

AYK REGION

SALMON BOF RPT #8

STATUS REPORT OF COMMERCIAL
AND SUBSISTENCE SALMON FISHERIES
IN THE ARCTIC-YUKON-KUSKOKWIM REGION
(with emphasis on the 1973 season)

A REPORT TO THE ALASKA BOARD
OF FISH AND GAME

November 1973

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 Demarcation Point at the Canadian border. In addition it includes the following Bering Sea Islands: Nunivak, St. Lawrence and St. Matthew. This is the largest management area 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 was made in the region during 1973 totaling nearly 1.6 million salmon which exceeded the previous high catch made in 1970 by approximately 580,000 fish. The 1973 harvest represented 14.1 million pounds (round weight) of salmon. Catches of chum and coho salmon were also the largest ever recorded.

The 1973 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	49,057	5,570	148,143	599	183,912	387,281
Yukon	75,897		36,671		528,640	641,208
Norton Sound	1,851		9,279	46,500	119,009	176,639
Kotzebue					380,312	380,312
Total, 1973	<u>126,805</u>	<u>5,570</u>	<u>194,093</u>	<u>47,099</u>	<u>1,211,873</u>	<u>1,585,440</u>
Previous season record	161,000	14,000	175,000	147,000	675,000	1,005,000
5-year average (1968-72)	153,000	8,000	92,000	76,000	510,000	838,000

Commercial harvests in the region have increased about 1600 percent since 1960. Recent increases have been largely due to expanded chum salmon harvests in the Yukon River, Kuskokwim River and Kotzebue areas.

The region-wide license registration in 1973 of 2,254 commercial, 1,650 fishing vessel and 1,966 gear licenses was a record high total. License registration had been increasing at a rate of approximately 6 percent annually during the 1968-1972 period. In 1973 the rate increase over the previous year was 20 percent for commercial licenses, 15 percent for vessel licenses and 12 percent for gear licenses. Vessel registration in the region has increased 500 percent since 1960. 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 1960-1973 are illustrated in Figure 2.

Figure 3 shows commercial, subsistence and total catches of king and other salmon species made in the region during 1960-1973.

The decline in subsistence utilization has resulted in the Department allowing greater commercial harvests, especially of chum salmon. Department

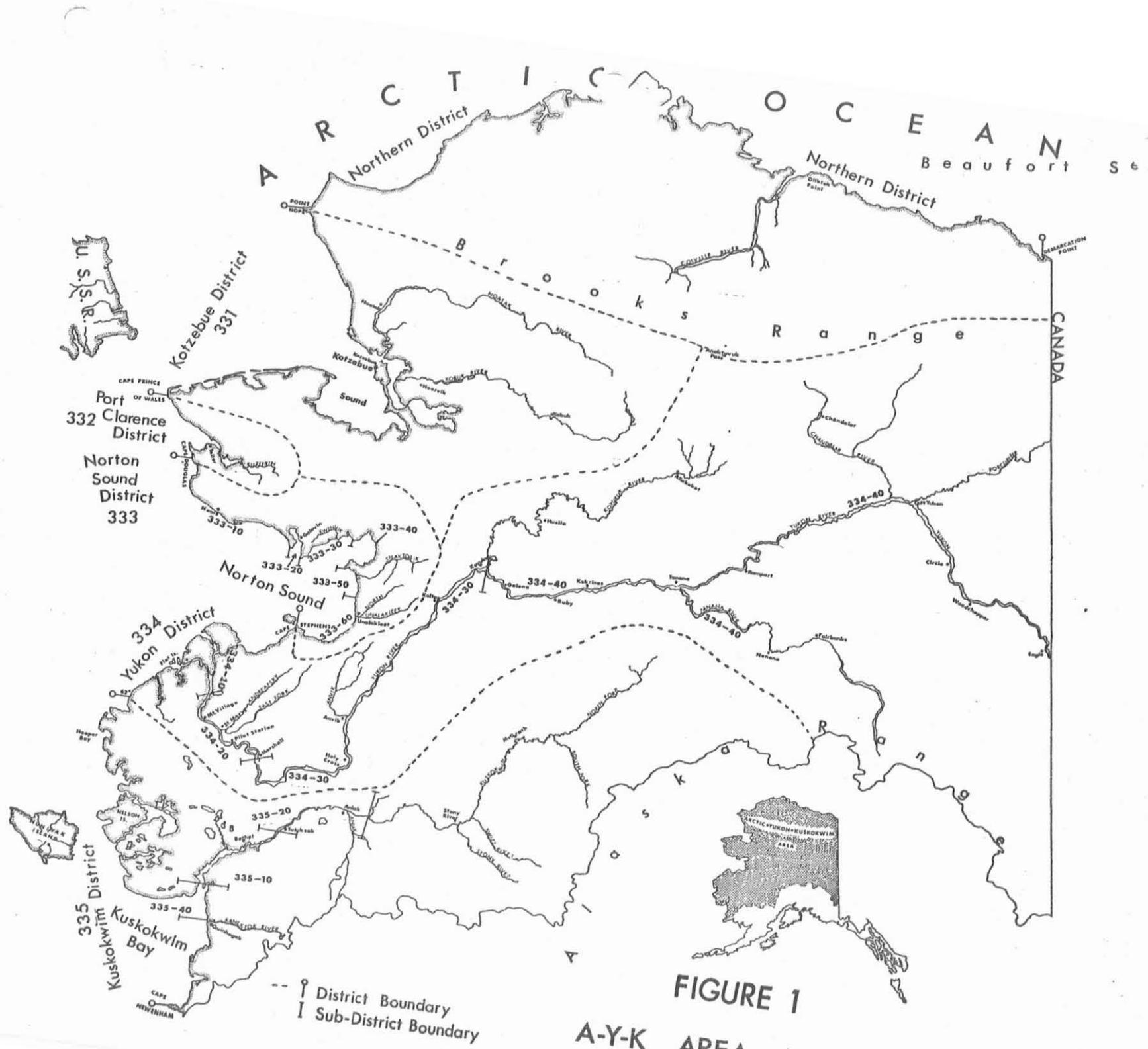


FIGURE 1
A-Y-K AREA MAP

Figure 2. Total commercial salmon catch and fishery vessel registration for the Arctic-Yukon-Kuskokwim region, 1960-1973.

vessel registration for the Arctic-Yukon-Kuskokwim region, 1960-1973.

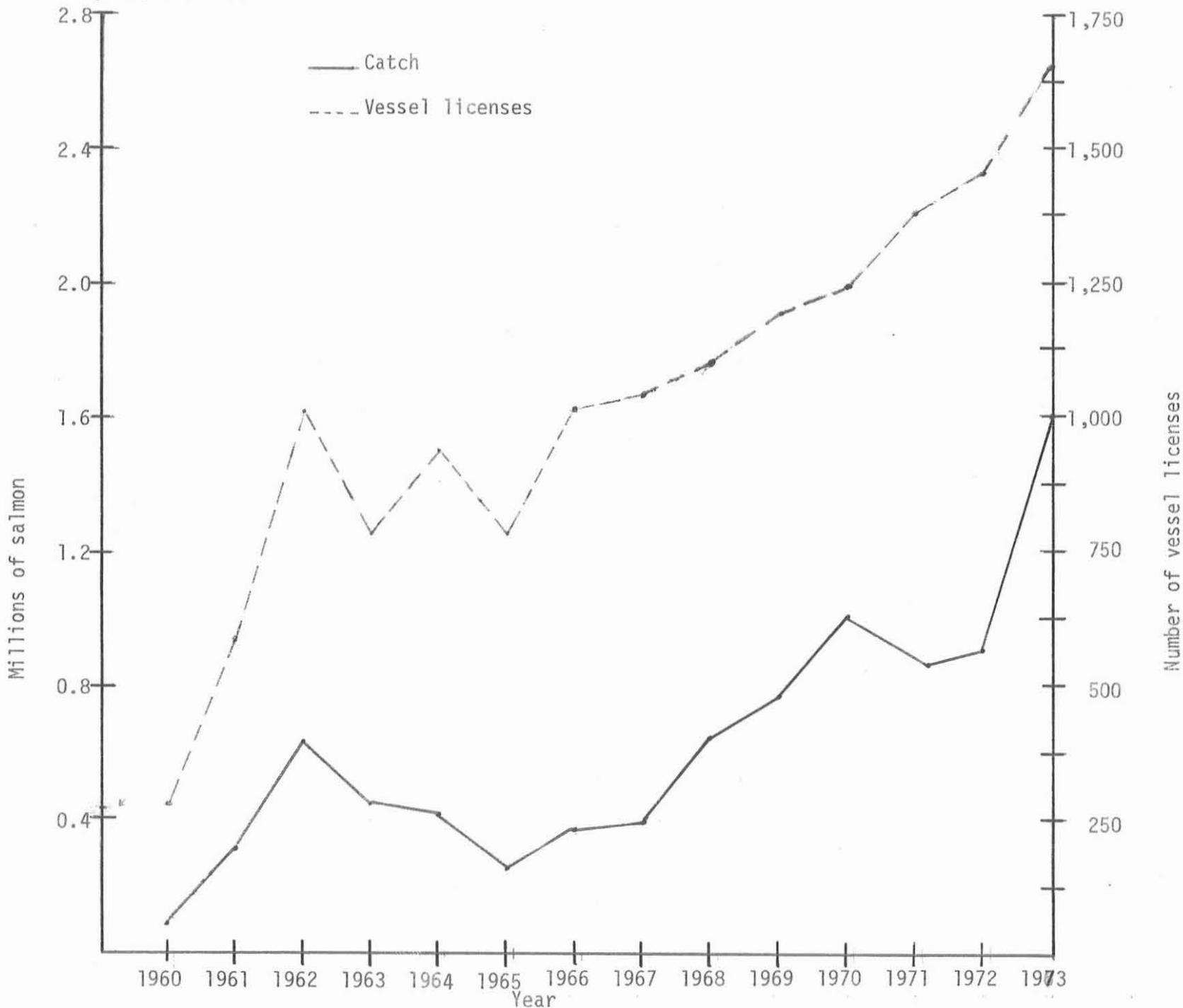
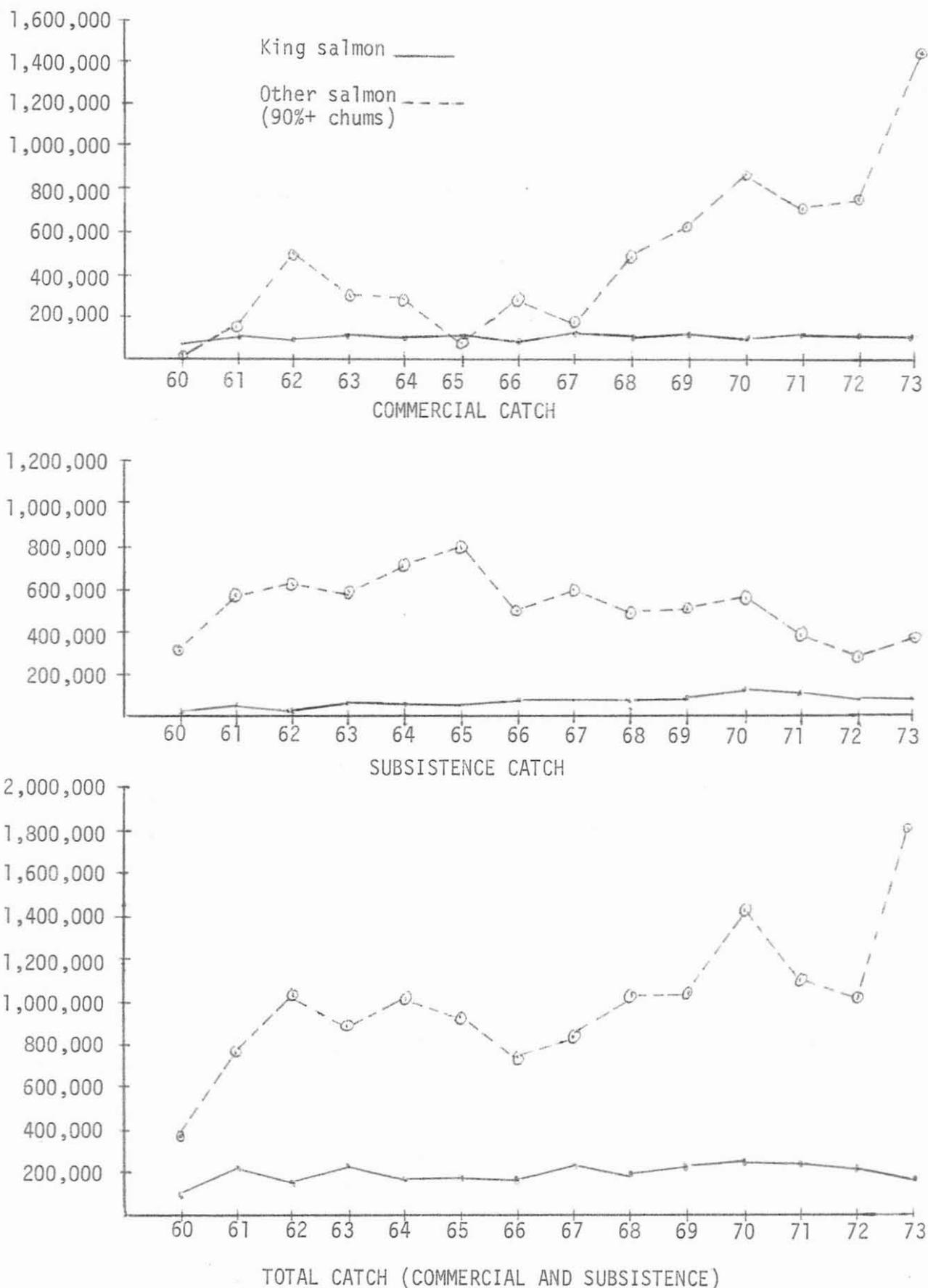


Figure 3. Commercial, subsistence and total catch in numbers of salmon for the Arctic-Yukon-Kuskokwim region, 1960-1973.



studies have revealed that unharvested surpluses of pink and chum salmon exist in some areas. In addition there has been increased demand from Japanese markets for fresh frozen A-Y-K salmon. Barring significant increases in offshore utilization by foreign nations or unusually severe environmental conditions, the A-Y-K commercial salmon fishery can be expected to increase moderately in terms of production and economic value during the next few years.

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 has been accelerated in the past few years as increased welfare payments and employment opportunities, including commercial fishing activities, have become available to the native people. Another very important factor tending to affect subsistence fishing effort during recent years is the increasing use of snow vehicles which may be replacing 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 will be required for subsistence purposes as the canine population declines. The decline in subsistence fishing is not related necessarily to fish abundance, but mainly reflects decreases in effort and dependence due to a changing way of life.

Subsistence catch data for 1973 is very preliminary at this time since a few late catch reports are still being received. The projected 1973 harvest should not exceed 450,000 salmon, and is expected to be one of the smallest harvests ever made in the region. The average annual subsistence harvest

recorded during 1960-1972 was 607,000 salmon (Figure 3).

KUSKOKWIM AREA

This area experienced a dramatic increase in 1973 as the commercial salmon catch of 387,621 fish greatly exceeded the previous five-year average of 222,275. Species composition of the 1973 harvest was 49,057 king, 5,570 red, 148,143 coho, 599 pink and 183,912 chum salmon. Table 1 presents annual commercial catches for the Kuskokwim River, Quinhagak and Goodnews Bay districts since 1960.

Registration exhibited a concurrent surge as commercial license registration rose 18 percent above the 1972 levels to 746. Vessel and drift gill net licenses showed a moderate increase as they reached 558 and 554 respectively, while set gill nets decreased to 25. Overall, 1973 registration increased 11.5 percent over 1972.

The 33,073 king salmon taken commercially in the Kuskokwim River represented a decrease of 6,600 fish compared to the previous 5-year average, but still exceeded the previous 10-year average by 2,500 fish. The Kuskokwim River chum catch of 147,435 was the largest ever recorded.

The 1973 Kuskokwim River subsistence harvest of 34,116 king salmon was below the 1960-72 average of 38,900 (Table 2). The catch of the other species, primarily chums, was 156,892. This catch rose significantly above 1971 and 1972 levels, but remained 50,500 fish below the 1960-1972 average (Table 3).

Based on comparative catch (commercial, test net) and escapement data, the Kuskokwim River king salmon run magnitude was below normal. Table 4 presents comparative king salmon escapement data. Chum and coho salmon runs throughout the area were average to above average in magnitudes.

Restrictions prohibiting subsistence fishing for 24 hours prior to each commercial fishing period during the entire commercial fishing season in subdistrict 1 (lower Kuskokwim River) were liberalized in 1973 so as to only apply during the short (2-3 week) king salmon season. In spite of an intense public relations and enforcement program, continued controversy, opposition and illegal fishing were experienced this past season in a few villages. In order to overcome this problem the Department plans to station the Kuskokwim area biologist position permanently in Bethel so that a full-time public relations program can be initiated.

Table 1. Kuskokwim district commercial catches by drainage, 1960-1973.

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	40,701	99	22,198	5	78,398	141,401
1973	33,073	253	127,259	31	147,435	308,051

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	16,739	3,403	392	2,030	17,587	40,151
1973	12,729	3,182	16,297	279	19,468	51,955

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	926	66	3,161	5,341
1973	3,255	2,135	4,927	289	17,009	27,615

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. Comparative Kuskokwim River king salmon subsistence catches by village, 1960-1973.

Village	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1960-72 Total	1960-72 Average
Kwigillingok, Kipnuk, Kongiganak	250	283	54 ^{3/}	229	414	0 ^{1/}	205	957	70	385	1,111	241	10	75 ^{12/}	4,209	351 ^{2/}
Eek	1,474 ^{3/}	2,238 ^{3/}	1,060 ^{3/}	2,697 ^{3/}	1,857	2,737	2,872	4,375	2,760	2,037	2,065	1,882	1,969	1,959	30,023	2,309
Tuntutuliak	226	2,226	842	2,853	1,826	1,978	3,061	3,338	2,026	2,195	3,558	1,841	3,214	2,858	29,184	2,245 ^{5/}
Kasigluk	135	1,215	127	1,302	4 ^{4/}	513	1,875	2,766	1,360	2,888	3,931	1,645	1,292	1,275	19,049	1,465 ^{5/}
Nunapitchuk ^{6/}	683	2,042	848	1,874	636	490	2,875	1,926	1,360	2,279	4,680	1,978	2,506	1,897	24,177	1,860
Atmauthluak ^{6/}											1,205	548	813	885	2,566	855
Napakiak	1,830	2,573	2,191	3,148	2,677	1,670	3,592	3,922	2,317	3,546	4,960	1,868	2,009	1,710	36,303	2,793
Oscarville	1,968	282	75	309	339	678	301	1,327	393	457	542	570	196	586	7,437	572
Napaskiak	536	1,258	759	1,569	2,201	1,412	2,935	3,091	1,647	2,227	3,446	1,916	1,578	1,950	24,575	1,890
Bethel	1,923	4,150	1,378	7,019	4,114	3,342	7,604	11,772	4,900	7,472	17,026	8,731	7,333	8,052	86,764	6,674
Kwethluk	2,692	3,763	2,329	5,050	3,262	4,538	6,135	6,889	3,549	3,187	7,932	5,564	5,225	3,361	60,115	4,624
Akiakchuk	1,626	3,052	1,800	2,533	3,488	3,952	4,957	5,543	3,415	2,602	7,022	4,818	3,709	1,556	48,517	3,732
Akiak	1,865	3,159	906	2,869	2,495	1,774	3,941	3,700	1,332	1,275	3,290	2,688	1,485	1,895	30,869	2,375
Tuluksak	737	1,486	493	1,295	572	1,019	1,559	1,710	1,048	1,131	1,995	1,280	1,318	1,422	15,643	1,203 ^{8/}
Lower Kalskag	961	571	805	2,661	710	841	1,918	1,733	1,463	2,083	2,146	2,355	2,604	1,113	20,851	1,896 ^{8/}
Upper Kalskag	667	1,049	7 ^{7/}	7 ^{7/}	1,143	719	1,333	1,699	1,404	1,623	734	601	401	974	11,373	1,034 ^{8/}
Aniak	1,057	688	185	602	1,104	494	2,002	1,415	467	1,406	2,136	1,076	2,188	1,071	15,932	1,226
Chuathbaluk	64	54	10	30	74	29	139	217	40	180	219	179	200	660	1,435	110
Napamute	20	16	44	52	134	2	78	60	100	19	22	17	20	13	584	45
Crooked Creek	747	518	561	859	1,358	363	1,249	638	77	541	684	291	181	239	8,057	620
Georgetown	10 ^{10/}	10 ^{10/}	10 ^{10/}	10 ^{10/}	10 ^{10/}	10 ^{10/}	12	10 ^{10/}	10 ^{10/}	9	2	0	0	0	23	5
Red Devil	10 ^{10/}	40	144	228	314	10 ^{10/}	182	40 ^{10/}	111	142	232	135	142	115	1,670	167
Sleetmute	465	222	9 ^{9/}	9 ^{9/}	9 ^{9/}	491	149	343	200	267	161	181 ^{11/}	69	274	2,566	257
Stony River	435	25	31	67	299	101	632	364	191	2,187	105	2,521 ^{11/}	95	215	7,053	543
Totals	20,361	30,910	14,642	37,246	29,017	27,143	49,606	57,875	30,230	40,138	69,204	42,926	38,557	34,116		38,851

^{1/} Included with other villages.^{2/} Does not include 1965.^{3/} Estimates based on catch data through 1969.^{4/} Included with Eek.^{5/} Does not include 1964.^{6/} New village of Atmauthluak segregated in 1970 from parent village of Nunapitchuk.^{7/} Included with Lower Kalskag.^{8/} Does not include 1962 and 1963.^{9/} Included with Red Devil.^{10/} Data not available.^{11/} Includes Lime Village.^{12/} Does not include Kipnuk.

Table 3. Comparative Kuskokwim River "other salmon" subsistence catches by village, 1960-1973.^{1/2/}

Village	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1960-72	1960-72
															Total	Average
Kipnuk, Kongiganak, Kwigillingok ^{12/}	1,430 ^{4/}	3,279 ^{4/}	1,990	2,562 ^{4/}	2,323	0	680	2,846	2,800	2,481	3,937	1,110	1,284	807 ^{12/}	26,722	2,227 ^{2/}
Eek	4,094 ^{4/}	2,321 ^{4/}	2,072 ^{4/}	1,771 ^{4/}	3,151	2,898	1,324	1,922	3,503	3,436	4,855	2,213	783	3,138	34,340	2,642
Tuntutuliak	4,101	8,526	9,692	6,791	8,421	18,993	9,747	11,531	14,090	17,462	10,600	9,964	11,103	13,574	141,022	10,848 ^{6/}
Kasigluk	1,400	3,657	1,705	1,020	5/	4,041	3,058	2,309	4,311	3,308	5,731	2,043	1,934	4,467	34,517	2,876 ^{6/}
Nunapitchuk	2,743	4,868	7,474	2,462	1,171	4,251	4,145	6,278	7,731	6,934	11,412	3,375	5,600	4,584	68,350	5,258
Atmauthluak												1,191	947	2,254	3,279	1,093
Napakiak	19,888	5,789	6,167	3,711	12,312	12,928	9,275	12,685	12,700	12,390	16,371	4,427	5,191	8,256	133,834	10,295
Oscarville	3,948	1,680	1,723	1,025	487	8,010	407	2,580	2,104	2,743	4,669	1,675	498	2,773	31,549	2,427
Napaskiak	5,199	4,286	5,546	3,584	6,275	26,206	8,743	8,585	12,409	11,655	11,169	7,039	8,858	8,077	119,554	9,196
Bethel	12,972	12,845	8,470	8,623	15,623	19,099	14,011	14,055	28,603	14,613	33,475	9,905	16,885	26,437	208,603	16,046
Kwethluk	32,975	21,106	22,788	13,188	19,186	37,780	18,707	23,872	36,645	23,462	27,702	13,941	11,721	18,714	303,380	23,337
Akiakchuk	15,932	12,518	10,521	6,725	10,096	25,138	15,049	13,584	19,461	10,306	29,776	12,298	9,266	8,049	190,693	14,669
Akiak	13,061	8,205	6,551	8,478	9,659	12,297	10,622	9,332	13,775	9,854	13,003	9,264	5,108	6,127	128,178	9,860
Tuluksak	19,261	7,928	8,526	10,289	9,777	12,820	11,670	8,898	11,114	6,058	7,626	5,115	5,145	5,896	124,209	9,555
Lower Kalskag	11,563	7,764	16,478	23,249	9,472	21,906	10,346	16,018	8,114	8,468	11,158	3,509	3,490	2,448	151,515	11,655
Upper Kalskag	38,398	27,149	7/	7/	11,391	11,970	6,236	8,364	9,733	9,413	5,309	3,530	1,460	5,807	132,856	12,078
Aniak	36,673	15,935	10,120	10,608	17,874	11,353	12,484	16,788	17,341	15,127	10,030	4,933	5,243	11,967	184,926	14,225
Chuathbaluk	22,370	2,922	3,784	2,629	5,059	6,507	5,625	7,249	11,588	7,523	10,971	5,632	8,509	9,923	100,193	7,707
Napamute	11,017	6,235	3,898	5,192	4,873	704	3,704	5,750	1,774	1,453	1,224	1,862	4,645	3,367	52,331	4,025
Crooked Creek	41,263	17,558	27,259	23,166	32,550	18,986	19,467	14,365	12,704	6,810	9,216	3,094	3,658	1,844	229,919	17,686
Georgetown	9/	9/	9/	9/	9/	70	70	9/	2,030	3,664	800	0	0	11	6,494	1,299
Red Devil	9/	1,350	9,007	5,367	5,706	9/	2,746	9/	2,400	1,130	2,454	1,067	1,695	3,348	32,610	3,261
Sleetmute	17,259	6,884	10/	10/	10/	11,707	2,611	6,875	11,218	8,258	4,464	3,203 ^{11/}	4,293	1,582	76,772	7,677
Stony River	11,750	2,642	1,855	1,110	4,254	15,865	3,933	11,377	13,875	12,080	8,407	5,995 ^{11/}	3,000	3,436	96,143	7,396
Totals	327,297	185,447	165,626	141,550	189,660	283,459	174,660	205,263	260,023	198,628	245,550	116,391	120,316	156,892		207,338

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

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

3/ Does not include 1965.

4/ Estimate based on catch data through 1970.

5/ Included with Eek.

6/ Does not include 1964.

7/ Included with Lower Kalskag.

8/ Does not include 1962 and 1963.

9/ Data not available.

10/ Included with Red Devil.

11/ Includes Lime Village.

12/ Does not include Kipnuk.

Table 4. Index counts of Kuskokwim River king salmon spawning escapements, 1965-1973.^{1/}

Year	Aerial Surveys				Counting Tower
	Kisaralik River	Aniak River (Above Salmon R.)	Chukowan River	Kogrukluk River	Kogrukluk River
1965	194 ^{2/}	-	-	-	-
1966	204 ^{2/}	485 ^{2/}	986	1,645	-
1967	-	758 ^{2/}	-	1,033	-
1968	487	783	1,260	2,180	-
1969	-	537	-	-	3,626
1970	531	592	1,118	1,598 ^{2/}	4,865
1971	-	144 ^{2/}	-	636 ^{2/}	-
1972 ^{3/}	-	93 ^{2/}	163 ^{2/}	476 ^{2/}	2,305
1973 ^{3/}	152	200 ^{2/}	229	610 ^{2/}	1,979

^{1/} ADF&G Annual Management Report, Arctic-Yukon-Kuskokwim area, 1971.

^{2/} Surveys rated poor.

^{3/} ADF&G unpublished data.

YUKON AREA

The 1973 commercial harvest of 641,208 salmon was the largest in history and nearly double the previous 5-year average of 347,767. The 1973 catch exceeded the previous record total catch of 469,790 in 1919 by nearly 200,000 fish. Species composition of the 1973 catch was 75,897 kings; 36,671 cohos and 528,640 chums. Table 5 presents annual commercial catches by subdistrict since 1960.

A record total of 855 commercial, 738 vessel, 679 set gill net and 335 drift gill net licenses was issued for the area in 1973. This represented a 12 percent increase in commercial and vessel licenses and a 6 percent increase in gear licenses over the 1972 registration. Much of the increase occurred in subdistrict 334-40 for the second consecutive year where 100 commercial fishermen were registered.

The increase in license registration in subdistrict 334-40 reflects expansion of the upriver commercial fishery. In recognition of the recently developed upriver commercial fishery and the desire of the fishermen in that area to more actively participate, the Department is proposing several regulation changes which will provide for a moderate increase in upriver catches. Presently the subdistrict 334-40 commercial fishery is limited to an area season catch quota of 2,000 king and 2,000 chum and coho salmon combined.

A majority of the available comparative data indicated that the 1973 king salmon run was below average in magnitude. The 1973 commercial king salmon catch was the lowest since statehood, about 28,000 less fish than the previous 12-year average. The 1973 subsistence catch was also below average and escapements in index areas ranged from very poor to fair. As a result of recent poor king salmon runs and increased fishing effort, the

Department is proposing a reduction in fishing time from 3 1/2 to 3 days a week in subdistricts 1 and 2.

The 1973 commercial chum salmon catch was the largest in history (52 percent greater than the record 1970 catch of 347,348) and exceeded the previous 12-year average by 398,513 fish. Based on comparative catch and escapement data, chum salmon were judged average in abundance and the large catch was the result of increased fishing effort.

There are both summer and fall runs of chum salmon in the Yukon River with summer chums being the most abundant. Utilization of summer chums has declined in recent years due to the decline in subsistence fishing effort and dependence. In order to encourage greater commercial harvesting of summer chums in subdistrict 1 and 2, all minimum mesh size restrictions have been removed and the second or "fall season" was opened earlier in July. A total of 258,798 summer chum salmon was harvested of which 87,567 were taken during the "king salmon season" (June 1-27) along with 160,754 taken during the early portion of the "fall season" (July 5-12). A new regulation requiring a maximum six inch mesh size after July 4 in subdistricts 1 and 2 contributed to the large summer chum catch, yet resulted in a minimal take of king salmon (less than 5,000 fish).

A total of 269,842 fall chums was harvested in 1973. The record fall chum catch (up 11 percent from the 1971 record catch of 246,384) was attributed to increased fishing effort, especially in subdistrict 2, where the fall chum salmon fishery in the past has been negligible. Fishing effort in subdistricts 1 and 2 has more than tripled during the last six years. In view of the large buildup of fishing effort during the fall chum fishery in recent years, the Department is proposing a reduction in fishing time from 4 to 3 days a week in subdistricts 1 and 2.

The 1973 commercial coho catch, the largest since statehood and surpassed only by the 1919 catch of 37,070, exceeded the previous 5-year average by 21,678 fish. This large catch reflects the magnitude of the run and increased fishing effort. Cohos are of minor importance and are taken incidentally to the more abundant fall chum salmon.

Subsistence catches tabulated to date total 18,001 king and 173,188 other salmon, primarily chums. With late catch reports still being received, final catch figures may be closer to 18,500 kings and 190,000 other salmon. The final 1973 "other salmon" harvest is expected to be the second smallest in the history of this fishery (Table 6).

As mentioned previously, king salmon escapements in index spawning areas varied from very poor to fair (see Table 7). Escapements were judged fair in the lower Yukon drainage (Andreafsky and Anvik River) but were poor in the upper drainage (Tanana River system and Yukon Territory).

Good comparative data are lacking for chum salmon escapements. Summer chum escapements were judged fair in the Andreafsky and Anvik Rivers. During the past two years the Department has initiated intensive surveys of fall chum salmon spawners in the upper Tanana River drainage. Several previously major undocumented spawning areas have been identified. Comparable surveys of the Delta River and portions of the Tanana River indicate that fall chum escapements of these areas were of similar magnitude in 1972 and 1973.

Table 5. Commercial salmon catches by species and subdistrict, Yukon district, 1960-1973.

Year	King salmon				Total	Coho salmon				
	334-10	334-20	334-30	334-40		334-10	334-20	334-30	334-40	Total
1960	50,713	15,994	-	884	67,591	-	-	-	-	-
1961	84,463	29,028	4,965	1,804	120,260	2,855	-	-	-	2,855
1962	67,099	22,224	4,687	724	94,734	22,926	-	-	-	22,926
1963	85,004	24,211	6,976	803	116,994	5,572	-	-	-	5,572
1964	67,555	20,246	4,705	1,081	93,587	2,446	-	-	-	2,446
1965	89,268	23,763	3,204	1,863	118,098	350	-	-	-	350
1966	70,788	16,927	3,612	1,988	93,315	19,254	-	-	-	19,254
1967	104,350	20,289	3,618	1,449	129,706	9,925	-	1,122	-	11,047
1968	79,465	21,392	4,543	1,126	106,526	13,153	-	150	-	13,303
1969	70,862	14,799	3,577	985	90,223	14,041	-	845	95	14,981
1970	57,681	17,210	3,712	1,666	80,269	12,245	-	-	-	12,245
1971	86,042	19,226	3,490	1,749	110,507	12,165	-	-	38	12,203
1972	69,784	17,414	3,870	1,091	92,159	22,462	506	-	22	22,990
1973	57,063	13,778	3,209	1,847	75,897	34,929	1,742	-	-	36,671

Year	Chum salmon				Total	Total salmon				
	334-10	334-20	334-30	334-40		334-10	334-20	334-30	334-40	Total
1960	-	-	-	-	-	50,713	15,994	-	884	67,591
1961	42,577 ^{1/}	-	-	-	42,577 ^{1/}	129,895	29,028	4,965	1,804	165,692
1962	53,160 ^{1/}	-	-	-	53,160 ^{1/}	143,185	22,224	4,687	724	170,820
1963	-	-	-	-	-	90,576	24,211	6,976	803	122,566
1964	8,347	-	-	-	8,347	78,348	20,246	4,705	1,081	104,380
1965	22,936	-	-	381	23,317	112,554	23,763	3,204	2,244	141,765
1966	69,836	-	1,209	-	71,045	159,878	16,927	4,821	1,988	183,614
1967	46,148	1,425	1,880	-	49,453	160,423	21,714	6,620	1,449	190,206
1968	62,852 ^{1/}	1,407	3,136	-	67,395	155,470	22,799	7,829	1,126	187,224
1969	184,411	5,024	1,722	703	191,860	269,314	19,823	6,144	1,783	297,064
1970	320,138	22,394	3,285	907	346,724	390,064	39,604	6,997	2,573	439,238
1971	282,461	6,112	50	1,061	289,684	380,668	25,338	3,540	2,848	412,394
1972	246,003	32,628	1,824	365	280,820	338,249	50,548	5,694	1,478	395,969
1973	407,805	107,655	463	12,717	528,640	499,797	123,175	3,672	14,564	641,208

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

Table 6. Yukon River comparative subsistence catch and effort data, 1961-1973 (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	17,903	170,234	16,827	151,338	38	342

Year	Fishing families surveyed ^{1/}	People in fishing families ^{1/}	Snow machines ^{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	443	2,869(6.5)	492(1.1)	1,873(4.2)	793	62

^{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 7. Comparative Yukon River drainage king salmon escapement counts 1959-1973.

Year	Andreafsky River (East fork)	Andreafsky River (West fork)	Anvik River
1960	1,020	1,220	1,950
1961	1,003 ^{2/}		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 ^{2/}	-
1972	798	582 ^{2/}	418
1973	825	788	445 ^{4/}

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 ^{2/}	615 ^{3/}	625
1971	159 ^{2/}	640 ^{3/}	856
1972	1,187	237	392
1973	249	36 ^{2/}	228

- ^{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/} Canadian Department of Fisheries survey.
- ^{4/} Tower count.

NORTON SOUND AREA

There were 176,639 salmon commercially harvested in Norton Sound in 1973. This year's catch represents a 9 percent increase over the previous 10-year average of 162,057. Species composition of the 1973 harvest was 1,851 king, 9,279 coho, 46,500 pink and 119,009 chum salmon. Comparative commercial harvest data for Norton Sound subdistricts are presented in Table 8.

The 1973 subsistence harvest of 13,518 salmon represents a 52 percent decline from the 1972 harvest of 27,840 and a 67 percent decline from the previous 10-year average of 40,323.

A record total of 263 commercial, 218 vessel and 217 set gill net (20,550 fathoms) licenses was issued for Norton Sound in 1973. This represents a 17 percent, 33 percent and 30 percent increase respectively over the 1972 licensing.

Salmon runs to drainages within Norton Sound were judged to be above average in magnitude with the exception of Unalakleet River stocks which were considered average. The pink salmon run was on a par with the parent year run with good run strength noted in subdistricts 333-20 and 333-30 (the Golovin and Moses Point areas). Coho salmon run strength was above average, particularly in subdistrict 333-60, the Unalakleet area.

Comparative escapement data for index spawning areas is presented in Table 9. Kwiniuk and North River escapements have been obtained from counting tower projects since 1965 and 1972 respectively. The 1973 tower counts were 28,614 chum and 38,426 pink salmon for the Kwiniuk River, and 4,257 chum, 25,461 pink and 314 king salmon for the North River.

A tagging project was conducted on the Unalakleet River this year to assess chum, pink and king salmon spawning population magnitudes. Four king, 513 chum and 1,217 pink salmon were tagged with 1, 91 and 331 tags

being recovered respectively, yielding preliminary population estimates of 1,092 king, 29,998 pink and 21,679 chum salmon.

A total of 37 tons of Pacific herring were commercially harvested this year with an approximate 3 percent roe recovery yielding approximately 2,400 pounds of processed roe.

Table 8. Commercial and subsistence catches by species, Norton Sound district, 1961-1973.

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	1,851		9,279	46,500	119,099	176,729	279	125	8,910	4,204	13,518

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	2,130	-	9,404	55,410	123,303	190,247

1/ Includes 197 red salmon recorded in all subdistricts.

2/ Includes 93 red salmon in all subdistricts.

Table 9. Comparative aerial survey counts of Norton Sound streams, 1961-1973.^{1/}

Year	King	Chum	Pink	Pink and Chum ^{2/}	Year	King	Chum	Pink	Pink and Chum ^{2/}
<u>Boston Creek</u>					<u>Niukluk River</u>				
1963	67	1,669			1962	11			27,879
1964	10	3,315			1963		13,687	4,103	
1966 ^{3/}	153	761			1964		8,395	10,495	
1968	7	2,500	2,500		1966		21,300	8,600	4,700
1969	100	7,000	16,000		1967			20,546	
1970	246	8,200	12,900		1968				85,125
1971	42	7,045	80		1969		10,240	92,650	
1972	56	4,252	3,950		1970		7,300	60,350	
1973	153	2,282	3,213		1971		22,605	8,370	
					1972 ^{3/}		10,500	22,600	
					1973		15,156	14,326	
<u>Fish River</u>					<u>Kachavik Creek</u>				
1961	1			14,100	1963		16,000	16,000	
1962	48			28,918	1964		5,284	3,675	
1963	21			25,728	1966		758	1,788	
1964		18,670	10,935	14,550	1967 ^{3/}				1,780
1966	7			17,955	1969		600	4,525	
1967	20			13,510	1970		500		
1968	10			164,000	1971		10,000	5,323	
1969		2,080	124,000		1972		3,100	16,950	
1970	33	76,550	198,000		1973		10,325	22,275	
1971	1	13,185	1,670						
1972 ^{3/}		3,616	13,050						
1973	31	6,887	14,364						
<u>Kwiniuk River</u>					<u>Tubutulik River</u>				
1962	3			23,249	1962	3			16,690
1963	2	11,340	3,779		1963	9	16,069	4,355	
1964		14,533			1964		15,469	10,043	3,420
1965 ^{4/}	14	26,634	8,301		1966		4,363	26,000	
1966 ^{4/}	7	32,786	10,629		1967	1			22,475
1967 ^{4/}	13	24,444	3,508		1968		5/	5/	
1968 ^{4/}	27	18,813	126,764		1969	3	12,040	12,788	3,045
1969 ^{4/}	12	19,687	56,683		1970		53,290	136,590	
1970 ^{4/}		68,004	235,131		1971		16,820	7,500	5,065
1971 ^{4/}	37	39,046	16,742		1972 ^{3/}		8,070	21,100	
1972 ^{4/}		30,305	62,299		1973	131	15,665	5,383	
1973 ^{4/}		28,614	38,426						

^{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 record commercial harvest of 380,312 chum was recorded in 1973. This represents a 230 percent increase over the previous 5-year average of 115,012 and a 122 percent increase over the previous record catch of 170,725 made in 1972. Historical commercial and subsistence catches are presented in Table 10.

A record total of 390 commercial, 136 vessel and 156 gear licenses was issued for the Kotzebue area in 1973. This represents a 102 percent, 56 percent and 62 percent increase respectively over the 1972 licensing. In addition a record total of 19,250 fathoms of set gill net was registered.

Commercial fishing was terminated by emergency order on August 22 or about ten days earlier than normal. This action was required to offset possible increased salmon mortalities due to unusually high rainfall that flooded key spawning areas in late August.

Chum salmon abundance in this area has been above average for the past four seasons and the 1973 run was probably the largest experienced since 1959. Inclement weather and extensive flooding of the Noatak and Kobuk Rivers prohibited conclusive escapement index counts from being obtained. Aerial surveys of the Squirrel and Salmon Rivers (Kobuk River system) prior to flooding resulted in a combined count of 19,200 chums. This was one of the larger counts made of these two streams, although the surveys were made prior to peak spawning.

A subsistence harvest of 10,999 chum salmon was reported in 1973. This represents a 64 percent decline from the 1972 harvest of 30,000 (estimate) chum salmon and a 59 percent decline from the previous 5-year average of 26,614. The dramatic decline in the subsistence chum salmon harvest is attributed to the extensive flooding the area experienced coincidentally with the peak of the chum salmon run.

Table 10. Commercial and subsistence salmon catches, Kotzebue district, 1914-1973.

Year ^{1/}	Chum ^{2/}	Commercial Catch Other ^{3/}	Total	Subsistence Catch - Chum	Combined catches
1914	8,550		8,550		200,358
1915	4,750		4,750		
1916	19,000		19,000		
1917	44,612		44,612		
1918	27,207		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	170,782		170,782	30,000 (est.)	200,782
1973	380,312	3	380,315	10,999	391,314

^{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.

Mostly pinks but includes king salmon, 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.