Mountain Village Fall Season Gillnet Test Fishery

R&M# 10-11

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Project Partners: USFWS and Asacarsarmiut Tribal Council

1. Introduction:

Objectives:

The objective of the project is to estimate the run timing, age composition and relative abundance of fall chum and coho salmon in the Yukon River near Mountain Village.

2. Study Area: Yukon River near Mountain Village, approximately river mile 87. Test drift gillnet sites are approximately 3 to 4 miles upstream of the village. The three drift sites can be found in Figure 1 of the Operational Procedures Manual (included as Appendix A, drift sites noted as A1, A2 and A3).

3. Methods

All project participants are provided with the Operational Procedures Manual. The manual is written by ADF&G, and updated annually with input from participants (attached as Appendix A).

On the first day of the project (July 17, 2011), Kyle Shumann of ADF&G traveled to Mountain Village to train the test fish crew. Kyle was accompanied by Mick Leach from ADF&G.

The Mountain Village test fishermen used a 25 fathom salmon gillnet with 5 and 7/8 inch mesh and 35 meshes deep. The nets are equipped with buoys marked "Test Fish" attached at each end of the net.

The fishermen were provided with a global positioning system (GPS) device and a hand- held thermometer for recording air and water temperature. A log book with data forms, a drift schedule, and supplies for age-sex-length (ASL) sampling were also provided.

Test fishermen departed Mountain Village each test day with enough time to arrive at the first test drift site by approximately 12:00 noon. Fishermen recorded daily climate conditions at the time of test fishing. The weather and water conditions were recorded by keeping track of the sky conditions, precipitation, wind direction, wind speed, and air and water temperature.

The test fishery consists of three drifts. Figure 1 in Appendix A denotes these three locations as A1, A2 and A3. One drift was conducted at each of three different sites. Drifts are intended to last about 5 to 20 minutes shorter time if catch rates are high. Efforts were made to fish the designated sites as consistently as possible in order to keep data comparable within and between years. For each drift, the time was noted for the start and completion of net deployment, as well as the start and completion of net retrieval. Age, sex and length sampling was taken from the salmon catch, with a daily goal of 40 fish to be sampled, all in accordance with the Operational Procedures Manual (Appendix A). The age of the salmon were determined by taking scale samples and are attached to scale gum cards. New scale gum cards are used daily to prevent loss or damage during subsequent sampling. The fish's sex was determined by cutting into the fish's abdomen and looking for ovaries or testes. The length of each fish was measured from the middle of the eye to the fork in the tail. At the end of the season, samples were sent to ADF&G for scale reading to determine age.

After all samples are taken, the fish are made available to households in the community for subsistence use.

Daily reports were faxed to ADF&G in Emmonak, or relayed by telephone if fax was unavailable.

After the season is over, ADF&G provides BSFA with Excel spreadsheets that contain all the catch and CPUE information for the season. This information is included as Tables 1 and 2 and Figures 1-3.

CPUE is calculated as described in the Operational Procedures Manual (Appendix A):

The deployment, fishing, and retrieval of the drift gillnets will be recorded for each sampling event. CPUE will be calculated using fish per 100 fathom-hours:

$$\text{CPUE} = [((100 \text{ fathom} * 60 \text{ minutes}) * (n))/(L*T)]$$

where:

n = number of fish caught,
L = length of net in fathoms
T = the time the net fished

The time the net fished is calculated using:

$$T = ([(\text{set time} + \text{retrieval time})/2] + \text{soak time})$$

The amount of time the gillnet is soaked varies. An independent CPUE calculation is made for each drift fished. This value is summed with CPUE calculations from the same day and gear type and then averaged to obtain a CPUE for the day and gear type:

$$\textit{Daily CPUE} = ((\sum CPUE)/n)$$

where:

n=number of sets for the given day and gear type.

3. Results

The 2011 fall season project operated for a total of 58 days from July 18 to September 18. Five local fishermen from Mountain Village were hired to perform the testing. Their names are Cletus Beans, Matthew S. Alexie, Jr., Brent Charlie, Michael Sheppard Jr., Oscar Johnson and one alternate, Larry George. Two days the water was too rough to navigate safely in order to perform any test fishing.

The attached tables and figures were provided to BSFA from Bonnie Borba, ADFG. Table 1 has the daily and cumulative and catch of chum and coho salmon. Table 2 is the daily climate observations. Figures 1 and 2 graphically display the daily and cumulative CPUE for fall chum and coho salmon. Figure 3 is a graph of the daily air and water temperatures.

The crew sampled 359 fall chum salmon for ASL (B. Borba, personal communication). Of those samples that could be aged n=268. Ages 0.2, 0.3, 0.4 and 0.5 were represented as 1%, 76%, 22% and 0% respectively. Those fall chum salmon were sexed and measured for length, males averaged 596.32 and females averaged 583.62. The sample consisted of 52% females.

Errors that occurred on fall chum salmon scales consisted of 67 inverted, 23 regenerated, 1 illegible and 1 missing. The majority (94%) of those that were inverted were from the fishermen from August 18 through September 9. This is unfortunate because we count on this project for data in particular after the other projects like LYTF and Pilot Station stop collecting samples.

The crew sampled 165 coho salmon for ASL. Of those samples that could be aged n=49 Ages 1.1 and 1.2 were represented as 40% and 60% respectively. The coho salmon that were sexed and measured for length (n=164), males averaged 577.53 and females averaged 577.58. The sample consisted of 54% females. One fish was not sexed and is not included in this average length data.

Errors that occurred on coho salmon scales consisted of 108 inverted, 7 regenerated, and 1 illegible. All of those that were inverted were from the fishermen from August 16 through September 9.

Dates of Operations: July17 to September 19, 2011

Problems or Issues:
As with the 2010 season, the most significant problem with the 2011 project was that a number of the ASL samples were unusable. While there are usually a few samples that end up being discarded due to minor errors, a significant number of the scales were iver. In the future, better training of the test fishermen and perhaps periodic checks on sample quality could be made to minimize the loss due to sampling errors.

Table 1. Historical fall chum (1997-2010 average) and coho salmon (1995-2010), daily and cumulative catch per unit
effort (CPUE), drift net test fishery, located near the community of Mountain Village, Yukon River, compared to 2011.

Fall Chum Salmon									Coho Salmon									
1997 to 2010 Average a					2011				1995 to 2010 Average a					2011				
Date	Daily Catch	Daily Cumulative CPUE	Percent	Cumulative CPUE b	Daily Catch	Daily CPUE	Percent	Cumulative CPUE b	Date	Daily Catch	Daily CPUE	Percent	Cumulative CPUE b	Daily Catch	Daily CPUE	Percent	CPUE b	Percent Coho
17-Jul	12	56.60	0.03	54.59					17-Jul	0	0.39	0.00	0.39					
18-Jul	13	52.46	0.04	92.02	6	25.26	0.01	25.26	18-Jul	0	0.30	0.00	0.61	0	0.00	0.00	0.00	0%
19-Jul	14	53.51	0.07	147.01	24	96.21	0.05	121.47	19-Jul	0	0.00	0.00	0.61	0	0.00	0.00	0.00	0%
20-Jul	14	56.04	0.09	207.93	18	73.10	0.09	194.57	20-Jul	0	0.69	0.00	1.30	0	0.00	0.00	0.00	0%
21-Jul	10	54.58	0.11	263.24	4	16.41	0.09	210.98	21-Jul	0	0.00	0.00	1.30	0	0.00	0.00	0.00	0%
22-Jul	8	27.86	0.12	291.74	4	16.00	0.10	226.98	22-Jul	0	0.25	0.00	1.55	0	0.00	0.00	0.00	0%
23-Jul	9	32.17	0.14	323.88	1	4.10	0.10	231.09	23-Jul	0	0.85	0.00	2.41	0	0.00	0.00	0.00	0%
24-Jul	8	32.55	0.15	354.73	0	0.00	0.10	231.09	24-Jul	0	0.58	0.00	2.99	0	0.00	0.00	0.00	
25-Jul	5	19.35	0.16	375.00	1	4.21	0.11	235.30	25-Jul	1	2.37	0.00	5.36	0	0.00	0.00	0.00	0%
26-Jul	15	45.03	0.18	421.81	3	11.90	0.11	247.20	26-Jul	0	1.12	0.00	6.49	0	0.00	0.00	0.00	0%
27-Jul	9	30.79	0.20	452.36	8	32.41	0.12	279.61	27-Jul	0	0.30	0.01	6.79	0	0.00	0.00	0.00	0%
28-Jul	9	33.11	0.22	485.45	5	19.61	0.13	299.22	28-Jul	0	1.78	0.01	8.11	0	0.00	0.00	0.00	0%
29-Jul	14	54.80	0.24	536.25	10	43.14	0.15	342.36	29-Jul	0	0.93	0.01	9.03	0	0.00	0.00	0.00	0%
30-Jul	12	40.90	0.27	581.16	14	55.62	0.18	397.98	30-Jul	1	2.98	0.01	12.01	1	4.21	0.00	4.21	7%
31-Jul	10	42.19	0.28	622.96	37	134.34	0.24	532.31	31-Jul	1	3.33	0.01	15.35	1	3.48	0.01	7.69	3%
1-Aug	14	52.96	0.31	674.52	40	170.67 c	0.31	702.98	1-Aug	1	3.80	0.02	19.15	1	4.10 c	0.01	11.79	2%
2-Aug	14	54.29	0.33	730.25	40	168.42	0.39	871.40	2-Aug	1	2.94	0.02	20.89	5	21.05	0.04	32.84	11%
3-Aug	8	42.56	0.35	769.94	6	26.43	0.40	897.84	3-Aug	1	3.48	0.02	24.37	4	17.54	0.06	50.39	40%
4-Aug	11	43.32	0.37	814.96		35.43 d	0.42	933.27	4-Aug	2	7.42	0.03	31.79		13.10 d	0.07	63.48	27%
5-Aug	18	56.33	0.39	873.32	19	81.72	0.45	1,014.98	5-Aug	3	12.32	0.04	44.11	2	8.65	0.08	72.13	10%
6-Aug	13	49.56	0.41	919.09	0	122.97 e	0.51	1,137.96	6-Aug	4	15.75	0.05	59.86		7.96 e	0.09	80.09	6%
7-Aug	18	71.32	0.44	990.86	43	164.23	0.58	1,302.18	7-Aug	5	18.75	0.06	78.61	2	7.27	0.10	87.37	4%
8-Aug	26	95.20	0.47	1,086.51	23	96.84	0.62	1,399.03	8-Aug	5	18.69	0.08	97.31	3	12.63	0.12		
100.00	12%																	
9-Aug	18	87.03	0.51	1,174.65	8	35.74	0.64	1,434.77	9-Aug	7	36.30	0.11	133.60	7	34.67	0.16		
134.66	49%																	
10-Aug	13	72.27	0.55	1,235.55	4	17.08	0.65	1,451.84	10-Aug	8	31.75	0.13	165.36	4	16.41	0.17		
151.07	49%																	
11-Aug	12	44.54	0.58	1,282.45	12	49.59	0.67	1,501.43	11-Aug	8	33.92	0.16	199.28	9	36.84	0.22		
187.91	43%																	
12-Aug	8	22.77	0.60	1,314.06	2	8.21	0.67	1,509.64	12-Aug	7	24.95	0.18	224.23	3	12.97	0.23		
200.88	61%																	
13-Aug	6	20.92	0.61	1,335.85	0	0.00	0.67	1,509.64	13-Aug	9	37.31	0.21	261.54	5	20.00	0.25		
220.88	100%																	
14-Aug	20	66.88	0.64	1,403.05		4.10 e	0.68	1,513.74	14-Aug	10	35.37	0.24	296.91		16.15 e	0.27		
237.04	80%																	
15-Aug	14	95.89	0.67	1,499.37	2	8.21	0.68	1,521.94	15-Aug	10	49.17	0.28	346.08	3	12.31	0.29		
249.35	60%																	
16-Aug	15	59.14	0.70	1,555.84	2	8.65	0.68	1,530.59	16-Aug	9	34.63	0.31	380.70	10	43.24	0.34		
292.59	83%																	
17-Aug	13	56.12	0.73	1,602.55		117.11 e	0.74	1,647.70	17-Aug	15	57.07	0.35	437.77		23.08 e	0.36		
315.67	16%																	
18-Aug	10	26.97	0.75	1,635.07	5	17.15	0.74	1,664.86	18-Aug	12	47.47	0.39	485.24	1	2.91	0.37		
318.57	15%																	
19-Aug	8	22.67	0.77	1,662.77	1	4.57	0.75	1,669.43	19-Aug	11	43.13	0.43	528.37	1	4.57	0.37		
323.15	50%																	
20-Aug	11	47.98	0.79	1,709.21	0	0.00	0.75	1,669.43	20-Aug	15	53.59	0.47	581.96	0	0.00	0.37		
323.15																		
21-Aug	11	42.67	0.81	1,752.83	0	0.00	0.75	1,669.43	21-Aug	11	42.36	0.51	624.32	0	0.00	0.37		
323.15																		
22-Aug	11	45.08	0.83	1,798.40	21	88.99	0.79	1,758.42	22-Aug	12	44.46	0.54	668.78	16	68.05	0.45		
391.20	43%																	
23-Aug	7	28.31	0.84	1,826.50		240.91 e	0.89	1,999.33	23-Aug	13	47.42	0.58	716.20		71.62 e	0.53		
462.82	23%																	
24-Aug	7	31.21	0.85	1,856.26	6	25.26	0.90	2,024.59	24-Aug	12	45.16	0.62	761.36	17	75.19	0.62		
538.01	75%																	
25-Aug	10	38.01	0.87	1,896.04	0	0.00	0.90	2,024.59	25-Aug	12	45.25	0.66	806.60	6	26.93	0.65		
564.93	100%																	
26-Aug	10	39.87	0.88	1,935.58	2	8.42	0.91	2,033.01	26-Aug	8	31.67	0.68	838.27	13	54.74	0.71		
619.67	87%																	
27-Aug	4	17.76	0.89	1,953.31	0	0.00	0.91	2,033.01	27-Aug	9	34.53	0.71	872.80	0	0.00	0.71		
619.67																		
28-Aug	10	36.51	0.91	1,989.53	0	0.00	0.91	2,033.01	28-Aug	6	25.92	0.74	898.72	1	4.57	0.72		
624.24	100%																	
29-Aug	9	35.50	0.92	2,022.24	0	0.00	0.91	2,033.01	29-Aug	7	25.94	0.77	924.67	1	4.71	0.72		
628.95	100%																	
30-Aug	8	25.99	0.93	2,047.01	2	8.21	0.91	2,041.22	30-Aug	6	24.80	0.79	949.46	4	16.41	0.74		
645.36	67%																	
31-Aug	5	11.94	0.94	2,063.23		10.77 d	0.92	2,051.99	31-Aug	7	29.59	0.81	979.05		14.87 d	0.76		
660.23	58%																	
1-Sep	2	11.15	0.94	2,072.35	3	13.33	0.92	2,065.32	1-Sep	6	24.56	0.83	1,003.61	3	13.33	0.78		
673.56	50%																	
2-Sep	3	9.87	0.95	2,082.14	11	46.32	0.94	2,111.64	2-Sep	4	17.10	0.84	1,020.71	12	50.87	0.83		
724.43	52%																	
3-Sep	6	21.41	0.96	2,103.86	5	21.74	0.95	2,133.38	3-Sep	6	22.71	0.86	1,043.41	13	56.46	0.90		
780.89	72%																	
4-Sep	8	27.63	0.97	2,133.30	0	0.00	0.95	2,133.38	4-Sep	9	32.35	0.89	1,075.76	2	8.89	0.91		
789.78	100%																	
5-Sep	4	14.88	0.98	2,148.46	1	4.32	0.95	2,137.70	5-Sep	9	34.74	0.91	1,110.50	2	8.65	0.92		
798.42	67%																	
6-Sep	2	9.55	0.98	2,158.01		4.38 d	0.96	2,142.09	6-Sep	9	36.77	0.94	1,147.26		6.55 d	0.93		
804.97	60%																	
7-Sep	2	7.08	0.98	2,165.09	1	4.44	0.96	2,146.53	7-Sep	4	16.39	0.96	1,163.65	1	4.44	0.93		
809.42	50%																	
8-Sep	1	5.32	0.99	2,170.41	5	21.05	0.97	2,167.58	8-Sep	3	13.59	0.97	1,177.24	7	29.71	0.97		
839.12	59%																	
9-Sep	3	14.35	0.99	2,184.76	2	8.42	0.97	2,176.00	9-Sep	3	12.24	0.98	1,189.48	7	29.47	1.00		
868.60	78%																	
10-Sep	2	4.01	0.99	2,189.05	-	35.12 d	0.99	2,211.12	10-Sep	2	5.47	0.98	1,194.95	-	- d	-		
868.60																		
11-Sep	1	3.11	0.99	2,191.50	-	28.71 d	1.00	2,239.83	11-Sep	2	7.60	0.98	1,200.18	-	- d	-		

868.60																
12-Sep	3	7.42	1.00	2,194.15	0	0.00	1.00	2,239.83	12-Sep	3	9.48	0.99	1,204.32	0	0.00	1.00
868.60																
13-Sep	3	9.55	1.00	2,196.59	0	0.00	1.00	2,239.83	13-Sep	2	6.95	0.99	1,206.93	0	0.00	1.00
868.60																
14-Sep	2	9.32	1.00	2,198.30	0	0.00	1.00	2,239.83	14-Sep	2	8.47	0.99	1,209.58	0	0.00	1.00
868.60																
15-Sep	4	13.08	1.00	2,201.30	0	0.00	1.00	2,239.83	15-Sep	4	13.58	0.99	1,212.97	0	0.00	1.00
868.60																
16-Sep	1	3.58	1.00	2,202.45	0	0.00	1.00	2,239.83	16-Sep	5	17.00	1.00	1,217.22	0	0.00	1.00
868.60																
17-Sep	1	2.22	1.00	2,202.92	0	0.00	1.00	2,239.83	17-Sep	3	10.09	1.00	1,219.75	0	0.00	1.00
868.60																
18-Sep	2	5.07	1.00	2,203.65	0	0.00	1.00	2,239.83	18-Sep	1	3.56	1.00	1,220.41	0	0.00	1.00
868.60																
19-Sep					0	0.00	1.00	2,239.83	19-Sep	1	2.00	1.00	1,220.66	0	0.00	1.00
868.60																
20-Sep					0	0.00	1.00	2,239.83	20-Sep	0	0.00	1.00	1,220.66	0	0.00	1.00
868.60																
21-Sep					0	0.00	1.00	2,239.83	21-Sep	0	0.00	1.00	1,220.66	0	0.00	1.00
868.60																
22-Sep					0	0.00	1.00	2,239.83	22-Sep	0	0.00	1.00	1,220.66	0	0.00	1.00
868.60																
23-Sep					0	0.00	1.00	2,239.83	23-Sep	0	0.00	1.00	1,220.66	0	0.00	1.00
868.60																
24-Sep					0	0.00	1.00	2,239.83	24-Sep	0	0.00	1.00	1,220.66	0	0.00	1.00
868.60																
25-Sep					0	0.00	1.00	2,239.83	25-Sep	0	0.00	1.00	1,220.66	0	0.00	1.00
868.60																
26-Sep					0	0.00	1.00	2,239.83	26-Sep	0	0.00	1.00	1,220.66	0	0.00	1.00
868.60																
27-Sep					0	0.00	1.00	2,239.83	27-Sep	0	0.00	1.00	1,220.66	0	0.00	1.00
868.60																
28-Sep					0	0.00	1.00	2,239.83	28-Sep	0	0.00	1.00	1,220.66	0	0.00	1.00
868.60																
29-Sep					0	0.00	1.00	2,239.83	29-Sep	0	0.00	1.00	1,220.66	0	0.00	1.00
868.60																
30-Sep					0	0.00 f	1.00	2,239.83	30-Sep	1	4.57	1.00	1,220.95	0	0.00 f	1.00
868.60																
1-Oct							-		1-Oct	0	0.00	1.00	1,220.95			-
2-Oct							-		2-Oct	0	0.00	1.00	1,220.95			-
	574				401					326				167		

a Differences in the termination dates of the project confounds computation of the historical daily cumulative percent and average. The historical daily cumulative percent and average were computed by assuming that 100 percent of the run was completed on the date of project termination.
b The box indicates the first to the third quartile of the cumulative catch per unit effort (CPUE). The median date of the cumulative CPUE is also highlighted. c Commercial period after test fish (3pm-9pm).
d Drifts cancelled due to weather. Data interpolated.
e Drifts cancelled due to commercial. Data interpolated. f Last day of operation.

Table 2. Daily climatological conditions at the time of test fishing, Mountain Village, Yukon Area, 2011.

Date	Time	Sky [a]	Precipitation [b]	Wind Direction	Wind Speed [c]	Air Temperature (ºC)	Water Temperature (ºC)	
17-Jul								
18-Jul	16:15	4	0	W	1	13	14	1st day of fall operation
19-Jul	11:56	4	0	S	1	12	14	
20-Jul	11:50	2	0	E	1	16	14	
21-Jul	11:48	2	0	S	1	18	14	
22-Jul	11:47	1	0	0	0	21	16	
23-Jul	11:50	4	0	S	2	11	14	
24-Jul	11:46	3	0	S	1	11	14	
25-Jul	11:53	4	B	S	1	12	16	
26-Jul	11:48	4	0	0	0	14	16	
27-Jul	11:53	3	B	NW	1	13	16	
28-Jul	11:51	1	0	NW	1	12	16	
29-Jul	11:52	2	B	SW	2	11	16	
30-Jul	11:50	4	B	SW	2	11	16	
31-Jul	11:41	4	0	0	0	11	16	
1-Aug	12:00	4	B	NE	1	14	16	
2-Aug	12:00	3	A	N	2	14	16	
3-Aug	12:00	3	B	SE	3.5	14	16	
4-Aug	12:00	4	C	S	4	9	14	
5-Aug	12:10	3	B	SW	4	12	14	
6-Aug	12:00	4	B	N	2	12	14	
7-Aug	12:35	4	B	SW	3	10	14	
8-Aug	12:00	4	B	S	3	10	13	
9-Aug	8:05	3	A	0	0	7	13	
10-Aug	12:00	4	A	0	0	10	13	
11-Aug	12:25	4	C	S	1	12	14	
12-Aug	12:10	4	B	W	3	12	16	
13-Aug	11:59	4	B	SW	2	11	13	
14-Aug	12:00	4	C	W	2	9	13	
15-Aug	12:40	4	B	NW	1	12	13	
16-Aug	12:33	4	0	NW	1	12	11	
17-Aug	9:00	1	0	N	2	10	13	
18-Aug	12:46	1	0	SE	2	16	14	
19-Aug	10:29	1	0	S	1	16	14	
20-Aug	10:30	1	0	N	2	15	14	
21-Aug	10:40	1	0	N	1	13	14	
22-Aug	12:30	2	B	W	1	9	14	
23-Aug	9:00	5	B	SW	1	7	14	
24-Aug	12:00	3	0	SW	1	13	12	
25-Aug	10:18	2	0	SW	1	10	13	
26-Aug	12:45	3	0	SSE	1	13	12	
27-Aug	9:00	3	0	NW	1	9	12	
28-Aug	12:15	1	0	0	0	12	14	
29-Aug	11:19	3	B	SE	1	13	14	
30-Aug	11:55	3	B	SE	1	10	14	
31-Aug	12:27	3	B	W	2	9	12	
1-Sep	11:40	3	B	SSE	2	9	11	
2-Sep	11:26	3	A	NNW	1	10	12	
3-Sep	12:00	3	B	SSE	1	12	14	
4-Sep	11:54	3	B	E	1	10	12	
5-Sep	12:00	1	A	E	2	10	14	
6-Sep	11:58	1	A	NNW	3	11	12	
7-Sep	10:32	2	B	NNW	1	6	12	
8-Sep	10:28	3	A	W	1	9	12	
9-Sep	12:49	3	B	SSW	1	7	11	
10-Sep	12:00	2	C	S	3	6	11	
11-Sep	14:58	2	B	SSE	3	12	11	
12-Sep	9:35	1	A	NNE	1	6	10	

13-Sep	10:56	1	B	ENE	1	9	11
14-Sep	10:56	4	C	WSW	2	8	10
15-Sep	10:32	3	A	EWE	1	9	10
16-Sep	12:00	1	A	0	0	16	11
17-Sep	12:00	1	A	0	0	14	11
18-Sep	12:00	4	B	0	0	11	10
19-Sep	12:00	4	B	ENE	1	11	10
20-Sep	12:49	4	B	NE	2	10	11
21-Sep	10:32	3	B	NE	1	9	10
22-Sep	12:00	2	A	0	0	11	10
23-Sep	10:56	2	B	0	0	9	10
24-Sep	12:49	2	B	EWE	1	11	10
25-Sep	10:28	2	A	EWE	1	9	10
26-Sep	10:32	2	A	ENE	1	4	9
27-Sep	13:00	4	A	WNW	1	6	7
28-Sep	11:54	4	A	WSW	2	4	6
29-Sep	13:11	1	0	SE	2	4	8
30-Sep	12:30	1	0	N	1	4	8

[a] Sky codes: 0=No observation, 1=Clear and visibility unlimited, 2=Cloud cover >50%, 3=Cloud cover >50%, 4=Complete overcast, 5=Thick fog.

[b] Precipitation codes: A=None, B=Intermittent, C=Continuous.

[c] Wind codes: 0=Calm, 1=1-10 mph, 2=11-20 mph, 3=21-30 mph,4=over 30 mph.

Below codes used in the field: only those used in the table are listed in the footnotes for "b".

CODES:

SKY -	PRECIPITATION -	WIND -	SPECIES -
0 no observation	A none	0 calm	K Chinook
1 clear or mostly clear	B intermittent	1 1-10 mph	S Sockeye
2 cloud cover not more than 1/2 of sky	C continuous rain	2 11-20 mph	P Pink
3 cloud cover more than 1/2 of sky	D snow	3 21-30 mph	W Whitefish
4 complete overcast	E snow and rain	4 over 30 mph	Sh Sheefish
5 thick fog	F hail		
	G thunderstorm with or without rain		

CPUE is calculated using the following two formulas:

Where "Fishing Time" is calculated as follows:

2 = Start Time Net
3 = Time Net Full
4 = Start Time Net
5 = Time Net Full

Mean Fishing Time = $\frac{(4 - 3) + (5 - 4)}{2}$

Index = $\frac{(3 - 2)(6000) * (\text{No. Fish})(\text{Fishing Time}) * (\text{Fathoms})}{}$

Used to convert temperatures from original data sheets taken in F to C.

$$C = (F-32) * .555$$

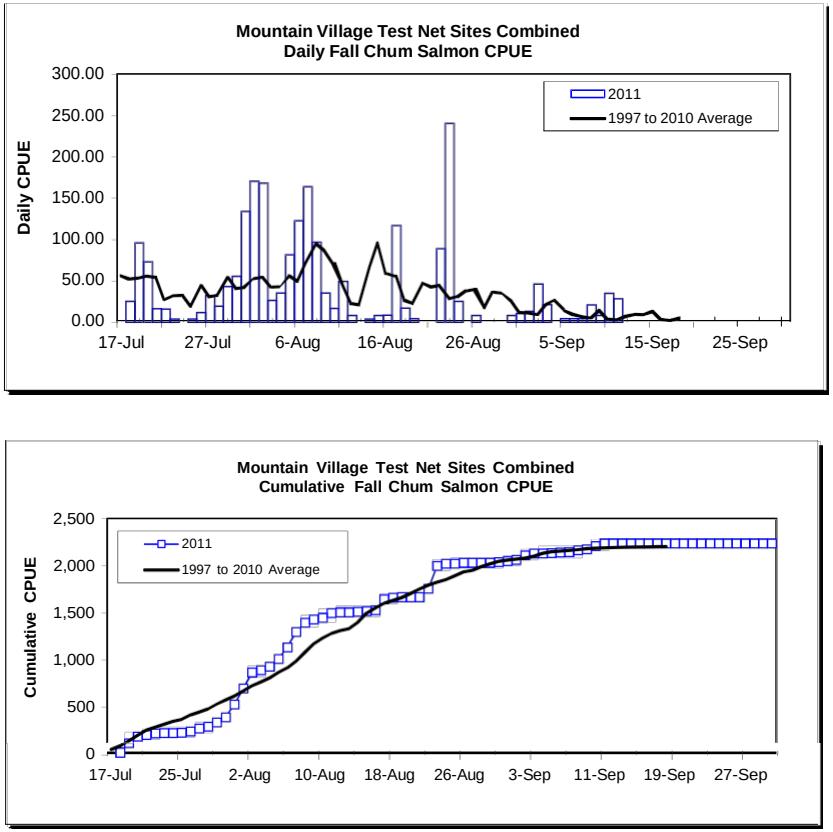


Figure 1. **Historical fall chum salmon daily and cumulative catch per unit effort (CPUE), drift net test fishery, located near the community of Mountain Village, 1997 to 2010 average and select years compared to 2011.**

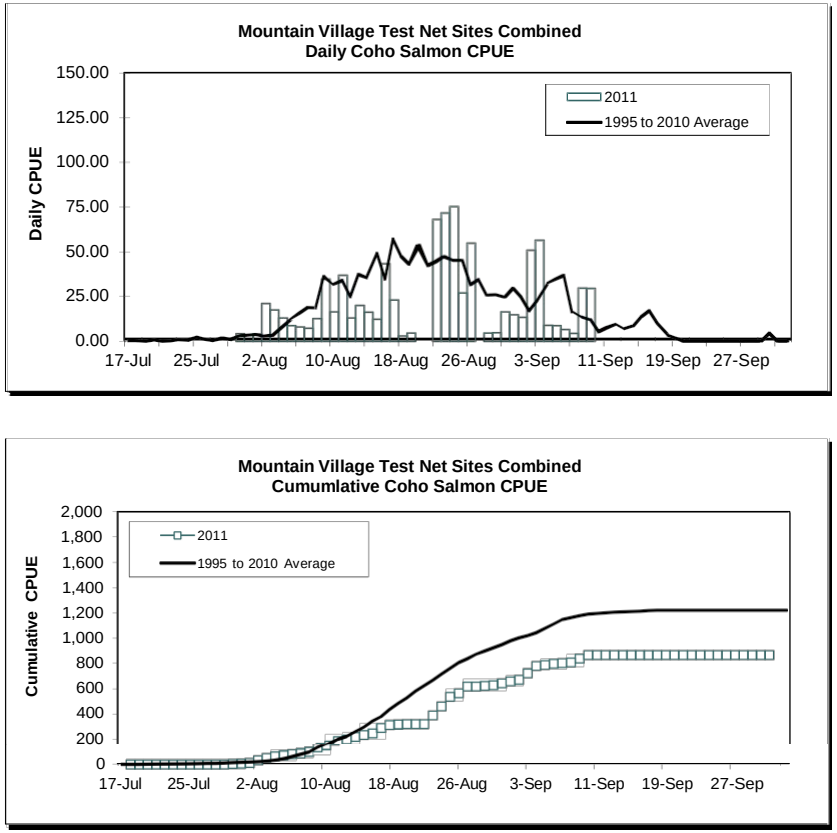
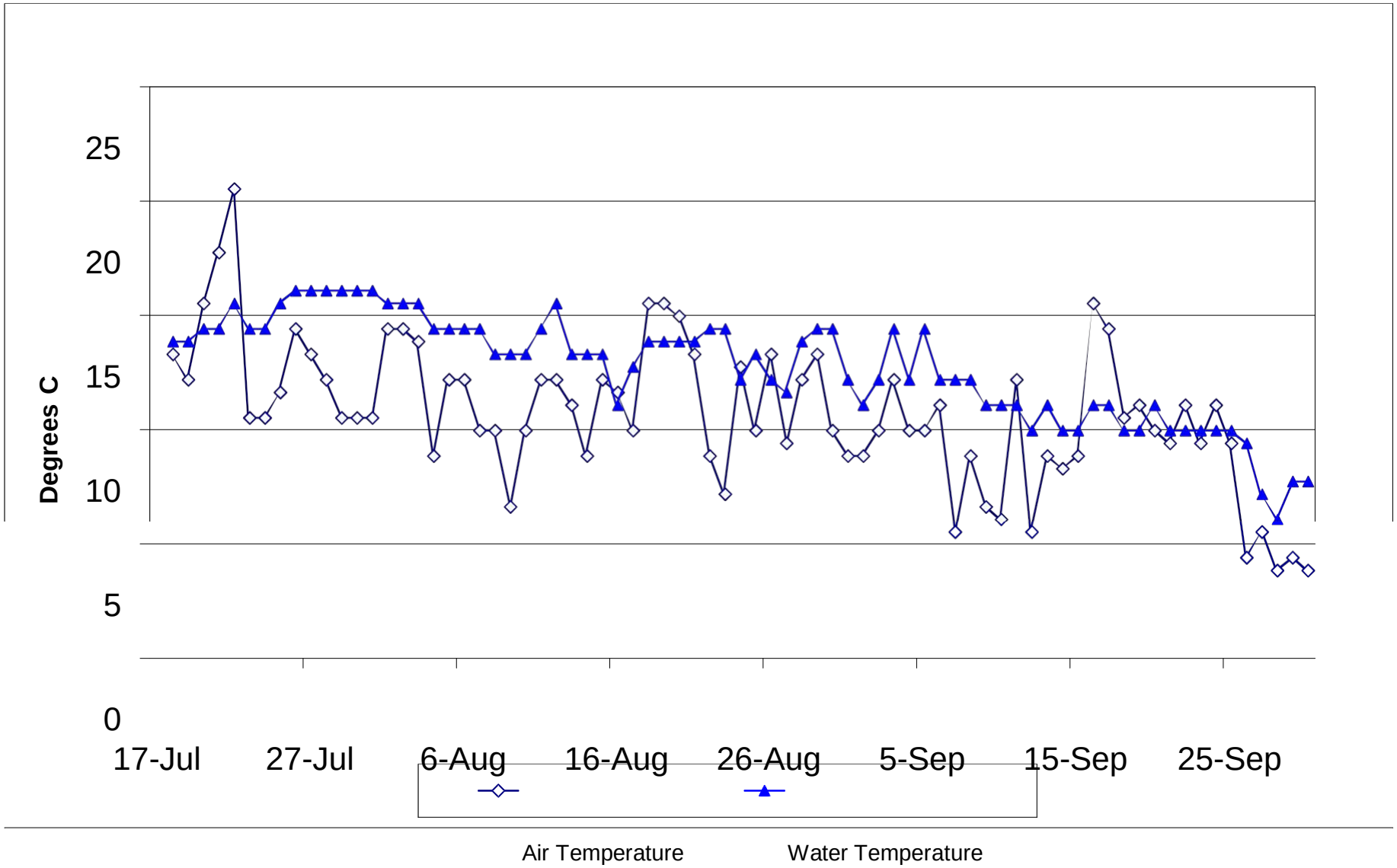


Figure 2. **Historical coho salmon daily and cumulative catch per unit effort (CPUE), drift net fishery, located near the community of Mountain Village, 1995 to 2010 average and select years compared to 2011.**

Figure 3. Air and water temperatures collected at the Mountain Village drift gillnet test fishery site, Yukon Area, 2011.



APPENDIX A

OPERATIONAL PROCEDURES MANUAL

MOUNTAIN VILLAGE
DRIFT GILLNET SALMON TEST FISHERY
FALL SEASON
2011

A Joint Project
with

Asa'carsarmiut Traditional Council
PO Box 32249
Mountain Village, Alaska 99632
(907) 591-2814
Fax (907) 591-2811

Bering Sea Fishermen's Association
110 W 15th Ave, Unit A
Anchorage, Alaska 99501
(907) 279-6519

and

Alaska Department of Fish and Game
PO Box 127
Emmonak, Alaska 99581
(907) 949-1320
Fax (907) 949-1830

Fairbanks ADF&G Office
1300 College Road
Fairbanks, Alaska 99701
(907) 459-7274
Fax (907) 459-7271

MOUNTAIN VILLAGE
DRIFT GILLNET SALMON TEST FISHERY
FALL SEASON
2011

Location: Yukon River near Mountain Village, approximately rivermile 87. Test drift gillnet sites are approximately 3 to 4 miles upstream of the village (Figure 1).

Personnel: Contract test fishermen from Mountain Village with project administration by Martin Alexie of the Asa'carsarmiut Traditional Council (ATC); Project assistance, management, and training provided by Jeff Estensen (fall season manager) and Mick Leach (scale collection) from the Alaska Department of Fish and Game (ADF&G).

Time Table: The Mountain Village test fishery is to operate from approximately 17 July to 30 September 2011.

Funding Sources: USFWS Yukon Treaty Implementation Research and Management Fund $ $26,630.25. Project number RM 10-11. Administered by BSFA.

Introduction

The Mountain Village Drift Gillnet Salmon Test Fishery (MVTF) has operated since 1995. A limited analysis of the results has concluded that the project does provide a useful measure of run timing and, to a lesser extent, relative abundance between and within years. The MVTF results correlated somewhat with the Lower Yukon River Set Gillnet Test Fishery located at rivermile 24 near the mouth of the Yukon River. Since 2001 the Lower Yukon River test fishing project was changed over from set gillnets to drift gillnet fishing to improve the correlation. Additionally, the MVTF results typically correlate well with the passage estimates provided by the Pilot Station sonar, located 135 miles upstream.

In 2011, the intent of the MVTF will be to operate from approximately 17 July through 30 September. The same drift gillnet sites used in the previous years (sites A1-A3) will be used in 2011 (Figure 1). The daily MVTF catch data will be converted to a catch per unit effort (CPUE) index, which can be compared to the prior years' database, as well as between other monitoring projects in the same year. The MVTF results may be considered by the area manager, along with other sources of information, for inseason management of the subsistence and commercial fisheries. Additionally, a scale sampling program will continue to obtain age composition of fall chum and coho salmon caught in the test fishery.

Objectives

The objective of the project is to estimate the run timing, age composition, and relative abundance of fall chum and coho salmon in the Yukon River near Mountain Village.

Participant's Responsibilities and Expectations

Asa'carsarmiut Traditional Council (ATC):

- Recruit, hire, and pay contract test fishermen.
- Supervise test fishermen to assure that the Operational Procedures Manual is being followed.
- Transmit daily test fish results provided by contract test fishermen to ADF&G. If the fax is not available, drift fishing times and catch data must be dictated over the phone on a daily basis for timely use in fisheries management.
- Return sampling materials to ADF&G by mid-October, including binder of daily faxed sheets, all rite-in-the-rain notebooks, ASL gum cards, and data notebooks.

Bering Sea Fishermen's Association (BSFA):

- Provide funding from the US portion of the Research and Management fund to pay contract fishermen's salaries and ATC administrative costs including net replacement.
- Assist in training contract test fishermen.
- Produce a final project report on the results of the test fishery for the funding source.

Alaska Department of Fish and Game (ADF&G):

- Provide notebook with data sheets to ATC.
- Receive results of the test fishery on a daily basis.
- Calculate daily and cumulative CPUE for the test fishery.
- Compare MVTF results with other run strength and timing information.
- Provide feedback of the project results to the test fishermen, ATC, and BSFA.
- Assist in training contract test fishermen.
- Post season: Fairbanks Office – error check data forms with raw data notebooks (rite-in-the-rain) provided by ATC; Anchorage Office – press and read all scales provided, and send results of analyzed data to BSFA to complete report.

Contract Test Fishermen:

- Provide a boat, outboard motor, fuel, motor oil, oars, first aid kit, repair tools, and other necessary equipment to effectively operate the boat and deploy the drift test fishing gear.
- Operate the test drift gillnet fishery in accordance with the Operational Procedures Manual and directives from ATC and ADF&G.
- Keep accurate records on daily weather conditions, daily catch results for each drift, and dispersal of the harvest. Form is referred to as Table 1.

- Collect age-sex-length data. Information recorded in ASL workbooks provided by ADF&G including back up office sheets located in binder.

- Have nets mended as necessary.
- Work with ATC staff to ensure that daily results are transmitted to ADF&G in Emmonak (FAX 907-949-1830) by 5:00 p.m. each day or the Fairbanks office when directed (FAX 907-457-7271). If the fax is not available, drift fishing times and catch data must be dictated over the phone to ADF&G in Emmonak (907-949-1320) or Fairbanks (907-459-7293) on a daily basis for timely use in management.

Methods

Gear:

The Mountain Village Test Fishery will use a 25 fathom salmon gillnet with 5 and 7/8 inch mesh and 35 meshes deep. The net shall be equipped with two buoys with the words "Test Fish" painted on them.

Field Procedures:

The test fish crew should meet at 11:15 a.m. each day to prepare the boat and gear. Test fishermen should depart Mountain Village with enough time to arrive at the first test drift site by 12:00 noon. Gas tanks should be filled earlier in the day or at the end of the previous day's test fish operation. The test fish boat should be outfitted with the following equipment:

- 25-fathom drift gillnet with buoys marked with the words "Test Fish."
- Boat should be marked with a sign "Test Fish."
- Sufficient gas and oil to conduct that day's test fishery plus extra gas for a minimum of an hour of running.
- Tools for emergency repairs.
- A data log book with log sheets and drift schedule.
- A thermometer.
- Scale sampling equipment (scale gum cards, tweezers, tape measure, wax paper, acetates, sample notebook).
- Float coats or life vests are to be worn at all times while in the boat.
- One or two oars.
- First aid kit.

Test Fishing Drifts:

The test fishery consists of three drifts. One drift is to be conducted at each of three different sites (Figure 1). Efforts should be made to fish the designated sites as consistently as possible. Keeping the sites, net size, and time of fishing consistent helps make the data comparable within and between years.

At approximately 12:00 noon each day, the first of the three drifts should be conducted. Each drift will last 5 to 20 minutes. Drifts should last 5 to 10 minutes when catch rates are high. The distance covered by the drift will vary depending on the time in the water as

well as water and wind conditions.

Any problems encountered during the drift should be noted in the logbook. Problems may include snags, net saturation (extremely high catch rate), and alteration of the drift pattern because of conflicts with other nets, drift, etc. Fish should be counted and then released if they are lively and netted only in the mouth. Any salmon that are netted in the gills should be retained. Record the total number of salmon caught (catch), the number kept (harvest), and the number released alive by species.

During the first drift each day, information on environmental factors (weather) should be taken (cloud cover, precipitation, wind speed and direction, and air and water temperature). If a drift is not conducted, particularly due to weather, record weather information as usual and send in the daily fax. Weather is an important factor as to when fish move.

Nets should always be retrieved as quickly as possible. Slow retrieval of the test net affects the catch rate, referred to as the catch per unit effort (CPUE). If possible, pick fish from the web while retrieving the net. At times of high abundance, it is best to pull the entire net into the boat prior to removing the fish from the web. If it is thought that the catch rate will be high on a given day, test fishermen should seek a third person to assist with the operation.

Test drifts at sites 2 and 3 should be performed in a similar manner to the first drift, and recorded on the daily log sheet. Site location numbers do not change even if fished in a different order. Drift numbers are consecutive throughout the season.

If a commercial fishing period is announced for District 2 that will overlap with the daily test-fishing period, test fishing can continue to be conducted only if the following conditions are met:

1. The contract test fisherman or his crewmember possesses a valid CFEC permit for the lower Yukon Area, and the non-permit holder on the boat possesses a valid State of Alaska fishing crewmember license.

2. The three test drifts are conducted in the same manner as outlined in this manual. The same 25-fathom drift gillnet should be used. All salmon harvested during the commercial salmon fishing period in the test drifts may be sold on the individual's CFEC permit.

3. The contract test fishermen and his crewmember abide by all applicable subsistence and commercial regulations.

section of the daily data sheet.

If the above conditions are not met on days with a commercial fishing period, test fishing will not be conducted that day and must be noted in the log book and data sheets.

Catch Sampling and Delivery of the Harvest:

After the three drifts are completed, the test fish crew should immediately return to Mountain Village to sample and deliver the catch. Salmon should first be sampled for gender and length while collecting scales for aging (age-sex-length sampling) and then made available for local subsistence use. The Asa'carsarmiut Traditional Council will help publicize the availability of the fish. Test fishermen should log the delivery (bottom section of Table 1) and make note of the dispersal of the fish as kept by test fishermen for subsistence use or given away to other households for subsistence use.

Sampling Goals:

Sample up to 40 fall chum salmon per day for each day fished. On days when the catch is less than 40 fall chum salmon, sample all fall chum salmon harvested. When the catch is greater than 40, randomly sample only 40 out of the total catch.

Sampling Procedures (Refer to sampling tab in notebook for more specific information. Figures in this section correspond to figures in sampling procedures manual):

Complete before fish are distributed to local subsistence users:

1. Fill out the information for that day in the scale sampling data notebook (rite-in-rain).
2. Fill out information on front of scale gum card (be careful not to get the cards wet as they will stick together). A new scale gum card should be used every day regardless of the number of scales taken to prevent them from getting lost or damaged during subsequent sampling.
2. Determine whether the salmon is a male or female and put either M (male) or F (female) in the Sex column in the sampling data notebook.
3. Measure the salmon from the middle of the eye to the fork in the tail (Figure 1) and record this in the Length column in the notebook. Measure to the nearest 0 or 5 mm (a 573 mm measurement should be rounded to 570 or 575 mm, whichever it is closest to). **All lengths should end in either 0 or 5.**
4. Take scales from each fish (1 scale per chum salmon, 3 scales per coho salmon) from the preferred area (Figure 1) and attach scale(s) to the gummed scale card corresponding to the number of the sample (i.e. Scale #1 should be put directly on the 1 printed on the gum card, scale #2 on 2 and so on). **Important: the side of the scale facing up on the card should be the side of the scale that is facing outward on the fish. Try to orientate each scale on the card in the same direction. For orientation purposes note that the outside surface has texture while the inside is smooth.**

5. If genetic sampling is requested, conduct samples according to instructions from the biologist.
6. Once sampling of the daily catch is done, put a piece of waxed paper over the side of the gum card with the scales stored pressed flat and in a safe place until the cards can be sent to Emmonak or Anchorage for aging.

Office Procedures:

Assignments to be completed after the harvest is delivered:

1. Test fishermen shall transfer the information from the field notebooks to the Daily Test Fish Reporting Log (Table 1) and Sampling Data Log (Table 2). Data should be transferred to the back up books each day in case the log/field notebooks become lost (overboard etc…). If supplies of Log forms or field notebooks run short, notify ADF&G. It is the test fishermen's responsibility to ensure that the climatologic data, drift gillnet data, fishing time, and fish distribution portions of the daily log sheet and the daily scale sample log sheet are transferred accurately.
2. Test fishermen must submit the day's test fish results to ATC staff.
3. ATC staff compiles data collected for that day's test fishery and ensures that the forms/logs are filled out correctly.
4. ATC staff reports the results daily to ADF&G. Fax in daily both the test fishing reporting log and the scale sampling data log. (Emmonak office (907) 949-1320, FAX (907) 949-1830).

Interpreting the Mountain Village Test Fish Index:

Calculating the daily CPUE for the Mountain Village Test Fishery:

Number of Fathoms = 1 Start Net Out = 2 Net Full Out = 3 Start Net In = 4 Net Full In = 5 Mean Fishing Time = 6	Mean Fishing Time = $(4 - 3) + \frac{(3 - 2) + (5 - 4)}{2}$ Index = $\frac{(6000) * (\text{Number of Fish})}{(6) * (1)}$

The deployment, fishing, and retrieval of the drift gillnets will be recorded for each sampling event. CPUE will be calculated using fish per 100 fathom-hours:

$$\text{CPUE} = [((100 \text{ fathom} * 60 \text{ minutes}) * (n))/(L*T)]$$

where:

n= number of fish caught,
L= length of net in fathoms

T= the time the net fished

The time the net fished is calculated using:

$$T = ([(\text{set time} + \text{retrieval time})/2] + \text{soak time})$$

The amount of time the gillnet is soaked varies. An independent CPUE calculation is made for each drift fished. This value is summed with CPUE calculations from the same day and gear type and then averaged to obtain a CPUE for the day and gear type:

$$\text{Daily CPUE} = ((\sum \text{CPUE})/n)$$

where:

n=number of sets for the given day and gear type.

The 2011 Mountain Village Drift Gillnet Test Fishery will continue to collect information to determine salmon timing and relative abundance. Daily CPUE can be compared within the year to provide timing information. Additionally, daily CPUE and cumulative CPUE can be compared to previous years to provide an estimate on relative salmon abundance. The degree to which this project correlates with other projects will continue to be monitored.

Using the test fishery as a management tool is not as simple as it may appear. Numerous variables such as wind, water level, other fishermen fishing in the vicinity, and debris can influence the effectiveness of the gear used to catch fish. Also, catchability changes from year to year and within a season.

Safety

- **If it is too rough, do not go fishing. "But collect the weather data."**
- Do not go test fishing alone. If a crewmember is sick, get another crewmember to fill in.
- Wear float coats or floatation vests at all times when in the boat.
- Operate the test fish boat and gear in a safe and responsible manner.

Post Season Reporting:

Following conclusion of the test fishery field season, the Project Leader will write a report on the test fish results.

Consultation and Public Support:

The 2011 Mountain Village Drift Gillnet Test Fishery will be modeled based on the successfully operated project operated since 1995. This project is supported by the residents of Mountain Village and provides valuable information used in the management of the Yukon River fisheries.

Scale samples will be forwarded to Emmonak ADF&G office for inseason aging by sending it on a plane to Emmonak with the Emmonak ADF&Gs address (located on the cover of this document) on the cover of the package. Scales will be sent to Emmonak through August 25, after which the scales for the remainder of the season will be kept until the end of the season and sent in with the data and notebooks to Fairbanks. ADF&G will pay freight charges to send scales from Mountain Village to Emmonak.

At the end of the season, the test fishing field notebooks, office binder with log sheets, and ASL sampling materials (scale cards and data notebooks) should be mailed to ADF&G Fairbanks office at the following address by mid-October:

Alaska Department of Fish and Game
Division of Commercial Fisheries
c/o Bonnie Borba
1300 College Road
Fairbanks, AK 99701
(907) 459-7260

Table 1. Daily Mountain Village Test Fishery Reporting Log, _____ (yr).

To: Alaska Department of Fish and Game, Emmonak (FAX 907 949-1830)
Test Fishermen (Captain): _____
Subject: Mountain Village Test Fishery Data

ADF&G Notes

Daily Climatological and River Conditions at Time of Test Fishing 1/							
DATE	TIME	SKY	PRECIP	WIND Direction	WIND Speed	AIR TEMP	WATER TEMP

				FISHING TIME					Fall Chum Salmon			Coho Salmon		
Date	Drift No.	Site No.	Mesh Size	No. Fathoms	Start Net Out	Net Full Out	Start Net In	Net Full In	Total Kept	Total Release	Total Catch	Total Kept	Total Release	Total Catch

Mountain Village Test Fishery Catch Disposition Log					
Date	Subsistence Household	Chum	Coho	Other Salmon 1/	Other Non-Salmon 1/

Other Comments :

1/ See codes on back of form.

Table 1. Daily Mountain Village Test Fishery Reporting Log, _____ (yr). (Continued)

CODES:			
SKY -	PRECIPITATION -	WIND -	SPECIES -
0 no observation	A none	0 calm	K Chinook
1 clear or mostly clear	B intermittent	1 1-10 mph	S Sockeye
2 cloud cover not more than 1/2 of sky	C continuous rain	2 11-20 mph	P Pink
3 cloud cover more than 1/2 of sky	D snow	3 21-30 mph	W Whitefish
4 complete overcast	E snow and rain	4 over 30 mph	Sh Sheefish
5 thick fog	F hail		
	G thunderstorm with or without rain		

Table 2. Mountain Village Drift Gillnet Salmon Test Fishery Scale Sampling Data Log, _____ (yr).

Date | | FALL CHUM SALMON

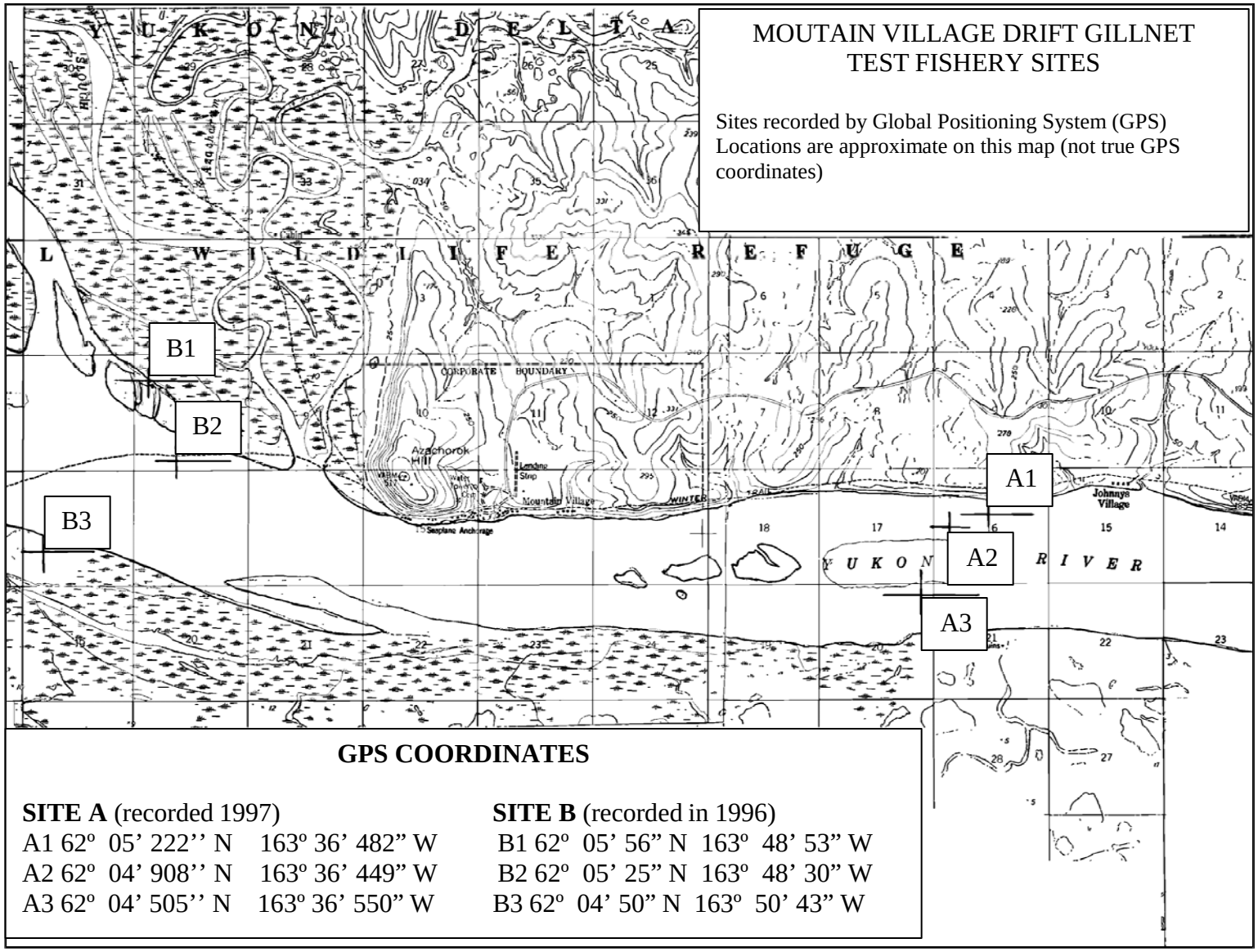
Mountain Village 5.875-inch DRIFT GILLNET

Card #			Length
1	M	F	
2	M	F	
3	M	F	
4	M	F	
5	M	F	
6	M	F	
7	M	F	
8	M	F	
9	M	F	
10	M	F	
11	M	F	
12	M	F	
13	M	F	
14	M	F	
15	M	F	
16	M	F	
17	M	F	
18	M	F	
19	M	F	
20	M	F	
21	M	F	
22	M	F	
23	M	F	
24	M	F	
25	M	F	
26	M	F	
27	M	F	
28	M	F	
29	M	F	
30	M	F	

Date | | COHO SALMON

Mountain Village 5.875-inch DRIFT GILLNET

Card #			Length
1	M	F	
2	M	F	
3	M	F	
4	M	F	
5	M	F	
6	M	F	
7	M	F	
8	M	F	
9	M	F	
10	M	F	
Card #			**Length**
11	M	F	
12	M	F	
13	M	F	
14	M	F	
15	M	F	
16	M	F	
17	M	F	
18	M	F	
19	M	F	
20	M	F	



GPS COORDINATES

SITE A (recorded 1997)		**SITE B** (recorded in 1996)	
A1 62º 05’ 222’’ N	163º 36’ 482” W	B1 62º 05’ 56” N	163º 48’ 53” W
A2 62º 04’ 908’’ N	163º 36’ 449” W	B2 62º 05’ 25” N	163º 48’ 30” W
A3 62º 04’ 505’’ N	163º 36’ 550” W	B3 62º 04’ 50” N	163º 50’ 43” W

Figure 1. Mountain Village test fishery showing drift gillnet site.