

Regional Information Report No. 3A09-04

2009 Kotzebue Sound Salmon Fisheries Management Plan

by

Jim Menard

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Alaska Department of Fish and Game

Division of Commercial Fisheries



Symbols and Abbreviations

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

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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 and harvest strategies for Kotzebue Sound salmon fisheries in 2009. Chum salmon *Oncorhynchus keta* are the dominant salmon species in the Kotzebue District most of which are produced in the Kobuk and Noatak Rivers. No closures in subsistence fishing are expected in 2009. Because of an expected limited market the department will likely open the commercial fishery continuously to allow the buyer maximum flexibility in determining fishing periods. The department will restrict commercial fishing time if commercial catches or test fish catches indicate a weak run or if a more orderly fishery is necessary to prevent waste.

Key words: Kotzebue Sound, Kobuk, Noatak, chum salmon, *Oncorhynchus keta*, subsistence, commercial, fishing, escapement, strategy.

INTRODUCTION

This Kotzebue District salmon fisheries management plan will inform fishers, processors and other interested people of the management strategies for the Kotzebue District commercial salmon fishery. The Kotzebue District includes all waters from Cape Prince of Wales to Point Hope. The Kotzebue District is divided into three subdistricts. Subdistrict 1 has six statistical areas open to commercial salmon fishing (Figure 1). Within the Kotzebue District chum salmon *Oncorhynchus keta* are the most abundant anadromous fish. Other salmon species (Chinook *O. tshawytscha*, pink, *O. gorbuscha*, coho, *O. kisutch*, and sockeye *O. nerka*) occur in lesser numbers, as do Dolly Varden *Salvelinus malma*, and sheefish (inconnu sheefish *Stenodus leucichthys*).

HISTORICAL FISHING EFFORT

Subsistence Fishery

Subsistence fishing has long been an important food gathering activity for people of the Kotzebue Sound drainages. The most recent subsistence survey of salmon harvests in 2004, excluding city of Kotzebue residents, estimated a total of 20,604 chum salmon were harvested from the Kobuk River and 3,997 chum salmon were harvested from the Noatak River. Over 90% of the subsistence salmon harvests are chum salmon. Subsistence salmon surveys were not done in 2008. Previous surveys in the 2000s indicate that Kotzebue residents harvest approximately the same amount of salmon as all the other villages combined.

Commercial Fishery

The historical commercial chum salmon harvests are listed in Table 1. Commercial chum salmon harvests during the 20 years when there was a major buyer (1982-2001) ranged from 55,907 to 521,406 fish, the 20-year average being 220,720. The 5-year (1997-2001) average catch was 141,741. This significant decrease reflects the lack of demand for salmon on the open market that began in the mid-1990s as buyers began to purchase less salmon. Fishing effort during 1982–2001 ranged from 45 to 199 fishers. The 20-year average was 129 fishers; the 5-year average from 1997–2001 was 61. The decrease in participation is likely due to substantial price declines and lack of market.

In 2002, the last significant buyer in the commercial fishery decided to not purchase fish in Kotzebue. Because there was no major buyer only 3 permit holders fished in 2002. Likewise, in 2003 there were only 4 permit holders. In both 2002 and 2003, one permit holder became a licensed agent for a buyer outside of Kotzebue, and worked with other permit holders to provide product for that market.

Beginning in 2004 one buyer provided a limited market for permit holders. The fishing effort (permits fished) over the last 5 years has been less than one-quarter the fishing effort 20 years ago. The 2004 harvest by 43 permit holders was 51,077 chum salmon, 128 Chinook salmon, 124 Dolly Varden and 3 sockeye salmon. The 2005 harvest by 41 permit holders was 75,971 chum salmon, 7 Chinook salmon and 181 Dolly Varden. The 2006 harvest by 42 permit holders was 138,660 chum salmon, 9 Chinook salmon, 5 sockeye salmon, 3 pink salmon, 278 Dolly Varden and 13 whitefish. The 2007 harvest by 46 permit holders was 147,085 chum salmon. In addition, there were 2 chum salmon, 15 Chinook salmon, 3 pink salmon, 2 coho salmon, 960 Dolly Varden and 13 whitefish caught in the commercial fishery and kept for personal use in 2007. The 2008 harvest of 190,550 chum salmon by 48 permit holders was the second best harvest in over a decade. Also, harvested for personal use were 4 Chinook salmon, 9 sockeye salmon, 693 pink salmon, 36 coho salmon, 1,629 Dolly Varden and 37 sheefish.

2009 RUN OUTLOOK

The outlook for the 2009 season is based on the parent-year returns and returning age classes observed in the test fish samples from the Kobuk and Noatak Rivers in 2008. During the 2009 season, the 4-year-old component of the run is expected to be average. The 5-year-old component of the run is expected to be above average based on the 4-year-old return this past season. The 3-year-old and 6-year-old age classes are much smaller components of the run and are expected to be average. The commercial harvest is expected to fall within the range of 150,000 to 200,000 chum salmon, if market conditions can accept that level of harvest.

MANAGEMENT STRATEGIES

Primary commercial fishery management objectives are to provide adequate chum salmon escapement through the commercial fishery: (1) to ensure sustained runs by allowing adequate escapement, and (2) to meet subsistence harvest needs. Fishery management will be dependent on comparing period and cumulative season catch rates to prior years and test fishing results on the Kobuk and Noatak Rivers.

Age composition of commercial salmon catches will be closely monitored to determine the strength of age classes in the run. If there is a low abundance of older salmon, which tend to migrate into freshwater first, catch rates will likely be weak early in the season. A strong 4-year-old return may cause mid-season catches to rise.

Demand for chum salmon during the 2009 season is expected to be the same as 2008 as the same buyer is returning. However, the buyer may decide to purchase fish from a limited number of permit holders who are willing to provide a higher quality salmon by taking care of the fish after harvest.

If the commercial fishery is similar to last year there will be 6 to 8 hour fishing periods on any day of the week, except Sunday. If the buyer opts for longer fishing periods similar to the 12-hour periods in the late 1990s and early 2000s then there will likely be a 1 day closure midweek and the weekends would be closed to fishing.

In order to allow the buyer flexibility the department plans to open the commercial fishery to the hours requested by the buyer. If poor run strength necessitates fishing restrictions, the department will establish periodic closures of the fishery.

During the last 5 years, the commercial fishing schedule has been set by the buyer. However, only in 2006 did the department restrict fishing time to allow for more salmon passage through

the commercial fishing district. The department will consult with the buyer if concern arises about salmon runs and the need to reduce commercial fishing time.

The department intends to open the commercial fishery anytime after July 9 when the buyer is ready or permit holders indicate they are ready to fish and a market is available. By regulation the commercial season closes after August 31, but usually the buyer ceases operations the fourth week of August as catches dwindle and more water marked fish show up in the catches. However, in 2007 and 2008 the buyer did purchase salmon until August 31.

If commercial catches indicate a weak run, and are in agreement with test fish catches in the Kobuk River, the department will consider reducing fishing time in late July to two short duration periods per week or less. If commercial catches indicate sufficient run strength the department will allow commercial fishing to continue based on market conditions and escapement indicators. Likewise, in August as the Noatak River chum salmon run passes through the district the department will consider restrictions if commercial catches indicate a weak run, and are in agreement with department test fish catches. No time restrictions on subsistence fishing are expected in 2009.

ESCAPEMENT OBJECTIVES

Inseason escapement-based management will be limited to aerial surveys, one test fish project on the Kobuk River, and limited test fishing on the Noatak River. The test fishing project on the Kobuk River, in the vicinity of Kiana, will provide an inseason index of chum salmon passage. The department has an index objective of 600 for the season at the test fish project. If the objective is projected to fall short of 600 then restriction in commercial fishing time will be necessary to make sure adequate escapement is moving into the Kobuk River. Test fishing is also likely to occur in August on the Noatak River and comparisons made to previous season's catches. If there are poor test fish catches on the Noatak River and there are poor catches in the commercial fishery then restriction in commercial fishing time may be necessary.

Aerial surveys will be attempted beginning in late August and ending in mid-September. Aerial surveys are not a direct count or estimate of the salmon population, but are used as an index for comparison with surveys both in season and in prior years. Typically surveys are conducted too late to affect present year fisheries decisions, but do provide useful information in evaluating management decisions and help project future salmon returns. Aerial survey data are utilized to: (1) evaluate initial run strength while salmon are traveling to the spawning grounds, and (2) document peak salmon abundance on the spawning grounds as an index to total escapement. These enumeration techniques are best initiated during times of low river water levels, high water clarity, and good sunlight penetration. Unfortunately, these conditions are not always available.

One of the primary fishery management strategies is to provide for escapement within sustainable escapement goal ranges (SEG) for each river system. These SEG's developed in 2006 are based on an analysis of historical harvest and escapement information of specific index areas within major drainages. These aerial survey escapement objectives are: (1) subject to continued review, (2) intended to evaluate escapement trends between years, and (3) are not a total count of the salmon escapement. The Noatak and upper Kobuk Rivers are flown annually if personnel and weather conditions permit and other rivers are flown on an opportunistic basis. The chum salmon escapement goals are as follows: Noatak River (mouth to Kelly Bar, including the Eli River) – 42,000 to 91,000, Squirrel River – 4,900 to 10,500, Salmon River – 3,300 to 7,200, Tutuksuk River – 1,400 to 3,000, and upper Kobuk River 9,700 to 21,000.

TABLES AND FIGURES

Table 1.–Kotzebue District chum salmon fishery historical information, 1962–2008.

Year	Total Catch	Number of Permits ^a	Season Catch per Permit Holder	Gross Value of Catch to Permit Holders
1962	129,948	84	1,547	\$4,500
1963	54,445	61	893	\$9,140
1964	76,449	52	1,470	\$34,660
1965	40,025	45	889	\$18,000
1966	30,764	44	699	\$25,000
1967	29,400	30	980	\$28,700
1968	30,212	59	512	\$46,000
1969	59,335	52	1,141	\$71,000
1970	159,664	82	1,947	\$186,000
1971	154,956	91	1,703	\$200,000
1972	169,664	104	1,631	\$260,000
1973	375,432	148	2,537	\$925,000
1974	627,912	185	3,394	\$1,822,784
1975	563,345	267	2,110	\$1,365,648
1976	159,796	220	726	\$580,375
1977	195,895	224	875	\$1,033,950
1978	111,494	208	536	\$575,260
1979	141,623	181	782	\$990,263
1980	367,284	176	2,087	\$1,446,633
1981	677,239	187	3,622	\$3,246,793
1982	417,790	199	2,099	\$1,961,518
1983	175,762	189	930	\$420,736
1984	320,206	181	1,769	\$1,148,884
1985	521,406	189	2,759	\$2,137,368
1986	261,436	187	1,398	\$931,241
1987	109,467	160	684	\$515,000
1988	352,915	193	1,829	\$2,581,333
1989	254,617	165	1,543	\$613,823
1990	163,263	153	1,067	\$438,044
1991	239,923	142	1,690	\$437,948
1992	289,184	149	1,941	\$533,731
1993	73,071	114	641	\$235,061
1994	153,452	109	1,408	\$233,512
1995	290,730	92	3,160	\$316,031
1996	82,110	55	1,493	\$56,310
1997	142,720	68	2,099	\$187,978
1998	55,907	45	1,242	\$70,587
1999	138,605	60	2,310	\$179,781
2000	159,802	64	2,497	\$246,786
2001	211,672	66	3,207	\$322,650
2002	8,390	3	2,797	\$7,572
2003	25,763	4	6,441	\$26,377
2004	51,077	43	1,188	\$64,420
2005	75,971	41	1,853	\$124,820
2006	138,660	42	3,301	\$216,654
2007	147,087	46	3,198	\$243,149
Average	195,997	114	1,840	\$589,587
2008	190,550	48	3,970	\$385,270

^a During 1962-1966 and 1968-1971 figures represent the number of vessels licensed to fish in the Kotzebue District, not the number of fishers.

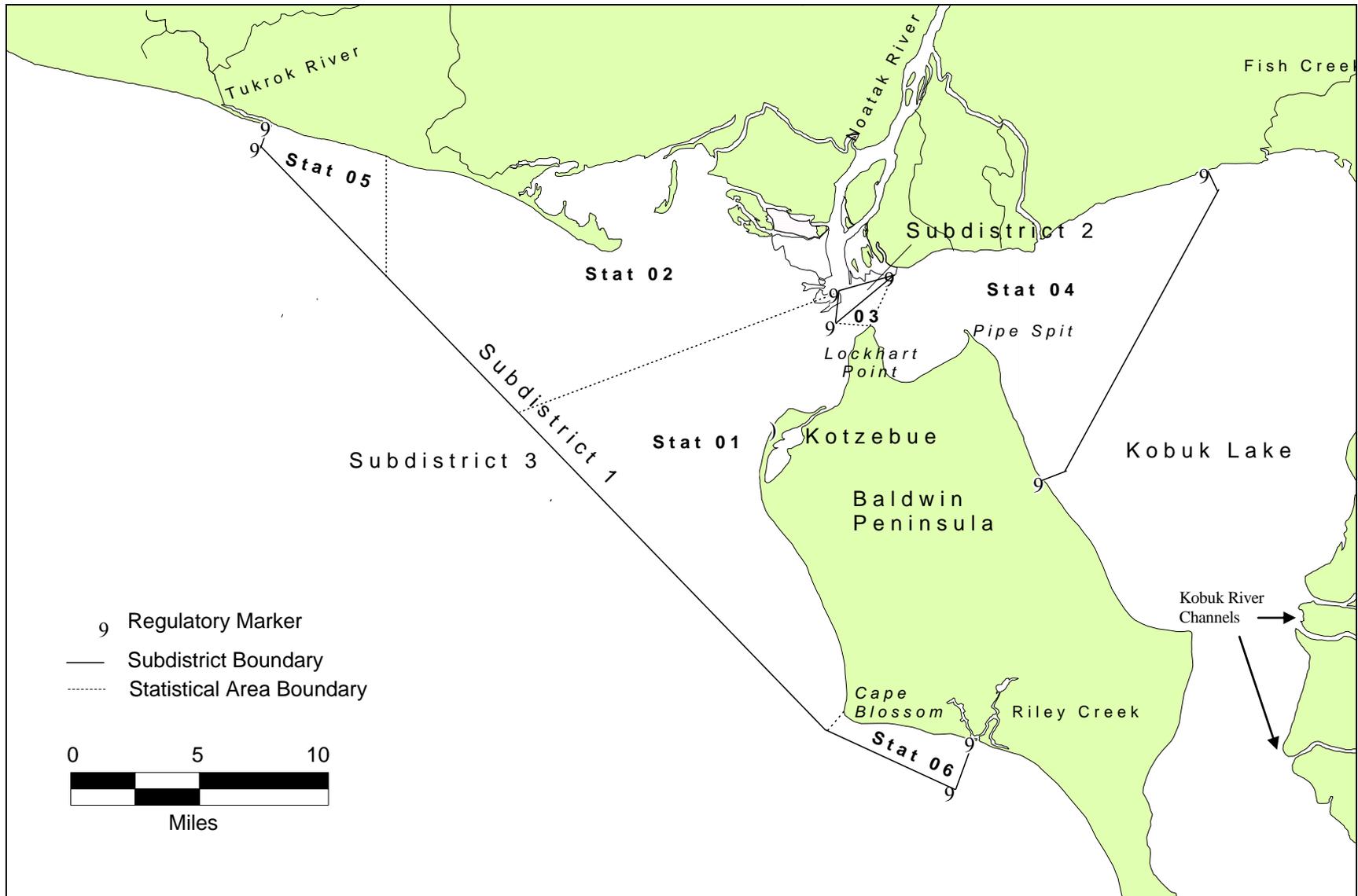


Figure 1.—Kotzebue salmon subdistrict boundaries.