

AYK REGION

SALMON BOF RPT #27

ALASKA DEPARTMENT OF FISH AND GAME  
DIVISION OF COMMERCIAL FISHERIES

1983  
NORTON SOUND DISTRICT  
SALMON REPORT  
to the  
Alaska Board of Fisheries  
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Nome Area Office:  
P.O. Box 1148  
Nome, Alaska 99762

Area Management Biologist  
Assistant Management Biologist  
Clerk Typist

Leonard Schwarz  
Charles Lean  
Judy Matheson

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### III. Background

#### A. District and Subdistrict Boundaries

The Norton Sound district includes all waters from Canal Point Light north to Cape Douglas. This district is subdivided into six subdistricts: Nome (subdistrict 1), from Penny River to Topkok Head; Golovin Bay (subdistrict 2), from Rocky Point to Cape Darby; Moses Point (subdistrict 3), from Elim Point to Kwik River; Norton Bay (subdistrict 4), from Kuiktulik River to Island Point; Shaktoolik (subdistrict 5), from Cape Denbigh to Junction Creek; and Unalakleet (subdistrict 6), from Junction Creek to Black Point (Figure 1).

Each subdistrict contains at least one major salmon spawning stream. Commercial fishing effort occurs in marine waters usually near stream mouths. Subdistrict boundaries were established around the major productive streams in an attempt to minimize interception of stocks bound for other areas. Subdistricts are managed independently based on the status of local stocks and fisheries. Gillnets are the only legal commercial fishing gear.

#### B. Management Objectives and Strategies

The Division of Commercial Fisheries of the Alaska Department of Fish and Game is responsible for the management of commercial and subsistence fisheries in Norton Sound. The main objective of the Department's program is to manage both fisheries on a sustained yield basis in accordance with policies set forth by the Alaska Board of Fisheries, including assignment of subsistence fishing as the highest priority among beneficial uses of the resource. Spawning escapements in major rivers are monitored through aerial surveys, counting towers and sonar. In most cases escapement goals can be achieved and, therefore, the potential for a sustained yield assured, through scheduled weekly closures of the commercial fishery. Subsistence fishing is allowed seven days a week in both marine and river waters with no catch limits, except in the Nome subdistrict where subsistence as well as commercial fishermen must be limited by periodic closures and catch limits so that escapement goals may be reached.

All five species of Pacific salmon occur in Norton Sound. Pink salmon are the most abundant followed by chum, coho and king salmon. Red salmon occur only rarely. Chum salmon are the most economically important species followed by king, coho, pink and red salmon.

Regulations provide for the commercial fishing season to be opened by emergency order between June 8 and June 20. The arrival of salmon in Norton Sound is greatly influenced by ice break up and the season is

not opened until fish are present on the fishing grounds in harvestable numbers and have started their upstream migration. The timing and abundance of the king salmon run is monitored in Unalakleet by a fisheries technician and a test net crew operating in the Unalakleet River. Fishermen throughout Norton Sound are encouraged to relay subsistence catch data early in the season to department representatives.

During early break-up conditions, the commercial season will be opened before June 15, the midpoint of the opening date range, on a subdistrict by subdistrict basis if increasing catches are made for a 7-day period. If the season is opened early, initial fishing periods may be only 24 hours in duration until additional run strength information is obtained. If a normal or late break up occurs, the season will be opened on or after June 15, the exact date based on run timing and abundance. The published fishing schedule is four days a week, 6:00 pm Monday to 6:00 pm Wednesday and from 6:00 pm Thursday to 6:00 pm Saturday. This schedule is usually followed except in the Nome and Moses Point subdistricts where intense fishing pressure, small local stocks, or expected poor runs have resulted in decreased fishing time. Commercial fishing in the Nome subdistrict has been closed when the regulatory 5-15,000 chum salmon harvest guideline for this subdistrict has been reached. Commercial fishing time in the Moses Point subdistrict is regulated by emergency order; initial fishing time consists of two 24-hour periods a week and subsequent fishing time is adjusted so that minimum escapement goals are met.

Adjustments in fishing time for other subdistricts may be required for conservation purposes if run magnitudes are below average and fishing effort remains high. Effort, catch and escapement data will be compared with previous seasons to judge relative run magnitudes of the current season.

The pink salmon run usually begins in early to mid-July, shortly after the king and chum runs have started to peak. When exceptionally large pink salmon runs occur, additional fishing periods are provided when only gillnets with 4 1/2" mesh or less may be fished. These additional fishing periods, coupled with mesh restrictions, are an attempt to allow for the harvest of surplus pinks without overharvesting chum stocks. A regulation adopted in 1981 provided fishermen with the option of setting or drifting their 4 1/2" mesh gillnets during these special periods. Pink salmon gear takes fewer total numbers of chum salmon, but takes a larger percentage of female chums. In subdistricts where low chum salmon escapements are occurring, additional pink gear periods are delayed until most chum salmon have entered spawning streams. These additional openings with small mesh gillnets are usually terminated about August 1 when the pink run has greatly diminished.

Coho salmon return during August and all subdistricts, except the Nome subdistrict, are scheduled by regulation to two 48-hour fishing periods per week. The Nome subdistrict commercial fishery is scheduled for two 24-hour periods per week due to intense subsistence and sport fishing pressure on local stocks which are not abundant.

C. Status of Fishery and Stocks

KING SALMON

There is a directed king salmon fishery in Shaktoolik and Unalakleet subdistricts. Commercial quantities of king salmon do not occur north of the Shaktoolik subdistrict. During the first three years of the fisheries, (1961-1963), annual catches averaged about 6,000 kings. The following 14 years (1964-1977) the commercial catch averaged about 2,000 kings. Since 1978, average annual king salmon catches have increased to about 8,000 fish. Subsistence catches have also increased with an average of about 1300 kings over the last 5 years (Table 1).

CHUM SALMON

Chum salmon is the primary commercial species throughout Norton Sound. Catches were large during the first four years of the fishery (1961-1964) averaging about 134,000 fish annually. Annual catches dropped to an average of 66,000 fish during 1965-1970. Since 1970, chum catches have been fairly stable averaging about 160,000 fish. Subsistence catches have ranged from 4,000 to 33,000 chum salmon. Subsistence catch figures are not as accurate as commercial catch figures due to the methods by which they are collected. The 1981 and 1982 subsistence catches were the largest and fourth largest on record respectively (Table 1).

Chum salmon escapements during the last several years have been difficult to monitor by aerial surveys due to the large number of pink salmon also present on the spawning grounds. Chum salmon escapements have been best documented in the Kwiniuk River of the Moses Point subdistrict where the department has operated a counting tower since 1965. Escapement results are presented in Table 5. In an effort to further document chum escapement, the department operated a side scan sonar in the Unalakleet River for the second time during the 1983 season. The feasibility of this project is still under consideration.

PINK SALMON

Annual pink salmon catches have ranged from 200 to 325,000 fish. From 1978-1982 pink salmon stocks increased greatly. Pink salmon counts in

the Kwiniuk River reflect this district-wide trend (Table 5). Commercial catch statistics do not accurately reflect pink salmon run size because the lack of a market is often the limiting factor in the sale of pink salmon. During the past several years the department has provided additional fishing periods with gillnets of 4 1/2" mesh or less during these large pink salmon runs. Effort has been non-existent in many subdistricts during the periods due to weak pink salmon markets.

Subsistence fishermen utilize pink salmon to prepare "dried fish". Subsistence catch increases from 1978-1982 reflect strong pink runs, averaging 42,000 fish. During the preceding fifteen years subsistence catches averaged 18,000 pink salmon (Table 1).

Aerial survey, tower and sonar counts have documented large spawning escapements of pink salmon. During 1980, pink salmon escapement in Norton Sound streams was estimated to be five million. Escapement in 1981 was excellent in some streams but only fair in others. Record pink salmon escapements were recorded in 1982 with over 7 million pink salmon observed in the streams that were surveyed. Pink salmon escapement was so large during 1982 that the enumeration of other species was difficult. Pink salmon escapement in 1983 was spotty and below the 1981 brood year. Although the run was smaller than the last several years of record runs, it was above average when compared to a ten year average. Table 5 reflects this.

#### COHO SALMON

Commercial coho catches averaged about 6,000 from 1961-1978. Coho returns have increased greatly since 1978 and the average catch for the 1979-1983 period is 47,000 fish. The coho distribution in Norton Sound is similar to that of King salmon. The Unalakleet and Shaktoolik subdistricts usually take more than 90% of the total catch. Strong coho runs coupled with strong markets have caused an increase in fishing effort during August. The recent economic importance of the coho harvest in the Shaktoolik and Unalakleet subdistricts rivals that of the king salmon harvest (Tables 2 and 3).

Subsistence catches also reflect the increasing trend of coho abundance. Coho catches averaged 2,000 fish during the first 16 years that subsistence catches were monitored (1963-1978). Subsistence coho catches since 1978 have increased averaging 12,000 fish annually (Table 1).

Aerial surveys for coho salmon are not conducted in most Norton Sound streams, however, comparative catch statistics for the past several years indicate that escapement levels were probably above average.

#### IV. Season Summary

##### A. Harvest, Effort and Economic Value

Due to an early break up commercial salmon fishing opened in Norton Sound subdistricts 5 and 6 by emergency order on June 9 for a 24-hour test opening. Subdistricts 1, 2, 3 and 4 were opened by emergency order on June 16. The season closed by regulation on August 31. The 1983 Norton Sound commercial catch totaled 456,420 fish which was comprised of 10,308 king, 76,913 pink, 319,437 chum, 49,735 coho and 27 sockeye salmon (Table 1).

The chum harvest was the highest catch on record and over 1.5 times larger than the previous record of 212,000 set in 1975. The king and coho harvests were the second largest catches on record and were 26% and 29% above the recent five-year average. Historical catch data for the Norton Sound district is presented in Table 1.

A total of 199 CFEC permits was renewed for the 1983 season, with only 170 permits actually fished. This is 6 more than the 164 which were fished in 1982. Looking at the Norton Sound district as a whole, fishing effort has been stable, averaging about 168 fishermen. Fishing effort and catch by subdistrict is presented in Table 2.

Six processors operated in Norton Sound during 1983. In addition, Nome subdistrict fishermen sold salmon locally to individuals, restaurants and grocery stores. Commercial fishermen received approximately \$1,038,967 for their catch; this is the highest dollar value on record for this fishery. This amount is slightly above the previous record set in 1982 when fishermen received \$988,588.

Prices paid to fishermen averaged \$1.13 per pound for kings, \$0.28 per pound for chums, \$0.11 per pound for pinks and \$0.39 per pound for cohos. This data is summarized in Table 3.

Escapement data for 1983 is presented in Table 4.

##### B. Special Management Action

###### Nome-Subdistrict 1

The first commercial landings occurred in the Nome subdistrict on June 20. On July 1, due to poor chum escapement in Nome area streams, and the large harvest of 11,500 chum salmon, the Nome subdistrict was closed to commercial salmon fishing. This closure was in keeping with the 5-15,000 chum salmon commercial harvest guideline. Chum escapements did not improve and the pink salmon run did not develop, so this subdistrict remained closed until August 1 when commercial

fishermen are allowed by regulation to fish 2 days per week to harvest a portion of the coho salmon run. Fishing effort during August was sporadic with only 4 fishermen making deliveries.

Nineteen commercial fishermen harvested a total of 23 king, 308 pink, 11,691 chum and 261 coho salmon. The pink catch was 97% and 96% below the recent 5 and 10 year averages respectively. The chum harvest was the third largest and the coho harvest the fourth largest on record. During the commercial salmon season, subsistence fishing was allowed 4 days per week on a permit system.

#### V. Norton Sound District Outlook for 1984

Insufficient data is available to enable accepted forecasting methods to be employed in Norton Sound. The 1984 "Outlook" is based upon analysis of comparative commercial catch and escapement information, age data and "subjective determinations". The "Outlook" is presented only as an indicator of possible 1984 run strength.

The pink salmon return will be produced from the 1982 brood year. Pink salmon escapements in 1982 were excellent throughout Norton Sound index streams. Therefore, the 1984 pink salmon run should be excellent, if egg survival was good.

The 1984 Norton Sound chum salmon return will be produced by progeny of the 1979-81 escapements, with the bulk of the run being composed of the four-year old age class from the 1980 escapement. In 1980 chum salmon escapement surveys were hampered by the large amount of pink salmon present; however, based on comparative catch statistics, escapements were considered average and, therefore, returns may be similar.

Coho salmon returning in 1984 will also be mainly comprised of four year old fish. Aerial surveys have not been regularly flown in Norton Sound during the coho season; however, commercial and subsistence catches during the 1980 parent year were the second and largest on record, respectively. The 1980 catches were very similar to the 1979 catches indicating similar sized runs. Therefore, the 1984 coho run may be similar to the 1983 run, which was considered excellent.

Chinook salmon returning to Norton Sound are mainly 5 and 6 year old fish making 1978 and 1979 the parent years for the 1984 return. Chinook escapements were judged to be above average during these years with the combined subsistence and commercial catches double any other previous parent years. Keeping in mind that other factors besides escapement play important parts in determining returns, the 1984 run may be excellent based on parent year run size.

## VI. Anticipated Management Problems

### 1. Nome-Subdistrict 1

Currently subsistence salmon fishermen in the Nome subdistrict are required to obtain permits which specify the number of salmon which may be taken. For example, a subsistence fisherman is allowed to take 250 salmon in the Nome River. During the 1983 season, 88 permits were issued for this river. The 60 permits that were returned documented a harvest of 12 chinook, 820 coho, 5437 pink and 979 chum salmon. A total of 5 aerial surveys and a boat survey documented a peak escapement of 2 chinook, 9170 pink and 198 chum salmon. A coho salmon count of 365 fish was also obtained, although this was probably before peak escapement occurred. A permit system needs to be implemented that will prevent the overharvest of less abundant chum and coho salmon while allowing a harvest of pink salmon. Under the current permit system the 88 permit holders could have potentially harvested 22,000 salmon. Reduction of the commercial harvest as well as lowering subsistence permit quotas may be needed to protect the resource.

### 2. Unalakleet-Subdistrict 6

During the chinook salmon run in late June, increased subsistence fishing effort was observed in the lower Unalakleet River. As many as 30 nets were observed in the first mile of the river. There is concern that this large effort may reduce escapement to such a degree that the reproductive potential of the stock may be damaged.

Household subsistence surveys were conducted in Unalakleet documenting a reported chinook salmon harvest of 1,868 fish from the 74 fishermen interviewed. This is the largest catch ever documented and more than double the previous 5-year average. Approximately 80% of the harvest was taken from the Unalakleet River with the average fisherman reporting a harvest of 25 king salmon. The lack of accurate and complete historical king salmon escapement data for the Unalakleet drainage will make it difficult to judge what the effect of an increased catch will have on the reproductive potential of the stock. However, if increased commercial and subsistence catches continue, there may be a need to restrict catches, thereby assuring escapement and that the reproductive potential of the stock will not be jeopardized.

Table 1. Commercial and Subsistence Salmon Catches by Species, All Subdistricts, Norton Sound District, 1961-1983.

Year	Commercial					Subsistence					Combined							
	Chi-nook	Sock-eye	Coho	Pink	Chum	Total	Chi-nook	Coho	Pink	Chum	Total	Chi-nook	Sock-eye	Coho	Pink	Chum	Total	
ALL SUBDISTRICTS																		
1961	5300	35	13807	34327	48332	101711	—	—	—	—	—	5300	35	13807	34237	48332	101711	
1962	7286	18	9156	33187	182784	232431	—	—	—	—	—	7286	18	9156	33187	182784	232431	
1963	6613	71	16765	55625	154789	233863	5	118	16607	17635	34365	6618	71	16883	72232	172424	268228	
1964	2018	126	98	13567	148862	164671	565	2567	9225	12486	24843	2583	126	2665	22792	161348	189514	
1965	1449	30	2030	220	36795	40524	574	4812	19131	30772	55289	2023	30	6842	19351	67567	95813	
1966	1553	14	5755	12778	80245	100345	269	2210	14335	21873	38687	1822	14	7965	27113	102118	139032	
1967	1804	—	2379	28879	41756	74818	817	1222	17516	22724	42279	2621	—	3601	46395	64480	117097	
1968	1045	—	6885	71179	45300	124499	237	2391	36912	11661	51201	1282	—	9276	108091	57051	175700	
1969	2392	—	6836	86949	82795	178972	436	2191	18562	15615	36804	2828	—	9027	105511	98410	215776	
1970	1853	—	4423	64908	107034	178218	561	4675	26127	22763	54126	2414	—	9098	91035	129797	232344	
1971	2593	—	3127	4895	131362	141977	1026	4097	10863	21815	1/ 37801	3619	—	7224	15758	153177	179778	
1972	2938	—	454	45182	100920	149494	804	2319	14158	13966	2/ 31247	3742	—	2773	59340	114886	180741	
1973	1918	—	9282	46499	119098	176797	392	520	14770	7185	22867	2310	—	9802	61269	126283	199664	
1974	2951	—	2092	148519	162267	315829	420	1064	16426	3958	21868	3371	—	3156	164945	166225	337697	
1975	2393	2	4593	32388	212485	251861	186	192	15803	8124	3/ 24305	2579	2	4785	48191	220609	276166	
1976	2243	11	6934	87919	95956	193060	203	1004	18048	7718	26973	2446	11	7938	105964	103674	220033	
1977	4500	5	3690	48675	200455	257325	846	2530	14296	26607	44279	5346	5	6220	62971	227062	301604	
1978	9819	12	7335	325503	189279	531948	1211	2981	35281	12257	51730	11030	12	10316	360784	201536	583678	
1979	10706	57	31438	167411	140789	350401	747	8487	25247	11975	46456	11453	57	39925	192658	152764	396857	
1980	6311	40	29842	227352	180792	444337	1397	8625	63778	19622	93422	7708	40	38467	291130	200414	537759	
1981	7929	56	31562	232479	169708	441734	2021	13416	28741	32866	77082	6/7/ 9950	94	44978	261220	202574	518816	
1982	5892	10	91690	230281	183335	511208	1328	17874	56295	23185	98690	6/7/8/ 220	18	109564	286576	206520	609898	
1983	10308	27	49735	76913	319437	456420	—	—	—	—	—	9/	—	—	—	—	—	
5-Yr Avg.																		
4/	8131	35	38373	236605	172781	455926	1341	10277	41868	19981	73476	9472	44	48650	278474	192762	529402	
10-Yr Avg.																		
5/	5466	19	21846	154702	165416	347450	875	5669	28869	15350	50767	6341	24	27515	183571	180766	398217	

1/ Includes 197 recorded sockeye salmon in all subdistricts  
 2/ Includes 93 recorded sockeye salmon in all subdistricts  
 3/ Includes 11 recorded sockeye salmon in all subdistricts  
 4/ 1978-1982  
 5/ 1973-1982  
 6/ These figures also include data from Stebbins and St. Michael  
 7/ Includes 38 sockeye salmon  
 8/ Includes 8 sockeye salmon  
 9/ Subsistence surveys not conducted in all subdistricts

1     : 2. 1983 Norton Sound Commercial Salmon Catch by Subdistrict.

Subdistrict	Fisher- men	Chinook	Sockeye	Coho	Pink	Chum	Total
Nome	19	23	--	261	308	11691	12283
Golovin	21	52	10	295	17414	48283	66054
Moses Point	39	254	--	--	17027	65776	83057
Norton Bay	15	215	--	204	3935	17157	21511
Shaktoolik	34	2742	4	12877	12031	67310	94964
Unalakleet	72	7022	13	36098	26198	109220	178551
District Total	170 1/	10308	27	49735	76913	319437	456420

1/ Several fishermen fished more than one subdistrict.

Table 3. 1983 Salmon Dollar Value and Average Price Paid, by Species.

Species	Dollar Value	Average Price Paid
King	\$ 203,022.00	1.13
Pink	28,830.00	.11
Chum	666,535.00	.28
Coho	140,502.00	.39
Sockeye	78.00	.34
Total	\$1,038,967.00	

Table 4. Peak Aerial Survey Counts of Norton Sound Streams, 1983.

Stream Name	Chums	Pinks	Kings	Coho
Nome River	198	9170	2	365
Flambeau	1195	200	2	--
Eldorado	994	270	11	100
Bonanza	723	10576	--	--
Solomon	310	8180	--	--
Sinuk	2150	1070	47	96
Fish	20077	300	87	--
Niukluk	8866	50	54	--
Boston	704	--	154	--
Tubutulik	16345	40797	135	--
Kwiniuk (Tower Count)	56907	251965	267	--
Ungalik	8357	23380	21	--
Shaktoolik	12414	18705	1080	--
North River	4135	4980	347	--
Unalakleet System (Sonar Count)	58540	89324	3025	14656
Kogok	1200	--	--	--
Pikmiktalik	3228	1500	13	--

Table 5. Kwiniuk Tower Expanded Chum and Pink Salmon Escapements, 1965-1983.

	Chum	Pink
1965	32,861	8,668
1966	32,182	10,864
1967	26,661	3,587
1968	18,976	129,052
1969	19,749	57,497
1970	68,004	235,131
1971	38,679	16,634
1972	30,686	62,461
1973	28,617	38,426
1974	35,899	40,816
1975	14,344	57,317
1976	6,466	28,087
1977	22,289	44,602
1978	11,049	70,148
1979	12,355	167,492
1980	19,374	319,363
1981	34,561	566,417
1982	44,099	469,674
1983	56,907	251,965



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