

# Little Trapper Sockeye and Kowatua-Tatsatua Chinook 2015

*(A study supported by the Northern Fund under the auspices of the Pacific Salmon Commission)*

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Bonnie Huebschwerlen and Ian Boyce  
Fisheries and Oceans Canada  
100-419 Range Road  
Whitehorse, Yukon Territory  
Y1A 3V1

## Executive Summary

*This report documents the results of the Little Trapper Sockeye and Kowatua-Tatsatua Chinook project supported by the Northern Fund of the Pacific Salmon Commission.*

A total of \$84,657 Cdn of Northern Fund monies was used to carry out the collection of biological samples from Little Trapper sockeye (*Oncorhynchus nerka*) and Kowatua and Tatsatua Chinook (*Oncorhynchus tshawytscha*) on the Taku River.

A total of 13,253 sockeye salmon were enumerated as they passed through the weir located at the outlet of Little Trapper lake, between the dates of August 1 and September 12, 2015. The target of 800 biological samples was achieved.

A total of 462 Chinook salmon were biologically sampled post-spawn in Kowatua Creek caught with sport rods. At Tatsatua Creek, 263 Chinook salmon were sampled from the carcass weir and 200 were sampled from angling between the dates of August 22 and September 11, 2015.

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## 1.0 Introduction

The objective of this project was to provide an escapement count for Little Trapper sockeye, and generate Event II (tag recovery) data for the Taku Chinook mark-recapture project in 2015.

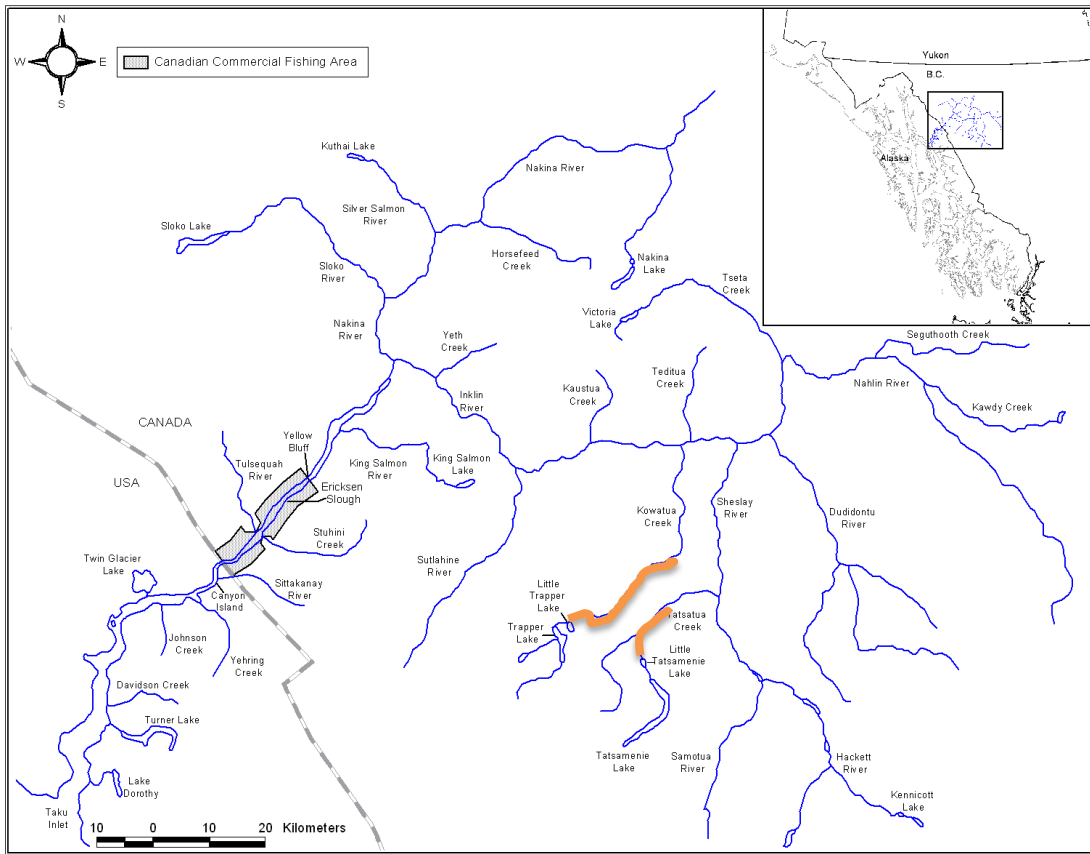
Sockeye salmon enumeration via counting fence has been conducted at Little Trapper Lake at the headwater of Kowatua Creek in the Taku River drainage for approximately 30 years. This provides a long term index of sockeye escapement into the Taku River. The Little Trapper stock is the largest lake stock in the drainage and an index for drainage wide abundance all the more important now that genetic stock identification (GSI) capabilities have been developed.

Tag recovery and biological sampling for Chinook salmon on Kowatua and Tatsatua creeks (in the vicinity of L. Trapper Lake) has also occurred for many years. This has involved boat surveys on Kowatua Creek and a carcass fence on Tatsatua Creek. This tag recovery and sampling is an important element of the Event II component of the Taku River Chinook mark-recapture program.

In recent years, core agency (DFO) funding has been reduced and consequently these assessment activities are at risk of being discontinued. Funding was sought to secure these projects for the remainder of the Annex period i.e. 2015 – 2018.

This project will provide improved information for resource management, including: stock assessment, data acquisition, and scientific understanding of limiting factors. The project will quantify sockeye escapement to a primary Taku index area and contribute to the Taku Chinook mark-recapture project on an annual basis.

As detailed in the Transboundary chapter of the PST, the Parties agree to conduct assessment programs in support of the abundance-based management regime for Taku River sockeye and Chinook salmon. This project will serve to assist in fulfilling that obligation. In March of 2009, the Transboundary Panel and the Transboundary Technical Committee finalized the “*Pacific Salmon Commission Transboundary Panel Strategic Salmon Plan*” which identified the desire of the Panel to continue the enumeration of sockeye at L. Trapper Lake as well as improve or augment as necessary the existing Taku Chinook mark/recapture program to meet a coefficient of variation (CV) of 15% without bias.



**Figure 1. The Taku River drainage in British Columbia and Southeast Alaska highlighting approximate project area.**

## 2.0 Approach

In June of 2015 DFO issued Request for Proposals for the execution of this project and Metla Environment Inc. of Whitehorse Yukon was the successful applicant. Using existing infrastructure, equipment and methodologies, the statement of work included the following elements, matching the objectives of the project:

1. Operation of an enumeration weir on the Kowatua River at the outlet of Little Trapper Lake, during the sockeye run.
2. Enumeration of all salmon and spaghetti tags passing through the enumeration weir. Recovery of as many spaghetti tags as possible without unduly disrupting migration.
3. Sampling 800 live sockeye for length, sex, scales, axillary appendage clips, and tags in proportion to run timing.
4. Sampling all available post-spawn Kowatua and Tatsatua Chinook for adipose-clips, floy tags and coded-wire tags, secondary marks, length, sex, and scales over the course of the spawning/die off period.

The Little Trapper weir was installed on made fish tight by July 24, 2015. The personnel operating the Little Trapper weir also conducted the Kowatua Chinook carcass recovery and sampling beginning in late August until mid-September depending on run timing and carcass availability. A jet boat was utilized to access the creek from the weir downstream approximately 8km. A spear was used to collect the post-spawn dead or moribund fish; a small number of samples were collected from Chinook transiting the sockeye weir.

For the Tatsatua Creek Chinook carcass weir and sampling, two technicians were stayed at the DFO field camp located 1km downstream of Little Tatsamenie Lake. The carcass weir was assembled on August 21 approximately 1km downstream of the camp to intercept post-spawn dead or moribund Chinook floating downstream. In addition and concurrently, angling was used to capture live post-spawn Chinook upstream of the weir.

For age determination, five scales were collected from all Chinook and sockeye except for those sampled at the Tatsatua carcass weir; ten scales were collected from these fish. Scale were sent to the Pacific Biological Station in Nanaimo, B.C for reading and interpretation.

Recovered CWT heads were tagged with a mouth cinch tag with the required shipping and handling information, frozen and transported to the DFO in Whitehorse, Yukon. Samples were shipped by DFO to the J.O. Thomas and Associates Lab in Vancouver, B.C. for coded wire tag extraction and decoding.

## 3.0 Results and Discussion

### 3.1 Little Trapper Weir

#### *Sockeye Salmon*

The weir was in place and fish tight on July 24, 2015 (statistical week 30). The first sockeye were observed below the weir on July 27. Migration through the weir commenced on August 4, 2015 (statistical week 32); and numeration took place from then until September 12, 2015 (statistical week 37).

A total of 13,253 sockeye salmon were counted as they migrated through the weir over seven weeks of operation. Of these, 800 sockeye were biologically sampled (five scales for aging analysis, length and sex, secondary mark to identify spaghetti tag loss) amounting to 6% of the total count. Of the 800 fish, 378 were males and 422 were female. One incidence of potential tag loss was observed. The sampling goal of 800 spread throughout the run was achieved.

Fish passing through the weir were inspected for spaghetti tags and radio tags. There were 239 spaghetti tags observed, 196 (82%) of which were recovered. No radio tags were observed.

The 2015 sockeye weir count was above the 10 year average (2005-2014) count of 8,683.

**Table 1. Little Trapper weir summary**

<b>Sockeye Salmon</b>		<b>Male</b>	<b>Female</b>	<b>10 Yr Avg. 2005-2014</b>
<b>Weir count</b>	13,253			8,683
<b>Sampled</b>	800	738	422	
<b>Adipose clips (CWT)</b>	1			
<b>Spaghetti tags recovered</b>	239			

### 3.2 Kowatua Creek

#### *Chinook Carcass Recovery*

Collection of biological samples from Chinook salmon commenced on August 17, 2015 (SW 34) and concluded on September 12, 2015 (SW 37). In total, there were 462 Chinook samples obtained (257 male, 205 female). Thirteen spaghetti tags, one radio tag and five CWT heads were recovered.

**Table 2. Kowatua Creek summary**

Chinook Salmon		Male	Female
<b>Sampled</b>	462	257	205
<b>Adipose clips (CWT)</b>	5		
<b>Spaghetti tags recovered</b>	13		
<b>Radio tags recovered</b>	1		

### 3.2 Tatsatua Creek

#### *Chinook Carcass Recovery weir and angling*

Collection of biological samples from Chinook salmon commenced on August 21, 2015 (SW 34) and concluded on September 11, 2015 (SW 37). The carcass weir provided 263 Chinook samples (196 male, 67 female); the angling, 200 samples for a total of 463. A total of 20 spaghetti tags were observed. Two CWT heads were collected. The recent 10 year average number of samples collected are 237 at the weir and 309 via angling.

**Table 3. Tatsatua Creek summary**

Chinook Salmon		Male	Female	10 Yr Avg. 2005-2014
<b>Sampled at carcass weir</b>	263	196	67	237
<b>Adipose clips (CWT)</b>	2			
<b>Spaghetti tags recovered</b>	12			
<b>Sampled with sport rod</b>	200	126	74	309
<b>Adipose clips (CWT)</b>	1			
<b>Spaghetti tags recovered</b>	8			

## 3.1 Budget and Project Operations

Scheduling and operations went as planned.



As presented in Appendix 2, the expenditure of Northern Funds amounted to \$84,657, which was just under the amount budgeted (\$85,188). A summary of Fund expenditures in relation to budgeted amounts is as follows:

- a) Labour
  - i) consultants and sub-contractors (i.e. service contract, air charters): \$57,240 (actual: 75,590; balance: \$-18,350)
  
- b) Site/Project Costs
  - i) travel: \$4,000 (actual: \$3,062; balance: \$938)
  - iii) small tools and equipment: \$2,000 (actual: \$0, balance: \$2,000)
  - iv) site supplies and materials: \$5,100 (actual: \$2,870; balance: \$2,230)
  - v) equipment rental: \$1,000 (actual: \$221; balance: \$780)
  - vi) work and safety gear: \$500 (actual: \$0, balance \$500)
  - vii) repairs and maintenance: \$4,000 (actual: \$2,916; balance: \$1,084 )

Total: \$18,300 (actual: \$9,068; balance: \$7,532)
  
- c) Training
  - i) safety and health training: 0 (actual: 0)
  
- d) Overhead / indirect costs
  - i) Admin overhead: \$0 (actual: \$0; balance: \$9,648)
  
- e) Capital
  - i) Capital/assets: 0 (actual: 0)
  
- f) Total estimated value
  - i) **\$85,188** in cash (actual: **\$84,657**; balance: **\$531**)

The service contract (Little Trapper / Kowatua and Tatsatua) total amounted to \$72,256.80 which included both administration and some site/project costs not identified above; this contributes to the higher contract amount versus the lower administration/ site project amount per line item.

A total of \$76,669.00 of PSC funding has been received to date; an additional \$7,987.89 is required to cover project costs.

## 4.0 Conclusion

The project objectives for 2015 were achieved; water levels were appropriate for weir operations and carcass recovery. A complete sockeye count was obtained at Little Trapper and sample goals were achieved. The number of samples collected from Kowatua-Tatsatua Chinook salmon comprised 54% of the escapement samples drainage-wide for the Taku River mark-recapture program (i.e. 925 of 1,712 samples).

Adult sockeye escapements into Little Trapper Lake as well as baseline age and length information serve as an index and verification of the system wide escapement estimates derived from the Taku River sockeye mark recapture program. The Chinook tag recovery and age, sex, length information contribute to the overall Taku River Chinook escapement estimates and biological metrics of the stock.

## **5.0 Acknowledgments**

Brian Mercer of Metla Environmental Inc. conducted the sampling supported by this funding. Colleen Claggett, Kylie Townend and Marnie Barteaux (DFO) assisted with the financial administration and accounting for this project.

**Appendix A: Sockeye Data, 2015.**

**Appendix A-1. Daily counts of adult sockeye salmon passing through Little Trapper Lake weir, 2015.**

DATE	Weir Count			Adipose clips (CWT)		Tags		
	Not sampled	Sampled	Total	Fish Inspected	Observed	Recovered	Not recovered	Total
23-Jul	0	0	0	0	0	0	0	0
24-Jul	0	0	0	0	0	0	0	0
25-Jul	0	0	0	0	0	0	0	0
26-Jul	0	0	0	0	0	0	0	0
27-Jul	0	0	0	0	0	0	0	0
28-Jul	0	0	0	0	0	0	0	0
29-Jul	0	0	0	0	0	0	0	0
30-Jul	0	0	0	0	0	0	0	0
31-Jul	0	0	0	0	0	0	0	0
01-Aug	57	0	57	0	0	0	0	0
02-Aug	0	0	0	0	0	0	0	0
03-Aug	731	50	781	50	0	3	1	4
04-Aug	744	70	814	70	0	3	1	4
05-Aug	916	60	976	60	0	4	2	6
06-Aug	955	50	1005	50	0	8	2	10
07-Aug	747	60	807	60	0	7	2	9
08-Aug	706	50	756	50	0	11	2	13
09-Aug	540	50	590	50	1	9	2	11
10-Aug	343	50	393	50	0	5	1	6
11-Aug	85	11	96	11	0	1	0	1
12-Aug	306	29	335	29	0	3	1	4
13-Aug	299	30	329	30	0	8	2	10
14-Aug	418	40	458	40	0	7	0	7
15-Aug	237	30	267	30	0	4	1	5
16-Aug	188	30	218	30	0	6	1	7
17-Aug	245	30	275	30	0	7	0	7
18-Aug	270	30	300	30	0	6	0	6
19-Aug	186	30	216	30	0	1	0	1
20-Aug	111	20	131	20	0	2	1	3
21-Aug	128	10	138	10	0	4	1	5
22-Aug	281	10	291	10	0	4	0	4
23-Aug	267	20	287	20	0	2	1	3
24-Aug	405	0	405	0	0	5	2	7
25-Aug	364	0	364	0	0	8	3	11
26-Aug	437	10	447	10	0	9	2	11
27-Aug	154	20	174	20	0	5	1	6
28-Aug	276	10	286	0	0	4	0	4
29-Aug	206	0	206	0	0	10	0	10
30-Aug	244	0	244	0	0	9	0	9
31-Aug	279	0	279	0	0	11	1	12
01-Sep	215	0	215	0	0	5	0	5
02-Sep	274	0	274	0	0	7	0	7
03-Sep	32	0	32	0	0	2	0	2
04-Sep	101	0	101	0	0	2	3	5
05-Sep	132	0	132	0	0	3	2	5
06-Sep	124	0	124	0	0	1	2	3
07-Sep	81	0	81	0	0	1	3	4
08-Sep	122	0	122	0	0	1	2	3
09-Sep	98	0	98	0	0	2	0	2
10-Sep	47	0	47	0	0	2	1	3
11-Sep	84	0	84	0	0	2	0	2
12-Sep	18	0	18	0	0	2	0	2
Total	12,453	800	13,253	790	1	196	43	239

## **Appendix B: Chinook Data, 2015**

**Appendix B-1. Daily counts of Chinook salmon carcasses sampled on Kowatua Creek with sport rod or snagging, 2015.**

DATE	Sampled			Adipose clips (CWT)		Tags
	Male	Female	Total	Recovered	Observed	Recovered
17-Aug		1	1			
18-Aug			0			
19-Aug			0			
20-Aug			0			
21-Aug			0			
22-Aug			0			
23-Aug			0			
24-Aug			0			
25-Aug	9	1	10			
26-Aug	12	7	19	1		2
27-Aug	5	5	10			
28-Aug	13	7	20			
29-Aug	11	3	14		1	
30-Aug	23	13	36			2
31-Aug	34	20	54	1		1
01-Sep	13	4	17			
02-Sep	36	34	70	1		4
03-Sep	22	25	47			2
04-Sep	34	41	75	1		2
05-Sep	4	12	16			
06-Sep	17	13	30			
07-Sep	9	18	27			
08-Sep	9		9			
09-Sep			0			
10-Sep	2	1	3			
11-Sep	2		2			
12-Sep	2		2			
	257	205	462	4	1	13

**Appendix B-2. Daily counts of Chinook salmon carcasses sampled at Tatsatua Creek weir, 2015.**

DATE	WEIR Sample			Adipose Clip (CWT)	TAGS
	Male	Female	Total	Recovered	Recovered
22-Aug		1	1		
23-Aug	1	1	2		
24-Aug	1		1		
25-Aug	1	1	2		
26-Aug	3		3		1
27-Aug	4	2	6		
28-Aug	4	1	5		
29-Aug	6	4	10		
30-Aug	10		10		2
31-Aug	17	4	21		2
01-Sep	13	11	24		1
02-Sep	17	8	25		
03-Sep	13	9	22	1	1
04-Sep	28	3	31		2
05-Sep	25	6	31		2
06-Sep	13	3	16		
07-Sep	12	3	15		
08-Sep	13	4	17	1	
09-Sep	10	3	13		1
10-Sep	3	2	5		
11-Sep	2	1	3		
Total	196	67	263	2	12

**Appendix B-3. Daily counts of Chinook salmon carcasses sampled on Tatsatua Creek with sport rod or snagging, 2015.**

DATE	Rod/snagging Sample			Adipose Clip (CWT)	TAGS
	Male	Female	Total	Recovered	Recovered
21-Aug	1	1	2		
22-Aug			0		
23-Aug			0		
24-Aug	5		5		1
25-Aug	8	5	13		1
26-Aug	7	2	9		2
27-Aug	11		11		
28-Aug			0		
29-Aug	11	6	17		
30-Aug	8	5	13		
31-Aug	6	4	10	1	
01-Sep	5	6	11		
02-Sep	4	2	6		
03-Sep	16	7	23		1
04-Sep	8	8	16		
05-Sep	7	6	13		2
06-Sep	10	4	14		
07-Sep	9	3	12		1
08-Sep	2	6	8		
09-Sep	3	4	7		
10-Sep	5	5	10		
Total	126	74	200	1	8



## **Appendix C: Financial Summary**

# Project Budget Form

Name of Project: L. Trapper Sockeye and Kowatua-Tatsatua Chinook 2015

**ELIGIBLE COSTS** **BUDGET** **OTHER CONTRIBUTION** **CONTRIBUTION** **CONTRIBUTION**  
**FUNDING** **FUNDING** **FUNDING** **FUNDING**

**Labour**  
**Wages & Salaries**

Position	# of crew	# of work days	hrs per day	rate per hour	Total (PSC + In-kind + cash)	In-Kind & Cash	PSC Amount	PSC Expenditures	Balance
DFO Stock Assessment Biologist Bi-3	1	5	7.5	39	1,463	1,463			
DFO Stock Assessment Biologist Bi-2	1	10	7.5	37	2,775	2,775			
DFO Fishery Technician EG 3 (includes OT)	1	10	7.5	29	8,175	8,175			
Person Days (# of crew x work days)		25		sub total	12,413	12,413	-	-	-

**Labour - Employer Costs ( percent of wages subtotal amount )**

rate	20%	sub total	2,483	2,483	-	-	-
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Subcontractors & Consultants	# of crew	# of work days	hrs per day	rate per hour	Total	In-Kind & Cash	PSC Amount	PSC Expenditures	Balance
Little Trapper / Kowatua	2.5	45	8	\$36	32,400		32,400	48,196	(15,796)
Tatsatua	2.5	22	8	\$36	15,840		15,840	24,061	(8,221)
Aircraft Charter					9,000		9,000	3,333	5,667
Insurance if applicable	rate	0%							
	114			sub total	57,240	-	57,240	75,590	(18,350)

**Volunteer Labour**

# of crew	# of work days	hrs per day	rate per hour	Total	In-Kind & Cash	PSC Amount	PSC Expenditures	Balance
Skilled								
Un-skilled								
Insurance if applicable	rate	0%						
				sub total				

**Total Labour Costs** **72,135** **14,895** **57,240** **75,590** **(18,350)**

**Site / Project Costs**

**Detail (use additional page for details if needed )**

Travel (do not include to & from work)	4,000	4,000	3,062	938
Small Tools & Equipment	2,000	2,000	-	2,000
Site Supplies & Materials	5,100	5,100	2,870	2,230
Equipment Rental	1,000	1,000	221	780
Work & Safety Gear	500	500	-	500
Repairs & Maintenance	4,000	4,000	2,916	1,084
Permits		-	-	-
Technical Monitoring		-	-	-
Other site costs	1,700	1,700	-	-
<b>Total Site / Project Costs</b>	<b>18,300</b>	<b>-</b>	<b>18,300</b>	<b>9,068</b>

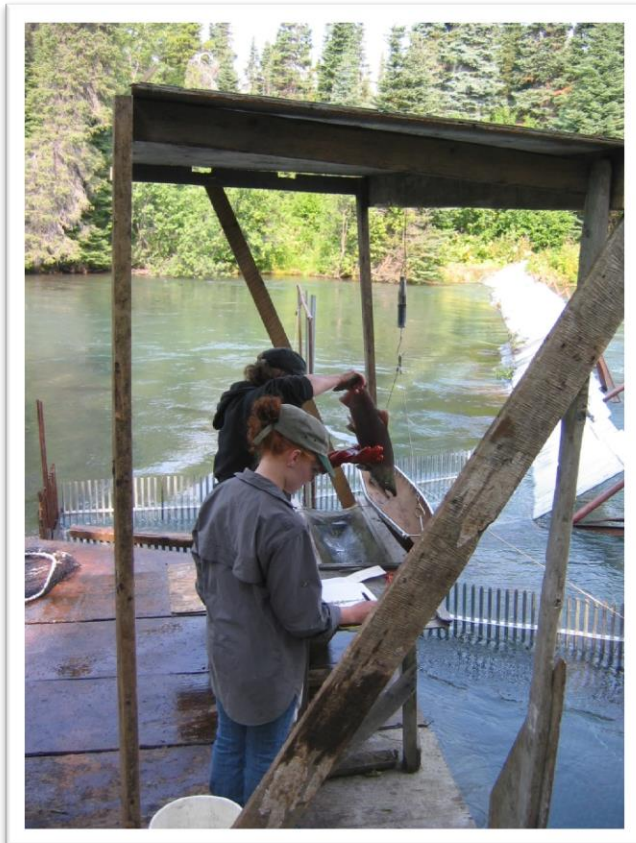
**Project Budget Form (continued)**

ELIGIBLE COSTS				BUDGET	OTHER FUNDING	CONTRIBUTION FUNDING	CONTRIBUTION FUNDING	CONTRIBUTION FUNDING
				Total (PSC + In-kind + cash)	In-Kind & Cash	PSC Amount	PSC Expenditures	Balance
<b>Training (e.g Swiftwater, bear aware, electrofishing, etc).</b>								
Name of course		# of crew	# of days					
				-	-			
				<b>Total Training Costs</b>	-	-	-	-
<b>Overhead / Indirect Costs (not to exceed 20% of PSC Amount)</b>								
Office space; including utilities, etc.								
Insurance								
Office supplies								
Telephone & long Distance					-			
Photocopies & printing								
Other overhead costs		Admin Overhead @ 3% / 20%		2,713	2,713	9,648		9,648
				<b>Total Overhead Costs</b>	2,713	2,713	-	9,648
<b>Capital Costs / Assets</b>				<b>Detail (use additional page for details if needed )</b>				
Assets are things of value that have an initial cost of \$250 CAN or more and which can be readily misappropriated for personal use or gain or which are not, or will not be, fully consumed during the term of the project.								
				-				
				-				
				-				
				-				
				-				
				<b>Total Capital Costs</b>	-	-	-	-
				<b>Project Total Costs Cdn\$</b>	93,148	17,608	85,188	84,657 531

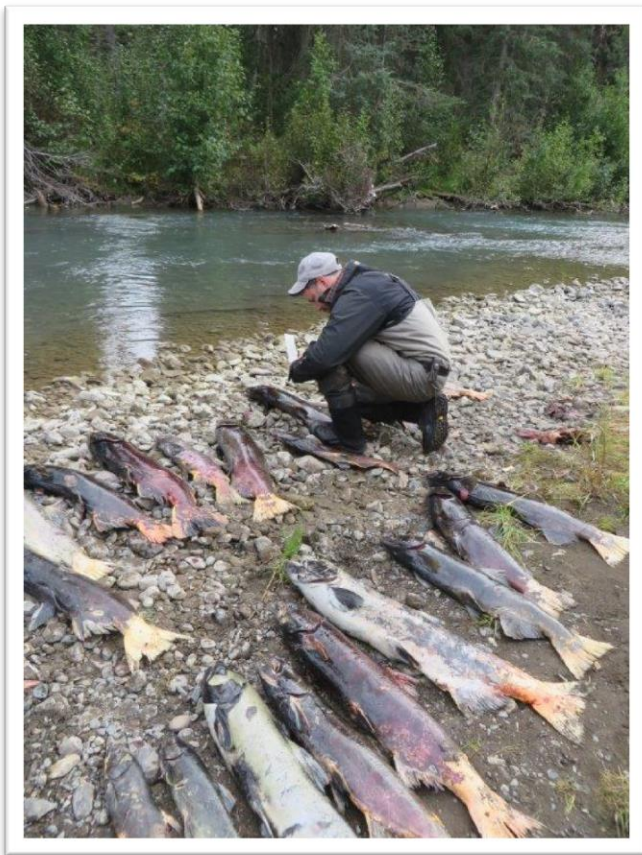
## **Appendix D: Photographs**



**Photograph 1. Little Trapper Lake Weir.**



**Photograph 2. Little Trapper weir - Sockeye sampling.**



**Photograph 3. Kowatua Creek - Chinook carcass sampling.**



**Photograph 4. Tatsatua Creek - Chinook sampling.**