SUMMARY OF WESTERN ALASKA CHINOOK SALMON CATCH AND ESCAPEMENT DATA

By

Charles P. Meacham

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INTRODUCTION

This report summarizes catch, escapement, and age-weight-sex statistics for western Alaska chinook salmon (Oncorhynchus tshawytscha). The geographical bounds of western Alaska include the following areas: Kotzebue Sound, Norton Sound, Yukon River, Kuskokwim River, Bristol Bay, the North side of the Alaska Peninsula and the Aleutian Islands (Figure 1).

Chinook salmon are found throughout western Alaska. The commercial and subsistence fisheries are concentrated in the Port Moller area off the Alaska Peninsula; in Bristol Bay, especially in the Nushagak and Togiak areas; Kuskokwim Bay and the lower Kuskokwim River; the Yukon River; and southern Norton Sound. Probably in excess of 90% of the chinook salmon produced in western Alaska originate in the Nushagak, Kuskokwim and Yukon Rivers. Although western Alaska chinook salmon are harvested for subsistence, and sport purposes, the majority are taken commercially (Table 1). The The fishery is conducted in nearshore coastal waters, except for the Yukon and Kuskokwim Rivers where commercial and subsistence effort takes place within the rivers themselves. The gear used to capture chinook is primarily nylon gillnets of eight inch or smaller mesh size, fished as either a set net or drift net. Some harvest by fishwheel occurs in the upper Yukon and Kuskokwim Rivers.

Approximately 4,400 commercial salmon fishing entry permits have been issued for the areas in western Alaska where chinooks are harvested commercially. It's estimated that approximately half that number participated in the 1980 commercial harvest of chinook salmon. A conservative estimate of 2,500 families utilize chinook salmon for subsistence food needs in western Alaska.

THE FISHERIES

Chinook salmon were first harvested for subsistence purposes. Remnants of salmon net stone sinkers have been found in old village sites at Cape

Denbigh in Norton Sound that date back to 400 B.C. (ADF&G, 1972). Periodic subsistence catch reports since 1920 for western Alaska locations are presented in Table 2. Only since 1963 are reasonably good statistics available. During the 1963-1980 period the average annual subsistence chinook harvest was approximately 73,000 fish, about 22% of the total harvest. In some locations such as the Kuskokwim the subsistence harvest frequently exceeds the commercial harvest. The subsistence fishery is managed by a permit system in some areas which specifies a guideline harvest level. In recent years management measures have become more restrictive than they were in the past.

Commercial harvest data is presented in Table 3 and Figure 2. The first significant commercial harvest of chinook salmon began in Bristol Bay in the 1800's and in the Alaska Peninsula, Kuskokwim and Yukon areas in the early 1900's. The average commercial harvest of chinook salmon in western Alaska since 1963 is approximately 261,000. Management of the commercial fishery is primarily by gear restrictions and time and area closures. In recent years management measures have become more restrictive, primarily through reduction in fishing time. The following sections outline in greater detail the three more important chinook salmon commercial fisheries of the Bristol Bay, Kuskokwim, and Yukon areas.

In Bristol Bay initial exploitation occurred from 1893 to 1899. Until 1952 virtually all of the entire commercial harvest was in the Nushagak district. Since then approximately 25% occurs in other Bristol Bay districts, some of which is taken incidentally in the sockeye fishery. The fishery averaged less than 100,000 chinook caught per year until the mid-seventies either because of resource abundance or market limitations. Subsistence harvests have been increasing and have averaged about 8,000 for the last 10 years. Since 1976 catches have increased in response to increased effort and resource availability.

Kuskokwim River commercial catches were first documented in 1913. The fishery remained at a low level until after the early 1960's. Commer-

cial catches have been somewhat stabilized by a gradual reduction in fishing time allowed with large mesh nets. This is the only major chinook fishery in which subsistence utilization has frequently surpassed the commercial harvest. From 1975 to 1979 the total annual harvest has averaged 104,000 chinook (51,000 commercial; 53,000 subsistence). Following a period of decreased abundance in the early and middle 1970's, catches and escapements have greatly improved over the past four years.

The Yukon River commercial king salmon fishery dates back to 1918. Since 1961 commercial catches have ranged from 63,800 to 152,900 fish and the recent 5 year average is 95,000. In addition to the Alaska catch, the commercial fishery at Dawson (Yukon Territory) harvests 2-3,000 kings annually (recent 10 year average). Commercial fishing effort has increased sharply since 1961 until the mid 1970's when entry to the fishery became regulated. Yukon River king salmon runs during the early 1970's generally declined in magnitude based on available comparative catch and escapement data. Countering this trend, good runs have occurred since 1977. Restrictions placed on the commercial fishery during the 1970's have generally resulted in improved escapements compared to the 1963-1969 period. However, with the exception of 1971 and 1977-80, escapements have not reached the levels observed during the early 1960's prior to maximum development of the commercial fishery. Throughout the Yukon River drainage approximately 15-25,000 kings were taken annually for subsistence use.

ESCAPEMENT ESTIMATES AND INDICES

Minimal data are available on the escapement levels of chinook salmon in western Alaska, due largely to the immense size and turbid conditions in the mainstem areas of the major chinook salmon river systems. Essentially no data are available for most of the smaller systems. Aerial surveys are frequently made of the more important spawning tributaries, providing relative indices of escapement for the Yukon and Kuskokwim and

rough estimates of escapement for Bristol Bay rivers (Table 4). During the period of record for Bristol Bay (Nushagak and Togiak Rivers, 1967-1980) the average escapement has been 90,000. For all major systems, a decline in escapement is apparent in the early 1970's followed by an increase in recent years. Indices of escapement are also available from CPUE values for commercial and subsistence fisheries and Department of Fish and Game test fishing.

AGE-WEIGHT-SEX STATISTICS

The commercial catch of western Alaska chinook salmon from major fisheries has been routinely sampled since 1964. Sampling procedures generally include measuring the length of the fish (mid-eye to fork of tail) determining sex, and removing a scale for aging purposes. Weights are regularly taken for Bristol Bay chinook salmon. Samples from the chinook salmon escapement are few, frequently dependent upon sampling of spawned carcasses with removal of scales or otoliths for aging purposes.

Although there are considerable variations in sex ratios from area to area and between years, there appears to be an overall higher percentage return of males (Table 5). During the years 1964-1978, the average percent of males in the harvest of western Alaska chinooks was 51%, 52%, and 56% for the Yukon, Kuskokwim, and Bristol Bay fisheries, respectively. An even higher percentage of males was found in the escapement. A higher percentage of males was also found in the commercial fishery with smaller mesh size gear. The overall higher percent of males in the commercial catch is due to a relatively greater abundance of early maturing smaller age 4 and 5 year old males. The larger age 6 and 7 year old age classes contain a significantly greater percentage of females.

As with sex composition, there is considerable variation in age class composition of western Alaska chinook salmon from area to area and year to year. However, the majority of chinook return as 4-7 year olds with a predominance of 6 year olds in both the catch (Table 6) and escapement

(Table 7). Also apparent is a greater percentage of younger fish moving from north to south.

Weight data by age class (Table 8) and sex (Tables 9 and 10) are routinely available only for the Bristol Bay, Nushagak River, commercial harvest. Average weights, in pounds, by age class for the years 1964-78 are as follow:

Age Class	Weight
4_2	7.4
5_2	16.7
6_2	25.0
7_2	29.3

Three years of mean weight data by age class for the Kuskokwim and Yukon Rivers closely parallel that for Bristol Bay. The mean weight of females also tends to be greater for a given age class than that for males of the same age class for 4, 5, and 6 year old fish.

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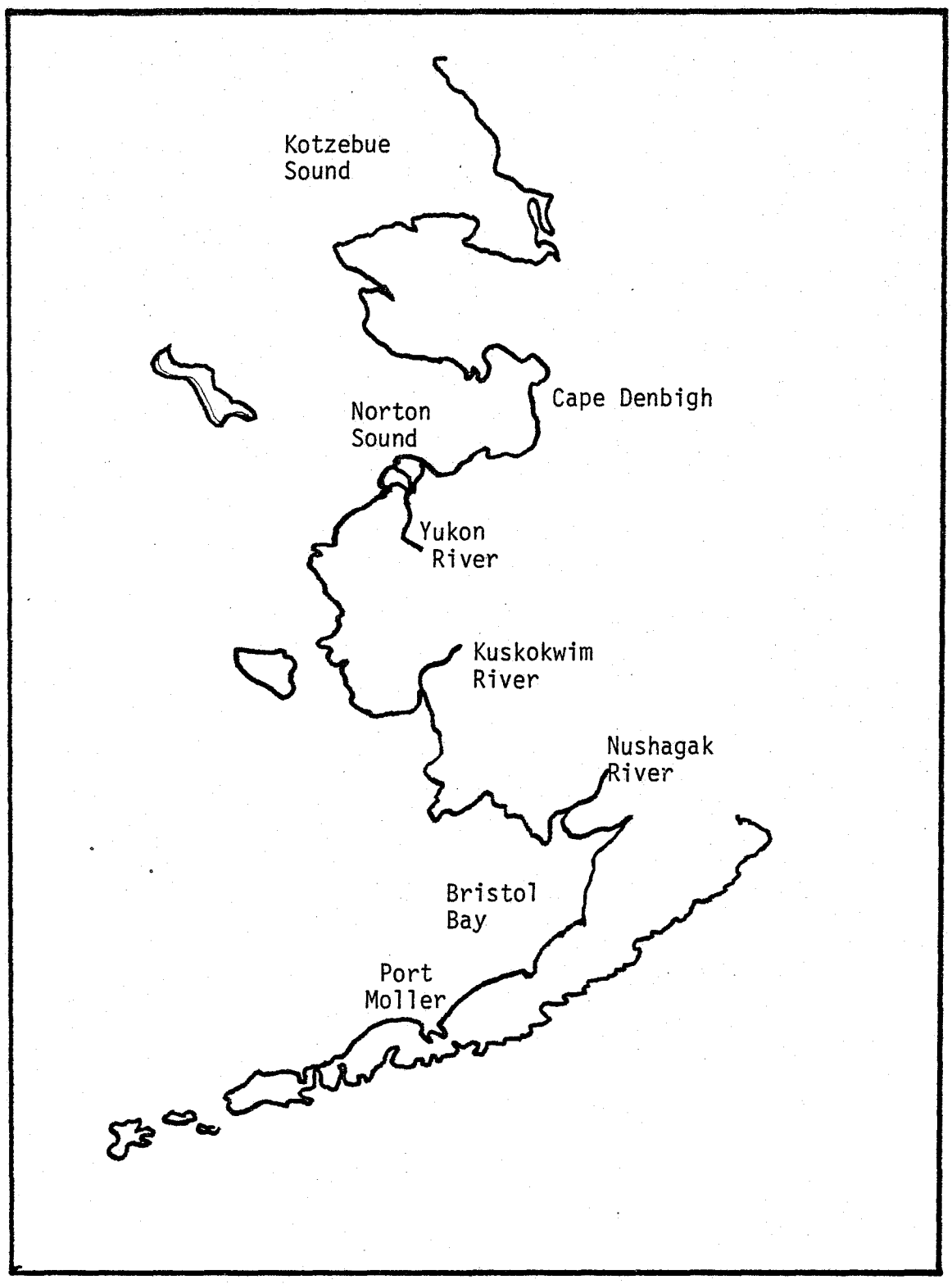

Figure 1. Western Alaska.

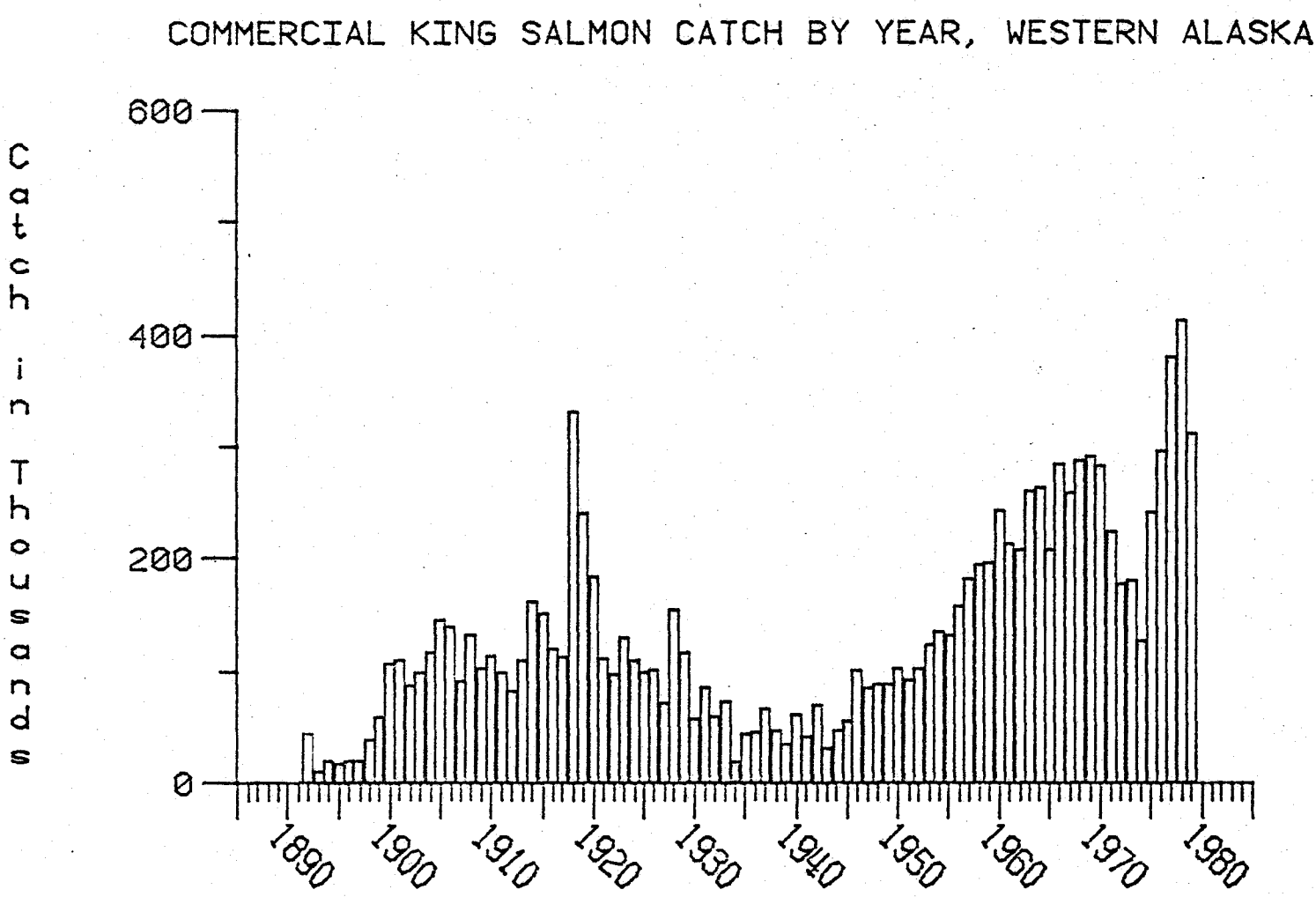

Figure 2. Commercial harvest of western Alaska chinook salmon by year, 1893-1980.

Table 1. Commercial, subsistence, and total catch of western Alaska chinook salmon 1963-1980.

Year	Commercial Catch	Subsistence Catch	Total Catch
1963	208,123	66,208	274,331
1964	259,996	50,484	310,480
1965	262,989	52,851	315,840
1966	207,507	69,478	276,985
1967	283,938	81,912	365,850
1968	258,973	54,192	313,165
1969	287,647	65,232	352,879
1970	290,790	95,119	385,909
1971	283,241	73,836	357,077
1972	224,058	66,733	290,791
1973	177,376	69,707	247,083
1974	180,213	57,342	237,555
1975	126,150	77,162	203,312
1976	241,544	84,043	325,587
1977	296,089	84,144	380,233
1978	379,977	74,600	454,577
1979	411,969	99,288	511,257
1980	312,000	90,000	402,000
Mean	260,699	72,907	333,606

Table 2 . Subsistence harvest of western Alaska chinook salmon by area and year, 1920-1980.

	Yukon[1]/	Kuskokwim[2]/	Bristol Bay[3]/	Total
1920	20,000	-	-	
1921	-	-	-	-
1922	15,000	-	-	-
1923	17,500	-	-	-
1924	-	14,700	-	-
1925	15,000	10,800	-	-
1926	20,500	-	-	-
1927	-	-	-	-
1928	-	-	-	-
1929	-	-	-	-
1930	-	-	-	-
1931	26,693	-	-	-
1932	23,160	-	-	-
1933	19,950	6,290	-	-
1934	-	20,800	-	-
1935	20,400	22,930	-	-
1936	22,750	33,500	-	-
1937	5,528	-	-	-
1938	19,244	10,153	-	-
1939	18,050	14,000	-	-
1940	14,400	8,000	-	-
1941	17,703	8,000	-	-
1942	-	6,400	-	-
1943	-	6,400	-	-
1944	-	-	-	-
1945	-	-	-	-
1946	-	-	-	-
1947	-	-	-	-
1948	-	-	-	-
1949	-	-	-	-
1950	-	-	-	-
1951	-	-	-	-
1952	-	-	-	-
1953	-	-	-	-
1954	-	-	-	-
1955	-	-	-	-
1956	-	-	-	-
1957	-	-	-	-
1958	11,890	-	-	-
1959	-	-	-	-
1960	-	20,361	-	-

Table 2 . Continued.

	Yukon	Kuskokwim	Bristol Bay	Total
1961	21,488	30,910	-	-
1962	11,110	14,642	-	-
1963	24,862	37,246	4,100	66,208
1964	16,231	30,853	3,400	50,484
1965	16,608	31,143	5,100	52,851
1966	11,572	53,606	4,300	69,478
1967	16,488	61,224	4,200	81,912
1968	12,106	34,986	7,100	54,192
1969	14,000	43,732	7,500	65,232
1970[4]/	13,874	71,376	6,645	95,119
1971[4]/	15,684	45,465	4,700	73,836
1972[4]/	17,958	43,335	4,532	66,733
1973[4]/	24,317	41,697	7,200	69,707
1974[4]/	17,356	29,590	9,840	57,342
1975[4]/	17,440	50,830	8,600	77,162
1976[4]/	15,097	60,335	8,400	84,043
1977[5]/	17,581	58,163	8,400	84,144
1978[5]/	27,391	38,209	9,000	74,600
1979[5]/	31,005	57,283	11,000	99,288
1980[5]/	30,000	50,000	10,000	90,000

1/ Ak. Dept of Fish and Game (1980a) unless otherwise noted.

2/ Ak. Dept of Fish and Game (1980b) unless otherwise noted.

3/ Ak. Dept of Fish and Game (1979a) unless otherwise noted.

4/International North Pacific Fisheries Commission (1972-1979).
Totals include those catches made in other minor western Alaskan locations.

5/ Preliminary.

Table 3. Commercial harvest of western Alaska chinook salmon by area and year, 1893-1980.1/

Year	Kotzebue	Norton Sound	Yukon	Kuskokwim	Bristol Bay	Alaska Penin(N)	Aleutians	Total
1893	-	-	-	-	44,000	-	-	44,000
1894	-	-	-	-	10,500	-	-	10,500
1895	-	-	-	-	19,925	-	-	19,925
1896	-	-	-	-	17,301	-	-	17,301
1897	-	-	-	-	19,897	-	-	19,897
1898	-	-	-	-	19,260	-	-	19,260
1899	-	-	-	-	38,259	-	-	38,259
1900	-	-	-	-	58,307	-	-	58,307
1901	-	-	-	-	106,047	-	-	106,047
1902	-	-	-	-	109,089	-	-	109,089
1903	-	-	-	-	86,506	-	-	86,506
1904	-	-	-	-	97,953	-	-	97,953
1905	-	-	-	-	116,855	-	-	116,855
1906	-	-	-	-	143,194	1,530	-	144,724
1907	-	-	-	-	137,677	1,725	-	139,402
1908	-	-	-	-	90,009	600	-	90,609
1909	-	-	-	-	130,489	1,500	-	131,989
1910	-	-	-	-	101,755	-	-	101,755
1911	-	-	-	-	113,163	-	-	113,163
1912	-	-	-	-	97,728	940	-	98,668
1913	-	-	-	7,800	74,249	600	-	82,649
1914	-	-	-	-	100,964	8,090	-	109,054
1915	-	-	-	-	148,028	13,953	-	161,981
1916	-	-	-	949	105,124	44,244	47	150,364
1917	-	-	-	7,878	91,145	20,006	-	119,029
1918	-	-	12,239	3,055	87,048	9,679	-	112,021
1919	-	-	104,822	4,836	201,954	19,632	-	331,244
1920	-	-	58,467	34,853	127,350	19,001	-	239,671
1921	-	-	69,646	9,854	91,982	12,474	-	183,956
1922	-	-	16,825	8,944	74,020	10,431	-	110,220
1923	-	-	13,393	7,254	67,013	9,075	-	96,735
1924	-	-	27,375	19,253	71,663	10,493	8	128,792
1925	-	-	-	1,664	97,448	10,550	-	109,662
1926	-	-	-	-	74,604	23,925	-	98,529
1927	-	-	-	-	83,846	16,495	-	100,341
1928	-	-	-	-	66,075	4,604	-	70,679
1929	-	-	-	-	150,663	4,067	-	154,730
1930	-	-	-	7,515	105,428	3,846	-	116,789
1931	-	-	-	8,541	47,175	1,837	-	57,553
1932	-	-	4,739	9,399	68,286	3,255	-	85,679
1933	-	-	8,829	-	49,308	1,145	-	59,282
1934	-	-	25,365	-	45,945	1,619	-	72,929
1935	-	-	7,265	6,448	3,573	991	-	18,277
1936	-	-	20,963	624	21,703	983	-	44,273
1937	-	-	6,226	480	36,629	1,633	-	44,968
1938	-	-	13,727	624	45,934	5,902	-	66,187
1939	-	-	9,987	134	33,408	3,918	-	47,447
1940	-	-	18,053	247	15,267	741	-	34,308

Table 3 Continued.

Year	Kotzebue	Norton Sound	Yukon	Kuskokwim	Bristol Bay	Alaska Penin(N)	Aleutians	Total
1941	-	-	29,905	187	30,661	716	-	61,469
1942	-	-	22,487	-	19,006	-	-	41,493
1943	-	-	27,650	-	41,146	183	-	68,979
1944	-	-	14,232	-	16,373	70	-	30,675
1945	-	-	19,727	-	26,609	86	-	46,422
1946	-	-	22,782	2,288	27,401	2,458	-	54,929
1947	-	-	54,026	5,356	41,641	82	-	101,105
1948	-	-	33,842	-	49,116	2,164	-	85,122
1949	-	-	36,379	-	50,752	712	-	87,843
1950	-	-	41,808	-	45,261	1,101	-	88,170
1951	-	-	56,278	4,210	40,183	1,272	3	101,946
1952	-	-	38,637	-	52,856	661	209	92,363
1953	-	-	58,859	-	42,556	808	-	102,223
1954	-	-	64,545	57	56,016	3,379	1	123,998
1955	-	-	55,925	-	75,429	4,119	-	135,473
1956	-	-	62,208	-	66,377	4,154	-	132,739
1957	-	-	63,623	-	91,420	1,040	2,301	158,384
1958	-	-	63,735	-	103,207	14,989	2	181,933
1959	-	-	78,370	3,760	84,289	28,692	-	195,111
1960	-	-	67,597	5,985	111,703	10,441	-	195,726
1961	-	5,300	119,664	23,462	88,656	6,050	-	243,132
1962	12	7,286	94,736	20,869	84,047	6,098	12	213,060
1963	7	6,613	117,048	18,581	62,269	3,601	4	208,123
1964	-	2,034	93,587	21,246	139,536	3,592	1	259,996
1965	-	1,449	118,014	24,428	112,967	6,131	-	262,989
1966	1	1,553	93,315	25,823	77,472	9,342	1	207,507
1967	1	1,804	129,430	29,986	117,193	5,523	1	283,938
1968	2	1,045	106,526	43,157	103,723	4,483	37	258,973
1969	-	2,394	90,720	64,777	124,908	4,846	2	287,647
1970	-	1,845	79,301	65,273	140,511	3,854	6	290,790
1971	1	2,593	110,507	44,936	123,015	2,189	-	283,241
1972	3	2,938	92,840	56,939	69,546	1,792	-	224,058
1973	5	2,041	75,353	51,374	44,044	4,559	-	177,376
1974	-	3,000	98,090	30,739	45,664	2,720	-	180,213
1975	-	2,394	63,868	27,803	29,992	2,093	-	126,150
1976	3	2,248	88,269	50,103	95,968	4,953	-	241,544
1977 2/	10	4,500	96,757	58,796	130,526	5,500	-	296,089
1978 2/	146	10,002	99,569	64,462	191,539	14,259	-	379,977
1979 2/	-	10,706	129,049	53,314	202,000	16,900	-	411,969
1980 2/	-	6,100	152,900	38,300	96,700	18,000	-	312,000

1/ Data through 1976 from INPFC(1979).

2/ Preliminary

Table 4 . Escapement estimates and indicies of western Alaska chinook salmon by area and year, 1961-1980.

Year	Yukon 1/	Kuskokwim 2/	Bristol Bay 3/
1961	1,650	-	-
1962	1,218	-	-
1963	484	-	-
1964	652	-	-
1965	655	-	-
1966	507	824	-
1967	533	-	75,000
1968	476	972	86,000
1969	334	537	43,000
1970	1,057	932	65,000
1971	1,348	-	-
1972	794	476	39,000
1973	523	191	46,000
1974	805	73	85,000
1975	696	419	81,000
1976	783	596	114,000
1977	1,247	1,079	85,000
1978	1,943	2,540	170,000
1979	2,063	-	115,000
1980	2,651 4/	-	155,000 4/

1/ Indicies based on average numbers of fish counted in four index areas: West Fork, Andreafsky; East Fork, Andreafsky; Salcha; Whitehorse fishway (ADFG 1980a).

2/ Indicies based on average numbers of fish counted during aerial surveys of the following index streams: Kwethluk, Kisaralik, Aniak(upstream of Salmon River), Kipchuk, Chukowan, and Kogrukluk (ADFG 1980b).

3/ Escapement estimates (Nelson, M. L. 1979)

4/ Preliminary estimates.

Table 5 . Sex composition statistics (% males) from commercial catch and escapement samples of western Alaska chinook salmon by area and year, 1964-1978.1/

Year	Commercial Catch				Yukon Escapement		
	Yukon		Kuskokwim	Bristol Bay	Anvik	Salcha	Whitehorse Fishway
	5 1/2 mesh	8 1/2 mesh					
1964	--	57	48	77	--	--	--
1965	--	56	59	63	--	--	--
1966	--	54	50	66	--	--	--
1967	--	49	47	67	--	--	--
1968	--	45	56	57	--	--	--
1969	--	47	55	47	--	--	--
1970	--	59	55	60	--	79	87
1971	--	53	51	46	--	--	49
1972	62	37	47	56	--	45	46
1973	57	53	43	54	--	62	61
1974	86	54	56	41	--	75	60
1975	70	54	72	44	75	61	--
1976	50	53	50	50	73	59	46
1977	60	42	--	53	50	34	43
1978	51	47	44	60	47	52	54
Mean	62	51	52	56	61	58	57

1/ Ak. Dept. Fish and Game (1979b) except Bristol Bay which was computed from AWL field data forms.

Table 6 . Age class composition statistics (% age class) from commercial catch samples of western Alaska chinook salmon by area and year, 1964-1978.1/

Year	4 Yr Olds			5 Yr Olds			6 Yr Olds			7 Yr Olds		
	Yukon	Kusk	B Bay	Yukon	Kusk	B Bay	Yukon	Kusk	B Bay	Yukon	Kusk	B Bay
1964	07	02	50	15	20	18	58	64	27	20	14	03
1965	01	00	12	19	45	37	56	32	45	24	21	08
1966	01	00	15	14	12	34	72	85	48	13	02	02
1967	01	01	22	10	10	27	73	73	42	16	16	05
1968	03	03	05	13	25	32	65	52	50	20	19	09
1969	02	05	13	17	41	26	70	45	52	11	09	06
1970	10	02	08	43	61	61	42	36	23	05	01	03
1971	01	06	05	29	25	22	69	69	69	01	01	01
1972	01	01	18	13	20	22	80	75	51	07	05	05
1973	00	02	02	18	24	25	76	66	63	06	08	09
1974	00	08	01	20	12	14	69	66	63	11	14	22
1975	07	01	03	40	83	58	36	11	30	17	06	09
1976	04	00	09	41	42	36	52	56	52	04	03	01
1977	00	--	02	17	--	35	79	--	59	04	--	03
1978	09	00	12	10	14	34	74	80	47	06	06	05
Mean	03	--	--	21	--	--	65	--	--	11	--	--
Mean Kusk	--	02	--	--	31	--	--	58	--	--	09	--
Mean B Bay		--	12	--	--	32	--	--	48	--	--	06

1/ Data for the Yukon and Kuskowkim from Ak. Dept. Fish and Game (1979b), data for Bristol Bay calculated from AWL field data forms.

Table 7 . Age class composition statistics (%) from escapement samples of Yukon River chinook salmon by area and year, 1970-1978.1/

Year	4 Yr Olds		5 Yr Olds		6 Yr Olds		7 Yr Olds	
	Salcha River	Whitehorse Fishway	Salcha River	Whitehorse Fishway	Salcha River	Whitehorse Fishway	Salcha River	Whitehorse Fishway
1970	43	30	38	53	14	15	05	03
1971	--	00	--	44	--	56	--	00
1972	08	00	08	19	82	73	03	08
1973	11	00	34	51	29	47	26	02
1974	44	14	11	26	41	55	03	05
1975	25	--	33	--	36	--	06	--
1976	14	05	43	77	40	18	03	00
1977	00	00	23	43	75	55	03	02
1978	15	04	20	41	63	56	00	00
Mean	20	07	26	44	48	47	06	03

1/ Ak. Dept. Fish and Game (1979b)

Table. 8. Nushagak District, Bristol Bay, commercial king salmon catch mean weight data (pounds) and sample size, 1964-1977 (sexes combined).

Year	4_2	(n)	5_2	(n)	6_2	(n)	7_2	(n)	Total 1/	(n)
1964	8.7	(106)	16.4	(38)	24.9	(57)	29.3	(7)	15.2	(211)
1965	6.2	(30)	15.7	(89)	26.0	(103)	30.9	(18)	20.1	(243)
1966	5.8	(109)	14.2	(243)	24.5	(344)	28.1	(13)	18.2	(715)
1967	6.2	(75)	15.5	(215)	25.2	(429)	29.2	(44)	20.9	(794)
1968	9.2	(35)	14.6	(157)	22.8	(236)	28.7	(37)	19.3	(489)
1969	8.8	(58)	19.2	(85)	24.5	(175)	26.8	(21)	20.7	(345)
1970	8.6	(6)	20.0	(157)	22.8	(63)	29.6	(8)	22.2	(253)
1971	6.2	(9)	18.6	(47)	24.5	(188)	28.7	(4)	24.6	(261)
1972	6.2	(40)	15.1	(51)	25.9	(140)	28.5	(14)	20.5	(251)
1973	-	(0)	18.1	(18)	24.5	(64)	28.0	(16)	24.9	(103)
1974	8.5	(1)	16.9	(7)	25.2	(33)	30.9	(16)	25.4	(58)
1975	-	(0)	18.0	(64)	24.7	(26)	32.9	(9)	21.1	(103)
1976	7.3	(20)	20.6	(46)	28.0	(90)	33.2	(3)	23.3	(163)
1977	8.6	(2)	21.5	(63)	26.5	(106)	25.7	(4)	24.5	(177)
1978	11.8	(22)	17.3	(78)	27.5	(113)	35.5	(10)	22.9	(229)
Mean	7.4	(513)	16.7	(1358)	25.0	(2167)	29.3	(204)	20.7	(4494)

1/ Includes minor age classes.

Table. 9. Nushagak District, Bristol Bay, commercial king salmon catch mean weight data (pounds) and sample size, 1964-1977 (males only).

Year	4_2	(n)	5_2	(n)	6_2	(n)	7_2	(n)	Total 1/	(n)
1964	8.7	(106)	15.6	(32)	24.6	(17)	29.8	(5)	12.3	(162)
1965	6.2	(30)	14.9	(72)	25.8	(41)	31.1	(9)	17.1	(154)
1966	5.8	(109)	13.8	(219)	22.9	(134)	31.3	(3)	14.7	(469)
1967	6.2	(75)	14.9	(188)	24.6	(174)	28.9	(12)	17.8	(470)
1968	9.2	(35)	13.9	(134)	20.9	(99)	37.0	(8)	16.2	(293)
1969	8.5	(55)	17.6	(52)	22.5	(55)	27.1	(6)	16.6	(170)
1970	8.6	(6)	18.1	(99)	32.1	(19)	29.5	(5)	19.9	(137)
1971	6.2	(9)	18.5	(41)	25.2	(49)	-	(0)	20.8	(101)
1972	6.2	(38)	13.9	(34)	26.3	(50)	25.8	(3)	16.7	(128)
1973	-	(0)	19.2	(12)	23.7	(24)	29.9	(4)	25.9	(44)
1974	8.5	(1)	17.6	(5)	22.2	(19)	26.9	(2)	21.3	(28)
1975	-	(0)	18.1	(27)	26.8	(7)	34.0	(4)	21.4	(39)
1976	6.8	(18)	20.8	(24)	28.9	(30)	40.7	(1)	21.0	(76)
1977	-	(0)	19.5	(36)	26.0	(44)	20.4	(1)	23.0	(182)
1978	8.9	(18)	16.3	(63)	26.0	(44)	39.7	(3)	19.1	(129)
Mean	7.3	(500)	15.6	(1038)	24.3	(806)	30.9	(66)	17.5	(2582)

1/ Includes minor age classes.

Table. 10. Nushagak District, Bristol Bay, commercial king salmon catch mean weight data (pounds) and sample size, 1964-1977 (females only).

Year	4_2	(n)	5_2	(n)	6_2	(n)	7_2	(n)	Total [1/]	(n)
1964	-	(0)	20.8	(6)	25.1	(40)	27.9	(2)	24.7	(49)
1965	-	(0)	18.9	(17)	26.1	(62)	30.7	(9)	25.2	(89)
1966	-	(0)	17.9	(24)	25.5	(210)	27.1	(10)	24.8	(246)
1967	-	(0)	19.3	(27)	25.6	(255)	29.2	(12)	25.5	(324)
1968	-	(0)	18.4	(23)	24.2	(137)	26.4	(29)	23.9	(196)
1969	14.6	(3)	21.8	(33)	25.4	(120)	26.7	(15)	24.7	(175)
1970	-	(0)	23.2	(58)	26.7	(44)	29.8	(3)	24.8	(116)
1971	-	(0)	19.3	(6)	27.4	(139)	28.7	(4)	27.0	(160)
1972	6.5	(2)	17.7	(17)	25.7	(90)	29.2	(11)	24.5	(123)
1973	-	(0)	15.9	(6)	25.0	(40)	27.4	(12)	24.2	(59)
1974	-	(0)	15.1	(2)	29.2	(14)	31.5	(14)	29.3	(30)
1975	8.1	(1)	18.0	(37)	23.9	(19)	32.1	(5)	20.9	(64)
1976	11.4	(2)	20.3	(22)	27.5	(60)	29.5	(2)	25.3	(87)
1977	8.6	(2)	24.3	(27)	26.9	(62)	27.5	(3)	25.8	(95)
1978	7.6	(3)	21.5	(15)	28.5	(69)	33.7	(7)	27.2	(99)
Mean	9.8	(13)	20.4	(320)	25.9	(1361)	28.6	(138)	25.1	(1912)

1/ Includes minor age classes.