

**MCINTYRE CREEK
SALMON INCUBATION PROJECT
2012-2013**

**YUKON RIVER SALMON RESTORATION AND
ENHANCEMENT FUND
Project # CRE-65-12**

March 2013 Final Report



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Abstract

The McIntyre Creek Salmon Project was administered by the Yukon Research Centre in 2012-2013. The Institute worked in partnership with Yukon College Renewable Resources Management students, DFO, Ta'an First Nation, Whitehorse Rapids Fish Hatchery, and various contractors to carry out its educational and salmon culture objectives.

The project coded wire tagged and released 92,067 Chinook fry from the 2012 brood year and released the fish back into the Tatchun River system and the Fox Creek system between July 11th, and July 26th, 2012.

Introduction

The McIntyre Creek Salmon Project was administered by the Yukon Research Centre in 2012-2013. The Institute has worked with Yukon College Renewable Resources Management Diploma students, partner organizations and contractors to operate the site since the spring of 2002. Yukon College students were involved in all aspects of the project over the 2012-2013 operating season, from the ponding and rearing of the 2011 fry to the preparing for ponding of the 2012 fry.

The Department of Fisheries and Oceans (DFO) provide additional guidance and technical advisory when required. Yukon College has continued to work with the students in class and at the site over the past academic year. The roles of the students', and particularly that of the student manager, provided hands on, practical skills including hatchery management, construction, trouble shooting and fish rearing. Many of these skills are valuable to the students' growth as they proceed into their second (and final) year of their Renewable Resources Management Diploma program.

Ponding and Rearing

Yukon College students moved fry into Capilano troughs between late March and early April 2012. The student manager and student employees looked after the daily feeding and cleaning until the last of the fry were released in July.

Flows in each of the troughs was initially set at 60 LPM and was gradually increased over the rearing period to about 100 LPM maximum from mid-May until the time of release.

Fish were sampled once per week to assess health status and food requirements (See Appendix 1).

Food was distributed using a 24 hour Ziegler belt feeder. Two feeders were installed per trough.

Capilano Troughs were cleaned daily using brooms and flow control to gently channel the settled solids to the tank outlet. The fish screen at the downstream end of the channel was cleaned daily to prevent breaching of the screen and back watering of the channel.

Skretting feed Crumble #0 and #1 were purchased for the 2012 rearing season.

School and Community Involvement

Renewable Resource Management students participated in the maintenance of the site and one of the students has been working as the project manager.

In collaboration with DFO, Chinook broodstock were incubated at the site. Some of the Chinook were used as a hands-on activity called the ‘Salmon in the Classroom’ project to help educate students on the life stages and life requirements of salmon. For the 2012-2013 season, salmon were distributed by DFO to elementary school classrooms at various life stages- eyed stage, alevin stage, and ponded/fry stage. In celebration of the life of the salmon, as an end of the school year activity students return fry to be released to the areas that they were collected.

The Ta’an First Nation also celebrated the Fox Creek salmon fry release with an event featuring refreshments, handouts, displays, quizzes, and prizes at the site.

Tagging

Tagging was completed by Janet Rempel who was trained and worked with Eh Fish Contracting at the Whitehorse Rapids Hatchery. She tagged a total of 92,067 fish between July 11th and July 26th. 88,063 Fox Creek fish and 4,004 Tatchun Creek fish. (See Appendix 2)

Releasing

The release of fry from 2011 broodstock was carried out between late June and early July of 2012. The releases were carried out by the Yukon College student manager, staff and Ta’an citizens.

Site Preparation

The site was provided with a major cleanup over the summer. Garbage and site materials were removed and the perimeter fence straightened and secured with concrete. Washed gravel was brought in to fill uneven ground and help with moisture management at the site. Walk ways were graveled and patio stones replaced on the walkways.

Upgrades were also made to various handrails along the various walkways and stairs to the troughs and incubation boxes.

Security System

Absolute Security continues to monitor the alarm system. The project manager or their delegate carried a pager with text capability, the number of which was at the top of Absolute Security's alarm call-out list. This system is easily adapted to changing responsible personnel at the site. A land line is on site to enable the worker to request assistance if/when required or in case of emergency. All buildings including incubation boxes, Capilano troughs and water levels are monitored by Absolute. If there is an issue at the site, the student manager and the YRC are contacted.

Brood stock Collection

In 2012, Fox Creek eggs were collected by Whitehorse Rapids Fish Hatchery at Whitehorse Rapids Fishway. Chinook broodstock was received at McIntyre from the Whitehorse Rapids hatchery in October.

No Chinook were collected from Tatchun Creek due to low numbers of returning adults.

Incubation

Fox Creek eggs were fertilized at the Whitehorse Rapids Fish Hatchery site with milt from at least two males per female and planted into heath trays. Eggs were incubated at Whitehorse Rapids until the eyed stage, which at that time 102,500 Fox Creek eggs were transferred to the McIntyre Incubation site on October 27.

(See Appendix 3)

On January 31st, 2013 there was an incident at the hatchery that resulted in 10, 093 alevin deaths. A faulty pipe in the systems water settling box allowed an accumulation of debris near the outflow of the incubation box reducing water flow to the alevins for a number of hours. This resulted in the alevins not getting enough oxygen and thus perishing. Water flows were re-instated to 60 L/min. and the remaining alevins survived. Mortalities were picked over a 5 or 6 day period to remove the dead alevins and so as not to stress the remaining survivors.

Monitoring and Maintenance

The Yukon College student manager and other students undertook regular checks of the site once the egg takes were completed. They visited the site daily to check temperatures and flows, as well as clean intakes, and pick eggs.

Upon troughing of the fry in the spring, daily checks included water flows, feeding and screen cleaning.

Egg Picking

Yukon College student employees removed dead eggs from the trays between October and December 2012.

High mortalities occurred in January 2013 due to debris clogging the system and reducing water flows to the incubation box.

Adult Return Monitoring (Tatchun)

Due to a low run in the Tatchun System the McIntyre crews did not go to Tatchun Creek this season and thus did not monitor returns.

Upcoming Season

Yukon College students have prepared the site for rearing, and the 2012/2013 fry were ponded in early April 2013.

A number of projects are scheduled for this season including a secondary dam downstream of the hatchery to provide additional protection, renovations to the alarm system and electrical and assessment of implementing new incubation box.



Appendix 1: Sampling Data

08-juin-11

FOX CREEK

TATCHUN

#	length (mm)	weight (g)	K factor	#	length (mm)	Weight (g)	K factor
1	42	0.70	0.94	1	44	0.77	0.90
2	43	0.68	0.86	2	46	0.93	0.96
3	42	0.71	0.96	3	46	0.95	0.98
4	41	0.68	0.99	4	44	0.78	0.92
5	43	0.74	0.93	5	47	1.07	1.03
6	44	0.73	0.86	6	41	0.60	0.87
7	43	0.72	0.91	7	44	0.92	1.08
8	44	0.83	0.97	8	46	0.94	0.97
9	43	0.75	0.94	9	48	1.09	0.99
10	42	0.72	0.97	10	43	0.73	0.92
AVERAGE	42.7	0.726	0.93	AVERAGE	44.9	0.878	0.96

fry 3750

biomass (g) 2722.5

food qty (g/day) 54.45

#0 crumble

and sprinkle of #1

fry 11585

Biomass (g) 10171.63

food qty (g/day) 185.63

#1 crumble

Appendix 2: Tagging Dates and Codes Used - 2012 Released Brood stock

Tatchun 2012 Tagging

Date	Source	Tag Code	Start	End	# Tagged	Accepted Tag	Tag Rejected
06/26/12	Tr# 4	2-7-1	1556162	1557052	890	93	1557109
06/27/12	Tr# 4	2-7-1	1557109	1559038	1929		
06/28/12	Tr# 4	2-7-1	1559038	1560227	1185	78	1560330
Tagged Total:					4004		
						Total Accepted Tag:	171

Fox Creek Tagged 2012

Date	Source	Tag Code	Start	End	Numbered Tagged	Accepted Tag	Rejected Tag
06/28/12	Tr#1	2-7-2	1560332	1560988	656	84	1560996
06/29/12	Tr#1	2-7-2	1560996	1561292	296		1561385
06/29/12	Tr#1	2-7-2	1561385	1562612	1227	73	1562695
06/30/12	Tr#1	2-7-2	1562695	1563099	404		
06/30/12	Tr#1	2-7-2	1563099	1563672	573		
06/30/12	Tr#1	2-7-3	1563672	1565360	1688	69	1565521
07/02/12	Tr#1	2-7-3	1565525	1568834	3309	42	1569036
07/03/12	Tr#1	2-7-3	1569036	1570424	1388	12	1570483
07/03/12	Tr#1	2-7-3	1570484	1573276	2792	21	1573347
07/04/12	Tr#1	2-7-3	1573347	11574515	1168	6	
07/04/12	Tr#1	2-7-4	1574517	1574863	346		1574948
07/04/12	Tr#1	2-7-4	1574948	1577999	3051	42	1578113
07/05/12	Tr#1	2-7-4	1478113	1579711	1598	18	1579781

07/05/12	Tr#1	2-7-4	1579781	1581053	1272		1581115
07/06/12	Tr#1	2-7-4	1581115	1582470	1355	10	1582581
07/06/12	Tr#1	2-7-4	1582581	1584110	1529	3	1584317
07/06/12	Tr#1	2-7-4	1584317	1585316	999	6	1585454
07/07/12	Tr#1	2-7-8	1585456	1587096	1640		1587212
07/07/12	Tr#1	2-7-8	1587212	1589566	2354		1589653
07/08/12	Tr#1	2-7-8	1589653	1590796	1077		1590808
07/09/12	Tr#1	2-7-8	1590810	1592061	1251	6	1592145
07/09/12	Tr#1	2-7-8	1592145	1594253	2108		1594399
07/10/12	Tr#1	2-7-8	1594399	1595143	744		1595226
07/10/12	Tr#1	2-7-8	1595226	1596548	1322		
07/10/12	Tr#1	2-7-2	1596550	1596759	309		1596908
07/11/12	Tr#1	2-6-8	1586910	1598854	1944		1598962
07/12/12	Tr#1	2-6-8	1598964	1601033	2602		1601220
07/12/12	Tr#1	2-6-8	1601220	1602727	1507		1603075
07/12/12	Tr#1	2-6-8	1603075	1603582	507		1603716
07/13/12	Tr#1	2-6-8	1603716	1605855	2139		1606012
07/13/12	Tr#1	2-6-8	1606012	1607461	1449		1607682
07/15/12	Tr#1	2-6-8	1607682	1608715	1033		
07/15/12	Tr#1	2-7-5	1608717	1609198	481		1609255
07/15/12	Tr#1	2-7-5	1609255	1610108	853		1610187
07/15/12	Tr#1	2-7-5	1610187	1611009	827		
07/15/12	Tr#1	2-7-5	1611009	1611798	789		1611853
07/15/12	Tr#1	2-7-5	1611853	1612759	906		1612850
07/16/12	Tr#1	2-7-5	1612852	1614018	1166		1614047
07/16/12	Tr#1	2-7-5	1614047	1616353	2306		1616529
07/17/12	Tr#1	2-7-5	1616531	1618529	1998		1618653

		5					
		2-7-					
07/17/12	Tr#1	5	1618653	1620653	2000		1621941
		2-6-					
07/17/12	Tr#1	9	1620565	1621689	1124		1622699
		2-6-					
07/18/12	Tr#1	9	1621941	1622647	706		
		2-6-					
07/18/12	Tr#	9	1623085	1623085	386		1623096
		2-6-					
07/19/12	Tr#	9	1624223	1624223	1127		1624307
		2-6-					
07/19/12	Tr#	9	1625742	1625742	1433		1625804
		2-6-					
07/19/12	Tr#	9	1626909	1626909	1105		1625804
		2-6-					
07/19/12	Tr#	9	1628602	1628602	1552		1627050
		2-6-					
07/20/12	Tr#	9	1630766	1630766	2050		1628716
		2-6-					
07/20/12	Tr#	9	1631863	1631863	1007		1630856
		2-6-					
07/20/12	Tr#	9	1632458	1632458	436		1632020
		2-7-					
07/20/12	Tr#	6	1633634	1633634	1174		
		2-7-					
07/22/12	Tr#	6	1635145	1635145	1347		1633796
		2-7-					
07/22/12	Tr#	6	1636549	1636549	1336		1635213
		2-7-					
07/22/12	Tr#	6	1637232	1637232	683		1637470
		2-7-					
07/22/12	Tr#	6	1638901	1638901	1431		1638994
		2-7-					
07/23/12	Tr#	6	1640980	1640980	1986		1641106
		2-7-					
07/23/12	Tr#	6	1642841	1642841	1735		1642945
		2-7-					
07/24/12	Tr#2	6	1642945	1644283	1338		
		2-7-					
07/24/12	Tr#2	7	1644285	1646221	1936		1646352
		2-7-					
07/25/12	Tr#2	7	1646352	1649281	2929		1649392
		2-7-					
07/25/12	Tr#2	7	1649392	1652256	2864		1652429
		2-7-					
07/26/12	Tr#2	7	1652429	153844	1415		1653917
Total					88063		

Appendix 3: Fox Creek Data from Whitehorse Rapids

Estimated Number of Eggs - Chinook Salmon, Green Eggs to Ponding Moved To McIntyre														
2011-2012														
Egg Take Date	Stack#/ Tray #	Volume Estimated Total Eggs	Estimated Percent Fertilized	Estimated Total Fert Eggs	Total Green Eggs	Pre-eyed Picks	Development checks out of 10	Date of Inventory	Shocking Morts	Est. 2nd Inventory Total Eyed Eggs	Eyed to Hatch Morts	Total at Hatched Stage	Hatch to Ponding Morts	Total at Ponding
2011														
					for development checks includes 10 eggs						demonstrates hand counted			
26-Aug	3--1	1000	100%	1000	1855	65	80%	16-Oct	304	1486		1486		1486
28-Aug	4--1	4500	100%	4500	5563	21	100%	18-Oct	53	5489		5489		5489
28-Aug	4--2	4500	100%	4500	5474	16	100%	18-Oct	56	5402		5402		5402
29-Aug	4--3	4500	100%	4500	5749	12	100%	18-Oct	335	5402		5402		5402
29-Aug	4--4	4500	100%	4500	4470	463	70%	18-Oct	1294	2713		2713		2713
29-Aug	4--5	4500	100%	4500	6732	12	100%	18-Oct	23	6697		6697		6697
29-Aug	4--6	4500	100%	4500	4638	13	100%	18-Oct	16	4609		4609		4609
29-Aug	4--7	4500	100%	4500	6641	17	100%	18-Oct	40	6584		6584		6584
29-Aug	4--8	4500	100%	4500	5516	49	90%	18-Oct	442	5025		5025		5025
29-Aug	5--1	4500	100%	4500	6243	140	100%	18-Oct	227	5876		5876		5876
30-Aug	5--2	2500	100%	2500	4767	13	100%	18-Oct	30	4724		4724		4724
30-Aug	5--3	4500	100%	4500	5299	10	100%	18-Oct	16	5273		5273		5273
30-Aug	5--4	4500	100%	4500	7836	12	100%	18-Oct	68	7756		7756		7756
30-Aug	5--5	4500	100%	4500	5880	19	100%	18-Oct	37	5824		5824		5824
30-Aug	5--6	4500	100%	4500	7633	13	100%	18-Oct	50	7570		7570		7570
30-Aug	5--8	4500	100%	4500	6293	24	100%	18-Oct	150	6119		6119		6119
30-Aug	6--2	4500	100%	4500	7095	15	100%	18-Oct	25	7055		7055		7055
03-Sep	6--3	3500	100%	3500	4705	160	90%	19-Oct	500	4045		4045		4045
03-Sep	6--4	3500	100%	3500	4628	14	90%	19-Oct	163	4451		4451		4451
Totals			100%		107017	1088	95%		3829	102100		102100		102100

Appendix 4: Financial Summary March, 2013

McIntyre Creek Fish Hatchery - Salmon Incubation Project – 2012/13

Total Received from Pacific Salmon Commission CRE-65-12 - \$45,710.05

FINANCIAL SUMMARY			
I. PERSONNEL COSTS:			
Tagging, Egg Takes			
Site Monitoring/Feeding/Picking	\$26,819.36		
		\$26,819.36	
II. OPERATING COSTS:			
A. TRAVEL			
Mileage – egg takes, fly trapping and carcass surveys.	\$0		
		\$0	
B. MATERIALS, SUPPLIES, MAINTENANCE			
Construction/Plumbing/Electrical/Incubation Supplies, Tags, Tagging Equipment	\$5,340.76		
Telephone	\$1,131.22		
Electricity	\$4,051.66		
Security (monitoring)	\$ 954.90		
Fish Food – Skretting	\$ 327.10		
Printing	\$ 23.99		
Licensing	\$ 30.00		
Freight/Postage	\$ 236.06		
		\$12,095.69	
C. COORDINATION:			
Coordination Fee (15%) (15% of total project estimate)	\$6,795.00		
		\$ 6,795.00	
SUB-TOTAL		\$18,890.69	
TOTAL			\$45,710.05

OTHER SOURCES OF FUNDING, ASSISTANCE, AND/OR INFORMATION:

<u>Assistance Details</u>	<u>Amount of funding</u>
Northern Research Institute: labour, administration, finance	\$9,500 in kind
Y2C2: fry trapping labour, adult stream survey -5 or 6 person crews for 5 days=25 person days	\$2,500 in kind
DFO: technical support and egg take assistance (for school program eggs) egg takes 20 person days	\$10,000 in kind
Streamkeepers North Society: equipment loans and Streamkeepers workshop	\$500 in kind
Yukon College Instructors - 12 days	\$5,000 in kind
TOTAL	\$27,500 in kind