

ARCTIC-YUKON-KUSKOKWIM REGION  
SALMON FISHERY REPORT

A REPORT TO THE  
ALASKA BOARD OF FISHERIES

NOVEMBER 1980

ALASKA DEPARTMENT OF FISH AND GAME  
DIVISION OF COMMERCIAL FISHERIES

## 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, which is equal to the combined areas of California, Oregon, Washington and Idaho. 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 3.3 million salmon was made in the region during 1980. King, red, coho and chum salmon catches were the largest ever recorded. Exceptionally large catches of kings in the Yukon area and chums in the Kuskokwim area were made. The 1980 harvest represented 17.5 million pounds (round weight) of salmon. Fishermen earnings totaled \$10.9 million. The vast majority of commercial fishermen are Eskimo and

Indian residents of the region.

Commercial harvests in the region have increased about thirty 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 1980 and previous years for each management area are shown below:

<u>Area</u>	<u>King</u>	<u>Red</u>	<u>Coho</u>	<u>Pink</u>	<u>Chum</u>	<u>Total</u>
Kuskokwim	48,242	42,214	327,908	30,306	560,393	1,009,063
Yukon	152,870	-	8,741	-	1,358,310	1,519,921
Norton Sound	6,311	40	29,967	227,352	180,792	444,462
Kotzebue	123	-	-	1,531	367,284	368,938
Totals	207,546	42,254	366,616	259,189	2,466,779	3,342,384
Previous Season Record	193,100 (1979)	39,500 (1979)	359,200 (1979)	395,300 (1978)	1,984,600 (1975)	2,732,700 (1978)
5 Year Average (1975-79)	151,400	20,800	236,900	153,200	1,668,800	2,231,100

#### 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 welfare payments and employment opportunities, including commercial fishing activities, became available to the native people. Another very important factor tending to affect subsistence fishing effort during this period was the increased use of snow vehicles which 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.

Subsistence catch data for 1980 is preliminary at this time since a few late catch reports are still being received. The projected 1980 harvest should approximate 730,000 salmon. The recent average annual subsistence harvest recorded during the 1975-79 period was 638,000 salmon.



## KUSKOKWIM AREA

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 1980 Kuskokwim area commercial salmon harvest of 1,009,100 fish was the largest catch ever recorded and was 309,900 fish more than the previous record set in 1979. This catch was primarily a reflection of the unusually strong chum salmon run experienced in the Kuskokwim River. Species composition of the 1980 catch was 48,200 kings, 42,200 reds, 327,900 cohos, 30,300 pinks, and 560,400 chum salmon. The red, coho and chum salmon catches were at record levels. Table 1 presents annual commercial catches since 1960.

A total of 803 C.F.E.C. permits were issued in 1980. Commercial fishermen earned approximately \$2,725,000 for their catch.

### Kuskokwim River

#### King Salmon

In 1980 the combined Kuskokwim River commercial and subsistence catch totaled 95,800 fish (Table 2). The commercial harvest in districts 1 and 2 of 35,900 kings was similar to the recent five year average (Table 1). The majority of the commercial catch was taken in district 1. A total of 34,200 kings were harvested in district 1 (including

an incidental catch of 7,400 taken with gill nets of 6 inch or smaller mesh size. Fishing time during the commercial "king salmon season" in district 1 consisted of two 6-hour periods. 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 25 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 1980 king salmon run was average compared to recent years.

#### Chum Salmon

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 483,200 fish, the largest on record, was attributed to good escapement during the brood year, and favorable environmental factors resulting in high survival. Due to an exceptionally early run of chums (first fish caught in Bethel on June 4th), the season was opened three days prior to the published opening date of June 26. Commercial fishermen

were allowed a total of 24 hours of fishing (four 6-hour periods) this season, compared to the 48 hours allowed in 1978 and 30 hours in 1979. 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 648,200 was the largest documented chum salmon catch since 1960 (Table 4).

#### Coho Salmon

The run this year was also judged above average in magnitude. The commercial coho salmon catch of 222,000 fish was 24 percent above the previous five year average. Commercial coho salmon fishing effort is presented in Table 3. Because of the dynamics of the coho run, individual period catch's were consistently strong but did not establish new period records. Fishermen were allowed two 6 hour periods per week in district 1 totaling 48 hours for the season. In comparison 144 hours were allowed in 1977, 108 hours in 1978 and 72 hours in 1979.

#### Subsistence Fishery

The 1980 Kuskokwim River subsistence king salmon harvest of 59,900 kings, the largest on record since 1970, reflected a 12 percent increase over the recent 5-year average catch of 52,900 fish. The subsistence chum salmon harvest of 165,000 was slightly below the recent 5-year average catch of 174,500.

## Quinhagak and Goodnews Bay

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 12,400 kings, 41,900 reds, 105,900 cohos, 29,500 pinks and 77,200 chums, totaling 266,900 fish, were harvested in these two districts during 1980 (Table 1). Harvest of red and coho salmon were the largest recorded to date.

### Escapement

Most spawning streams were consistently turbid during the 1980 season in most portions of the Kuskokwim area. Aerial surveys of streams where water conditions were not turbid indicated average escapements of king salmon. Ignatti weir on the Holitna River was unable to operate due to high water levels. Table 5 presents comparative king salmon escapement data. Although information is limited, escapements for all species in the Kanektok and Goodnews River systems appeared to be at least average. Red and chum salmon escapement was observed to be strong this season.

### Outlook for 1981

Based on brood year escapement data, the return of king salmon to the Kuskokwim River in 1981 would normally be expected to be below average to average in magnitude. However, apparent good survival of fish from 1975 brood year (large return of age 5<sub>2</sub> fish in 1980) could result in an improved return for 1981. Limited comparative brood year escapement data is available for Kuskokwim River chum and coho stocks, however comparative commercial catch data indicate an average return of these species in 1981.

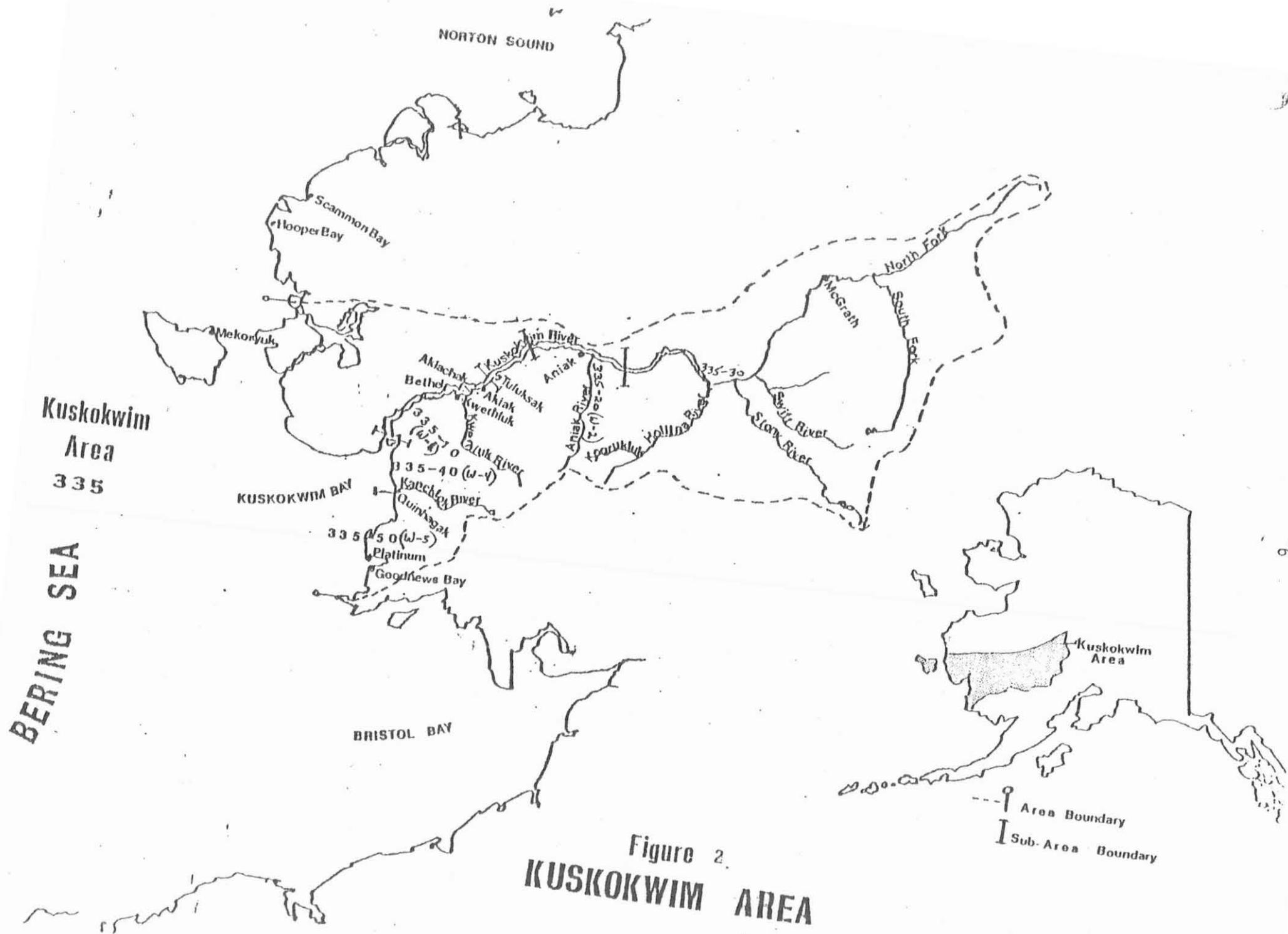


Table 1. Kuskokwim area commercial catches by drainage, 1960-1980.

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	15,660	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 4/	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	231,393	5,832	248,656	514,255
1979	38,966	1,054	219,060	78	261,874	521,032
1980	35,881	360	222,042	803	483,211	742,297
Previous 5 yr Average	34,578	2,832	168,853	1,251	223,791	431,305

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	18,864	25,636
1962	5,526	10,313	0	4,340	45,707	65,886
1963	6,555	0	0	0	0	6,555
1964	4,081	13,422	379	939	707	19,528
1965	2,976	1,886	0	0	4,242	9,104
1966	278	1,030	0	268	2,610	4,186
1967	0	652	1,926	0	8,087	10,665
1968	8,879	5,884	21,511	75,818	19,497	131,589
1969	16,802	3,784	15,077	953	38,206	74,822
1970	18,629	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 4/	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	47,825	295	25,995	103,787
1980	10,387	13,222	62,610	21,671	65,984	173,874
Previous 5 yr Average	12,121	9,322	20,237	15,886	34,678	92,244

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	45,630
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 4/	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	11,198	92,892
Previous 5 yr Average	3,665	8,644	19,235	3,638	8,246	43,428

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

2/ District 335-40

3/ District 335-50 and includes Chagvan Bay.

4/ Final catch data used.

Table 2. Total 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	57,917	88,652
1977	35,830	55,339	91,169
1978	45,641	37,049	82,661
1979	38,966	54,381	93,347
1980	35,881	59,870	95,751
Previous 5 yr. average	34,578	52,911	87,489

1/ Districts 335-10, 335-20 and 335-30.

2/ Catches are expanded and include all villages surveyed each year.

Table 3. Kuskokwim River commercial effort data, 1965-1980.

Year	King Season	Chum Season	Coho Season
1965	195		
1966	210		107
1967	233		147
1968	303		242
1969	329		231
1970	361		256
1971	418	216	83
1972	405	176	245
1973	456	341	411
1974	606	457	516
1975	472	540	533
1976	561	517	516
1977	563	522	572
1978	615	617	597
1979	591	617	613
1980	553	579	586

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

Table 4. Total utilization of Kuskokwim River chum salmon, 1960-1980.

Year	Commercial Catch <u>1/</u>	Subsistence Catch <u>2/3/</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	358,229
1976	177,864	223,792	401,656
1977	248,721	210,294	458,915
1978	248,656	118,341	368,071
1979	261,874	155,118	416,992
1980	483,211	165,019	648,230
Previous 5 yr. average	223,791	174,513	398,304

1/ Districts 335-10 and 335-20.

2/ Catches are expanded and include all villages surveyed each year.

3/ Includes small numbers of red and coho salmon.

Table 5. Index counts of Kuskokwim River king salmon spawning escapements, 1965-1980.

Year	Aerial Surveys				Counting Tower	Ignatti Weir
	Kisaralik River	Aniak River (Above Salmon R.)	Chukowan River	Kogruluk River	Kogruluk River	Holitna 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	1,118	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	1,988 <u>4/</u>	1,385 <u>4/</u>
1978 <u>6/</u>	2,417	-	1,064	-	7,405	13,132
1979	-	-	-	-	<u>5/</u>	10,125
1980	- <u>6/</u>	- <u>7/</u>	- <u>7/</u>	540	<u>5/</u>	- <u>8/</u>

1/ ADF&G Annual Management Report, Kuskokwim area, 1978.

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

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 1980 commercial harvest of 1,519,900 salmon was the largest in history and exceeded the previous 5 year average of 1,112,500. Species composition of the 1980 catch was 152,900 kings; 8,700 cohos and 1,358,300 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 714 CFEC gillnet permits were issued while in the upper Yukon area 72 gillnet and 160 fishwheel permits were issued. Fishing effort has apparently stabilized at current levels due to implementation of the Limited Entry Program. Commercial fishermen earned approximately \$6,110,000 for their catches in 1980.

### King Salmon

The 1980 Yukon River commercial king salmon catch was the largest on record and greatly exceeded the previous 5-year average of 95,100 fish. Catch and escapement data indicate that the magnitude of the run was above average and it probably exceeded last year's run which was one of the largest king runs since statehood.

For the third consecutive year the king salmon runs entering the mouth of the Yukon River have been early as a result of environmental factors (early ice break-up in the lower river and the relatively ice-free conditions in the Bering Sea). As a result, the commercial fishing season was opened early by emergency order prior to the published June 10 opening date. Each year the timing and relative abundance of king salmon entering the mouth of the river is highly variable. (Late runs occurred in 1971-72 and 1975-77). The staff is proposing an emergency opening of the season between June 5-15 in order to provide for more flexible management (Proposal #19).

#### Chum Salmon

The 1980 commercial chum salmon catch was the largest in history and exceeded the previous 5-year average of 999,800 fish. The large chum salmon catch this year was attributed to an above average run of summer chums.

Subsistence utilization of summer chums, which are more abundant than the fall run, has generally decreased in recent years, due to a decline in effort and dependence. In order to encourage greater commercial harvesting of summer chums, regulations have been relaxed. In 1980, a total of 1,062,500 summer chums was commercially harvested in the Yukon area, mostly in districts 1, 2 and 4 where 92 percent of the catch was taken. The 1980 Yukon area summer chum salmon catch was the highest on record and exceeded the recent 5 year average of 744,800.

A total of 295,800 fall chums was harvested in the Yukon area in 1980. The 1980 commercial catch exceeded the recent five year average of

256,700 fish. Catch and escapement data indicate the run was below average to average in magnitude.

Recent tagging studies in the mainstem Yukon River in the Galena-Ruby area indicates differences in the timing and distribution (bank orientation) of fall chum salmon stocks. More than 75% of tag recoveries from the north bank of the Yukon River were recovered in the upper Yukon (Porcupine River and all areas upstream of the Tanana River confluence). Conversely, the greater majority (more than 85%) of tag recoveries from the south bank of the Yukon River were recovered in the Tanana River. The staff is proposing to redescribe subdistrict boundaries in districts 4 and 5 with regards to north-south bank distribution of fall chum salmon stocks in order to provide more flexible management (Proposal #16).

#### Coho Salmon

The 1980 commercial catch was below the previous 5-year average of 17,700 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 33,200 king and 339,700 other salmon, primarily chums, compared to the recent 5 year average of 24,100 king and 316,400 other salmon (Table 7).

#### Escapement

King salmon escapements in most index spawning areas ranged from average to above average (Table 8). Record escapements were documented in the

Gisasa River, Chena River, Salcha River and several streams in the Yukon Territory (Canada). The Whitehorse Dam fishway count of 1,391 kings was exceeded only by the 1962 escapement.

Summer chum escapements were average to above average throughout the drainage. Table 9 presents comparable escapement data in various index streams. In the Anvik and Andreafsky River systems, the major summer chum salmon producers, estimated escapements totaled 633,800 chums. Throughout the Yukon River drainage a total of 704,900 summer chums were documented in selected escapement surveys.

Comparative fall chum and coho salmon escapement data is presented in Table 10. In 1980, escapements of fall chums were considered below average to average in magnitude. Generally escapements in 1980 were very similar in magnitude to the 1976 brood year escapement levels.

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

#### Outlook for 1981

Based on parent year (1975) catch and escapement information the magnitude of the Yukon River king salmon run in 1981 is expected to be average to above average in magnitude. Survival from the 1975 escapement is apparently good as indicated by the large proportion of five year olds in the 1980 inshore harvest and the large incidental catch of kings taken in the Japanese high seas mothership fishery. Summer and fall chum salmon runs in 1981 are expected to be average in magnitude.

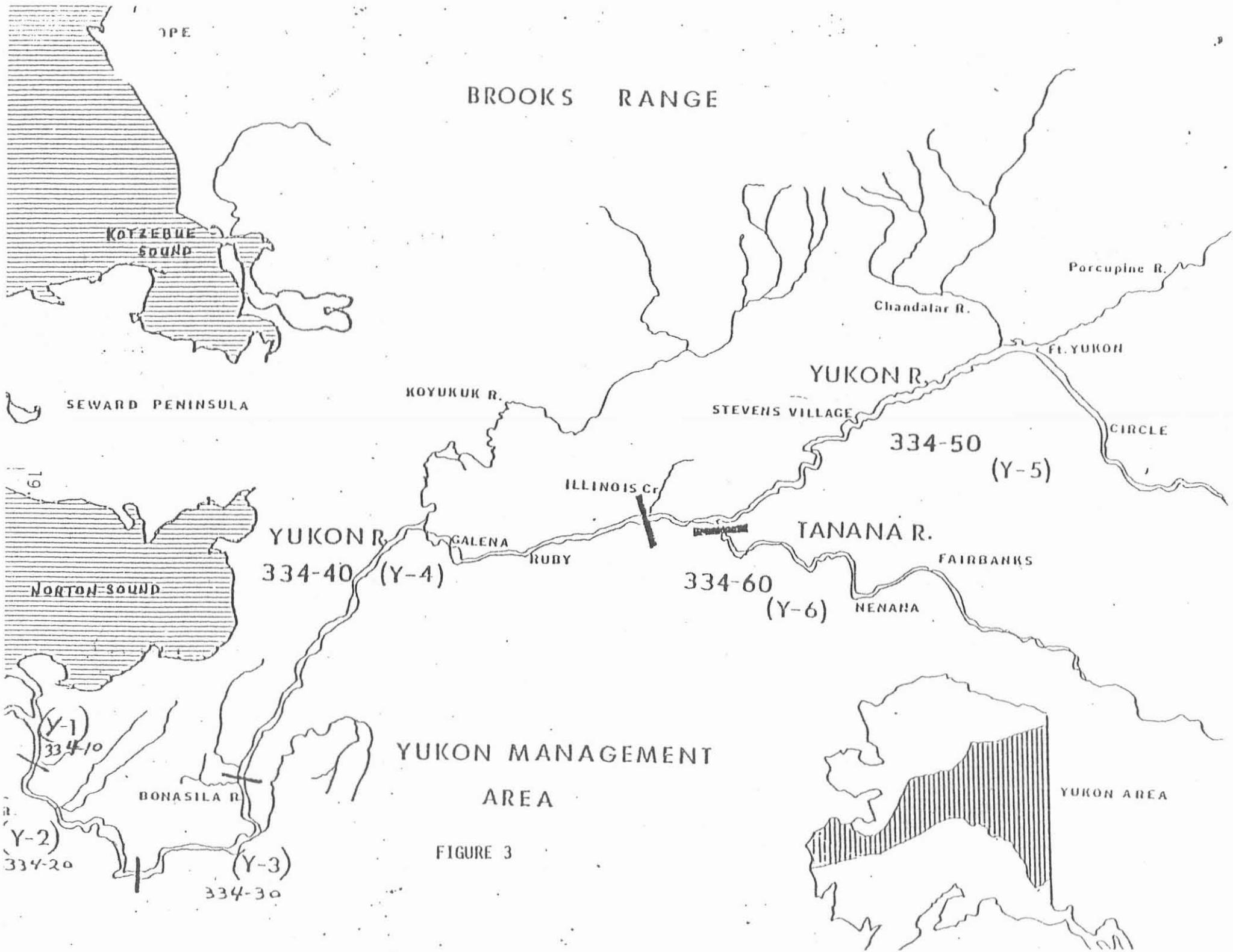


FIGURE 3

Table 6. Commercial salmon catches by species and districts, Yukon area, 1960-1980.

KING SALMON									
Year	Lower Yukon Area				Upper Yukon Area				Totals
	134-10	134-20	134-30	Subtotals	134-40	134-50	134-60	Subtotals	
1960	50,713	15,394	-	66,707	-	-	-	384	67,591
1961	84,463	29,023	4,365	118,456	-	-	-	1,304	120,260
1962	67,099	22,224	4,687	94,010	-	-	-	724	94,734
1963	85,004	24,211	6,375	115,191	-	-	-	303	115,994
1964	67,353	20,246	4,705	92,506	-	-	-	1,081	93,587
1965	89,288	23,763	3,204	116,235	-	-	-	1,363	118,098
1966	70,788	15,927	3,512	90,227	-	-	-	1,288	91,515
1967	104,350	20,239	3,518	128,257	-	-	-	1,449	129,706
1968	79,465	21,392	4,543	105,400	-	-	-	1,125	106,525
1969	70,362	14,799	3,577	88,738	-	-	-	985	89,723
1970	57,581	17,210	3,712	78,503	-	-	-	1,566	80,259
1971	86,042	19,225	3,490	108,758	-	-	-	1,749	110,507
1972	70,052	17,355	3,841	91,748	-	-	-	1,092	92,840
1973	56,381	13,359	3,204	74,044	-	-	-	1,309	75,353
1974	71,580	17,347	3,471	93,098	685	2,563	1,473	4,321	97,919
1975	44,385	11,187	4,207	59,979	389	2,372	900	3,761	63,740
1976	62,832	17,413	4,239	84,284	385	2,900	1,102	4,387	88,671
1977	69,456	16,781	3,943	90,180	959	4,257	1,008	6,234	96,414
1978	57,890	12,335	2,917	73,142	701	3,115	644	4,460	77,602
1979	76,269	41,357	5,108	122,734	1,969	3,520	826	6,315	129,049
1980	87,371	50,324	5,240	143,335	1,521	5,338	2,076	8,935	152,870

COWO SALMON									
Year	Lower Yukon Area				Upper Yukon Area				Totals
	134-10	134-20	134-30	Subtotals	134-40	134-50	134-60	Subtotals	
1960	-	-	-	-	-	-	-	-	-
1961	2,355	-	-	2,355	-	-	-	-	2,355
1962	22,925	-	-	22,925	-	-	-	-	22,925
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	9,325	-	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	34,860	1,781	-	36,641	-	-	-	-	36,641
1974	13,728	176	-	13,904	-	309	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	3,312	521	34,421	-	-	1,284	1,284	37,705
1978	16,262	3,335	758	20,355	32	7	3,065	3,105	25,960
1979	11,244	2,320	-	14,164	155	-	2,783	2,938	17,082
1980	4,328	2,560	-	7,488	27	-	1,225	1,253	8,741

CHUM SALMON									
Year	Lower Yukon Area				Upper Yukon Area				Totals
	134-10	134-20	134-30	Subtotals	134-40	134-50	134-60	Subtotals	
1960	-	-	-	-	-	-	-	-	-
1961	42,577	-	-	42,577	-	-	-	-	42,577
1962	53,160	-	-	53,160	-	-	-	-	53,160
1963	-	-	-	-	-	-	-	-	-
1964	8,347	-	-	8,347	-	-	-	-	8,347
1965	22,936	-	-	22,936	-	-	-	381	23,317
1966	69,836	-	1,209	71,045	-	-	-	-	71,045
1967	46,148	1,425	-	47,573	-	-	-	-	47,573
1968	62,352	1,407	3,136	67,395	-	-	-	-	67,395
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	5,112	50	287,623	-	-	-	1,061	288,684
1972	250,945	33,805	1,840	286,590	-	-	-	1,254	287,844
1973	395,431	109,138	453	504,622	-	-	-	13,003	517,625
1974	641,563	127,544	2,273	771,580	37,079	30,382	40,202	107,663	879,243
1975	576,607	150,259	5,590	732,456	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	22,951	232,864	796,597
1978	523,557	277,086	38,728	839,371	375,517	25,907	47,334	448,758	1,288,129
1979	491,475	270,979	63,395	825,849	222,653	37,282	54,196	314,131	1,159,980
1980	497,353	394,412	58,090	950,355	308,796	42,302	58,357	409,455	1,359,810

TOTAL SALMON									
Year	Lower Yukon Area				Upper Yukon Area				Totals
	134-10	134-20	134-30	Subtotals	134-40	134-50	134-60	Subtotals	
1960	50,713	15,394	-	66,707	-	-	-	384	67,591
1961	129,395	29,023	4,365	163,388	-	-	-	1,304	165,592
1962	143,185	22,224	4,687	170,096	-	-	-	724	170,820
1963	90,576	24,211	6,375	121,763	-	-	-	303	122,566
1964	78,348	20,246	4,705	103,299	-	-	-	1,081	104,380
1965	112,554	23,763	3,204	139,521	-	-	-	2,244	141,765
1966	159,878	16,927	4,321	181,126	-	-	-	1,388	182,514
1967	160,423	21,714	6,520	188,657	-	-	-	1,449	190,206
1968	155,470	22,799	7,329	185,598	-	-	-	1,125	186,723
1969	259,314	19,823	5,144	284,281	-	-	-	1,793	286,074
1970	390,064	39,504	6,397	435,965	-	-	-	2,573	438,538
1971	380,568	25,338	3,540	409,446	-	-	-	2,348	411,794
1972	342,702	52,166	5,881	400,749	-	-	-	2,368	403,117
1973	487,272	124,778	3,667	615,717	-	-	-	14,312	630,029
1974	727,071	145,767	5,774	878,612	37,764	33,954	43,102	114,820	993,432
1975	623,480	161,446	9,797	794,723	179,109	43,086	34,027	256,222	1,050,945
1976	448,932	138,389	18,743	606,064	213,404	9,147	25,762	248,313	854,377
1977	486,016	181,144	23,744	690,904	184,524	31,115	25,243	240,882	931,786
1978	597,709	315,256	42,403	955,368	376,350	29,029	51,644	457,023	1,412,391
1979	578,388	315,256	74,503	968,147	224,777	40,302	57,785	322,864	1,291,011
1980	590,552	447,396	63,330	1,101,278	308,344	48,140	61,359	417,843	1,519,321

Table 7. Yukon River comparative subsistence catch and effort data, 1961-1980 (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 3/	33,209	339,747	30,846	324,179	47	497

Year	Fishing Families surveyed	People in fishing families 1/	Gear operated 1/			
			Snowmachines 1/	Sled dogs 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 3/	652	3,631 (5.6)	926 (1.4)	4,387 (6.7)	774	133

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 not available for Nulato and Ruby.

Table 8. Comparative Yukon River drainage king salmon escapement estimates 1959-1980. 1/

Year	Andreafsky River (East Fork)	Andreafsky 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	1,160	1,134	1,507	1,474 <u>4/</u>
1980	958 <u>2/</u>	1,500	1,323	1,330

Year	Chena River	Salcha River	Nisutlin River (Sidney-100 Mi. Cr.)	Whitewater Dam Fishway
1959				1,054
1960	132	1,660		560
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	4,769	713	1,150
1980	2,541	6,757	975	1,391

1/ With exception of Whitewater 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, 1958-1980.

Year	Summer Chums			
	Andreasfky River (East Fork)	Andreasfky 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	250
1965		14,670	100,000	2,375
1966	25,619	18,145	37,500	2,200
1967		14,495	116,000	
1968	17,600	74,600	51,580	3,790
1969	119,000	159,500		425
1970	84,090	91,710	232,780	7,879
1971	98,095	71,745		306
1972	41,460	25,573	245,857	947
1973	10,149	51,835	86,665	290
1974	3,215	33,258	201,277	8,040
1975	223,485	235,954	845,485	7,573
1976	105,347	118,420	406,166	6,474
1977	112,722	63,120	262,754	677
1978	127,050	57,321	251,399	5,405
1979	66,471	43,391	345,827	3,060
1980	36,823	114,759	482,181	4,140

- 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, 1971-1980 <sup>1/</sup>

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
<u>TANANA RIVER DRAINAGE</u>										
Bear Paw River	-	-	1,530	2,996	1,657	-	-	-	-	-
Toklat River drainage										
Upper Toklat River <sup>3/</sup>	-	1,000 <sup>2/</sup>	6,957	34,310	42,418	35,224	25,000	35,000	107,593	23,054
Lower Toklat River	-	-	-	-	35,867	2,000 <sup>2/</sup>	-	-	64,540	2,140
Subtotal Toklat R. drainage			6,957	34,310	78,285	37,224	25,000	35,000	172,133	25,194
Upper Tanana River drainage										
Benchmark #735 Slough	-	5,255	127 <sup>2/</sup>	1,450	-	336	1,270	1,705	2,714	1,619
Delta River	-	3,650	7,971	4,010	3,946 <sup>7/</sup>	5,526	17,925	10,051	8,125	4,637
Upper Tanana River <sup>4/</sup>	-	8,350	5,635	4,567	-	4,979	3,725	5,700	20,820	3,444
Bluff Cabin Slough	-	6,040	3,450	4,840	5,000 <sup>2/</sup>	3,197	6,491	5,340	6,875	3,190
Delta Clearwater Slough (1 Mile Slough)	-	-	1,720	1,235	745 <sup>2/</sup>	1,552	1,900	475	3,850	885
Subtotal Upper Tanana R. drainage		23,295	18,903	16,102	9,691	15,590	31,311	23,271	42,384	13,775
<u>CHANDALAR RIVER</u>	-	-	-	17,455	6,345 <sup>2/</sup>	58 <sup>2/</sup>	4,183	-	-	2,986
<u>PORCUPINE RIVER DRAINAGE</u>										
Sheenjek River	-	-	1,175	40,507	78,060	12,023	20,506	14,610	41,140	13,027
Fishing Branch River (Yukon Terr)	250,300,000	35,125 <sup>5/</sup>	15,987 <sup>6/</sup>	32,525 <sup>6/</sup>	353,282 <sup>6/</sup>	13,450	32,500	15,000	44,080	20,319
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
<u>TOTAL</u>	250-300,000	59,420	44,552	143,895	527,320	78,345	113,500	87,881	299,737	75,303

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

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

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

<sup>4/</sup> Richardson Highway Bridge to Blue Creek.

<sup>5/</sup> Combined tagging population estimate and weir count.

<sup>6/</sup> Weir count.

<sup>7/</sup> Foot survey.

## NORTON SOUND AREA

### Commercial Fishery

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.

The commercial salmon harvest of 444,500 fish was the second largest on record and included 6,300 king, 30,000 coho, 227,400 pink and 180,800 chum salmon (Table 11). The pink and coho salmon harvests were the second largest ever documented.

A total of 159 fishing vessels participated in the commercial fishery in 1980, which was slightly below 1978 and 1979 levels. CFEC gillnet permits issued in 1980 totaled 194. Commercial fishermen earned approximately \$583,000 for their catch.

### Subsistence Fishery

Subsistence fishermen caught a reported 88,800 salmon in 1980, which represents a 163% increase above the recent 5-year annual average harvest. A large portion of this catch and increase was pink salmon. The 1980 subsistence catch figures will increase as more permits from the subdistrict 1 fishery are returned.

### Escapement

Aerial surveys and two counting towers indicated record pink escapement in Norton Sound streams (Table 12). In many cases the large abundance of pink salmon made it difficult to enumerate the less numerous chum salmon. On the whole, chum escapements in Norton Sound streams were average. Two counting towers (Kwiniuk and Tubutulik Rivers) were operated in the Moses Point subdistrict (Figure 4), where chum escapement has been below average for three of the last four years. Through reduced fishing time in this subdistrict, minimum chum escapement goals were met (Table 12).

### Outlook for 1981

Based on limited parent year escapement data and comparative commercial catch data, chum salmon returns for Norton Sound in 1981 can be expected to be average. Parent year pink escapement in 1979 was average to above average and could indicate similar 1981 returns.

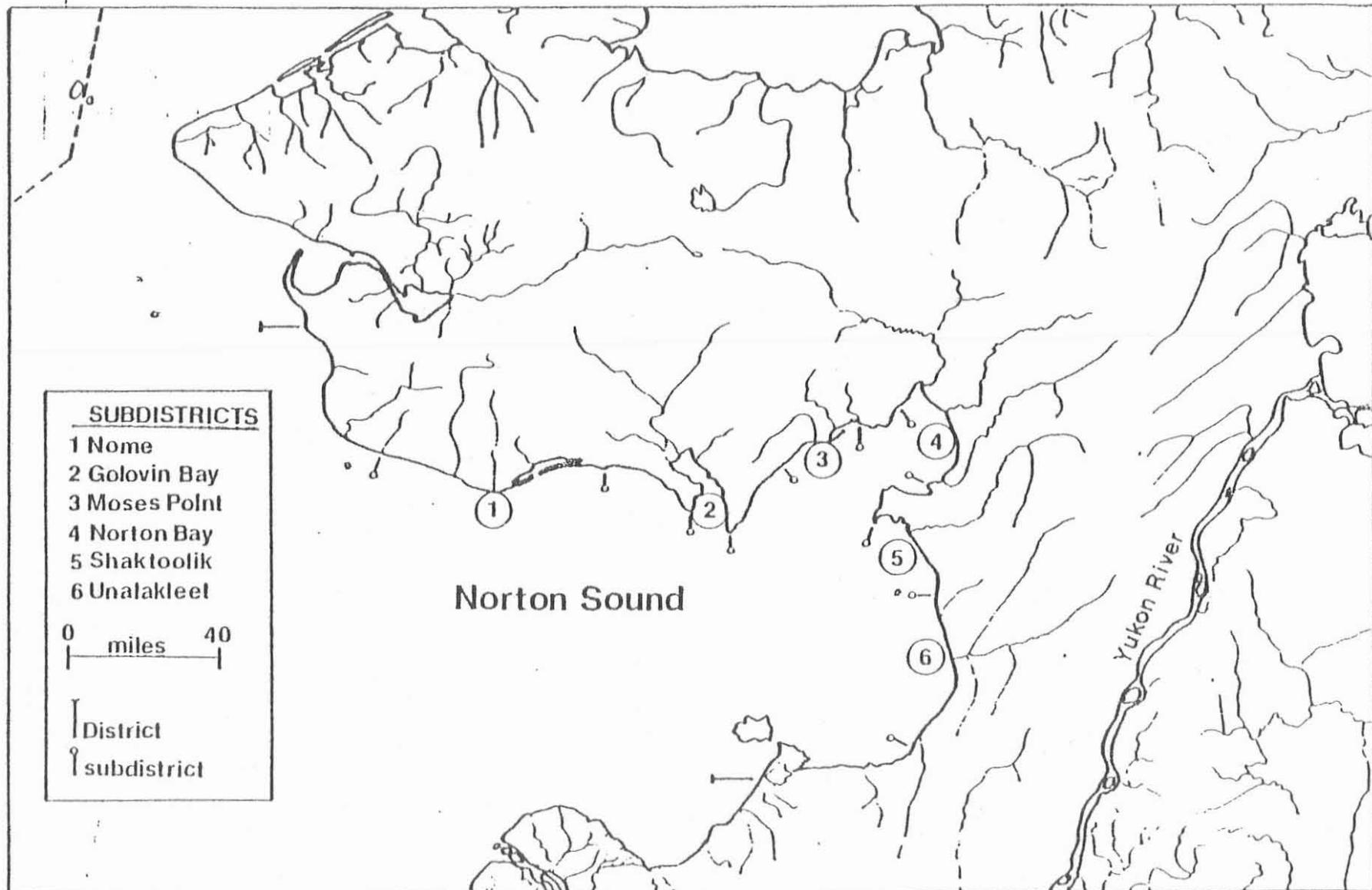


Figure 4. Norton Sound district and subdistricts

Table 11. Commercial and subsistence salmon catches by species by subdistrict, Norton Sound district, 1961-1980.

Year	Commercial					Subsistence					Combined						
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
<u>ALL SUBDISTRICTS</u>																	
1961	5,300	35	13,807	34,332	48,332	101,711	-	-	-	-	-	5,300	35	13,807	34,237	48,332	101,711
1962	7,286	18	9,156	33,187	182,784	232,431	-	-	-	-	-	7,286	18	9,156	33,187	182,784	232,431
1963	6,613	71	16,765	55,625	154,789	233,863	5	118	16,607	17,635	34,365	6,618	71	96,883	72,232	172,424	268,228
1964	2,018	126	98	13,567	148,862	164,671	565	2,567	9,225	12,486	24,843	2,583	126	2,665	22,792	161,348	189,514
1965	1,449	30	2,030	220	36,795	40,524	574	4,812	19,131	30,772	55,289	2,023	30	6,847	19,351	67,567	95,813
1966	1,553	14	5,755	12,778	80,245	100,345	269	2,210	14,335	21,873	38,687	1,822	14	7,965	27,113	102,118	139,032
1967	1,804	-	2,379	28,879	41,756	74,818	817	1,222	17,516	22,724	42,279	2,621	-	3,601	46,395	64,480	117,097
1968	1,045	-	6,885	71,179	45,300	124,499	237	2,391	36,912	11,661	51,201	1,282	-	9,276	108,091	57,051	175,700
1969	2,392	-	6,836	86,949	82,795	178,972	436	2,191	18,562	15,615	36,804	2,828	-	9,027	105,511	98,410	215,776
1970	1,853	-	4,423	64,908	107,034	178,218	561	4,675	26,127	22,763	54,126	2,414	-	9,098	91,035	129,797	232,374
1971	2,593	-	3,127	4,895	131,362	141,977	1026	4,097	10,863	21,815 <sup>1/</sup>	37,801	3,619	-	7,224	15,758	153,177	179,778
1972	2,938	-	454	45,182	100,920	149,494	804	2,319	14,158	13,966 <sup>2/</sup>	31,247	3,742	-	2,773	59,340	114,886	180,741
1973	1,918	-	9,282	46,499	119,093	176,797	392	520	14,770	7,185	22,867	2,310	-	9,802	61,269	126,283	199,664
1974	2,981	-	2,092	148,519	162,267	315,829	420	1,064	16,426	3,958 <sup>3/</sup>	21,868	3,371	-	3,156	164,945	166,825	337,697
1975	2,393	2	4,593	32,388	212,485	251,861	186	192	15,803	8,124 <sup>3/</sup>	24,305	2,579	2	4,785	48,191	220,609	276,166
1976	2,248	11	6,934	87,916	95,956	193,060	203	1,004	18,048	7,718	26,973	2,446	11	7,938	105,958	103,674	219,987
1977	4,500	5	3,690	48,675	200,455	257,325	846	2,530	14,296	26,607	44,279	5,346	5	6,220	62,971	227,062	301,604
1978	9,819	12	7,335	325,503	189,279	531,948	1211	2,981	35,281	12,257	51,730	11,030	12	10,316	360,784	201,536	583,678
1979	10,706	-	31,438	167,411	140,789	350,344	747	8,487	25,247	11,975	46,456	11,453	-	39,925	192,658	152,764	396,800
1980	6,311	-	29,842	227,352	180,792	444,337 <sup>7/</sup>	1297	8,499	60,503	18,517	88,816	7,608	-	38,341	287,855	199,309	533,153
5-year avg <sup>4/</sup>	5,953	-	10,798	132,379	167,793	316,908	639	3,039	21,735	13,336	38,749	6,571	-	13,837	154,112	181,129	355,647

1/ Includes 197 recorded sockeye salmon in all subdistricts.

2/ Includes 93 recorded sockeye salmon in all subdistricts.

3/ Includes all recorded sockeye salmon in all subdistricts.

4/ 1975-1979

6/ May include sockeye salmon, usually less than 100

7/ Preliminary data/1980 subsistence catch will increase as more permits are returned.

Table 12. Comparative aerial surveys of Norton Sound streams, 1961- 1980.

<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	
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	15,156	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	
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	19,813	56,683	
1970	68,004	235,135	
1971	38,679	16,634	
1973	28,617	38,426	
1974	35,899	40,816	
1975	14,344	57,317	29.

Table 12. (cont.) Comparative aerial surveys of Norton Sound Streams, 1961-1980.

<u>YEAR</u>	<u>CHUM</u>	<u>PINK</u>	<u>PINK AND CHUM</u> <sup>1/</sup>
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	

Shaktoolik (Subdistrict 5)

SHAKTOOLIK RIVER

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	

Unalakleet (Subdistrict 6)

UNALAKLEET RIVER

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 <sup>2/</sup>	
1980	11,105	166,390	

1/ Not distinguished by species.

2/ Poor survey.

3/ Counting tower

## KOTZEBUE AREA

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 arrives in the district first, soon after ice break-up, and is followed by the Noatak River run. 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 367,000 fish was 51% above the recent 5-year average annual catch of 234,500 fish (Table 13). A total of 176 fishermen participated in the commercial fishery in 1980, which was below 1979 levels. One hundred ninety seven C.F.E.C. gillnet permits were issued in 1980. Commercial fishermen earned approximately \$1,447,000 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. As a result, several new regulations and a revised management strategy was implemented beginning in 1979.

This season aerial surveys did not indicate above average Kobuk River chum returns. Consequently, the fishing schedule was maintained at two 24-hour periods per week during July to protect this run. Run strength increased in late July as the Noatak River run entered the fishery. This resulted in an increase of fishing time on July 31 to two 36-hour periods a week. Aerial surveys, sonar counts, and comparative commercial catch data continued to indicate a strong run. Therefore, fishing time was increased on August 9 to two 48 periods per week. This schedule was maintained until the season closed by regulation on August 31.

#### Escapement

This year record escapements were documented in the Noatak River. Side scan sonars were operated from each bank of the lower river, counting 283,400 chum salmon. This high escapement was partially verified by aerial surveys, which estimated 164,500 chum (Table 14).

Good weather and low water also allowed excellent aerial surveys to be flown in the Kobuk River and its tributaries. Escapement in the Kobuk River system was considered average (Table 14).

#### Outlook for 1981

Chum salmon escapements of the 1977 brood year to the Noatak and Kobuk rivers were not accurately determined due to extremely poor aerial survey conditions. The Kotzebue research biologist, however, is developing a chum salmon forecast which is fairly new and still in the testing

stages. The 1981 return has been forecasted at being average to slightly above average, when compared to the last five years. An expected return of 340,000 chum salmon (range 220,000-750,000) is forecasted with a predicted harvest of 230,000 (range 150,000-300,000) fish.

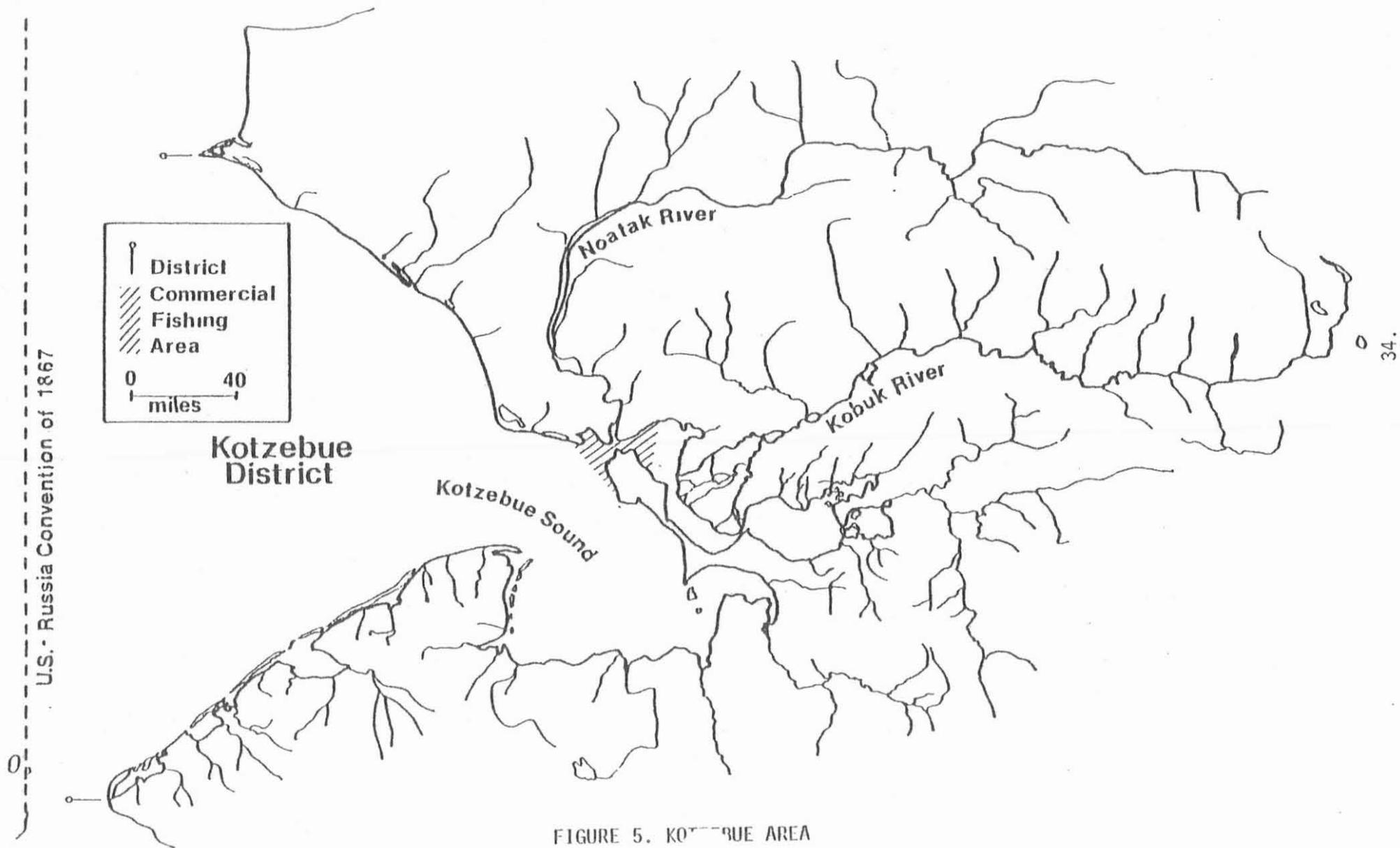


FIGURE 5. KOTZEBUE AREA

Table 13 . Commercial and subsistence salmon catches, Kotzebue district,  
1914-1980.

Year <sup>1/</sup>	Commercial Catch			Subsistence	Combined Catches
	Chum	Other <sup>3/</sup>	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 <sup>4/</sup>				298,430	
1962	129,948	127	130,075	20,283	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 <sup>5/</sup>		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 <sup>6/</sup>	48	634,527	26,729	661,256
1975	563,682 <sup>7/</sup>	36	563,718	27,605	591,323
1976	159,796	2	159,798	15,756	175,563
1977	195,895		195,895	9,752	205,647
1978	111,494	7,007	118,501	12,864	131,365
1979	141,623	910	142,533	14,605	157,138
1980	367,284	4,734	381,018	<u>8/</u>	<u>8/</u>

<sup>1/</sup> There was no commercial fishing during 1919-1961

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

<sup>3/</sup> Mostly pinks, but includes king salmon and red salmon.

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

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

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

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

<sup>8/</sup> Information not available at present time.

Table 14. Comparative chum salmon catch, effort, and escapement data, Kotzebue district, 1962-1980.

	Average 1962-72	1973	1974	1975	1976	1977	1978	1979	1980
Commercial Catch	85,000	375,400	627,900 <sup>1/</sup>	553,000 <sup>1/</sup>	159,800	195,900	111,500	141,600	367,284
Licensed Commercial Boats	62	136	174	258	219	222	208	181	176
Noatak River Escapement <sup>2/</sup>	78,000	32,000	130,000	96,500	44,500	11,000	37,500	17,800	164,474
Noatak River Sonar									283,379
Kobuk River Escapement <sup>2/</sup>	13,000	19,000	62,000	40,500	8,000	<u>3/</u>	4,000	<u>3/</u>	21,942

<sup>1/</sup> Does not include data from Deering experimental fishery.

<sup>2/</sup> Peak aerial survey counts, Kobuk River data includes only Squirrel and Salmon Rivers.

<sup>3/</sup> No estimate due to poor aerial survey conditions.