HOOPER BAY SUBSISTENCE SALMON MONITORING PROJECT, 2003

By

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And

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OEO/ADA STATEMENT

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ABSTRACT

Yukon Area includes all waters of Alaska within the Yukon River drainage and all coastal waters of Alaska from Point Romanof southward to the Naskonat Peninsula. Because of its location south of the Yukon River, subsistence harvest information from Hooper Bay was investigated as a potential indicator of run strength and timing before chinook and summer chum salmon enter the Yukon River. During the 2003 monitoring season, 208 interviews were conducted. Catch, time fished, gillnet length and mesh size information were collected. A total of 254 chinook and 859 summer chum salmon were harvested during the monitoring period. The average chinook salmon catch per day was eleven for fishers using large mesh gear, and the average chum salmon catch was 36 fish per day for chum gear. The mid-point of the Hooper Bay chinook salmon subsistence fishery occurred eight days before the Alaska Department of Fish and Game Big Eddy set gillnet test fishing mid-point. For summer chum salmon, fifteen days intervened between the mid-point of the Hooper Bay subsistence fishery and Big Eddy test fishing nets. Four years of data from the Hooper Bay subsistence-monitoring project shows little or no relationship between timing and magnitude of the subsistence catch of chinook and summer chum salmon at Hooper Bay and the Big Eddy test fish project in the Lower Yukon River. Therefore, this project was not a useful tool for fishery managers trying to get an early read on the timing and magnitude of salmon runs returning to the Lower Yukon River.

KEY WORDS: Hooper Bay, chinook salmon, subsistence fishery, Big Eddy, test fishing, gillnet, Yukon River, Point Romanof, Naskonat Peninsula

INTRODUCTION

From its headwaters in Marsh Lake, British Columbia (Thorsteinson et al. 1989), the Yukon River flows approximately 3,701 kilometers (km) to the Bering Sea coast in western Alaska. Yukon Area includes all waters of Alaska within the Yukon River drainage and coastal waters from Point Romanof, located northeast of Kotlik, and south to Naskonat Peninsula (Borba and Hamner 1999 and ADFG 1999). Five species of Pacific salmon are found in the Yukon River drainage: chinook salmon *Oncorhynchus tshawytscha*, chum salmon *O. keta*, coho salmon *O. kisutch*, pink salmon *O. gorbuscha*, and sockeye salmon *O. nerka*. Chinook and chum salmon provide most subsistence, personal use, commercial and sport fish harvests for Yukon Area communities.

For management purposes, the Yukon Area is divided into seven districts (Figure 1). The three management areas in the Lower Yukon Area are Districts 1, 2, and 3. The Upper Yukon Area includes Districts 4, 5 and 6 (ADFG 1999). The Alaskan portion of the Yukon River drainage and the boundary of the management area terminate at the Canadian border.

The Coastal District includes coastal marine waters within the Yukon Area. Several rural communities are located within the Coastal Management Area and within the lower portions of the Yukon River drainage. Residents of these communities are primarily Yupik Eskimo, who have historically fished for salmon in nearshore marine waters.

The Hooper Bay salmon subsistence monitoring report has been written annually (Raymond *et. al.* 2001; Lingnau 2002a, 2002b). This report presents information gathered during the 2003 field season.

Community of Hooper Bay

Hooper Bay is a large community situated on the northwest shore of Hooper Bay. It is located approximately 241 km northwest of Bethel and 145 km south of the southern most mouth of the Yukon River (Figure 1). The prominent geographical features in the area are Hooper Bay and the isolated coastal Askinuk Mountains located 24 km north of the village. The elevation of land in this area ranges from low-lying marshes at sea level to 610 m at the Askinuk Mountains. The area around Hooper Bay is drained by several rivers systems including the Kokechik, Kashunuk, Keolivik, Aphrewn, and Manokinak rivers (Stickney 1984).

Hooper Bay, with a population of approximately 1,100 residents, is the largest community in the Yukon-Kuskokwim Delta after Bethel. Hooper Bay has a subsistence-based economy and functions as the hub for smaller nearby villages. Subsistence salmon fishing activities in the bay occur from late May through mid-July. Historically, residents annually harvest salmon stocks that originate from the Yukon River system and other areas. A Bering Sea Fishermen's Association tagging study conducted in 1986 identified the residents of Hooper Bay primarily

harvest Yukon Area chum and pink salmon stocks, (Borba and Hamner 1999), but also harvest Kotzebue and Norton Sound chum salmon stocks (Kerkvliet 1986).

Alaska Department of Fish and Game Projects

Since 1992, the Alaska Department of Fish and Game (ADF&G) has conducted annual subsistence surveys in the Hooper Bay area (Borba and Hamner 1999). Fishery managers have periodically collected inseason catch reports from Hooper Bay residents, and although helpful, inseason data from Hooper Bay has not been collected on a consistent basis.

Currently, ADF&G employs a variety of methods to determine returning salmon run strength and timing in the Yukon River. These methods include drift and set gillnet test fishing projects, sonar assessment projects, tower, and weir counting projects, and commercial and subsistence fishery catch rate information. However, these projects only provide information on salmon passage after the fish enter the mouth of the Yukon River. Because of recent declines in Yukon River chinook and summer chum salmon returns, ADF&G is interested in collecting salmon run strength and run timing information before the salmon enter the mouth of the Yukon River.

Project Design

This project was initiated to help fishery managers better assess Yukon River chinook and summer chum salmon runs early in their migration by inseason monitoring of the subsistence salmon fishery at Hooper Bay. Managers hoped that if there were a good relationship between the timing and magnitude of the runs at Hooper Bay and the Big Eddy test fish project, then this early information would be a useful tool for management of fisheries in the Lower Yukon River.

METHODS

During the 2003 summer season, a Hooper Bay Traditional Council technician collected daily salmon catch and effort data from subsistence salmon fishers in the Hooper Bay area (Appendix A.1). Data were collected from May 30 through June 22 during the chinook and summer chum salmon migration. Subsistence fishers were interviewed about their daily catch by species, net length, mesh size, and time fished. Each technician contacted fishers at the small boat harbor or on the beach as they returned from fishing.

Catch Effort Calculation

Catch per unit effort (CPUE) calculations were completed for each interview and compiled into an Excel spreadsheet. Daily catch rates were calculated and compared to the Big Eddy chinook and summer chum salmon test fishing indices. Because of the different methods of collecting run strength and run timing information, i.e. set gillnets and drift gillnets, different formulas were used to calculate catch rate indices. The goal of this project was to determine if Hooper Bay subsistence harvest information could be used to project the run strength of salmon returning to the Yukon River. Therefore, the emphasis was on comparing trends between the Hooper Bay and Big Eddy test fishing projects, not to compare calculated CPUE indices from each project.

Index values (I) used in ADF&G test fishing projects the following catch per unit effort equation.

$$I = \frac{6{,}000\ (c)}{(l)\ (t)}$$

The number 6,000 is a constant and is the number of fish that would have been caught if a net of 100 fathoms was fished for 60 minutes, c denotes salmon catch, l is the length of net in fathoms, and t equals mean time fished in minutes (Lingnau 1997).

Chinook and summer chum salmon harvest information from Hooper Bay was separated by mesh size. Catch information from mesh sizes greater than 6.5 inches were used for chinook catch rates. Mesh sizes less than or equal to 6.5 inches provided data for summer chum salmon catch rates. Assembled data were reported daily to the ADF&G office in Emmonak. Collected data from the Hooper Bay subsistence-monitoring project were compared qualitatively with the existing lower Yukon River set gillnet test fishing daily and cumulative CPUE. Chinook salmon data from large mesh gillnets at Hooper Bay were compared to chinook salmon data from 8.5-inch mesh set gillnets at the Big Eddy test fishery. Summer chum salmon data from small mesh gillnet at Hooper Bay were compared to the summer chum salmon data from 5.5-inch drift gillnets at the Big Eddy test fishery.

RESULTS

From May 30 to June 22, 2003, two hundred eight subsistence salmon catch survey interviews were conducted in Hooper Bay (Appendix A.2). Subsistence fishers primarily used set gillnets to harvest chinook and summer chum salmon. Fishers used nets of varying lengths (10 fathoms to 50 fathoms), and assorted mesh sizes (4.0 inches to 8.0 inches). The total inseason reported harvest by Hooper Bay subsistence fisherman was 254 chinook salmon and 859 summer chum salmon. Results are broken down by gear type below.

Chinook Salmon

Chinook salmon, in 2003, were harvested using nets that averaged 27 fathoms in length with a mean mesh size of 7 inches. Total time fished using chinook gear was 102,000 minutes (1,700 hours) (Table 1). The mean chinook salmon catch per day fished was eleven fish. The cumulative CPUE was 1.35. Average number of fishers per day using chinook salmon gear was six: average fishing time was 12 hours per fisherman. The highest single-day catch was 74 chinook salmon on June 1.

A comparison of the timing of the chinook salmon run at Hooper Bay and the Big Eddy test fishing project showed the run was about 8 days earlier at Hooper Bay. Cumulative CPUE for chinook salmon at the Hooper Bay subsistence fishery was 1.35 and the cumulative CPUE for the Big Eddy test fish project was 27.05 (Tables 2 and 3).

No age, sex, or length data were collected from chinook salmon catches in Hooper Bay in 2003.

Summer Chum Salmon

On June 4, subsistence fishers using chum gear harvested 137 chum salmon, the highest single day harvest during the monitoring period. The highest daily CPUE was 2.00 occurring on May 31. Cumulative CPUE was 12.86 (Table 1). Most Hooper Bay subsistence fishers harvested summer chum salmon using a 25-fathom net with 5.75 inch mesh. Fishers fished for a total of 47,520 minutes (792 hours) (Table 1). The mean chum salmon catch was 36 fish per day. The average number of fishers using summer chum salmon gear per day was three with an average fishing time of 12 hours per fisherman.

A comparison of the midpoints of the summer chum salmon runs at Hooper Bay and the Big Eddy test fishing project showed the run was about 15 days earlier at Hooper Bay (Tables 4 and 5). Cumulative CPUE for summer chum salmon at the Hooper Bay subsistence fishery was 12.85 and cumulative CPUE for the Big Eddy test fish project was 2,642.95.

No age, sex, or length data were collected from summer chum salmon catches in Hooper Bay in 2003.

DISCUSSION

Four years of data from the Hooper Bay subsistence-monitoring project show little or no relationship between the timing and magnitude of the subsistence catch of chinook and summer chum salmon at Hooper Bay and the Big Eddy test fish project in the Lower Yukon River (Table 6, Figures 2-3).

This discrepancy may be influenced by changes in prevailing winds. Hooper Bay residents report winds have a significant effect on the efficiency of their harvest, especially for chinook salmon. Prevailing winds either push fish to shore; where they can be captured in local subsistence nets or push them offshore where they cannot be caught.

Another reason why this subsistence fishery was not a good indicator for returns of chinook and summer chum salmon to the Yukon River is that once fishers have taken their catch, they pull their nets. Inconsistent fishing effort makes this project a poor tool for fishery managers.

Comparing the cumulative CPUE for each location (Tables 2-5), run strength at Big Eddy in 2002 was nearly twice that of 2001. However, the 2002 Hooper Bay index indicated a run, which was half as strong as 2001. The chinook salmon index at Hooper Bay in 2002 indicated a run near the 2000 level; most likely the poorest run ever observed. Big Eddy indicated a more robust run than 2000. Had managers used the data provided by the Hooper Bay subsistence monitoring project, both chinook and summer chum salmon runs would have been misread, leading to erroneous management decisions.

Since the catchability of salmon in the Hooper Bay subsistence fishery varies with shifts in prevailing winds and fishing effort is not constant, this project was not a useful tool for fishery managers trying to get an early read on the timing and magnitude of the salmon runs returning to the Lower Yukon River. For these reasons, the department recommends this project be discontinued.

LITERATURE CITED

ADFG. 1999. Annual Management Report Yukon Area, 1998. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A99-26. Anchorage. 256pp.

Borba, B.M., and H.H. Hamner. 1999. Subsistence and Personal Use Salmon Harvest Estimates Yukon Area, 1999. Alaska Department Fish and Game, Division of Commercial Fisheries, Regional Information Report 3A00-23. Anchorage. 111pp.

Clutter, R. I., and L.W. Whitesel. 1956. Collection and interpretation of sockeye salmon scales. Bulletin of the International Pacific Salmon Fisheries Commission 9. Vancouver, British Columbia.

Kerkvliet, C.M. 1986. Hooper Bay Salmon Tagging Study. Bering Sea Fishermen's Association. Anchorage, Alaska.

Lingnau, T.L. 1997. Kobuk River Test Fishing Project, 1997. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A97-38. Anchorage.

Lingnau, T.L. 2002a. Hooper Bay Subsistence Salmon Monitoring Project, 2001. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A02-10. Anchorage.

Lingnau, T.L. 2002b. Hooper Bay Subsistence Salmon Monitoring Project, 2002. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A02-47 Anchorage.

Raymond, R.L., Vania, T.D., Lingnau, T.L. 2001. Hooper Bay Subsistence Salmon Monitoring Project, 2000. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report No. 3A01-04. Anchorage.

Stickney, A. 1984. Coastal Ecology and Wild Resource Use in the Central Bering Sea Area: Hooper Bay and Kwigillingok. Alaska Department of Fish and Game. Technical Paper No. 85. 370 pp.

Thorstein, L.K. P.R. Becker, and D.A. Hale. 1989. The Yukon Delta: A Synthesis of Information. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service. Anchorage. 89pp

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Table 1. Hooper Bay chinook and summer chum salmon subsistence catch per unit effort, and associated catch date, 2003.

	Chinook Salmon (mesh size >6.5")						Summer Chum Salmon (mesh size <=6.5")					
Date	Fished (minutes)	No. of Fishers	No. of Fish	Total Fathoms	CPUE	Cum. CPUE	Fished (minutes)	No. of Fishers	No. of Fish	Total Fathoms	CPUE	Cum. CPUE
25-May												
26-May												
27-May												
28-May												
29-May												
30-May	2,640	4	9	110	0.19	0.19	2,160	3	14	100	0.39	0.39
31-May	4,800	7	14	155	0.11	0.30	720	1	12	50	2.00	2.39
1-Jun	11,520	16	74	353	0.11	0.41	2,880	4	60	113	1.11	3.50
2-Jun	8,640	12	28	255	0.08	0.48	4,200	6	68	145	0.67	4.17
3-Jun	7,320	10	20	345	0.05	0.53	1,800	3	7	60	0.39	4.55
4-Jun	15,120	22	54	525	0.04	0.57	6,000	7	137	210	0.65	5.21
5-Jun	3,960	6	8	160	0.08	0.65	0	0	0	0		5.21
6-Jun	5,520	10	2	275	0.01	0.66	1,200	2	11	35	1.57	6.78
7-Jun	5,640	7	8	275	0.03	0.69	4,440	7	53	275	0.26	7.04
8-Jun	3,360	5	1	135	0.01	0.70	0	0	0	0		7.04
9-Jun	7,560	11	4	275	0.01	0.71	3,240	5	43	125	0.64	7.68
10-Jun	5,040	7	5	175	0.03	0.75	720	1	0	25	0.00	7.68
11-Jun	4,320	6	5	250	0.03	0.77	0	0	0	0		7.68
12-Jun	4,320	6	2	150	0.02	0.79	0	0	0	0		7.68
13-Jun	0	0	0	0		0.79	0	0	0	0		7.68
14-Jun	5,040	7	14	225	0.07	0.87	2,160	3	22	75	0.81	8.49
15-Jun	0	0	0	0		0.87	0	0	0	0		8.49
16-Jun	1,440	2	3	50	0.25	1.12	0	0	0	0		8.49
17-Jun	1,440	1	1	25	0.17	1.28	7,920	7	355	175	1.54	10.03
18-Jun	2,160	3	2	80	0.07	1.35	2,160	3	14	75	0.52	10.55
19-Jun	0	0	0	0		1.35	2,160	3	29	75	1.07	11.62
20-Jun	2,160	3	0	75	0.00	1.35	2,880	4	25	85	0.61	12.23
21-Jun	0	0	0	0		1.35	2,160	3	8	75	0.30	12.53
22-Jun	0	0	0	0		1.35	720	1	1	25	0.33	12.86
23-Jun												
24-Jun												
25-Jun												
26-Jun												
27-Jun												
28-Jun												
29-Jun												
30-Jun												
1-Jul												
2-Jul												
3-Jul												
4-Jul												
5-Jul												
6-Jul												
7-Jul												
8-Jul												
9-Jul												
10-Jul												
11-Jul												
12-Jul												
13-Jul												
14-Jul												
15-Jul												
Total	102,000		254	3,893	1.35		47,520		859	1,723	12.86	

Table 2. Hooper Bay chinook salmon set gillnet subsistence daily and cumulative CPUE, and cumulative proportions, 2000-2003.

	2000			2001			2002			2003		
	Daily CPUE	Cum. CPUE	Cum. Prop.	Daily CPUE	Cum. CPUE	Cum. Prop.	Daily CPUE	Cum. CPUE	Cum. Prop.	Daily CPUE	Cum. CPUE	Cum. Prop.
25-May												
26-May												
27-May												
28-May							0.00	0.00	0.00			
29-May							0.13	0.13	0.13			
30-May							0.25	0.38	0.39	0.19	0.19	0.14
31-May							0.18	0.56	0.57	0.11	0.30	0.22
1-Jun							0.03	0.60	0.60	0.11	0.41	0.30
2-Jun				0.76	0.76	0.05	0.03	0.63	0.63	0.08	0.48	0.36
3-Jun					0.76	0.05	0.02	0.65	0.66	0.05	0.53	0.39
4-Jun				0.42	1.18	0.08	0.01	0.66	0.67	0.04	0.57	0.42
5-Jun				0.33	1.51	0.11	0.01	0.68	0.68	0.08	0.65	0.48
6-Jun				1.03	2.54	0.18	0.03	0.70	0.71	0.01	0.66	0.49
7-Jun				1.71	4.24	0.30	0.04	0.74	0.75	0.03	0.69	0.51
8-Jun	0.18	0.18	0.29	1.12	5.36	0.38	0.03	0.78	0.78	0.01	0.70	0.52
9-Jun	0.04	0.21	0.35	0.38	5.74	0.41	0.02	0.80	0.81	0.01	0.71	0.53
10-Jun	0.00	0.21	0.35	0.92	6.65	0.48	0.01	0.80	0.81	0.03	0.75	0.55
11-Jun	0.02	0.24	0.39	0.83	7.49	0.54		0.80	0.81	0.03	0.77	0.57
12-Jun	0.01	0.24	0.40	0.70	8.19	0.59	0.00	0.80	0.81	0.02	0.79	0.59
13-Jun	0.01	0.25	0.42	0.60	8.78	0.63	0.00	0.80	0.81		0.79	0.59
14-Jun	0.01	0.27	0.44	0.08	8.87	0.63		0.80	0.81	0.07	0.87	0.64
15-Jun	0.01	0.28	0.46	0.32	9.18	0.66	0.17	0.97	0.98		0.87	0.64
16-Jun	0.02	0.30	0.49	0.96	10.14	0.72		0.97	0.98	0.25	1.12	0.83
17-Jun	0.00	0.30	0.49	1.21	11.35	0.81	0.00	0.97	0.98	0.17	1.28	0.95
18-Jun	0.02	0.32	0.53	0.30	11.65	0.83		0.97	0.98	0.07	1.35	1.00
19-Jun	0.01	0.33	0.55	0.63	12.27	0.88	0.00	0.97	0.98			
20-Jun	0.02	0.35	0.59	1.30	13.57	0.97	0.02	0.99	1.00			
21-Jun	0.02	0.37	0.61	0.42	13.99	1.00						
22-Jun	0.05	0.42	0.70									
23-Jun	0.00	0.42	0.70									
24-Jun		0.42	0.70									
25-Jun		0.42	0.70									
26-Jun	0.00	0.42	0.70									
27-Jun	0.00	0.42	0.70									
28-Jun	0.18	0.60	1.00									
29-Jun	0.00	0.60	1.00									
30-Jun	0.00	0.60	1.00									
1-Jul		0.60	1.00									
2-Jul	0.00	0.60	1.00									
3-Jul												
4-Jul												
5-Jul												
6-Jul												
7-Jul												
8-Jul												
9-Jul												
10-Jul												
11-Jul												
12-Jul												
13-Jul												
14-Jul												
15-Jul												

Table 3. Big Eddy chinook salmon set gillnet test fish daily and cumulative CPUE, and cumulative proportic

	2000			2001			2002		
	Daily CPUE	Cum. CPUE	Cum. Prop.	Daily CPUE	Cum. CPUE	Cum. Prop.	Daily CPUE	Cum. CPUE	Cum. Prop.
25-May									
26-May									
27-May									
28-May									
29-May							0.00	0.00	0.00
30-May							0.00	0.00	0.00
31-May							0.00	0.00	0.00
1-Jun							0.13	0.13	0.01
2-Jun							0.13	0.25	0.01
3-Jun	0.00	0.00		0.00	0.00		0.33	0.58	0.02
4-Jun	0.06	0.06		0.00	0.00		0.33	0.92	0.04
5-Jun	0.08	0.14		0.00	0.00		0.33	1.25	0.05
6-Jun	0.17	0.31		0.00	0.00		0.63	1.88	0.08
7-Jun	0.13	0.44		0.00	0.00		0.54	2.42	0.10
8-Jun	0.04	0.48		0.19	0.19	0.02	0.25	2.67	0.11
9-Jun	0.10	0.58	0.04	0.35	0.54	0.05	0.46	3.13	0.13
10-Jun	0.33	0.91	0.06	0.21	0.75	0.06	0.50	3.63	0.15
11-Jun	0.10	1.01	0.06	0.33	1.08	0.09	0.54	4.17	0.17
12-Jun	0.08	1.09	0.07	0.56	1.64	0.14	1.00	5.17	0.21
13-Jun	0.15	1.24	0.08	0.67	2.31	0.20	1.58	6.75	0.27
14-Jun	0.15	1.39	0.08	0.83	3.14	0.27	1.46	8.21	0.33
15-Jun	0.08	1.47	0.09	0.31	3.45	0.30	1.17	9.38	0.38
16-Jun	0.19	1.66	0.10	0.21	3.66	0.32	0.92	10.29	0.41
17-Jun	0.21	1.87	0.11	0.17	3.83	0.33	1.75	12.04	0.48
18-Jun	1.54	3.41	0.21	0.04	3.87	0.34	1.04	13.08	0.53
19-Jun	1.23	4.64	0.28	0.13	4.00	0.35	0.46	13.54	0.54
20-Jun	0.63	5.27	0.32	0.10	4.10	0.36	1.42	14.96	0.60
21-Jun	0.25	5.52	0.34	1.04	5.14	0.45	1.17	16.13	0.65
22-Jun	0.40	5.92	0.36	0.50	5.64	0.49	0.79	16.92	0.68
23-Jun	0.35	6.27	0.38	1.19	6.83	0.59	1.00	17.92	0.72
24-Jun	0.21	6.48	0.40	1.13	7.96	0.69	1.00	18.92	0.76
25-Jun	1.17	7.65	0.47	0.77	8.73	0.76	1.04	19.96	0.80
26-Jun	2.19	9.84	0.60	0.46	9.19	0.80	0.75	20.71	0.83
27-Jun	0.67	10.51	0.64	0.71	9.90	0.86	0.29	21.00	0.84
28-Jun	0.69	11.20	0.68	0.21	10.11	0.88	0.08	21.08	0.85
29-Jun	0.56	11.76	0.72	0.06	10.17	0.88	0.29	21.38	0.86
30-Jun	0.23	11.99	0.73	0.08	10.25	0.89	0.46	21.83	0.88
1-Jul	0.33	12.32	0.75	0.25	10.50	0.91	0.25	22.08	0.89
2-Jul	0.33	12.65	0.77	0.15	10.65	0.92	0.54	22.63	0.91
3-Jul	0.35	13.00	0.79	0.17	10.82	0.94	0.42	23.04	0.93
4-Jul	0.83	13.83	0.84	0.13	10.95	0.95	0.38	23.42	0.94
5-Jul	0.27	14.10	0.86	0.13	11.08	0.96	0.29	23.71	0.95
6-Jul	0.19	14.29	0.87	0.06	11.14	0.97	0.17	23.88	0.96
7-Jul	0.10	14.39	0.88	0.06	11.20	0.97	0.29	24.17	0.97
8-Jul	0.23	14.62	0.89	0.04	11.24	0.97	0.25	24.42	0.98
9-Jul	0.44	15.06	0.92	0.02	11.26	0.98	0.21	24.63	0.99
10-Jul	0.38	15.44	0.94	0.10	11.36	0.98	0.08	24.71	0.99
11-Jul	0.19	15.63	0.95	0.06	11.42	0.99	0.08	24.79	1.00
12-Jul	0.08	15.71	0.96	0.02	11.44	0.99	0.00	24.79	1.00
13-Jul	0.02	15.73	0.96	0.06	11.50	1.00	0.08	24.88	1.00
14-Jul	0.02	15.75	0.96	0.02	11.52	1.00	0.00	24.88	1.00
15-Jul	0.63	16.38	1.00	0.02	11.54	1.00	0.00	24.88	1.00

Table 4. Hooper Bay summer chum salmon set gillnet subsistence daily and cumulative CPUE, and cumulative proportions, 2000-2003.

	2000			2001			2002			2003		
	Daily CPUE	Cum. CPUE	Cum. Prop.	Daily CPUE	Cum. CPUE	Cum. Prop.	Daily CPUE	Cum. CPUE	Cum. Prop.	Daily CPUE	Cum. CPUE	Cum. Prop.
25-May							0.05	0.05	0.00			
26-May							0.00	0.05	0.00			
27-May							0.07	0.13	0.00			
28-May							39.02	39.15	0.40			
29-May							5.78	44.93	0.46			
30-May								44.93	0.46	0.39	0.39	0.03
31-May							32.52	77.45	0.80	2.00	2.39	0.19
1-Jun				0.36	0.36	0.00	0.37	77.82	0.80	1.10	3.49	0.27
2-Jun				3.33	3.69	0.02	1.09	78.90	0.81	0.67	4.16	0.32
3-Jun					3.69	0.02	1.80	80.70	0.83	0.39	4.55	0.35
4-Jun					3.69	0.02	0.76	81.46	0.84	0.65	5.20	0.40
5-Jun				3.90	7.59	0.05	0.41	81.86	0.84	0.00	5.20	0.40
6-Jun				3.27	10.85	0.07	0.32	82.19	0.85	1.57	6.77	0.53
7-Jun				4.12	14.97	0.09	1.05	83.24	0.86	0.26	7.03	0.55
8-Jun	0.21	0.21	0.01	3.67	18.64	0.11	0.73	83.97	0.86	0.00	7.03	0.55
9-Jun	0.33	0.55	0.03	3.55	22.19	0.14	0.87	84.84	0.87	0.64	7.67	0.60
10-Jun	1.70	2.24	0.11	58.74	80.94	0.50	0.20	85.05	0.88	0.00	7.67	0.60
11-Jun	0.42	2.66	0.13		80.94	0.50	0.01	85.06	0.88	0.00	7.67	0.60
12-Jun	0.85	3.51	0.18	9.29	90.22	0.55	0.16	85.22	0.88	0.00	7.67	0.60
13-Jun	0.46	3.97	0.20	6.11	96.33	0.59	0.19	85.40	0.88	0.00	7.67	0.60
14-Jun	0.92	4.89	0.25	4.85	101.19	0.62	0.23	85.64	0.88	0.81	8.48	0.66
15-Jun	0.37	5.25	0.26	1.84	103.03	0.63	0.41	86.04	0.89	0.00	8.48	0.66
16-Jun	1.56	6.82	0.34	1.25	104.28	0.64	0.10	86.14	0.89	0.00	8.48	0.66
17-Jun	0.59	7.41	0.37	1.74	106.02	0.65	0.04	86.18	0.89	1.54	10.02	0.78
18-Jun	1.75	9.16	0.46	1.01	107.04	0.65	0.06	86.25	0.89	0.52	10.54	0.82
19-Jun	0.82	9.98	0.50	1.02	108.06	0.66	0.04	86.28	0.89	1.07	11.61	0.90
20-Jun	1.03	11.01	0.55	3.23	111.29	0.68	0.14	86.42	0.89	0.61	12.22	0.95
21-Jun	2.18	13.19	0.66	1.38	112.67	0.69	0.04	86.47	0.89	0.30	12.52	0.97
22-Jun	0.43	13.63	0.68	9.66	122.33	0.75	0.00	86.47	0.89	0.33	12.85	1.00
23-Jun	0.50	14.12	0.71		122.33	0.75	0.05	86.52	0.89			
24-Jun	1.00	15.12	0.76		122.33	0.75	0.37	86.89	0.89			
25-Jun	2.29	17.41	0.87		122.33	0.75	0.40	87.28	0.90			
26-Jun	0.26	17.67	0.89	0.67	122.99	0.75		87.28	0.90			
27-Jun	0.00	17.67	0.89	0.31	123.30	0.75	0.20	87.49	0.90			
28-Jun	0.81	18.49	0.93	2.20	125.51	0.77	0.00	87.49	0.90			
29-Jun	0.35	18.84	0.94	2.79	128.30	0.78		87.49	0.90			
30-Jun	0.20	19.04	0.95	2.33	130.63	0.80		87.49	0.90			
1-Jul	0.59	19.63	0.98		130.63	0.80	1.67	89.15	0.92			
2-Jul	0.31	19.94	1.00		130.63	0.80		89.15	0.92			
3-Jul					130.63	0.80		89.15	0.92			
4-Jul					130.63	0.80		89.15	0.92			
5-Jul					130.63	0.80	1.54	90.70	0.93			
6-Jul				12.50	143.13	0.88	2.33	93.03	0.96			
7-Jul				8.24	151.37	0.93	2.17	95.20	0.98			
8-Jul				5.71	157.08	0.96	0.83	96.03	0.99			
9-Jul					157.08	0.96		96.03	0.99			
10-Jul				1.83	158.91	0.97		96.03	0.99			
11-Jul				0.98	159.90	0.98		96.03	0.99			
12-Jul				0.47	160.37	0.98		96.03	0.99			
13-Jul				1.67	162.04	0.99		96.03	0.99			
14-Jul				1.46	163.49	1.00	1.14	97.17	1.00			
15-Jul												

Table 5. Big Eddy summer chum salmon drift gillnet test fish daily and cumulative CPUE, and cumulative proportions.

	2000			2001			2002		
	Daily CPUE	Cum. CPUE	Cum. Prop.	Daily CPUE	Cum. CPUE	Cum. Prop.	Daily CPUE	Cum. CPUE	Cum. Prop.
25-May									
26-May									
27-May									
28-May									
29-May							0.00	0.00	0.00
30-May							15.14	15.14	0.00
31-May							4.51	19.65	0.00
1-Jun							2.97	22.62	0.01
2-Jun							1.50	24.12	0.01
3-Jun							7.78	31.90	0.01
4-Jun	0.00	0.00					0.00	31.90	0.01
5-Jun	0.04	0.04					10.72	42.62	0.01
6-Jun	0.08	0.12					19.92	62.54	0.01
7-Jun	0.04	0.16					6.01	68.55	0.02
8-Jun	0.08	0.24		0.00	0.00	0.00	3.00	71.55	0.02
9-Jun	0.83	1.07	0.06	1.67	1.67	0.00	4.54	76.09	0.02
10-Jun	2.08	3.15	0.16	0.00	1.67	0.00	0.55	76.64	0.02
11-Jun	0.54	3.69	0.19	0.00	1.67	0.00	51.14	127.78	0.03
12-Jun	0.38	4.07	0.21	4.62	6.29	0.00	690.07	817.85	0.19
13-Jun	0.17	4.24	0.22	67.39	73.68	0.02	224.56	1,042.41	0.24
14-Jun	0.17	4.41	0.23	399.89	473.57	0.16	45.53	1,087.94	0.25
15-Jun	0.13	4.54	0.24	173.74	647.31	0.22	30.09	1,118.03	0.26
16-Jun	0.21	4.75	0.25	81.84	729.15	0.25	108.19	1,226.22	0.28
17-Jun	0.13	4.88	0.26	53.76	782.91	0.27	17.40	1,243.62	0.29
18-Jun	1.50	6.38	0.33	24.99	807.90	0.27	175.79	1,419.41	0.33
19-Jun	1.63	8.01	0.42	16.88	824.78	0.28	145.90	1,565.31	0.36
20-Jun	0.92	8.93	0.47	16.47	841.25	0.28	229.91	1,795.22	0.42
21-Jun	0.25	9.18	0.48	155.84	997.09	0.34	824.15	2,619.37	0.61
22-Jun	0.21	9.39	0.49	128.38	1,125.47	0.38	90.01	2,709.38	0.63
23-Jun	0.29	9.68	0.51	295.84	1,421.31	0.48	297.44	3,006.82	0.70
24-Jun	0.21	9.89	0.52	454.59	1,875.90	0.64	323.98	3,330.80	0.77
25-Jun	1.08	10.97	0.57	166.57	2,042.47	0.69	117.00	3,447.80	0.80
26-Jun	1.71	12.68	0.66	201.25	2,243.72	0.76	14.87	3,462.67	0.80
27-Jun	0.71	13.39	0.70	355.55	2,599.27	0.88	23.16	3,485.83	0.81
28-Jun	0.54	13.93	0.73	78.44	2,677.71	0.91	86.55	3,572.38	0.83
29-Jun	0.75	14.68	0.77	23.43	2,701.14	0.91	303.83	3,876.21	0.90
30-Jun	0.29	14.97	0.78	121.44	2,822.58	0.96	78.64	3,954.85	0.92
1-Jul	0.08	15.05	0.79	40.17	2,862.75	0.97	70.80	4,025.65	0.93
2-Jul	0.50	15.55	0.81	16.57	2,879.32	0.97	52.03	4,077.68	0.94
3-Jul	0.25	15.80	0.83	17.26	2,896.58	0.98	164.92	4,242.60	0.98
4-Jul	1.17	16.97	0.89	25.95	2,922.53	0.99	9.10	4,251.70	0.99
5-Jul	0.38	17.35	0.91	9.21	2,931.74	0.99	4.78	4,256.48	0.99
6-Jul	0.00	17.35	0.91	9.20	2,940.94	1.00	23.16	4,279.64	0.99
7-Jul	0.25	17.60	0.92	3.08	2,944.02	1.00	6.12	4,285.76	0.99
8-Jul	0.54	18.14	0.95	7.82	2,951.84	1.00	0.00	4,285.76	0.99
9-Jul	0.46	18.60	0.97	0.00	2,951.84	1.00	9.23	4,294.99	1.00
10-Jul	0.17	18.77	0.98	0.00	2,951.84	1.00	4.74	4,299.73	1.00
11-Jul	0.08	18.85	0.99	1.50	2,953.34	1.00	1.67	4,301.40	1.00
12-Jul	0.08	18.93	0.99	0.00	2,953.34	1.00	9.73	4,311.13	1.00
13-Jul	0.04	18.97	0.99	0.00	2,953.34	1.00	3.20	4,314.33	1.00
14-Jul	0.00	18.97	0.99	0.00	2,953.34	1.00	1.67	4,316.00	1.00
15-Jul	0.13	19.10	1.00				0.00	4,316.00	1.00

Table 6. Annual Hooper Bay subsistance harvest and Big Eddy test fishing timing statistics for chinook and summer chum, 2000-2003. [a]

Year	Cumulative CPUE	First Quartile Day	Median Day	Third Quartile Day	Days Between Quartiles: First & Median	Median & Third	First & Third
Hooper Bay Subsistence Harvsest - chinook salmon							
2000	0.6	8-Jun	18-Jun	28-Jun	10	10	20
2001	46.1	7-Jun	11-Jun	17-Jun	4	6	10
2002	1.0	30-May	31-May	7-Jun	1	7	8
2003	1.4	1-Jun	7-Jun	16-Jun	6	9	15
Big Eddy Test Fish Set Gill Net Catch - chinook salmon							
2000	16.4	19-Jun	26-Jun	1-Jul	7	5	12
2001	11.5	14-Jun	23-Jun	25-Jun	9	2	11
2002	24.6	13-Jun	18-Jun	24-Jun	5	6	11
2003	24.6	10-Jun	15-Jun	24-Jun	5	9	14
Hooper Bay Subsistence Harvsest - summer chum salmon							
2000	19.9	15-Jun	19-Jun	24-Jun	4	5	9
2001	163.5	10-Jun	12-Jun	26-Jun	2	14	16
2002	97.2	28-May	31-May	31-May	3	0	3
2003	12.9	1-Jun	6-Jun	17-Jun	5	11	16
Big Eddy Test Fish Drift Gill Net Catch - summer chum salmon							
2000	19.1	16-Jun	23-Jun	29-Jun	7	6	13
2001	2,953.3	17-Jun	24-Jun	26-Jun	7	2	9
2002	4,284.1	14-Jun	21-Jun	24-Jun	7	3	10
2003	2635.02	13-Jun	21-Jun	30-Jun	8	9	17

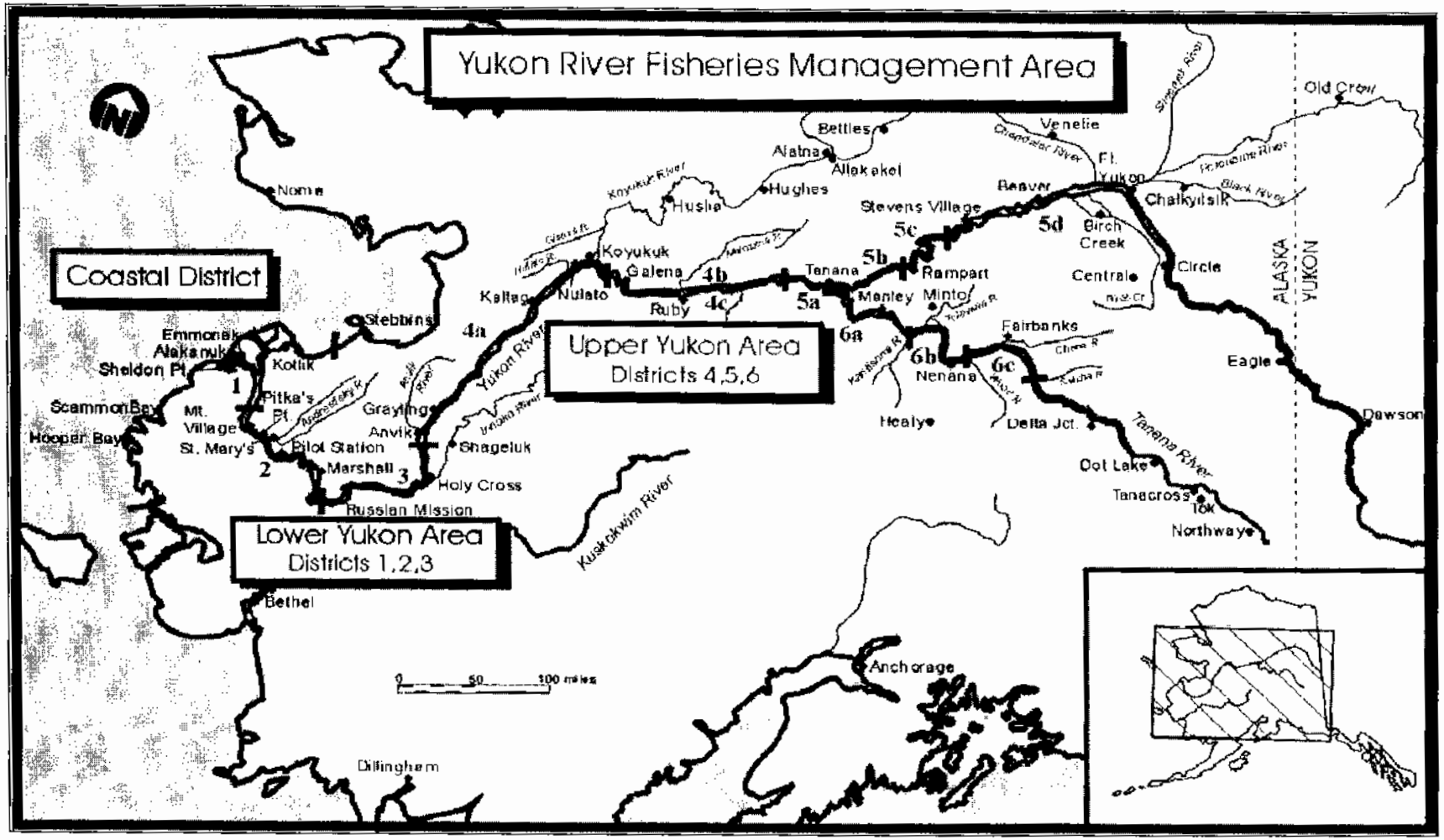
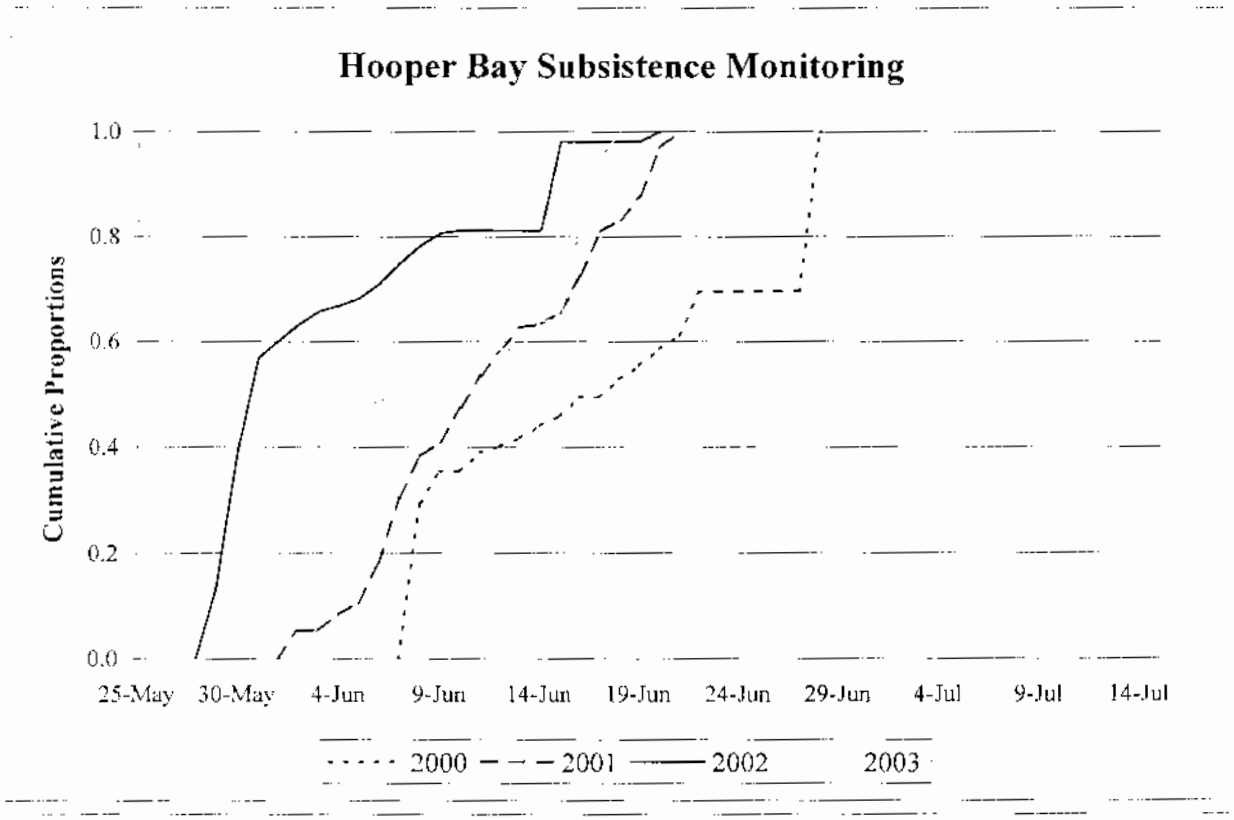


Figure 1. Alaska portion of the Yukon River drainage.



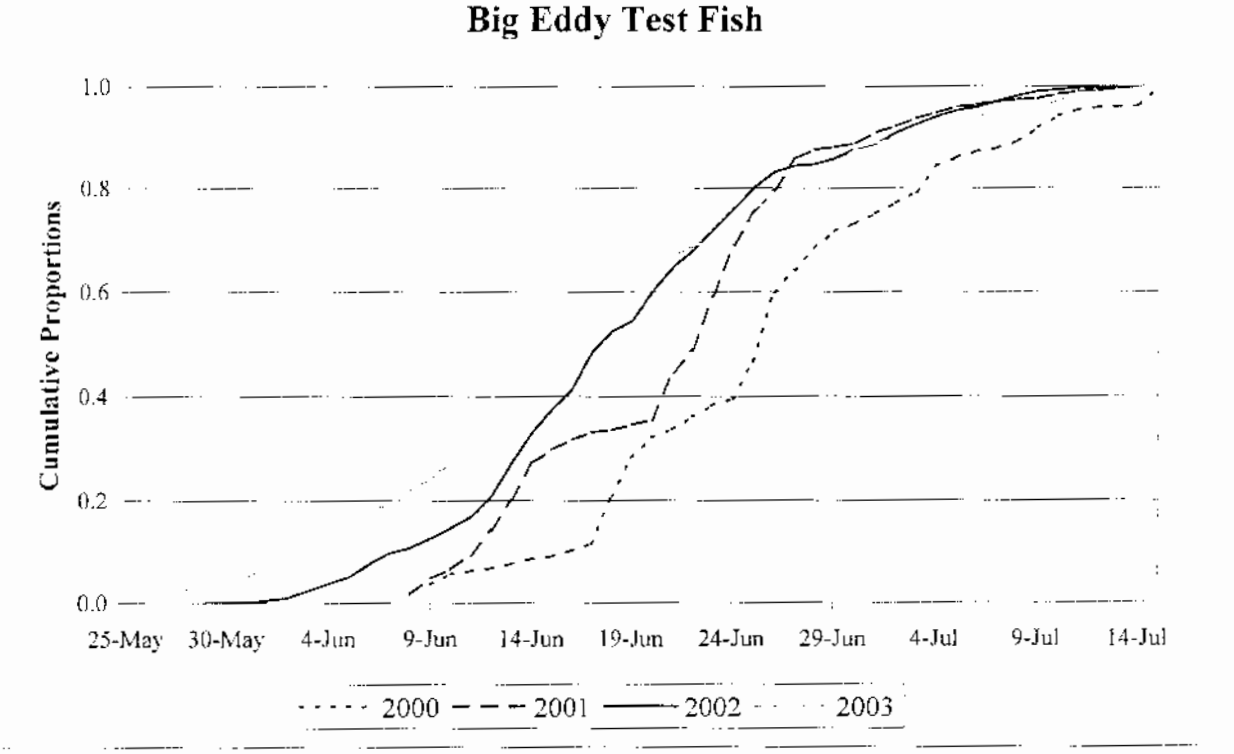
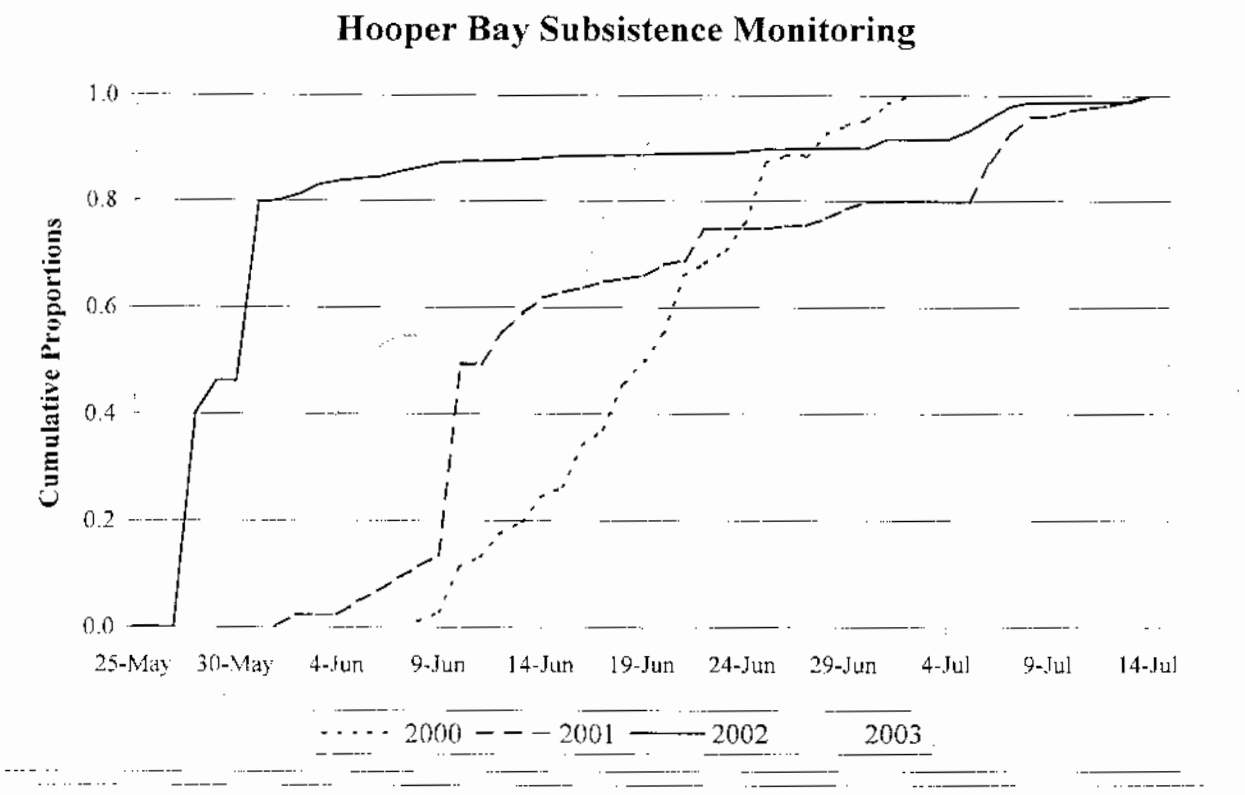


Figure 2. Comparison of cumulative proportions of chinook salmon catches at the Hooper Bay subsistence monitoring project and the Big Eddy test fish project, 2000-2003.



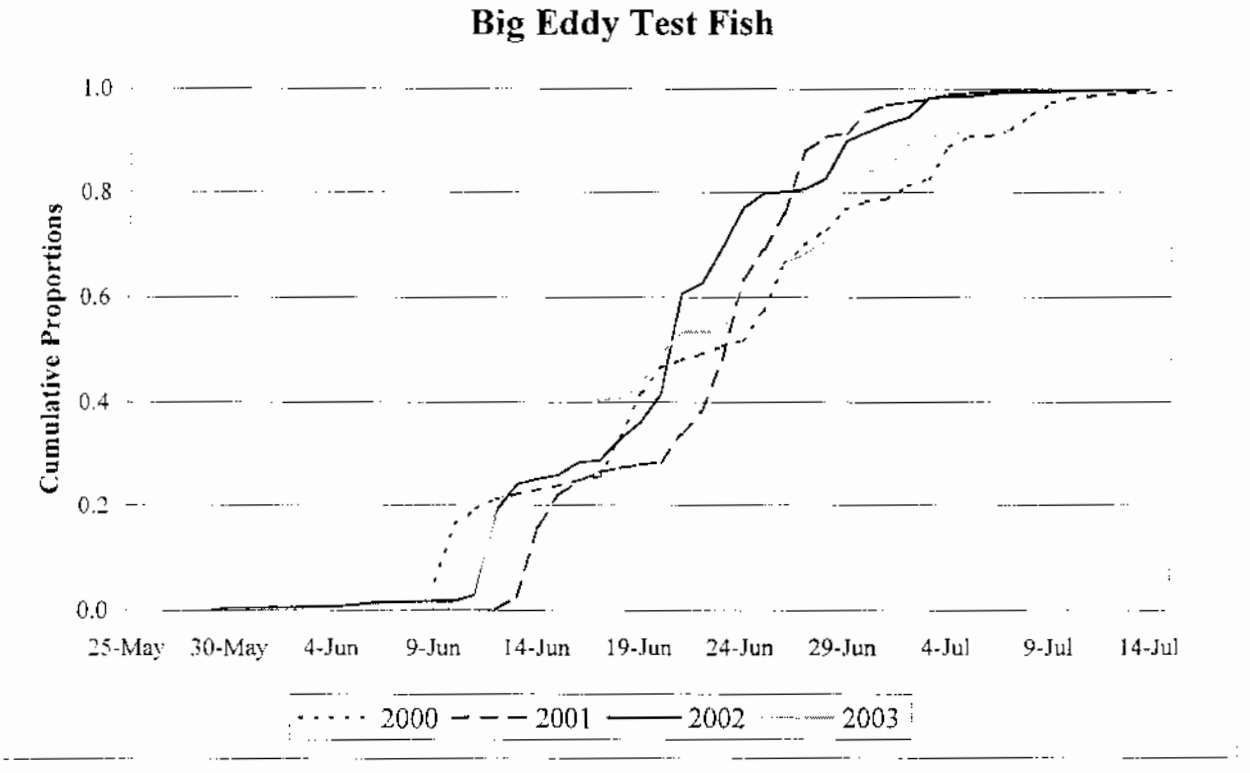


Figure 3. Comparison of cumulative proportions of summer chum salmon catches at the Hooper Bay subsistence monitoring project and the Big Eddy test fish project, 2000-2003.

Appendix A.1. Hooper Bay subsistence salmon catch survey form.

Hooper Bay Native Village Daily Subsistence Catch Form

Data collected

Date: _____ **by:** _____

Fished (one day per form) (please print name)

Fisherman	Time Fished (minutes)	Net Length (fathoms)	Mesh Size	Number of Kings	Number of Chum	King CPUE	Chum CPUE

Description of Subsistence Catch

Fishing for kings today was described as: ☐ Poor ☐ Fair ☐ Average ☐ Good ☐ Very Good

Fishing for chums today was described as: ☐ Poor ☐ Fair ☐ Average ☐ Good ☐ Very Good

Overall, fishermen have completed what percent of their subsistence harvest:

☐ 10% ☐ 25% ☐ 50% ☐ 75% ☐ 90% ☐ 100%

General Observations Describing Catch (eg. kings are increasing; good storm moving fish; poor tide)

Catch Per Unit Effort: 6,000 (c) / (l) (t) c = Catch t = Time l = Length

FAX DAILY To : 949-1830
Voice phone 949-1039

Appendix A.2. Hooper Bay subsistence salmon catch survey data, May 30 to June 22, 2003.

Entry	Day	Fisher	Time Fished (minutes)	Net Length (fathoms)	Mesh Size (inches)	Number Chinook	Number Chum	CPUE[a] Chinook	CPUE[a] Chum
1	30-May	James Hale	480	25	8.00	1	0	0.50	0.00
2	30-May	Clifford Lake	720	25	8.00	1	0	0.33	0.00
3	30-May	Teddy Smith	720	25	5.00	0	2	0.00	0.67
4	30-May	Ephrem Smith	720	25	4.38	1	2	0.33	0.67
5	30-May	William Naneng	720	50	5.00	0	10	0.00	1.67
6	30-May	John Mann	720	50	8.00	6	0	1.00	0.00
7	30-May	William Tinker	720	10	8.00	1	0	0.83	0.00
8	31-May	Harvey Hill	720	10	8.00	1	0	0.83	0.00
9	31-May	Mark Cervant	720	10	8.00	1	0	0.83	0.00
10	31-May	Clifford Lake	480	25	8.00	3	1	1.50	0.50
11	31-May	Carl Mann	720	50	8.00	6	0	1.00	0.00
12	31-May	Carl Mann	720	50	5.00	0	12	0.00	2.00
13	31-May	James Hale	720	25	8.00	0	2	0.00	0.67
14	31-May	Leonard Bell	720	25	8.00	2	0	0.67	0.00
15	31-May	William Tinker	720	10	8.00	1	0	0.83	0.00
16	1-Jun	Aaron Rivers	720	25	5.50	0	1	0.00	0.33
17	1-Jun	George Nanook	720	10	7.00	5	4	4.17	3.33
18	1-Jun	James Hale	720	25	8.00	3	3	1.00	1.00
19	1-Jun	Harvey Hill	720	10	8.00	3	3	2.50	2.50
20	1-Jun	Jack Slivermail	720	25	8.00	8	5	2.67	1.67
21	1-Jun	Teddy Smith	720	25	8.00	3	4	1.00	1.33
22	1-Jun	Ronald Bell	720	25	8.00	6	0	2.00	0.00
23	1-Jun	Leonard Bell	720	25	8.00	4	0	1.33	0.00
24	1-Jun	Clifford Lake	720	25	8.00	9	4	3.00	1.33
25	1-Jun	Ephrem Smith	720	25	4.25	6	23	2.00	7.67
26	1-Jun	William Naneng	720	50	5.00	3	30	0.50	5.00
27	1-Jun	Teddy Smith	720	25	8.00	0	3	0.00	1.00
28	1-Jun	Dennis Loveun	720	50	8.00	1	1	0.17	0.17
29	1-Jun	Ray Nodatah	720	25	8.00	3	0	1.00	0.00
30	1-Jun	William Tinker	720	10	8.00	6	1	5.00	0.83
31	1-Jun	Bob Smith	720	10	8.00	4	19	3.33	15.83
32	1-Jun	Blasé Tinker	720	25	8.00	6	1	2.00	0.33
33	1-Jun	Norman Pingayak	720	13	8.00	2	0	1.25	0.00
34	1-Jun	Norman Pingayak	720	13	6.50	0	6	0.00	3.75
35	1-Jun	Ben Knight Sr.	720	25	8.00	11	20	3.67	6.67
36	2-Jun	Jack Silvermail	720	25	8.00	4	3	1.33	1.00
37	2-Jun	Edgar H	720	25	8.00	2	0	0.67	0.00
38	2-Jun	Wilfred Bunyan	720	25	8.00	0	2	0.00	0.67
39	2-Jun	Mark Cervant	720	10	8.00	3	0	2.50	0.00
40	2-Jun	Clement M	720	25	8.00	2	3	0.67	1.00
41	2-Jun	James Hale	720	25	8.00	2	1	0.67	0.33
42	2-Jun	Blasé Tinker	720	25	8.00	3	1	1.00	0.33
43	2-Jun	George Nanook	720	10	7.00	5	0	4.17	0.00
44	2-Jun	Charley Johnson	720	25	8.00	2	0	0.67	0.00

Appendix A.2. Hooper Bay subsistence salmon catch survey data, May 30 to June 22, 2003.

Entry	Day	Fisher	Time Fished (minutes)	Net Length (fathoms)	Mesh Size (inches)	Number Chinook	Number Chum	CPUE[a] Chinook	CPUE[a] Chum
45	2-Jun	Teddy Smith	720	25	8.00	1	2	0.33	0.67
46	2-Jun	Victor Night	720	10	4.00	2	1	1.67	0.83
47	2-Jun	Aaron Rivers	720	25	5.50	2	1	0.67	0.33
48	2-Jun	Harvey Hill	720	10	8.00	1	4	0.83	3.33
49	2-Jun	Ben Knight Sr.	720	25	8.00	3	10	1.00	3.33
50	2-Jun	Bob Smith Sr.	720	10	4.25	3	12	2.50	10.00
51	2-Jun	James Hale	720	25	5.25	5	33	1.67	11.00
52	2-Jun	Ike Hill	720	25	5.25	2	7	0.67	2.33
53	2-Jun	George Andrew	600	50	5.25	1	14	0.20	2.80
54	3-Jun	Mark Cervant	1440	10	8.00	1	1	0.42	0.42
55	3-Jun	Aaron Rivers	600	25	5.50	0	1	0.00	0.40
56	3-Jun	Harvey Hill	600	50	8.00	2	0	0.40	0.00
57	3-Jun	Wilfred Bunyan	600	50	7.75	1	2	0.20	0.40
58	3-Jun	George Nanook	600	10	8.00	2	1	2.00	1.00
59	3-Jun	Teddy Smith	600	25	8.00	1	7	0.40	2.80
60	3-Jun	Victor Night	600	10	5.75	1	5	1.00	5.00
61	3-Jun	Aaron Rivers	600	25	5.50	0	1	0.00	0.40
62	3-Jun	Charley Johnson	600	25	8.00	0	1	0.00	0.40
63	3-Jun	Blasie Tinker	720	25	8.00	4	1	1.33	0.33
64	3-Jun	Donald Tall	720	50	8.00	6	0	1.00	0.00
65	3-Jun	Dennis Green	720	50	8.00	2	0	0.33	0.00
66	3-Jun	Ulrich Simon	720	50	8.00	1	2	0.17	0.33
67	4-Jun	Harvey Hill	600	10	8.00	1	24	1.00	24.00
68	4-Jun	George Nanook	600	10	8.00	2	1	2.00	1.00
69	4-Jun	Morris ?	1440	50	6.25	6	40	0.50	3.33
70	4-Jun	Dennis Green	600	50	8.00	2	2	0.40	0.40
71	4-Jun	Clarence Smith	1440	25	5.50	3	0	0.50	0.00
72	4-Jun	Victor Night	600	25	5.25	1	7	0.40	2.80
73	4-Jun	James Hale	600	50	8.00	1	3	0.20	0.60
74	4-Jun	Aaron Rivers	600	25	5.25	2	44	0.80	17.60
75	4-Jun	Jack Silvermail	720	10	8.00	2	4	1.67	3.33
76	4-Jun	Ernid Green	720	25	8.00	0	3	0.00	1.00
77	4-Jun	Michael Murran	720	10	7.00	2	3	1.67	2.50
78	4-Jun	Bob Smith	720	10	5.75	2	16	1.67	13.33
79	4-Jun	Paul M	720	25	7.75	0	16	0.00	5.33
80	4-Jun	William Tinker	720	25	8.00	3	1	1.00	0.33
81	4-Jun	Geroge M	720	50	5.25	4	28	0.67	4.67
82	4-Jun	Donald Tall	720	25	8.00	1	20	0.33	6.67
83	4-Jun	Jack Slivermail	720	25	8.00	2	7	0.67	2.33
84	4-Jun	Paul Kaiser	720	25	7.75	0	1	0.00	0.33
85	4-Jun	Ephrem Smith	720	25	8.00	2	20	0.67	6.67
86	4-Jun	Teddy Smith	720	25	8.00	0	11	0.00	3.67
87	4-Jun	Micky Smith	720	25	8.00	13	1	4.33	0.33
88	4-Jun	Francis Bell	720	25	8.00	1	7	0.33	2.33

Appendix A.2. Hooper Bay subsistence salmon catch survey data, May 30 to June 22, 2003.

Entry	Day	Fisher	Time Fished (minutes)	Net Length (fathoms)	Mesh Size (inches)	Number Chinook	Number Chum	CPUE[a] Chinook	CPUE[a] Chum
89	4-Jun	Elias Stone	720	25	8.00	1	13	0.33	4.33
90	4-Jun	Larry Carl	720	25	8.00	4	25	1.33	8.33
91	4-Jun	Ephrem Smith	480	25	4.25	1	2	0.50	1.00
92	4-Jun	John Seton	480	25	6.75	2	11	1.00	5.50
93	4-Jun	Adrian Lake	720	25	8.00	2	18	0.67	6.00
94	4-Jun	Albert Simon	720	25	8.00	3	25	1.00	8.33
95	4-Jun	John Mann	720	10	8.00	10	3	8.33	2.50
96	5-Jun	Harvey Hill	600	50	8.00	2	13	0.40	2.60
97	5-Jun	Charley Johnson	600	25	8.00	1	2	0.40	0.80
98	5-Jun	Jack Nanok	600	10	7.00	2	1	2.00	1.00
99	5-Jun	Teddy Smith	720	25	8.00	0	7	0.00	2.33
100	5-Jun	Blaise Tinker	720	25	7.75	1	0	0.33	0.00
101	5-Jun	Paul Jackson	720	25	7.75	2	1	0.67	0.33
102	6-Jun	Elias Stone	480	25	7.75	0	1	0.00	0.50
103	6-Jun	Ulrich Simon	480	25	8.00	0	1	0.00	0.50
104	6-Jun	Ronald Bell	480	25	7.75	1	5	0.50	2.50
105	6-Jun	Larry Carl	480	25	8.00	0	0	0.00	0.00
106	6-Jun	Teddy Smith	600	25	8.00	0	4	0.00	1.60
107	6-Jun	Aaron Rivers	600	25	5.50	0	7	0.00	2.80
108	6-Jun	Jack Nanok	600	50	7.00	1	2	0.20	0.40
109	6-Jun	Victor Night	600	25	7.75	0	3	0.00	1.20
110	6-Jun	James Hale	600	25	8.00	0	7	0.00	2.80
111	6-Jun	Ulrich Simon	600	25	7.75	0	1	0.00	0.40
112	6-Jun	Elias Stone	600	25	7.75	0	6	0.00	2.40
113	6-Jun	Bob Smith	600	10	5.75	2	4	2.00	4.00
114	7-Jun	John Mann	720	50	8.00	5	17	0.83	2.83
115	7-Jun	Reuben Hill	600	50	5.75	0	1	0.00	0.20
116	7-Jun	Albert Simon	720	25	7.75	1	23	0.33	7.67
117	7-Jun	Paul Nukusuk	720	25	7.75	0	4	0.00	1.33
118	7-Jun	Ronald Bell	720	25	7.75	0	1	0.00	0.33
119	7-Jun	James Hale	1440	50	8.00	1	1	0.08	0.08
120	7-Jun	Ephrem Smith	720	25	5.75	0	2	0.00	0.67
121	7-Jun	John Seton	720	25	5.75	0	4	0.00	1.33
122	7-Jun	John Mann	720	50	8.00	0	10	0.00	1.67
123	7-Jun	Jack Nanok	600	50	7.75	1	2	0.20	0.40
124	7-Jun	Victor Night	600	25	4.00	2	3	0.80	1.20
125	7-Jun	Harvey Hill	600	50	5.75	0	8	0.00	1.60
126	7-Jun	Luke Tall	600	50	4.00	3	32	0.60	6.40
127	7-Jun	George Nanook	600	50	5.75	1	3	0.20	0.60
128	8-Jun	Sam Joe	720	50	7.75	1	1	0.17	0.17
129	8-Jun	Joe Bell	720	25	7.75	0	4	0.00	1.33
130	8-Jun	Francis Bell	720	25	7.75	0	13	0.00	4.33
131	8-Jun	Harvey Hill	600	10	8.00	0	35	0.00	35.00
132	8-Jun	Ronald Bell	600	25	7.75	0	16	0.00	6.40

Appendix A.2. Hooper Bay subsistence salmon catch survey data, May 30 to June 22, 2003.

Entry	Day	Fisher	Time Fished (minutes)	Net Length (fathoms)	Mesh Size (inches)	Number Chinook	Number Chum	CPUE[a] Chinook	CPUE[a] Chum
133	9-Jun	Albert Simon	600	25	7.75	1	38	0.40	15.20
134	9-Jun	Elias Stone	600	25	7.75	0	2	0.00	0.80
135	9-Jun	Harvey Hill	600	25	8.00	0	12	0.00	4.80
136	9-Jun	Victor Night	600	25	4.00	0	7	0.00	2.80
137	9-Jun	Luke Tall	600	25	4.00	0	15	0.00	6.00
138	9-Jun	George Nanook	600	25	5.75	0	13	0.00	5.20
139	9-Jun	Francis Bell	720	25	7.75	0	1	0.00	0.33
140	9-Jun	Joe Bell	720	25	7.25	0	5	0.00	1.67
141	9-Jun	John Mann	720	25	7.75	1	1	0.33	0.33
142	9-Jun	Jack Silvermail	720	25	8.00	0	12	0.00	4.00
143	9-Jun	Wilfred Bunyan	720	25	7.75	1	2	0.33	0.67
144	9-Jun	Clarence Smith	720	25	5.50	0	7	0.00	2.33
145	9-Jun	Ike Hill	720	25	5.25	0	1	0.00	0.33
146	9-Jun	Ephrem Smith	720	25	7.75	0	5	0.00	1.67
147	9-Jun	John Seton	720	25	7.75	0	17	0.00	5.67
148	9-Jun	William Tinker	720	25	8.00	1	1	0.33	0.33
149	10-Jun	Ulrich Simon	720	25	7.75	0	1	0.00	0.33
150	10-Jun	Clarence Wilson	720	25	7.75	0	1	0.00	0.33
151	10-Jun	John Mann	720	25	7.75	2	1	0.67	0.33
152	10-Jun	Blaise Tinker	720	25	7.75	1	1	0.33	0.33
153	10-Jun	Ulrich Simon	720	25	7.75	2	1	0.67	0.33
154	10-Jun	Elias Stone	720	25	7.75	0	1	0.00	0.33
155	10-Jun	Ike Hill	720	25	5.25	0	0	0.00	0.00
156	10-Jun	John Mann	720	25	8.00	0	1	0.00	0.33
157	11-Jun	Ulrich Simon	720	25	7.25	0	2	0.00	0.67
158	11-Jun	Bernard ?	720	25	7.25	1	0	0.33	0.00
159	11-Jun	John Mann	720	50	7.25	0	1	0.00	0.17
160	11-Jun	Luke Hill	720	50	7.25	0	2	0.00	0.33
161	11-Jun	Harvey Hill	720	50	7.25	1	11	0.17	1.83
162	11-Jun	Donald Tall	720	50	7.25	3	13	0.50	2.17
163	12-Jun	Albert Simon	720	25	7.75	0	39	0.00	13.00
164	12-Jun	Paul Nukusuk	720	25	8.00	2	18	0.67	6.00
165	12-Jun	Ephrem Smith	720	25	7.75	0	10	0.00	3.33
166	12-Jun	John Seton	720	25	7.75	0	10	0.00	3.33
167	12-Jun	Reuben Hill	720	25	7.75	0	5	0.00	1.67
168	12-Jun	Francis Bell	720	25	7.75	0	8	0.00	2.67
169	14-Jun	Teddy Smith	720	25	5.75	0	16	0.00	5.33
170	14-Jun	Ephrem Smith	720	25	7.75	6	14	2.00	4.67
171	14-Jun	Harvey Hill	720	25	7.75	0	16	0.00	5.33
172	14-Jun	Victor Night	720	25	5.75	0	3	0.00	1.00
173	14-Jun	Jack Silvermail	720	25	5.75	0	3	0.00	1.00
174	14-Jun	Mark Tall	720	50	7.75	0	17	0.00	2.83
175	14-Jun	Francis Manning	720	50	7.75	7	80	1.17	13.33
176	14-Jun	Elias Stone	720	25	7.75	1	9	0.33	3.00

Appendix A.2. Hooper Bay subsistence salmon catch survey data, May 30 to June 22, 2003.

Entry	Day	Fisher	Time Fished (minutes)	Net Length (fathoms)	Mesh Size (inches)	Number Chinook	Number Chum	CPUE[a] Chinook	CPUE[a] Chum
177	14-Jun	Ulrich Simon	720	25	7.75	0	15	0.00	5.00
178	14-Jun	Paul Nukusuk	720	25	7.75	0	12	0.00	4.00
179	16-Jun	Al Smith	720	25	7.75	2	19	0.67	6.33
180	16-Jun	Edgar Tall	720	25	7.75	1	8	0.33	2.67
181	17-Jun	Jack Silvermail	1440	25	8.00	1	0	0.17	0.00
182	17-Jun	Jack Silvermail	1440	25	5.75	0	29	0.00	4.83
183	17-Jun	George Nanook	1440	25	5.75	2	40	0.33	6.67
184	17-Jun	Dennis Green	720	25	5.75	0	56	0.00	18.67
185	17-Jun	Harvey Hill	720	25	5.75	0	51	0.00	17.00
186	17-Jun	Nathan Cisher	1440	25	5.50	0	50	0.00	8.33
187	17-Jun	Sam Mann	1440	25	5.50	2	90	0.33	15.00
188	17-Jun	Mark Tall	720	25	5.50	0	39	0.00	13.00
189	18-Jun	Ike Hill	720	25	5.75	0	10	0.00	3.33
190	18-Jun	Calvin Joe	720	30	8.00	1	1	0.28	0.28
191	18-Jun	Elias Stone	720	25	7.75	0	2	0.00	0.67
192	18-Jun	Joseph Bell	720	25	5.75	0	3	0.00	1.00
193	18-Jun	Leonard Bell	720	25	8.00	1	2	0.33	0.67
194	18-Jun	Ulrich Simon	720	25	5.75	0	1	0.00	0.33
195	19-Jun	Ben Knight Sr	720	25	5.75	0	6	0.00	2.00
196	19-Jun	Ephrem Smith	720	25	5.75	0	11	0.00	3.67
197	19-Jun	John Seton	720	25	5.25	0	12	0.00	4.00
198	20-Jun	Jan Olsen	720	10	5.25	1	4	0.83	3.33
199	20-Jun	John Seton	720	25	5.75	0	7	0.00	2.33
200	20-Jun	Ike Hill	720	25	4.50	0	6	0.00	2.00
201	20-Jun	Wilfred Bunyan	720	25	7.75	0	3	0.00	1.00
202	20-Jun	Ephrem Smith	720	25	7.75	0	4	0.00	1.33
203	20-Jun	John Seton	720	25	7.75	0	3	0.00	1.00
204	20-Jun	Ike Hill	720	25	5.75	0	8	0.00	2.67
205	21-Jun	Edgar Tall	720	25	5.75	0	1	0.00	0.33
206	21-Jun	Bill Tinker	720	25	5.75	0	2	0.00	0.67
207	21-Jun	Ben Knight Sr	720	25	5.75	0	5	0.00	1.67
208	22-Jun	Ulrich Simon	720	25	5.75	0	1	0.00	0.33

[a] CPUE calculations based on 100 fathoms of gear fished for 1 hour.