

Regional Information Report No. 3A08-04

2008 Norton Sound Salmon Fisheries Management Plan

by

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May 2008

Alaska Department of Fish and Game

Division of Commercial Fisheries



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the *Système International d'Unités* (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, Special Publications and the Division of Commercial Fisheries Regional Reports. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)		General		Measures (fisheries)	
centimeter	cm	Alaska Administrative Code	AAC	fork length	FL
deciliter	dL			mid-eye-to-fork	MEF
gram	g	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	mid-eye-to-tail-fork	METF
hectare	ha			standard length	SL
kilogram	kg			total length	TL
kilometer	km	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.		
liter	L	at	@	Mathematics, statistics <i>all standard mathematical signs, symbols and abbreviations</i>	
meter	m	compass directions:		alternate hypothesis	H _A
milliliter	mL	east	E	base of natural logarithm	<i>e</i>
millimeter	mm	north	N	catch per unit effort	CPUE
		south	S	coefficient of variation	CV
		west	W	common test statistics	(F, t, χ^2 , etc.)
Weights and measures (English)		copyright	©	confidence interval	CI
cubic feet per second	ft ³ /s	corporate suffixes:		correlation coefficient (multiple)	R
foot	ft	Company	Co.	correlation coefficient (simple)	r
gallon	gal	Corporation	Corp.	covariance	cov
inch	in	Incorporated	Inc.	degree (angular)	°
mile	mi	Limited	Ltd.	degrees of freedom	df
nautical mile	nmi	District of Columbia	D.C.	expected value	<i>E</i>
ounce	oz	et alii (and others)	et al.	greater than	>
pound	lb	et cetera (and so forth)	etc.	greater than or equal to	≥
quart	qt	exempli gratia (for example)	e.g.	harvest per unit effort	HPUE
yard	yd	Federal Information Code	FIC	less than	<
		id est (that is)	i.e.	less than or equal to	≤
Time and temperature		latitude or longitude	lat. or long.	logarithm (natural)	ln
day	d	monetary symbols (U.S.)	\$, ¢	logarithm (base 10)	log
degrees Celsius	°C	months (tables and figures): first three letters	Jan, ..., Dec	logarithm (specify base)	log ₂ , etc.
degrees Fahrenheit	°F	registered trademark	®	minute (angular)	'
degrees kelvin	K	trademark	™	not significant	NS
hour	h	United States (adjective)	U.S.	null hypothesis	H ₀
minute	min	United States of America (noun)	USA	percent	%
second	s	U.S.C.	United States Code	probability	P
		U.S. state	use two-letter abbreviations (e.g., AK, WA)	probability of a type I error (rejection of the null hypothesis when true)	α
Physics and chemistry				probability of a type II error (acceptance of the null hypothesis when false)	β
all atomic symbols				second (angular)	"
alternating current	AC			standard deviation	SD
ampere	A			standard error	SE
calorie	cal			variance	
direct current	DC			population	Var
hertz	Hz			sample	var
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

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2008 NORTON SOUND SALMON FISHERIES MANAGEMENT PLAN

by
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The Regional Information Report Series was established in 1987 and was redefined in 2006 to meet the Division of Commercial Fisheries regional need for publishing and archiving information such as project operational plans, area management plans, budgetary information, staff comments and opinions to Board of Fisheries proposals, interim or preliminary data and grant agency reports, special meeting or minor workshop results and other regional information not generally reported elsewhere. Reports in this series may contain raw data and preliminary results. Reports in this series receive varying degrees of regional, biometric and editorial review; information in this series may be subsequently finalized and published in a different department reporting series or in the formal literature. Please contact the author or the Division of Commercial Fisheries if in doubt of the level of review or preliminary nature of the data reported. Regional Information Reports are available through the Alaska State Library and on the Internet at: <http://www.sf.adfg.ak.us/statewide/divreprots/html/intersearch.cfm>.

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ABSTRACT

This management plan provides the expected run outlooks, management issues, and harvest strategies for Norton Sound salmon fisheries in 2008. Norton Sound is comprised of two commercial fishing districts, the Norton Sound District and the Port Clarence District. Commercial and subsistence salmon fisheries occur in Norton Sound. Norton Sound District extends from Cape Douglas south to Point Romanof and includes over 500 miles of coastline. The area open to commercial salmon fishing is divided into six subdistricts. Each subdistrict contains at least one major spawning stream with commercial fishing effort located in the ocean near stream mouths. The Port Clarence District encompasses all waters from Cape Douglas north to Cape Prince of Wales. The area open to commercial salmon fishing is near the villages of Teller and Brevig Mission. Management strategies may change inseason based upon assessment of Chinook *Oncorhynchus tshawytscha*, chum *O. keta*, sockeye *O. nerka*, pink *O. gorbuscha*, and coho *O. kisutch* salmon runs.

Key words: Norton Sound, Port Clarence, Chinook, *Oncorhynchus tshawytscha*, chum, *O. keta*, sockeye, *O. nerka*, pink, *O. gorbuscha*, coho, *O. kisutch*, outlook, subsistence, commercial, fishing, strategy, management plan.

INTRODUCTION

Norton Sound is comprised of two fishing districts, the Norton Sound District and the Port Clarence District (Figure 1). The Norton Sound District extends from Cape Douglas south to Point Romanof and includes over 500 miles of coastline. The area open to commercial salmon fishing is divided into six subdistricts. Each subdistrict contains at least one major spawning stream with commercial fishing effort located in the ocean near stream mouths. The Port Clarence District encompasses all waters from Cape Douglas north to Cape Prince of Wales. The area open to commercial salmon fishing is adjacent to the communities of Brevig Mission and Teller (Figure 2).

Alaska Department of Fish & Game (ADF&G) staffing for salmon management within Norton Sound includes two biologists, a program technician and 19 seasonal employees during the summer months. Norton Sound Economic Development Corporation (NSEDC) funds seven interns to work on department projects and cooperative projects between NSEDC and ADF&G. NSEDC is also providing funding to a cooperative project by the Unalakleet IRA. Anticipated management projects in 2008 include: Kwiniuk River counting tower; Nome River weir; Niukluk River counting tower; periodic aerial surveys of index spawning streams; catch sampling and monitoring efforts at Unalakleet and Moses Point; and test fishing on the main stem of the Unalakleet River. Department staff will also track the salmon escapement counts reported on other cooperative projects administered by NSEDC on the following rivers: Snake, Eldorado, and Pilgrim and Glacial Lake. The Unalakleet IRA will operate a cooperative tower project on the North River.

2008 RUN OUTLOOK

Salmon outlooks and harvest projections for the 2008 salmon season are based on qualitative assessments of parent year escapements, subjective determinations of freshwater overwintering and ocean survival, and in the case of the commercial fishery, the projections of local market conditions. Except for Chinook salmon there have been near record to record runs for all salmon species in most river drainages in Norton Sound since 2004. Parent-year escapements for Chinook salmon have been mostly poor in the 2000s. Parent-year escapements in 2004 were

poor to fair for chum and parent-year escapements in 2003 for this year's returning 5-year old chum salmon were very poor. Parent-year escapements for coho salmon were poor to fair for coho salmon. Pink salmon parent-year escapements were well above average to near record setting in a number of Norton Sound river drainages in 2006.

The excellent salmon runs in recent years for most species indicates good ocean survival conditions and will likely help to counter poor parent-year escapements for this year's returning salmon. The department is cautiously optimistic that most salmon runs in Norton Sound will be average and that the coho salmon run will be above average. However, because of poor parent-year escapements for many salmon species, the department will take action to restrict fisheries if salmon runs show early signs of being weak.

The Chinook salmon run is expected to be below average and no commercial fishing targeting Chinook salmon is expected. Subsistence restrictions are expected again in southern Norton Sound. The Chinook salmon harvest will likely be low as an incidental catch in other salmon directed fisheries. Chum salmon runs are expected to be average, but limited commercial fishing targeting chum salmon is expected. There is some buyer interest in chum salmon this year and the harvest could be 40,000 to 50,000 fish. The only expected subsistence restrictions for chum salmon will be in the Nome Subdistrict where catch limits will be in effect. In the last several years there have been record breaking pink salmon runs in many locations when compared to the respective even- and odd-numbered year run cycles. However, in 2007 the pink run was average for an odd-numbered year and well below the run in 2005. There was limited buyer interest in 2007 and nearly 4,000 pink salmon were sold in the commercial fishery. If there was a sufficient market the harvest could be 500,000 pink salmon in 2008. However, because of limited markets the harvest will likely be less than 200,000 pink salmon. The coho salmon run in 2008 is expected to be above average based on good ocean survival conditions in recent years and the near record and record runs in recent years in southern Norton Sound. The commercial harvest is expected to be 80,000 to 100,000 fish and no subsistence fishing restrictions are expected, except for catch limits in the Nome Subdistrict.

The guideline harvest level (GHL) set by the Alaska Board of Fisheries (BOF) for the Port Clarence sockeye fishery allows for a harvest of up to 10,000 sockeye salmon. Based on excellent runs of sockeye salmon in recent years the department expects the GHL to be reached if there is a sufficient fishing fleet.

MANAGEMENT STRATEGIES

Department staff will manage salmon fisheries to ensure that sufficient escapement occurs to the spawning grounds. Subsistence fishing will need to be restricted or closed if concerns for escapement arise. Commercial fishing will be allowed if a market is available and if the commercial fishery is not expected to jeopardize escapement or reasonable opportunity for subsistence fishing. Periodically, informational updates will be broadcast over Nome public radio stations to inform fishers of current regulations, catches, escapements and ADF&G activities. Also, biologists will attempt to visit each fishery to disseminate fishery information and answer questions. The Unalakleet office will be open daily, except Sunday, throughout the season. The public may also call the Nome office at the toll-free number of 1-800-560-2271 or the regular number of 443-5167 for information.

NOME SUBDISTRICT

Salmon management in 2008 in the Nome Subdistrict is expected to be similar as last year. There will be no Tier II subsistence fishing restrictions because the chum salmon surplus above escapement needs is expected to exceed the amount necessary for subsistence (ANS). All subsistence salmon fishing will require Tier I permits. In the last several years, exploitation of chum stocks in the Nome Subdistrict has been less than 5%. In 2006 and 2007 there were no Tier II restrictions and all who applied for a Tier II permit by the deadline in 2004 and 2005, including the 10 day appeal period, received a permit.

In marine waters subsistence fishing is allowed 7 days a week prior to June 15 and after August 15. From June 15 through July 25 the marine waters of the subdistrict will be open to set gillnet fishing from 6 p.m. Thursday until 6 p.m. Sunday and from July 26 through August 15 will be open from 6 p.m. Monday until 6 p.m. Saturday. In fresh waters subsistence fishing is open 7 days a week prior to June 15 and after August 31. Beginning June 15 through August 31 subsistence set gillnet fishing will be open from 6 p.m. Monday until 6 p.m. Wednesday and from 6 p.m. Thursday until 6 p.m. Saturday. All state residents are eligible to receive a Tier I subsistence permit.

Harvests limits for salmon vary by marine and fresh waters. Marine and stream-specific harvest limits will be listed in the subsistence salmon fishing permits or the attachment given to subsistence fishers at the same time the permit is issued. Permit catch limits for Nome Subdistrict and Port Clarence District streams are listed in Table 2.

The department will use the Eldorado River weir counts as an indicator of chum salmon run strength in the Nome Subdistrict east of Cape Nome. If the Eldorado River chum salmon escapement begins to lag behind historical run timing curves and indicates that the escapement goal range will likely not be met, then marine fishing periods will be suspended as well as fishing periods in the river. The Eldorado River escapement is expected to be met in 2008 and early escapement counts from the weir will be used to confirm that run is tracking as expected. The Eldorado River weir counts will be used as index for escapement for the Flambeau, Bonanza and Solomon Rivers and aerial surveys will be used to confirm that escapement has been reached on those rivers. If aerial survey counts show escapement to be lagging then fresh water fishing periods will be suspended.

The department will use the Nome River and Snake River escapement counts as an indicator of chum salmon run strength in the Nome Subdistrict west of Cape Nome. If either the Nome and Snake weir counts project that the chum salmon escapement goal range will not be reached, then marine fishing periods will be suspended and fresh water fishing in the river with lagging escapement counts will be closed. The Cripple and Penny Rivers are closed by regulation to subsistence chum salmon fishing. The Sinuk River is expected to reach the chum salmon escapement goal in 2008 and another good run of sockeye salmon is expected.

Commercial fishing for chum salmon is closed by regulation, but there is the opportunity for very limited commercial fishing for pink salmon if a market develops, provided the interception of chum salmon is low. No commercial coho salmon fishing is expected, but a big run of coho salmon similar to 2006 would allow for limited commercial fishing time if a market is available.

GOLOVIN SUBDISTRICT

Low chum salmon runs have kept the subdistrict closed to commercial chum salmon fishing for most of the 2000s, but commercial fishing for pink salmon may occur if there is buyer interest. Last year there was a good run of chum salmon, but no buyer interest. If the 2008 chum run is again strong the department will allow a commercial harvest if there is a market available. In recent years there has been little commercial interest in coho salmon in the Golovin Subdistrict because of historically low harvest rates and weak coho runs in most years in the 2000s.

Permits are required when subsistence salmon fishing and few restrictions to fishing are expected. In most years in the last decade the harvests of chum salmon have been less than 5% of the run. The coho salmon run is expected to reach the minimum escapement goal of 2,400 coho salmon past Niukluk River tower. However, a restriction in subsistence fishing time or a closure in late August may occur if the run is not projected to reach escapement. In the last decade subsistence harvests of coho salmon has been less than 15% of the run for most years.

MOSES POINT SUBDISTRICT

No subsistence salmon fishing restrictions have occurred in this subdistrict in nearly 20 years and no restrictions are expected in 2008. Subsistence permits are required when subsistence salmon fishing in the marine or fresh waters of the Moses Point Subdistrict.

No commercial fishing is expected for Chinook salmon because of an expected poor run. There is the possibility of commercial fishing for chum and pink salmon if a market is available. Also, there is the possibility of commercial coho salmon openings depending on buyer availability and sufficient escapement as indicated by historical comparisons of the Kwiniuk River aerial survey and tower counts and subsistence fishing catch reports.

NORTON BAY SUBDISTRICT

Salmon markets have not been sufficient to attract interested fishers or buyers since the 1990s. Existing inseason escapement monitoring indices and subsistence harvest indices for this subdistrict are not reliable and no commercial fishing time is expected. No subsistence restrictions are expected.

UNALAKLEET AND SHAKTOOLIK SUBDISTRICTS

Unalakleet and Shaktoolik Subdistricts will be managed as one fishery because past studies have shown salmon bound for these subdistricts intermingle and that harvests in one subdistrict most likely will affect the other. If there is a sufficient salmon surplus for commercial fishing a fishery will occur. However, no commercial fishing is expected for Chinook salmon because of recent poor runs and new BOF regulations which have raised the passage goal at North River tower by over 50% before a commercial fishery can occur. If there is a market interest chum and pink salmon will be targeted in July. A chum salmon fishery would likely occur after July 4 to allow more time for Chinook salmon to pass through the subdistricts. The department will switch to coho management in late July and a commercial fishery is expected.

Timing and abundance of the Chinook salmon run will be monitored by department personnel conducting interviews with subsistence fishers and operating a test net in the Unalakleet River. The escapement goal range for the North River is 1,200 to 2,600 Chinook salmon and the aerial survey escapement goal range for the Unalakleet River and Old Woman River index area is 550 to 1,100 Chinook salmon. For a commercial fishery to occur, the department must project an

escapement of a minimum of 1,900 Chinook salmon past the North River tower. However, if the Chinook salmon run is poor, commercial fishing will not be allowed and subsistence fishing time may be further restricted.

There is the possibility of chum or pink salmon directed fishing periods in July. If Chinook salmon escapements are lagging then other salmon directed fisheries may need to be restricted to minimize Chinook salmon interception. Chum directed fishing periods will have gear restricted to a maximum mesh size of 6 inches and pink directed fishing periods will have gear restricted to a maximum mesh size of 4.5 inches.

If there is sufficient run strength, coho salmon openings will be conducted as they have been in recent years. The coho season is considered to begin July 25. Coho gear will be restricted to a maximum mesh size of 6 inches and the standard periods will be in effect if there are no escapement concerns.

This year will be the second year a subsistence fishing schedule will be in effect beginning in mid-June in Subdistricts 5 and 6 to protect Chinook salmon. Beginning June 16, the subsistence fishing schedule in the marine waters of Shaktoolik and Unalakleet Subdistricts will be from 6:00 p.m. Monday until 6:00 p.m. Wednesday and from 6:00 p.m. Thursday until 6:00 p.m. Saturday, and the schedule in the Unalakleet River will be from 8:00 a.m. Monday until 8:00 p.m. Tuesday and from 8:00 a.m. Friday until 8:00 p.m. Saturday.

In the 2000s, the number of larger Chinook salmon reaching the spawning grounds has been in serious decline based on age and sex composition of fisheries harvests, and test net and beach seine catches. Concerns have been expressed by fishers about the lack of larger Chinook salmon on the spawning grounds of the Unalakleet River drainage. To address these concerns subsistence gillnet mesh size will likely be restricted to no more than six inches in the Unalakleet River in late June through mid-July to conserve older, larger Chinook salmon. The subsistence fishing schedule will remain in effect through July 15 unless further restrictions are necessary to protect Chinook salmon.

PORT CLARENCE DISTRICT

A commercial fishery for sockeye salmon may be allowed in the Port Clarence District from July 1 through July 31 with openings established by emergency order. The commercial salmon fishing area is all waters inside of the ADF&G regulatory marker from the western tip of Cape Riley to the ADF&G regulatory marker at the entrance to Brevig Lagoon and from the ADF&G regulatory marker at Four Mile Point across Grantley Harbor to the mouth of Sunset Creek.

If subsistence fishing reports indicate normal catches of sockeye salmon, then commercial fishing will be allowed after June 30 with openings announced by emergency order. Continued commercial fishing will be dependent on sufficient subsistence fishing catches and an in-river goal of 30,000 sockeye salmon projected to be met at Pilgrim River.

Subsistence salmon fishing permits are required for the Port Clarence District, Pilgrim River drainage and Salmon Lake. Catch limits are listed on subsistence permits and in Table 2.

The sockeye salmon runs in the Pilgrim River have greatly improved in recent years as the last 5 years have had record passage through the Pilgrim River weir ranging from 42,729 to 85,417 sockeye salmon. The department will compare the 2008 run with escapement counts from the last few years at the weir and historical counts from previous years of the tower project at the same site and previous years of aerial surveys of Salmon Lake to determine if fishing restrictions

are necessary. No subsistence fishing time restrictions are expected in 2008, but if the weir project and aerial surveys indicate poor runs of a particular species the department may need to implement fishing restrictions.

TABLES AND FIGURES

Table 1.—Commercial salmon catches by species, Norton Sound District, 1961–2007.

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	124,409
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	350,401
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	37,214	74,604	107,966	225,132
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	0	86,871	156,789
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	68,206	487,441	10,609	571,241
1997	12,573	161	32,284	20	34,103	79,141
1998	7,429	7	29,623	588,013	16,324	641,396
1999	2,508	0	12,662	0	7,881	23,051
2000	752	14	44,409	166,548	6,150	217,873
2001	213	44	19,492	0	11,100	30,849
2002	5	1	1,759	0	600	2,365
2003	12	16	17,058	0	3,560	20,646
2004	0	40	42,016	0	6,296	48,352
2005	151	280	85,255	0	3,983	89,669
2006	12	3	130,808	0	10,042	140,865
2007	19	2	126,115	3,769	22,431	152,336
Previous 5-Yr Avg ^a	36	68	55,379		4,896	60,379
Previous 10-Yr Avg ^b	2,366	57	41,537		10,004	129,421

^a 2002-2006^b 1997-2006

Table 2.–Nome Subdistrict, Port Clarence District subsistence permit limits.

Nome Subdistrict

Sinuk River	500 salmon/family (no more than 40 chum, 40 coho, and 100 red)
Cripple River	300 pink salmon/family (no chum and 5 coho)
Penny River	300 pink salmon/family (no chum and 5 coho)
Nome River	500 salmon/family (no more than 40 chum, and 40 coho)
Snake River	400 salmon/family (no more than 40 chum, and 40 coho)
Eldorado River	500 salmon/family (no more than 200 chum, and 40 coho)
Flambeau River	500 salmon/family (no more than 200 chum, and 40 coho)
Bonanza River	400 salmon/family (no more than 40 chum, and 40 coho)
Solomon River	300 salmon/family (no more than 20 chum, and 20 coho)
Safety Sound/Bonanza Channel	400 salmon/family (no more than 100 chum, and 40 coho)
Marine Waters	750 salmon/family (no more than 300 chum, and 40 coho)

Norton Sound District from Cape Douglas to Rocky Point (outside the Nome Subdistrict)

Marine Waters	No catch limits
Fresh Waters	100 salmon /family (no more than 20 chum and 10 coho)

Golovin and Moses Point Subdistricts

Marine Waters & Fresh Waters - No catch limits

Port Clarence District

Marine Waters	No catch limits
Pilgrim River	500 salmon/family (no more than 2 king, 250 red & 2 coho)
Salmon Lake	Opened by emergency order only/100 salmon
Kuzitrin River	100 salmon/family (above the confluence of the Pilgrim River) – no more than 2 king & 2 coho.

Note: The waters of the Nome Subdistrict are subject to closures from June 15 to September 30. The Port Clarence District is outside the Nome Subdistrict boundary and, therefore, subsistence fishing can occur 7 days a week unless closed by an Emergency Order.

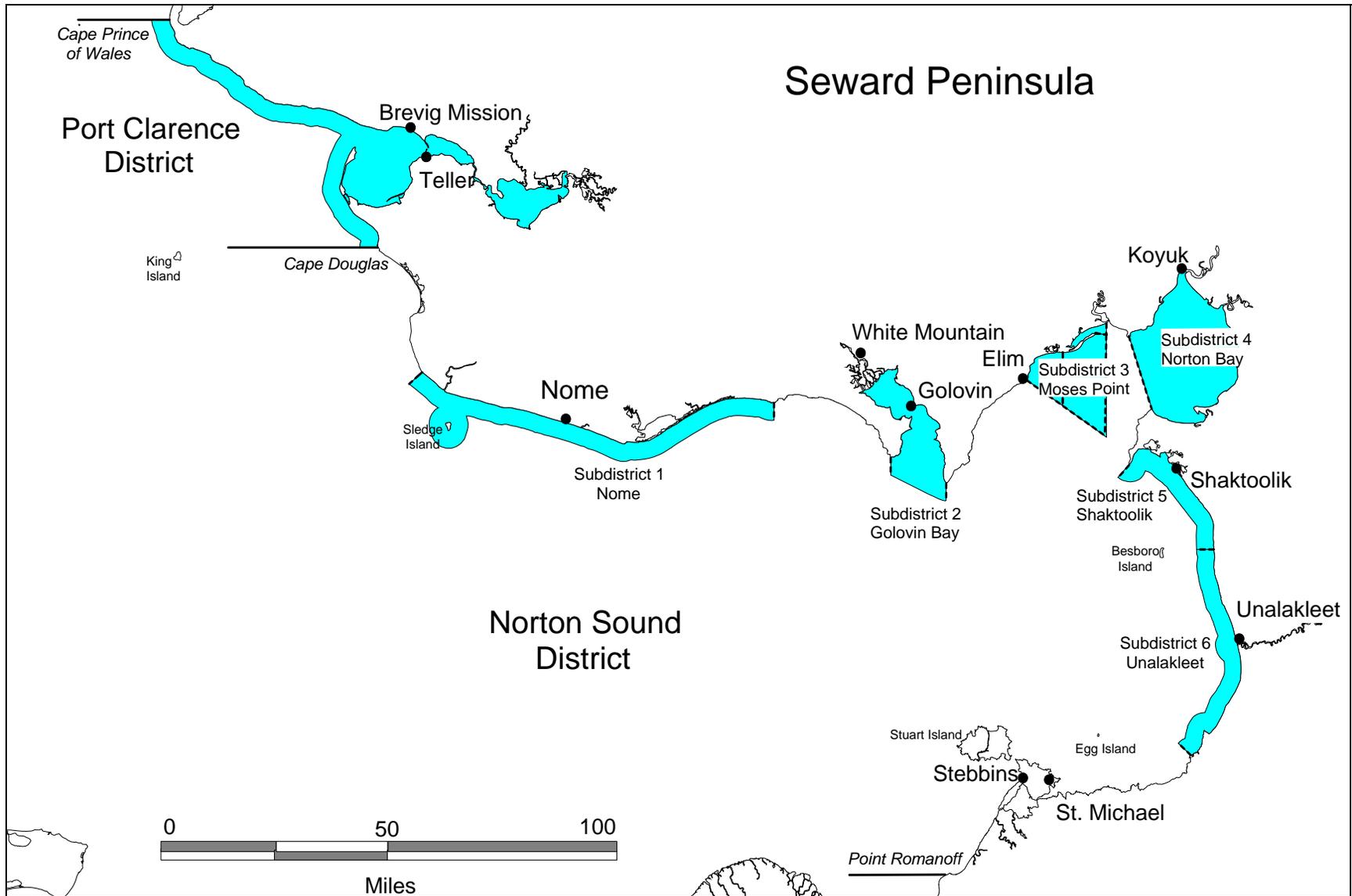


Figure 1.—Norton Sound District and Port Clarence District.

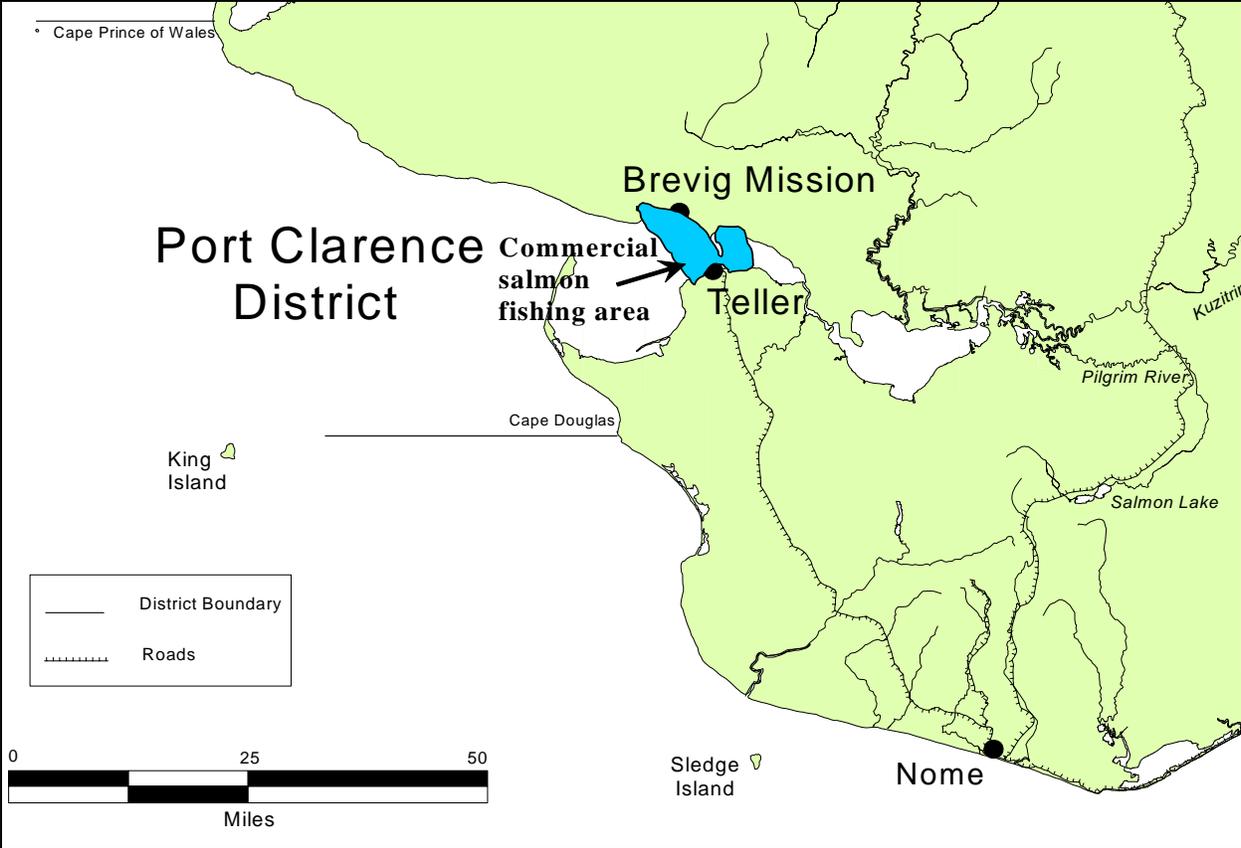


Figure 2.—Port Clarence District commercial salmon fishing area.