249
Tuntutuliak	1,841	3,214	2,859	1,577	3,492	4,807	2,470	1,656	2,268	2,545	2,289	2,688
Kasigluk	1,645	1,292	8,864	1,411	1,713	1,613	1,324	608	1,142	1,704	1,609	1,359
Nunapitchuk	1,970	2,496	2,663	1,165	2,092	2,578	2,622	2,178	2,109	2,612	1,916	2,194
Atmauthluak <sup>5/</sup>	548	864	1,106	382	1,042	1,169	1,015	966	2,242	1,288	931	1,156
Napaklak	1,868	2,009	1,763	1,224	2,864	3,330	2,702	2,140	2,191	2,582	2,719	2,433
Oscarville	570	196	586	180	891	623	672	349	629	477	573	546
Napaskiak	1,916	1,578	2,048	900	2,303	3,566	1,989	2,122	2,085	3,160	1,902	2,303
Bethel	8,731	8,371	8,898	4,631	11,688	13,215	9,408	6,906	11,564	12,591	6,907	10,000
Kwethluk	5,564	5,137	3,444	2,694	3,179	4,193	5,563	3,172	6,919	7,627	4,534	4,764
Akiakchak	4,818	3,872	2,592	1,726	3,534	4,915	5,407	2,951	4,818	5,405	3,662	4,108
Akiak	2,688	1,899	1,895	1,292	2,837	3,076	2,880	1,850	3,567	3,355	2,366	2,694
Tuluksak	1,280	1,318	1,322	883	1,338	1,411	2,906	1,906	1,489	2,807	1,212	1,820
Lower Kalskag	2,355	2,604	1,309	1,586	2,755	4,536	1,750	1,951	2,821	3,917	1,583	2,756
Upper Kalskag	601	401	938	463	1,752	1,431	2,813	1,253	1,590	1,889	1,026	1,599
Aniak	1,076	2,105	1,030	1,952	1,391	1,490	4,991	1,331	2,634	2,750	1,126	2,363
Chuathbaluk	179	261	942	674	594	657	1,507	1,238	2,189	1,507	174	1,195
Napamute	17	20	13	6	16	420	176	144	149	90	43	143
Crooked Creek	291	183	269	650	238	264	619	488	728	654	596	520
Georgetown	0	0	0	9/	10/	10/	66	10/	0	93	4	53
Red Devil	135	182	138	205	623	195	324	153	488	255	168	320
Sleetmute	181	69	504	269	256	356	684	456	988	227	277	475
Stony River	2,521	11/	287	439	861	653	11/	33	182	171	332	524
Totals	42,926	40,145	38,526	26,665	47,569	57,917	55,339	35,881	54,780	59,509	38,757	48,237

- 1/ Included with other villages.
- 2/ Does not include 1965.
- 3/ Estimates based on catch data through 1969.
- 4/ Included with Eek.
- 5/ Does not include 1964.
- 6/ New village of Atmauthluak segregated in 1970 from parent village of Nunapitchuk.
- 7/ Included with Lower Kalskag.
- 8/ Does not include 1962 and 1963.
- 9/ Included with Red Devil.
- 10/ Data not available.
- 11/ Includes Lime Village.

Appendix Table 14. Kuskokwim River "other salmon" subsistence catches by village, 1960-1973. <sup>1/</sup> <sup>2/</sup>

Village	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1960-1973 Average
Kipnuk															
Kongiganak															
Kwigillingok	1,430	3,279 <sup>3/</sup>	1,990 <sup>3/</sup>	2,562 <sup>3/</sup>	2,323	0	680	2,846	2,800	2,481	3,937	1,110	1,284	807	1,966
Eek	4,094 <sup>3/</sup>	2,321 <sup>3/</sup>	2,072	1,771	2,151	2,898	1,324	1,922	3,503	3,436	4,855	2,213	783	2,401	2,625
Tuntutuliak	4,101	8,526	9,692	6,791	8,421	18,993	9,747	11,531	14,090	17,462	10,600	9,964	11,103	13,572	11,042
Kasigluk	1,400	3,657	1,705	1,020	4/	4,041	3,058	2,309	4,311	3,308	5,731	2,043	1,934	6,090	3,124
Nunapitchuk	2,743	4,868	7,474	2,462	1,171	4,251	4,145	6,278	7,731	6,934	11,412	3,375	5,600	7,663	5,436
Atmauthluak											1,191	1,197	947	2,818	1,538
Napakiak	19,888	5,789	6,167	3,711	12,312	12,928	9,275	12,685	12,700	12,390	16,371	4,427	5,191	8,461	10,164
Oscarville	3,948	1,680	1,723	1,025	487	8,010	407	2,580	2,104	2,743	4,669	1,675	498	3,081	2,474
Napaskiak	5,199	4,286	5,546	3,584	6,275	26,206	8,743	8,585	12,409	11,655	11,169	7,039	8,858	8,478	9,145
Bethel	12,972	12,845	8,470	8,623	15,623	19,099	14,011	14,055	28,603	14,613	33,475	9,905	16,885	33,930	17,365
Kwethluk	32,975	21,106	22,788	13,180	19,186	37,780	18,707	23,872	36,645	23,462	27,702	13,941	11,721	19,565	23,046
Akiakchak	15,932	12,518	10,521	6,725	10,096	25,138	15,049	13,584	19,461	10,306	29,776	12,298	9,266	9,864	14,324
Akiak	13,061	8,205	6,551	8,478	9,659	12,297	10,622	9,332	13,775	9,854	13,003	9,264	5,108	6,118	9,666
Tuluksak	19,261	7,928	8,526	10,289	9,777	12,820	11,670	8,898	11,114	6,058	7,626	5,115	5,145	5,946	9,298
Lower Kalskag	11,563	7,764	16,478	23,249	9,472	21,906	10,346	16,018	8,114	8,468	11,158	3,509	3,490	2,873	11,029
Upper Kalskag	38,398	27,149	5/	5/	11,391	11,970	6,236	8,364	9,733	9,413	5,309	3,530	1,460	5,607	11,547
Aniak	36,673	15,935	10,120	10,608	17,874	11,353	12,484	16,788	17,341	15,127	10,030	4,933	5,243	13,547	14,147
Chuathbaluk	22,370	2,922	3,784	2,629	5,059	6,507	5,625	7,249	11,588	7,523	10,971	5,632	8,509	14,171	8,181
Rapamute	11,017	6,235	3,898	5,192	4,873	704	3,704	5,750	1,774	1,453	1,224	1,862	4,645	3,451	3,984
Crooked Creek	41,263	17,558	27,259	23,166	32,550	18,986	19,467	14,365	12,704	6,810	9,216	3,094	3,658	1,981	16,577
Georgetown	6/	6/	6/	6/	6/	6/	70	6/	2,030	3,664	800	0	0	10	939
Red Devil	6/	1,358	9,007	5,367	5,706	6/	2,746	6/	2,400	1,130	2,454	1,067	1,695	2,782	3,246
Sleetmute	17,259	6,884	7/	7/	7/	11,707	2,611	6,875	11,218	8,258	4,464	3,203	4,293	2,168	7,176
Stony River	11,750	2,642	1,855	1,110	4,254	15,865	3,933	11,377	13,875	12,080	8,407	5,995	3,000	3,875	7,144
Totals	327,297	185,447	165,626	141,550	189,660	283,459	174,660	205,263	260,023	198,628	245,550	116,391	120,316	179,259	205,183

(continued)

Appendix Table 14 (continued). Kuskokwim River "other salmon" subsistence catches by village, 1974-1980. 1/ 2/

Village	1974	1975	1976	1977	1978	1979	1980	1974- 1980 Average
Kipnuk								
Kongiganak								
Kwigillingok	9/	9/	902	2,190	78	0	0	453
Eek	4,227	2,754	4,425	3,251	1,874	1,125	2,177	2,833
Tuntutuliak	28,321	7,429	8,440	9,340	5,564	5,632	8,961	10,527
Kasigluk	6,773	3,708	4,050	3,504	1,242	2,617	5,684	3,939
Nunapitchuk	12,498	5,447	6,551	8,991	4,977	5,737	6,626	7,261
Atnauthluak	4,585	2,524	3,446	3,693	3,860	5,287	4,794	4,027
Napakiak	21,494	11,630	9,477	8,420	6,074	8,019	8,123	10,462
Oscarville	5,617	3,237	2,416	2,030	1,276	969	1,395	2,420
Napaskiak	20,467	12,930	21,518	11,588	9,286	5,773	7,391	12,712
Bethel	34,892	26,808	26,970	15,982	13,731	31,040	33,198	26,089
Kwethluk	39,747	19,183	27,120	28,193	14,038	16,861	24,564	24,243
Akiachak	15,108	14,008	16,050	18,607	9,445	10,459	15,172	14,121
Akiak	18,434	18,890	12,337	13,952	9,237	12,218	10,596	13,666
Tuluksak	13,261	7,819	11,833	7,835	4,478	5,249	9,963	8,595
Lower Kalskag	12,265	9,823	17,169	8,964	3,704	9,134	8,903	9,995
Upper Kalskag	9,631	6,904	8,694	11,845	7,279	6,117	6,932	8,200
Aniak	9,305	9,597	13,507	21,610	8,042	15,247	14,067	13,054
Chuathbaluk	4,287	561	7,967	5,141	4,885	6,646	4,148	4,805
Napamute	76	226	1,653	4,969	1,887	2,103	3,049	1,995
Crooked Creek	4,954	2,461	3,236	3,072	2,469	3,141	7,165	3,785
Georgetown	9/	9/	9/	1,127	9/	0	1,042	723
Red Devil	2,688	4,481	4,231	5,916	6,161	8,286	5,133	5,271
Sleetmute	4,212	5,761	7,628	6,674	7,917	8,262	10,934	7,341
Stony River	4,328	5,202	8,484 <sup>8/</sup>	3,300	3,545	3,355	2,967	4,454
Totals	277,170	176,389	228,104	210,194	131,049	149,147	202,714	96,395

1/ Catches include a majority of chum salmon but include small numbers of red, coho, pink and small king salmon.

2/ 1965 to 1972 catches do not include late coho salmon catches.

3/ Estimate based on catch data through 1970.

4/ Included with Eek.

5/ Included with Lower Kalskag

6/ Data not available.

7/ Included with Red Devil

8/ Includes Lime Village.

Appendix Table 15. Subsistence Fishery Historical Summary, Kuskokwim River, 1960-1980.

Year	Fishing Families Surveyed	Average numbers per fishing family					
		People	Dogs	Snow-Machines	King Salmon	Small Salmon <sup>2/</sup>	Fishwheels
1960	247	5.89	6.66		60	1,074	?
1961	342	6.02	6.33		39	453	0.19
1962	349	6.50	6.30		79	470	.18
1963	405	6.14	5.29		87	351	.11
1964	394	6.33	5.44		70	454	.10
1965	332	5.95	5.45		64	669	.08
1966	492	5.91	4.49		91	320	.06
1967	472	6.36	5.22	<sup>1/</sup> 0.18	106	375	.06
1968	567	6.23	5.31	0.35	53	447	.06
1969	376	6.49	5.51	0.53	78	385	.05
1970	514	6.33	4.65	0.75	108	384	.02
1971	488	6.53	4.30	1.01	88	238	.01
1972	576	6.78	3.08	1.00	51	166	.02
1973	408	6.55	3.84	1.48	81	356	.02
1974	596	6.24	3.61	1.12	45	466	.02
1975	437	6.41	3.99	1.35	79	310	.02
1976	494	6.53	3.81	1.23	86	335	.02
1977	502	6.33	3.83	1.36	89	309	.02
1978	613	6.02	4.29	1.24	53	190	.01
1979	698	5.98	4.25	1.32	68	184	.01
1980	722	5.84	4.55	1.39	76	214	.01

\* Unexpanded data only

<sup>1/</sup> Snowmachine count started in 1967

<sup>2/</sup> Does not include coho salmon.

Appendix Table 16. Quinhagak Subsistence Fishery Historical Summary, 1967-1980\*

Year	Fishing Families Surveyed	Average numbers per fishing family					
		People	Dogs	Snow-machines	King Salmon	"Dog" Salmon	Coho Salmon
1967	19	6.43	4.00	?	71	231	?
1968	46	5.59	4.07	0.28	88	234	380
1969	59	5.38	3.41	0.46	27	29	179
1970	46	6.02	2.76	0.74	47	110	?
1971	41	5.83	2.37	0.73	55	87	36
1972	54	6.41	2.30	0.80	56	116	9
1973	44	5.80	2.07	0.98	61	98	83
1974	47	5.53	2.31	1.17	46	78	87
1975	46	5.86	1.85	1.13	71	88	?
1976	50	5.62	2.20	1.42	44	119	?
1977	60	6.63	1.59	1.42	34	70	?
1978	65	5.59	1.86	1.70	36	96	3
1979	48	5.23	1.72	1.66	29	24	37

\* Expanded data

Appendix Table 17. King salmon escapement counts, Kuskokwim River drainage, 1970-1980 (p. 3 of 3).

Chukowan River (Holitna)				Kogrulik River (Holitna)					
Year	Estimated Count	Area Surveyed	Survey Rating	Year	Tower Count	Weir Count	Aerial Survey Count	Area Surveyed	Survey Rating
1966	986	Mouth - Gemuk River	Good	1961			214	Entire <sup>3/</sup>	Fair
1968	1,260	Mouth - Gemuk River	Fair	1966			1,645	Entire	Good
1970	1,118	Mouth - Gemuk River	Good	1967			1,033	Entire	Poor
1972	163	Mouth - Gemuk River	Poor	1968			2,180	Entire	Fair
1973	229	Mouth - Gemuk River	Fair	1969	2,980				
				1970	3,868		1,598	Entire	Fair
1975	667	Mouth - Gemuk River	Fair	1971	42 <sup>5/</sup>		636	Headwater to 15 mi. above mouth	Poor
				1972	1,934		476	Entire	Fair
				1973	1,725		610	Entire	Poor
				1974	3,724				
				1975	1,970		1,062	Entire	Fair
1976	727	Entire <sup>3/</sup>	Fair	1976	3,261	5,507	518	Tower to Maka Ck.	Fair
1978	1,064	Mouth to Enatalik Creek	Good						
1979		Not surveyed		1977	1,988	1,385 <sup>5/</sup>	1,342	Entire	Good
				1978 <sup>8/</sup>	7,405	13,132	-	-	-
				1979	-	11,299	-	-	-
1980		Not surveyed		1980	-	-	540		

  

Salmon River (Pitka Fork)			
Year	Estimated Count	Area Surveyed	Survey Rating
1975	272	Entire	Poor
1976	1,149	Middle Fork	Good
1977	1,930	Entire	Good
1978	1,083	Entire	Good
1979	667	Entire	Fair
1980	1,450	Entire	Fair

1/ All counts are from aerial surveys, except as noted.

2/ Aerial survey counts were made only in main stem of each river listed.

3/ "Entire" usually does not include several miles of the lower sections of streams where turbid water conditions prevent observation of fish.

4/ Includes data listed under Aniak River (above Salmon River).

5/ Count is very low due to water conditions.

6/ Last year of tower operation.

Appendix Table 17. King salmon escapement counts, Kuskokwim River drainage, 1970-1980 (p. 1 of 3).

Goodnews River				Kanektok River			
Year	Estimated Count	Area Surveyed	Survey Rating	Year	Estimated Count	Area Surveyed	Survey Rating
1960	2,503	Entire 3/	Fair	1960	6,047	Entire 3/	Fair
1961	1,780	Entire	Fair	1961	1,650	60 miles	Poor
1968	1,790	Entire	Fair	1962	935	Entire	Fair
1969	75	Entire	Poor	1964	627	Entire	Poor
1970	600	Entire	Poor	1966	3,718	Entire	Fair
1975	829	Mouth to Nimgun Cr.	--	1968	4,170	Entire	Fair
1976	1,150	Mouth to Slate Cr.	Good	1969	119	10 miles	Poor
1977	2,163	Mouth to Goodn. L.	Good	1970	3,112	Lake to mile 20	Fair
1979	635	Mouth to Goodn. L.	Fair	1972	73	Lake to Nukluk Cr.	Poor
1980	1,228	Mouth to Goodn. L.	Fair	1973	814	Entire	--
				1974	197	Kanuktic Cr. to mouth	--
				1975	1,278	Entire	--
				1976	2,115	Entire	Fair
				1977	5,787	Entire	Fair
				1978	9,181	Entire	Fair
				1979	601	Entire	Poor
				1980	6,172	Entire	Good
Kwethluk River				Kisaralik River			
Year	Estimated Count	Area Surveyed	Survey Rating	Year	Estimated Count	Area Surveyed	Survey Rating
1960	1,320	Upper 40 miles	?	1960	1,104	Entire 3/	Fair
1962	248	Entire 3/	Poor	1962	327	Entire	Poor
1966	516	Upper 35 miles	Fair	1965	194	Below canyon	Poor
1968	800	Entire	Fair	1966	204	Upper 60 miles	Poor
1972	68	Upper 20 miles	Poor	1968	487	Upper river	Fair
1974	88	Upper 30 miles	Poor	1970	531	Airstrip to Quicksilver Cr.	Fair
1975	Few	Lower 40 miles	Poor	1973	152	Airstrip to 1 mi. above falls	Fair
1976	997	40 miles d.s. from mouth of Canyon Cr.	Fair	1974	4	Airstrip to 30 mi. upstream	Poor
1977	1,999	3-step Mt. to Canyon Creek	Fair	1975	129	Entire	Poor/Fair
1978	1,276	3-step Mt. to Canyon Creek	Fair	1976	873	10 mi. below foothills to lake	Fair
1979	822	3-step Mt. to Canyon Creek	Fair	1978	2,417	Airstrip to lake	Fair
1980	-	Not surveyed	-	1979	38	Entire	Poor
				1980	-	Not surveyed	-

Appendix Table 17. King salmon escapement counts, Kuskokwim River drainage, 1970-1980 (p. 2 of 3)

Aniak River 4/				Aniak River (above Salmon River)			
Year	Estimated Count	Area Surveyed	Survey Rating	Year	Estimated Count	Area Surveyed	Survey Rating
1960	1,881	Entire <sup>3/</sup>	Fair	1966	485	Salmon R. to lake	Fair
1961	497	Entire	Fair	1967	758	Salmon R. to lake	Poor
1962	925	Entire	Fair	1968	783	Salmon R. to lake	Good
1965	646	Mile 20 to lake	Poor	1969	537	Salmon R. to lake	--
1966	2,184	Buckstock R. to lake	Fair	1970	592	Salmon R. to Waterboot Cr.	Fair
1968	1,420	Buckstock to Kipchuk R.	Fair	1971	144	Waterboot Creek to Aniak Lake	Poor
1970	1,231	20 mi. below Salmon R. to Waterboot Cr.	Fair	1972	93	Salmon R. to lake	Poor
1974	196	Entire	Poor	1973	200	Salmon R. to lake	Poor
1975	202	Entire	Fair	1974	57	Salmon to lake	Poor
1976	281	Kipchuk River to Gemuk Mt.	--	1975	145	Salmon to lake	Fair
1979		Not surveyed		1976		No information available	
1980		Not surveyed		1977	21	5 mi. below lake to canyon below Gemuk Mt.	Fair
				1978	140	Salmon R. to lake	Good
				1979		Not surveyed	
				1980		Not surveyed	
Salmon River (Aniak)				Kipchuk River (Aniak)			
Year	Estimated Count	Area Surveyed	Survey Rating	Year	Estimated Count	Area Surveyed	Survey Rating
1960	223	Entire	Good	1960	513	Entire	Good
1966	141	Lower 25 miles	Poor	1966	491	Lower 22 miles	Good
1970	381	Lower 25 miles	Fair	1967	200	Lower 25 miles	Poor
1972	43	Entire	Poor	1968	319	?	Fair
1973	100	Mouth to Marvel Cr.	Poor	1970	821	Mouth Bulldog Cr.	Fair
1974	35	Entire	Good	1974	73	Entire	Good
1975	32	Entire	Fair	1975	94	Entire	Fair
1976	86	Mouth to Marvel Cr.	Poor	1976	177	Mouth to Big Bend	Fair
1977	625	Mouth to Marvel Creek	Fair	1977	16	5 mi. from canyon downstream	Poor
1978	322	Entire	Fair	1978	187	Lower 25 miles	Poor
1979		Not surveyed		1979		Not surveyed	
1980	1,186	Mouth to Cripple Cr.	Fair	1980	1,932	Entire	Poor