

AYK REGION
SALMON BOF RPT #12

ARCTIC-YUKON-KUSKOKWIM REGION
SALMON FISHERY REPORT

A REPORT TO THE
ALASKA BOARD OF FISHERIES

December 1976

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 harvest of 1.6 million salmon was made in the region during 1976 which was exceeded only by the catches made in 1974 and 1975 of 2.4 and 2.2 million fish, respectively. Catches of chum salmon were also the third largest ever recorded. The 1976 harvest represented 13.0 million pounds (round weight) of salmon. Fishermen earnings totaled \$4.0 million.

The 1976 commercial catches made in 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	42,261	14,637	111,254	39,998	231,877	440,027
Yukon	88,669	-	5,197	-	761,509	855,375

Norton Sound	2,206	11	6,709	87,889	96,102	192,917
Kotzebue	-	-	-		159,796	159,796
Totals	<u>133,136</u>	<u>14,648</u>	<u>123,160</u>	<u>127,887</u>	<u>1,249,284</u>	<u>1,648,115</u>
Previous Season Record	161,500	29,000	198,500	208,600	1,870,200	2,436,700
5 Year Average (1970-75)	132,700	12,500	117,400	67,800	1,276,500	1,606,900

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 River, Kuskokwim River and Kotzebue areas.

The region-wide license registration in 1976 of 3,179 commercial and 2,372 gear licenses was a record high total, while fishing vessel licenses (2,183) decreased slightly from the record 2,242 licenses issued in 1975. License registration in the region increased at a rate of about 6 percent annually during the 1968-72 period. During the 1973-75 period vessel and gear license registration increased approximately 20 and 10 percent annually respectively over that for the previous five years. Most of this increase was in the Kuskokwim, Kotzebue and upper Yukon areas. This expansion is largely the result of increasing numbers of subsistence fishermen who are beginning to also participate in the commercial fishery. The vast majority of commercial fishermen are Eskimo and Indian residents of the region.

Trends in license registrations and commercial harvests in the region during 1960-1976 are illustrated in Figure 2.

Figure 3 shows commercial, subsistence and total catches of king and other salmon species made in the region during 1960-1976.

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 (Figure 3). 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 of subsistence salmon roe sales in 1974-76, catches during this recent period have increased substantially compared to the small catches made the previous three years.

Subsistence catch data for 1976 is very preliminary at this time since a few late catch reports are still being received. The projected 1976 harvest should approximate 585,000 salmon, a slight increase compared to the 1975 catch. The average annual subsistence harvest recorded during 1960-1975 was 605,000 salmon (Figure 3).

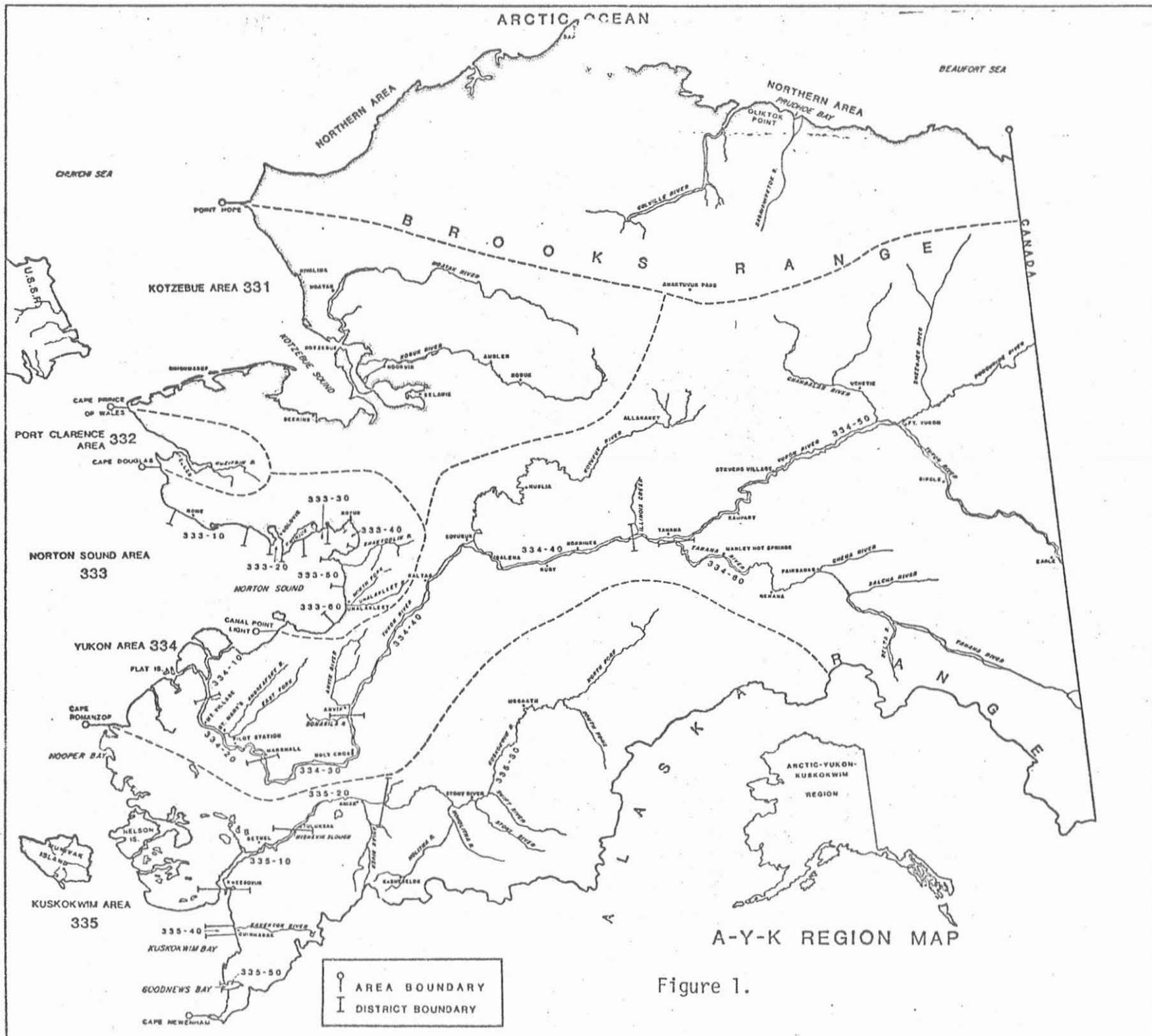


Figure 1.

Fig 2. Total commercial salmon catch and fishing vessel registration for the Arctic-Yukon-Kuskokwim Region. 1960-1976

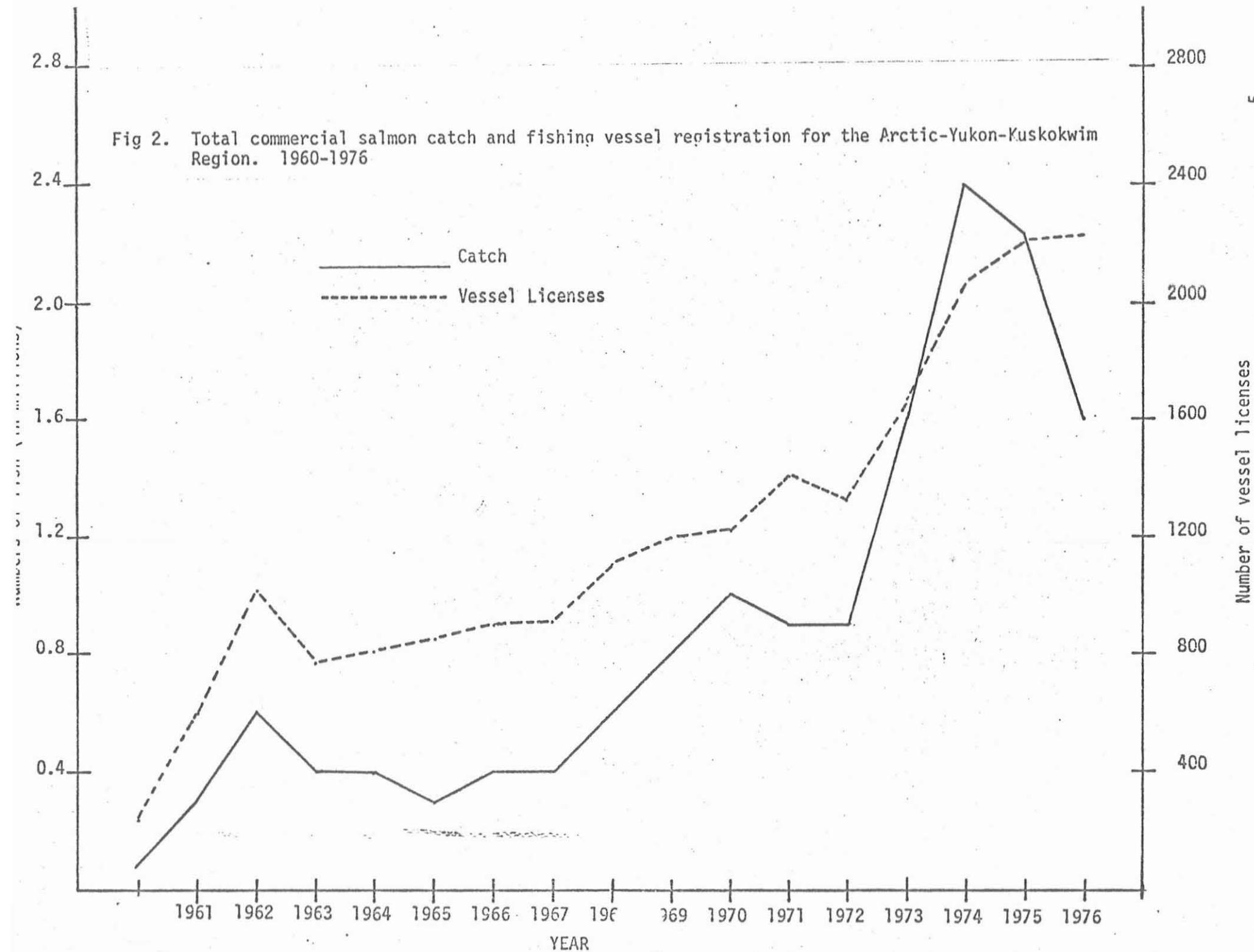
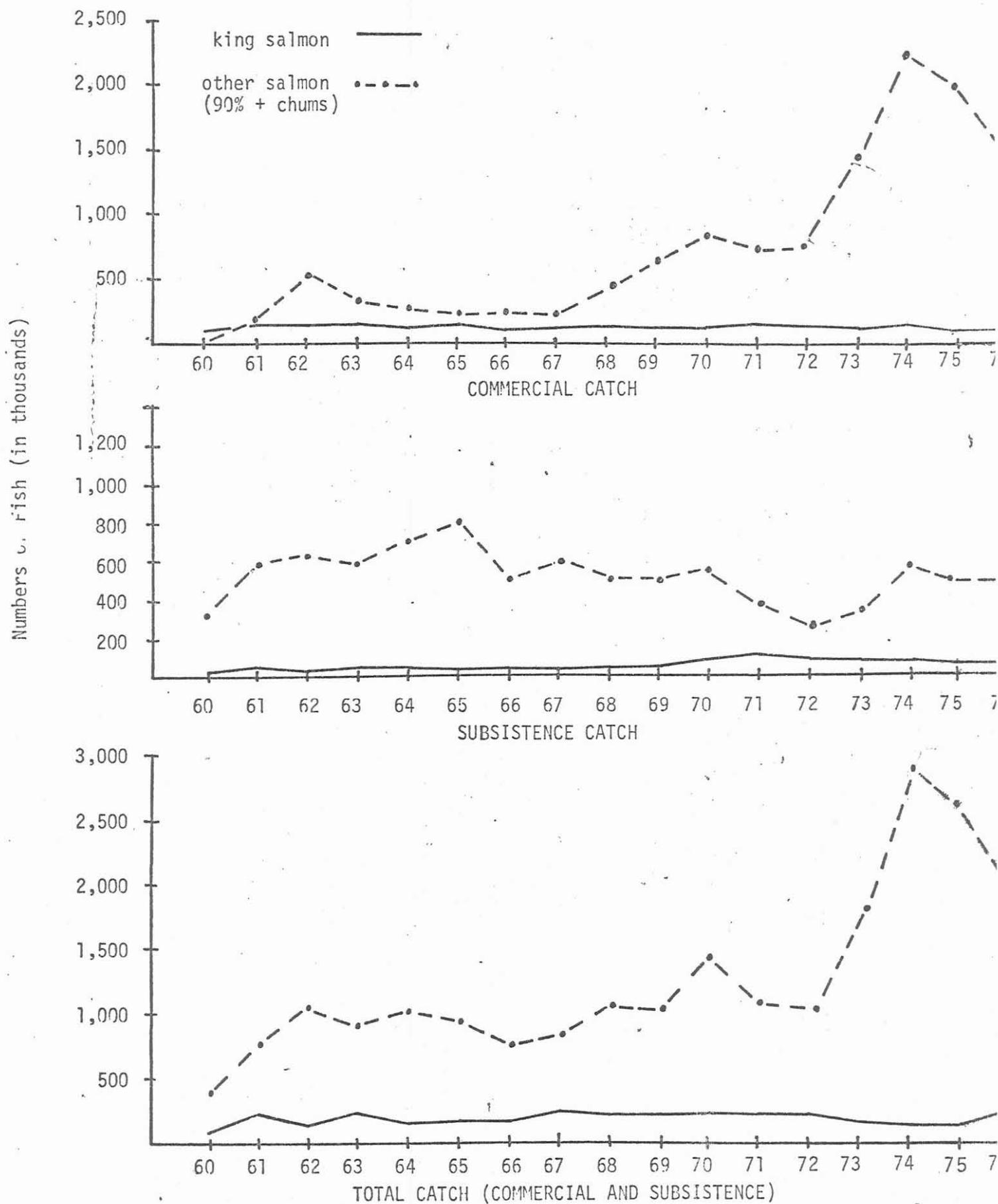


Figure 3. Commercial, subsistence and total catch in numbers of salmon for the Arctic-Yukon-Kuskokwim region, 1960-1976.



Kuskokwim Area

The 1976 Kuskokwim area commercial salmon harvest of 447,903 fish was the second largest catch ever recorded. Species composition was 49,262 king, 14,636 red, 112,130 coho, 39,998 pink and 231,877 chum salmon. Table 4 represents commercial catches for the Kuskokwim River, Quinhagak and Goodnews Bay subdistricts.

Most license registration dropped below record 1974 levels, but remained the second highest on record. Commercial license registration increased slightly (0.6 per cent) to 1,145, but vessel licenses decreased 8.7 per cent to 826 licenses. Gear licenses (set and drift combined) fell 13.2 per cent below the record 1974 levels to 801 units of gear.

Kuskokwim River

In 1976 the combined commercial and subsistence king salmon catch of 97,107 fish was the second largest ever recorded. The commercial harvest of 30,735 kings was similar to the recent five year average. The majority of comparative catch and escapement data indicate that the 1976 king salmon run was above average compared to recent years. In an attempt to reverse the decline in recent year escapements and in view of an increase in fishing effort (Table 5) and efficiency, the commercial king salmon harvest goal was revised downward to 20,000 fish (except during years of high abundance). Also fishing time has been severely restricted in recent years. In 1976 the commercial fishery was limited to only two 6 hour fishing periods. However this reduction in fishing time was also influenced by an indicated large subsistence harvest being made concurrently during the 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 subdistrict 1 of approximately 400,000 fish for the 1976 season. Although this season's chum salmon run was judged above average, the harvest of 177,864 fish was strongly influenced by a commercial effort that has increased 52 per cent since 1973. Due to the increased effort and efficiency of the fleet, commercial periods were reduced from 12-hour to 6-hour duration. When commercial catches are added to subsistence catches, the total utilization of 422,371 was the second largest documented catch since 1960.

Although commercial fishing effort reached record levels, the 1976 commercial coho salmon catch of 88,501 fish was 39.9 per cent below the previous record 1974 catch of 147,260 cohos.

The Kuskokwim River subsistence king salmon harvest of 61,561 kings was above the recent 5-year average catch of 39,166 fish.

The subsistence chum salmon harvest of 230,736 was 24.6 above the recent 5-year average catch of 173,905. The increase in the chum salmon harvest was due to an above average run and also to increased effort influenced by the sales of subsistence salmon roe.

The sale of subsistence salmon roe was allowed under strict management and regulatory controls during 1976. A total of 59,489 pounds of king salmon roe and 92,035 pounds of chum roe were sold. The catch represented 41,266 kings and 244,340 chums. Preliminary information indicates that subsistence harvests decreased tremendously when the roe sales were terminated by emergency order. This tends to infer the presence of a "roe fishery".

Weather and water conditions were favorable and several additional streams were surveyed in 1976. Aerial surveys indicated good escapements

of king salmon. The Kogrukluk River counting tower count of 2,900 kings compared favorably to other peak years. Table 6 presents comparative index counts.

Escapements of chum and red salmon were judged as very good. The Kogrukluk River tower count of 9,305 chum was the largest ever recorded, and the red salmon count of 4,215 was also the largest on record.

Quinhagak and Goodnews Bay

These two fisheries are located south of the Kuskokwim River (Figure 1). Fishermen in these subdistricts are restricted to the use of gill nets of less than 6-inch stretched mesh. A total of 18,527 kings, 11,665 reds, 23,629 cohos, 39,865 pinks and 54,013 chums, totaling 147,699 fish were harvested in 1976. Harvest of all species were above average.

Although information is limited, escapements of king salmon were good. Escapements of other species were judged average or above average.

Table 4. Kuskokwim district commercial catches by drainage, 1960-1976

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	40,795	102	22,579	8	78,619	142,103
1973	32,838	369	130,876	33	148,746	312,862
1974	18,564	136	147,260	37	171,887	337,884
1975	22,135	4	84,120	5	184,171	290,435
5 Year Average	30,921	643	78,018	17	130,467	
1976	30,735	2,972	88,501	133	177,864	300,205

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	3,994	8,969	10,096	540	34,402	58,001
5 Year Average	9,551	7,533	8,190	9,270	23,367	
1976	14,110	6,090	13,777	31,412	43,659	109,048

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	6,794	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	2,149	9,063	17,547	418	6,583	35,760
5 Year Average	1,947	4,349	9,320	3,436	6,527	
1976	4,416	5,575	8,976	8,453	10,354	37,774

^{1/} Includes subdistricts 335-10, 335-20 and 335-30. Commercial Fishing in 335-30 has been prohibited since 1966.

^{2/} Subdistrict 335-40.

^{3/} Subdistrict 335-50 and includes Chagvan Bay.

Table 5. Kuskokwim River commercial effort data, 1965-76 1/

Year	King Season	Chum Season	Coho Season
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	541	539	531
1976	616	517	527

1/ Number of actual fishing vessels.

Table 6. Index counts of Kuskokwim River king salmon spawning escapements, 1965-1976 1/

Year	Aerial Surveys				Counting Tower
	Kisaralik River	Aniak River (Above Salmon R.)	Chukowan River	Kogrukluuk River	Kogrukluuk 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

1/ ADF&G Annual Management Report, Arctic-Yukon-Kuskokwim area, 1976.

2/ Surveys rated poor.

YUKON AREA

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

The 1976 commercial harvest of 855,375 salmon was the third largest in history and exceeded the previous 5-year average of 698,992. Species composition of the 1976 catch was 88,669 kings; 5,197 cohos and 761,509 chums. Table 7 presents annual commercial catches by subdistrict since 1960. Yukon River commercial fishermen received an estimated \$2,194,000 for their catch and the first wholesale value of the pack was estimated at \$5,500,000.

A total of 1,229 commercial, 962 vessel, 761 set gill net and 379 drift gill net licenses was issued for the area in 1976. Also, more than 100 fishwheels (which are legal gear but license fees are not required) were operated. License registration for all types of gear except drift nets were below the levels recorded in 1975. Drift gill net license registration in 1976 increased 22 per cent compared to the previous year. License registration in 1976 in the upper Yukon area (subdistricts 4, 5 and 6), where the commercial fishery had been undergoing rapid expansion, were similar to 1975.

The 1976 Yukon River commercial king salmon catch was approximately 10,000 less fish than the previous 15-year average. Due to the indicated poor strength of the king run based on comparative catch data, fishing time was reduced to two days a week during the latter portion of the run.

The 1976 commercial chum salmon catch was the third largest in history and exceeded the previous 5-year average by 168,282 fish. The large chum catch this year was attributed to a good 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 1976, a total of 623,354 summer chums was commercially harvested in the Yukon area, mostly in subdistricts 1 and 2 where 60 per cent of the catch was taken. A record summer chum catch of 211,277 fish was taken during the season in subdistrict 4 due to increased fishing effort and marketing outlets. The regulation requiring a maximum 6-inch mesh net size after a date specified during the period June 27-July 5 in subdistricts 1 and 2 resulted in a catch of 101,072 summer chums during the early portion of the fall season (July 5-14) yet resulted in a minimal take of king salmon (6,817 fish).

A public proposal has been submitted to change the effective 6 inch maximum mesh size changeover dates to July 10-31. This proposal if adopted would substantially reduce the harvest of summer chums which are normally abundant during late June-early July in the lower river.

A total of 163,282 fall chums was harvested in the Yukon area in 1976. The fall run was considered poor and the 1976 commercial catch was 35 percent below the recent five year average of 251,392 fish. The Yukon River fall chum fishery has expanded rapidly in recent years. The Department has established a 250,000 optimum fall chum salmon harvest goal until future returns from current harvest levels can be evaluated. Beginning with the 1974 season, the Board established quotas of 200,000 chum salmon for the lower three subdistricts (combined) and 50,000 combined chum and coho salmon for the upper three subdistricts. In 1976 due to a poor run of fall chum, the lower Yukon subdistricts were closed to fishing prior to obtaining the 200,000 quota. Also subdistricts 4

and 5 were closed early to commercial fishing. Public proposals have been submitted to the Board which advocate later effective quotas thereby increasing the overall fall chum salmon harvest.

The 1976 commercial coho salmon catch was 12,844 less fish than the previous 5-year average. Cohos are generally of minor importance and are taken incidentally to the more abundant fall chum salmon.

Subsistence catches tabulated to date total 13,100 king and 212,300 other salmon, primarily chums (Table 8). The majority of the subsistence catches are taken in areas open to commercial salmon fishing and usually weekly subsistence closures are in effect during the commercial salmon fishing season. Present regulations provide for seven days a week subsistence fishing following closure of the commercial fishing season. Subsistence fishing has increased in recent years due to the sale of subsistence caught salmon roe. In addition, due to early closures of the commercial salmon fishery as a result of weak runs or attainment of quotas, subsistence fishing effort has increased in duration over a greater portion of the run. The staff has submitted a proposal which would provide for a two day a week subsistence fishing closure if the commercial fishing season remains closed greater than five days. It is felt that weekly subsistence fishing closures would result in better balanced escapements throughout the run.

King salmon escapements in index spawning areas varied from average to below average (Table 9). Escapements were considered average in the lower portion of the drainage and in the Salcha River, but escapements to Yukon Territory streams were considered very poor. In recent years the Yukon River king salmon runs have been depressed and escapements in certain portions of the drainage have been below average. In addition, fishing effort and efficiency have increased. Accordingly in order to

maintain the king salmon run by bolstering escapements, the Department is proposing a reduction in fishing time from 3 to 2 days a week of the intensive commercial fishery in subdistricts 1 and 2. Also a later opening of the fishing season (June 10 instead of June 1) is being proposed by the staff in order to provide partial protection of the early run of kings.

Summer chum escapements were judged very good in that portion of drainage downstream of the mouth of the Koyukuk River, but below average elsewhere. Table 10 presents comparable escapement data in various index streams. In the Anvik and Andreafsky River systems estimated escapements of nearly 500,000 chums were documented. Throughout the Yukon River drainage a total of 830,000 summer chums were documented in selected escapement surveys.

During the past five years the Department has initiated intensive surveys of fall chum and coho salmon spawners in the upper Yukon River drainage. In 1976, escapements of fall chums were average in the Tanana River system but poor elsewhere (Table 11).

Tanana River drainage coho salmon escapements as indicated by surveys of the Clearwater Lake and Delta Clearwater River systems, were below average.

Among the major problems in management of the upper-Yukon fisheries is that of enforcement of catch reporting regulations and the illegal entry of subsistence caught salmon into commercial channels. It is not possible to accurately judge the magnitude of illegal sales of salmon but persistent rumors of this type of activity occurring in certain locations abound. Staff proposal #37 attempts to deal with the problem as it occurs in the Fairbanks area by providing for a complete closure of the subsistence salmon fishery when the commercial salmon fishing

season closes. Limiting the period of time in which subsistence fishing would occur to only the commercial fishing season would insure that legitimate subsistence needs could be met yet minimize expansion of this non-traditional fishery.

Table Commercial salmon catches by species and subdistrict, Yukon district, 196

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	15,994	-	66,707	-	-	-	884	67,591
1961	84,463	29,028	4,965	118,456	-	-	-	1,804	120,260
1962	67,099	22,224	4,687	94,010	-	-	-	724	94,734
1963	85,004	24,211	6,976	116,191	-	-	-	803	116,994
1964	67,555	20,246	4,705	92,506	-	-	-	1,081	93,587
1965	89,268	23,763	3,204	116,235	-	-	-	1,863	118,098
1966	70,788	16,927	3,612	91,327	-	-	-	1,988	93,315
1967	104,350	20,289	3,618	128,257	-	-	-	1,449	129,706
1968	79,465	21,392	4,543	105,400	-	-	-	1,126	106,526
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	19,226	3,490	108,758	-	-	-	1,749	110,507
1972	70,052	17,855	3,841	91,748	-	-	-	1,092	92,840
1973	56,931	13,859	3,204	74,044	-	-	-	1,309	75,353
1974	71,067	17,587	3,413	92,067	679	2,661	1,495	4,835	96,902
1975	45,197	9,824	4,177	59,198	389	2,865	460	3,714	62,917
1976	62,632	17,411	4,239	84,282	385	2,900	1,102	4,387	88,669

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	2,855	-	-	2,855	-	-	-	-	2,855
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	34,860	1,781	-	36,641	-	-	-	-	36,641
1974	13,761	176	-	13,937	-	1,500	1,388	2,888	16,825
1975	2,243	-	-	2,243	-	5	53	58	2,301
1976	4,084	17	-	4,101	-	-	1,096	1,096	5,197

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 ^{1/}	-	-	42,577	-	-	-	-	-	42,577
1962	53,160 ^{1/}	-	-	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	1,880	49,453	-	-	-	-	-	49,453
1968	62,852 ^{1/}	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	346,357	-	-	-	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	395,427	109,041	463	504,931	-	-	-	13,003	-	517,934
1974	641,052	125,821	2,157	769,030	30,914	28,013	41,411	108,338	-	877,368
1975	583,715	151,610	5,590	740,915	178,721	40,344	33,332	252,397	-	993,312
1976	382,216	120,959	14,504	517,679	213,019	6,247	24,564	243,830	-	761,509

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	15,994	-	66,707	-	-	-	884	-	67,591
1961	129,895	29,028	4,965	163,888	-	-	-	1,804	-	165,692
1962	143,185	22,224	4,687	170,096	-	-	-	724	-	170,820
1963	90,576	24,211	6,976	121,763	-	-	-	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	-	-	-	2,244	-	141,765
1966	159,878	16,927	4,821	181,626	-	-	-	1,988	-	183,614
1967	160,423	21,714	6,620	188,757	-	-	-	1,449	-	190,206
1968	155,470	22,799	7,829	186,098	-	-	-	1,126	-	187,224
1969	269,314	19,823	6,144	295,281	-	-	-	1,783	-	297,064
1970	390,064	39,604	6,997	436,665	-	-	-	2,573	-	439,238
1971	380,668	25,338	3,540	409,546	-	-	-	2,848	-	412,394
1972	342,702	52,166	5,681	400,549	-	-	-	2,368	-	402,917
1973	487,272 ^{1/}	124,778 ^{1/}	3,667	615,717	-	-	-	14,312	-	630,029
1974	725,880	143,584	5,570	875,034	39,593	32,174	44,294	116,061	-	991,095
1975	631,155	161,434	9,767	802,356	179,110	43,214	33,845	256,169	-	1,058,525
1976	448,932	138,387	18,743	606,062	213,404	9,147	26,762	249,313	-	855,375

^{1/} Includes small numbers of pink or red salmon.

Table 8.

Yukon River comparative subsistence catch and effort data, 1961-1976 (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	23,719	407,814	23,719	405,632	38	650
1962	19,910	358,441	13,010	329,144	23	583
1963	32,656	421,625	26,141	372,578	44	624
1964	22,817	485,630	19,480	460,712	32	765
1965	19,723	458,379	16,950	436,306	31	806
1966	14,017	214,236	11,507	204,913	23	415
1967	19,661	288,595	16,306	256,926	35	545
1968 ^{3/}	14,832	189,607	11,883	170,522	25	358
1969	14,946	213,725	13,916	195,476	30	426
1970	15,926	223,237	13,474	199,163	34	498
1971	24,755	200,568	21,670	171,247	51	399
1972	19,541	140,102	17,079	119,335	43	298
1973	22,215	186,179	19,458	167,106	42	360
1974	20,543	291,080	16,584	256,636	38	586
1975	15,064	249,087	14,522	216,904	33	492
1976	13,118	212,328	12,095	190,225	24	378

Year	Fishing families surveyed ^{1/}	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	597	3,460 (6.9)		4,155 (7.0)	716	156
1964	602	3,524 (6.0)		4,003 (6.6)	840	155
1965	541	3,453 (7.3)		3,974 (7.3)	647	127
1966	494	3,144 (6.4)		3,112 (6.3)	578	116
1967	471	2,756 (5.9)	192 (0.4)	2,752 (5.8)	530	87
1968	476	3,109 (6.5)	262 (0.6)	2,719 (5.7)	565	71
1969	459	2,974 (6.5)	349 (0.8)	2,442 (5.3)	594	63
1970	400	2,679 (6.7)	346 (0.9)	2,214 (5.5)	647	55
1971	429	2,795 (6.5)	414 (1.0)	1,894 (4.4)	683	56
1972	401	2,508 (6.3)	423 (1.1)	1,375 (3.4)	698	57
1973	463	2,894 (6.3)	485 (1.0)	2,030 (4.4)	840	77
1974	438	2,759 (6.3)	492 (1.1)	1,796 (4.1)	609	83
1975	441	2,646 (6.0)	562 (1.2)	1,909 (4.3)	898	87
1976	503	3,018 (6.0)	631 (1.3)	2,504 (4.9)	823	118

^{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/} Total king and other salmon catches have been corrected.

Table 9 Comparative Yukon River drainage king salmon escapement counts 1959-1976 ^{1/}

Year	Andreafsky River (East fork)	Andreafsky River (West fork)	Anvik River
1960	1,020	1,220	1,950
1961	1,003		1,226
1962	675 ^{2/}	762 ^{2/}	
1963			
1964	867	705	
1965		355 ^{2/}	650 ^{2/}
1966	361	303	638
1967		276 ^{2/}	336 ^{2/}
1968	380	383	297 ^{2/}
1969	231 ^{2/}	274 ^{2/}	296 ^{2/}
1970	665	574 ^{2/}	368 ^{2/}
1971	1,904	1,284	
1972	798	582 ^{2/}	1,172 ^{4/}
1973	825	788	613 ^{4/}
1974		285	506 ^{5/}
1975	993	421	720 ^{6/}
1976	818	643	976 ^{5/}

Year	Salcha River	Nisutlin River (Sidney-100 Mile Cr.)	Whitehorse Dam Fishway
1959			1,054
1960	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 ^{2/}	407	407
1969	461 ^{2/}	105	334
1970	1,882	615	625
1971	159 ^{2/}	640 ^{3/}	856
1972	1,193	317	392
1973	249	36 ^{2/}	228
1974	1,857	48 ^{2/}	273
1975	1,055	249	313
1976	1,550	102	120

- ^{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 & aerial survey estimates.
- ^{5/} Tower count.
- ^{6/} Combination aerial survey and boat count.

Table 10. Comparative Yukon River drainage summer chum salmon aerial survey escapement estimates, 1958-1976.

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	208,815 <u>4/</u>	8,040 <u>5/</u>
1975	223,485	235,954	345,485	7,573
1976	105,347	118,420	237,124 <u>4/</u>	6,474

- 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.

Table 11 Comparative Yukon River drainage aerial survey estimates, fall chum salmon, 1971-1976 ^{1/}

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>
Tanana River drainage						
Bear Paw River		<u>2/</u>	1,530	2,996	1,657	
Toklat River		1,000 <u>3/</u>	6,957	34,310	78,285 <u>3/</u>	35,190
Benchmark 735 slough		5,255	127 <u>4/</u>	1,450	<u>2/</u>	336 <u>3/</u>
Delta River		3,650	7,971	4,010	3,946 <u>3/</u>	4,779
Tanana River <u>8/</u>		8,350	5,635	4,567	<u>2/</u>	4,979
Bluff Cabin slough		6,040	3,450	4,840	5,000 <u>3/</u>	3,197
Delta Clearwater slough		<u>2/</u>	1,720 <u>3/</u>	1,235	745 <u>3/</u>	881
Chandalar River		<u>2/</u>	<u>5/</u>	17,455	6,345 <u>3/</u>	58 <u>3/</u>
Porcupine River drainage						
Sheenjek River		<u>2/</u>	1,175 <u>3/</u>	40,507	78,060	12,023
Yukon Territory Streams						
Fishing Branch River	250-300,000	35,125 <u>6/</u>	15,987 <u>7/</u>	32,525 <u>7/</u>	353,282 <u>7/</u>	13,450

- 1/ All surveys rated fair - good unless rated otherwise.
2/ Not surveyed.
3/ Poor survey.
4/ Surveyed too early.
5/ Surveyed too late.
6/ Combined tagging population estimate and weir count.
7/ Weir count.
8/ Richardson Highway Bridge to Blue Creek.
9/ Foot survey.

NORTON SOUND AREA

A total of approximately 193,000 salmon was commercially harvested in 1976 which was 10 percent less than the recent 5-year average harvest. The commercial king salmon catch of approximately 2,200 fish was almost 25 percent below the average annual harvest. The chum salmon catch of 96,000 fish was the lowest since 1969 and 33 percent below the recent 5-year average. As a result of a small return of chum salmon, fishing time restrictions or season closures were imposed on all subdistricts except Golovin Bay in order to bolster escapements. The pink salmon harvest of 88,000 fish was the second largest on record and almost 60 percent above recent year average. The coho catch of 6,700 fish was almost 75 percent above the recent 5-year average harvest. Comparative commercial and subsistence catches by species are presented in Table 12.

The 1976 subsistence salmon harvest of 27,000 fish was comparable to the recent 5-year average of 28,000 fish.

A total of 293 commercial, 212 vessel and 206 set gillnet licenses was issued in 1976. This represents decreases of 14 percent for commercial licenses and 29 percent for vessel and gear licenses.

Pink salmon runs were of average to above average magnitude, while chum salmon returns were generally below average. Chum salmon returns and escapements to Moses Point subdistrict streams were notably poor and represented the second consecutive year of below average runs to this subdistrict. Comparative escapement data is presented in Table 13.

The value of the commercial catch to the fisherman was approximately \$285,000.

Table Commercial and subsistence catches by species Norton Sound district, 1961-1976.

Year	Commercial						Subsistence				
	King	Red	Coho	Pink	Chum	Total	King	Coho	Pink	Chum	Total
1961	5,300	35	13,807	34,237	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	5	118	16,607	17,635	34,365
1964	2,018	126	98	13,567	148,862	164,671	565	2,567	9,225	12,486	24,843
1965	1,449	30	2,030	220	36,795	40,524	574	4,812	19,131	30,772	55,289
1966	1,553	14	5,755	12,778	80,245	100,345	269	2,210	14,335	21,873	38,687
1967	1,804	-	2,379	28,879	41,756	74,818	817	1,222	17,516	22,724	42,279
1968	1,045	-	6,885	71,179	45,390	124,499	237	2,391	36,912	11,661	51,201
1969	2,392	-	6,836	89,949	82,795	178,972	436	2,191	18,562	15,615	36,804
1970	1,853	-	4,423	64,908	107,034	178,218	561	4,675	26,127	22,763	54,126
1971	2,593	-	3,127	4,895	131,362	141,977	1,026	4,097	10,863	21,815	1/ 37,801
1972	2,885	-	450	45,143	101,235	149,713	756	1,928	12,214	12,942	2/ 27,840
1973	1,918	-	9,282	46,499	119,098	176,797	392	520	14,770	7,185	22,867
1974	2,951	-	2,092	148,519	162,267	315,829	420	1,064	16,426	3,953	21,868
1975	2,321	-	6,218	32,820	216,443	257,802	186	192	15,078	6,449	21,905
1976	2,206	11	6,709	87,889	96,102	192,917	203	1,004	18,409	7,867	27,483

Combined

Year	King	Red	Coho	Pink	Chum	Total
1961	5,300	35	13,807	34,237	48,332	101,711
1962	7,286	18	9,156	33,187	182,784	232,431
1963	6,618	71	16,883	72,232	172,424	268,228
1964	2,583	126	2,665	22,792	161,348	189,514
1965	2,023	30	6,842	19,351	67,567	95,813
1966	1,822	14	7,965	27,113	102,118	139,032
1967	2,621	-	3,601	46,395	64,480	117,097
1968	1,282	-	9,276	108,091	57,051	175,700
1969	2,828	-	9,027	105,511	98,410	215,776
1970	2,414	-	9,098	91,035	129,797	232,374
1971	3,619	-	7,224	15,758	153,177	179,778
1972	3,641	-	2,378	57,357	114,084	177,553
1973	2,310	-	9,802	61,269	126,283	199,664
1974	3,371	-	3,156	164,945	166,225	332,697
1975	2,507	-	6,410	47,898	222,892	279,707
1976	2,419	11	7,713	106,298	103,969	220,410

1/Includes 197 red salmon recorded in all subdistricts.

2/Includes 93 red salmon in all subdistrict.

Table 13. Comparative aerial survey counts of Norton Sound streams, 1961-1976.^{1/}

Year	King	Chum	Boston Creek	
			Pink	Pink and Chum ^{2/}
1963	67	1,669		
1964	10	3,315		
1966 ^{3/}	153	761		
1968	7	2,500	2,500	
1969	100	7,000	16,000	
1970	246	8,200	12,900	
1971	42	7,045	80	
1972	57	4,252	3,950	
1973	153	2,882	3,213	
1974	225	2,201	749	
1975	147	1,885	2,556	
<u>Niukluk River</u>				
1962	11			27,879
1963		13,687	4,103	
1964		8,395	10,495	
1966		21,300	8,600	4,700
1967			20,546	
1968				85,125
1969		10,240	92,650	
1970		7,300	60,350	
1971		22,605	8,370	
1972 ^{3/}		10,500	22,600	
1973		14,365	14,790	
1974	4	13,684	9,210	
1975		16,453	10,089	
1976		4,130	7,190	
<u>Fish River</u>				
1961	1			14,100
1962	48			28,918
1963	21			25,728
1964		18,670	10,935	14,550
1966	7			17,955
1967	20			13,510
1968	10			164,000
1969		2,080	124,000	
1970	33	76,550	198,000	
1971	1	13,185	1,670	
1972 ^{3/}		3,616	13,050	
1973	31	6,887	14,364	
1974	3	10,945	15,690	
1975	26	10,742	9,954	
1976		8,390	15,850	8,550

Table 13.

Comparative aerial survey counts of Norton Sound streams, 1961-1976.^{1/}

Year	King	Chum	Pink	Pink and Chum ^{2/}
<u>Kachavik Creek</u>				
1963		16,000	16,000	
1964		5,284	3,675	
1966		758	1,788	
1967 ^{3/}				1,780
1969		600	4,525	
1970		500		
1971		10,000	5,323	
1972		3,100	16,950	
1973		10,325	22,275	
1974		11,645	2,723	
1975		1,735	23,360	
<u>Kwiniuk River</u>				
1962	3			23,249
1963	2	11,340	3,779	
1964		14,533	3,033	
1965 ^{4/}	14	26,634	8,301	
1966 ^{4/}	7	32,786	10,629	
1967 ^{4/}	13	24,444	13,508	
1968 ^{4/}	27	18,813	126,764	
1969 ^{4/}	12	19,687	56,683	
1970 ^{4/}		68,004	235,131	
1971 ^{4/}	37	39,046	16,742	
1972 ^{4/}	65	30,686	62,461	
1973 ^{4/}	57	28,029	37,070	
1974 ^{4/}	62	35,899	40,825	
1975 ^{4/}	42	11,714	54,878	
1976 ^{4/}	12	6,834	28,431	
<u>Tubutulik River</u>				
1962	3			16,690
1963	9	16,069	4,355	
1964		15,469	10,043	3,420
1966		4,363	26,000	
1967	1			22,475
1968		5/	5/	
1969	3	12,040	12,788	3,045
1970		53,290	136,590	
1971		16,820	7,500	5,065
1972 ^{3/}		8,070	21,100	
1973	131	5,383	15,665	
1974	136	9,560	17,940	
1975		15,871	38,003	
1976		1,095	6,095	2,600

1/ King salmon count is the "high count" for the season, chum and pink, salmon counts collectively taken as "high counts" for season.

2/ Surveyor unable to distinguish between the two species.

3/ Poor survey conditions or partial survey.

4/ Total counts obtained from counting tower.

5/ Count not obtained but numbers believed to be similar to Kwiniuk River.

KOTZEBUE AREA

A total of approximately 160,000 chum salmon was harvested commercially in the Kotzebue area in 1976. This was the lowest catch since 1971 and was 58 percent below the recent 5-year average harvest (Table 14). Due to the poor return of chum salmon, fishing time was reduced by one-half early in the season in order to bolster escapements.

Commercial license registration totaled 512, a 7 percent decrease from record 1975 levels, but 47 percent above the recent 5-year average. A total of 219 vessel and 225 gear licenses were issued in 1976. These figures were below record 1975 levels also, but were 48 percent and 38 percent, respectively, above the recent 5-year averages.

A subsistence harvest of approximately 17,000 chums was reported, which represents a decrease of 23 percent below the recent 5-year average harvest (Table 14).

Information from commercial catch data, subsistence information, test fishing and aerial survey data indicates 1976 runs and escapements were average at best and as much as 67 percent below peak year figures. Comparative escapement data is presented in Table 15.

The value of the commercial catch to the fishermen was approximately 412,000 or an average of \$1,873 per fisherman.

Table 14. Commercial and subsistence salmon catches, Kotzebue district, 1914-1976

Year ^{1/}	Commercial catch			Subsistence catch		Combined catches
	Chum ^{2/}	Other ^{3/}	Total	Chum		
1914	8,550		8,550			
1915	4,750		5,750			
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	561,710 ^{7/}		561,710	27,605		589,315
1976	159,796		159,796	15,765		175,561

^{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 king salmon and red 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.

Table 15. Comparative aerial survey chum salmon counts of Kotzebue area streams, 1962-76.

Year	Noatak River ^{1/}	Upper Kobuk River ^{2/}	Kobuk River Tributaries ^{3/}
1962	168,000	23,150	39,827
1963	1,970 ^{4/}	4,535	8,940
1964	89,798	7,985	20,047
1965	4,177 ^{2/}	2,750	8,730 ^{4/}
1966	101,640	1,474	6,690
1967	28,620	2,495	5,618
1968	39,394	2,370	10,936
1969	33,395	7,500	9,434
1970	138,145	13,908	9,418 ^{4/}
1971	41,064	17,202	13,465
1972	64,315	18,155	34,199 ^{4/}
1973	32,144	2,470 ^{4/}	19,236 ^{4/}
1974	138,834	27,309	66,978
1975	101,581 ^{4/}	10,358	41,821
1976	45,689	1,804 ^{4/}	8,848

^{1/} Mouth to Kelly River.

^{2/} Kobuk village to Reed River.

^{3/} Squirrel, Salmon, Tutuksuk Rivers.

^{4/} Poor survey conditions or incomplete survey.