

Little Trapper Sockeye and Kowatua-Tatsatua Chinook 2016

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

PSC NF-2016-I-21
Project DFO 57676

Final Report
January 2017

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 \$85,188 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 7,771 sockeye salmon were enumerated as they passed through the weir located at the outlet of Little Trapper Lake, between the dates of July 22 and September 10, 2016. The target of 800 biological samples was achieved.

A total of 171 post-spawn Chinook salmon were biologically sampled in Kowatua Creek (carcass pitch) between the dates of August 4 and September 8, 2016. At Tatsatua Creek, 171 Chinook salmon were sampled from the carcass weir and 112 were sampled via angling between the dates of August 22 and September 9, 2016.

Table of Contents

1.0 INTRODUCTION	1
2.0 METHODS.....	2
3.0 RESULTS AND DISCUSSION	3
3.1 Little Trapper Weir	3
3.2 Kowatua Creek.....	4
3.2 Tatsatua Creek	4
3.1 BUDGET AND PROJECT OPERATIONS.....	5
4.0 CONCLUSION.....	5
5.0 ACKNOWLEDGMENTS	5
6.0 APPENDICES.....	5

List of Tables

Table 1. Little Trapper weir summary	3
Table 2. Kowatua Creek summary.....	4
Table 3. Tatsatua Creek summary	4

List of Figures

Figure 1. The Taku River drainage in British Columbia and Southeast Alaska highlighting project area.	2
--	---

List of Appendices

Appendix A: Sockeye Data.....	1
Appendix B: Chinook Data.....	3
Appendix C: Expenditures	7
Appendix D: Photographs.....	10

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 2016.

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 more than 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 2016.

This project provides improved information for resource management, including: stock assessment, data acquisition, and scientific understanding of limiting factors. The project quantifies 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 serves 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.

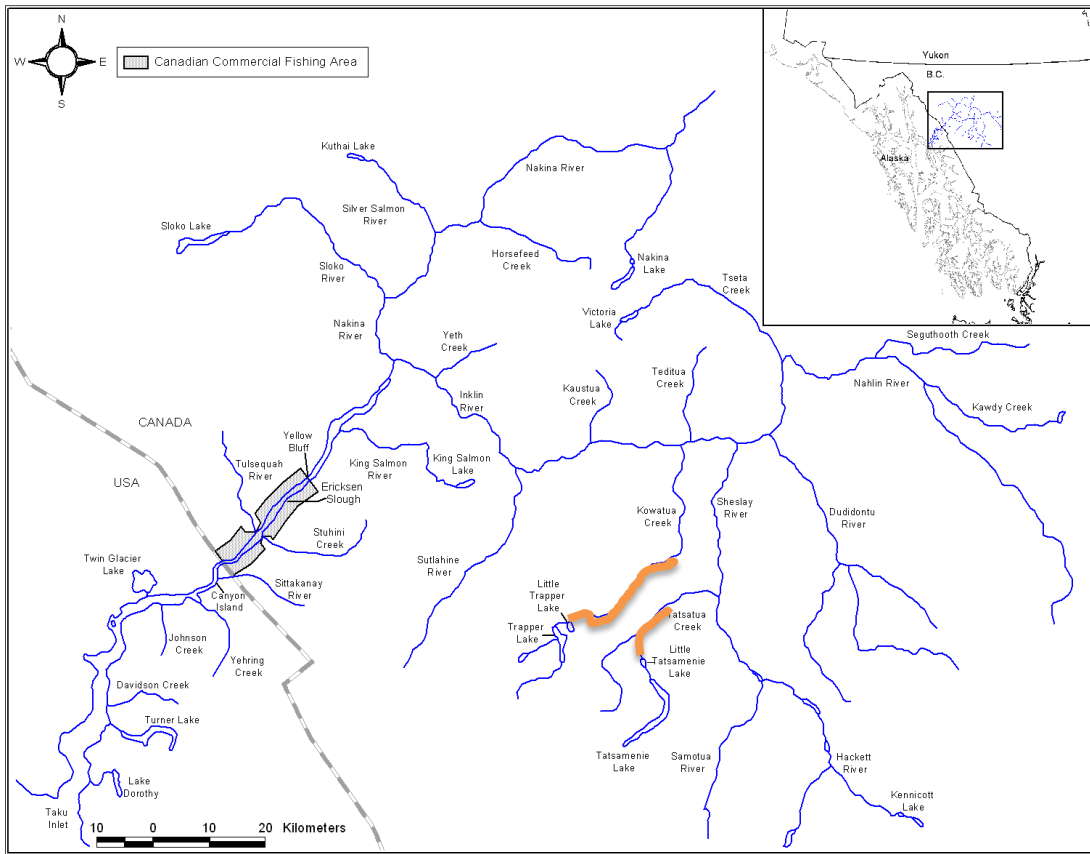


Figure 1. The Taku River drainage in British Columbia and Southeast Alaska highlighting approximate project area.

2.0 Methods

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 for 2015 with the option of renewing for 2016 and 2017. 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 and made fish tight by July 22, 2016. 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 live Chinook transiting the sockeye weir and one fish was captured by angling (sport rod).

For the Tatsatua Creek Chinook carcass weir and sampling, two technicians 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. Scales 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 22, 2016 (statistical week 30). The first sockeye were observed below the weir on July 29. Migration through the weir commenced on August 2, 2016 (statistical week 32); and enumeration took place from then through September 9, 2016 (statistical week 37).

A total of 7,771 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 10% of the total count. Of the 800 fish, 423 were males and 377 were female. There was one incidence of potential tag loss 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 191 spaghetti tags observed, 172 (90%) of which were recovered. No radio tags were observed.

The 2016 sockeye weir count was above the 10 year average (2006-2015) count of 8,367.

Table 1. Little Trapper weir summary

Sockeye Salmon		Male	Female
Weir count	7,771		
Sampled	800	423	377
Tag Loss	1		
Spaghetti tags recovered	172		
Radio Tags Recovered	0		

3.2 Kowatua Creek

Chinook Carcass Recovery

Collection of biological samples from Chinook salmon commenced on August 4, 2016 (SW 34) and concluded on September 8, 2016 (SW 37). In total, there were 200 Chinook samples obtained (117 male, 83 female). Four CWT heads, seven spaghetti tags, and no radio tags were recovered.

Table 2. Kowatua Creek summary

Chinook Salmon		Male	Female
Sampled	200	117	83
Adipose clips (CWT)	4		
Spaghetti tags recovered	7		
Radio tags recovered	0		

3.2 Tatsatua Creek

Chinook Carcass Recovery weir and angling

Collection of biological samples from Chinook salmon commenced on August 22, 2016 (SW 35) and concluded on September 9, 2016 (SW 37). The carcass weir provided 171 Chinook samples (83 male, 88 female); the angling, 112 samples (89 male, 23 female); for a total of 283. A total of nine CWT heads and ten spaghetti tags were recovered. The recent 10 year average number of samples collected is 240 at the weir and 298 via angling. The drainage wide Chinook run was well below average in 2016.

Table 3. Tatsatua Creek summary

Chinook Salmon		Male	Female	10 Yr Avg. 2006-2015
Sampled at carcass weir	171	83	88	240
Adipose clips (CWT)	5			
Spaghetti tags recovered	9			
Sampled with sport rod	112	89	23	298
Adipose clips (CWT)	4			
Spaghetti tags recovered	1			

3.1 Budget and Project Operations

Scheduling and operations went as planned.

As presented in Appendix 2, the expenditure of Northern Funds amounted to \$85,188, which was the budgeted amount. The 10% holdback of \$8,519 is anticipated once the final project report is accepted by the Pacific Salmon Commission.

A summary of Fund expenditures in relation to budgeted amounts is as follows:

Description	Budget	Expenditure	Balance
Labour Costs	57,240	78,492	(21,252)
Site/Project Costs	18,300	6,387	11,913
Training Costs	0	310	(310)
Overhead Costs	9,648	0	9,648
Capital Costs	0	0	-
Grand Total	59,394	59,394	0

The service contract (Little Trapper / Kowatua and Tatsatua) total amounted to \$72,256.80 which included both administration and some site/project costs; this contributes to the higher contract amount versus the lower overhead/ site project amount per line item.

4.0 Conclusion

The project objectives for 2016 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 33% of the escapement samples drainage-wide for the Taku River mark-recapture program (i.e. 482 of 1,478 samples).

Adult sockeye escapements into Little Trapper Lake as well as baseline age and length information serve as an index and provide insight on 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.

6.0 Appendices

Appendix A: Sockeye Data

Appendix B: Chinook Data

Appendix B-2. Daily counts of Chinook salmon carcasses sampled at Tatsatua Creek weir, 2016.

DATE	Weir Sample			Adipose Clip (CWT)	TAGS
	Male	Female	Total	Recovered	Recovered
22-Aug					
23-Aug		1	1		1
24-Aug		1	1		1
25-Aug	1	1	2		1
26-Aug	2	1	3		
27-Aug			0		
28-Aug			0		
29-Aug	4	1	5		
30-Aug	1	2	3		
31-Aug		1	1		
01-Sep		4	4		
02-Sep	2	2	4		
03-Sep	5	3	8	1	
04-Sep	7	8	15		2
05-Sep	12	13	25		1
06-Sep	16	14	30	1	
07-Sep	17	28	45	2	1
08-Sep	10	1	11		1
09-Sep	6	7	13	1	1
Total	83	88	171	5	9

Appendix C: Expenditures

Project Budget Form

Name of Project: L. Trapper Sockeye and Kowatua-Tatsatua Chinook 2016

ELIGIBLE COSTS **BUDGET** **OTHER CONTRIBUTION 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	Actual Expenditures	Variance
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	-	-	-
------	-----	------------------	-------	-------	---	---	---

Subcontractors & Consultants	# of crew	# of work days	hrs per day	rate per hour					
Little Trapper/Kowatua	2.5	45	8	\$36	32,400		32,400	74,059	(41,659)
Tatsatua	2.5	22	8	\$36	15,840		15,840		15,840
Aircraft charter					9,000		9,000	4,433	4,567
									-
Insurance if applicable				rate	0%				-
	114			sub total	57,240	-	57,240	78,492	(21,252)

Volunteer Labour

# of crew	# of work days	hrs per day					
Skilled							-
Un-skilled							-
Insurance if applicable				rate	0%		-
				sub total			-

Total Labour Costs 72,135 14,895 57,240 78,492 (21,252)

Site / Project Costs

Detail (use additional page for details if needed)

Travel (do not include to & from work)				4,000		4,000	-	4,000	
Small Tools & Equipment				2,000		2,000	1,021	979	
Site Supplies & Materials				5,100		5,100	3,421	1,679	
Equipment Rental				1,000		1,000	-	1,000	
Work & Safety Gear				500		500	-	500	
Repairs & Maintenance				4,000		4,000	-	4,000	
Permits						-	-	-	
Technical Monitoring						-	-	-	
Other site costs				1,700		1,700	1,944	(244)	
Total Site / Project Costs				18,300		-	18,300	6,387	11,913

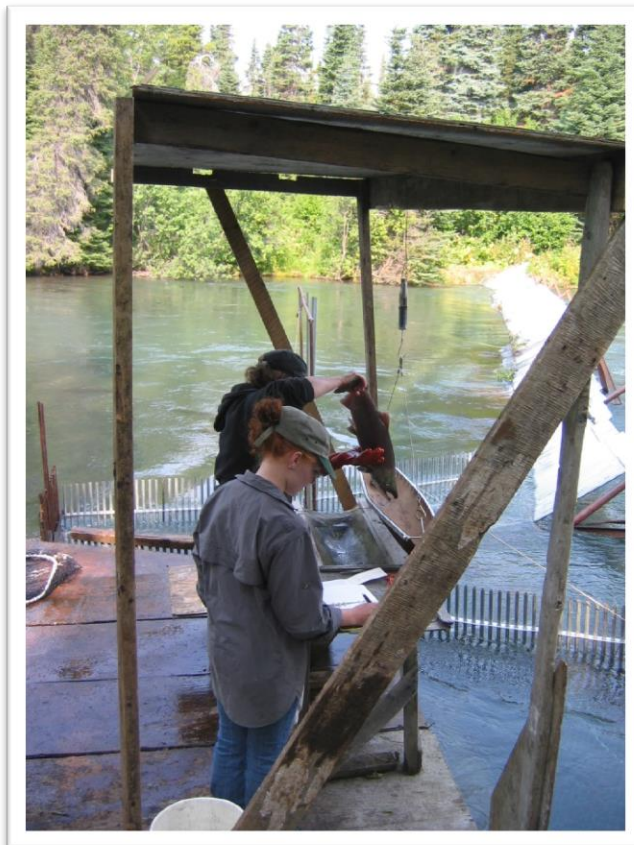
Project Budget Form (continued)

ELIGIBLE COSTS				BUDGET	OTHER FUNDING	CONTRIBUTION FUNDING		
				Total (PSC + In-kind + cash)	In-Kind & Cash	PSC Amount	Actual Expenditures	Variance
Training (e.g Swiftwater, bear aware, electrofishing, etc).								
Name of course	# of crew	# of days						
Swiftwater rescue				-	-		310	(310)
								-
								-
								-
Total Training Costs				-	-	-	310	(310)
Overhead / Indirect Costs (not to exceed 20% of PSC Amount)								
Office space; including utilities, etc.								-
Insurance								-
Office supplies								-
Telephone & long Distance					-			-
Photocopies & printing								-
Other overhead costs	Admin Overhead @ 3%			2,713	2,713	9,648		9,648
								-
								-
								-
Total Overhead Costs				2,713	2,713	9,648	-	9,648
Capital Costs / Assets								
Detail (use additional page for details if needed)								
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.								
				-				
				-				
				-				
				-				
				-				
Total Capital Costs				-		-	-	-
Project Total Costs Cdn\$				93,148	17,608	85,188	85,188	-
DFO Budget Summary (PSC + in-kind + cash)								
			Total				1st payment	\$ 76,669.00
							10% holdback	\$ 8,518.80
Total Labour Costs			72,135				Total	\$ 85,187.80
Total Site / Project Costs			18,300					
Total Training Costs			-					
Total Overhead Costs			2,713					
Total Capital Costs			-					
	Project Total		93,148					

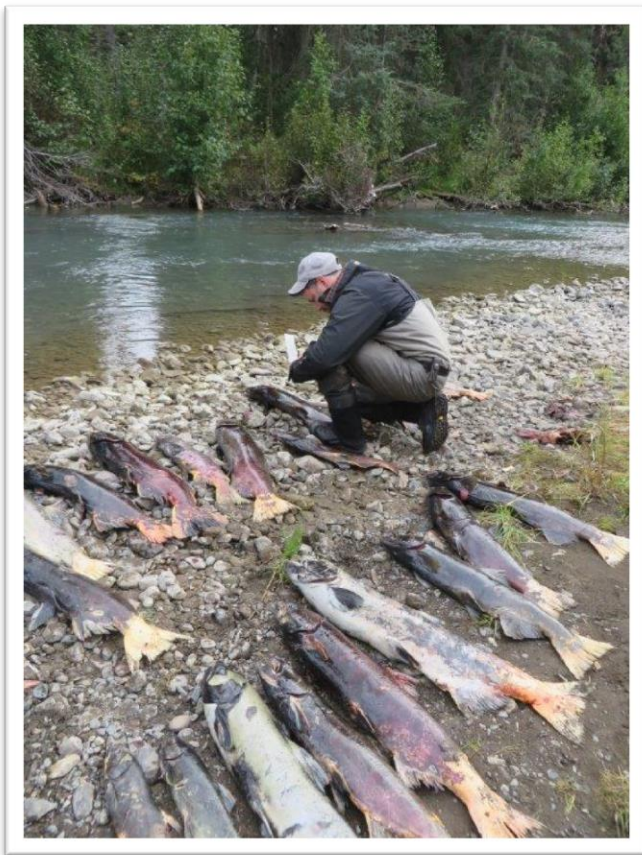
Appendix D: Photographs



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.