

Kotzebue Area Fisheries Summary, 2003



A Report to the Alaska Board of Fisheries

By

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KOTZEBUE SOUND FISHERY

History

The Kotzebue commercial salmon district supports the northernmost commercial salmon fishery in Alaska (Figure 1).

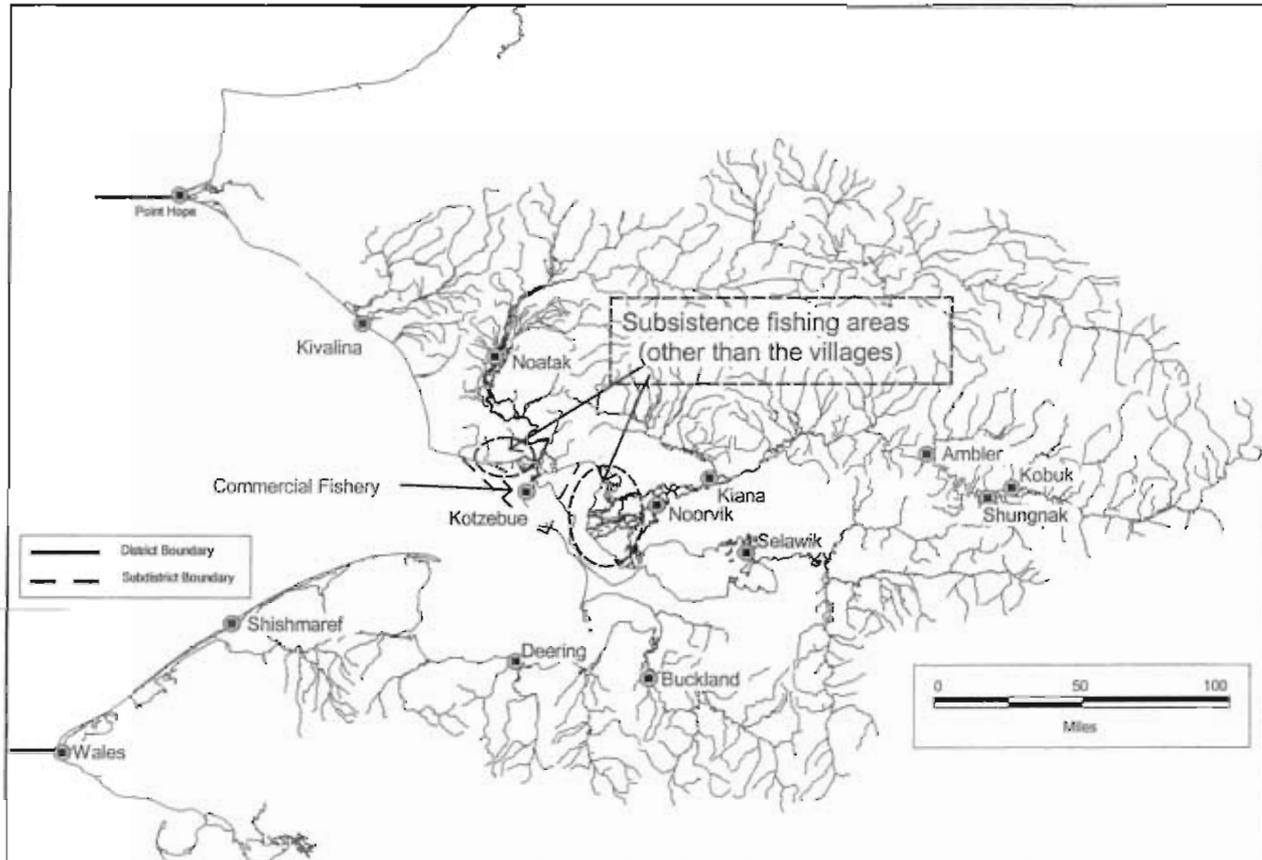


Figure 1. The Kotzebue Sound Area, villages and fishing areas.

The recent commercial fishery opened under state management in 1962. Salmon harvests consist of primarily chum salmon although limited amounts of Dolly Varden and a few chinook salmon are harvested as well.

The earliest sales of salmon in the Kotzebue District were in 1909 when Lockhart's store purchased 21,906 pounds of salmon from local Eskimos and resold it at \$0.05/lb. Of that, 21,366 pounds were sold to gold miners on the Kobuk River drainage and 540 pounds were sold to a company in Seattle. A commercial fishery occurred from 1914 to 1918. Salmon were canned and the bulk of the harvest was thought to have been sold to miners working in the upper Kobuk River Drainage. The next organized commercial fishery began under state management in 1962 and continues to the present (Table 1). The current fishery became fully developed in the mid- 1970s. The fishery displayed a

gradually declining pattern of overall run strength with four year cycles of stronger followed by weaker returns. In 1987, the fisheries managers began a rebuilding program with an emphasis on attaining escapement goals. Beginning in the mid-1990s poor market conditions have caused harvests to fall short of their potential.

The commercial harvests have been the lowest on record the last two years because of a lack of market. In the 1980s harvests were always over 100,000 chum salmon with over 100 permit holders fishing. In the mid-1990s with declining markets and declining prices the fishing effort began to drop below 100 permit holders. In the late 1990s until 2001 the fishing effort had dropped to approximately 65 permit holders. In 2002 and 2003 there were no major buyers and less than 5 permit holders fished each year for a limited market. However, the chum salmon run strength in the two most recent years has dropped off greatly as indicated by those few permit holders having limited success in harvests and test fish indices in one of the major spawning drainages being below average.

General Information

The Kotzebue commercial salmon district is divided into three subdistricts. Commercial fishing is only allowed in Subdistrict 1, which is divided into six statistical areas (Figure 2).

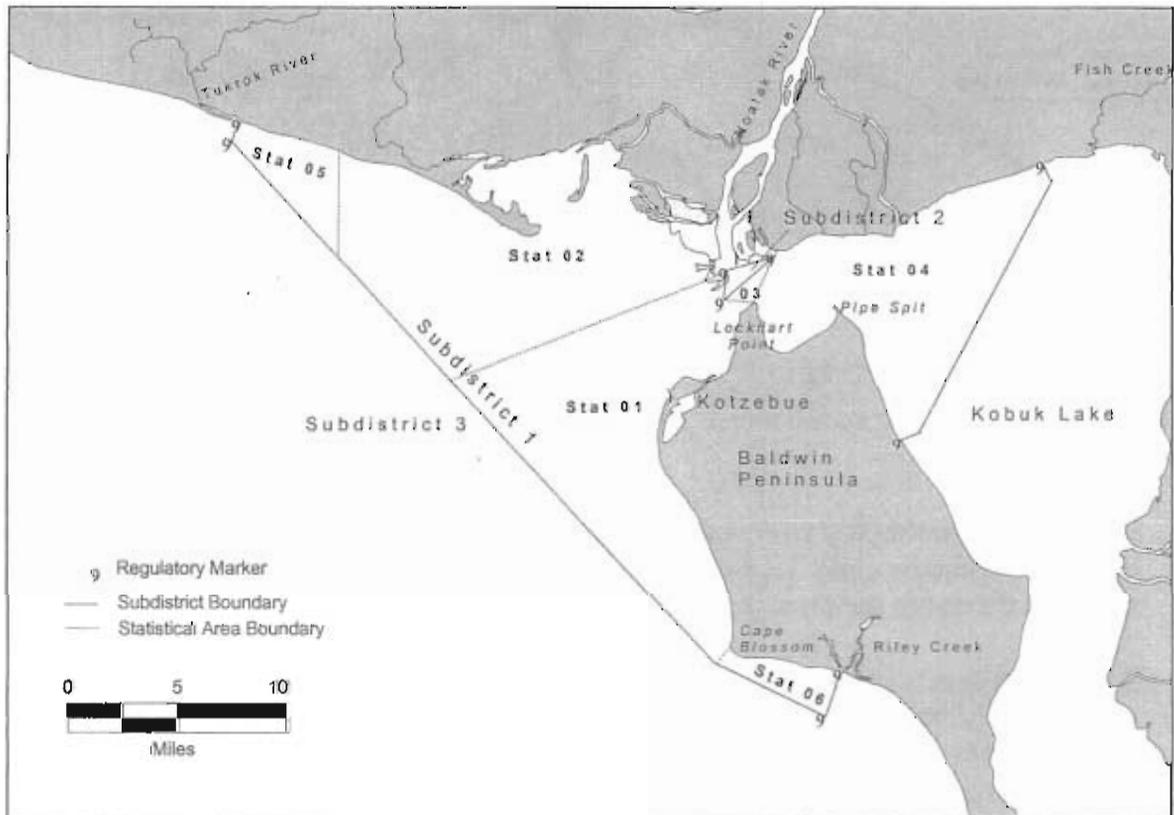


Figure 2. Kotzebue Sound commercial salmon fishing subdistricts and statistical areas

Each commercial fisher is limited to 150 fathoms of gear. These gillnets are generally operated as a single unit of gear, although the nets are occasionally broken down to single 50 fathom shackles. Most gillnets are made of 5-7/8 inch stretched measure multifilament web. Fishers generally operate with one end on or near shore and with all three shackles connected. Fishers also set in deeper channels in the mud flats further out from shore.

2003 Commercial Season Summary

A limited 2003 Kotzebue Sound commercial salmon season ended with the second lowest harvest and participation on record because, for the second year in row, the fishery lacked a major buyer (Table 1). The commercial harvest consisted of 25,763 chum salmon. The total chum harvest of 25,763 includes 340 chum salmon kept for personal use. Also, 224 Dolly Varden were caught in the commercial fishery, but only 20 were sold. In addition, 9 chinook salmon, 147 pink salmon, and 10 sheefish were caught, but not sold. Only 4 of 183 active permit holders fished during the season. The overall chum salmon run to Kotzebue Sound in 2003 was estimated to be below average to poor in abundance based on the low commercial harvest rates, subsistence fishers reporting lower catches than normal, the Kobuk test fish index being below average, and aerial survey observations.

The Kotzebue Sound commercial salmon fishery opened on July 11, but there were no deliveries until July 18. Because of logistic problems, permit holders did not begin fishing until July 17. Commercial fishing remained open continuously to allow fishers the maximum flexibility to harvest fish and meet airline shipping schedules. The fishery closed by regulation after August 31, but the last permit holder stopped fishing on August 23. Fishers reported that catch rates were poor for most of the season with occasional good catches occurring infrequently. Age-sex-length (ASL) data was not used to manage the fishery due to the low volume of fish harvested. However, ASL samples of the Kotzebue commercial chum salmon catch did show a weak return of age-0.4 chum salmon compared to the historical average.

A total of 218,091 pounds of chum salmon (average weight 8.6 lbs) were sold at an average of \$0.12 per pound. The total exvessel chum value was \$26,297 to Kotzebue Area fishers with an average of \$6,574 for each participating permit holder. A total of 160 pounds of Dolly Varden (average weight 8.0 lbs) were sold at \$0.50 per pound resulting in a total exvessel value for all species sold of \$26,377 (Table 1). This represents 11% of the recent 10-year average (1992-2001) of \$238,242, and 2% of the average yearly ex-vessel value in the 1980s of \$1,500,333.

Escapement

A test fish project located just downstream from the village of Kiana monitored escapement in the Kobuk River. The test fish index of 749 was the third lowest in the eleven years the project has been in operation (Figure 3). The lowest index recorded was 494 in 1993. Aerial surveys indicated that escapement just reached the goal in the Kobuk River drainage that year (Table 1). Aerial surveys also indicated that escapement was adequate on the Upper Kobuk River in 2003. The Kobuk River test fish index did not follow the typical pattern. A smaller than average number of index points were generated

in the first half of the season and a larger than average number of index points were generated in the second half of the season indicating later and below average chum salmon abundance in the Kobuk River. As there was little commercial fishing effort again this year the escapement was expected to be higher than average, but the low test fish catches were in agreement with the low commercial catch rates indicating a weaker chum salmon run in 2003. In the 11-year history of the Kobuk River test fish project managers have taken action in reducing commercial fishing time in 1993 and 1998. A recent management strategy is if the test fish index is projected to fall below 600 CPUE and commercial catches have been below average then a reduction in commercial fishing time is made.

The sonar project on the Noatak River last operated in 1994. Since that time the department has done test fishing infrequently on the Noatak River. In 2003, test fishing was conducted two days during the run in the lower Noatak River by the department. Fishing on both trips was described as slow. Kobuk and Noatak River ASL samples and the Kotzebue commercial catch ASL samples show a lower than normal percentage of age-0.4 chum salmon (Tables 3-5).

Aerial surveys conducted in the Kotzebue District in 2003 occurred during acceptable viewing conditions. Aerial survey escapement goals were reached in the Kobuk River drainage, but fell short in the Noatak River drainage.

Miscellaneous Fisheries

Limited commercial harvest of miscellaneous finfish has been allowed since statehood, normally under the auspices of a permit which delineates harvest levels, open areas, legal gear, etc. Commercial harvests of Dolly Varden are incidental during the commercial chum salmon fishery (Table 6). There was no reported commercial harvest of whitefish, pike, or burbot during the 2003 commercial season. Sheefish are caught and sold predominantly between mid-November and late March. The commercial sheefish fishery allows subsistence fishermen to sell part of their winter catch. There were no commercially sold sheefish reported in 2003 (Table 7).

Trends in the Fishery

The past two years, a major buyer has not operated during the chum fishery. A few permit holders have organized to provide chum salmon to a limited market through a buyer in Anchorage. To maximize the efficiency of the commercial fishery the past two years, the department has allowed commercial fishing to occur continuously once the fishery opens in mid-July until the regulation closure on September 1. With the unrestricted schedule, permit holders are able to coordinate their fishing schedule to when a cargo flight is available. As there were record low commercial harvests the last two years this schedule has not jeopardized subsistence fishing opportunities or escapement.

The 2002 and 2003 chum salmon run have shown a large decrease in abundance compared to the chum salmon runs of 1999 – 2001. From 1999 – 2001, the Kobuk River test fish indices were the three best years of catch per unit of effort (CPUE), except for the huge run

of 1996. In the 11-year history of the Kobuk River test fishery the last two years have been the third and fourth worst CPUE, although escapement was met this past year.

Few Dolly Varden have been harvested in the commercial fishery in recent years as there is little fishing in later August when the majority of these fish pass through the district. The lack of harvest since the late 1990s has been because of the buyers pulling out of the area shortly after mid-August, and little fishing effort the last two years.

Unless a major buyer returns to the Kotzebue District the commercial fishery will likely continue with the small fleet of several permit holders. However, with the weak chum salmon runs the last two years there would have been commercial fishing closures if the fleet was anywhere near the size of the 60 plus permits that fished before the last buyer left after the 2001 season. There has been an interest expressed by one buyer to set up a small plant in Kotzebue next season and purchase chum salmon from approximately 15 permit holders.

2004 Outlook

The outlook for the 2004 season is based on the returning age classes of the 2003 season. During the 2004 season, the four-year-old component of the run is expected to be below average to average. The five-year-old component of the run is expected to be below average based on the four-year-old return this past season. The three-year-old and six-year-old age classes are much smaller components of the run and are expected to be below average to average. The commercial harvest is expected to fall within the range of 25,000 to 50,000 chum salmon, if market conditions can accept that level of harvest.

Table 1. Kotzebue Area chum salmon historical commercial catch and escapement information, 1962-2003.

Year	Commercial Catch					Escapement (goals)				
	Number Caught	Number Permits	Average Catch per Permit	Total Value ^a	Value per Fishermen	Squirrel R. (11,500)	Salmon R. (7,000)	Tuluksuk R. (2,000)	Upper Kobuk R. (10,000)	Noatak R. (85,000)
1962	129,948	84	1,547	\$4,500	\$54	5,384	12,936	10,841	9,224	177,080
1963	54,445	61	893	\$9,140	\$150	2,200	1,535	670	4,535	2,005 ^b
1964	76,449	52	1,470	\$34,660	\$667	8,009	9,353	2,685	7,985	89,798
1965	40,025	45	889	\$18,000	\$400	7,230	1,500 ^b		2,750	6,152
1966	30,764	44	699	\$25,000	\$568	1,350	3,957	1,383	1,474	101,760
1967	29,400	30	980	\$28,700	\$957	3,332	2,116	169	2,495	29,120 ^b
1968	30,212	59	512	\$46,000	\$780	6,746	3,367	823	2,370	44,896
1969	59,335	52	1,141	\$71,000	\$1,365	6,714	2,581	159	7,500	34,013
1970	159,664	82	1,947	\$186,000	\$2,268	4,418	3,000 ^b	2,000 ^b	13,908	138,145
1971	154,956	91	1,703	\$200,000	\$2,198	6,628	5,453	1,384	17,202	41,055
1972	169,664	104	1,631	\$260,000	\$2,500	32,126	2,073 ^b		18,155	67,601 ^b
1973	375,432	148	2,537	\$925,000	\$6,250	12,345	6,891		2,470 ^b	32,144
1974	627,912	185	3,394	\$1,822,784	\$9,853	32,523	29,190	8,312	28,120	151,889
1975	563,345	267	2,110	\$1,365,648	\$5,115	32,256	9,721	1,344 ^b	10,702	97,811
1976	159,796	220	726	\$580,375	\$2,638	7,229	1,161	758	2,522 ^b	45,779
1977	195,895	224	875	\$1,033,950	\$4,616	1,964 ^b				11,963 ^b
1978	111,494	208	536	\$575,260	\$2,766	1,863	814 ^b	368 ^b	1,981 ^b	43,342
1979	141,623	181	782	\$990,263	\$5,471	1,500 ^b	674 ^b	382 ^b	2,008	17,515 ^b
1980	367,284	176	2,087	\$1,446,633	\$8,220	13,563	8,456	1,165	11,472	174,751
1981	677,239	187	3,622	\$3,246,793	\$17,363	9,854	4,709	1,114	8,648	116,352
1982	417,790	199	2,099	\$1,961,518	\$9,857	7,690	1,821	1,322	14,674	20,871 ^b
1983	175,762	189	930	\$420,736	\$2,226	5,115	1,677	2,637	33,746	82,817
1984	320,206	181	1,769	\$1,148,884	\$6,347	5,473	1,471	1,132	10,621	72,900
1985	521,406	189	2,759	\$2,137,368	\$11,309	6,160	2,884	5,089	6,278	46,380 ^b
1986	261,436	187	1,398	\$931,241	\$4,980	4,982	1,971	4,257	6,015	41,535 ^b
1987	109,467	160	684	\$515,000	\$3,219	2,708	3,333	206	6,210	8,295 ^b
1988	352,915	193	1,829	\$2,581,333	\$13,375	4,848 ^b	6,208	3,122	11,895 ^b	54,569 ^b
1989	254,617	165	1,543	\$613,823	\$3,720					
1990	163,263	153	1,067	\$438,044	\$2,863	5,500	6,335	2,275	15,355	26,345
1991	239,923	142	1,690	\$437,948	\$3,084	4,606	5,845	744	24,525	85,690
1992	289,184	149	1,941	\$533,731	\$3,582	2,765	1,345	1,162	11,803	35,036 ^b
1993	73,071	114	641	\$235,061	\$2,062	4,463	13,880	1,196	12,158	30,210 ^b
1994	153,452	109	1,408	\$233,512	\$2,142					
1995	290,730	92	3,160	\$316,031	\$3,435	10,605	13,988	3,901	35,725	167,120
1996	82,110	55	1,493	\$56,310	\$1,024	21,795	21,740	8,200	74,770	336,940
1997	142,720	68	2,099	\$187,978	\$2,764	4,779 ^b	1,181 ^b	164 ^b	8,513 ^b	
1998	55,907	45	1,242	\$70,587	\$1,569				906 ^b	5,397 ^b
1999	138,605	60	2,310	\$179,781	\$2,996	13,513	4,989		27,340	87,494
2000	159,802	64	2,497	\$246,786	\$3,856					
2001	211,672	66	3,207	\$322,650	\$4,889				11,640	
2002	8,390	3	2,797	\$7,572	\$2,524				3,572 ^b	700 ^b
2003	25,763	4	6,441	\$26,377	\$6,594		1,132		11,175	40,317

^a Some estimates between 1962 and 1981 include only chum value which in figures represent represent over 99% of the total value. Figures after 1981 represent the chum value as well as incidental species such as char, whitefish and other salmon.

^b Poor survey conditions or incomplete, early or late survey.

Table 2. Kobuk River test fish and Kotzebue Area catch data, 1993 - 2003.

Year	Date	Drifts	CPUE	Commercial Catch	Subsistence Kobuk River	Subsistence Noatak River	Subsistence Kotzebue	Total Catch
1993	7/12 - 8/12	164	496.77	73,071	24,770 ^a	3,270	^b	101,111
1994	7/13 - 8/30	248	1,218.97	153,452	26,612	6,126	^b	186,190
1995	7/12 - 8/16	196	1,188.31	290,730	38,867	6,359	50,708	386,664
1996	7/09 - 8/14	208	2,581.39	82,110	39,076	10,091	50,573	181,850
1997	7/09 - 8/14	202	797.19	142,720	25,242	5,309	26,355	199,626
1998	7/10 - 8/15	182	538.35	55,907	21,398	2,614	24,968	104,887
1999	7/11 - 8/13	176	1,357.45	138,605	27,958	1,616	64,768	232,947
2000	7/07 - 8/14	228	1,481.32	159,802	21,538	7,293	37,144	225,777
2001	7/05 - 8/13	232	1,574.72	211,672	29,193 ^c	2,326	17,713	260,904
2002	7/05 - 8/12	218	868.75	8,390	13,943 ^a	2,937	^b	25,270
2003	7/09 - 8/13	216	748.86	25,763	^d	^d	^d	

^a Several Kobuk River villages were not surveyed.

^b Kotzebue not surveyed.

^c Ambler village was not surveyed in 2001.

^d Subsistence survey data not yet available.

Table 3. Comparison of age and sex compositions by year for Kobuk River test net chum salmon catch, 1993 - 2003.

Year	Date	No. of samples	Percent by Sex		Percent by Age Group					
			Male	Female	0.2	0.3	0.4	0.5	0.6	0.7
1993	7/17-8/12	462	52.6	47.4	1.7	28.8	66.0	3.5	0.0	0.0
1994	7/13-8/29	624	63.0	37.0	3.0	58.0	36.6	2.4	0.0	0.0
1995	7/13-8/16	1,025	63.3	36.7	2.2	61.5	34.0	2.2	0.0	0.0
1996	7/09-8/18	1,633	54.8	45.2	0.5	31.9	58.4	8.9	0.3	0.0
1997	7/09-8/14	756	56.2	43.8	1.3	23.9	59.3	15.2	0.3	0.0
1998	7/10-8/15	536	43.5	56.5	4.9	51.3	31.0	11.9	0.9	0.0
1999	7/17-8/13	913	59.7	40.3	0.4	92.0	5.9	1.4	0.2	0.0
2000	7/07-8/14	635	47.1	52.9	1.1	60.9	37.6	0.3	0.0	0.0
2001	7/06-8/13	930	42.0	58.0	1.9	36.9	58.6	2.6	0.0	0.0
2002	7/05-8/12	793	45.0	55.0	0.1	24.8	67.2	7.8	0.0	0.0
2003	7/09-8/13	566	29.2	70.8	1.6	54.2	30.4	13.8	0.0	0.0

Table 4. Comparison of age and sex compositions by year for Kotzebue commercial chum salmon catch, 1993 - 2003.

Year	Date	No. of samples	Percent by Sex		Percent by Age Group					
			Male	Female	0.2	0.3	0.4	0.5	0.6	0.7
1993	7/09-8/28	1,870	52.3	47.7	1.4	20.4	73.3	4.8	0.2	0.0
1994	7/12-8/24	3,614	55.2	44.8	3.3	63.0	30.8	2.9	0.0	0.0
1995	7/11-8/28	4,621	51.4	48.6	2.2	58.9	36.9	1.9	0.0	0.0
1996	7/08-8/26	2,386	49.6	50.4	0.9	40.7	48.9	9.0	0.4	0.0
1997	7/10-8/29	4,824	57.6	42.4	1.4	28.7	58.3	10.2	1.4	0.0
1998	7/10-8/30	3,128	57.2	42.8	6.2	50.4	29.3	13.3	0.7	0.0
1999	7/13-8/27	3,288	51.3	48.7	0.9	87.5	10.6	0.9	0.2	0.0
2000	7/11-8/24	3,179	39.2	60.7	2.1	61.6	35.2	1.0	0.0	0.0
2001	7/10-8/24	3,670	41.9	58.1	2.4	45.7	49.9	2.0	0.7	0.0
2002	No samples taken because of lack of a major buyer in 2002.									
2003	7/22-8/19	969	48.9	51.1	0.6	62.3	28.3	7.6	0.9	0.2

Table 5. Comparison of age and sex compositions by year for Noatak River test net chum salmon catch, 1993 - 2003.

Year	Date	No. of samples	Percent by Sex		Percent by Age Group				
			Male	Female	0.2	0.3	0.4	0.5	0.6
1993	7/24-9/13	956	42.6	57.4	4.8	34.2	58.8	1.8	0.3
1994	7/22-9/10	1,160	47.6	52.6	3.1	68.5	26.8	1.6	0.0
1995	7/20-8/29	1,266	49.2	50.8	2.0	56.1	39.8	1.9	0.2
1996	7/28-8/27	347	45.5	54.5	0.6	47.0	45.5	6.9	0.0
1997	7/27-8/28	214	67.3	32.7	0.5	34.1	56.1	8.9	0.5
1998	7/27-8/28	284	53.1	46.9	5.6	70.1	21.5	2.5	0.3
1999	8/14-8/29	140	52.9	47.1	0.7	80.7	17.1	0.7	0.7
2000	No test fishing occurred in 2000.								
2001	8/08-8/15	257	28.8	71.2	4.7	72.4	21.4	1.6	0.0
2002	7/13-8/14	171	42.1	57.9	0.6	42.1	53.2	3.5	0.6
2003	8/01-8/18	49	42.9	57.1	0.0	55.1	40.8	4.1	0.0

Table 6. Kotzebue Area incidentally caught and sold Dolly Varden during the commercial salmon fishery, 1966-2003.

Year	Number of Fish Sold	Estimated Total Catch ^g	Pounds Sold	Average Weight ^d	Average Price ^f
1966	3,325				0.55 ^f
1967	367		2,606	7.1	0.11
1968	3,181		21,949	6.9	0.14
1969	1,089 ^a				2.84 ^f
1970	2,095				
1971	3,828 ^b		23,353	6.1	0.16
1972	7,746		56,545	7.3	0.17
1973	640		4,608	7.2	0.16
1974	2,605 ^c		20,580	7.9	0.16
1975					
1976					
1977					
1978	1,229		9,094	7.4	0.15
1979	2,523		12,523	5.0	0.25
1980	3,049		17,015	5.6	0.20
1981	3 ^e		16	5.3	0.17
1982	3,447		23,648	6.9	0.20
1983	190 ^e	845	1,108	5.8	0.20
1984	347 ^e	1,090	2,104	6.1	0.25
1985	454	3,600	3,177	7.0	0.25
1986	5 ^e	2,373	34	6.8	0.20
1987	1,261	^h	8,704	6.9	0.30
1988	752	^h	4,967	6.6	0.35
1989	3,093	^h	20,293	6.6	
1990	604	^h	4,219	7.0	0.25
1991	6,136	^h	40,747	6.6	0.18
1992	1,977	^h	11,951	6.0	0.10
1993	76	^h	540	7.1	0.10
1994	149	^h	767	5.1	0.17
1995	2,090	^h	13,195	6.3	0.20
1996	188	^h	1,153	6.1	0.25
1997	3,320	^h	23,203	7.0	0.20
1998	349	^h	2,640	7.6	0.20
1999	1,502	^h	11,352	7.6	0.20
2000	7	^h	44	6.3	0.20
2001	0	^h	0		
2002		30	0		
2003	20	224	160	8.0	0.50

^a Includes 269 taken by permit.

^b Includes 179 taken by permit.

^c Includes 234 taken during commercial sheefish fishery.

^d Some data extrapolated from average reported weight.

^e Limited Dolly Varden market; many fish were taken home or dumped.

^f Price per fish.

^g Estimate includes fish caught but not sold based on interviews of fishers.

^h Estimate of Dolly Varden caught, but not sold, not made.

Table 7. Kotzebue Area winter commercial sheefish harvest statistics, 1967-2003.

Year ^b	No. of Fishers	No. of Fish	Pounds ^a		Price/Pound	Estimated Value
			Total	Average		
1967 ^c		4,000	26,000	6.5	\$0.20	\$5,200
1968	10	792	4,752	6.0	\$0.22	\$1,045
1969	17	2,340	15,209	6.5	\$0.25	\$3,802
1970 ^c		2,206			\$0.14	
1971	4	73	720	9.9	\$0.13	\$95
1972	5	456	4,071	8.9	\$0.16	\$651
1973	11	2,322	15,604	6.7	\$0.20	\$3,121
1974	6	1,080 ^d	6,265	5.8	\$0.30	\$1,880
1975	^c	2,543 ^d	24,161	9.5	\$0.30	\$7,248
1976	14	2,633	19,484	7.4	\$0.30	\$5,845
1977	2	566	5,004	8.8	\$0.30	\$1,501
1978	11	2,879	26,200	9.1	\$0.40	\$10,480
1979 ^e						
1980	4	1,175	8,225	7.0	\$0.50	\$4,113
1981	1	278	1,836	6.6	\$0.75	\$1,377
1982	11	2,629 ^f	17,376	6.6	\$0.75	\$13,032
1983	5	1,424	13,395	9.4	\$0.50	\$6,698
1984	5	927 ^d	10,403	11.2	\$0.55	\$5,722
1985	4	342 ^d	3,902	11.4	\$0.51	\$1,990
1986	2	26	312	12.0	\$0.75	\$234
1987	3	670	5,414	8.1	\$0.49	\$2,653
1988	3	943	7,373	7.8	\$0.45	\$3,318
1989	3	2,335	16,749	7.2	\$0.51	\$8,542
1990 ^c	6	687	5,617	8.2		
1991	5	852	8,224	9.7	\$0.50	\$4,112
1992	3	289	2,850	9.9	\$0.65	\$1,853
1993	1	210 ^d	1,700	8.1	\$0.50	\$850
1994 ^c						
1995	1	226	2,240	9.9	\$0.50	\$1,120
1996	2	308	3,002	9.7	\$0.44	\$1,321
1997 ^c						
1998	1	254	2,400	9.4	\$0.43	\$1,032
1999 ^c						
2000 ^c						
2001	1	19	200	10.5	\$1.00	\$200
2002	4	30	300	10.0	\$1.00	\$300
2003 ^c						

^a Data is not exact, in some instances total catch poundage was determined from average weight and catch data. Similarly, various price/pound figures were determined from price/fish and average weight data.

^b Season was from October 1 to September 30. Year indicated would be the year the commercial season ended. For example, the year 1980 would represent October 1, 1979 to September 30, 1980.

^c Data unavailable or incomplete.

^d Number of fish not always reported. Estimates were based on average weight from reported sales which documented the number of fish.

^e No reported commercial catches.

^f Estimate based on historical average weight.

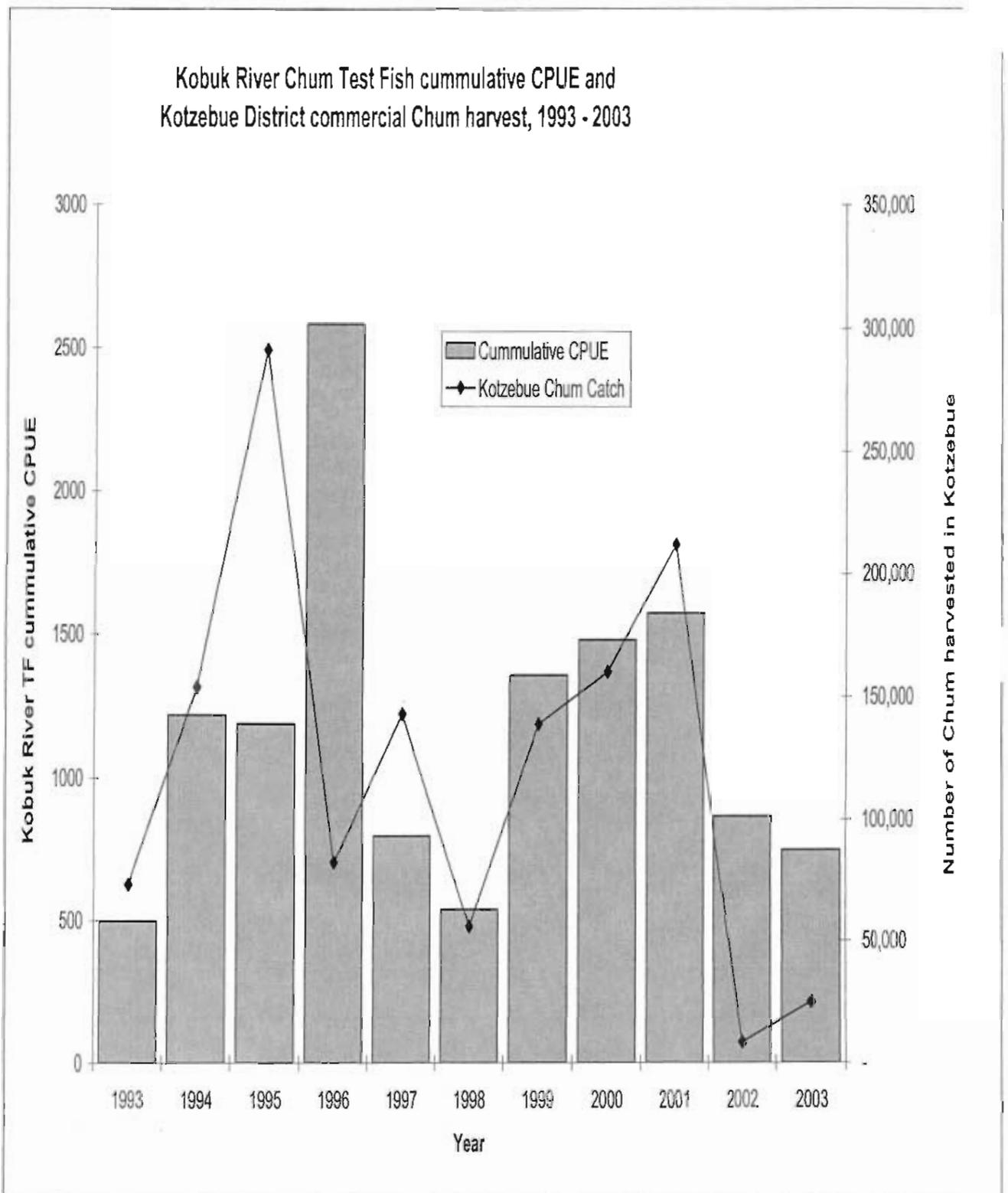


Figure 3. Comparison of Kobuk River test fish CPUE with Kotzebue commercial chum catch.