

NORTON SOUND NOME SUBDISTRICT CHUM SALMON  
STOCK STATUS AND ACTION PLAN



A Report to the Alaska Board of Fisheries

By:

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## EXECUTIVE SUMMARY

### *Synopsis*

In response to the guidelines established in the *Sustainable Salmon Fisheries Policy* (SSFP) 5 AAC 39.222, the Alaska Board of Fisheries (Board) classified the Norton Sound Nome Subdistrict (Subdistrict 1) chum salmon stock as a management concern at the September 2000 work session. This determination was based on the persistent low chum salmon productivity since the mid-1980s. Subsistence salmon management in the Nome Subdistrict is among the most restrictive in Alaska with the only Tier II fishery in the state. An action plan was subsequently developed by the department and acted upon by the Board in January 2001. The SSFP directs ADF&G to assess salmon stocks in areas addressed during the 2003-2004 regulatory cycle to identify stocks of concern and in the case of Nome Subdistrict chum salmon in Norton Sound, reassess the stock of concern status.

Based on definitions provided in SSFP (5 AAC 39.222(f)(21)), the department recommended continuation of the Nome Subdistrict chum salmon stock as a management concern at the September 2003 Board work session. During the past three years there has been continued difficulty in consistently meeting chum salmon escapement goals in the Nome Subdistrict, despite specific management actions taken annually.

### *Stock Assessment Background*

The Norton Sound District is composed of six commercial fishing subdistricts (Figure 1). Most subdistricts have several rivers where subsistence fishing occurs, and except for the Nome Subdistrict, there are few restrictions. In the Nome Subdistrict the larger chum runs are often east of Nome particularly in the Eldorado and Flambeau Rivers (Figure 2).

The salmon harvests for subsistence uses in Nome Subdistrict had gradually increased since statehood until the last decade when the harvests decreased (Table 1) with the increasing subsistence restrictions on chum salmon. Although chum harvests have decreased (Figure 3), escapements have not increased in response to less fishing pressure (Figures 4-7). Overall, in many rivers the salmon escapement has been lower in recent years and most of the decreasing harvests were due to weak runs in the Nome Subdistrict requiring subsistence restrictions. An overview of management actions in the Nome Subdistrict is in listed in Table 2.

At the January 2001 Board of Fisheries meeting, the Board established optimal escapement goal ranges for chum salmon on three rivers in the Nome Subdistrict: the Nome River, the Snake River and the Eldorado River (Figure 2). The three rivers have escapement counting tower or weir projects for the duration of the chum salmon run. The department established sustainable escapement goal ranges on four other rivers in the Nome Subdistrict and monitors the rivers by aerial survey in addition to using the three escapement weir projects as an index of escapement in the subdistrict. The department established an escapement goal of 23,000 to 35,000 chum salmon for the Nome Subdistrict. This goal was reached in 2001 and 2002, but was not reached in 2003 (Figure 4). In the past three years the escapement goal has been reached at the Snake River and two of three years at the Eldorado River (Figures 5 and 7). However, at the Nome River the

escapement goal was not reached in the last three years despite more restrictive actions including closing the river to all fishing in 2003 (Figure 6).

The 2003 chum salmon run was anticipated to be poor based on the poor run in 1999 and the weak return of four-year-old chum salmon in 2002. The last year, besides 2003, when the Nome Subdistrict escapement goal was not reached was in 1999 and Tier II chum salmon fishing was suspended in that year, as it was in 2003. In the years 2000 – 2002 there were regular Tier II fishing periods in the ocean and some rivers had Tier II fishing periods. Also, there were Tier I openings in those three years allowing subsistence fishing for chum salmon in selected rivers and subsistence fishing for pink salmon.

### **STOCK OF CONCERN RECOMMENDATION**

Based on the definitions provided in the sustainable salmon policy of 5 AAC 39.222(f)(21), the department recommends continuation of the Nome Subdistrict chum salmon stock as a management concern. During the past three years there has been continued difficulty in consistently meeting chum salmon escapement goals in Norton Sound Subdistrict 1, despite specific management actions taken annually.

#### *Outlook*

The Nome Subdistrict chum salmon run is expected to be poor in 2004 based on the poor chum salmon runs in previous years, but larger than the 2003 run. Information from Bering Sea studies (BASIS) and trawl bycatch information indicates a higher abundance of all salmon species than last year. Depending on the origination of these salmon, the 2004 salmon runs may be better than expected.

#### *Alaska Board of Fisheries Action*

In response to the guidelines established in the Sustainable Salmon Fisheries Policy, the Alaska Board of Fisheries, during the January 12–19, 2004 regulatory meeting, is anticipated to continue the stock of concern classification for the Nome Subdistrict chum salmon stock as a management concern.

### **ESCAPEMENT GOAL EVALUATION**

The department has undertaken a review of escapement goals for several Norton Sound salmon stocks where long-term escapement, catch, and age composition data exist that enable the development of biological escapement goals (BEG) or sustainable escapement goals (SEG) based on analysis of production consistent with the escapement goal policy. A separate report details the escapement goal review for the AYK Region. In January 2001 the Board of Fisheries established optimal escapement goal ranges for chum salmon on three rivers in the Nome Subdistrict: Nome River, Snake River, and Eldorado River, which are the same as the department's escapement goals. These three rivers have escapement counting tower or weir

projects. The department established escapement goal ranges on four other rivers in Subdistrict 1 and uses aerial surveys in addition to the three escapement projects as an index of escapement in the subdistrict. The department established a BEG of 23,000 to 35,000 chum salmon for Subdistrict 1. Escapement goals developed in 2000 were reviewed for this Board cycle utilizing additional data since the escapement goals were established. This evaluation resulted in no numerical changes. However, all of the goals except for the subdistrict wide goal will be recommended as SEGs rather than BEGs, because system specific goals may not provide maximum sustained yield (MSY) from that individual river. The department recommends no change to the existing OEGs.

The Nome Subdistrict 1 chum salmon stock has been recommended as a stock of management concern by the department. No Sustainable Escapement Threshold (SET) was developed for this stock because the recommendations for setting an SET suggest that it be estimated based on the lower ranges of historical escapement levels for which the stock has consistently demonstrated the ability to sustain itself. Because the lower escapement levels have been observed in recent years, full returns from these escapements will not be realized until at least 2004 (returns from the 1999 escapement) and more reliably not until 2009 (returns from the 2003 escapement).

***List of current and proposed escapement goals for Nome Subdistrict chum stocks***

Stream	Current Goal	Proposed Goal
Sinuk River Aerial Expanded	4,000-6,200 BEG	Change to SEG
Snake River	1,600-2,500 BEG and OEG	Change to SEG and OEG
Nome River	2,900-4,300 BEG and OEG	Change to SEG and OEG
Eldorado	6,000-9,200 BEG and OEG	Change to SEG and OEG
Flambeau River Aerial Expanded	4,100-6,300 BEG	Change to SEG
Bonanza River Aerial Expanded	2,300-3,400 BEG	Change to SEG
Solomon River Aerial Expanded	1,100-1,600 BEG	Change to SEG
Subdistrict 1	23,000-35,000 BEG	No Change

**MANAGEMENT ACTION PLAN OPTIONS FOR ADDRESSING STOCKS OF CONCERN AS OUTLINED IN THE SUSTAINABLE FISHERIES POLICY**

***Norton Sound Subdistrict 1 Chum Salmon Management Plan Review/Development***

**Current Stock Status**

In response to the guidelines established in the Sustainable Salmon Fisheries Policy (5 AAC 39.222), the department recommended the continuation of the Norton Sound Subdistrict 1 chum salmon stock as a management concern at the October 2003 Board work session. The Board of Fisheries, after reviewing stock status information and public input during the January 2004 regulatory meeting, is anticipated to continue the stock of concern classification for Norton Sound Subdistrict 1 chum salmon stock as a management concern. This determination was based on the inability, despite the use of specific management measures, to consistently maintain

escapements for a salmon stock within the bounds of the BEGs, SEGs, or OEGs during several of the last five years.

### **C&T Use Finding**

The Board of Fisheries has made a positive finding for Customary and Traditional Use for chum salmon in the Nome Subdistrict. Amounts Necessary for Subsistence uses has been determined to be 3,430 – 5,716 chum salmon seasonally in the Nome Subdistrict and 96,000 – 160,000 salmon for the Norton Sound-Port Clarence Area.

### *Habitat Factors Adversely Affecting Chum Stock*

Nome Subdistrict has been subjected to significant gold mining over a long time period. While historical mining did cause significant damage, most of the direct physical damage was to tributary streams and/or headwaters. For the most part, prime chum salmon spawning areas were not affected (except for the Nome, Snake and Solomon rivers). In addition there are other issues, such as road and narrow gage railroad construction, which have contributed to loss of fish habitat. A discussion of habitat issues impacting Nome Subdistrict chum salmon production is contained in the Norton Sound/Bering Strait Regional Comprehensive Salmon Plan 1996 – 2010.

The following excerpts from the Comprehensive Plan describe some of the problems:

1. The **Snake River** “...was heavily impacted by gold mining activities which played a significant role in damaging salmon spawning and rearing habitats as well as impacting the returns of the different species of salmon. A few Snake Rivers tributaries (predominantly Anvil Creek) are still actively mined today.” (page 43)
2. “Prior mining activity on the **Nome River** and its tributaries as well as road construction has adversely impacted salmon populations over the years.” (page 44)
3. In the **Solomon River** “...early mining activity was substantial; at least 13 dredges were operated on the Solomon River and its’ tributaries. Considerable damage was done to some sections of river as a result of these activities. Additionally road construction has resulted [in] redirection of portions of the river that may require stream channelization work for complete recovery.” (page 45)

In addition to existing mining activities, the possibility exists that new large-scale mining activity will occur in the future. One such possibility is a 1,000 acre pit mine on Rock Creek, a tributary of the Snake River where there is a lode deposit. The lode consists of two ore structures, the Albion and Tension zones. These two zones have distinct geochemical characteristics that may influence long-term environmental behavior. An assessment program is under development to evaluate the acid-generating potential of both deposits as well as their neutralizing potential. Mine site development and reclamation plans will need to consider these factors to ensure that water quality in the Snake River is maintained during and after completion of mining. Electro-shocking and minnow trapping have not revealed the presence of any fish in Rock Creek, although a few juvenile Dolly Varden have been documented in lower Rock Creek. It is not clear at the present time what impact, if any, this mining activity may have on Snake River chum salmon.

## Projects Needed

1. Survey of the loss of chum salmon spawning and rearing habitat due to mining and instream gravel extraction (historic practice), especially in the Snake, Nome, and Solomon Rivers and an assessment of the feasibility and cost of restoration.
2. Solomon River restoration to correct loss of habitat due to historical dredging and material extraction (road construction).
3. Intensive monitoring of existing and future projects to determine whether or not chum salmon and their habitat is being impacted.

### *Do New Or Expanding Fisheries On This Stock Exist?*

There are no new or expanding fisheries on this stock.

### *Existing Management Plan*

5 AAC 01.190. SUBDISTRICT 1 OF THE NORTON SOUND DISTRICT CHUM SALMON MANAGEMENT PLAN.

## ACTION PLAN DEVELOPMENT

### *Norton Sound Subdistrict 1 Chum Salmon Action Plan Goal*

Reduce fishing mortality in order to meet spawning escapement goals, to provide for subsistence levels within the ANS range, and to reestablish historic range of harvest levels by other users.

### *Review of Management Action Plan*

#### **Regulation Changes Adopted in January 2001**

In January 2001, after review of the management action plan options addressing this stock of concern, the Board adopted the following plan:

**5 AAC 01.190. Subdistrict 1 of the Norton Sound District Chum Salmon Management Plan.** The purpose of this management plan is to provide the department with conservative management guidelines for the sustained yield of chum salmon stocks in Subdistrict 1 of the Norton Sound District. The department shall manage Subdistrict 1 to achieve optimal escapement goals for chum salmon spawning streams and to restore chum salmon abundance so that a Tier II subsistence fishery will not be necessary. The department shall manage chum salmon as follows:

(1) commercial fishing for chum salmon is closed and will be reopened only after,

(A) the harvestable surplus of chum salmon has met Tier I subsistence needs for four consecutive years; and

(B) the department has proposed to the Board of Fisheries and the board has adopted an abundance-based management plan supported by inseason enumerator counts of abundance;

(2) in the subsistence fishery, .

(A) subsistence chum salmon fishing will be opened and closed by emergency order on a stream-by-stream basis, to be determined by the department, when chum salmon stocks are abundant enough to provide for optimal escapement goals and a harvestable surplus;

(B) a subsistence fishing permit under 5 AAC 01.180 is required and will be issued to a household; the permit will identify the body of water to be fished, the annual limit for each salmon species, and the allowable gear;

(C) in Subdistrict 1, pink salmon may be taken only with gillnets that have a mesh size of four and one-half inches or less.

The Board repealed escapement goal ranges in 5 AAC 04.358. Chum Salmon optimal escapement goal ranges for river systems in Subdistrict 1 of the Norton Sound District currently in regulation and adopted the following optimal escapement goal ranges for chum salmon in Subdistrict 1:

- (1) Snake River - 1,600 to 2,500 chum salmon
- (2) Nome River - 2,900 to 4,300 chum salmon
- (3) Eldorado River - 6,000 to 9,200 chum salmon

The Cripple and Penny Rivers were closed to subsistence chum salmon fishing.

Adopted subsistence hook and line (rod and reel) as a lawful gear for all species in northern Norton Sound and southern Kotzebue Sound. Sport Fishing Bag Limits and Methods and Means restrictions were adopted except when a subsistence fishing permit is required, then the catch limits specified in the subsistence fishing permit will apply, except when fishing through the ice.

### **Management Review**

Conservative management strategies employed by the department the past three years were based on the management action plan adopted by the Board in 2001. Subdistrict 1 is closed to all salmon fishing in mid-June and reopened in ocean waters to Tier II chum salmon permit holders in later June. The number of successful Tier II permit applicants was 30 in 2001, and 40 in 2002 and 2003. The first Tier II chum salmon fishing periods after the mid-June closure occur in the marine waters east of Cape Nome. There are weekly 72-hour fishing periods. In 2001 and 2002 there was a sufficient surplus in some of the rivers to allow Tier II chum salmon fishing periods in those fresh waters. Also, in both years there was a sufficient surplus to Tier I fishing periods in the marine waters east of Cape Nome and in some rivers. The chum runs to the Eldorado and Flambeau Rivers have been larger than the chum runs in other rivers in recent years and the first freshwater fishing periods have been in the Eldorado and Flambeau Rivers.

## ACTION PLAN ALTERNATIVES

**ACTION 1.** Require a subsistence permit in the Nome Subdistrict when subsistence fishing with rod and reel.

### Objective

To provide a record of subsistence harvest by species and stream post-season.

### Specific action recommended to implement the objective

Amend regulation 5 AAC 01.180. Subsistence fishing permits. This regulation requires a subsistence fishing permit when fishing with any type of gear in the Pilgrim River drainage of the Port Clarence District, but only requires a subsistence fishing permit for *net fishing* in the Nome Subdistrict.

Current regulation effecting Nome Subdistrict:

5 AAC 01.180. Subsistence fishing permits.

(b) A subsistence fishing permit is required as follows:

(2) in the Norton Sound District: for net fishing in all waters from Cape Douglas to Rocky Point.

### Subsistence issues/considerations

The Board made rod and reel legal subsistence gear in northern Norton Sound area including all of the Port Clarence Area at the January 2001 meeting. However, the permit requirement for Norton Sound waters from Cape Douglas to Rocky Point was not amended to require a permit for rod and reel.

### Cost/Benefit Analysis

Permits are issued at no cost to the recipient. The recipient will need to sacrifice some time to get a permit, record the harvests, and return the permit. A more accurate assessment of subsistence harvests with rod and reel.

### Performance measures

The department encourages fishers to keep track of their subsistence salmon harvest on subsistence fishing permits, which specify gear type and fishing location. Inseason salmon run assessment will be based on three towers/weirs and aerial surveys. Postseason analysis will apportion harvest information by species, effort, stream, and gear type

**Action 2.** Repeal 5 AAC 01.190.(2)(C) in Subdistrict 1, pink salmon may be taken only with gillnets that have a mesh size of four and one-half inches or less.

### Objective

This regulation in the chum salmon management plan for Subdistrict 1 of Norton Sound District (5 AAC 01.190) implies that pink salmon can only be harvested with four and one-half inch nets.

**Specific action recommended to implement the objective**  
Repeal 5 AAC 01.190.(2)(C).

This is a housekeeping measure as other regulations allow the taking of pink salmon with other gear types and gillnets may be restricted to four and one-half inches or less mesh size by emergency order.

5 AAC 01.170. Lawful gear and gear specifications. (e) In Subdistrict 1, only set gillnets may be used; during times when the commissioner determines there is an abundance of fish and it is necessary to increase efficiency of harvest the commissioner, by emergency order, may close the fishing season in Subdistrict 1 and immediately reopen the season in Subdistrict 1 to subsistence fishing with gillnets and beach seines.

and; (i) Notwithstanding (a)-(h) of this section, during times when the commissioner determines it to be necessary for the conservation of chum salmon, the commissioner, by emergency order, may close (1) the pink salmon fishing season in Subdistricts 1-3 and immediately reopen the season in these subdistricts, during which gillnets must have a mesh size of four and one-half inches or less.

**Subsistence issues/considerations**  
None.

**Cost/Benefit Analysis**  
Eliminates a conflicting regulation.

**Performance measures**  
None.

## RESEARCH PLAN

### *Norton Sound Initiative and AYK Sustainable Salmon Initiative*

A Norton Sound Research and Restoration (NSR&RI) Steering Committee (SC) has been formed that is identifying and prioritizing research needs through the associated NSR&R Scientific Technical Committee (STC) in response to the low chum salmon run in 1999. Through this initiative, native organizations, private industry, non-profit organizations, state and federal agencies have joined together to form an innovative partnership to cooperatively address salmon research and restoration needs. The Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative (AYK SSI) was formed after the NSR&RI and is similar in organization, but encompasses the Yukon and Kuskokwim areas in addition to Norton Sound.

The NSR&RI has several projects occurring in Norton Sound. There are several projects in Subdistrict 1 that receive funding from the NSR&RI. The escapement projects on the Nome, Snake and Eldorado Rivers receive funding to sample the chum salmon for age, sex and length (ASL) data. The data help managers determine age class return strength that can provide for better forecasts. Environmental monitoring on stream conditions occurs year-round through data

loggers on the Nome and Snake Rivers. Juvenile chum salmon studies are done in Subdistrict 1 to determine the outmigration timing of juvenile salmon. Results from 2002 studies show the majority of the outmigration of chum fry from the Eldorado-Flambeau River system was in late July (Nemeth, et. al., 2003), as opposed to a belief that outmigration occurred mainly in late June.

## LITERATURE CITED

- Nemeth, M., B. Haley, S. Kinneen, and W. Griffiths. 2003. Ecology of juvenile chum salmon from Norton Sound, Alaska. Unpublished report for the Norton Sound Disaster Relief Fund by LGL Alaska Research Associates, Inc. and Norton Sound Economic Development Corporation.
- Norton Sound/Bering Strait Regional Comprehensive Salmon Plan 1996-2010. Developed by the Norton Sound/Bering Strait Regional Planning Team. 1996. Alaska Department of Fish and Game, Frank Rue Commissioner.

Table 1. Commercial and subsistence salmon catches by species, by year, in Nome Subdistrict, Norton Sound District, 1964-2003.

NOME (SUBDISTRICT 1)																			
Year	Commercial						Subsistence <sup>a</sup>						Combined						
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	
1964	5	-	-	1	1,194	1,200	-	-	-	-	-	-	5	-	-	1	1,194	1,200	
1965	1	-	-	193	1,941	2,135	-	-	-	780	1,825	2,605	1	-	-	973	3,766	4,740	
1966	1	-	32	1	581	615	12	-	-	1,794	1,762	3,568	13	-	32	1,795	2,343	4,183	
1967	-	-	-	72	406	478	11	-	-	349	627	987	11	-	-	421	1,033	1,465	
1968	-	-	-	50	102	152	7	-	-	6,507	621	7,135	7	-	-	6,557	723	7,287	
1969	-	-	63	330	601	994	2	-	-	3,649	508	4,159	2	-	63	3,979	1,109	5,153	
1970	-	-	6	55	960	1,021	-	-	35	5,001	458	5,494	0	-	41	5,056	1,418	6,515	
1971	11	-	-	14	2,315	2,340	-	-	122	5,457	2,900	8,479	11	-	122	5,471	5,215	10,819	
1972	15	-	-	12	2,643	2,670	19	-	52	4,684	315	5,070	34	-	52	4,696	2,958	7,740	
1973	-	-	-	321	1,132	1,453	14	-	120	5,108	1,863	7,105	14	-	120	5,429	2,995	8,558	
1974	19	-	123	7,722	10,431	18,295	8	-	5	3,818	183	4,014	27	-	128	11,540	10,614	22,309	
1975	2	-	319	2,163	8,364	10,848	2	-	97	6,267	2,858	9,224	4	-	416	8,430	11,222	20,072	
1976	2	10	26	1,331	7,620	8,989	13	-	189	5,492	1,705	7,399	15	10	215	6,823	9,325	16,388	
1977	8	-	58	65	15,998	16,129	35	-	498	2,773	12,192	15,498	43	-	556	2,838	28,190	31,627	
1978	19	-	-	22,869	8,782	31,670	35	-	225	13,063	4,295	17,618	54	-	225	35,932	13,077	49,288	
1979	9	-	29	5,860	5,391	11,289	11	-	1,120	6,353	3,273	10,757	20	-	1,149	12,213	8,664	22,046	
1980	8	-	-	10,007	13,922	23,937	129	-	2,157	22,246	5,983	30,515	137	-	2,157	32,253	19,905	54,452	
1981	4	-	508	3,202	18,666	22,380	35	14	1,726	5,584	8,579	15,938	39	14	2,234	8,786	27,245	38,318	
1982	20	-	1,183	18,512	13,447	33,162	21	6	1,829	19,202	4,831	25,889	41	6	3,012	37,714	18,278	59,051	
1983	23	-	261	308	11,691	12,283	74	53	1,911	8,086	7,091	17,215	97	53	2,172	8,394	18,782	29,498	
1984	7	-	820	-	3,744	4,571	83	16	1,795	17,182	4,883	23,959	90	16	2,615	17,182	8,627	28,530	
1985	21	-	356	-	6,219	6,596	56	114	1,054	2,117	5,667	9,008	77	114	1,410	2,117	11,886	15,604	

-Continued-

Table 1. Commercial and subsistence salmon catches by species, by year, in Nome Subdistrict, Norton Sound District, 1964-2003.

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NOME (SUBDISTRICT 1)																		
Year	Commercial						Subsistence <sup>a</sup>						Combined					
	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total	Chinook	Sockeye	Coho	Pink	Chum	Total
1986	6	-	50	-	8,160	8,216	150	107	688	8,720	8,085	17,750	156	107	738	8,720	16,245	25,966
1987	3	-	577	-	5,646	6,226	200	107	1,100	1,251	8,394	11,052	203	107	1,677	1,251	14,040	17,278
1988	2	-	54	182	1,628	1,866	63	133	1,076	2,159	5,952	9,383	65	133	1,130	2,341	7,580	11,249
1989	2	0	0	123	492	617	24	131	469	924	3,399	4,947	26	131	469	1,047	3,891	5,564
1990	0	0	0	0	0	0	58	234	510	2,233	4,246	7,281	58	234	510	2,233	4,246	7,281
1991	0	0	0	0	0	0	83	166	1,279	194	3,715	5,437	83	166	1,279	194	3,715	5,437
1992	1	2	693	185	881	1,762	152	163	1,481	7,351	1,684	10,831	153	165	2,174	7,536	2,565	12,593
1993	0	2	611	0	132	745	52	80	2,070	873	1,766	4,841	52	82	2,681	873	1,898	5,586
1994	0	1	287	0	66	354	23	69	983	6,556	1,673	9,304	23	70	1,270	6,556	1,739	9,658
1995	0	1	369	0	122	492	36	211	1,897	486	5,344	7,974	36	212	2,266	486	5,466	8,466
1996	0	0	9	13	3	25	19	353	1,317	5,802	4,333	11,824	19	353	1,326	5,815	4,336	11,849
1997	0	0	0	0	0	0	19	99	534	287	4,996	5,936	19	99	534	287	4,996	5,936
1998	0	0	0	0	0	0	15	14	1,057	4,797	964	6,847	15	14	1,057	4,797	964	6,847
1999	0	0	0	0	0	0	11	85	161	58	337	652	11	85	161	58	337	652
2000	0	0	0	0	0	0	7	26	747	2,657	535	3,972	7	26	747	2,657	535	3,972
2001	0	0	0	0	0	0	2	92	425	113	858	1,490	2	92	425	113	858	1,490
2002	0	0	0	0	0	0	4	79	666	3,161	1,114	5,024	4	79	666	3,161	1,114	5,024
2003	0	0	0	0	0	0												
5-year avg. <sup>b</sup>	0	0	0	0	0	0	8	59	611	2,157	762	3,597	8	59	611	2,157	762	3,597
10-year avg. <sup>c</sup>	0	0	128	1	32	162	19	111	986	2,479	2,192	5,786	19	111	1,113	2,480	2,224	5,948

<sup>a</sup> Subsistence harvest are incomplete prior to 1979.<sup>b</sup> 1998-2002<sup>c</sup> 1993-2002

Table 2. Nome Subdistrict Management Actions.

- 1962 Norton Sound District divided into subdistricts to focus management near terminal harvest areas.
- 1968 Subsistence registration permits required for fishing in the Sinuk, Snake, Nome and Solomon Rivers with bag limits and standard fishing times for entire sub-district.
- Late 1970s- Board of Fish set commercial guideline harvest range between 5,000 and 15,000 chum salmon.  
- Commercial fishing period length reduced by half.  
- Subsistence permits required for all Nome area waters beginning in 1975.
- 1984 Salmon management shifted focus from commercial to subsistence.  
-Commercial harvest area reduced by half to protect subsistence harvest areas.  
-Commercial fishing time greatly reduced to allow for subsistence needs and adequate escapements.  
-Sport fish chum and coho bag limits reduced.  
-Subsistence season bag limits reduced to 20 chum and 20 coho.
- 1987 -Commercial fishery nearly eliminated by current regulations and management due to low chum and pink stocks  
-Sport fish chum and coho bag limits further reduced.  
-Subsistence disallowed beach seines as a legal gear type in specific waters.
- 1988 -Sport fishing for chum closed in the Nome River.  
-Subsistence gillnets reduced to 50 feet maximum length in Nome River.
- 1990 Subsistence fishing closure on Nome River to allow for chum escapement.
- 1991 Commercial, Sport, and Subsistence closures of nearly the entire subdistrict due to low chum and pink escapements. Restrictions were lifted once they became no longer effective and other species could be targeted.
- 1992 Similar to 1991 except that subsistence restrictions were lifted incrementally as the abundant pinks returned while protecting the chum stocks. Beach seines were allowed as a legal gear type for pinks only.  
-Subsistence gillnet gear was restricted to 50 feet maximum length for all inland waters of the Nome area by regulation.
- 1993 Same as 1991.
- 1994 Commercial fishing closed until August 1 when coho salmon could be targeted. Sport harvest of chum closed for entire season. Subsistence restrictions similar to 1992.

- 1995 Management similar to 1994 except: sport fishing for chum salmon became closed by regulation; beach seine gear was allowed in areas with adequate chum escapements; subsistence fishing time increased for marine waters to allow for more flexibility to deal with more harsh fishing conditions.
- 1996 Management similar to 1995 except that beach seine fishing targeted pink salmon and did not allow chum salmon to be retained.
- 1997 Management similar to 1995 except that no beach seine fishing was allowed.
- 1998 -Initial all salmon subsistence closure for all waters except marine west of Nome Jetty.  
-Incremental relaxing of individual areas to subsistence with gear restrictions to avoid chum salmon.  
-No commercial coho season.
- 1999 BOF implements Tier II subsistence chum fishing regulations which awards limited fishing opportunity to individuals with the longest history and greatest dependence on the Nome chum resource based on the inability of the Nome chum stock to fully support all subsistence user's needs.  
-Open Tier II only subsistence chum fishing, issuing 20 permits and restricting effort to marine waters east of Cape Nome.  
-Close all subsistence chum fishing due to very weak runs.  
-No commercial coho season, close sport and subsistence fishing for coho.
- 2000 -Open Tier II only subsistence chum fishing, issuing 10 permits and restricting effort to marine waters east of Cape Nome.  
-Open Tier I beach seining for pink salmon and later small mesh gillnets to take advantage of the strong pink run while protecting chum.  
-General subsistence fishing reopened to coho in all usual waters of the subdistrict.
- 2001 -BOF updates escapement goals for Nome Subdistrict rivers.  
- Open Tier II only subsistence chum fishing in late June, issuing 20 permits and restricting effort to marine waters east of Cape Nome. Tier II fishing opened in Eldorado, Flambeau and Bonanza Rivers in mid-July. An additional 10 Tier II permits are issued in mid-July.  
-Open Tier I subsistence chum salmon in Eldorado-Flambeau Rivers after July 18.  
-General subsistence fishing reopened in August to coho fishing.  
-Subsistence coho fishing time reduced from August 20 to September 15. Sport coho fishing closed.
- 2002 -Open Tier II only subsistence chum fishing in late June, issuing 30 permits and restricting effort to marine waters east of Cape Nome. An additional 10 Tier II permits are issued in late June.  
-Open Tier II fishing in Eldorado and Flambeau Rivers after July 4.

Table 2. Nome Subdistrict Management Actions.

(page 3 of 3)

- 2002 -Open Tier I fishing for pink salmon in marine waters 2<sup>nd</sup> week of July.  
-Open Tier I fishing open in fresh waters east of Cape Nome in mid-July and then all rivers except Nome.  
-General subsistence fishing reopened in August to coho fishing.  
-Subsistence and sport coho fishing closed for two weeks beginning mid-August and then a restricted fresh water schedule in September.
- 2003 -Open Tier II only subsistence chum fishing in late June, issuing 30 permits and restricting effort to marine waters east of Cape Nome. An additional 10 Tier II permits are issued in early July.  
-Close all subsistence fishing in mid-July because of weak chum runs.  
-General subsistence fishing reopened in August to coho fishing.  
-Subsistence and sport fishing for coho salmon closed in mid-August.

Figure 1. Norton Sound commercial salmon fishing districts and subdistricts.

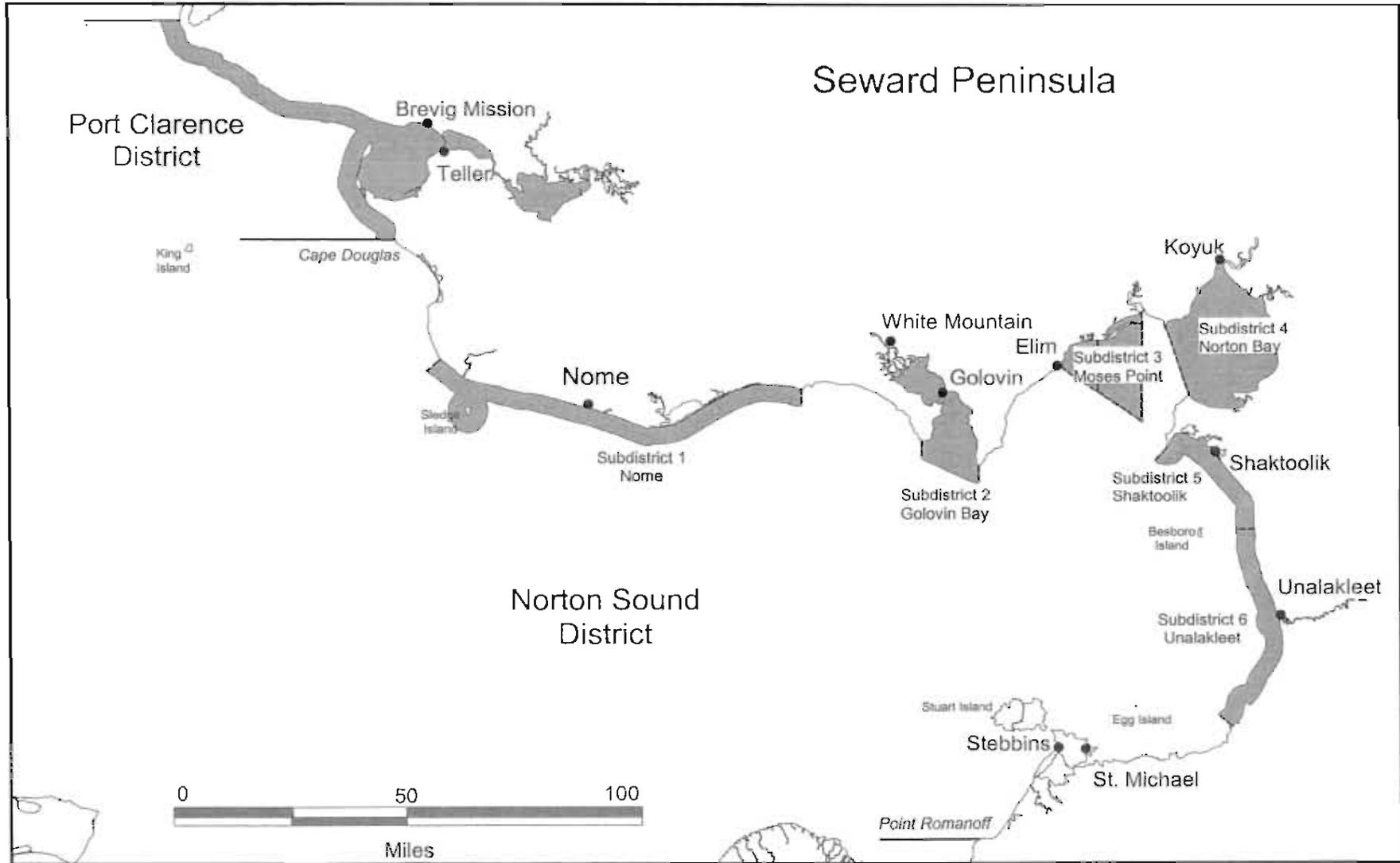


Figure 2. Northern Norton Sound Area Rivers

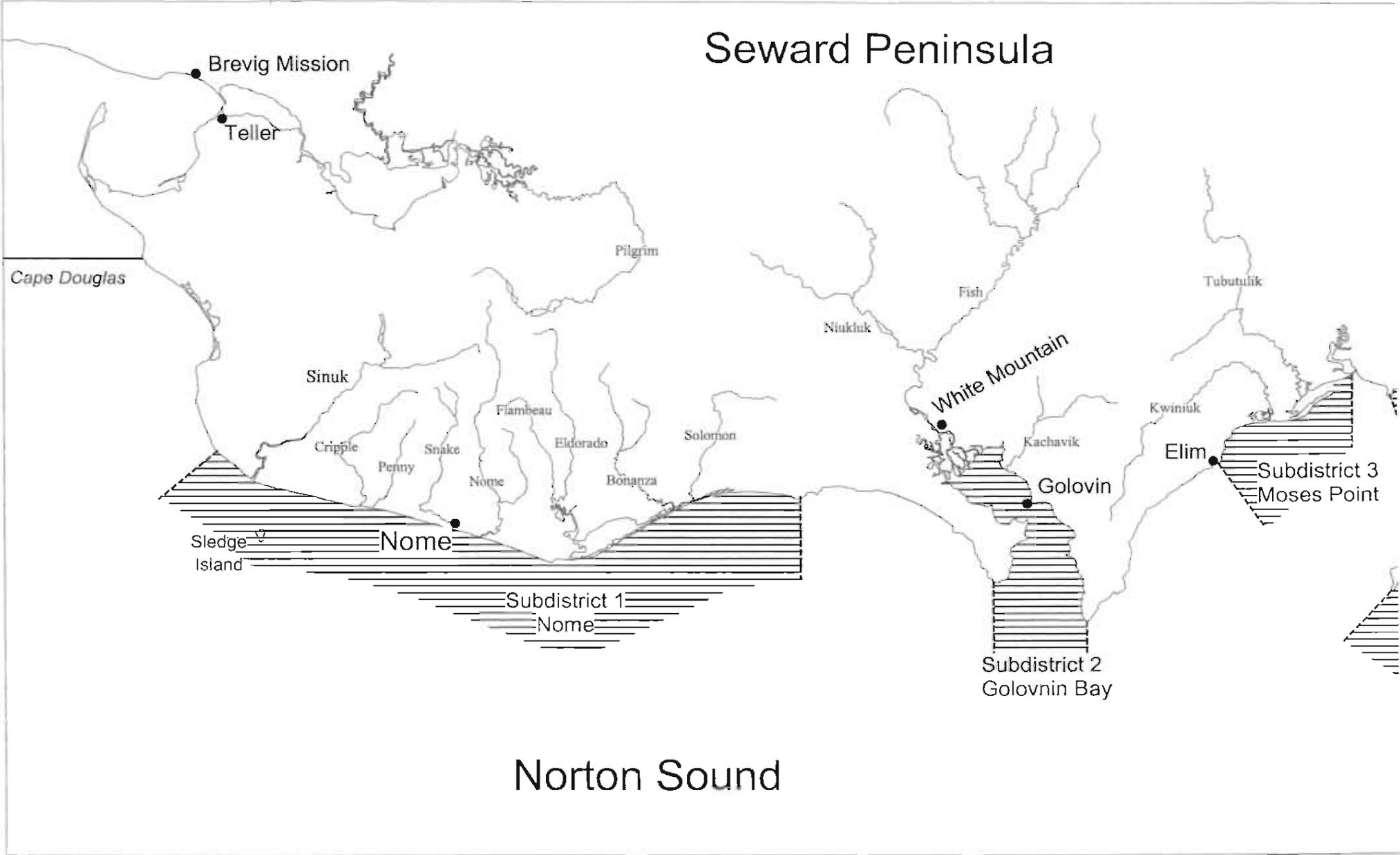


Figure 3. Nome Subdistrict Chum Harvest. \*

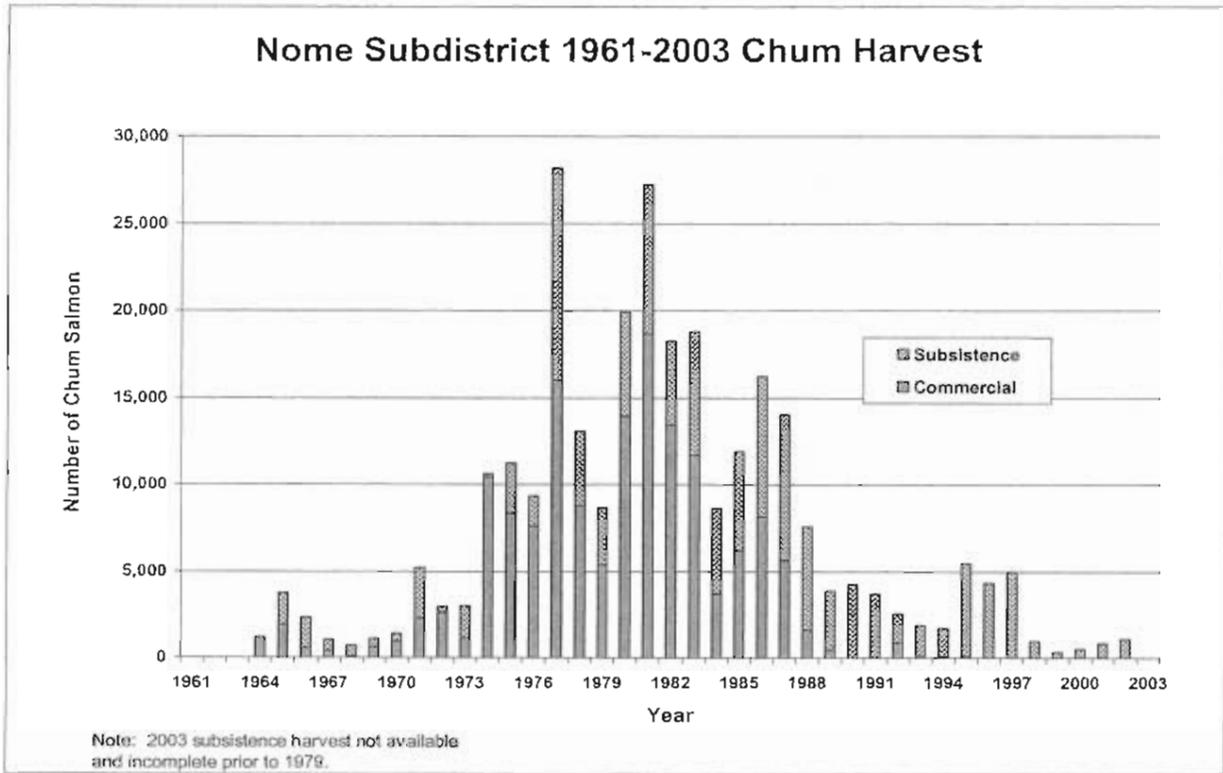
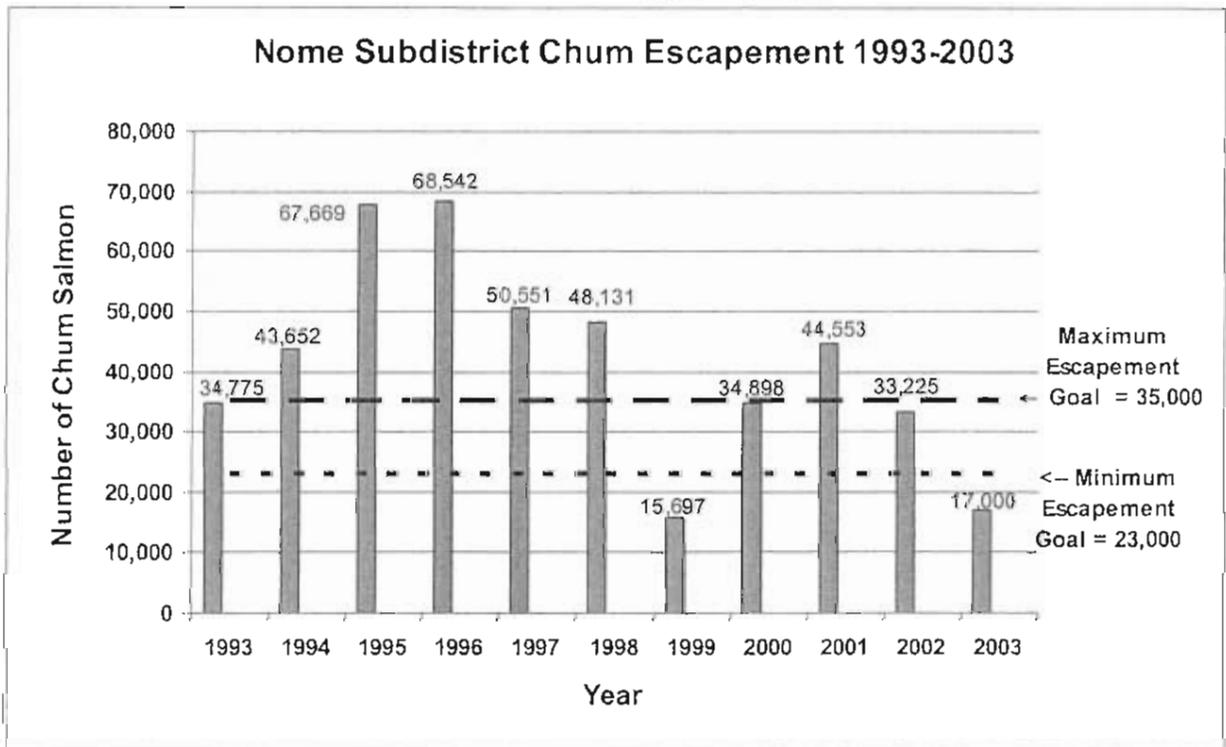


Figure 4. Nome Subdistrict Chum Salmon Escapement.



\* Subsistence data not available for all years.

Figure 5. Snake River Chum Salmon Escapement.

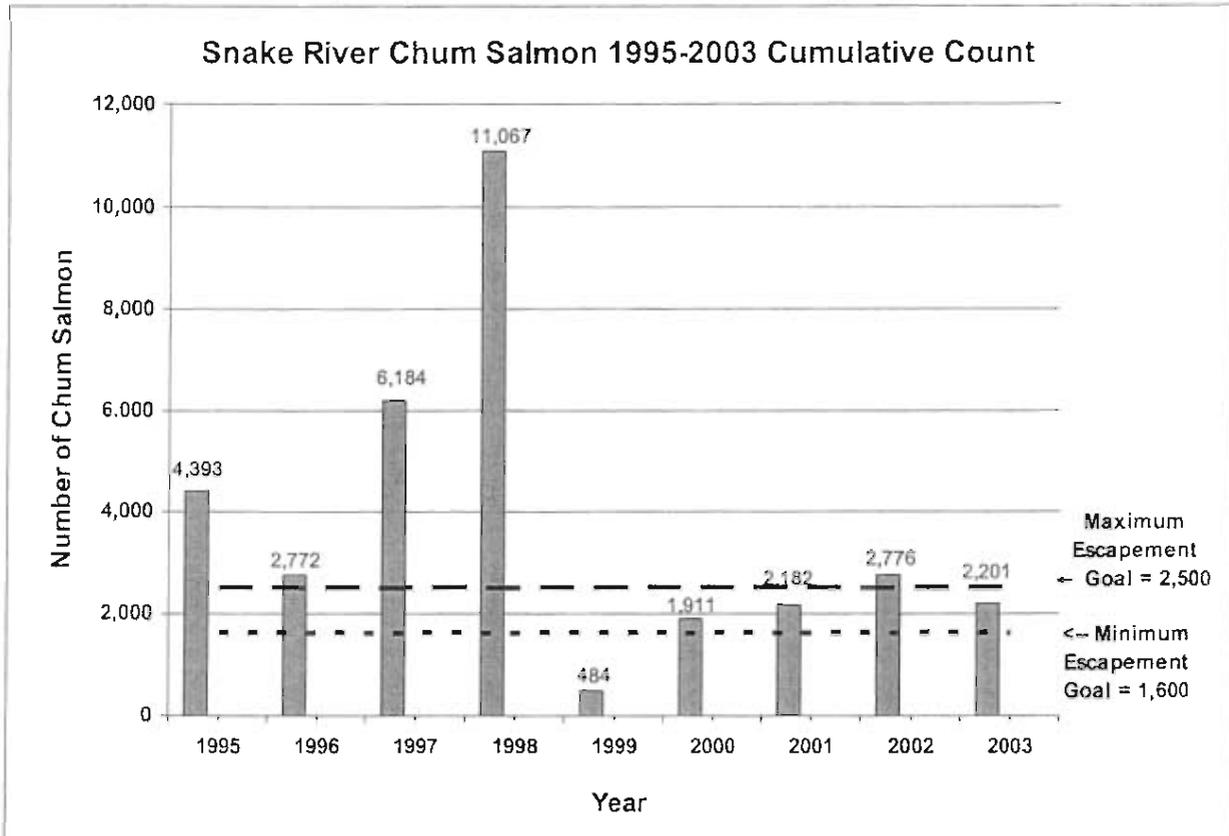


Figure 6. Nome River Chum Salmon Escapement.

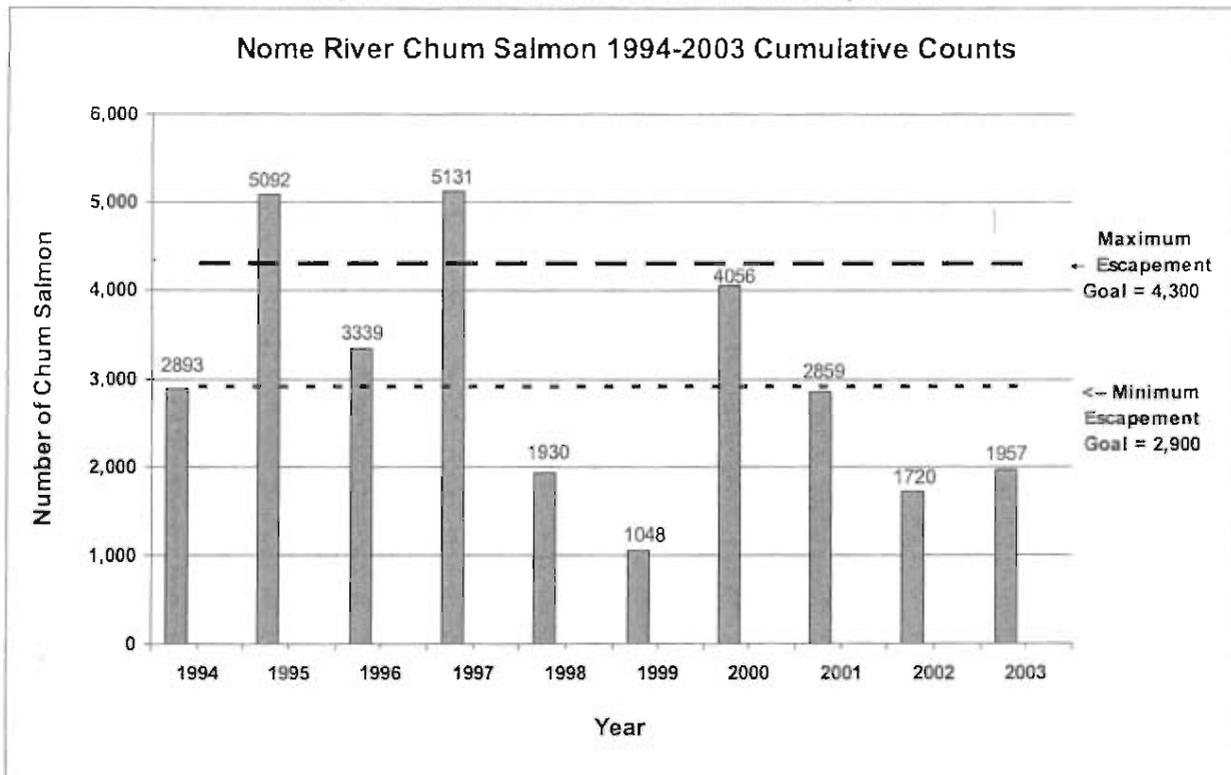


Figure 7. Eldorado River Chum Salmon Escapement.

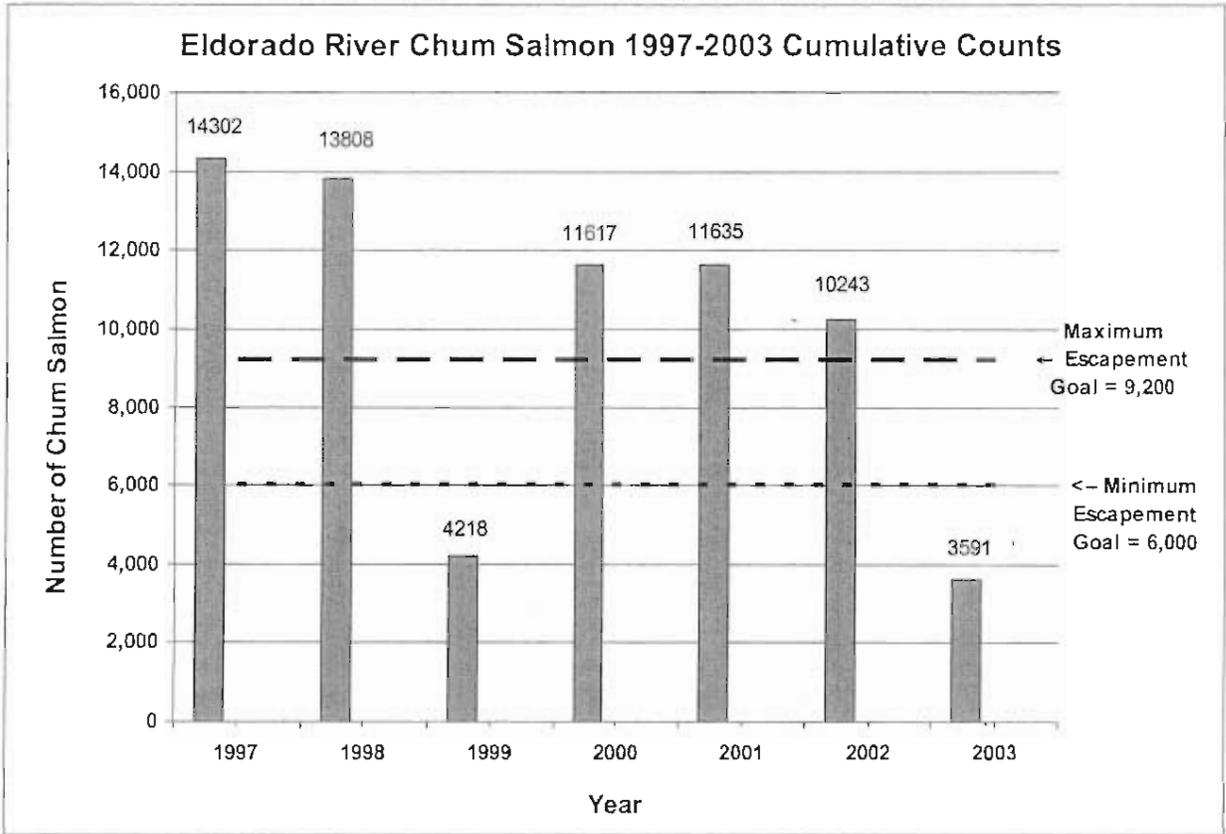


Figure 6. Kwiniuk River Chum Salmon Escapement.

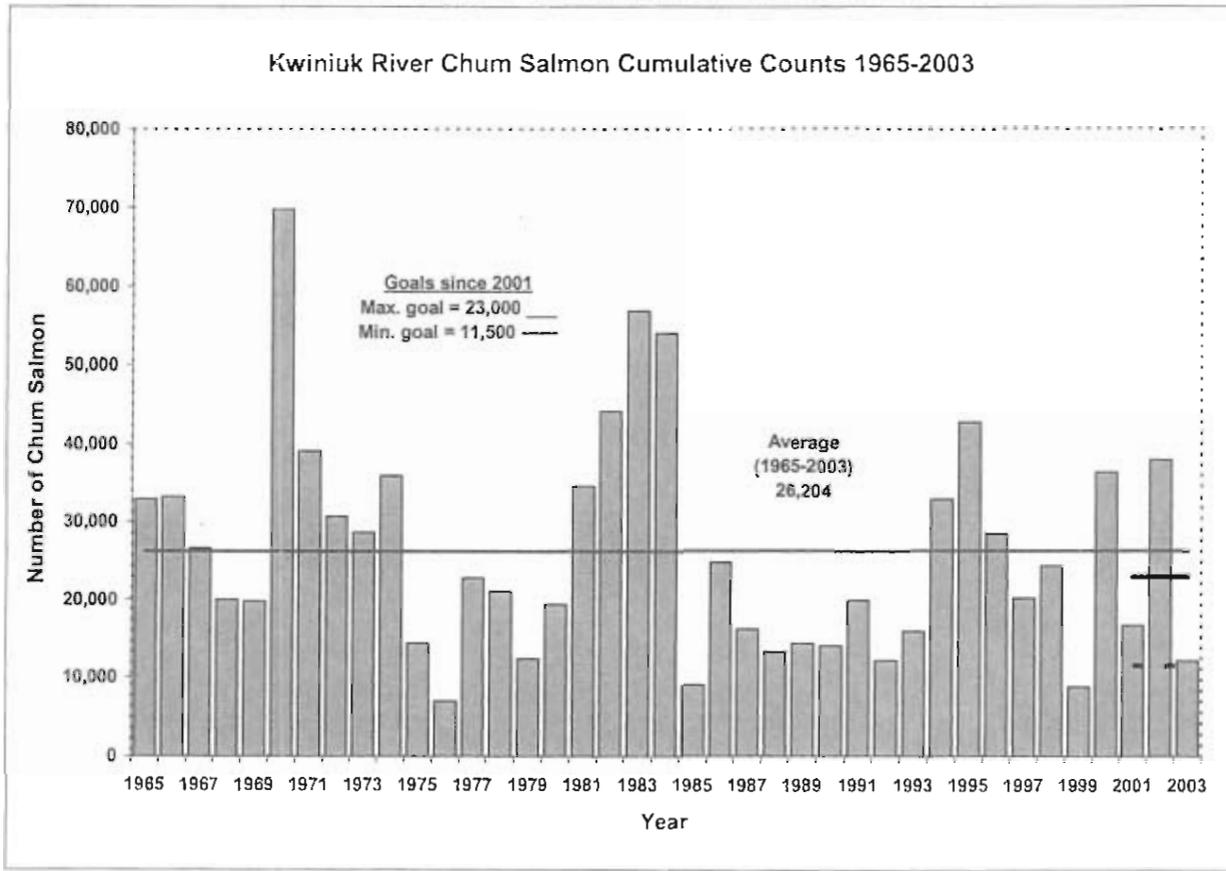
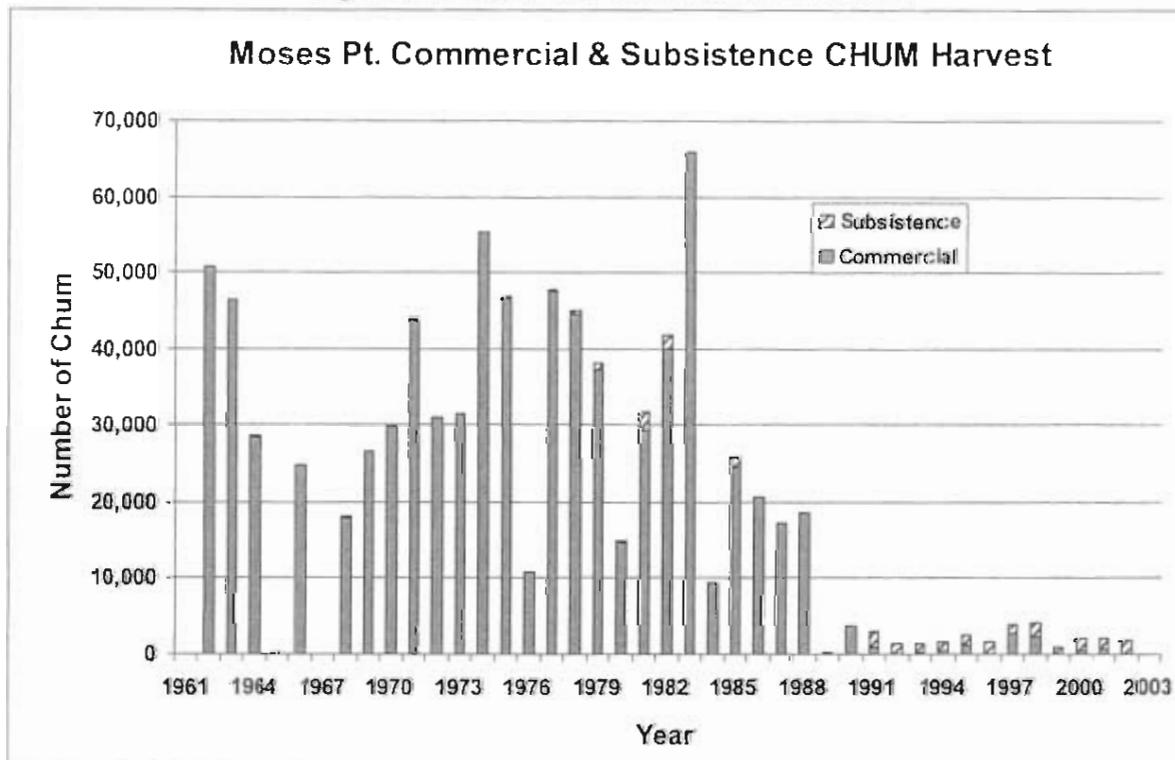


Figure 7. Moses Point Chum Salmon Harvests. \*



\* Subsistence data not available for all years.