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**THE MISSION CREEK COHO FENCE REPORT
1999**



Prepared by Brenda Donas
For
Chicago Creek Community Environmental Enhancement Society
December 15, 1999

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Acknowledgements

The Chicago Creek Community Environmental Enhancement Society would like to thank the following individuals and groups for assistance during this program :

- Dept. of Fisheries and Oceans Canada for providing bio/technical support for this project
- Conservation and Protection Branch (DFO) for assistance during adult capture and sampling
- Fisheries Renewal B.C. for co-funding this project
- Ministry of Transportation and Highways for project funding as per agreement with DFO

The fence was operated by Mike and Shannon Garner and Tim Lemky. There were several volunteers that assisted with broodstock capture and egg takes. The volunteers were Meghan Frederickson, Jamie Corrigan, Sarah Girard, Shane Foord and Jeff Joiner. Thanks to all who assisted with the fence program this season.

Mission Creek Adult Coho Program 1999 Program Report

Introduction

Mission Creek(Station Creek) is a small salmon bearing stream with headwaters in the District of New Hazelton Community Watershed. Mission Creek enters the lower Bulkley River downstream of Hagwilget Canyon. The creek is impacted by industrial(chipper mill, fuel depot) and residential development, transportation corridors (Highway #16 and CN Railway) and the withdrawal of water by the District of New Hazelton and Hagwilget Village. There is an impassable highways culvert (Highway #16) west of New Hazelton that presents a height and velocity barrier to upstream migrating salmon.

The New Hazelton Elementary School, Waterfalls Creek Stream Rehabilitation Project and the Chicago Creek Community Environmental Enhancement Society have been conducting monitoring activities and coho salmon enhancement programs on the creek for several years now. Those groups have been involved in water quality monitoring, periodic aquatic insect monitoring, juvenile presence/absence monitoring and adult coho counts. The purpose of the monitoring and enhancement activities is to restore historical salmon runs and to increase public education and awareness of the salmon resource.

In the fall of 1998, the Chicago Creek Community Environmental Enhancement Society and the Waterfalls Creek Stream Rehabilitation Project became members of a conglomerate group called the Bulkley Morice Salmonid Preservation Group. The Chicago Creek Community Environmental Enhancement Society applied for funding from Fisheries Renewal B.C. for the fall of 1999 to operate a coho adult counting fence on Mission Creek. The Ministry of Transportation and Highways, under Habitat Inspectors Order (Fisheries and Oceans Canada) also contributed funding to this project for the 1999 season.

A broomstick fence was installed in early September 1999. Coho capture and enumeration occurred from early September to November 1, 1999. The purpose of the counting fence system was to enumerate coho adults returning to Mission Creek and to transport a portion of the returning adults above the impassable culvert.

Fence Installation and Operation

The fence consisted of two parts. A lower fence with a V-notch type lead in and an upper broomstick fence that was impassable to upstream migrating adults. The fence was constructed of two by six lumber frames with one inch holes drilled into top and bottom of the frames, at two inch centres. Wooden broomsticks were placed in the holes so that adults could only get through at the location of the V-notch lead-in. When the water was low, one of the panel sections was constructed such that it could be flipped up. When the water was low the coho preferred to go through this flipped-up section rather than use the V-notch lead-in.

Fence Installation and Operation Continued

A portable holding pen was placed between the two fences. When coho entered the area between the two fences, they would hold in a small pool area with some woody debris cover.

The crew would then net the coho from the holding pool using soft meshed dipnets and place them in the holding pen. Once the coho holding between the two fences had been transferred to the holding pen, the fish would then be sampled for mark type and either released above the counting fence or loaded into the transport truck for transport above the impassable culvert.

Sampling included the following :

- Sex
- Mark type (included dorsal fin tags, fin clips and maxillary clips)

Refer to Table I for adult capture information.

The fence was attended to several times daily and in the evenings. Debris was cleaned off both fences and the holding pool checked for presence of coho adults. When debris load against the fence increased during periods of heavy rainfall and/or snow melt, the fence was tended twenty-four hours per day. A small travel trailer was available for the crew to use as a residence during those times. A generator and safety lighting system were also on-hand for night-time work at the fence.

On October 22, 1999 the fence was washed out by a high water event. A temporary fence was installed on October 23rd and the fence was fishing by 2:00 p.m.. Several coho were observed just upstream of the washed out fence on Oct. 23rd, but no attempt was made to count those fish.

The temporary fence was removed on October 31, 1999 and is in storage at the Chicago Creek Hatchery, South Hazelton, B.C..

Adult Transport and Egg Deposition

Coho adults were transported via three quarter ton, flat-deck, four wheel drive truck with a 100 gallon holding tank. The transport tank was supplied with medical oxygen using a welding cylinder regulator and a micro-diffuser air stone. Transport time from start of loading adults to last adult either released into the creek or placed into the holding container at the hatchery, was approximately one hour. The maximum number of adults transported in one tank load was twenty.

No mortality occurred during adult transport.

A total of 82 females and 79 males were counted. A total of 29 females and 34 males were released above the fence but below the impassable culvert. Estimated egg deposition below the culvert is 63,800 eggs (using an estimated fecundity of 2200 eggs per female). At biostandard levels of 0.008% survival to returning adults, the estimated adult production from this egg deposition would be 510 adults. Note that return means catch + escapement.

A total of 41 females and 45 males were released above the impassable culvert. Estimated egg deposition above the impassable culvert is 90,200 eggs (Estimated fecundity is 2200 eggs per female).. At biostandard levels of 0.008% survival to returning adult, the estimated adult production from this egg deposition would be 722 adults.

Note that returning adult means **catch plus escapement**. The number of adults that will be in the escapement is dependent upon exploitation rate.

A total of 12 females were used in hatchery egg takes. All males that were used in hatchery egg takes were returned live to the stream above the impassable culvert.

Adult Holding and Egg Takes

Adults that were held for hatchery broodstock were held in a seven foot diameter, green fiberglass circular tub. The tub had a tight fitting lid so that the coho were kept in complete darkness. The water flow was set at approximately 30 USGPM and the flow pattern was circular in a counter-clockwise motion. Water depth was maintained at about one metre. Water temperature during holding varied between 4.5 and 6.5 degrees Celsius.

Almost all of the coho used for broodstock were transported to the hatchery on October 4th to 11th, 1999. The coho were first checked for ripeness on October 16th and were checked again on October 19th. The first egg takes were conducted on October 19th and egg takes were completed on October 20th, 1999.

Coho held very well in the circular tub and there was no fungus growth on adults.

When coho adults were checked for maturity, the females would be netted out of the holding tub first. Each female was checked for ripeness and females that were not ripe were placed into a Capilano trough. Any females that were ripe (sexually mature), were killed with a blow to the head and hung and bled (head down, tail up). Once we had females on the bleeding rack, we would begin taking sperm from the males.

The males were dipnetted out of the holding tub, the area of the urogenital pore was dried, and the males were milked into whirlpack sperm bags. The whirlpack bags were numbered and then were placed in a cooler until a sufficient number of males had been milked.

The females were stripped into clean, dry basins (one female per basin). A simple matrix spawning method was used this year to improve genetic diversity. The eggs from each female were split into two equal groups. Each group of eggs received sperm from two different males as follows :

- Group 1 eggs received sperm from Male #1 and that sperm was mixed into the eggs. Then sperm from Male #2 was added to the top of the eggs but was not mixed in.
- Group 2 received sperm from Male #2 that was mixed in well and then received sperm from Male #3 on top of the eggs.

Male #1 was the primary male for Group 1 and Male #2 was the primary male for Group #2. The other males were added in the event that the primary males had sperm that was either partially viable or completely unviable.

Egg take information is included in Table II.

Eggs will be incubated to the swim-up fry stage in the Heath tray incubator.

Table I : Adult Capture Records

Date	Species	Sex		Mark Type	Species	Sex		Release Location
		Male	Female			Male	Female	
Sep-13					Pink	0	0	above fence
Sep-14					Pink	5	6	above fence
Sep-15					Pink	4	2	above fence
Sep-16					Pink	16	14	above fence
Sep-17					Pink	15	17	above fence
Sep-18					Pink	17	18	above fence
Sep-19					Pink	13	16	above fence
Sep-20					Pink	11	16	above fence
Sep-21					Pink	6	9	above fence
Sep-22					Pink	8	9	above fence
Sep-23					Pink	4	9	above fence
Sep-24					Pink	6	3	above fence
Sep-25					Pink	6	4	above fence
Sep-26					Pink	6	5	above fence
Sep-27					Pink	9	7	above fence
Sep-28					Pink	8	3	above fence
Sep-29					Pink	5	5	above fence
Sep-30					Pink	3	7	above fence
Oct-01					Pink	6	8	above fence
Oct-02					Pink	4	7	above fe
Oct-03					Pink	2	3	above fe

Table 1 Cont'd
1999

Date	Species	Sex Male	Female	Mark Type	Species	Sex Male	Female	Release Location
Oct-04	Coho	5	6	Unmarked	Pink	3	1	to hatchery
Oct-05	Coho	0	0	Unmarked	Pink	3	1	above fence
Oct-06	Coho	0	0	Unmarked	Pink	3	1	above fence
Oct-07	Coho	0	0	Unmarked	Pink	1	1	above fence
Oct-08	Coho	3	5	unmarked				above fence
Oct-09	Coho	1	0	Unmarked				above fence
Oct-10	Coho	1	1	Unmarked				above fence
Oct-11	Coho	2	1	Unmarked				above fence
Oct-12	Coho	8	8	2 L Max.				to hatchery
Oct-13	Coho	2	3	1 rt. Max.				above fence
Oct-14	Coho	3	1	Unmarked				above fence
Oct-15	Coho	3	1	1 Rt. Max	Pink			above fence
Oct-16	Coho	5	2	1 Rt. Max				above fence
Oct-17	Coho	8	9	1 Rt. Max.				Above culvert
Oct-18	Coho	4	5	3 Rt. Max				Above culvert
Oct-19	Coho	6	9	1 Rt. Max				Above culvert
Oct-20	Coho	7	9	1 Rt./2Left Max.				above fence
Oct-21	Coho	10	14	2 Rt./2 Left Max.				Above culvert
Oct-22	Coho	Fence washed out						
Oct-23	Coho	Fence reinstalled						

Table 1 Cont'd

1999 Date	Species	Sex		Mark Type	Species	Sex		Release Location
		Male	Female			Male	Female	
Oct-24	Coho	3	1	1 Rt. Max.				above fence
Oct-25	Coho	2	1	Unmarked				Above culvert
Oct-26	Coho	1	1	1 Left Max.				Above culvert
Oct-27	Coho	1	1	Unmarked				above fence
Oct-28	Coho	1	2	1 Rt. Max.				above fence
Oct-29	Coho	1	1	Unmarked				above fence
Oct-30	Coho	2	1	Unmarked				above fence
Oct-31	Coho							
Totals	Coho	79	82		Pink	164	172	

The total number of Pink salmon counted through the fence (and released above the fence) was 164 females and 172 males for a total of 336 adults. There were so many pinks spawning in the lower reaches of the creek that pink eggs were observed rolling downstream along the stream bottom for a few weeks.

The total number of coho counted was 161 during the 1999 season as compared to 65 coho counted at the fence in 1998. The total number of marked coho in 1999 was 17 or 10.55%. The total number of marked coho in 1998 was 35 or 53.84%.

A number of steelhead were captured at the mouth of the creek. On October 4/99, 8 steelhead were captured and four were unmarked while 4 had dorsal fin tags as follows :

- Blue color, tag number 9115
- Blue color, tag number 6639
- White color, tag number 9176
- Purple color, tag number 9115

One coho was also dorsal fin tagged with a blue tag.

Table II : Egg Take Records

<u>Date</u>	<u>Female No.</u>	<u>Tray No.</u>	<u>Est No. eggs</u>	<u>Ttl. No. of Eggs in Tray</u>
Oct 19/99	1	10	2200	
	2	10	2200	4400
	3	11	2200	
	4	11	2200	
	5	11	2200	6600
	6	12	2200	
	7	12	2200	
	8	12	2200	6600
Oct 20/99	9	13	2200	
	10	13	2200	4400
	11	14	2200	
	12	14	2200	4400
Total				26400



Fence Construction on Mission Creek





Coho Capture by Gillnetting at the Mouth of Mission Creek





Transport Truck at Mouth of Mission Creek



Fence Washed Out-Oct. 22/23, 1999

Mission Creek Assessment/Capture Fence Budget Summary 1999

MOTH Contract

<u>Invoice Period</u>	<u>Category</u>	<u>Description</u>	<u>Cost \$</u>	<u>Cost Details No. Hrs.</u>	<u>Wage Rate</u>
Aug 30/99	Labour	Site inspection	\$ 240.00	16	\$ 15.00
		Road repairs	\$ 300.00	20	\$ 15.00
		Site preparation	\$ 600.00	40	\$ 15.00
		Fence Installation	\$ 1,200.00	80	\$ 15.00
	O/H	Payroll-Rev. Canada	\$ 304.20		
		WCB			
	Operation	Vehicle mileage	\$ 38.50		
		Lumber	\$ 32.00		
		Bolts	\$ 8.75		
Sep 15/99	Labour	Fence operations	\$ 3,600.00	240	\$ 15.00
	O/H	Payroll-Rev. Canada	\$ 468.00		
		WCB			
	Operation	Vehicle mileage	\$ 57.75		
Nov 5/99	Labour	Fence operations	\$ 2,752.50	183.5	\$ 15.00
	O/H	Payroll-Rev. Canada	\$ 357.83		
		WCB			
	Operation	Trailer draw bar	\$ 57.42		
Totals			\$10,016.95	579.5	

Fisheries Renewal B.C. Contract

Invoice				Cost Details	
Period	Category	Description	Cost \$	No. Hrs.	Wage Rate
Nov 5/99	Labour	Fence operations	\$ 3,870.00	258	\$ 15.00
	O/H	Payroll-Rev. Canada	\$ 503.10		
		WCB			
	Operation	Vehicle mileage	\$ 277.20		
		Fence materials	\$ 133.43		
		Waders	\$ 85.49		
		Propane	\$ 18.18		
		Fire extinguisher	\$ 26.70		
		Telephone charges	\$ 20.00		
	Project admin.	At 4%	\$ 197.36		
Totals			\$ 5,131.46		

Budget Summary

Categ.	Cost \$	No. Hrs.
Labour	\$12562.5	837.5
O/H	\$1633.13	
Ops.	\$755.42	
Admin.	\$197.36	
Total	\$15148.41	

Financial Claims attached.

Chicago Creek

COMMUNITY ENVIRONMENTAL ENHANCEMENT SOCIETY

1260 CHICAGO CREEK ROAD
P.O. BOX 152
SOUTH HAZELTON, B.C.
VOJ 2R0

Invoice

Invoice #: Fish Fence-01
Date: August 30, 1999

In account with:
Department of Fisheries
and Oceans
Smithers, B.C.
Attn. Brenda Donas

Ref #:

Project Name: Mission Creek Coho Fence

<u>Item</u>	<u>Dates</u>	<u>Description</u>	<u>Cost</u>
Labour	August 1999		
	-Site Inspection	16 hrs @\$15/hr.	\$ 240.00
	-Road repairs	20 hrs @ \$15/hr.	\$ 300.00
	-Site Preparation	40 hrs @\$15/hr.	\$ 600.00
	-Fence Repair & Inst.	80 hrs @\$15/hr.	\$1200.00
Payroll	August 1999	Rev. Can. + WCB	\$ 304.20
Mileage	August 1999	110 km @ \$.35	\$ 38.50
CCCEES	August 1999	4-2x6x16'	\$ 32.00
CCCEES	August 1999	25 bolts @ \$.35	\$ 8.75
	Sub-Total		\$2723.45

Total payable this Invoice: \$2723.45

Please make cheque payable to Chicago Creek Community Environmental Enhancement Society (CCCEES).

Chicago Creek

COMMUNITY ENVIRONMENTAL ENHANCEMENT SOCIETY

1260 CHICAGO CREEK ROAD
P.O. BOX 152
SOUTH HAZELTON, B.C.
VOJ 2R0

Invoice

Invoice #: Fish Fence-02
Date: September 15, 1999

In account with:
Department of Fisheries
and Oceans
Smithers, B.C.
Attn. Brenda Donas

Ref #:

Project Name: Mission Creek Coho Fence

<u>Item</u>	<u>Dates</u>	<u>Description</u>	<u>Cost</u>
Labour	September 1-15/99	240 hrs @\$15/hr.	\$3600.00
Payroll	August 1999	Rev. Can. + WCB	\$ 468.00
Mileage	August 1999	165 km @ \$.35	\$ 57.75
	Sub-Total		\$4125.75

Total payable this Invoice: \$4125.75

Please make cheque payable to Chicago Creek Community Environmental Enhancement Society (CCCEES).

Payment Received on Previous Invoice: \$2723.45. Thank You!

Chicago Creek

COMMUNITY ENVIRONMENTAL ENHANCEMENT SOCIETY

1260 CHICAGO CREEK ROAD
P.O. BOX 152
SOUTH HAZELTON, B.C.
VOJ 2R0

Invoice

Invoice #: Fish Fence-03
Date: November 5, 1999

In account with:
Department of Fisheries
and Oceans
Smithers, B.C.
Attn. Brenda Donas

Project Name: Mission Creek Coho Fence

<u>Item</u>	<u>Dates</u>	<u>Description</u>	<u>Cost</u>
Labour	Sept-Oct./99(bal.)	183.5 hrs @\$15/hr.	\$2752.50
Payroll	August 1999	Rev. Can. + WCB	\$ 357.83
Geraco	Sept. 9/99	Trailer draw bar	<u>\$ 57.42</u>
	Sub-Total		\$3167.75
	<u>Total payable this Invoice:</u>		\$3150.80

Please make cheque payable to Chicago Creek Community Environmental Enhancement Society (CCCEES).

Payment Received on Previous Invoice: \$4125.75. Thank You!

Chicago Creek

COMMUNITY ENVIRONMENTAL ENHANCEMENT SOCIETY

1260 CHICAGO CREEK ROAD
P.O. BOX 152
SOUTH HAZELTON, B.C.
VOJ 2R0

Invoice

Invoice #: Fish Fence-Final
Date: November 5, 1999

In account with:
Nadina Community Futures
Box 236
Houston, B.C. V0J 1Z0
Attn. Angus Glass

Ref: FsRBC-1999-CCCEES
Project Name: Mission Creek Coho Fence

<u>Item</u>	<u>Dates</u>	<u>Description</u>	<u>Cost</u>
Labour	Sept-Oct. 1999 (bal.)	258 hrs @\$15/hr.	\$3870.00
Payroll	Sept-Oct. 1999	Rev. Can. + WCB	\$ 503.10
Mileage	Sept-Oct. 1999	792 km. @ \$.35	\$ 277.20
Tri-Town	Aug. 30/99	Fence Materials	\$ 39.07
Oscar's	Aug. 31/99	Wader Repairs	\$ 85.49
PetroCan	Sept. 9/99	Propane	\$ 18.18
Apollo	Sept. 24/99	Fire Extinguisher	\$ 26.70
Tri-Town	Oct. 19/99	Fence Repair Materials	\$ 94.36
Tel/Fax	July-Nov. /99	Long Distance Charges	\$ 20.00
	Sub-Total		\$4934.10
	Project administration costs 4%		\$ 197.36
	Total		\$5131.46

Balance due minus advance payment received September 15/99 Thank You!

Please make cheque payable to Chicago Creek Community Environmental Enhancement Society (CCCEES).

Mission Cr. Coho Fence Counts for 1998 & 1999

