U.S. Fish and Wildlife Service
Office of Subsistence Management
Fisheries Resource Monitoring Program

Abundance and Run Timing of Adult Salmon in Long Lake in the Wrangell-St. Elias National Park and Preserve, 2008

Annual Report for Project 07-505

Molly McCormick
Wrangell - St. Elias National Park and Preserve
P.O. Box 439
Mile 106.8 Richardson Hwy.
Copper Center, Alaska 99573

October 2009

TABLE OF CONTENTS

Page

TABLE OF FIGURES v

LIST OF TABLES ..... **v**

LIST OF APPENDICES ..... **vi**

INTRODUCTION **1**

Background 1

OBJECTIVES 4

METHODS 4

Site Description 4

Weir Operation 5

Biological Data 8

RESULTS 9

Weir Operation 9

Biological Data 10

Run Timing 14

DISCUSSION 14

Weir Operation 14

Biological Data 15

RECOMMENDATIONS 17

ACKNOWLEDGMENTS 17

LITERATURE CITED 17

LIST OF FIGURES

Figure Page

Figure 1. Salmon spawning in Long Lake in April, 2004. 3

Figure 2. Cliff Collins at the weir at age 93 with Karelian bear dog in 2003. 4

Figure 3. Long Lake weir site. 5

Figure 4. Long Lake weir and sampling box under construction, 2008. 6

Figure 5. Sampling box and weir, Long Lake weir, 2007. 7

Figure 6. Staff gauge at Long Lake weir, 2006. 7

Figure 7. Otolith sampling, Long Lake, 2008. 8

Figure 8. Daily staff gauge readings of water depth, Long Lake weir, 2008. 9

Figure 9. Comparison of 2004-2008 water levels, Long Lake weir. 9

Figure 10. Daily water temperatures, Long Lake weir, 2008. 10

Figure 11. Daily sockeye salmon count, Long Lake weir, 2008. 11

Figure 12. Long Lake weir sockeye estimates, 1974-2008. 12

Figure 13. Relationship between Long Lake sockeye salmon and Miles Lake sonar counts, 1978-2008. 12

Figure 14. Average migratory run timing for 19974-2008 sockeye salmon runs, and migratory timing 2004-2008, Long Lake weir. 14

Figure 15. Long Lake weir, April 2006. 15

Figure 16. The confluence of Long Lake Creek (Salmon Creek) and the Lakina River, October 8, 2008. 16

LIST OF TABLES

Table Page

Table 1. Long Lake weir and Miles Lake sonar sockeye salmon counts, 1974-2008. Miles Lake sonar counts obtained from Alaska Department of Fish and Game website. Data for Miles Lake not available (N/A) 1974-1977. 2

Table 2. Numbers by sex and age class of sockeye salmon sampled at the Long Lake weir, August 19 - October 9, 2008. 13

Table 3. Average Length (mid-eye to tail fork) by sex and age of sockeye salmon sampled at the Long Lake weir, August 19 - October 9, 2008. 13

Table 4. Run timing information for the sockeye salmon migration through the Long Lake weir, 2004-2008. 14

LIST OF APPENDICES

Appendix Page

Appendix A. Daily and cumulative sockeye and coho salmon counts, and number of sockeye salmon sampled for age, sex, and length information, Long Lake weir, 2008..... 18

INTRODUCTION

The upper Copper River drainage provides spawning habitat for sockeye *Oncorhynchus nerka*, coho *O. kisutch*, and Chinook *O. tshawytscha* salmon. Significant numbers of adult salmon are harvested in commercial drift gillnet operations near the mouth of the Copper River from mid-May to September. Salmon escapement into the upper Copper River system contributes to federal and state subsistence fishing through September each year. The monitoring and evaluation of these runs is essential to ensure that Wrangell - St. Elias National Park and Preserve (WRST) maintains natural and healthy populations of fish as required by the Alaska National Interest Lands Conservation Act (ANILCA).

Accurate assessment of yearly run strength and migratory timing in tributaries to the Copper River is essential to the development of a management strategy that meets the mandates of ANILCA. The upper Copper River sockeye salmon populations are of particular importance to both federally qualified and state subsistence users. The primary assessment of inriver abundance for Copper River sockeye salmon occurs at the Miles Lake sonar site. However, migratory timing of sockeye salmon into the Copper River is prolonged (May-August), and subsequent assessment of escapement into some tributaries is needed to determine spawning distribution. The sonar equipment at the Miles Lake site is typically shut down on August 15 each year, after the majority of the sockeye salmon have migrated through. A portion of the Long Lake sockeye salmon run enters the Copper River after the sonar has been pulled from the Miles Lake site.

Thirty-five years of weir data show annual variations in abundance of Long Lake runs ranging from 636 to over 50,000 sockeye salmon (Table 1). This is the longest running data set of salmon weir counts in the Copper River drainage. The sockeye salmon stock that spawns within Long Lake is the largest salmon stock within the Chitina River drainage. The magnitude of escapement, and its contribution to the total inriver return of the Copper River, is widely variable (Table 1). The largest measured escapement (50,000) into Long Lake occurred in 2002, and comprised 6% of the estimated total inriver return. During the period 1978-1980, inriver returns to the Copper River were very low, and Long Lake escapements comprised 14-19% of the total. Since 1981, escapements into Long Lake have comprised no more than 6% of the total inriver return. There does not appear to be a relationship between the magnitude of inriver return and escapement into Long Lake during this 26-year period, which demonstrates the need for stock specific monitoring sites in addition to broad scale sonar sites estimating mixed stock returns.

Background

The Long Lake population has the longest known annual spawning duration (August through April) of any sockeye salmon population in North America. (Roberson, K, retired ADF&G Commercial Fisheries Division fisheries biologist, personal communication, November 2002). Throughout the winter, sockeye salmon spawn in the northwest corner of the lake since this portion of the lake rarely freezes (Figure 1).

Table 1. Long Lake weir and Miles Lake sonar sockeye salmon counts, 1974-2008. Miles Lake sonar counts obtained from Alaska Department of Fish and Game website. Data for Miles Lake not available (N/A) 1974-1977.

	Number of Sockeye Salmon		
Year	Miles Lake Sonar	Long Lake Weir	Long Lake as % of Sonar Estimates
1974	N/A	4,684	-
1975	N/A	6,768	-
1976	N/A	24,689	-
1977	N/A	8,624	-
1978	107,011	15,458	14.5
1979	237,173	46,110	19.4
1980	276,538	39,038	14.1
1981	535,263	12,659	2.4
1982	467,306	28,047	6.0
1983	545,724	28,133	5.2
1984	536,806	10,637	2.0
1985	436,313	21,131	4.8
1986	509,275	16,997	3.3
1987	483,478	13,633	2.8
1988	488,398	7,543	1.5
1989	607,797	14,981	2.5
1990	581,895	21,664	3.7
1991	579,435	11,511	2.0
1992	601,952	10,091	1.7
1993	797,902	16,101	2.0
1994	715,181	18,289	2.6
1995	599,265	17,923	3.0
1996	906,867	6,309	0.7
1997	1,148,079	4,443	0.4
1998	866,957	8,441	1.0
1999	848,921	12,922	1.5
2000	587,592	8,645	1.5
2001	833,569	26,999	3.2
2002	819,000	49,747	6.1
2003	695,233	4,604	0.7
2004	669,646	19,215	2.9
2005	854,268	7,770	0.9
2006	959,731	9,239	1.0
2007	926,438	7,846	0.9
2008	614,999	631	0.1

Figure 1. Salmon spawning in Long Lake in April, 2004.

The Alaska Department of Fish and Game (ADF&G) initially operated the Long Lake weir in 1974 and 1975. Cliff Collins, a local private citizen who owned the land where the weir is located, voluntarily took over operation of the weir in 1976 when ADF&G was no longer able to fund its operation (Figure 2). He operated the weir continuously from 1976 through 2003. In 2003, when Mr. Collins, at age 93, was no longer able to operate the weir, a cooperative agreement was formed between the Collins' Family Trust, Wrangell-St. Elias National Park/Preserve and the Copper River Watershed Project to keep the weir operating. Since 2004, funding has been provided under the Subsistence Fisheries Resource Monitoring Program[1]. Starting in 2003, the weir operators began sampling sockeye salmon for age, sex, and length composition according to a sampling protocol established by ADF&G.

The physical structure of the weir has changed little since 1974. A small sampling box was constructed on the upstream side of the middle of the weir in 2003. In 2004 a larger sampling box was constructed against the west bank of the creek on the upstream side of the weir. This larger box has been used since 2004.

[1] Administered by U.S. Fish and Wildlife Service, Office of Subsistence Management.

Figure 2. Cliff Collins at the weir at age 93 with Karelian bear dog in 2003.

OBJECTIVES

1) To monitor annual abundance and timing of sockeye and other salmon in Long Lake.
2) To enumerate the number of sockeye salmon entering Long Lake from July 1 to mid-September, thereby continuing a data set initiated in 1974.
3) To measure the entry pattern of sockeye salmon to Long Lake and compare the entry pattern to the historic entry pattern data set to test for change in the interannual run timing.
4) To estimate age-sex-length composition of the Long Lake sockeye salmon population.
5) To compare the numbers of sockeye salmon entering Long Lake with similar data from the Miles Lake sonar.

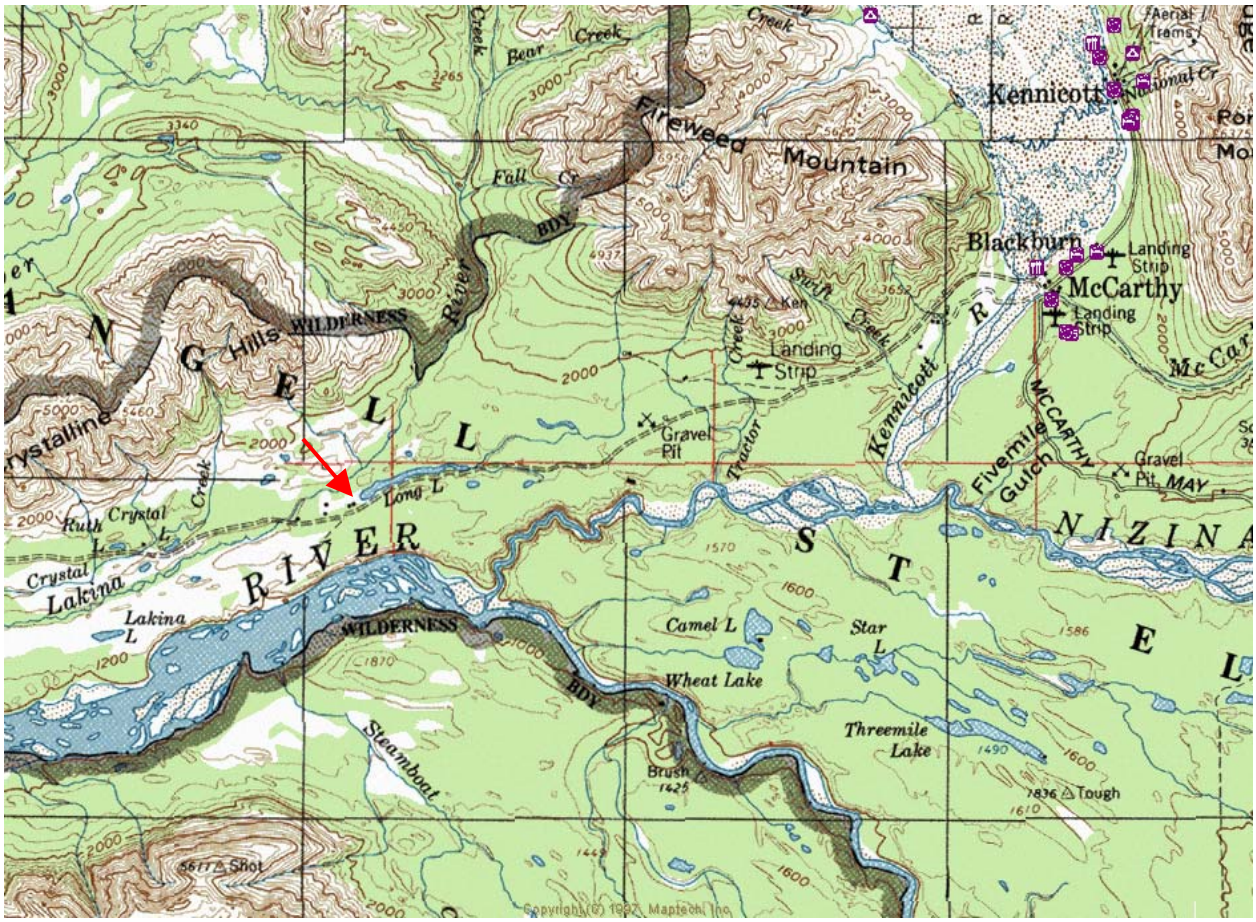
METHODS

Site Description

Long Lake is 480 m above sea level, at latitude 61 deg 23’ 1.68” N and longitude 143 degrees 17’ 15.89” W (Figure 2). Long Lake is located adjacent to the McCarthy Road and is 0.5 km wide and 8.5 km long. The outlet stream (called Salmon Creek by the Collins family) runs 2.1 kilometers through nearly level terrain to the Lakina River, a tributary of the Chitina River that flows into the Copper River. Willows, alders, mosses and sedges dominate the vegetation.

Forested areas consist mainly of white spruce interspersed with stands of paper birch and quaking aspen. The soils are poorly drained. Average annual precipitation is 40.11 cm, and average annual temperature is 22° C with extremes of 13.39° C and -27.06° C (USDA 1979).

Figure 3. Long Lake weir site.



Weir Operation

The project uses a rigid picket weir to enumerate the number of salmon migrating into Long Lake and to estimate the age, sex and length composition of the run by sampling sockeye salmon migrating through the weir. The weir site is on Collins Family Trust land and is located within a few hundred meters of the Collins family residence, at mile 45 on the McCarthy Road (Figure 3). The weir is installed and operated at the outlet of the lake, and pickets are spaced 3.75 cm apart (Figure 4).

The site is extremely conducive to the operation of a rigid picket weir. Flows fluctuate only slightly, water velocity is always low, and the stream is shallow and easily waded. A walkway is placed across the stream immediately upstream of the weir where a weir operator stands and counts migrating salmon simply by removing one or two pickets from the weir. Counting is done daily, and all pickets are kept in place so that fish cannot pass through when it is not being monitored.

Figure 4. Long Lake weir and sampling box under construction, 2008.

There is a large sampling box approximately 2.1 m x 3.1 m in size, with a funnel-shaped entry trap on the northwestern bank of the creek. The bank of the creek is used as one side of the box, and there is a table at the upstream end that is used to sample salmon (Figure 5). Fish are allowed to enter the sampling box by removing one or two pickets on the west side of the weir. When the box has 20-50 sockeye salmon in it, the pickets are replaced, trapping the salmon within the box. In 2008 the weir and sampling box were installed on July 25. Work at the weir ended on October 9, when the weir pickets were removed for the winter. Sampling was typically performed with a crew of two people.

Bears are frequently a problem at the weir and further downstream in the creek. The Collins family has several Karelian bear dogs (Figure 2) that are staked out near the weir when fish are being sampled or enumerated. An electric fence was installed around the weir and sampling box for the entire 2008 field season to prevent bears from damaging the weir and eating salmon captured in the box.

Both water temperature and water level were monitored throughout the summer, from July 26 to October 9. A *HOBO® TEMP* data logger placed in a submersible case was used to collect water temperature data throughout the season, and a staff gauge installed on the weir was used to measure water level (by observation) each day (Figure 6).

Figure 5. Sampling box and weir, Long Lake weir**,** 2007.

Figure 6. Staff gauge at Long Lake weir, 2006.

Biological Data

Fish migrating through the weir were counted and identified to species. This was done by removing 1 or 2 pickets in the weir and visually counting the salmon as they passed through. Sockeye salmon were sampled according to the same procedures used by the ADF&G, Division of Commercial Fisheries in Cordova, Alaska. This required sampling 10 percent of the average total return of sockeye salmon to estimate the age, sex and length of the population. To do this, at least 10% of the fish were sampled each week.

Each sockeye salmon sampled was measured to the nearest millimeter from mid-eye to fork length (MEF). One scale was collected from the preferred area, located on the left side of the fish and two rows above the lateral line on a diagonal from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin, according to ADF&G sampling protocols. Scales were later analyzed by ADF&G Commercial Fisheries Division staff based in Cordova. Ages were adjusted for resorbed scale margins using an age-length relationship developed for Copper River sockeye salmon. Age, sex, and length sampling at the weir occurred from August 19 through October 3, 2008. Additionally, age, sex, and length data were collected from 32 sockeye salmon carcasses sampled from the lake and shore between October 1 and 8, 2008 (Figure 7). Otoliths were removed from these carcasses for future analysis.

To determine whether the 1978-2008 time series of sockeye salmon escapements into Long Lake showed linear trends over years, the coefficient of determination (R_2) was calculated to determine the amount of variation explained by the regression, and an F test was used to test the null hypothesis that the slope of the fitted line was equal to zero. Similar statistical analyses were

Figure 7. Otolith sampling, Long Lake**,** 2008.

applied to1978-2008 inriver runs at the Miles Lake sonar site. To determine whether sockeye salmon escapements into Long Lake were correlated with total inriver runs at Miles Lake, the correlation coefficient (R) for 1978-2008 paired estimates was calculated. All statistical significance testing was done at the 95% level.

RESULTS

Weir Operation

In 2008, daily staff gauge readings between July 26 and October 4 varied between 1.9 feet and 2.85 feet, showing a maximum variation of 1.75 feet (Figure 8). In the early part of the summer the water level was slightly higher than normal compared to the previous four years (Figure 9).

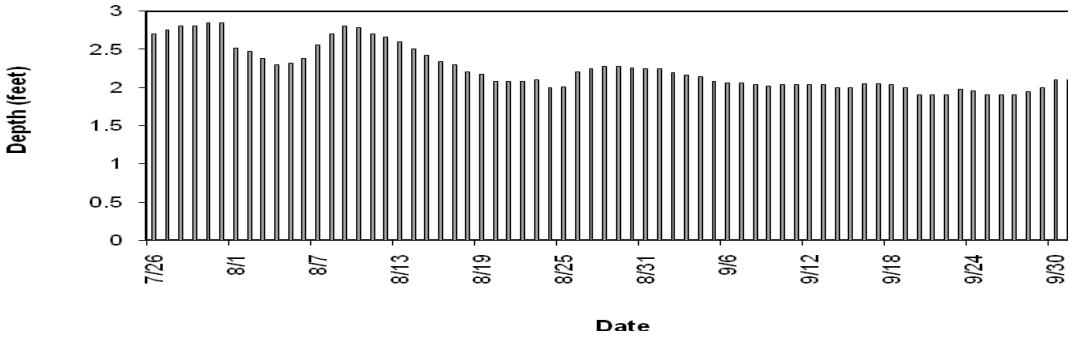


Figure 8. Daily staff gauge readings of water depth, Long Lake weir, 2008.

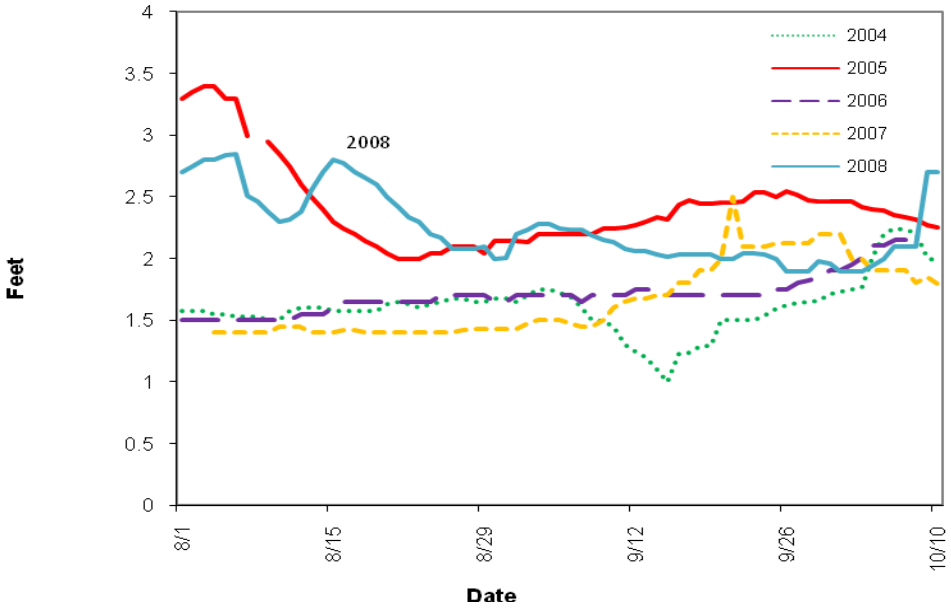


Figure 9. Comparison of 2004-2008 water levels, Long Lake weir.

Daily water temperature data ranged from a high of 65° F on August 16 to a low of 28° F on October 22 (Figure 10).

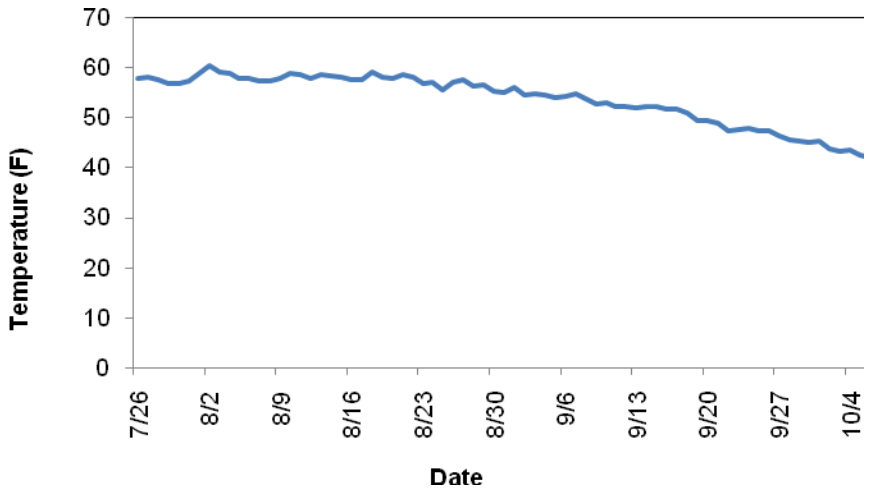


Figure 10. Daily water temperatures, Long Lake weir, 2008.

Biological Data

In 2008, 631 sockeye salmon were enumerated through the Long Lake weir (Figure 11 and Appendix A). The first sockeye salmon passed through the weir on August 6 when 115 were counted; this was also the day when the highest number of salmon were counted through the weir. The median run day occurred on August 20 when 329 sockeye salmon had been counted through the weir. A total of 174 sockeye salmon were sampled for sex, length, and age. Between September 17 and October 9, a total of 184 coho salmon were also enumerated.

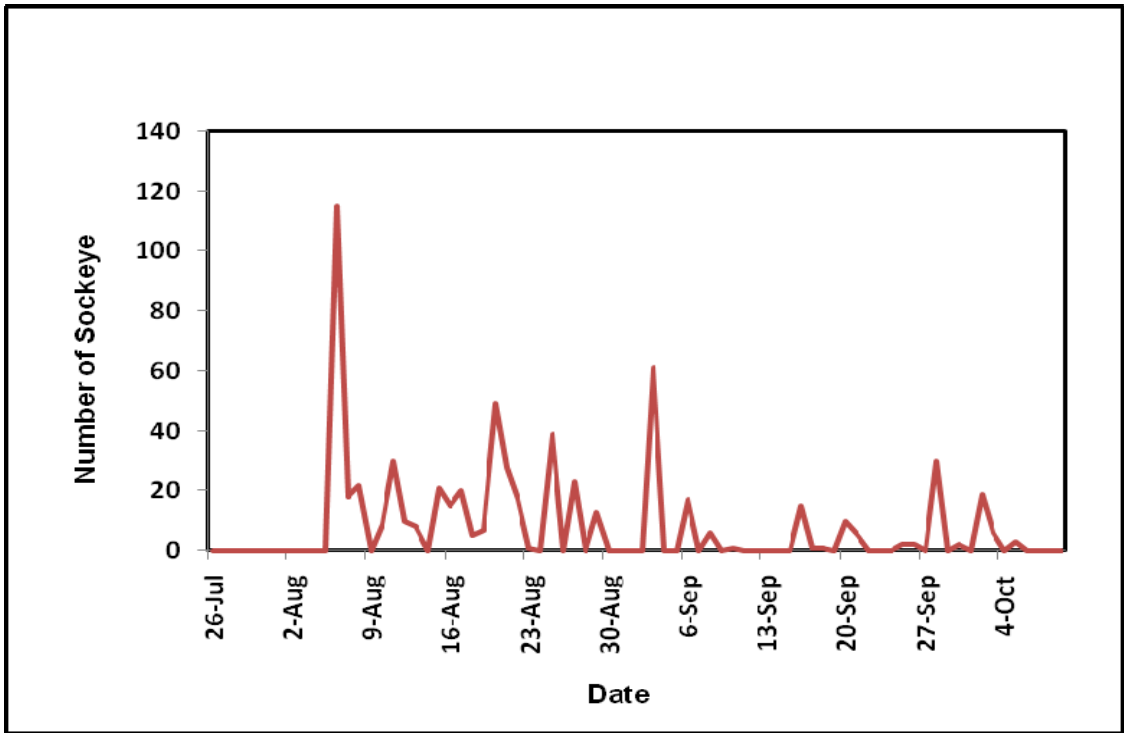


Figure 11. Daily sockeye salmon count, Long Lake weir, 2008.

Sockeye returns to Long Lake during the 35 year period of weir operations have been highly variable, ranging from a high of 50,000 in 2002 to 2008's low of 631 (Table 1, Figure 12). The number of sockeye salmon counted through the weir in 2008 was approximately 4% of the 35 year average of 15,966 sockeye salmon and represented about 0.1% of the total inriver run estimated by the Miles Lake sonar project. During 1978-2008, Long Lake escapements counts represented an average of 3.8% of the total inriver run, but ranged from 0.4% to 19.4% of the total inriver run. Long Lake escapements show no significant ($p > 0.05$) abundance trend during this time period, while Miles Lake estimates show a significant ($p < 0.05$) trend ($R = 0.786$) of increasing abundance. A significant ($p < 0.05$) negative correlation ($R = -0.403$) was found between Long Lake escapements and Miles Lake estimates for these years (Figure 13).

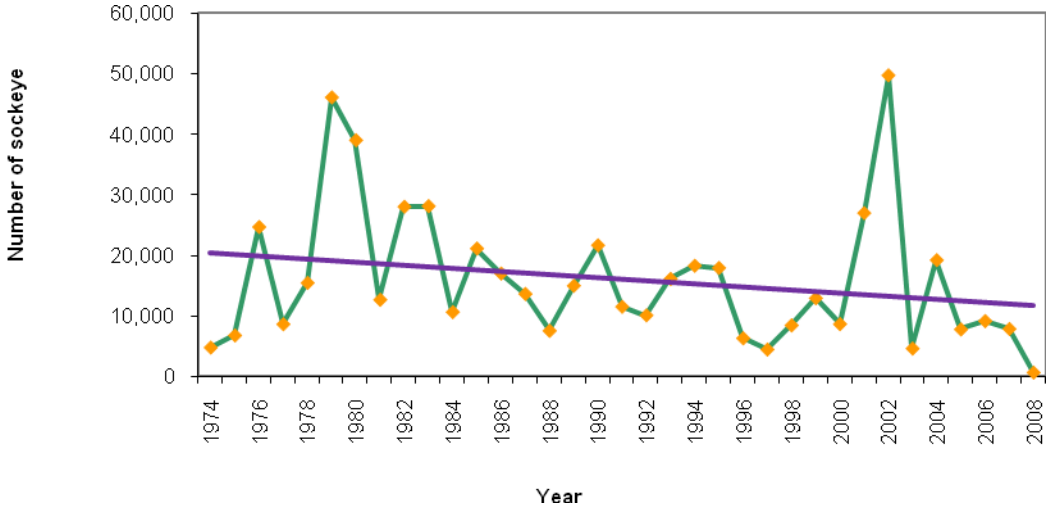


Figure 12. Long Lake weir sockeye estimates, 1974-2008.

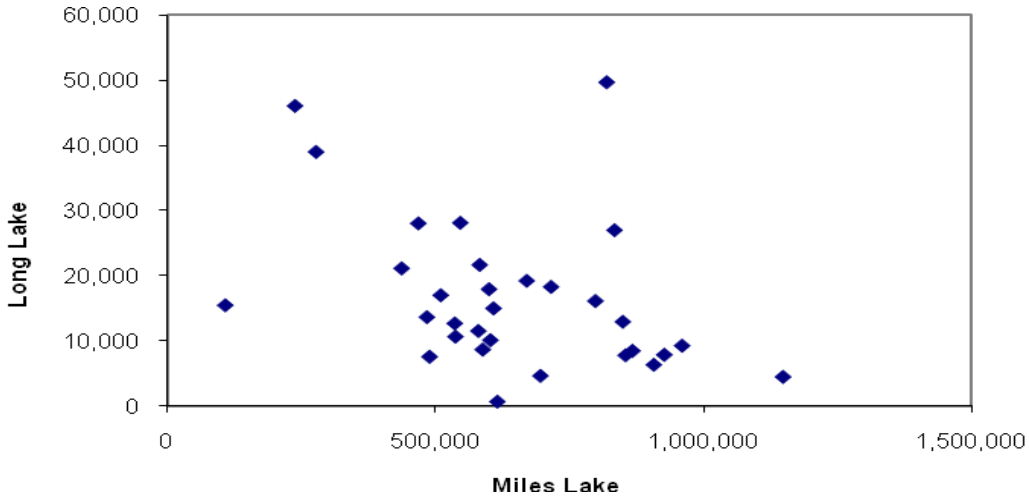


Figure 13. Relationship between Long Lake sockeye salmon and Miles Lake sonar counts, 1978-2008.

Females comprised about 49% of the returning adults sampled in 2008, and age-1.3 sockeye salmon comprised 71.9% (Table 2).

Table 2. Numbers by sex and age class of sockeye salmon sampled at the Long Lake weir, August 19 - October 9, 2008.

Sex		Age Class 1.2	1.3	2.2	1.4	2.3	Total Fish Counted	Number of fish sampled
F	Percent	12.5	32.5	0.0	0.6	3.1		
	Number	79	205	0	4	20	308	
								78
M	Percent	4.4	39.4	0.6	0.0	6.9		
	Number	28	248	4	0	43	323	
								82
Total	Percent	16.9	71.9	0.6	0.6	10.0		
	Number	106	454	4	4	63	631	160
	SE	19	22	4	4	15		

The average MEF length of age-1.3 males was 588 mm, while the average MEF length of age-1.3 females was 557 mm (Table 3).

Table 3. Average Length (mid-eye to tail fork) by sex and age of sockeye salmon sampled at the Long Lake weir, August 19 - October 9, 2008.

Sex		Age Class 1.2	1.3	2.2	2.3
F	Avg Length (mm)	491	557		584
	SE	10.6	5.7		13.0
	Sample Size	20	50		5
M	Avg Length (mm)	514	588	520	600
	SE	19.0	5.0		8.2
	Sample Size	7	62	1	11
Total	Avg Length (mm)	497	574	520	595
	SE	9.3	4.0		7.0
	Sample Size	27.0	112.0	1.0	16.0

Run Timing

Run timing in 2008 was earlier than that observed for the last four years, which have all been about one week later than the 1974-2007 average (Table 2, Figure 14). The first sockeye salmon were passed through the weir on August 15 when 94 fish were counted. The median point of the run was August 20 when the cumulative total reached 329 sockeye salmon. The last sockeye salmon were counted through the weir on October 15.

Table 4. Run timing information for the sockeye salmon migration through the Long Lake weir, 2004-2008.

Year	First fish	Median date	Median Number
2004	August 8	September 12	9,608
2005	August 11	September 12	3,885
2006	August 7	September 4	4,620
2007	August 15	September 8	3,923
2008	August 6	August 20	329

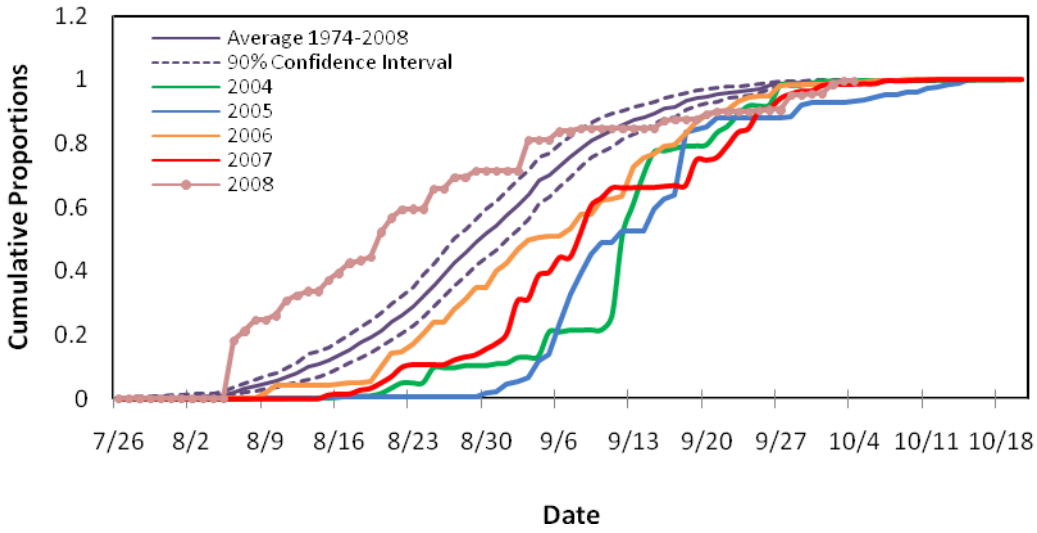


Figure 14. Average migratory run timing for 19974-2008 sockeye salmon runs, and migratory timing 2004-2008, Long Lake weir.

DISCUSSION

Weir Operation

There were no major changes in weir operations in 2008. The basic construction of the weir has changed very little since it was built in 1974 because the rigid picket design works well in this

location. The pickets are removed from the weir and stored at the end of each field season and then replaced each summer, while the weir's framework is left in place in the creek throughout the winter (Fig. 15).

The 2004 sampling box design continued to work well This sampling box replaced a smaller one that was built in 2003 (that can be seen in Figure 2), which was the first year sampling was done at the weir and the first year that WRST was involved in the project. The redesigned box is larger than the 2003 box, and was built adjacent to the northwestern bank of Salmon Creek. Erecting the electric fence earlier to deter bears seems to have provided a safer work place at the weir site. The 2008 sampling crew, which was composed of two individuals living in the Collins' household and one other local resident, functioned very well. No major changes are planned for 2008.

Figure 15. Long Lake weir, April 2006.

Biological Data

Otolith collecting was started in 2007 to supplement the age data collected from scale samples. Scales taken from the sockeye salmon that return to Long Lake are often hard to read because they are worn at the edges and have started to be resorbed. Otoliths may provide a more accurate

way to age the salmon. However, it is more difficult to sample sockeye salmon in the lake than at the weir, and it would be very difficult to obtain a representative sample of 10% of the population. In 2009 we will again sample a combination of scale and otolith collections

The 2008 sockeye salmon escapement into Long Lake was much less than the average 35 year escapement, while the 2008 the Miles Lake sonar estimate of the total number of salmon entering the Copper River was similar to the average 31 year total escapement. The creek was checked in September to determine if there were any physical impediments to fish passage and none were found. In early October, a flyover of the confluence of the creek into the Lakina River showed water flow into the river (Figure 15). Salmon escapement into Long Lake was very low but continuous throughout its normal run timing.

Figure 16. The confluence of Long Lake Creek (Salmon Creek) and the Lakina River, October 8, 2008.

Sockeye salmon returns to Long Lake have been highly variable, from a high of 50,000 in 2002 to a low of 631 in 2008 (Table 1). While the total run of sockeye salmon to the Copper River estimated at the Miles Lake sonar site has shown an increasing trend in abundance, a similar trend has not been seen for the Long Lake component of the run. In fact, there is a negative correlation between Miles Lake sonar and Long Lake weir counts. We are unable to determine whether this is due to unequal fishing exploitation rates or other causes. However, it does

indicate the importance of monitoring individual spawning populations along with the total run to this drainage, since increasing total runs do not indicate that all segments of the spawning population are experiencing similar trends. It is vitally important to conserve all segments of the population to ensure the continued health and sustainability of the total run.

RECOMMENDATIONS

1. Continue monitoring the sockeye salmon escapement into Long Lake so that an appropriate natural and healthy escapement range can be determined.
2. Continue sampling sockeye salmon for age, length, and sex information to monitor the health of the spawning population.
3. Continue collecting otolith as a means to determine accurate age information for the sockeye salmon spawning population.

ACKNOWLEDGMENTS

The Collins family and the Prince William Sound Science Center provided the majority of the labor for operating the weir. Tamara Harper and Lucas Stumpf were instrumental in assuring that age, sex, and length and otolith collection were conducted properly. Steve Moffit and crew at the ADF&G, Commercial Fisheries Division in Cordova, Alaska proposed the sampling regime for the weir, read scale samples, and provide age, sex, and length summaries. The U.S. Fish and Wildlife Service, Office of Subsistence Management, provided $19,698 in funding support for 2008 through the Fisheries Resource Monitoring Program, under contract number FIS07-505. Stephen Fried, FWS, OSM, provided statistical support.

LITERATURE CITED

USDA (United States Department of Agriculture, Soil Conservation Service). 1979. Exploratory Soil Survey of Alaska, National Cooperative Soil Survey.

Appendix A. Daily and cumulative sockeye and coho salmon counts, and number of sockeye salmon sampled for age, sex, and length information, Long Lake weir, 2008.

Date	Sockeye Salmon			Coho Salmon	
	Daily Count	Cumulative Count	Number Sampled	Daily Count	Cumulative Count
26-Jul	0	0	0	0	0
27-Jul	0	0	0	0	0
28-Jul	0	0	0	0	0
29-Jul	0	0	0	0	0
30-Jul	0	0	0	0	0
31-Jul	0	0	0	0	0
1-Aug	0	0	0	0	0
2-Aug	0	0	0	0	0
3-Aug	0	0	0	0	0
4-Aug	0	0	0	0	0
5-Aug	0	0	0	0	0
6-Aug	115	115	0	0	0
7-Aug	18	133	0	0	0
8-Aug	22	155	0	0	0
9-Aug	0	155	0	0	0
10-Aug	9	164	0	0	0
11-Aug	30	194	0	0	0
12-Aug	10	204	0	0	0
13-Aug	8	212	0	0	0
14-Aug	0	212	0	0	0
15-Aug	21	233	0	0	0
16-Aug	15	248	0	0	0
17-Aug	20	268	0	0	0
18-Aug	5	273	0	0	0
19-Aug	7	280	5	0	0
20-Aug	49	329	40	0	0
21-Aug	28	357	0	0	0
22-Aug	17	374	17	0	0
23-Aug	1	375	0	0	0
24-Aug	0	375	0	0	0
25-Aug	39	414	0	0	0
26-Aug	0	414	0	0	0
27-Aug	23	437	18	0	0
28-Aug	0	437	0	0	0
29-Aug	13	450	13	0	0
30-Aug	0	450	0	0	0
31-Aug	0	450	0	0	0

-continued-

Appendix A. Continued.

Date	Sockeye Salmon			Coho Salmon	
	Daily Count	Cumulative Count	Number Sampled	Daily Count	Cumulative Count
1-Sep	0	450	0	0	0
2-Sep	0	450	0	0	0
3-Sep	61	511	28	0	0
4-Sep	0	511	0	0	0
5-Sep	0	511	0	0	0
6-Sep	17	528	14	0	0
7-Sep	0	528	0	0	0
8-Sep	6	534	4	0	0
9-Sep	0	534	0	0	0
10-Sep	1	535	0	0	0
11-Sep	0	535	0	0	0
12-Sep	0	535	0	0	0
13-Sep	0	535	0	0	0
14-Sep	0	535	0	0	0
15-Sep	0	535	0	0	0
16-Sep	15	550	0	3	3
17-Sep	1	551	0	1	4
18-Sep	1	552	0	0	4
19-Sep	0	552	0	0	4
20-Sep	10	562	0	0	4
21-Sep	5	567	0	4	8
22-Sep	0	567	0	0	8
23-Sep	0	567	0	0	8
24-Sep	0	567	0	1	9
25-Sep	2	569	2	16	25
26-Sep	2	571	2	26	51
27-Sep	0	571	0	0	51
28-Sep	30	601	0	81	132
29-Sep	0	601	0	0	132
30-Sep	2	603	0	2	134
1-Oct	0	603	0	0	134
2-Oct	19	622	19	18	152
3-Oct	6	628	6	16	168
4-Oct	0	628	6	6	174
5-Oct	3	631	0	2	176
6-Oct	0	631	0	2	178
7-Oct	0	631	0	0	178
8-Oct	0	631	0	3	181
9-Oct	0	631	0	3	184

The U.S. Fish and Wildlife Service, Office of Subsistence Management conducts all programs and activities free from discrimination on the basis of sex, color, race, religion, national origin, age, marital status, pregnancy, parenthood, or disability. For information on alternative formats available for this publication please contact the Office of Subsistence Management to make necessary arrangements. Any person who believes she or he has been discriminated against should write to: Office of Subsistence Management, 3601 C Street, Suite 1030, Anchorage, AK 99503; or O.E.O., U.S. Department of Interior, Washington, D.C. 20240.