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1997  
NORTON SOUND DISTRICT  
SALMON REPORT  
to the  
Alaska Board of Fisheries

By  
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## 1997 NORTON SOUND SALMON SEASON SUMMARY

### Introduction

The Norton Sound Salmon District consists of all waters between Cape Douglas in the north and Point Romanof Light in the south. The District is divided into six subdistricts: Subdistrict 1, Nome; Subdistrict 2, Golovin; Subdistrict 3, Moses Point; Subdistrict 4, Norton Bay; Subdistrict 5, Shaktoolik; and Subdistrict 6, Unalakleet Subdistrict. Each of these subdistricts contain at least one major salmon producing stream. Subdistrict boundaries were established to facilitate management of individual salmon stocks.

All commercial salmon fishing in the district is by set gillnets in marine waters; fishing effort is usually concentrated near river mouths. Commercial fishing typically begins in June and targets chinook salmon. Emphasis switches to chum salmon around June 25 and the coho salmon fishery begins the third week of July. The season closes September 7. Pink salmon may be very abundant on even year returns and a pink directed fishery may replace or may be scheduled to alternate periods with the historical chum directed fishery.

Salmon management has changed significantly during recent years due to limited market conditions and marginal returns of many salmon stocks within the district. The Eastern subdistricts, Norton Bay, Shaktoolik, and Unalakleet all have fairly healthy salmon stocks. Commercial fishing in these subdistricts is managed using commercial fishing statistics and the Unalakleet River test fishing escapement index. Both the Golovin and Moses Point Subdistricts have recently suffered from poor chum salmon returns. In these two subdistricts, management first insures an adequate escapement, then a subsistence harvest within historical levels and finally an attempt is made to provide for a commercial and sport harvest. The Nome Subdistrict is managed intensively for subsistence use. Registration permits, closed waters, setting fishing period length, limiting gear and harvest limits are all tools that can be employed throughout the season to provide for escapement needs and to maximize subsistence opportunity.

### Commercial Fishery Overview

The 1997 Norton Sound District commercial salmon fishing season first opened in the Unalakleet and Shaktoolik Subdistricts on June 12 and ended on August 23. Commercial fishing dates and times were set throughout the season by Emergency Order. The commercial salmon harvest totaled 79,141 fish which was comprised of 12,573 chinook, 161 sockeye, 32,284 coho, 20 pink, and 34,103 chum salmon (Table 1). One hundred two permit holders participated in the fishery and received \$363,907 for their catch (Table 2 and 3). This report should be considered preliminary and will be updated with additions and corrections in subsequent reports.

Table 1 lists the Norton Sound salmon historical and current year commercial harvests relative to the previous 5 year (1992-1996) and the previous 10 year (1987-1996) averages. The chinook

salmon total harvest for 1997 was the highest since 1985. The harvest was 93% above the previous 5 year average and 95% above the previous 10 year average. The coho salmon harvest was the lowest since 1987 at 56% below the previous 5 year average and 46% below the previous 10 year average. Historically Norton Sound has had very limited, but sporadic markets for pink salmon. A new market opened in 1994 which focused on the abundant even year return. The fishery went well so it was attempted on the weaker return in 1995 with such poor results that no directed pink fishery was prosecuted in 1997. The commercial harvest of pink salmon in 1997 totaled only 20 fish. The Norton Sound chum salmon commercial harvest was 18% below the 5 year average and 44% below the 10 year average. This low chum salmon harvest can be attributed primarily to the combination of a low harvestable surplus in the northern subdistricts and poor markets in the southern subdistricts.

The Norton Sound Salmon District has 201 CFEC salmon permits, of which 102 actually fished during the 1997 season (Table 2). The number of participating fishermen this season was 11% below the previous 5 year average and 19% below the previous 10 year average. There has been a significant drop in effort in recent years due primarily to poor market conditions. The 1997 season ended with the second lowest number of commercial fishermen participating on record.

Two primary salmon buyers operated in Norton Sound during the 1997 season. Salmon were delivered to Unalakleet from other subdistricts using tenders and aircraft. Some fish were headed and gutted while others were iced in the round, then shipped airfreight to markets. In addition, a few individual fishermen sold their catch of fresh salmon locally and to wholesale distributors, as permitted under catcher-seller status. The average price paid for chinook salmon was \$1.00 per pound, \$.72/lb for sockeye, \$.47/lb for coho, \$.06/lb for pink, and \$.11/lb for chum salmon (Table 3). The total value of the raw fish was \$363,908, was 22% below the previous 5 year (1992-1996) average of \$466,531.

### Subsistence Fishery

Household subsistence surveys will be partially funded by the Commercial Fisheries Management and Development Division and implemented by the Division of Subsistence during the fall of 1997 in Norton Sound villages. This information will be available in later reports. Daily interviews of Unalakleet River and ocean subsistence fishermen were conducted at Unalakleet during the early portion of the fishing season in order to monitor the chinook salmon return. Total harvests by subsistence fishermen were not documented, however effort and catch information was used in combination with the Department's test net in the lower Unalakleet River and commercial catch information to judge the timing and magnitude of the chinook salmon return. This information was the basis for scheduling early commercial salmon fishing periods in the Unalakleet and Shaktoolik Subdistricts. Commercial fishing is typically only allowed after chinook salmon have been observed entering the Unalakleet River in increasing numbers for a week's time to assure the harvest is directed on a actively migrating stock rather than milling fish and to assure adequate quantities are available to subsistence users.

Subsistence fishing permits are required by regulation for each household that fishes in the Nome Subdistrict. These permits identify the body of water to be fished, the type of gear used, and the bag limit which is specific to that body of water. In addition, the permit contains a catch calendar where the permit holder records catches in numbers of each species of fish for each day fished. If the subsistence fishers have filled their bag limits or would like to fish another location, they can be issued another permit for another area after the previous one has been returned. These permits are important to management because they identify users and bag limits, but the actual catch information can not be compiled until well after the season when the permits are returned to the Department of Fish and Game. Therefore, this information will also be presented in a later report.

## SEASON SUMMARY BY SUBDISTRICT

### Nome - Subdistrict 1

The commercial salmon season in the Nome Subdistrict is scheduled to take place by regulation between July 1 and August 31. However, due to low chum, pink, and coho salmon returns, no commercial salmon harvest occurred (Table 2). Commercial fishing in the subdistrict is typically very limited due to the limited abundance of small local salmon stocks and the high subsistence demand. Sport fishing for chum salmon is closed by regulation in the subdistrict. The previous ten year average commercial harvest is 1 chinook, 1 sockeye, 260 coho, 50 pink, and 897 chum salmon. The ten year average subsistence salmon harvest in the subdistrict is 71 chinook, 165 sockeye, 1,218 coho, 2,783 pink, and 4,051 chum salmon. One hundred eight subsistence fishing permits were issued in 1997 for the Nome Subdistrict. Harvest results will be available in a latter report.

Subsistence fishing was closed prior to the beginning of the chum salmon return for nearly the entire area except in marine waters East of Cape Nome. On July 21, only the Flambeau River, Eldorado River, Safety Sound and marine waters east of Cape Nome were opened to subsistence fishing because the chum salmon escapements had built to adequate levels. The rest of the subdistrict remained closed until August 7. It was felt that continued restrictions would have little benefit in boosting chum salmon escapement and opening the subdistrict would allow for a coho salmon subsistence harvest.

The entire area from Cape Prince of Wales to Cape Darby, which includes the Nome Subdistrict, was closed August 15 to the sport harvest of coho salmon due to poor returns. On August 16, this same area was closed to all subsistence fishing for the same reason, extremely poor coho salmon returns. Subsistence fishing reopened throughout the area on September 1 when the bulk of the coho salmon return had passed beyond the harvest zone on most rivers. However, the upper Fish River and Niukluk Rivers remained closed through September 10 because coho salmon in those streams were still vulnerable and required continued protection.

## Golovin Bay- Subdistrict 2

Over the past eight years, chum salmon stocks in the Golovin Bay Subdistrict have received little or no commercial exploitation and still have not made spawning escapements in some years. The 1997 Salmon Management Plan informed fishermen that the Golovin Bay Subdistrict commercial harvest would be limited to a maximum of 15,000 chum salmon before mid-July in an attempt to protect the chum salmon stocks and allow for a harvest while flesh quality is at its best. By that date, the chum salmon run would be assessed and fishing time would be adjusted accordingly.

Commercial fishing began on June 18 for a single 24 hour period with a mesh restriction to target chinook salmon (Table 5). Both the chinook and chum salmon returns appeared strong so additional commercial periods were allowed with unrestricted mesh gear to target either species. The subdistrict was closed on August 5 when the coho salmon return was assessed to be well below average. However, a single fishing period in a special harvest area was allowed later that same day which directed a harvest for chum salmon to be used as crab bait. Only one coho was reported harvested that period. The total season commercial harvest landed by 11 permits included 19 chinook, 2 sockeye, 102 coho, 8,003 chum, and 20 pink salmon.

As stated earlier, on August 16, the Golovin Bay Subdistrict was included in the subsistence salmon closure of the area from Cape Prince of Wales to Cape Darby. The coho salmon return was very low as indicated by the Departments counting tower, aerial surveys, and public comments. The lower portion of the Fish River and marine waters reopened after August 31 since the fish had moved past that area. However, the upper portion of the river remained closed through August 10 because the coho salmon in that area were still susceptible to subsistence harvest.

## Moses Point - Subdistrict 3

The Moses Point Subdistrict chum salmon return has also experienced a decrease in size in recent years despite conservative management actions. The salmon management plan stated that there was to be no chum salmon directed fishery with the possibility of a subsistence closure during the run if the chum salmon escapement levels were likely to fall short of the Kwiniuk River counting tower goal of 19,500 chum salmon. Commercial fishing was to remain closed through June and early July to protect the chum salmon stocks. If the chum salmon return was weak, attempts would be made to minimize the impact on the subsistence harvest by allowing directed fishing on other salmon species. The escapement was closely monitored throughout the run by the Department's Kwiniuk River counting tower.

In the past there had been a small annual harvest of chinook salmon that has not occurred recently out of concern for chum salmon. Since the chinook salmon return appeared strong and there was new regulation that allowed mesh restrictions to target chinook salmon, on June 21 a single commercial fishing period was planned to take a chinook salmon harvest of similar magnitude to previous years (Table 6). After that period, the subdistrict remained closed until August 4 when it

reopened. The chum salmon goal had been attained and there was a limited market for coho and chum salmon. The subdistrict closed for the season on August 14 due to poor coho salmon returns.

The Moses Point Subdistrict total commercial season harvest taken by 21 permits included 844 chinook, 1,409 coho, and 2,683 chum salmon (Table 6). The chinook salmon harvest was the highest since 1987, the coho salmon harvest was 62% below the previous 5-year average, and even though the chum salmon harvest was above the previous 5-year average, it was still 37% below the previous 10-year average.

#### Norton Bay - Subdistrict 4

The Norton Bay Subdistrict typically has difficulty attracting a buyer due to its remoteness and its reputation for water-marked fish. Consequently, in 1995, a regulatory change was implemented that moved the western boundary from Six Mile Point to Isaac's Point in an attempt to improve fish quality. Due to lack of timely salmon escapement information the Norton Bay Subdistrict is managed similar to the Shaktoolik and Unalakleet Subdistricts because they reflect similar trends in salmon return strength and timing. In 1997 a salmon buyer expressed an interest in buying fish in the subdistrict so a period was scheduled for June 25 to test the quantity and quality of both chinook and chum salmon. Product quality was judged to be poor so no further openings were announced due to lack of market (Table 7). Nine fishermen made landings that totalled 194 chinook and 531 chum salmon for the season. These catches are near averages that include seasons not fished, yet well below average when those years not fished were omitted from the averages.

#### Shaktoolik and Unalakleet - Subdistricts 5 and 6

Both the Shaktoolik and Unalakleet Subdistricts, which share a common boundary, consistently attract commercial markets due to larger volumes of fish and better transportation services. Management actions typically encompass both subdistricts because salmon tend to intermingle and the harvest in one subdistrict affects the movement of fish in the adjacent subdistrict. As stated earlier the, department's test net in the Unalakleet River and subsistence interviews at Unalakleet are used to set early fishing periods in both subdistricts. As the season progresses, the test net, commercial catch indices, and the North River counting tower operated through cooperation with Kawarak Corporation are used to assess return strengths of each salmon species. Aerial surveys are frequently not obtained in either subdistrict due to poor survey conditions. When conditions allow, aerial surveys can be used as a late assessment check, once salmon have migrated the long distance between the fishery and the spawning grounds (Table 4).

Commercial fishing is typically only allowed after chinook salmon have been observed entering the Unalakleet River in increasing numbers for a week's time to assure the harvest is directed on actively migrating stocks and not on milling fish. The chinook salmon return began early and appeared strong. The first fishing period in both subdistricts opened on June 12 for 24 hours (Table 8 and 9). It was directed at chinook salmon using a minimum mesh size restriction of 7.5

inches. A second 24 hour period opened on June 16 in both subdistricts. The chinook salmon return continued to be strong with escapements increasing well ahead of schedule while the chum salmon run showed signs of a good return. On June 19, both subdistricts went to a standard schedule of two 48 hour periods per week with unrestricted mesh size. For the next three periods the chinook salmon catches decreased until June 30 when most fishermen had shifted their focus to target chum salmon.

The Shaktoolik Subdistrict closed on July 3 when the only buyer ceased operations. That same buyer also ceased operations in the Unalakleet Subdistrict July 9, but fishing time was increased to 5 days per week because there was still interest by catcher/sellers who found their own markets. In addition, the chum return continued to look strong. On July 14, fishing gear was restricted to a maximum mesh size of 6 inches to conform with regulation. In addition, fishing time was reduced in preparation for the approaching coho salmon directed fishery. The Shaktoolik Subdistrict reopened August 4 on the same fishing schedule as Unalakleet to target coho salmon.

The 1997 season began with expectations of an average coho salmon return. By the end of the first week in August the coho salmon return was behind schedule based on harvest and escapement indices, but the southern subdistricts showed signs of improvement and Department theorized that the run was simply slow in arriving due to the unusually warm season. Commercial fishing periods continued in both subdistricts with only a few minor adjustments in schedule to accommodate tenders. By the third week in August, the coho return was considered below average based on both escapement and catch indices so both the Unalakleet and Shaktoolik Subdistricts closed for the season on August 23.

Commercial catches in the Shaktoolik Subdistrict included 2,449 chinook, 4,694 coho, and 5,747 chum salmon harvested by 19 permit holders (Table 2 and 8). The chinook salmon harvest was 67% above the previous 5 year average and 59% above the previous 10 year average. The coho salmon harvest was 67% below the previous 5 year average and 57% below the previous 10 year average. There was a very limited chum salmon market with most fish being purchased as an incidental product of the chinook and coho salmon directed fisheries in both subdistricts. The total chum salmon harvest in the Shaktoolik Subdistrict was 60% below the 5 year average and 68% below the 10 year average harvest.

The Unalakleet Subdistrict had similar catches and trends. The harvest by 57 permit holders included 9,067 chinook, 159 sockeye, 26,079 coho, and 17,139 chum salmon (Table 2 and 9). The chinook salmon catch was 81% above the previous 5 year average and 100% above the previous 10 year average. The coho salmon harvest in the subdistrict was 51% below the previous 5 year average and 41% below the previous 10 year average. The total chum salmon harvest was 32% below both the 5 and 10 year averages. There were no pink salmon sales reported from either the Unalakleet or Shaktoolik Subdistricts in 1997 due to lack of market.

## ESCAPEMENT

Table 4 lists aerial survey escapement counts for the major index streams of Norton Sound and the Kwiniuk River tower counts. Survey conditions were fair to good for most of the district in 1997 for chinook, chum, and pink salmon, but poor to unacceptable for coho salmon throughout the district. As usual, the Nome Subdistrict streams received the most intensive survey efforts because salmon stocks local to the Nome area are limited, easily accessed by road system, and are exposed to intensive subsistence and sport fishing pressure.

Department escapement projects in the Norton Sound District include counting towers on the Kwiniuk, Niukluk, and Shaktoolik Rivers, a test net operated on the Unalakleet River, and a weir on the Nome River. Both the Unalakleet test net and the Kwiniuk tower projects have been in operation for many years. They provide comparable and timely information which is used as a basis for inseason salmon management decisions. The Nome River weir first began as a tower late in 1993 and was operational as a tower in 1994 and 1995 before switching to a weir in 1996. The Niukluk tower became functional in 1995. Both the Nome and Niukluk River projects have limited years of data that can be used when making comparisons, but have proven to be reliable and will become more valuable the longer they operate. This was the second season the Shaktoolik tower was operated. Project modifications were made that provided better data early in the season, but the tower flooded out again in 1997 when the river overflowed its banks for the second year in a row.

Four additional counting tower projects were also operated in the Norton Sound District this season. The Snake, Eldorado, Pilgrim, and North River projects were setup and operated by Kawarak Corporation. The projects ran as cooperative ventures with the Department of Fish and Game who supplied technical advice and purchased some equipment. The projects supplied daily information to the Department that was very useful to management of the local salmon resource.

### Chinook Salmon

The Unalakleet and Shaktoolik Subdistricts are the primary chinook salmon producers in Norton Sound. On a smaller scale, the Norton Bay, Moses Point and Golovin Bay Subdistricts have also experienced a gradual increasing trend of chinook salmon returns in recent years. The 1997 season noted an above average chinook salmon return for nearly every drainage surveyed. Daily subsistence fishermen interviews conducted at Unalakleet, the Department's test fish project in the Unalakleet River, aerial survey data, and comparative commercial catch data all indicated that chinook salmon escapements were above average in the Unalakleet and Shaktoolik Subdistricts while the Kwiniuk River counting tower nearly doubled the average chinook salmon passage. Comments from local fishers regarding other subdistricts indicated chinook salmon returns were among the highest in many people's memory.

## Chum Salmon

Chum salmon escapements were typically below average throughout most of Norton Sound in 1997. Streams in the Nome Subdistrict were surveyed with mixed results. The Sinuk, Nome, Flambeau, Bonanza, and Solomon Rivers had chum salmon escapement at approximately one half their escapement goals. The Eldorado River attained its goal and the Snake River was not surveyed, but the counting tower project which does not have a formal escapement goal, indicated a strong chum salmon return that suggests the Snake River also attained its goals.

Chum salmon production in the Golovin Bay Subdistrict is primarily supported by one river system with escapement goals set for select individual tributaries called index areas. Aerial surveys estimated chum salmon escapements to have attained escapement goals for all the index areas in the subdistrict. Therefore, chum salmon escapement to the subdistrict was assumed to be adequate in 1997. The Kwiniuk River tower project attained its chum salmon escapement goal with a preliminary expanded count of 20,118 fish. However, the Tubutulik River, a close neighbor to the Kwiniuk River, had an aerial survey count of chum salmon only one quarter of its escapement goal.

Aerial surveys in the Norton Bay, Shaktoolik, and Unalakleet Subdistricts are not consistently obtained each year, but exceptionally low water and few pink salmon provided ideal viewing conditions in 1997. The Ungalik River was the only stream surveyed in the Norton Bay Subdistrict and was assessed at more than twice its goal. A survey of the Shaktoolik River observed less than half its chum salmon escapement goal while the Unalakleet River had mixed indicators. The test net caught slightly less than average numbers, but the aerial survey counts were well above average for the Unalakleet River. Therefore, it is believed that the Unalakleet drainage had adequate chum salmon escapements for 1997.

## Coho Salmon

Coho salmon are found in nearly all of the chum salmon producing streams throughout Norton Sound with the primary commercial contributors being the Unalakleet and Shaktoolik Rivers. Because inclement weather is normally experienced in this area during August and September, escapement data for all subdistricts can be somewhat sketchy. Streams in the northern subdistricts of Norton Sound are typically surveyed and the Unalakleet River test net has the best data set to compare coho salmon escapement in eastern Norton Sound. The newer assessment projects are intended to monitor coho as well as chum salmon, but still lack a historic data base. Nearly all escapement monitoring projects had gaps in operations of varying degrees due to high water in 1997.

Overall, coho salmon escapements were average to well below average in all subdistricts. The coho salmon returns were the weakest in the northern subdistricts which required very restrictive measures to assure adequate escapements. Yet in some cases escapements were still very poor. The southern subdistricts were difficult to assess due to high water conditions. Coho salmon run assessment relied upon the Unalakleet test net and comparative commercial catch statistics which

both indicated below average returns in 1997 and therefore, below average escapements were assumed.

## Pink Salmon

During recent years, pink salmon returns to Norton Sound have followed an odd/even year cycle with the even years building in size and typically much larger than the odd years. The 1997 return came in late as is typical on odd years and was very small as expected in the northern subdistricts. However, in the southern subdistricts, the run timing was late, but much larger than expected.

## MANAGEMENT CONCERNS

Chum salmon stocks have been depressed throughout Norton Sound over the past eight to nine years with escapements in the northern subdistricts continuing to be a major concern. Chum salmon escapement goals are generally being met, but the cost has been a drastic reduction of all forms of harvest in many instances. The Nome Subdistrict was closed in 1997 during the entire chum salmon run to sport and commercial fishing. Subsistence fishery management actions included intense management on a stream-by-stream basis. The Golovin, Norton Bay, and Unalakleet Subdistricts attained their escapement goals with limited commercial harvests levels. Both the Moses Point and Shaktoolik Subdistricts had chum salmon escapements at or below their goals with each having small commercial salmon harvests. Even though escapement goals were obtained for most index streams, chum salmon harvests will continue to be managed conservatively to assure future returns.

The streams of the Nome Subdistrict and those of the Moses Point Subdistrict have been managed to assure an adequate chum salmon escapement since 1989. The Kwiniuk and Eldorado Rivers have now attained adequate chum salmon escapement levels during the past four years. The "rivers of concern" classification and the strict requirement that escapement goals be met before any harvest is no longer appropriate. The management staff is planning to allow limited subsistence harvests on the Eldorado River shortly after July 4. On the Kwiniuk River, commercial fisheries directed at king salmon, but harvest chums incidentally may be allowed early in the season. Chum Salmon management will continue to be quite conservative to allow other streams in those Subdistricts to recover, but some response to the recent gains in the recovery of these stocks is warranted.

The renewed interest in Norton Sound pink salmon commercial fishing has proven feasible and manageable on strong year classes, but is questionable during weak return years. Management Plans will have to be developed that set exploitation levels and escapement needs, gear and harvest requirements, and consider incidental weak stock impacts.

Salmon marketing conditions have become significant factors for consideration when scheduling fishing periods. Market conditions have caused more restrictive limitations than biological factors in recent years for many species. Fish buyers frequently notify the Department of Fish and Game

that they can only handle a limited quantity with a high quality standard and at a specific rate to optimize their operations. The fishery manager must not only monitor the salmon returns and harvest rates, but must coordinate schedules with the salmon buyers to protect the limited markets available for Norton Sound salmon.

### **1998 NORTON SOUND SALMON OUTLOOK**

Salmon forecasts and harvest projections for the 1998 commercial salmon season are based on qualitative assessments of brood year returns, subjective determinations of freshwater overwintering and ocean survival, and projections of local market conditions. Salmon buyers will probably operate in only some of the Norton Sound subdistricts during 1998. The chinook return is expected to be above average with a commercial harvest ranging from 5,000 to 8,000 fish. The pink salmon market is uncertain in 1998. However, the pink salmon escapements during 1996 were strong in most index streams indicating a surplus of several million salmon. The 1997 chum salmon return is expected to be about average while the market for Norton Sound chum will likely be weak. The commercial harvest of chum salmon will be managed conservatively to provide a potential harvest between 40,000 and 80,000. The 1994 coho salmon commercial harvest and escapements indicate that the 1997 coho return will be well above average and the commercial harvest is expected to range from 60,000 to 80,000 fish.

Table 1. Commercial salmon catches by species, Norton Sound District, 1961-1997.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1961	5,300	35	13,807	34,327	48,332	101,801
1962	7,286	18	9,156	33,187	182,784	232,431
1963	6,613	71	16,765	55,625	154,789	233,863
1964	2,018	126	98	13,567	148,862	164,671
1965	1,449	30	2,030	220	36,795	40,524
1966	1,553	14	5,755	12,778	80,245	100,345
1967	1,804	-	2,379	28,879	41,756	74,818
1968	1,045	-	6,885	71,179	45,300	124,499
1969	2,392	-	6,836	86,949	82,795	178,972
1970	1,853	-	4,423	64,908	107,034	178,218
1971	2,593	-	3,127	4,895	131,362	141,977
1972	2,938	-	454	45,182	100,920	149,494
1973	1,918	-	9,282	46,499	119,098	176,797
1974	2,951	-	2,092	148,519	162,267	315,829
1975	2,393	2	4,593	32,388	212,485	251,861
1976	2,243	11	6,934	87,916	95,956	193,060
1977	4,500	5	3,690	48,675	200,455	257,325
1978	9,819	12	7,335	325,503	189,279	531,948
1979	10,706	57	31,438	167,411	140,789	350,344
1980	6,311	40	29,842	227,352	180,792	444,337
1981	7,929	56	31,562	232,479	169,708	441,734
1982	5,892	10	91,690	230,281	183,335	511,208
1983	10,308	27	49,735	76,913	319,437	456,420
1984	8,455	6	67,875	119,381	146,442	342,159
1985	19,491	166	21,968	3,647	134,928	180,200
1986	6,395	233	35,600	41,260	146,912	230,400
1987	7,080	207	24,279	2,260	102,457	136,283
1988	4,096	1,252	37,247	74,604	107,967	225,166
1989	5,707	265	44,091	123	42,625	92,811
1990	8,895	434	56,712	501	65,123	131,665
1991	6,068	203	63,647	221	86,871	157,010
1992	4,541	296	105,418	6,284	83,394	199,933
1993	8,972	279	43,283	157,574	53,562	263,670
1994	5,285	80	102,140	982,389	18,290	1,108,184
1995	8,860	128	47,862	81,644	42,898	181,392
1996	4,984	1	68,033	487,441	10,636	571,095
1997	12,573	161	32,284	20	34,103	79,141

Previous

5-Yr Avg <sup>a</sup> 6,528 157 73,347 343,066 41,756 464,855

Previous

10-Yr Avg <sup>b</sup> 6,449 315 59,271 179,304 61,382 306,721

<sup>a</sup> 1992-1996

<sup>b</sup> 1987-1996

Table 2. Norton Sound commercial salmon harvest summary by subdistrict, 1997.

	Subdistricts						Total Number
	1	2	3	4	5	6	
Number of Fishers	0	11	21	9	19	57	102 <sup>a</sup>
Chinook							
Number	0	19	844	194	2,449	9,067	12,573
Weight(lbs.)		288	17,004	3,469	46,454	157,921	225,136
Sockeye							
Number	0	2	0	0	0	159	161
Weight(lbs.)		15				1,080	1,095
Coho							
Number	0	102	1,409	0	4,694	26,079	32,284
Weight(lbs.)		787	9,617		32,452	192,661	235,517
Pink							
Number	0	20	0	0	0	0	20
Weight(lbs.)		50					50
Chum							
Number	0	8,003	2,683	531	5,747	17,139	34,103
Weight(lbs.)		58,516	22,537	4,520	42,084	125,349	253,006
Coho Salmon Roe						531 lbs	
Chinook Salmon Roe						294 lbs	
Salmon Roe (unspecified)						55 lbs	
Totals <sup>b</sup>							
Number		8,146	4,936	725	12,890	52,444	79,141
Weight(lbs.)		59,656	49,158	7,989	120,990	477,011	714,804

<sup>a</sup> Some fishermen fished more than one subdistrict.

<sup>b</sup> Totals do not include salmon roe sold.

Table 3. Norton Sound salmon dollar value and average price paid to the fisherman, by species, 1997.

Species	Dollar value	Average price per pound
Chinook	\$224,842.00	\$1.00
Sockeye	\$788.40	\$0.72
Coho	\$110,443.42	\$0.47
Pink	\$3.00	\$0.06
Chum	\$27,830.66	\$0.11
Total Value	\$363,907.48	

Table 4. Salmon Escapement Indices of Norton Sound Streams, 1997

Stream Name	Chinook	Coho	Sockeye	Pink <sup>a</sup>	Chum <sup>b</sup>
<u>Pilgrim Drainage</u> (including Salmon Lake)	Above Avg.	Below Avg.	Record High		Average
<u>Sinuk Drainage</u> (including Glacial Lake)		Well Below Avg.	Well Below Avg.	Below Avg.	Below Avg.
<u>Nome Subdistrict</u>					
Cripple River				Below Avg.	Below Avg.
Penny River				Below Avg.	
Snake River		Average			At Goal
Nome River		Average		Below Avg.	Below Goal
Flambeau River		Average		Below Avg.	Below Goal
Eldorado River		Well Below Avg.		Below Avg.	At Goal
Bonanza River		Below Avg.		Below Avg.	Below Goal
Solomon River		Average		Below Avg.	Below Goal
<u>Fish River Drainage</u>	Above Avg.	Well Below Avg.		Below Avg.	Above Goal
<u>Kwiniuk River</u>	Above Avg.	Below Avg.		Below Avg.	At Goal
<u>Tubutulik River</u>	Above Avg.			Average	Below Goal
<u>Ungalik River</u>	Record High			Average	Above Goal
<u>Shaktoolik River</u>	Above Avg.	Below Avg.		Above Avg.	Below Goal
<u>Unalakleet Drainage</u>	Above Avg.	Below Avg.		Above Avg.	Above Goal

<sup>a</sup> Pink salmon have an odd/even year return cycle. Odd year returns are much smaller and are evaluated relative to other odd year returns.

<sup>b</sup> Chum salmon are evaluated relative to average except when there is an established escapement goal.

Table 5. Commercial salmon set gillnet catches from Golovin, Subdistrict 2, Norton Sound, 1997.

Period Number	Period Dates	Hours Fished	No. of Fishermen	Period Catch and Catch Per Unit Effort						Cumulative Catch and Catch Per Unit Effort												
				Chinook Number	Chinook CPUE	Sockeye Number	Sockeye CPUE	Coho Number	Coho CPUE	Chum Number	Chum CPUE	Pink Number	Pink CPUE	Chinook Number	Chinook CPUE	Sockeye Number	Sockeye CPUE	Coho Number	Coho CPUE	Chum Number	Chum CPUE	Pink Number
2	6/21-6/22	24	2	10	0.21	0	0.00	0	0.00	218	4.54	0.00	10	0.21	0	0.00	0	0.00	218	4.54	0	0.00
3	6/26-6/28	48	4	3	0.02	0	0.00	0	0.00	1204	6.27	0	13	0.05	0	0.00	0	0.00	1422	5.93	0	0.00
4	6/29-7/01	42	4	1	0.01	0	0.00	0	0.00	1705	10.15	0	14	0.03	0	0.00	0	0.00	3127	7.66	0	0.00
5	7/21-7/23	48	6	5	0.02	2	0.01	10	0.03	1146	3.98	0	19	0.03	2	0.01	10	0.03	4273	6.14	0	0.00
6	7/24-7/26	48	2	0	0.00	0	0.00	18	0.19	1247	12.99	0	19		2		28	0.07	5520	6.97	0	0.00
7	7/29-7/31	48	4	0	0.00	0	0.00	49	0.26	1802	9.39	0	19		2		77	0.13	7322	7.44	0	0.00
8	8/01-8/03	48	3	0	0.00	0	0.00	24	0.17	659	4.58	0	19		2		101	0.14	7981	7.08	0	0.00
9	8/05-8/06	24	1	0	0.00	0	0.00	1	0.04	22	0.92	20	19		2		102	0.14	8003	6.95	20	0.83

Total Hours fished = 330

Total number of permits used = 11

Table 6. Commercial salmon set gillnet catches from Moses Point, Subdistrict 3, Norton Sound, 1997.

Period Number	Period Dates	Hours Fished	No. of Fishermen	<u>Period Catch and Catch Per Unit Effort</u>					<u>Cumulative Catch and Catch Per Unit Effort</u>				
				Chinook Number CPUE	Sockeye Number CPUE	Coho Number CPUE	Chum Number CPUE	Pink Number CPUE	Chinook Number CPUE	Sockeye Number CPUE	Coho Number CPUE	Chum Number CPUE	Pink Number CPUE
1	6/18-6/19	24	16	844 2.20	0 0.00	0 0.00	166 0.43	0 0.00	844 2.20	0 0	0	166 0.43	0 0
3	8/04-8/06	48	9	0 0.00	0 0.00	431 1.00	1042 2.41	0 0.00	0.00	0 0	431 1.00	1208 1.48	0 0
4	8/07-8/08	30	9	0 0.00	0 0.00	361 1.34	948 3.51	0 0.00	0.00	0 0	792 1.13	2156 1.99	0 0
5	8/11-8/13	48	10	0 0.00	0 0.00	617 1.29	527 1.10	0 0.00	0.00	0 0	1409 1.19	2683 1.71	0 0

Total Hours fished = 150

Total number of permits used = 21

Table 7. Commercial salmon set gillnet catches from Norton Bay, Subdistrict 4, Norton Sound, 1997.

Period Number	Period Dates	Hours Fished	No. of Fishermen	Period Catch and Catch Per Unit Effort					Cumulative Catch and Catch Per Unit Effort														
				Chinook Number	Chinook CPUE	Sockeye Number	Sockeye CPUE	Coho Number	Coho CPUE	Chum Number	Chum CPUE	Pink Number	Pink CPUE										
1	6/25-6/26	24	9	194	0.90	0	0.00	0	0.00	531	2.46	0	0.00	194	0.90	0	0.00	0	0.00	531	2.46	0	0.00

Total Hours fished = 24

Total number of permits used = 9

Table 8. Commercial salmon set gillnet catches from Shaktoolik, Subdistrict 5, Norton Sound, 1997.

Period Number	Period Dates	Hours Fished	No. of Fishermen	Period Catch and Catch Per Unit Effort					Cumulative Catch and Catch Per Unit Effort				
				Chinook Number CPUE	Sockeye Number CPUE	Coho Number CPUE	Chum Number CPUE	Pink Number CPUE	Chinook Number CPUE	Sockeye Number CPUE	Coho Number CPUE	Chum Number CPUE	Pink Number CPUE
1	6/12-6/13	24	12	510 1.77	0 0.00	0 0.00	3 0.01	0 0.00	510 1.77	0 0.00	0 0.00	3 0.01	0 0.00
2	6/16-6/17	24	13	370 1.19	0 0.00	0 0.00	13 0.04	0 0.00	880 1.47	0 0.00	0 0.00	16 0.03	0 0.00
3	6/19-6/21	48	18	755 0.87	0 0.00	0 0.00	141 0.16	0 0.00	1635 1.12	0 0.00	0 0.00	157 0.11	0 0.00
4	6/23-6/25	48	18	594 0.69	0 0.00	0 0.00	102 0.12	0 0.00	2229 0.96	0 0.00	0 0.00	259 0.11	0 0.00
5	6/26-6/28	48	6	91 0.32	0 0.00	0 0.00	56 0.19	0 0.00	2320 0.89	0 0.00	0 0.00	315 0.12	0 0.00
6	6/30-7/02	48	11	129 0.24	0 0.00	0 0.00	4145 7.85	0 0.00	2449 0.78	0 0.00	0 0.00	4460 1.42	0 0.00
7	8/04-8/06	48	12	0 0.00	0 0.00	1773 3.08	1086 1.89	0 0.00	2449	0 0.00	1773 3.08	5546 1.49	0 0.00
8	8/07-8/09	36	14	0 0.00	0 0.00	737 1.46	0 0.00	0 0.00	2449	0 0.00	2510 2.32	5546 1.49	0 0.00
9	8/11-8/13	48	13	0 0.00	0 0.00	502 0.80	133 0.21	0 0.00	2449	0 0.00	3012 1.77	5679 1.31	0 0.00
10	8/14-8/16	36	2	0 0.00	0 0.00	201 2.79	19 0.26	0 0.00	2449	0 0.00	3213 1.81	5698 1.29	0 0.00
11	8/18-8/20	48	10	0 0.00	0 0.00	911 1.90	20 0.04	0 0.00	2449	0 0.00	4124 1.83	5718 1.17	0 0.00
12	8/21-8/23	36	7	0 0.00	0 0.00	570 2.26	29 0.12	0 0.00	2449	0 0.00	4694 1.87	5747 1.12	0 0.00

Total Hours fished = 492

Total number of permits used = 19

Table 9. Commercial salmon set gillnet catches from Unalakleet, Subdistrict 6, Norton Sound, 1997.

Period Number	Period Dates	Hours Fished	No. of Fishermen	Period Catch and Catch Per Unit Effort					Cumulative Catch and Catch Per Unit Effort														
				Chinook Number	Chinook CPUE	Sockeye Number	Sockeye CPUE	Coho Number	Coho CPUE	Chum Number	Chum CPUE	Pink Number	Pink CPUE	Chinook Number	Chinook CPUE	Sockeye Number	Sockeye CPUE	Coho Number	Coho CPUE	Chum Number	Chum CPUE	Pink Number	Pink CPUE
1	6/12-6/13	24	35	1283	1.53	0	0.00	0	0.00	22	0.03	0	0.00	1283	1.53	0	0.00	0	0.00	22	0.03	0	0.00
2	6/16-6/17	24	33	1022	1.29	0	0.00	0	0.00	38	0.05	0	0.00	2305	1.41	0	0.00	0	0.00	60	0.04	0	0.00
3	6/19-6/21	48	34	3052	1.87	0	0.00	0	0.00	221	0.14	0	0.00	5357	1.64	0	0.00	0	0.00	281	0.09	0	0.00
4	6/23-6/25	48	38	2064	1.13	0	0.00	0	0.00	206	0.11	0	0.00	7421	1.46	0	0.00	0	0.00	487	0.10	0	0.00
5	6/26-6/28	48	28	973	0.72	0	0.00	0	0.00	724	0.54	0	0.00	8394	1.31	0	0.00	0	0.00	1211	0.19	0	0.00
6	6/30-7/02	48	24	421	0.37	0	0.00	0	0.00	1756	1.52	0	0.00	8815	1.16	0	0.00	0	0.00	2967	0.39	0	0.00
7	7/03-7/05	48	7	147	0.44	0	0.00	0	0.00	2188	6.51	0	0.00	8962	1.13	0	0.00	0	0.00	5155	0.65	0	0.00
8	7/07-7/12	120	4	31	0.06	0	0.00	0	0.00	737	1.54	0	0.00	8993	1.07	0	0.00	0	0.00	5892	0.70	0	0.00
9	7/14-7/16	48	1	9	0.19	0	0.00	0	0.00	0	0.00	0	0.00	9002	1.07	0	0.00	0	0.00	5892	0.70	0	0.00
10	7/17-7/19	48	2	7	0.07	6	0.06	11	0.11	674	7.02	0	0.00	9009	1.05	6	0.06	11	0.11	6566	0.77	0	0.00
11	7/21-7/23	48	11	4	0.01	4	0.01	194	0.37	1330	2.52	0	0.00	9013	0.99	10	0.02	205	0.33	7896	0.88	0	0.00
13	7/28-7/30	48	26	10	0.01	17	0.01	1330	1.07	1467	1.18	0	0.00	9023	0.87	27	0.01	1535	0.82	9363	0.91	0	0.00
14	7/31-8/02	48	32	18	0.01	35	0.02	2760	1.80	1898	1.24	0	0.00	9041	0.76	62	0.02	4295	1.26	11261	0.95	0	0.00
15	8/04-8/06	48	38	6	0.00	45	0.02	6957	3.81	2624	1.44	0	0.00	9047	0.66	107	0.02	11252	2.15	13885	1.02	0	0.00
16	8/07-8/09	48	36	8	0.00	5	0.00	4429	2.56	1255	0.73	0	0.00	9055	0.59	112	0.02	15681	2.25	15140	0.99	0	0.00
17	8/11-8/13	48	15	1	0.00	2	0.00	1031	1.43	238	0.33	0	0.00	9056	0.56	114	0.01	16712	2.18	15378	0.96	0	0.00
18	8/14-8/16	48	26	3	0.00	7	0.01	2879	2.31	543	0.44	0	0.00	9059	0.52	121	0.01	19591	2.19	15921	0.92	0	0.00
19	8/18-8/20	48	32	3	0.00	30	0.02	3050	1.99	688	0.45	0	0.00	9062	0.48	151	0.01	22641	2.16	16609	0.88	0	0.00
20	8/21-8/23	48	28	5	0.00	8	0.01	3438	2.56	530	0.39	0	0.00	9067	0.45	159	0.01	26079	2.21	17139	0.85	0	0.00

Total Hours fished = 936

Total number of permits used = 57

Figure 1. Norton Sound commercial salmon fishing subdistricts.

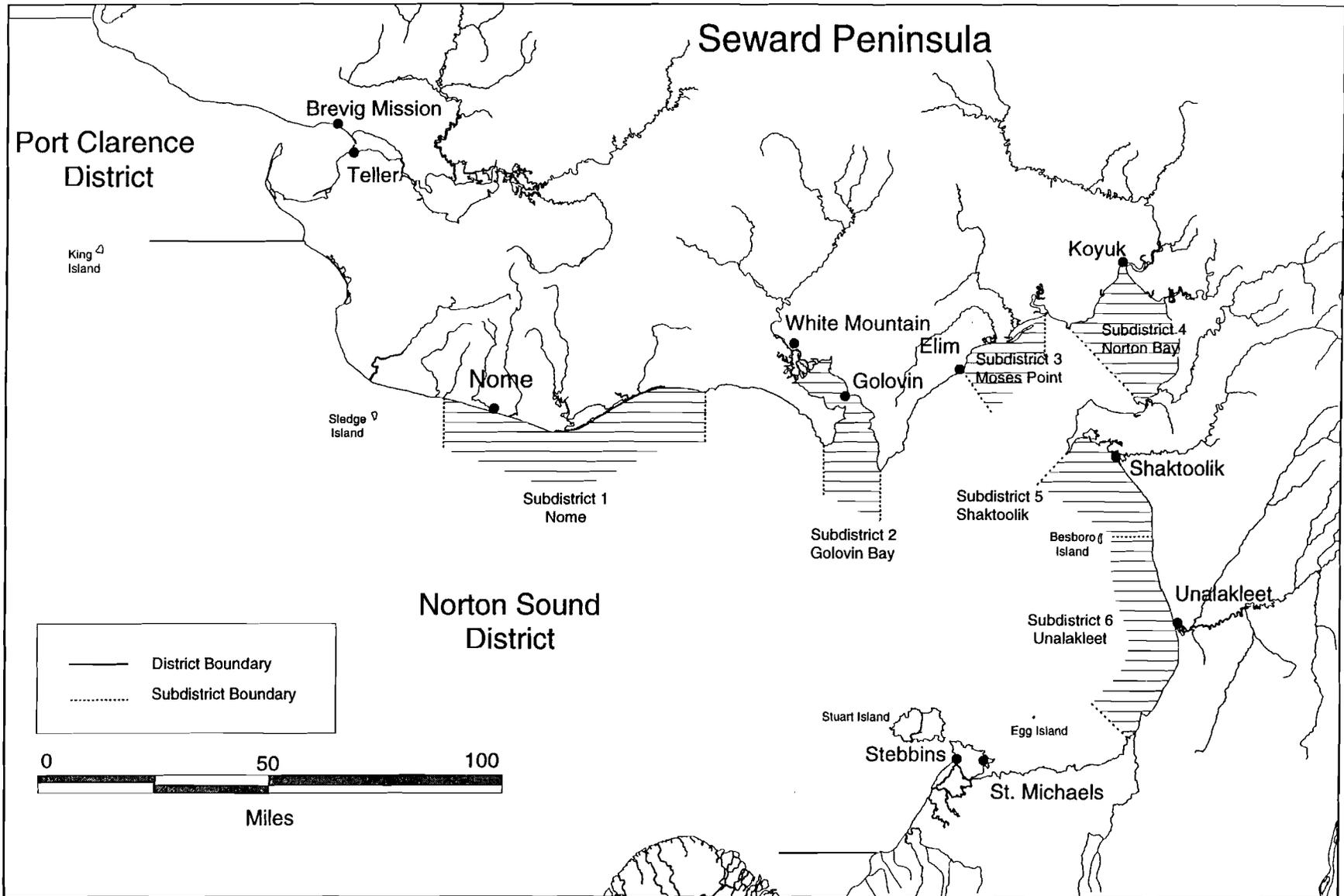


Figure 2. Northern Norton Sound subsistence salmon fishing sites.

