

Kotzebue District Fisheries Report, 1999

to the

Alaska Board of Fisheries

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and
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1999 Kotzebue Sound Salmon Season Summary

History

The Kotzebue district supports the northernmost commercial salmon fishery in Alaska (Figure 1). The Kotzebue District is divided into three subdistricts. Subdistrict 1 contains six statistical areas (Figure 2).

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. There are 215 commercial permit holders, of which an average of 146 were active over the ten year period 1986 to 1995. During the recent four years, participation in the fishery has averaged 57 permit holders. Eighty-seven percent of the permittees are residents of the district and 99 percent are residents of the state.

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. 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. Prior to 1987, harvest had been proportional to total return. During the last few years, poor market conditions have caused harvests to fall short of their potential and consequently escapements have increased above historic levels.

General Information

The commercial harvest in the Kotzebue District in 1999 was 138,605 chum salmon, 5 chinook salmon, and 1,502 Dolly Varden. The chum salmon harvest was limited by the buyers shipping capacity, which resulted in a commercial catch below the pre-season projected harvestable surplus of 150,000 to 250,000. Only 60 of a possible 203 permit holders fished during the season with the greatest number participating in any one period being 36. This was up slightly from last year when only 45 permit-holders participated.

The Kotzebue Sound salmon fishery is a set gill-net only fishery with each permit holder limited to 150 fathoms in aggregate length. Most fishermen operate their gear as a single unit tied to the beach and anchored offshore. The mesh size of choice was 5- 7/8 or 6 inch stretched measurement.

North Alaska Fisheries was the only buyer present and requested that openings be 12 hours and end at 6:00 pm to coincide with airline schedules. There were a total of 30 openings between July 12 and when they ceased buying operations on August 27. Total fishing time was 312 hours or 58% of the 540 hour long term average (Table1).

Chum salmon were assumed to average 8 lbs. and were not weighed. The buyer had used this weight during the last several years based on long term historic average weights of chum salmon in the fishery. An estimated 1,108,898 lbs. of chum salmon were purchased at \$.16 per pound. Eighty-seven pounds (average weight 17.4) of Chinook salmon were purchased at \$1.00 per pound and 11,352 pounds (average weight 7.6) of Dolly Varden were purchased at \$.20 per pound (Table 2). The total ex-vessel value of the fishery was \$179,781. This was an average \$2,996 per participating permit- holder. The fish were packed whole in ice and flown to Anchorage or Bethel for processing.

COMMERCIAL SEASON SUMMARY

Inseason Management

The management objectives for the Kotzebue District are to provide adequate chum salmon escapement through the commercial fishery to sustain the run and to provide for the subsistence needs of local users. Due to a lack of resources the only information available on which to base management decisions were the commercial fishery catch rates and the results of a test fishery conducted on the Kobuk River near Kiana.

The catch rates (catch per unit effort) in relation to historical averages were used as an indication of the total run strength. Short frequent openings and a low number of participants distributed in an atypical manner complicated this situation. In order to compare the 1999 catch and effort data with that of previous years, information from the 12-hour periods needed to be combined. Monday through Wednesday was considered as one period and Thursday and Friday to be another, for comparison as the historical two openings a week (Table 3).

A test fishery conducted on the Kobuk River for the seventh year provided the only in-season escapement information. Poor weather did not allow aerial surveys during the commercial fishery.

Scale samples were collected from the catch to determine the age composition. This provides an indication of the stage of the run, as older age groups tend to dominate the early portion of the run, being replaced by the younger age classes as the run progresses.

Season Narrative

The season was opened on July 12 by emergency order with 12-hour openings from 6 am till 6 PM on Monday, Tuesday, Thursday, and Friday. During the first opening nobody participated and participation was limited to a maximum of four through July 20th. As expected the five and six year classes that make up the majority of the early part of the run were in very low abundance. The Kobuk River test fish CPUE was very low indicating poor escapement and the fishery was not opened again until July 28th. Test fishing conducted during the closure indicated average run strength by July 26th.

At the peak of the season, between July 30 and August 11, the buyer only had the shipping capacity to buy every other day. On August 16, the buyer requested that the openings be increased to five days per week. As the catch per fisherman was above the historical average and the maximum number of fishermen participating to that date was a low number (36), the requested change was implemented (Figure 1). Five days per week fishing continued until August 27 when buying operations ceased. The catch per effort relative to historical averages were high and test fish catches on the Kobuk River were the second highest since the project began in 1993 indicating that the run was stronger and that the potential harvest may not have been realized (Table 4).

The age structure of the commercial catch was much different than the historic average, being dominated by four-year-olds throughout the season (Table 5, Figure 2). The age structure accounts for the weak early return and the typical four-year-old peak.

Subsistence Salmon Fishery

The Subsistence Division will conduct surveys in October and November to determine the subsistence harvest. No other information on harvest is available at this time other than comments that catches were good to excellent.

Season Overview

The 1999 season was unusual not only in the low participation rate but also in the distribution of the effort. Rather than going to areas to maximize their catch fishermen concentrated their efforts near town to minimize their expenditure on fuel which at \$3.00 a gallon is a major consideration. The fishery appears to have caught a greater number of fish bound for the Kobuk River as the age structure of the Noatak test fish sample was somewhat different than those collected in the commercial fishery. Commercial fishing was concentrated on the Kobuk side of the district.

The age structure of the commercial chum salmon catch showed the vast majority were four-year-old fish. This would explain the very short duration of the run.

The value of the catch to the fishermen was \$179,781. This represents 26% of the \$694,292 historical average (Table 6). The average harvest value for the 60 permits that participated was \$2,996. It should be noted however that the top ten fishermen caught 42% of the fish. Further decline in participation can be expected due to the ever-increasing costs of gear, equipment, and fuel unless prices paid to the fishermen improve.

ESCAPEMENT

A test fish project located just downstream from the village of Kiana monitored escapement into the Kobuk River. The test fish index of 1,357 was the second highest in the seven years the project has been in operation (Table 4). This is graphically presented in Figure 3. The 1996 test fishery index

is not shown, as the index was almost twice that of any other year of the project. The index in the lowest year, 1993, was 494. Aerial surveys indicated that escapement was adequate in 1993. Due to lack of staffing no escapement monitoring was conducted on the Noatak River in 1999.

Aerial surveys were conducted on the Tutuksuk, Salmon, and Squirrel Rivers on August 18 under relatively good conditions. Counts were 2,906, 4,989, and 13,513 chum salmon, respectively. It was felt that the survey was well before the peak as very few fish were spawning and no carcasses were observed. Escapements were judged to be within the Biological Escapement Goal (BEG) ranges.

The upper Kobuk River was flown on August 28th and again by a second observer on August 30th. Counts were 21,319 live and 1,189 dead by one observer and 25,140 live and 2,200 dead by the second. These surveys were also thought to be prior to peak abundance. Observations were judged to be roughly twice the BEG for this index area.

The Noatak River was flown on August 31st under relatively poor conditions and prior to peak abundance. 84,055 live and 30 dead chum salmon were observed. After August 31st rain caused severe turbidity. In general escapement numbers and distribution were judged to be good. Observations indicated the escapement to be within the BEG range.

DOLLY VARDEN

Spawning and overwintering Dolly Varden (locally called trout) typically migrate along the northern shore of Kotzebue Sound during the third week of August. Even with a reduced number of fishers and a concentration of their effort near town, the incidental catch of trout was average. There were 1,502 Dolly Varden sold with an average weight of 7.6 pounds. The majority of the catch occurred from August 23 to 27, the normal time and the last five days of the 1999 commercial fishery.

FRESHWATER 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. There was no reported commercial harvest of whitefish, pike, or burbot during the 1999 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. One fisher reported selling 254 sheefish from November 21, 1998 to December 24, 1998. The average weight was 9.4 pounds per fish and the total weight was reported as 2,400 pounds. The average price was \$0.43 per pound, for a total value of \$1,032.

2000 OUTLOOK

The outlook for the 2000 season is based on the returning age classes of the 1999 season. During the 2000 season, the four and six-year old component of the return is expected to be below average, while the five-year old component is expected to be above average. The three-year old component is generally small, and it too is likely to be near average. The commercial harvest is expected to fall within the range of 200,000 to 300,000 chum salmon, if market conditions can accept that level of harvest.

Table 1. Kotzebue District chum salmon catch statistics 1962-1998 and 1999.

Year	Total Catch	Total Days ^a	Boat Days ^b	Catch/Boat Day	Number Fisherman ^c	Season Catch per Fisherman
1962	129,948	21.0	793	164	84	1,547
1963	54,445	20.0	693	79	61	893
1964	76,449	27.0	560	137	52	1,470
1965	40,025	32.0	410	98	45	889
1966	30,764	35.0	548	56	44	699
1967	29,400	33.0	556	53	30	980
1968	30,212	34.0	858	35	59	512
1969	59,335	40.0	798	74	52	1,141
1970	159,664	32.0	1,368	117	82	1,947
1971	154,956	29.0	1,468	106	91	1,703
1972	169,664	35.0	2,095	81	104	1,631
1973	375,432	25.0	2,217	169	148	2,537
1974 ^d	627,912	32.0	3,769	167	185	3,394
1975 ^e	563,345	39.0	4,301	131	267	2,110
1976	159,796	16.0	2,236	71	220	726
1977	195,895	21.0	2,353	83	224	875
1978	111,494	23.0	2,738	41	208	536
1979	141,623	21.0	2,462	58	181	782
1980	367,284	27.0	2,559	144	176	2,087
1981	677,239	27.0	3,336	203	187	3,622
1982	417,790	23.5	3,115	134	199	2,099
1983	175,762	12.5	1,557	113	189	930
1984	320,206	19.5	2,432	132	181	1,769
1985	521,406	25.5	3,376	154	189	2,759
1986	261,436	15.5	2,049	128	187	1,398
1987	109,467	11.5	1,160	94	160	684
1988	352,915	21.5	2,761	128	193	1,829
1989	254,617	22.2	1,961	130	165	1,543
1990	163,263	11.5	1,760	93	153	1,067
1991	239,923	22.5	1,795	134	142	1,690
1992	289,184	17.0	1,513	191	149	1,941
1993 ^f	73,071	7.0	431	170	114	641
1994 ^g	153,452	9.8	426	360	109	1,408
1995	290,730	9.7	282	1031	92	3,160
1996 ^h	82,110	6.0	76	1080	55	1,493
1997	142,720	16.5	330	432	68	2,099
1998	55,907	13.0	187	300	45	1,242
Average	217,807	22.5	1,658	186	132	1,563
1999	138,605	12.0	212	654	60	2,310

a Day = 24 hours of open fishing time.

b Boat days standardized in 1983 for all prior years. Boat days = number of boats fishing times period length in hours divided by 24. Total boat days = total season boat hours divided by 24.

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

d Includes 6,567 chum salmon from the Deering experimental fishery.

e Includes 10,704 chum salmon from the Deering experimental fishery.

f Includes 2,000 chum salmon from the Sikusuilaq springs Hatchery terminal fishery.

g Includes 4,000 chum salmon commercially caught but not sold on July 29.

h Includes 2,200 chum salmon commercially caught but not sold on July 29.

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Table 2. Commercial catches of chum salmon, chinook salmon, and Dolly Varden by standard period in the Kotzebue District, 1999.

Period	Date	Hours Fished	Number of Fishermen	Catch Rate (chum)	Chum			Chinook			Dolly Varden		
					Number	Pounds	Avg. Wt.	Number	Pounds	Avg. Wt.	Number	Pounds	Avg. Wt.
1	12-Jul-99	12	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
2	13-Jul-99	12	1	21.0	252	2,016	8.0	0	0	0.0	0	0	0.0
3	15-Jul-99	12	4	12.7	611	4,888	8.0	0	0	0.0	0	0	0.0
4	16-Jul-99	12	3	11.0	395	3,160	8.0	0	0	0.0	0	0	0.0
5	19-Jul-99	12	2	7.9	189	1,512	8.0	0	0	0.0	0	0	0.0
6	20-Jul-99	12	3	10.6	383	3,064	8.0	0	0	0.0	0	0	0.0
7	7/22/1999 ^a	5	2	25.8	258	2,064	8.0	0	0	0.0	0	0	0.0
8	7/23/1999 ^a	5	1	1.8	9	72	8.0	0	0	0.0	0	0	0.0
9	7/24/1999 ^a	1	0.67	120.9	81	648	8.0	0	0	0.0	0	0	0.0
10	7/26/1999 ^a	1	0.67	249.3	167	1,336	8.0	0	0	0.0	0	0	0.0
11	28-Jul-99	12	20	55.8	13,398	107,184	8.0	1	7	7.0	1	6	6.0
12	29-Jul-99	12	15	20.3	3,659	29,272	8.0	0	0	0.0	2	16	8.0
13	30-Jul-99	12	23	29.0	7,999	63,992	8.0	0	0	0.0	2	16	8.0
14	2-Aug-99	12	28	45.5	15,303	122,424	8.0	1	22	0.0	8	55	6.9
15	4-Aug-99	12	27	31.5	10,202	81,616	8.0	0	0	0.0	1	10	10.0
16	6-Aug-99	12	36	33.8	14,589	116,762	8.0	1	10	10.0	8	73	9.1
17	9-Aug-99	12	33	44.1	17,483	139,864	8.0	0	0	0.0	22	167	7.6
18	11-Aug-99	12	34	25.0	10,210	81,680	8.0	0	0	0.0	2	15	7.5
19	12-Aug-99	12	25	27.8	8,346	66,768	8.0	1	41	41.0	8	63	7.9
20	13-Aug-99	12	20	30.3	7,271	58,168	8.0	0	0	0.0	2	14	7.0
21	16-Aug-99	12	23	32.0	8,836	70,688	8.0	0	0	0.0	11	90	8.2
22	17-Aug-99	12	28	21.7	7,287	58,296	8.0	0	0	0.0	13	95	7.3
23	18-Aug-99	12	23	15.8	4,356	34,848	8.0	0	0	0.0	9	86	9.6
24	19-Aug-99	12	5	16.6	997	7,976	8.0	0	0	0.0	5	28	5.6
25	20-Aug-99	12	14	5.2	871	6,968	8.0	0	0	0.0	8	62	7.8
26	23-Aug-99	12	15	11.7	2,104	16,840	8.0	0	0	0.0	106	830	7.8
27	24-Aug-99	12	11	10.4	1,369	10,952	8.0	0	0	0.0	105	741	7.1
28	25-Aug-99	12	12	5.0	722	5,776	8.0	0	0	0.0	239	1,675	7.0
29	26-Aug-99	12	9	5.5	594	4,752	8.0	1	7	7.0	401	3,071	7.7
30	27-Aug-99	12	10	9.8	1,179	9,432	8.0	0	0	0.0	549	4,239	7.7
Totals		324	60		139,120	1,113,018	8.0	5	80	16.0	1,502	11,352	7.6

^a Test fish catches not sold

^b Fishing 100 rather than 150 fathoms of gear

Table 3. Commercial catches of chum salmon, chinook salmon, and Dolly Varden by period in the Kotzebue District, 1999.

Period	Date	Hours Fished	Number of Fishermen	Chum			Chinook			Dolly Varden		
				Number	Pounds	Avg. Wt.	Number	Pounds	Avg. Wt.	Number	Pounds	Avg. Wt.
1	7/12-7/13	24	0.5	252	2,016	8	0	0	0	0	0	0
2	7/15-7/16	24	3.5	1,006	8,048	8	0	0	0	0	0	0
3	7/19-7/20	24	2.5	572	4,576	8	0	0	0	0	0	0
4	7/22-7/26	12	1.22 ^a	515	4,120	8	0	0	0	0	0	0
5	7/28	12	20	13,398	107,184	8	1	7	7	1	6	6
6	7/29-7/30	24	19	11,658	93,264	8	0	0	0	4	32	8
7	8/2,8/4	24	27.5	25,505	204,040	8	1	22	22	9	65	7.2
8	8/6/99	12	36	14,589	116,762	8	1	10	10	8	73	9.1
9	8/9-8/11	24	33.5	27,693	221,544	8	0	0	0	24	182	7.6
10	8/12-8/13	24	22.5	15,617	124,936	8	1	41	41	10	77	7.7
11	8/16-8/18	36	24.67	20,479	163,832	8	0	0	0	33	271	8.2
12	8/19-8/20	24	9.5	1,868	14,944	8	0	0	0	13	90	6.9
13	8/23-8/25	36	12.67	4,195	33,568	8	0	0	0	450	3,246	7.2
14	8/26-8/27	24	9.5	1,773	14,184	8	1	7	7	950	7,310	7.7
15	^b											
Totals		324	60	139,120	1,113,018	8	5	87	17.4	1,502	11,352	7.6

^a Test fish catch not sold

^b No harvest reported

Table 4. Kobuk River chum salmon drift test fish mean daily and cumulative CPUE, 1993-1999.

Date	1993		1994		1995		1996		1997		1998		1999	
	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.	Daily	Cum.
10-Jul							15	27.77	0	5.85	5.22	5.22		
11-Jul							98.38	126.15	5.31	11.16	0.85	6.07	0	0
12-Jul	11.18	11.18			0	0	45.54	171.69	7.19	18.35	^a	6.07	0	0
13-Jul	14.22	25.4	0	0	0.93	0.93	74.29	245.98	^a	18.35	15.89	21.96	0	0
14-Jul	20.57	45.97	2.68	2.68	2.80	3.73	^a	245.98	6.25	24.60	7.53	29.49	0	0
15-Jul	35.08	81.05	2.58	5.26	2.77	6.5	83.75	329.73	3.65	28.25	14.07	43.56	0	0
16-Jul	13.19	94.24	11.35	16.61	^a	6.50	71.35	401.08	14.28	42.53	17.33	60.89	0	0
17-Jul	17.27	111.51	^a	16.61	0	6.50	55.49	456.57	15.17	57.7	5.07	65.96	4.26	4.26
18-Jul	^a	111.51	7.16	23.77	1.81	8.31	89.86	546.43	16.12	73.82	9.02	74.98	8.48	12.74
19-Jul	10.71	122.22	12.4	36.17	9.89	18.20	54.74	601.17	17.98	91.8	^a	74.98	5.89	18.63
20-Jul	2.76	124.98	3.65	39.82	16.3	34.50	63.7	664.87	^a	91.8	18.66	93.64	5.11	23.74
21-Jul	3.2	128.18	7.30	47.12	38.54	73.04	52.12	716.99	18.53	110.33	11.87	105.51	23.75	47.49
22-Jul	5.52	133.7	3.56	50.68	21.18	94.22	50.97	767.96	13.28	123.61	0	105.51	11.91	59.40
23-Jul	27.15	160.85	16.49	67.17	50.58	144.8	91.36	859.32	10.79	134.4	29.58	135.09	6.09	65.49
24-Jul	9.06	169.91	^a	67.17	28.46	173.26	91.89	951.21	22.86	157.26	27.33	162.42	24.95	90.44
25-Jul	^a	169.91	14.38	81.55	40.16	213.42	76.80	1,028.01	21.57	178.83	24.68	187.1	28.73	119.17
26-Jul	15.22	185.13	47.65	129.2	35.15	248.57	55.68	1,083.69	14.66	193.49	^a	187.1	39.72	158.89
27-Jul	8.06	193.19	40.66	169.86	63.94	312.51	29.79	1,113.48	18.46	211.95	23.91	211.01	80.39	239.28
28-Jul	16.36	209.55	57.83	227.69	62.49	375.00	49.06	1,162.54	30.53	242.48	51.91	262.92		239.28
29-Jul	0.93	210.48	33.62	261.31	46.11	421.11	70.13	1,232.67	28.13	270.61	34.16	297.08	55.00	294.28
30-Jul	0.92	211.4	69.21	330.52	57.86	478.97	35.29	1,267.96	22.33	292.94	24.59	321.67	49.66	343.94
31-Jul	12.58	223.98	^a	330.52	29.89	508.86	82.27	1,350.23	32.57	325.51	15.69	337.36	160.53	504.47
1-Aug	^a	223.98	82.16	412.68	72.91	581.77	167.67	1,517.90	41.41	366.92	25.44	362.8	145.02	649.49
2-Aug	6.74	230.72	65.12	477.80	48.71	630.48	62.02	1,579.92	22.41	389.33	^a	362.8	41.67	691.16
3-Aug	54.49	285.21	71.79	549.59	48.40	678.88	48.70	1,628.62	35.21	424.54	26.67	389.47	33.19	724.35
4-Aug	44.23	329.44	108.98	658.57	53.00	731.88	65.93	1,694.55	26.67	451.21	42.35	431.82	74.23	798.58
5-Aug	89.3	418.74	59.74	718.31	49.95	781.83	60.33	1,754.88	24.47	475.68	8.57	440.39	108.04	906.62
6-Aug	18.6	437.34	102.56	820.87	^a	781.83	80.47	1,835.35	42.25	517.93	6.00	446.39	82.79	989.41
7-Aug	20.52	457.86	^a	820.87	46.39	828.22	90.99	1,926.34	36.00	553.93	5.11	451.50	82.73	1,072.14
8-Aug	^a	457.86	62.75	883.62	44.02	872.24	146.94	2,073.28	45.07	599.00	16.40	467.90	^a	1,072.14
9-Aug	1.84	459.7	96.86	980.48	68.22	940.46	106.11	2,179.39	55.14	654.14	17.20	485.10	55.58	1,127.72
10-Aug	12.63	472.33	45.83	1,026.31	56.33	996.79	56.95	2,236.34	^a	654.14	9.46	494.56	44.73	1,172.45
11-Aug	18.11	490.44	57.02	1,083.33	37.95	1,034.74	^a	2,236.34	43.45	697.59	10.29	504.85	58.13	1,230.58
12-Aug	3.74	494.18	90.54	1,173.87	63.92	1,098.66	72.29	2,308.63	37.36	734.95	19.44	524.29	48.50	1,279.08
13-Aug			11.36	1,185.23	^a	1,098.66	114.63	2,423.26	45.93	780.88	10.21	534.50	78.37	1,357.45
14-Aug			^a	1,185.23	29.35	1,128.01	158.13	2,581.39	16.01	796.89	3.85	538.35		
15-Aug			5.13	1,190.36	25.26	1,153.27					0	538.35		
16-Aug			16.23	1,206.59	35.04	1,188.31								

^a No test fishing on this date

Table 5. Historical average age composition by period for the recent 20 years (1979-1998) and 1999.

20 Year Average		Percent				Catch by Age				Cumulative Percent			
Period	Catch	3	4	5	6	3	4	5	6	3.0	4.0	5.0	6.0
1	3,028	0.4	32.6	61.0	6.5	12	987	1,847	197	0.4	32.6	61.0	6.5
2	5,130	0.8	38.7	54.0	6.0	41	1,985	2,770	308	0.7	36.4	56.6	6.2
3	9,620	1.3	40.0	52.3	6.5	125	3,848	5,031	625	1.0	38.4	54.3	6.4
4	17,028	1.2	48.5	45.8	4.5	204	8,259	7,799	766	1.1	43.3	50.1	5.4
5	20,826	1.3	46.7	46.2	5.6	271	9,726	9,622	1,166	1.2	44.6	48.7	5.5
6	27,583	1.9	52.6	41.7	3.5	524	14,509	11,502	965	1.4	47.2	46.4	4.8
7	32,901	2.8	56.8	37.3	3.1	921	18,688	12,272	1,020	1.8	50.0	43.8	4.3
8	35,904	4.1	59.4	33.1	2.9	1,472	21,327	11,884	1,041	2.3	52.2	41.3	4.0
9	34,507	5.2	59.4	32.7	3.0	1,794	20,497	11,284	1,035	2.9	53.5	39.7	3.8
10	38,928	5.8	62.0	30.3	2.0	2,258	24,135	11,795	779	3.4	55.0	38.1	3.5
11	22,572	10.7	63.8	23.5	1.5	2,415	14,401	5,304	339	4.0	55.8	36.7	3.3
12	13,865	11.6	59.2	26.6	2.2	1,608	8,208	3,688	305	4.4	56.0	36.2	3.3
13	9,473	9.9	61.5	26.3	2.3	938	5,826	2,491	218	4.6	56.2	35.9	3.2
14	6,825	9.4	61.3	28.0	1.3	642	4,184	1,911	89	4.8	56.3	35.7	3.2
15	3,020	5.1	66.0	27.1	1.5	154	1,993	818	45	4.8	56.4	35.6	3.2

Kotzebue Sound commercial catch and age composition, 1999.

		Percent				Catch by Age				Cumulative Percent			
Period	Catch	3	4	5	6	3	4	5	6	3.0	4.0	5.0	6.0
1	252	0.0	84.5	13.8	1.7	0	213	35	4	0.0	84.5	13.8	1.7
2	1,006	0.8	76.2	22.6	0.4	8	767	227	4	0.6	77.9	20.8	0.7
3	572	0.9	83.0	15.2	0.4	5	475	87	2	0.7	79.5	19.1	0.6
4	348	0.4	88.8	8.4	2.4	1	309	29	8	0.7	81.0	17.4	0.9
5	13,398	0.0	85.2	11.8	2.3	0	11,415	1,581	308	0.1	84.6	12.6	2.1
6	11,658	0.0	89.7	9.5	0.8	0	10,457	1,108	93	0.1	86.8	11.3	1.5
7	25,505	0.8	85.2	13.7	0.4	204	21,730	3,494	102	0.4	86.0	12.4	1.0
8	14,589	0.0	89.0	9.1	0.4	0	12,984	1,328	58	0.3	86.7	11.7	0.9
9	27,693	0.8	92.9	6.0	0.0	222	25,727	1,662	0	0.5	88.5	10.1	0.6
10	15,617	0.8	84.6	14.2	0.4	125	13,212	2,218	62	0.5	87.9	10.6	0.6
11	20,479	0.8	85.5	11.6	2.0	164	17,510	2,376	410	0.6	87.6	10.8	0.8
12	1,868	2.3	90.6	7.0	0.0	43	1,692	131	0	0.6	87.6	10.7	0.8
13	4,195	4.1	89.2	6.6	0.0	172	3,742	277	0	0.7	87.6	10.6	0.8
14	1,773	3.1	83.1	12.0	1.3	55	1,473	213	23	0.7	87.6	10.6	0.8
15 ^a										0.7	87.6	10.6	0.8

^a No harvest reported on this date

Table 6. Kotzebue District Commercial Fishery Dollar Value Estimates, 1962-1998 and 1999.^a

Year	Gross Value of Catch to Fishermen
1962	\$4,500
1963	\$9,140
1964	\$34,660
1965	\$18,000
1966	\$25,000
1967	\$28,700
1968	\$46,000
1969	\$71,000
1970	\$186,000
1971 ^b	\$200,000
1972 ^c	\$260,000
1973	\$925,000
1974	\$1,822,784
1975	\$1,365,648
1976	\$580,375
1977	\$1,033,950
1978	\$575,260
1979	\$990,263
1980	\$1,446,633
1981	\$3,246,793
1982	\$1,961,518
1983	\$420,736
1984	\$1,148,884
1985	\$2,137,368
1986	\$931,241
1987	\$515,000
1988	\$2,581,333
1989	\$613,823
1990	\$438,044
1991	\$437,948
1992	\$533,731
1993 ^d	\$235,061
1994	\$233,512
1995	\$316,031
1996	\$56,310
1997	\$187,978
1998	\$70,587
Average	\$694,292
1999 ^e	\$179,781

^a Some estimates between 1962 and 1981 include only include chum value which in figures 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 Includes \$9,193 from the experimental commercial fishery at Deering.

^c Includes \$17,776 from the experimental commercial fishery at Deering.

^d Includes \$3,648 from Sikusuilaq Springs Hatchery terminal fishery.

^e Preliminary data includes chum salmon chinook salmon and char.

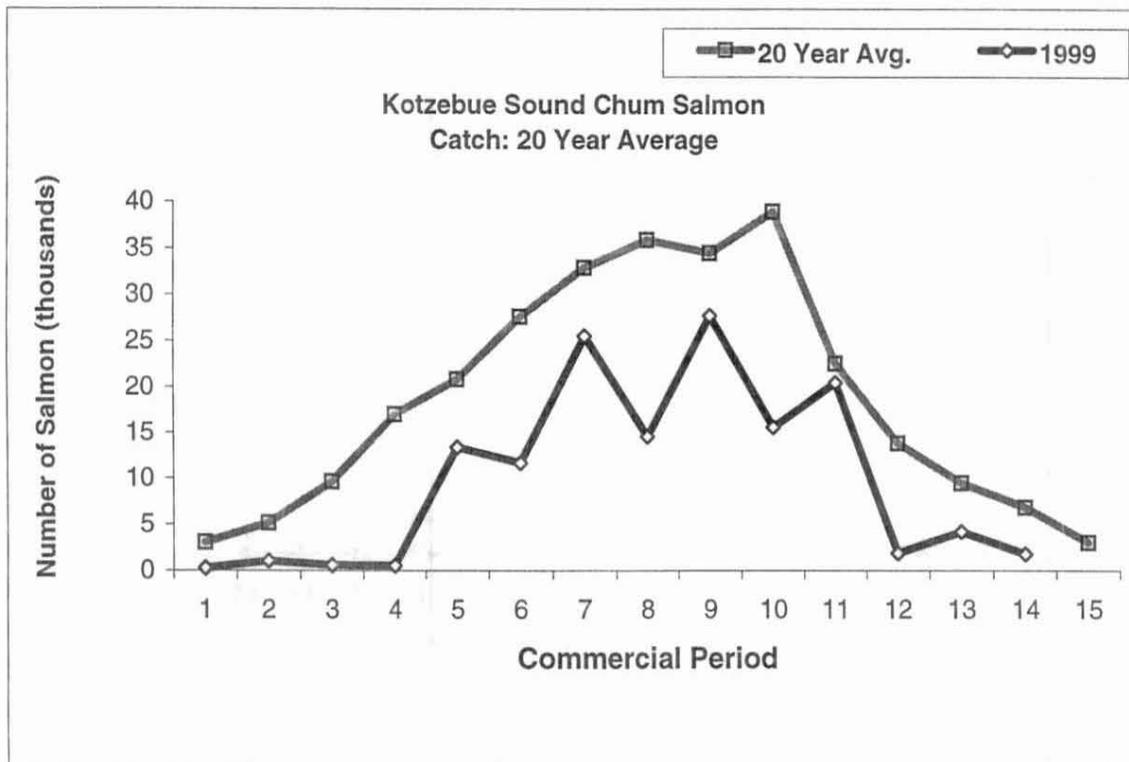
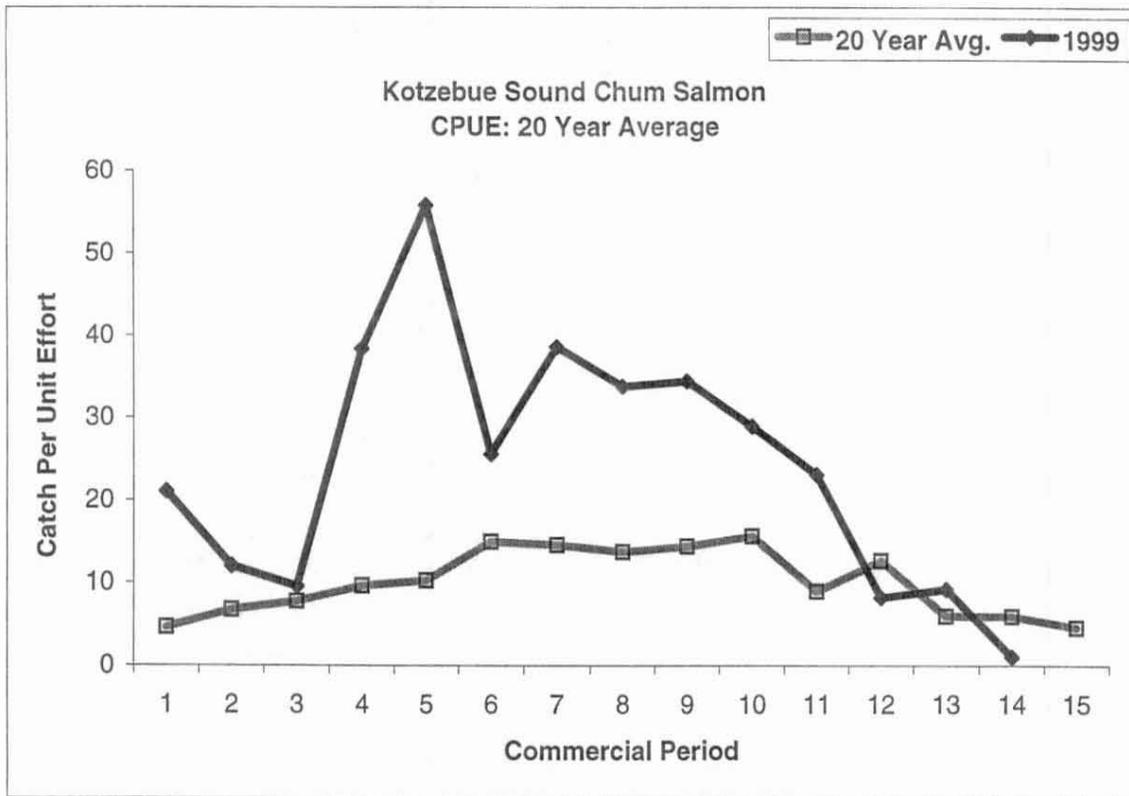


Figure 1. Kotzebue Sound commercial chum salmon catch (lower figure) and CPUE (upper figure) for 1999 vs historic average.

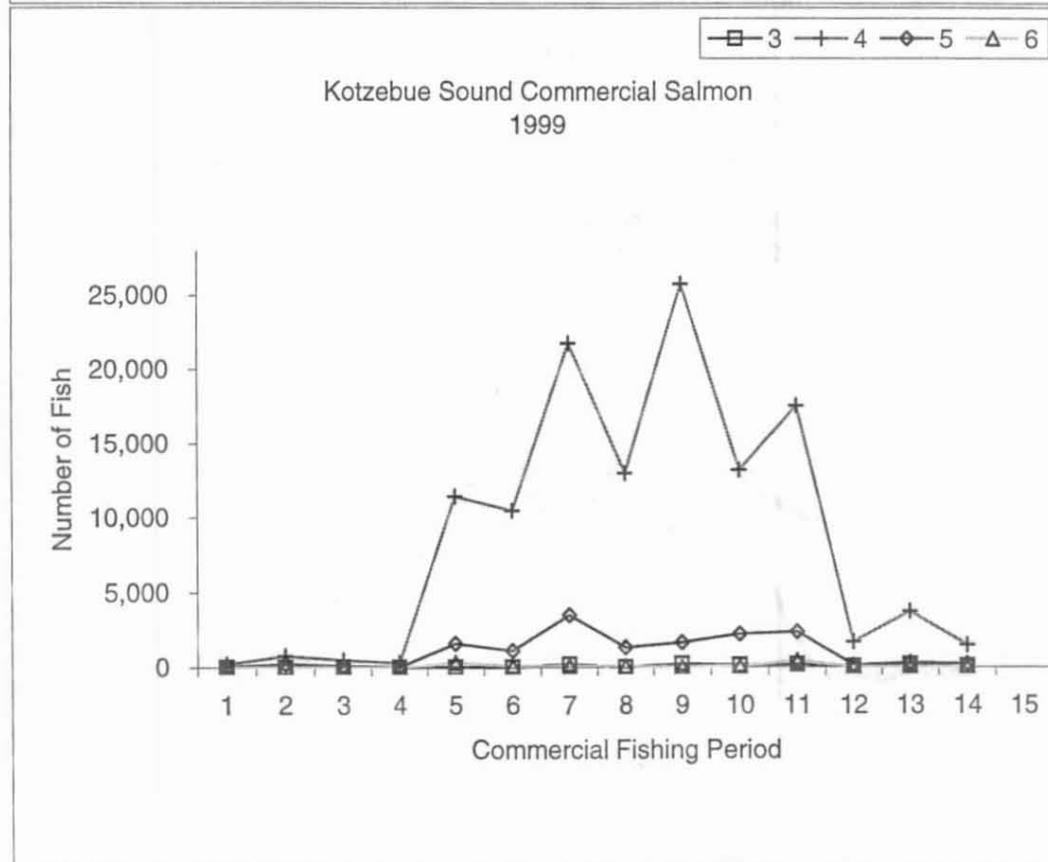
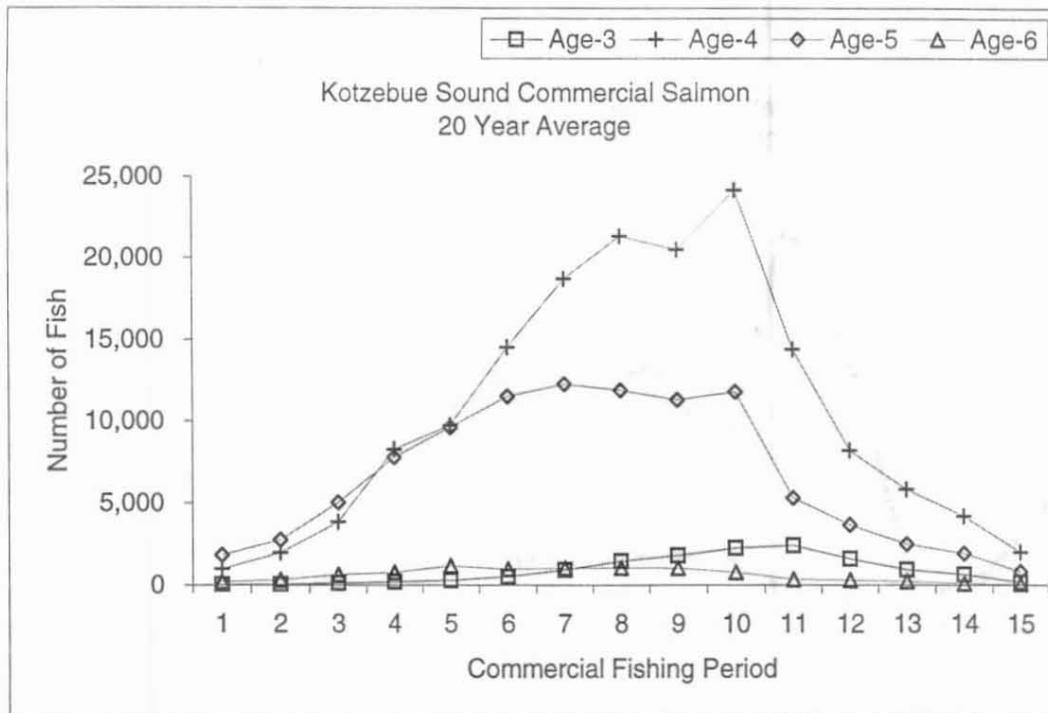


Figure 2. Kotzebue Sound chum salmon historic age composition (20 year average) by fishing period (upper figure) and 1999 age composition by fishing period (lower figure).

Figure 3. Kobuk River chum salmon test fishing cumulative CPUE, 1993-1999.

