

ARCTIC-YUKON-KUSKOKWIM REGION
1981 SALMON FISHERY
REPORT TO THE BOARD OF FISHERIES

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INTRODUCTION

The Arctic-Yukon-Kuskokwim region is that portion of the state north of the Alaska Range and the Bristol Bay drainage. It includes all of the drainages of the Bering Sea and the Arctic Ocean from Cape Newenham to the U.S.-Canadian border. In addition, it includes the following Bering Sea Islands: Nunivak, St. Lawrence and St. Matthew. This is the largest management region in the state comprising over 400,000 square miles. The region is subdivided into several management areas or districts as indicated in Figure 1.

There are approximately 30,000-40,000 Eskimo and Indian people in the region, the majority of whom reside in excess of 110 small villages scattered along the coast and the major river systems. Nearly all of these native people are dependent to varying degrees on the fish and game resources for their livelihood.

REGIONAL SUMMARY

Commercial Fishery

A record harvest of 3.9 million salmon was made in the region during 1981. King, red and chum salmon catches were the largest ever recorded. Exceptionally large catches of kings in the Yukon area, reds in the Kuskokwim area, and chums in the Kuskokwim, Yukon and Kotzebue

were made. The 1981 harvest represented 33.0 million pounds (round weight) of salmon. Fishermen earnings totaled \$18.1 million. The vast majority of commercial fishermen are Eskimo and Indian residents of the region.

Commercial harvests in the region have increased more than forty times since 1960. Recent increases have been largely due to development of chum salmon fisheries in the Yukon, Kuskokwim and Kotzebue areas.

Commercial catches for 1981 for each management area are shown below:

Area	King	Red	Coho	Pink	Chum	Total
Kuskokwim	79,378	105,940	278,587	463	485,635	950,003
Yukon	157,509	-	23,478	-	1,677,308	1,858,295
Norton Sound	7,929	56	31,562	233,479	169,708	442,734
Kotzebue	81	-	-	156	677,239	677,476
Totals	244,897	105,996	333,627	234,098	3,009,890	3,928,508
Previous Year Record	207,500 (1980)	42,300 (1980)	366,600 (1980)	395,300 (1980)	2,466,800 (1980)	3,342,400 (1980)
5 Year Average (1976-80)	174,900	25,700	290,400	208,000	1,554,900	2,253,900

Subsistence Fishery

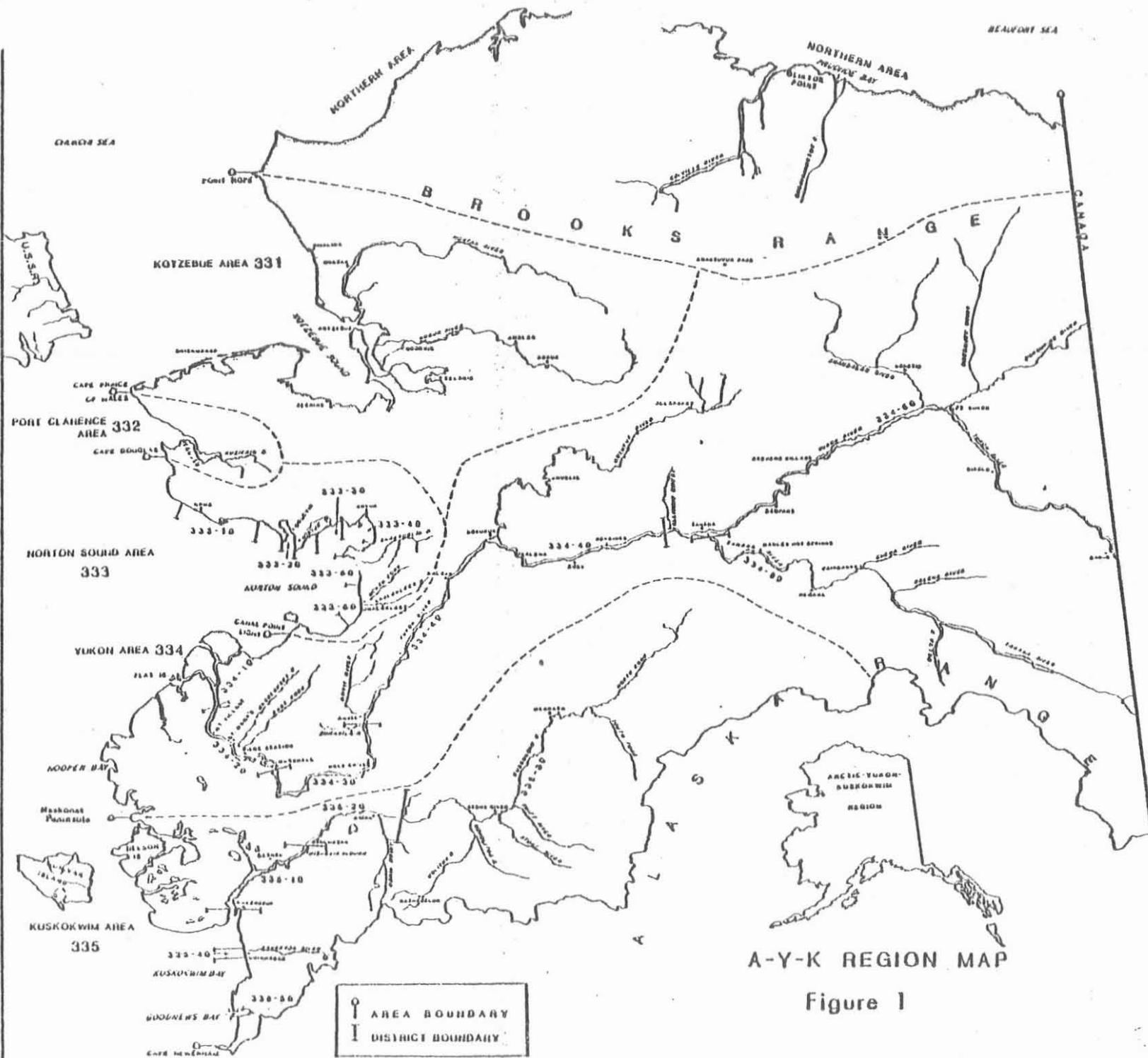
Subsistence harvest information prior to 1960 is incomplete or entirely lacking for many years, but there are also records indicating that in

excess of two million salmon annually were taken during the early 1900's. About 1930 the airplane began replacing the sled dog as a mail carrier, and this started the gradual decline of the subsistence salmon fishery. This decline was accelerated during the 1966-73 period as increased government aid and employment opportunities, including commercial fishing activities, became available to local residents. Another very important factor tending to affect subsistence fishing is that snow machines replaced sled dogs at a faster rate than did the airplane. Since considerable numbers of salmon and other fish are fed to sled dogs, fewer fish were required for subsistence purposes as the canine population declined. The decline in subsistence fishing was not related necessarily to fish abundance, but mainly reflects decreases in effort and dependence due to a changing way of life. Coincidental with the legislation allowing subsistence salmon roe sales in 1974-77, catches during this period increased substantially compared to the relatively small subsistence catches made the four years prior to roe sales. Since 1977 subsistence catches have remained relatively large due to above average size runs and the increased use of recreational sled dogs.

Subsistence catch data for 1981 is preliminary at this time since a few late catch reports are still being received. The projected 1981 harvest should approximate 700,000 salmon. The recent five year average annual subsistence harvest is 684,000 salmon.

ARCTIC OCEAN

BEAUFORT SEA



A-Y-K REGION MAP

Figure 1

○ AREA BOUNDARY
 I DISTRICT BOUNDARY

KUSKOKWIM AREA

Introduction

This area includes all waters of the Kuskokwim River drainage and all waters from Cape Newenham north to Naskonat Peninsula. Commercial salmon fishing is allowed along 165 miles of the lower Kuskokwim River (districts 1 and 2) and in Quinhagak (district 4) and Goodnews Bay (district 5) located along the coast (Figure 2).

The 1981 Kuskokwim area commercial salmon harvest of 950,000 fish was the second largest catch ever recorded (1980 harvest of 1,009,100 fish). This catch was primarily a reflection of the unusually strong chum salmon run experienced in the Kuskokwim River. Species composition of the 1981 catch was 79,400 king, 105,900 red, 278,600 coho, 500 pink and 485,600 chum salmon. The king and red salmon catches were at record levels. Table 1 presents annual commercial catches since 1960.

A total of 826 C.F.E.C. permits were issued in 1981. Commercial fishermen earned approximately \$3,767,000 for their catch.

Kuskokwim River

King Salmon Commercial Fishery

The commercial harvest of 47,700 kings was above the recent five year average (Table 2). The district 1 catch totaled 42,400 fish which included an incidental catch of 12,500 taken during the "chum salmon season" with gillnets of 6 inch or smaller mesh. Fishing time during the "king salmon season" in district 1 consisted of two 6-hour periods, the same as 1980. Fishing time has been restricted during recent years (with the exception of 1978) due to increases in fishing effort (Table 3), gear efficiency and competition among fishermen as a result of better prices for their catch. The current commercial harvest goal for district 1 is 20-30 thousand kings during the "king salmon season" (prior to June 26, no mesh size restrictions). Largely due to fleet efficiency recent catches have exceeded this figure in some years. However, most recent year king salmon runs have been on the increase and adequate escapement levels have been achieved. The majority of comparative catch and escapement data indicate that the 1981 king salmon run was average to above average compared to recent years.

In 1981 the combined Kuskokwim River commercial and subsistence catch totaled 107,300 fish, the second largest catch since 1960.

Chum Salmon Commercial Fishery

Although the commercial chum salmon fishery has increased tremendously since its inception in 1971, the subsistence fishery is still of prime importance. Commercial and subsistence effort and catches have increased greatly in recent years, resulting in the institution of a combined harvest goal in district 1 of approximately 400,000 fish. This season's chum salmon run was judged exceptionally strong in magnitude based on comparative catch data and escapement information. The commercial harvest of 418,700 fish, the second largest on record, was attributed to good brood year escapements, and favorable environmental factors resulting in high survival. Due to an exceptionally early run, the season was opened four days prior to the published opening date of June 26. Commercial fishermen were allowed a total of 36 hours of fishing (six 6-hour periods) this season, compared to the 30 hours allowed in 1979 and 24 hours in 1980. Commercial fishing effort during the chum salmon season is presented in Table 3.

When commercial catches are added to subsistence catches, the total utilization of 572,000 was the second largest documented chum salmon catch since 1960 (Table 4).

Coho Salmon Commercial Fishery

The run this year was judged average in magnitude. The commercial coho salmon catch of 211,300 fish was similar to the previous five year average. Commercial coho salmon fishing effort is presented in Table 3.

Fishermen were allowed two 6-hour periods per week in district 1 totaling 54 hours for the season. In comparison, 108 hours were allowed in 1978, 72 hours in 1979 and 48 hours in 1980.

Subsistence Fishery

The 1981 Kuskokwim River subsistence king salmon harvest of 59,700 was above the recent 5-year average catch of 52,700 fish. The subsistence chum salmon harvest of 153,400 was below the recent 5-year average catch of 179,300.

Escapement

Aerial surveys in the Kuskokwim River drainage were hampered by unfavorable stream and weather conditions. Of those streams surveyed, king salmon escapements were considered average or better in magnitude. Table 5 presents the limited comparative king salmon escapement data. A record 16,000 kings were enumerated past the Ignatti weir on the Holitna River. Chum and sockeye escapements were above average. A total of 17,700 red and 56,500 chum salmon, the largest ever recorded, were counted at the Ignatti weir site. The Aniak River sonar site enumerated 300-400,000 chum salmon, the second consecutive year of very large escapements.

Outlook for 1982

Based on brood year escapement data, the return of king salmon to the Kuskokwim River in 1982 would normally be expected to be only average in

magnitude. However apparent good survival of fish from the 1976 brood year (large incidental catch of 4 year old fish in the 1980 Japanese high seas mothership fishery) could result in a stronger return for 1982. Limited comparative brood year escapement data is available for Kuskokwim River chum, red and coho salmon stocks; however, comparative commercial catch data indicate an average return of these species in 1982.

Quinhagak and Goodnews Bay

Commercial Fishery

These two fisheries are located south of the Kuskokwim River (Figure 2). Fishermen in these districts are restricted to the use of gill nets of less than 6-inch stretched mesh. A total of 31,700 kings, 57,600 reds, 67,300 cohos, 500 pinks and 67,000 chums, totaling 223,800 fish, were harvested in these two districts during 1981 (Table 1). The harvest of king salmon in both districts were the largest recorded to date. The red salmon harvest of 40,300 fish in the Goodnews Bay district was the highest ever recorded and reflects a very large run. Increasing fishing time was allowed in district 5 based on the large number of red salmon passing the Department's newly established counting tower located on the Middle Fork of the Goodnews River.

Escapement

Although information is limited, escapements for king and red salmon were above average in the Quinhagak and Goodnews Bay districts. A

record aerial survey count of 15,900 kings was obtained in the Kanektok River. Red salmon escapements in the Goodnews River system were also strong as evidenced by the count of 42,200 fish at the Department's counting tower located on the Middle Fork of the Goodnews River. Chum escapements were considered average in the Kanektok and Goodnews Rivers.

Table 1. Kuskokwim area commercial catches by drainage, 1960-1981.

Kuskokwim River 1/	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	15,560	0		27,576
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	38,501	44	1,664	79,716
1971	40,274	2,506	5,253	0	58,914	117,047
1972	39,454	102	22,579	8	78,519	140,762
1973	32,838	369	130,876	33	148,746	312,862
1974	18,664	136	147,259	37	171,887	337,984
1975	21,720	23	81,945	10	181,840	285,538
1976 4/	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
1981	47,653	48,375	211,251	292	418,577	725,258
Previous 5 year average	37,411	2,900	200,472	1,410	294,065	522,648

Quinhagak (Kanektok River 2/	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	25,536
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	258	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	3,928	8,584	10,742	486	35,233	58,973
1976 4/	14,110	6,090	13,777	31,412	43,659	109,048
1977	19,090	5,519	9,028	202	43,707	77,546
1978	12,335	7,589	20,114	47,033	24,798	111,869
1979	11,144	18,828	47,525	295	25,995	103,787
1980	10,387	13,221	62,610	21,571	65,984	173,373
1981	24,525	17,292	47,587	160	53,316	143,080
Previous 5 year average	13,413	10,250	30,611	20,123	40,829	115,225

Goodnews Bay (Goodnews River 3/	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	45,530
1971	477	330	1,771	0	301	2,879
1972	264	924	925	66	1,331	3,510
1973	3,543	2,072	5,017	324	15,781	26,737
1974	3,302	9,357	21,340	16,373	8,942	59,314
1975	2,151	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
1981	7,190	40,273	19,749	11	13,642	80,365
Previous 5 year average	3,630	13,585	24,461	5,124	9,192	54,993

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

2/ Subdistrict 335-40.

Table 2. Utilization of Kuskokwim River king salmon, 1960-1981.

Year	Commercial Catch 1/	Subsistence Catch 2/	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
1981	47,663	59,669	107,332
Previous 5 yr. average	37,411	52,911	90,322

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.

TABLE 3. KUSKOKWIM RIVER COMMERCIAL EFFORT DATA, 1965-1981

<u>YEAR</u>	<u>KING SEASON</u>	<u>CHUM SEASON</u>	<u>COHO SEASON</u>
1965	195		
1966	210		107
1967	233		147
1968	303		242
1969	329		231
1970	361		266
1971	418	216	83
1972	405	176	245
1973	456	341	411
1974	606	467	516
1975	472	540	533
1976	561	517	516
1977	563	622	572
1978	615	617	597
1979	591	617	613
1980	553	579	586
1981	589	613	586

1/ Number of actual fishing vessels in district 335-10

Table 4. Utilization of Kuskokwim River chum salmon, 1960-1981. ^{3/}

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	148,746	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
1981	418,751	153,366	572,043
Previous 5 yr. average	284,173	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.

Table 5. Index counts of Kuskokwim River king salmon spawning escapements, 1965-1981.

Year	Aerial Surveys				Counting Tower	Ignatti Weir
	Kisaralik River	Aniak River (Above Salmon R.)	Chukowan River	Kogruluk River	Kogruluk River	Hottina River
1965	194 <u>2/</u>	-	-	-	-	-
1966	204 <u>2/</u>	485	986	1,645	-	-
1967	-	758 <u>2/</u>	-	1,033	-	-
1968	487	783	1,260	2,180	-	-
1969	-	537	-	-	2,980	-
1970	531	592	1,110	1,598	3,815	-
1971	-	144 <u>2/</u>	-	636 <u>2/</u>	-	-
1972	-	93 <u>2/</u>	163 <u>2/</u>	476 <u>2/</u>	1,934	-
1973	152	200 <u>2/</u>	229	610 <u>2/</u>	1,725	-
1974	4 <u>2/</u>	15 <u>2/</u>	43 <u>2/</u>	-	3,410	-
1975	129 <u>2/</u>	145	667	1,062	1,970	-
1976	873	281	727	518	2,900	5,507
1977	-	21 <u>3/</u>	-	1,342	1,980 <u>4/</u>	1,385 <u>4/</u>
1978	2,417	-	1,064	-	7,405	13,132
1979 <u>6/</u>	-	-	-	-	5/	10,125
1980	- <u>6/</u>	- <u>7/</u>	- <u>7/</u>	540	5/	- <u>8/</u>
1981	940	- <u>7/</u>	- <u>7/</u>	- <u>7/</u>	5/	16,036

2,234

- 1/ ADF&G Annual Management Report, Kuskokwim area, 1970.
- 2/ Surveys rated poor.
- 3/ Survey only uppermost 5 miles of River.
- 4/ Poor counting conditions - probably only a minimum count.
- 5/ Project terminated 1978.
- 6/ Weather prevented aerial assessment.
- 7/ Water high, muddy
- 8/ Weir washed out 1980.

YUKON AREA

Introduction

The Yukon area includes all waters of the Yukon River drainage in Alaska and all waters from Naskonat Peninsula north to Canal Point light. Commercial salmon fishing is allowed along 1,400 river miles in six districts managed under various regulations (Figure 3).

The 1981 commercial harvest of 1,858,300 salmon was the largest in history and greatly exceeded the previous 5 year average of 1,205,900. Species composition of the 1981 catch was 157,500 kings, 23,500 cohos and 1,677,300 chums. The king and chum salmon catch was the largest ever recorded. Table 6 presents annual commercial catches by district since 1960.

In the lower Yukon area a total of 686 CFEC gillnet permits were issued while in the upper Yukon area 75 gillnet and 169 fishwheel permits were issued. Fishing effort has apparently stabilized at current levels due to implementation of the Limited Entry Program. Commercial fishermen earned approximately \$10,207,000 for their catches in 1981.

King Salmon Commercial Fishery

The 1981 commercial king salmon catch was the largest on record and greatly exceeded the previous 5-year average of 112,900 fish. Catch and

escapement data indicate that the magnitude of the run was above average and exceeded last year's run, which was one of the largest king runs since statehood. The average size of king salmon taken in the commercial fishery was approximately 25 pounds, considerably larger than most years. The large size was attributed to a high percentage (80%) of six year old fish from the 1975 brood year.

In districts 1 and 2 of the Yukon area (lower 190 river miles), where the majority of the kings are harvested, fishing time was reduced to two 24 hour periods per week by emergency order in 1981. This action was required in order to spread out the harvest over a greater portion of the run and to insure that various run segments were not overharvested. In recent years the lower Yukon commercial fishery has become increasingly more efficient and has developed rapidly. Emergency order action is also necessary in order to respond to variabilities in run timing and abundance. The staff is proposing regulating weekly fishing periods by emergency order in districts 1 and 2 through July 15 to afford more flexible management (Proposal #24).

Chum Salmon Commercial Fishery

The 1981 commercial chum salmon catch was the largest in history and exceeded the previous 5-year average of 1,074,000 fish. The large chum salmon catch this year was attributed to an above average run of both summer and fall chums.

In 1981, a total of 1,199,400 summer chums, which are more abundant than fall chums, were commercially harvested in the Yukon area, mostly

in districts 1, 2 and 4 where 93 percent of the catch was taken. The 1981 catch was the largest on record and exceeded the recent 5 year average of 810,700. Record summer chum salmon catches were made in districts 1, 2 and 3.

A total of 478,000 fall chums was harvested in the Yukon area in 1981. The 1981 commercial catch was also the largest on record and greatly exceeded the recent five year average of 263,300 fish. Record fall chum catches were made in districts 2 and 5.

In the lower Yukon area (districts 1, 2 and 3) the commercial fishing season was closed during August 1-5 after a record 225,500 fall chums were harvested. This action was taken to provide for upriver catch and escapement requirements from the early portion of the run (presumably that portion of the run (presumably that portion of the upper Yukon drainage - excluding the Tanana River system)). The fishing season in the lower Yukon area was reopened on August 13 for one week and 106,300 fall chums were taken from the late run (presumably Tanana River stocks).

Coho Salmon Commercial Fishery

The 1981 commercial catch of 23,500 coho salmon was above the previous 5-year average of 19,000 fish. Cohos are generally of minor importance and are taken incidentally to the more abundant fall chum salmon.

Subsistence Fishery

Yukon River subsistence catches tabulated to date total 23,400 king and 324,800 other salmon, primarily chums, compared to the recent 5-year average of 27,300 king and 343,200 other salmon (Table 7).

Escapement

Aerial surveys of king salmon spawning streams in the Alaskan portion of the drainage were severely limited due to turbid water conditions and inclement weather. King salmon escapements in the few index spawning areas adequately surveyed ranged from average to above average (Table 8). Record escapements were documented in the South Fork of the Nulato River and several major streams in the Yukon Territory (Canada). The Whitehorse Dam fishway count of 1,555 kings was the largest on record. The quality of the king salmon escapement, in terms of large numbers of older age females, was very good. The majority of spawners were age 6 females.

Summer chum escapements were above average in the few streams that could be adequately surveyed. Table 9 presents available comparable escapement data in various index streams. In the Anvik River system, the major summer chum salmon producer in the drainage, an estimated escapement of 1,479,600 chums were enumerated by side scan sonar.

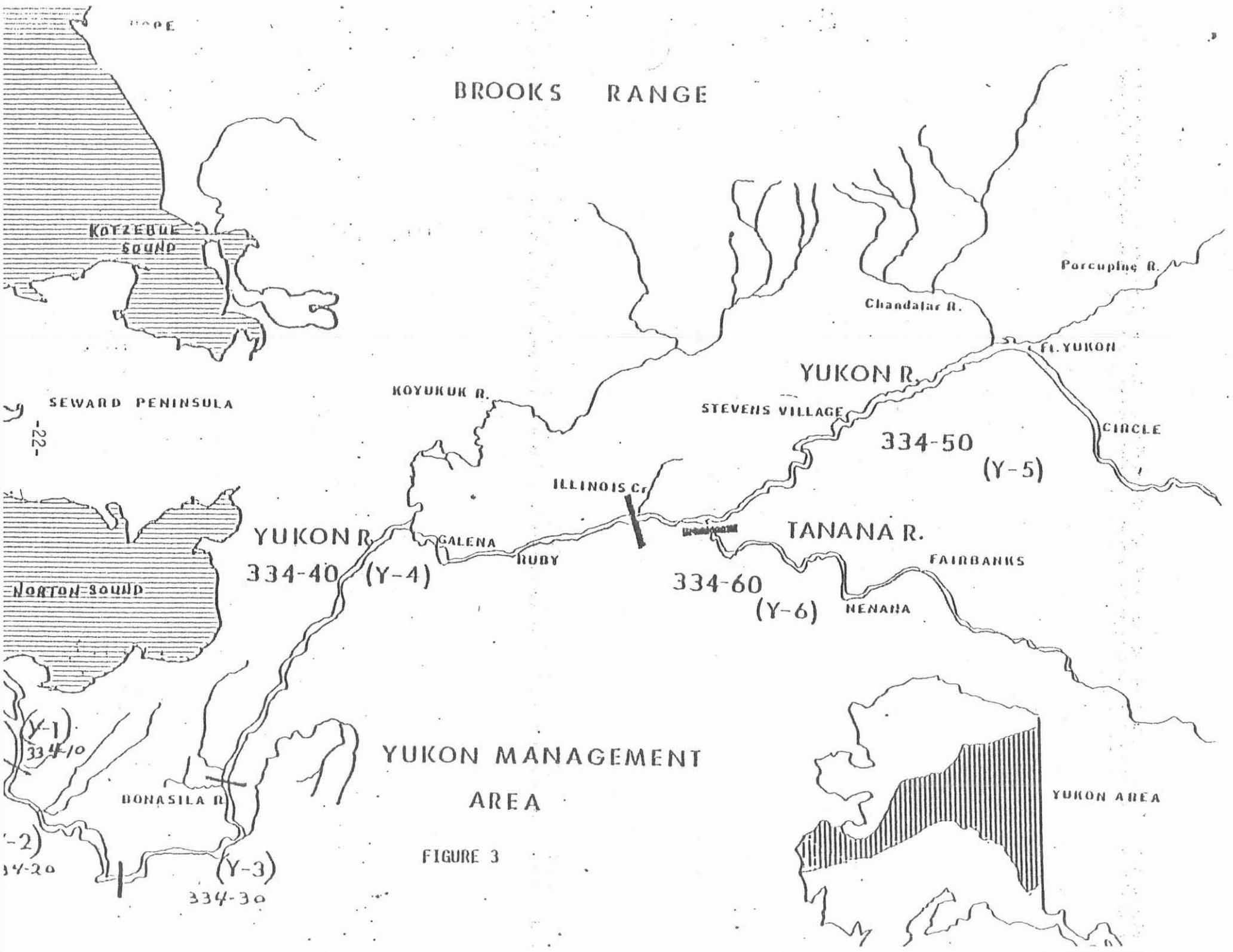
Comparative fall chum and coho salmon escapement data is presented in Table 10. Inclement weather and incomplete surveys resulted in poor documentation of the fall chum escapements from the early run segment

which appeared especially strong based on commercial catch data. Aerial surveys of the late fall chum run (Tanana River) indicated that escapements were below average in the Toklat River and above average in the upper Tanana River drainage. A record escapement of 22,400 fall chums were enumerated in the Delta River. Generally, escapements documented in 1981 were similar in magnitude to the 1977 brood year escapement levels.

Tanana River drainage coho salmon escapements were considered average to above average in magnitude.

Outlook for 1982

Based on parent year (1976) catch and escapement information and subsequent survival of the progeny, the magnitude of the Yukon River king salmon run in 1982 is expected to be above average in magnitude. Survival from the 1976 escapement is apparently good as indicated by the large incidental catch of 4 year old kings taken in the 1980 Japanese high seas mothership fishery. Summer chum salmon runs in 1982 are expected to be average to above average in magnitude. The magnitude of the fall chum salmon run is expected to be average.



YUKON MANAGEMENT
AREA

FIGURE 3

KING SALMON

Year	Lower Yukon Area				Upper Yukon Area				Totals
	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	
1960	50,713	15,394	-	66,107	-	-	-	884	67,591
1961	84,463	29,028	4,965	118,456	-	-	-	1,304	120,260
1962	57,099	22,224	4,537	84,860	-	-	-	724	94,734
1963	85,004	24,211	6,376	115,591	-	-	-	803	116,994
1964	57,555	20,246	4,705	82,506	-	-	-	1,081	93,587
1965	89,268	23,763	3,204	116,235	-	-	-	1,863	118,098
1966	70,788	16,327	3,512	90,627	-	-	-	1,988	93,315
1967	104,350	20,289	3,518	128,157	-	-	-	1,449	129,706
1968	79,465	21,392	4,543	105,400	-	-	-	1,125	106,525
1969	70,862	14,799	3,577	89,238	-	-	-	985	90,223
1970	57,681	17,210	3,712	78,603	-	-	-	1,666	80,269
1971	86,042	19,225	3,490	108,758	-	-	-	1,749	110,507
1972	70,052	17,855	3,341	91,248	-	-	-	1,092	92,340
1973	58,981	13,859	3,204	76,044	-	-	-	1,309	77,353
1974	71,680	17,947	3,471	93,098	685	2,563	1,473	4,321	97,919
1975	44,585	11,187	4,207	59,979	389	2,372	500	3,261	63,740
1976	82,532	17,413	4,239	104,184	385	2,900	1,102	4,387	108,571
1977	69,455	16,781	3,343	89,579	959	4,257	1,008	6,224	95,803
1978	57,390	32,335	2,917	92,642	701	3,115	644	4,460	97,602
1979	76,269	41,357	5,108	122,734	1,969	3,520	826	6,315	129,049
1980	87,371	50,824	5,240	143,435	1,521	5,338	2,076	8,935	152,370
1981	99,219	45,302	4,023	148,544	1,349	6,452	1,164	8,965	157,509

COHO SALMON

Year	Lower Yukon Area				Upper Yukon Area				Totals
	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	
1960	-	-	-	-	-	-	-	-	-
1961	2,355	-	-	2,355	-	-	-	-	2,355
1962	22,926	-	-	22,926	-	-	-	-	22,926
1963	5,572	-	-	5,572	-	-	-	-	5,572
1964	2,446	-	-	2,446	-	-	-	-	2,446
1965	350	-	-	350	-	-	-	-	350
1966	19,254	-	-	19,254	-	-	-	-	19,254
1967	9,925	-	1,122	11,047	-	-	-	-	11,047
1968	13,153	-	150	13,303	-	-	-	-	13,303
1969	14,041	-	845	14,886	-	-	-	95	14,981
1970	12,245	-	-	12,245	-	-	-	-	12,245
1971	12,165	-	-	12,165	-	-	-	38	12,203
1972	21,705	506	-	22,211	-	-	-	22	22,233
1973	34,360	1,781	-	36,141	-	-	-	-	36,141
1974	13,728	176	-	13,904	-	909	1,427	2,336	16,240
1975	2,288	-	-	2,288	-	5	53	58	2,346
1976	4,084	17	-	4,101	-	-	1,096	1,096	5,197
1977	30,588	5,312	521	36,421	-	-	1,284	1,284	37,705
1978	16,262	5,335	758	22,355	32	7	3,066	3,105	25,960
1979	11,244	2,920	-	14,164	155	-	2,783	2,938	17,082
1980	4,328	2,650	-	6,978	27	-	1,226	1,253	8,741
1981	13,154	7,037	427	20,618	-	-	2,060	2,060	22,678

CHUM SALMON

Year	Lower Yukon Area				Upper Yukon Area				Totals
	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	
1960	-	-	-	-	-	-	-	-	-
1961	42,577	-	-	42,577	-	-	-	-	42,577
1962	53,160	-	-	53,160	-	-	-	-	53,160
1963	-	-	-	-	-	-	-	-	-
1964	3,347	-	-	3,347	-	-	-	-	3,347
1965	22,936	-	-	22,936	-	-	-	381	23,317
1966	69,836	-	1,209	71,045	-	-	-	-	71,045
1967	46,148	1,425	1,980	49,553	-	-	-	-	49,553
1968	62,352	1,407	3,136	67,895	-	-	-	-	67,895
1969	184,411	5,024	1,722	191,157	-	-	-	703	191,860
1970	320,138	22,394	3,285	345,817	-	-	-	907	346,724
1971	282,461	6,112	50	288,623	-	-	-	1,061	289,684
1972	250,945	33,805	1,840	286,590	-	-	-	1,254	287,844
1973	395,431	109,138	463	504,032	-	-	-	13,003	518,035
1974	641,663	127,644	2,273	771,580	37,079	30,382	40,202	107,663	879,243
1975	576,507	150,259	5,590	732,356	178,720	40,209	33,474	252,403	984,859
1976	382,216	120,959	14,504	517,679	213,019	6,247	24,564	243,830	761,509
1977	385,372	159,051	19,310	563,733	183,565	26,348	22,961	232,874	796,607
1978	523,557	277,386	38,728	839,671	375,517	25,907	47,354	448,778	1,288,449
1979	491,475	270,379	69,395	831,249	222,653	57,282	94,196	374,131	1,155,380
1980	497,353	394,412	58,090	950,855	306,796	42,802	58,357	407,955	1,358,810
1981	675,463	508,341	73,682	1,257,486	262,379	95,751	63,092	421,222	1,678,708

TOTAL SALMON

Year	Lower Yukon Area				Upper Yukon Area				Totals
	334-10	334-20	334-30	Subtotals	334-40	334-50	334-60	Subtotals	
1960	50,713	15,394	-	66,107	-	-	-	884	67,591
1961	129,395	29,028	4,965	163,388	-	-	-	1,304	165,692
1962	143,185	22,224	4,537	170,946	-	-	-	724	170,320
1963	90,576	24,211	6,376	121,163	-	-	-	803	122,566
1964	78,348	20,246	4,705	103,299	-	-	-	1,081	104,380
1965	112,554	23,763	3,204	139,521	-	-	-	1,863	141,384
1966	159,378	16,327	4,321	179,026	-	-	-	2,244	181,270
1967	160,423	21,714	8,520	190,657	-	-	-	1,988	192,645
1968	155,470	22,799	7,329	185,598	-	-	-	1,449	187,047
1969	269,314	19,323	6,144	294,781	-	-	-	1,125	295,906
1970	390,064	39,604	6,397	436,065	-	-	-	2,373	438,438
1971	380,568	25,338	3,540	409,446	-	-	-	2,348	411,794
1972	342,702	52,156	5,581	400,439	-	-	-	2,168	402,607
1973	487,272	124,778	3,667	615,717	-	-	-	14,312	630,029
1974	727,071	145,767	5,774	878,612	37,754	33,954	43,102	114,810	993,422
1975	623,480	161,445	5,797	790,722	179,109	43,086	34,027	256,222	1,046,944
1976	448,932	138,389	18,743	606,064	213,404	9,147	26,762	249,313	855,377
1977	486,015	181,144	23,744	690,903	184,524	31,115	25,243	240,882	931,816
1978	597,709	315,256	42,403	955,368	376,350	29,029	51,544	456,923	1,412,291
1979	578,988	315,256	74,503	968,747	224,777	60,802	57,785	343,364	1,312,111
1980	590,552	447,896	63,330	1,101,778	308,344	48,140	61,689	418,173	1,519,951
1981	757,536	559,480	78,132	1,425,148	264,328	102,203	66,316	432,847	1,858,295

Table 7. Yukon River comparative subsistence catch and effort data, 1961-1981 (numbers per fishing family are in parenthesis).

Year	Total Catch		Equivalent Catch 1/		Mean Equivalent Catch per Family 1/	
	King Salmon	Other Salmon 2/	King Salmon	Other Salmon 2/	King Salmon	Other Salmon 2/
1961	31,864	405,632	20,117	403,765	32	647
1962	21,610	356,754	10,217	325,244	18	577
1963	32,790	408,381	23,919	376,440	40	625
1964	22,877	485,630	14,847	458,609	25	762
1965	19,723	458,379	16,499	430,949	30	788
1966	14,272	214,236	11,507	204,913	23	416
1967	19,661	288,595	16,306	256,956	35	546
1968	15,006	189,607	11,883	170,552	25	358
1969	15,000	213,725	13,916	195,476	30	426
1970	15,794	223,237	13,474	199,163	34	498
1971	27,953	228,849	24,058	191,011	48	383
1972	21,868	151,008	19,314	129,343	46	311
1973	26,459	219,275	23,530	198,054	44	374
1974	23,137	323,834	19,014	284,977	38	580
1975	15,466	300,379	12,600	262,741	21	448
1976	19,329	262,624	16,196	235,056	25	358
1977	20,388	267,127	15,740	235,401	27	408
1978	30,297	299,791	25,496	255,447	36	360
1979	35,205	452,328	26,616	315,661	33	387
1980	58,224	479,713	38,749	436,321	51	571
1981 3/	23,367	324,848	19,058	256,862	27	357

Year	Fishing Families surveyed	People in fishing families 1/	Snowmachines 1/	Sled dogs 1/	Gear operated 1/	
					Gill nets	Fishwheels
1961	624	3,626 (5.8)		4,806 (7.7)	577	169
1962	564	3,279 (5.8)		3,848 (6.8)	613	138
1963	602	4,154 (6.9)		4,214 (7.0)	716	156
1964	602	3,612 (6.0)		4,003 (6.6)	840	155
1965	547	3,993 (7.3)		3,993 (7.3)	645	127
1966	492	3,149 (6.4)		3,112 (6.3)	582	116
1967	471	2,779 (5.9)	192 (0.4)	2,752 (5.8)	530	86
1968	476	3,094 (6.5)	262 (0.6)	2,719 (5.7)	565	71
1969	459	2,984 (6.5)	349 (0.8)	2,448 (5.3)	930	63
1970	400	2,680 (6.7)	346 (0.9)	2,214 (5.5)	647	55
1971	499	3,244 (6.5)	460 (0.9)	2,226 (4.5)	795	63
1972	416	2,621 (6.3)	438 (1.0)	1,589 (3.8)	755	59
1973	530	3,339 (6.3)	571 (1.1)	2,375 (4.5)	991	83
1974	491	3,093 (6.3)	534 (1.1)	2,105 (4.3)	668	90
1975	587	3,698 (6.3)	762 (1.3)	2,585 (4.4)	1,119	126
1976	657	4,139 (6.3)	882 (1.3)	3,401 (5.2)	1,071	154
1977	577	3,635 (7.3)	785 (1.4)	3,413 (5.9)	755	164
1978	711	3,929 (5.5)	843 (1.2)	3,722 (5.2)	943	178
1979	815	4,386 (5.3)	914 (1.1)	4,623 (5.7)	1,324	179
1980	764	4,101 (5.4)	891 (1.2)	4,874 (6.4)	939	179
1981	719	3,883 (5.4)	686 (0.9)	3,458 (4.8)		

1/ Data from villages surveyed each year since 1961: Mouth to Fort Yukon and Tanana River (does not include Fairbanks area).

2/ Mostly chum salmon, some pinks and cohos.

3/ Preliminary data.

Table 8. Comparative Yukon River drainage king salmon escapement estimates 1959-1981.1/

Year	Andreařsky River (East Fork)	Andreařsky River (West Fork)	Nuiato River	Anvik River
1960	1,020	1,220	756	1,950
1961	1,003		543	1,226
1962	675 <u>2/</u>	762 <u>2/</u>		
1963				
1964	867	705		
1965		355 <u>2/</u>		650 <u>2/</u>
1966	361	303		638
1967		276 <u>2/</u>		336 <u>2/</u>
1968	380	383		297 <u>2/</u>
1969	231 <u>2/</u>	274 <u>2/</u>		296 <u>2/</u>
1970	665	574 <u>2/</u>		368 <u>2/</u>
1971	1,904	1,284		
1972	798	582 <u>2/</u>		1,172 <u>4/</u>
1973	825	788		613 <u>4/</u>
1974		285	78	506 <u>5/</u>
1975	993	421	204	720 <u>6/</u>
1976	818	643	648	1,155 <u>6/</u>
1977	2,008	1,499	487	1,354 <u>6/</u>
1978	2,487	1,062	920	1,281 <u>6/</u>
1979	1,180	1,134	1,507	1,474 <u>4/</u>
1980	958 <u>2/</u>	1,500	1,323	1,330
1981	2,146 <u>2/</u>		791 <u>2/</u>	807 <u>2/</u>

Year	Chena River	Salcha River	Nisutlin River (Sidney-100 Mi. Cr.)	Whitehorse Dam Fishway
1959				1,054
1960	132	1,660		660
1961		2,878		1,068
1962		937		1,500
1963				484
1964		450		587
1965		408		903
1966		800		563
1967				533
1968		735	407	407
1969		461 <u>2/</u>	105	334
1970		1,882	615	625
1971	193 <u>2/7/</u>	159 <u>2/</u>	640 <u>3/</u>	856
1972	138 <u>2/7/</u>	1,193	317	392
1973	21	249	36 <u>2/</u>	228
1974	1,035 <u>7/</u>	1,857	48 <u>2/</u>	273
1975	316 <u>7/</u>	1,055	249	313
1976	531	1,691	102	120
1977	563	1,202	77	277
1978	1,726	3,499	375	670
1979	1,159	4,789	713	1,150
1980	2,541	6,757	975	1,391
1981	373 <u>2/</u>	1,237 <u>2/</u>	1,626	1,555

- 1/ With exception of Whitehorse fishway counts, the data was obtained from aerial surveys which were made only of the main stem of each river listed.
- 2/ Incomplete survey or poor survey conditions resulting in a very minimal count.
- 3/ Environment Canada - Fisheries Service survey.
- 4/ Combination tower counts and aerial survey estimates.
- 5/ Tower count.
- 6/ Combination aerial and boat surveys.
- 7/ Boat surveys.

Table 9. Comparative Yukon River drainage summer chum salmon aerial survey escapement estimates, 1958-1981.

Year	Summer Chums			
	Andreafsky River (East Fork)	Andreafsky River (West Fork)	Anvik River	Salcha River
1958			100-200,000	
1959			200,000	
1960	3,830		11,110	670
1961	8,110			1,152
1962	18,040	19,530	20,600	1,161
1963				
1964		12,810	12-14,000 <u>1/</u>	250 <u>1/</u>
1965		14,670 <u>1/</u>	100,000	2,375
1966	25,619	18,145	37,500	2,200
1967		14,495 <u>2/</u>	116,000	
1968	17,600 <u>2/</u>	74,600 <u>2/</u>	51,580 <u>1/</u>	3,790
1969	119,000	159,500		425 <u>1/</u>
1970	84,090	91,710 <u>1/</u>	232,780	7,879
1971	98,095	71,745		306 <u>1/</u>
1972	41,460	25,573	245,857 <u>3/</u>	947 <u>1/</u>
1973	10,149 <u>1/</u>	51,835	86,665 <u>3/</u>	290
1974	3,215 <u>1/</u>	33,258	201,277 <u>4/</u>	8,040 <u>5/</u>
1975	223,485	235,954	845,485	7,573
1976	105,347	118,420	406,166 <u>3/</u>	6,474
1977	112,722	63,120	262,754	677
1978	127,050	57,321	251,399 <u>3/</u>	5,405
1979	66,471	43,391	345,827 <u>6/</u>	3,060
1980	36,823 <u>1/</u>	114,759	482,181 <u>7/</u>	4,140
1981	152,655 <u>7/</u>		1,479,582 <u>7/</u>	6,111

- 1/ Poor or incomplete survey.
2/ Includes some pinks.
3/ Combined tower and aerial survey estimates.
4/ Tower counts.
5/ Combined aerial and boat surveys.
6/ Combined sonar count and aerial survey.
7/ Sonar count.

Table 10. Comparative Yukon River drainage fall chum salmon aerial survey escapement estimates, 1971-1981 ^{1/}

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
<u>TANANA RIVER DRAINAGE</u>											
Bear Paw River	-	-	1,530	2,996	1,657	-	-	-	-	-	-
Toklat River drainage											
Upper Toklat River ^{3/}	-	1,000 ^{2/}	6,957	34,310	42,418	35,224	25,000	35,000	107,593 ^{8/}	23,054	13,907
Lower Toklat River	-	-	-	-	35,867	2,000 ^{2/}	-	-	64,540	2,140	-
Subtotal Toklat R. drainage			6,957	34,310	78,285	37,224	25,000	35,000	172,133	25,194	13,907
Upper Tanana River drainage											
Benchmark #735 Slough	-	5,255	127 ^{2/}	1,450	-	336	1,270	1,705	2,714	1,619 ^{7/}	168 ^{2/}
Delta River	-	3,650	7,971	4,010	3,946 ^{7/}	5,526	17,925	10,051	8,125	4,637	22,375 ^{7/}
Upper Tanana River ^{4/}	-	8,350	5,635	4,567	-	4,979	3,725	5,700	20,820	3,444	7,063
Bluff Cabin Slough	-	6,040	3,450	4,840	5,000 ^{2/}	3,197	6,491	5,340	6,875	3,190	5,703
Delta Clearwater Slough (1 Mile Slough)	-	-	1,720	1,235	745 ^{2/}	1,552	1,900	475	3,850	885	632
Subtotal Upper Tanana R. drainage		23,295	18,903	16,102	9,691	15,590	31,311	23,271	42,384	13,775	35,941
<u>CHANDALAR RIVER</u>	-	-	-	17,455	6,345 ^{2/}	58 ^{2/}	4,183	-	-	2,988	4,906
<u>PORCUPINE RIVER DRAINAGE</u>											
Sheenjek River	-	-	1,175	40,507	78,060	12,023	20,506	14,610	41,140	13,027	12,625
Fishing Branch River (Yukon Terr)	250,300,000	35,125 ^{5/}	15,987 ^{6/}	32,525 ^{6/}	353,282 ^{6/}	13,450	32,500	15,000	44,080	20,319	10,549
Subtotal Porcupine R. drainage	250-300,000	35,125	17,162	73,032	431,342	25,473	53,006	29,610	85,220	33,346	23,174
TOTAL	250-300,000	59,420	44,552	143,895	527,320	78,345	113,500	87,881	299,737	75,303	77,928

1/ All surveys rated fair-good unless rated otherwise. Only peak estimates listed.

2/ Poor or incomplete survey; very minimal and/or rough estimate.

3/ Includes following areas: Toklat River in vicinity of roadhouse, Shushana River and Geiger Creek.

4/ Richardson Highway Bridge to Blue Creek.

5/ Combined tagging population estimate and weir count.

6/ Weir count.

7/ Foot survey.

8/ Combined aerial and ground survey estimates.

NORTON SOUND AREA

Introduction

This area includes all waters from Canal Point Light north to Cape Douglas. It is subdivided into six subdistricts, each containing at least one major salmon spawning stream (Figure 4). Commercial fishing is conducted with set gill nets, primarily near stream mouths. It is assumed that the majority of salmon captured commercially in each subdistrict are bound for streams within that subdistrict; however, this assumption is only now being studied by stock separation programs.

Commercial Fishery

The 1981 commercial salmon harvest of 442,700 fish was the third largest on record and included 7,900 king, 31,600 coho, 233,500 pink and 169,700 chum salmon (Table 11). The coho salmon harvest was the largest ever documented. King, pink and chum salmon catches were above the recent 5-year average.

A total of 167 fishing vessels participated in the commercial fishery in 1981, which was similar to 1980. CFEC gillnet permits issued in 1981 totaled 199. Commercial fishermen earned approximately \$814,000 for their catch.

Subsistence Fishery

Subsistence fishermen caught a reported 68,700 salmon in 1981, which represents a 130% increase above the recent 5-year annual average harvest. The chum and coho salmon catches were the largest ever reported.

Escapement

Aerial surveys were flown to help assess escapement (Table 12) and to investigate the feasibility of a commercial fishery in the Stebbins - St. Michael area. Weather was unsuitable for aerial surveys during the latter half of the chum run and most of the pink run. Chum salmon escapements appeared to be above average in northern Norton Sound and average in southern Norton Sound. Pink salmon aerial survey estimates were severely limited by inclement weather. However, a record 551,500 pink salmon were enumerated at the Kwiniuk River counting tower.

Poor weather also hampered aerial surveys in the Stebbins - St. Michael area. Very small pink and chum salmon escapements were observed in this area.

Outlook for 1982

Based on limited parent year escapement data and comparative commercial catch data, chum salmon returns for Norton Sound in 1982 can be expected to be average to slightly above average in magnitude. Parent year pink escapements in 1980 were the largest ever documented and could indicate a very large return in 1982.

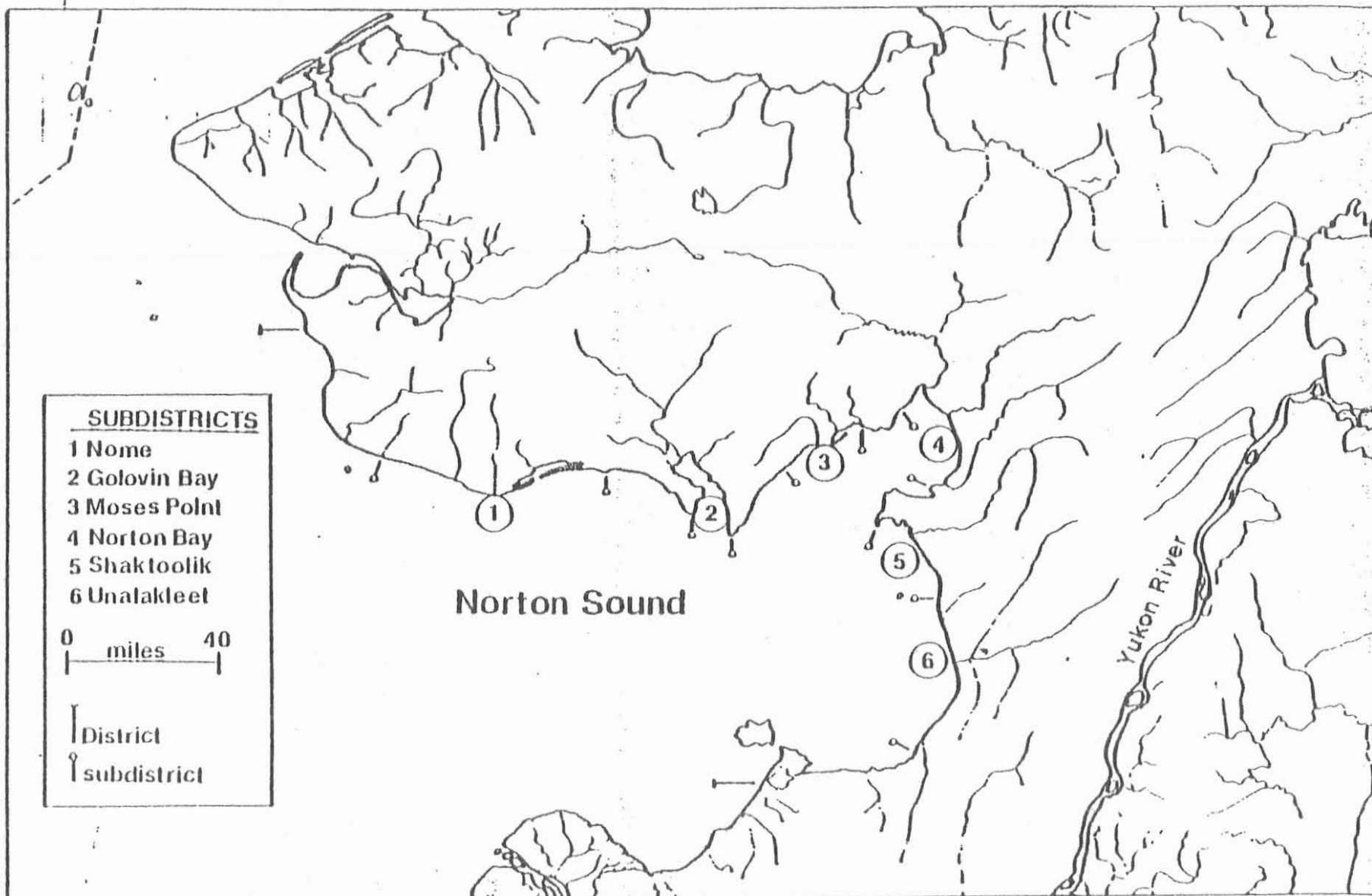


Figure 4. Norton Sound district and subdistricts.

Table 11. Commercial salmon catches by species, Norton Sound district
1961-1981.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1961	5,300	35	13,807	34,332	48,332	101,711
1962	7,286	18	9,156	33,187	182,784	232,431
1963	6,613	71	16,765	55,625	154,789	233,863
1964	2,018	126	98	13,567	148,862	164,671
1965	1,449	30	2,030	220	36,795	40,524
1966	1,553	14	5,755	12,778	80,245	100,345
1967	1,804	-	2,379	28,879	41,756	47,818
1968	1,045	-	6,885	71,179	45,300	124,499
1969	2,392	-	6,836	86,949	82,795	178,972
1970	1,853	-	4,423	64,908	107,034	178,218
1971	2,593	-	3,127	4,895	131,362	141,977
1972	2,938	-	454	45,182	100,920	149,494
1973	1,918	-	9,282	46,499	119,093	176,797
1974	2,981	-	2,092	148,519	162,267	315,829
1975	2,393	2	4,593	32,388	212,485	251,861
1976	2,248	11	6,934	87,916	95,956	193,060
1977	4,500	5	3,690	48,675	200,455	257,325
1978	9,819	12	7,335	325,503	189,279	531,948
1979	10,706	-	31,438	167,411	140,789	350,344
1980	6,311	40	29,967	277,352	180,792	444,462
1981	7,929	56	31,562	232,479	169,708	441,734
5-year						
Average ^{1/}	6,717	14	15,823	181,371	161,454	355,428
10-year						
Average ^{2/}	4,641	7	9,891	118,434	88,758	281,310

^{1/} 1976 - 1980

^{2/} 1971 - 1980

Table 12. Comparative aerial surveys of Norton Sound streams, 1961-1981.

<u>YEAR</u>	<u>CHUM</u>	<u>PINK</u>	<u>PINK AND CHUM</u>
Nome (Subdistrict 1)			
<u>NOME RIVER</u>			
1960	-	410	
1963	126	3,719	
1964	-	-	480
1965	294	-	
1971	75	7,755	
1973	710	14,960	
1974	854	17,830	
1975	975	3,405	
1976	1,200	6,700	
1977	3,046	1,726	
1978	5,242	34,900	
1979	-	-	750
1980	7,745	171,350	
1981	1,195	12,565	
Golovin (Subdistrict 2)			
<u>NIUKLUK RIVER</u>			
1962	-	-	27,879
1964	13,687	4,103	
1966	21,300	8,600	4,700
1967	20,546	-	
1968	-	-	85,125
1969	10,240	92,650	
1970	7,300	60,300	
1971	22,605	8,370	
1972	10,500	22,600	
1973	13,156	14,325	
1974	8,720	8,915	
1975	16,453	10,089	
1976	4,134	7,190	
1977	10,456	1,921	
1978	14,365	208,300	
1979	8,213	29,100	
1980	8,915	75,770	
1981	7,249	-	
Moses Pt. (Subdistrict 3)			
<u>KWINIUK RIVER</u> 3/			
1965	26,634	8,301	
1966	32,786	10,629	
1967	24,444	3,508	
1968	18,813	126,764	
1969	19,313	56,683	
1970	68,004	235,135	
1971	38,679	16,634	
1973	28,617	38,426	
1974	35,399	40,816	
1975	14,344	57,317	

Table 12. (cont.) Comparative aerial surveys of Norton Sound Streams, 1961-1981.

<u>YEAR</u>	<u>CHUM</u>	<u>PINK</u>	<u>PINK AND CHUM^{1/}</u>
1976	6,466	28,087	
1977	22,757	46,234	
1978	14,408	75,993	
1979	12,355	167,492	
1980	19,844	327,543	
1981	34,875	551,505	
Shaktoolik (Subdistrict 5)			
<u>SHAKTOOLIK RIVER</u>			
1961	-	-	10,300
1962	-	-	36,417
1963	-	-	29,987
1964	-	-	16,327
1966	-	-	4,060
1975	16,601	37,971	
1976	1,736	12,175	
1977	20,899	7,602	
1978	19,972	203,303	
1979	4,350	40,450	
1980	3,019	69,915	
1981	165 ^{2/}	-	
Unalakleet (Subdistrict 6)			
<u>UNALAKLEET RIVER</u>			
1961			50,260
1962			46,838
1963			19,305
1964			28,214
1966			5,200
1968			112,812
1970	950	95,075	
1972	7,852	12,450	
1975	10,501	16,750	
1976			38,325
1977	16,038	18,170	
1978	28,600	491,706	
1979	570	7,700 ^{2/}	
1980	11,105	166,390	
1981	55 ^{2/}	-	

^{1/} Not distinguished by species.

^{2/} Poor survey.

^{3/} Counting tower

KOTZEBUE AREA

Introduction

This area includes all waters from Cape Prince of Wales north to Point Hope (Figure 5). The major salmon species in this area are chum salmon, bound primarily for the Kobuk and Noatak rivers. The Kobuk River run, smaller than the Noatak River run, arrives in the district first soon after ice break-up. The Kobuk River run peaks during the third week of July, while the Noatak River run peaks during the second week of August. These fish are used not only within the commercial fishery in Kotzebue Sound, but also by five subsistence villages on the Kobuk River and one on the Noatak River.

Commercial Fishery

The chum salmon harvest of 677,200 fish was the largest on record and more than three times above the recent 5-year average catch of 195,200 fish (Table 13). A total of 187 fishermen participated in the commercial fishery in 1981, which was above the 1980 levels. Two hundred twenty C.F.E.C. gillnet permits were issued in 1981. Commercial fishermen earned approximately \$3,247,000 for their catch.

Kotzebue commercial chum salmon catches averaged about 85,000 fish during 1962-1972, but due to exceptionally large runs increased to an average of 524,500 fish in 1973-75, during which time fishing effort increased sharply (Table 14). Harvests and escapements made during 1976-78 were more similar to pre-1973 levels, but fishing effort has remained high.

This season the commercial fishery opened on July 9 and initial fishing periods were set at two 24-hour periods per week. Fishing time was increased on July 20 to two 36 hour periods a week. Additional increases in weekly fishing time were initiated on July 27 (two-48 hour periods) and August 5 (one-6 day period). The six day a week schedule was maintained throughout the remainder of the season. Each increase in fishing time was justified by comparative catch statistics and Noatak River Sonar counts which indicated an above average run and that escapement goals would be met.

Subsistence Fishery

A subsistence harvest of 17,400 chums was reported by 66 fishermen which was above the recent 5 year average annual harvest.

Escapement

This year record escapements were documented in the Noatak River. Side scan sonars were operated from each bank of the lower river and counted 336,600 chum salmon. This high escapement was partially verified by an aerial survey count of 116,400 chum (Table 14).

Escapement in the Kobuk River system was considered average based on aerial surveys and interviews with subsistence fishermen (Table 14).

Outlook for 1982

The Kotzebue research biologist is developing a chum salmon forecast which is fairly new and still in the testing stages but did predict the large 1981 run. The 1982 chum run is predicted to have a range of 400,000 to 700,000 with a point estimate of 606,000 fish. The projected chum salmon return of 606,000 fish would be sixth largest documented return. However, this return would be about one-half of last year's record return.

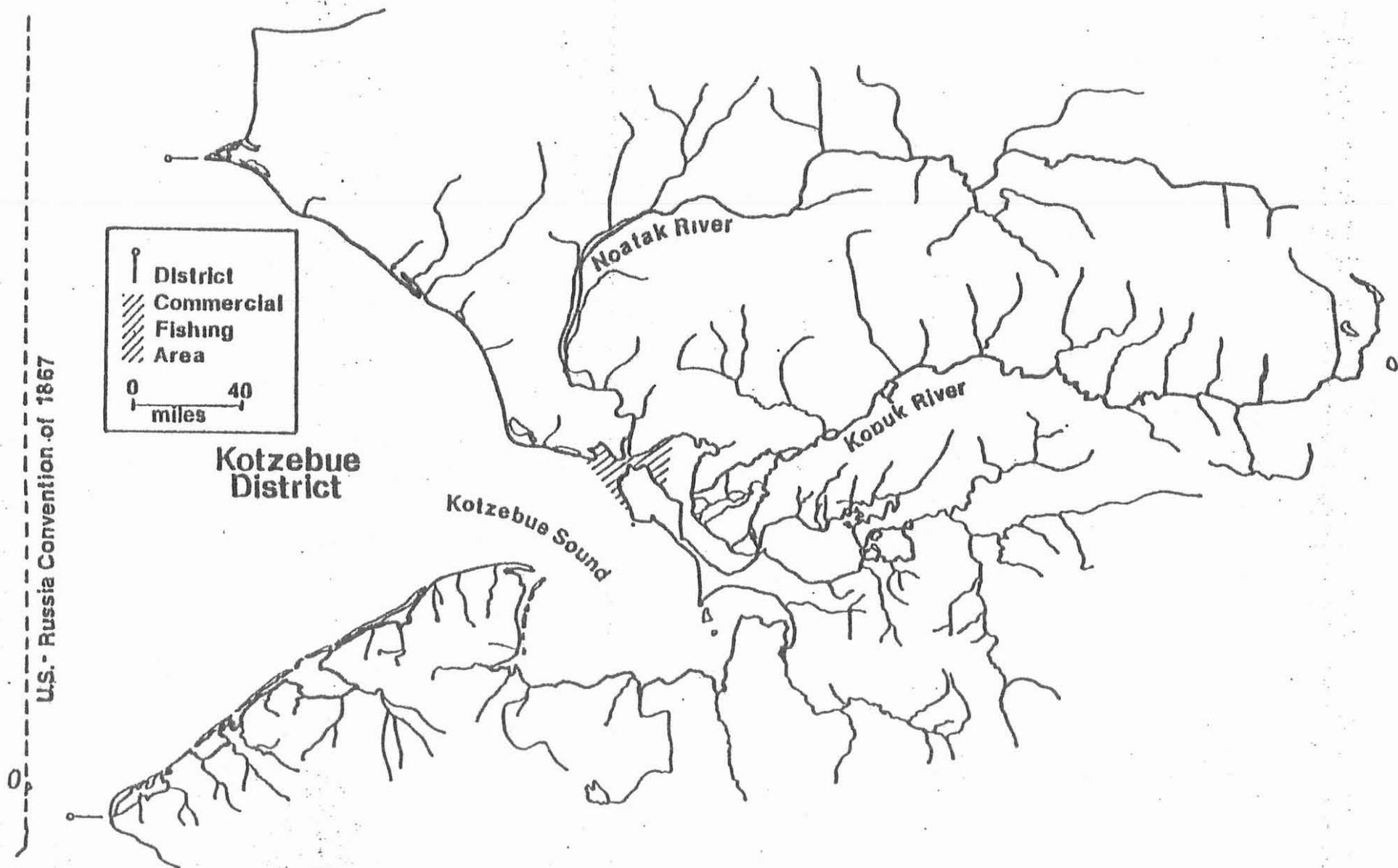


Figure 6. Kotzebue Area.

Table T3. Commercial and subsistence salmon catches, Kotzebue district, 1914-1981.

Year ^{1/}	Commercial catch			Subsistence catch	Combined Catches
	Chum ^{2/}	Other ^{3/}	Total	Chum	
1914	8,550		8,550		
1915	4,750		4,750		
1916	19,000		19,000		
1917	44,612		44,612		
1918	27,407		27,407		
1957 ^{4/}				298,430	
1962	129,948	127	130,075	70,283	200,358
1963	54,445	143	54,588	31,069	85,657
1964	76,499	5	76,504	29,762	106,266
1965	40,034		40,034	30,500	70,534
1966	30,764	1	30,765	35,588	66,353
1967	29,400		29,400	40,108	69,508
1968	30,384 ^{5/}		30,384	20,814	51,198
1969	59,335	48	59,383	29,812	89,195
1970	159,664		159,664	28,486	188,150
1971	154,956	1	154,957	23,959	178,916
1972	169,664	3	169,667	11,085	180,752
1973	375,432	5	375,437	18,942	394,379
1974	634,479 ^{6/}	48	634,527	26,729	661,256
1975	563,682 ^{7/}	36	563,718	27,605	591,323
1976	159,796	2	159,798	15,765	175,563
1977	195,895		195,895	9,752	205,647
1978	111,533	7,007	118,590	12,864	131,404
1979	141,623	910	142,455	14,605	157,060
1980	367,284	1,654	368,938	10,945	379,883
1981	677,239	237	677,566	17,400	694,639
five year average ^{8/}	195,226	1,915	197,141	12,786	209,927

1/ There was no commercial fishing during 1919-1961.

2/ Catches for 1914-1918 from pack data only; numbers of chums estimated at 9.5 per case (#48) and 34 per barrel.

3/ Mostly pinks, but includes chinook salmon and sockeye salmon.

4/ Estimated mean annual catches prior to 1957 (study by Raleigh).

5/ Corrected from 1968 annual report due to addition of late catches.

6/ Includes 6,567 chum salmon harvested from Deering experimental fishery.

7/ Includes 10,704 chum salmon harvested from Deering experimental fishery.

8/ 1976-1980

Table 14. Comparative chum salmon catch, effort, and escapement data, Kotzebue district, 1962-1981

	Average 1962-72	1973	1974	1975	1976	1977	1978	1979	1980	1981
Commercial Catch	85,000	375,400	627,900 ^{1/}	553,000 ^{1/}	159,800	195,900	111,500	141,600	367,284	677,239
# of Fishermen Fishing	62	136	174	258	219	222	208	181	176	187
Noatak River Escapement ^{2/}	78,000	32,000	130,000	96,500	44,500	11,000	37,500	17,800	164,474	116,352
Noatak River Sonar									283,379	336,619
Kobuk River Escapement ^{2/}	13,000	19,000	62,000	40,500	8,000	<u>3/</u>	4,000	<u>3/</u>	21,942	14,563

^{1/} Does not include data from Deering experimental fishery.

^{2/} Peak aerial survey counts, Kobuk River data includes only Squirrel and Salmon Rivers.

^{3/} No estimate due to poor aerial survey conditions.