

1982 Western Alaska Chinook Salmon Synopsis
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by

William D. Arvey
Charles P. Meacham

Introduction

This report was prepared to provide preliminary data on the 1982 inshore catch and escapement of western Alaska chinook salmon. The chinook salmon resource is of immense commercial and subsistence value and is currently fully harvested in established inshore domestic fisheries. Although serious concern has existed over high seas exploitation of this resource for a number of years, 1980 record level interceptions have resulted in this issue assuming major importance and requiring serious INPFC consideration.

Yukon Area Synopsis

The commercial harvest in the Yukon (including reported Canadian catches) was 133,100 fish (2,075,200 lbs), down from the 1981 catch of 166,200. Effort, in terms of number of permits fishing in 1982 was similar to prior recent years, although actual fishing time was slightly greater in 1982. Subsistence harvest data are being collected at this time but will also probably indicate lower harvests than those of the last few years.

Average fish size and preliminary aging data indicate that the catch was composed primarily of 5 and 6 year old fish, similar to most prior years. Age composition of the lower Yukon 1982 catch was as follows:

Sample Size	1.2%	1.3%	1.4%	Other %
2,339	4.3	16.7	64.0	15.0

Drainage escapements reflect the fisheries harvest magnitude, in that most systems surveyed received long term average numbers of spawners as opposed to record level escapements experienced the last few years. Escapement objectives were not reached in 7 of 9 established stream index areas in Yukon River tributary streams.

Kuskokwim Area Synopsis

Kuskokwim area chinook salmon commercial harvests, which include the Kuskokwim River and Kuskokwim Bay, totaled 79,100 fish (1,092,700 lbs), comparable to the 1981 commercial harvest. However, this catch was achieved with increased effort. Subsistence harvest surveys have documented a minimum catch of 30,000 chinook salmon, but final assessment of the harvest will not be available for several weeks.

Preliminary examination of age and sex composition indicates that the catch was composed of a large proportion of 6 year old fish, which is normally the case for this area.

Escapement surveys were incomplete and later than desirable due to poor weather and stream conditions in the drainage. An aerial survey index comparable to prior years was not obtained in 1982. The best available escapement estimates were obtained from two ADF&G weir projects in the upper Kuskokwim drainage, both of which documented the passage of only average numbers of chinook spawners. It is clear that the total return of chinook

salmon was down from recent high levels experienced the last few years.

Norton Sound Synopsis

The 1982 commercial harvest of chinook salmon totaled 5,900 in Norton Sound, the smallest documented in the past 5 years.

Bristol Bay Synopsis

Chinook salmon returns to Bristol Bay were again at record levels in 1982. The commercial harvest totaled 265,000 chinook salmon (6,000,000 lbs), surpassing the prior 1981 record harvest of 239,000. Subsistence harvest data are not yet compiled but the catch is expected to exceed 15,000 fish. Escapements to the Nushagak River system, the major contributor to the Bristol Bay chinook salmon resource, were also at record levels of approximately 250,000 fish.

Nearly 2,500 scale samples were collected from the 1982 Nushagak River catch and escapement to determine age composition and other biological statistics.

Age composition of the 1982 run was as follows:

	Sample Size	1.2%	1.3%	1.4%	Other %
Catch	975	9%	43%	38%	10%
Escapement	1,491	7%	43%	44%	6%
Total Run	2,466	8%	43%	42%	7%

The 42 percent 6 year old catch component is slightly below the average contribution of 6 year olds, but more significant is the fact that this is

only the second instance in 18 years that the 5 year old component (1.3) of the catch exceeded the 6 year old component (1.4). The decreased contribution of 6 year olds to the inshore run in the Nushagak River may be the result of record high levels of 4 year olds caught by the 1980 Japanese Mothership gillnet catch.

Summary

More than 500,000 chinook salmon were commercially harvested in western Alaska in 1982. While inshore returns to Bristol Bay were at record high levels, inshore returns to the Yukon and Kuskokwim Rivers and Norton Sound were relatively weaker than in the previous 3 years, as judged by escapement indices (Table 1) and commercial catch statistics (Table 2).

The 1980 Japanese Mothership catch of 704,000 chinook salmon included an estimated 380,000 of western Alaska origin (Major 1982, in press). Over 90% of the chinook salmon harvested on the high seas in 1980 were 4 years old, a large proportion of which should have matured and returned in 1982 as 6 year old fish. Using the maturity schedules and estimated natural mortality rates of Major, it is possible that an additional 133,000 6 year old chinook (over 3,000,000 lbs) would have returned to western Alaska in 1982 had they not been harvested in 1980 as 4 year olds. Unfortunately, the distribution of this potential loss to individual stocks or major western Alaska drainages is not completely understood at this time. More precise stock identification studies are currently underway through contract.

Based on the increasing abundance trends observed in western Alaska over the past 3-5 years, and upon the large Mothership catch in 1980 of the year class

which returned predominantly in 1982, a record level return was expected in all districts. The fact that the return was somewhat weaker than expected, especially north of Bristol Bay, may indicate that the 1976 year class was selectively diminished by the high seas fishery operating in 1980. This conjecture is further supported by the decreased contribution of 6 year old fish to the Nushagak River system.

Table 1. Escapement estimates and indices of Western Alaska chinook salmon by area and year, 1961-1982.

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	-	74,000
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/	-	153,000
1981	5/	4,355 6/	177,000
1982	1,285 4/	7/	250,000 4/

- 1/ Indices based on average numbers of fish counted in four index areas: West Fork, Andreafsky; East Fork, Andreafsky; Salcha; Whitehorse fishery (ADF&G 1980a).
- 2/ Indices 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 Kogrukluuk (ADF&G 1980b).
- 3/ Escapement estimates for Nushagak and Togiak Districts, only.
- 4/ Preliminary estimates.
- 5/ Index areas unsurveyed due to high, turbid water conditions.
- 6/ Based on poor surveys of Kwethluk and Kisaralik; fair survey of Aniak; other streams unsurveyed.
- 7/ Surveyed after peak of spawning, stream totals not comparable with prior years.

Table 2. Commercial harvest of Western Alaska chinook salmon by area and year, 1961-1982.

Year	Kotzebue	Norton Sound	Yukon 1/	Kuskokwim	Bristol Bay	AK Peninsula	Aleutians	Total
1961	-	5,300	123,706	23,462	88,656	6,050	-	243,132
1962	12	7,286	98,771	20,869	84,047	6,098	12	213,060
1963	7	6,613	119,277	18,581	62,269	3,601	4	208,123
1964	-	2,034	96,795	21,246	139,536	3,592	1	259,996
1965	-	1,449	120,363	24,428	112,967	6,131	-	262,989
1966	1	1,553	95,257	25,823	77,472	9,342	1	207,507
1967	1	1,804	131,893	29,986	117,193	5,523	1	283,938
1968	2	1,045	108,732	43,157	103,723	4,483	37	258,973
1969	-	2,394	91,863	64,777	124,908	4,846	2	287,647
1970	-	1,845	82,880	65,273	140,511	3,854	6	290,790
1971	1	2,583	113,685	44,936	123,015	2,189	-	283,241
1972	3	2,938	94,609	56,939	69,546	1,792	-	224,058
1973	5	2,041	77,224	51,374	44,044	4,554	-	177,376
1974	-	3,000	100,133	30,739	45,664	2,720	-	180,312
1975	-	2,394	66,740	27,803	29,992	2,093	-	126,150
1976	3	2,248	92,171	50,103	95,968	4,953	-	241,544
1977	10	4,500	101,034	58,256	130,526	5,500	-	296,089
1978	146	10,002	100,577	63,194	191,539	14,259	-	379,977
1979	-	10,706	135,231	53,314	212,873	16,900	-	429,024
1980	-	6,100	164,588	48,242	95,708	18,000	-	332,638
1981	2/ 100	7,900	166,200	79,700	239,065	18,000	-	510,965
1982	2/ -	5,900	133,100	79,100	265,000	30,000	-	506,100

1/ Includes catches made in Canada.

2/ Preliminary