

**Alsek River Watershed –
Klukshu Chinook and Sockeye Salmon
Enumeration 2018**

Final Report
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1.0 Introduction

Chinook and sockeye salmon enumeration via counting fence has been conducted on the Klukshu River in the Alsek River drainage for approximately 40 years. The project serves as the primary tool for identifying Klukshu River salmon abundance, and by extension an index of Alsek River drainage-wide abundance. The long term dataset maintained by this project provides an excellent time series of data to help understand long term variability in the Alsek River drainage. Genetic stock identification (GSI) capabilities have also enhanced the value of the Klukshu River salmon enumeration as an index for drainage wide abundance through an integrally linked project also supported by the Northern Endowment Fund (NEF) “*2018 Alsek Sockeye Salmon Run Reconstruction Using Genetic Stock Identification*”.

In the Transboundary chapter of the Pacific Salmon Treaty (PST), the Parties agreed to implement assessment programs in support of the abundance-based management regimes for Alsek River Chinook and sockeye salmon. This project assists in fulfilling that obligation. The Transboundary Panel and the Transboundary Technical Committees (TTC) “Pacific Salmon Commission Transboundary Panel Strategic Salmon Plan” (2009) identifies the desire of the Panel to continue the enumeration of Chinook and sockeye at the Klukshu River weir.

In February 2013, the TTC and TBR Panel revised the biological escapement goals for Alsek River and Klukshu River Chinook and sockeye salmon. These were: Alsek River Chinook MSY target of 4,700 (esc. goal range 3,500 – 5,300), Klukshu River Chinook MSY target of 1,000 (esc. goal range of 800 – 1,200), Alsek River sockeye MSY target of 29,700 (esc. goal range of 24,000 – 33,500), and Klukshu River sockeye MSY target of 9,700 (esc. goal range 7,500 – 11,000).

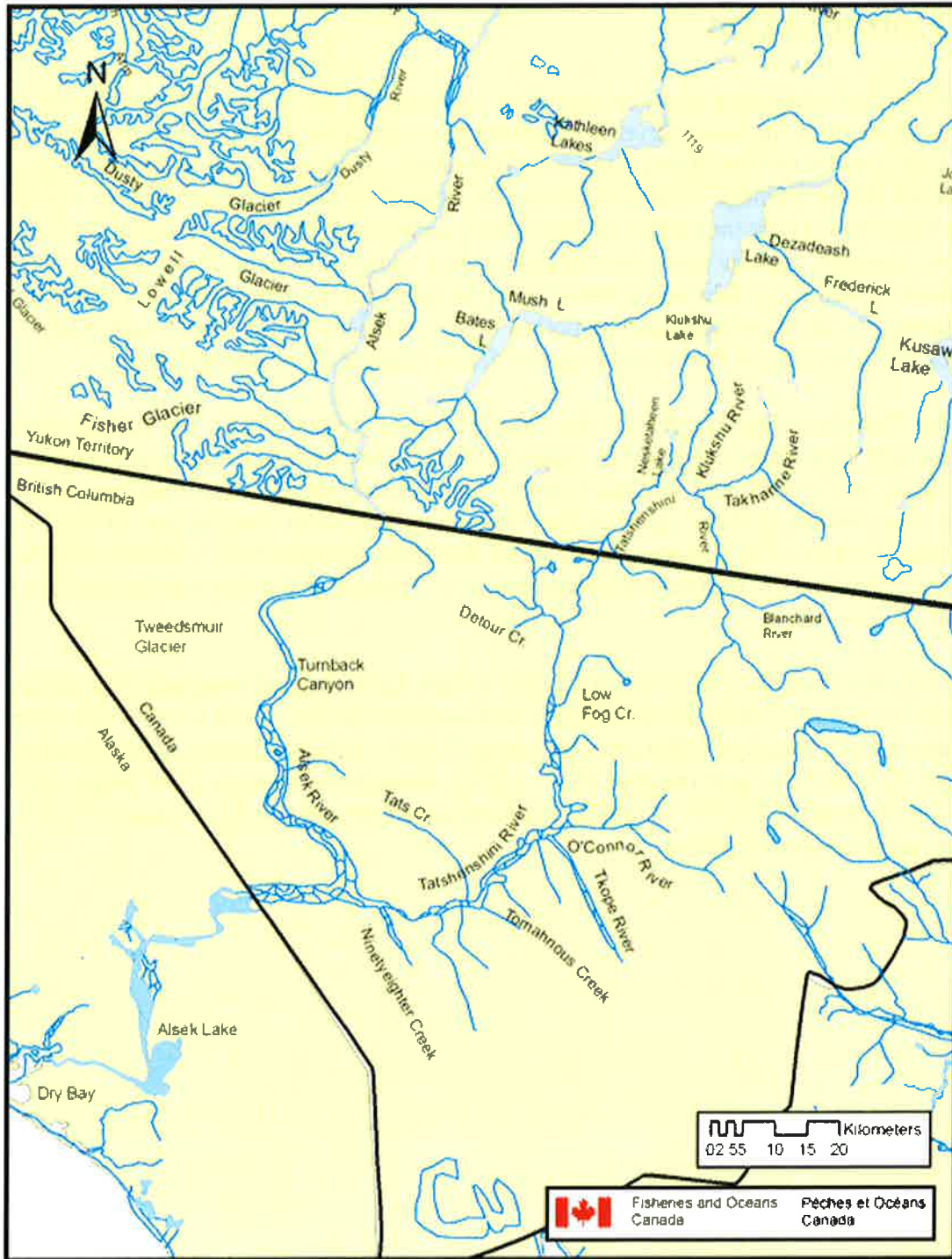


Figure 1. Alsek River drainage map

2.0 Objectives

The objectives of this project (modified slightly from the proposal to address CAFN concerns and the lack of fisheries in 2019) were to:

1. To obtain an absolute count of the escapement of Chinook and sockeye salmon into the Klukshu River obtained through a traditional weir fitted with video counters;
2. To collect age (scales), sex, and size data from post-spawn Chinook and sockeye salmon at spawning grounds;
3. To conduct an opportunistic creel census on any Klukshu/Tatshenshini recreational fisheries;
4. To collect Klukshu River water levels and temperatures;
5. To collect the heads of any coded wire tagged Chinook found in sampled fish;
6. To further incorporate CAFN staff into all aspects of DFO Alsek stock assessment and to provide assistance to CAFN salmon projects;
7. To maintain a work environment that is both safe and healthy.

3.0 Methodology

A rotating crew of three DFO technicians (EG-3) conducted the core project with two technicians on site at any one time. Champagne and Aishihik First Nations (CAFN) staff provided technical support as frequently as able throughout the season. The project was supervised by an EG-4 technician based in Whitehorse who made weekly site visits.

A 20 meter conduit fence supported by up to 8 steel tripods was constructed across the Klukshu River approximately 900 meters upstream of the river's mouth. In 2018, at the request of CAFN, the fence was modified to include a second video counting system which allowed unimpeded fish passage 24 hours per day through two separate locations in the fence. The fence directed fish to pass through the counting systems which consisted of aluminum boxes (56cm wide, 94 cm tall, and 122 cm in length) anchored to the stream bed and ballasted with water. There was a 28 by 22 cm tunnel for fish passage in the lower corner of each box constructed of clear Plexiglas on two sides. The back wall of the tunnel is scribed with a 5 cm grid pattern to allow estimation of fish length from the image. The remainder of the box was designed to house the electronics. There was a motion activated camera positioned above the tunnel to capture the top view of the tunnel on one half of the image, and a mirror on a 45 degree angle positioned to reflect the right hand side of the fish into the other half of the image. This allowed a simultaneous view of both the top and the side of the passing fish (Appendix 6). When a fish entered the tunnel, the motion was detected by the camera and an 11 second long video clip of the top and side view of each fish was recorded and stored on a computer hard drive on shore.

Field staff reviewed stored camera footage twice daily and recorded an hourly count of salmon by species that passed upstream through the fence. Any salmon swimming

downstream were subtracted from the count. In addition to counts by species, for Chinook salmon staff also recorded sex, their position in the tunnel (top/center/bottom, right/center/left), and their observed length based on the tunnel wall grid. Observed lengths will be later corrected to estimated actual lengths based on the fish position in the tunnel and calibration data generated at time of video system setup.

In 2018, to address CAFN concerns, the traditional run proportional biological sampling at the fence was foregone to allow unimpeded fish passage 24 hours a day. Instead, biological samples were collected opportunistically from spawning grounds. Post-spawn Chinook salmon were snagged using rod and reel gear from known spawning sites in the Klukshu River near the mouths of Vand and Motherall Creeks. All sampled fish were released alive back into the river. Moribund and drifting Chinook carcasses were also recovered and sampled from the Klukshu fence whenever present.

Spawning ground sampling for river spawning sockeye populations was conducted using rod and reel gear in Klukshu River from known spawning sites in the vicinity of Vand and Motherall Creeks. All sampled fish were released alive back into the river. Moribund and drifting sockeye carcasses were also recovered from the Klukshu fence whenever present. Sampling of lake spawning sockeye was conducted using a 15 meter seine net to capture fish from known lakeshore spawning sites for sample collection, after which fish were released alive back into the lake. Several known sites were investigated in Klukshu Lake, but all samples were collected from one site in Klukshu Lake near the mouth of the Klukshu River.

For age determination and archiving for potential future genetic analysis, five scales each were collected from both Chinook and sockeye salmon. All scales were collected from above the lateral line within a radius measuring three to four scales from the preferred area, i.e. one scale row above the lateral line along a diagonal line between the anterior end of the pelvic fin and the posterior end of the dorsal fin. Scales were placed in gum-card booklets and sent to the Pacific Biological Station in Nanaimo, B.C for reading and interpretation. Length measurements were taken to the nearest five millimeters using a flexible tape measure. The measurement taken was fork length, i.e. the distance between the tip of the nose to the fork of the tail. 200 DNA samples were collected from the lake sampled fish and stored for future analysis.

Also as part of a separate NEF project (noted in the introduction), sockeye salmon tissue samples (severed axillary appendages) were collected from the 2018 U.S. commercial fishery catch in Dry Bay at the mouth of the Alsek River from the beginning of June to the middle of August. These were sent to the DFO Molecular Genetics Lab in Nanaimo, BC for genetic analysis. A ratio-based Alsek sockeye salmon abundance estimate may be generated using the escapement and stock composition data.

4.0 Results and Discussion

Scheduling and operations of the project went as planned in 2018. Construction of the fence and installation of the video enumeration systems began on 07 June 2018. The structure was complete and fish tight as of 09 June. The weir was dismantled on 04 October 2018. Klukshu River water levels were high and murky during freshet from 17 June to 01 July and there were times at peak flows that the fence was not fish tight. This period was largely prior to the arrival of salmon, and staff walked the shoreline between the fence and camp daily to visually observe for the presence of salmon with none observed. It is believed that complete Chinook and sockeye counts were obtained in 2018, with the video enumeration methodology working effectively.

Chinook Salmon

The first Chinook to pass the weir was on 16 June. However, as is typical for Klukshu River Chinook, the run was slow to gather strength, and the first day with passage of more than five fish did not occur until 08 July.

A total of 1,087 Chinook salmon were counted as they migrated through the weir over the next seven weeks, until 01 August. The peak count of 67 fish occurred on 27 July. Dates by which 25, 50 and 90% of the run had passed through the weir were 24 July, 28 July, and 19 August, respectively. Over the past ten years, the respective dates for these milestones have averaged 19 July, 24 July, and 06 August, indicating that the 2018 run was a few days later than average, also shown in Figures 2 and 3. Hourly and daily counts are presented in Appendices 1 and 2. Daily and cumulative counts are presented in Figures 2 and 3.

Chinook that passed through the video counters were 33% female and 67% male. Lengths were determined from the imagery, but calibration remains to be completed so results are not presented here.

Sampling for Chinook age-sex-length data commenced on 25 July and concluded on 02 October. Most samples (n=99) came from carcasses washed up on the fence, with a majority of samples collected between 10 August and 01 September. Spawning ground sampling began 10 August and continued through 27 August with visits approximately every other day.

Dates by which 25, 50 and 90% of the samples had been taken were 14 August, 16 August, and 27 August, respectively. A total of 106 Chinook samples were collected of which 86 were male, 5 were female, and 14 unknown. This ratio is reflective of the sex bias anticipated when sampling moribund and floating samples.

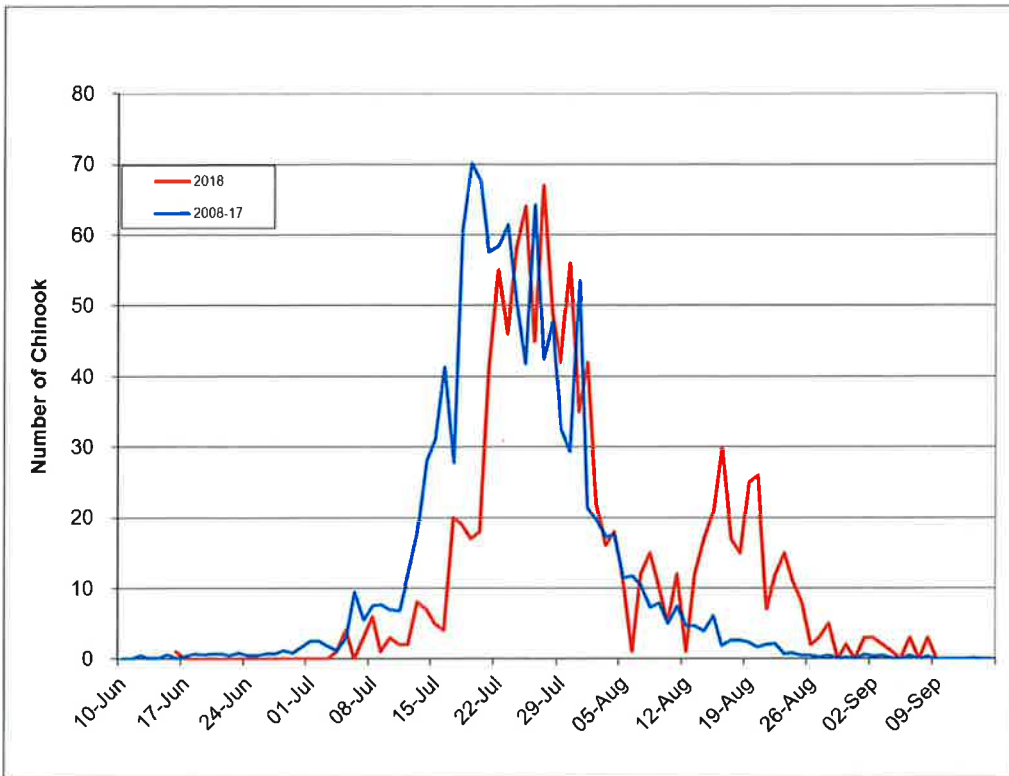


Figure 2. Daily counts of Chinook salmon through the Klukshu River weir, 2018 versus 2008-2017 average.

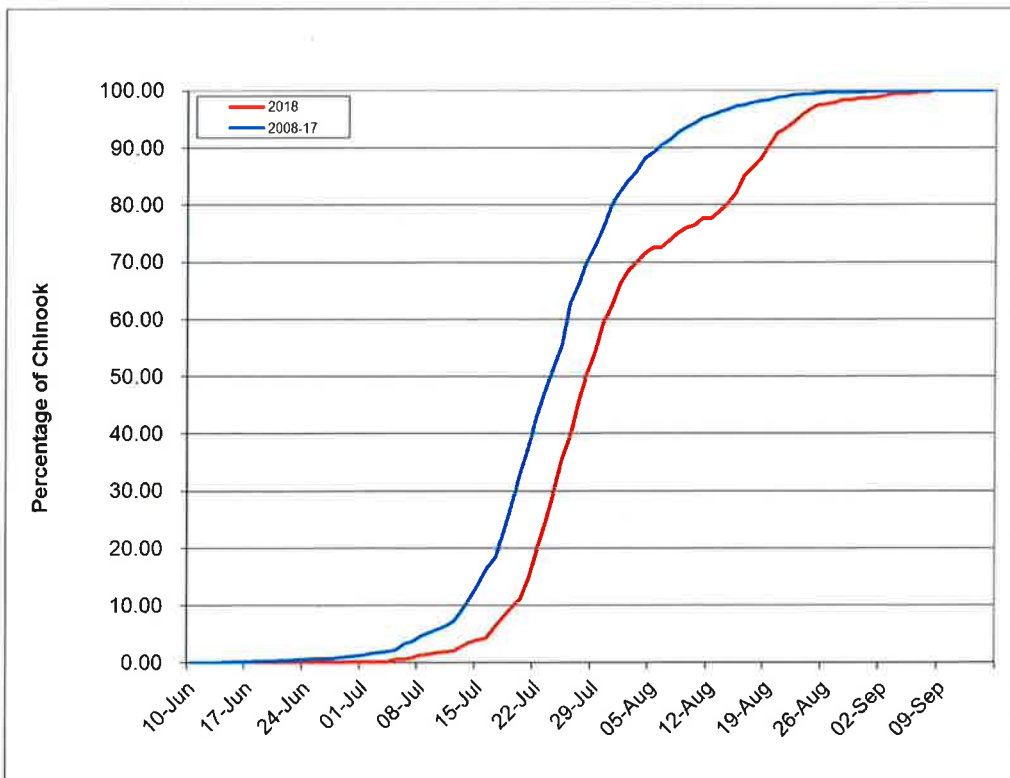


Figure 3. Cumulative passage of Chinook salmon through the Klukshu River weir, 2018 versus 2008-2017 average.

Sockeye Salmon

A total of 7,143 sockeye salmon were counted as they migrated through the weir over a period of 11 weeks, i.e. from 17 July until 04 October. The peak daily count, 552 fish, occurred on 11 September. Dates by which 25, 50, and 90% of the run had passed through the weir were 03 September, 08 September, and 16 September, respectively. Over the past ten years, the respective dates for these milestones have averaged 18 August, 28 August, and 26 September, indicating that the 2018 run was nearly two weeks later than average, and ended earlier than average (Figures 4 and 5). Hourly and daily sockeye counts are presented in Appendices 3 and 4. Daily counts and cumulative counts are presented in Figures 4 and 5.

Sampling for age-sex-length data from river spawning sockeye populations commenced on 15 August and concluded 11 September, with visits approximately every other day. Sampling from lake spawning sockeye populations began on 18 September and continued through 03 October, with frequent visits over that time.

Dates by which 25, 50 and 90% of the samples had been taken were 02 September, 27 September, and 03 October, respectively. A total of 697 sockeye samples were collected, comprising 9.8% of the total run and meeting the annual objective of 700 fish. Samples were difficult to obtain from river spawning sockeye with only 27 collected; the remaining 670 samples were from lake spawners. Of the 697 samples, 393 were male and 301 were female.

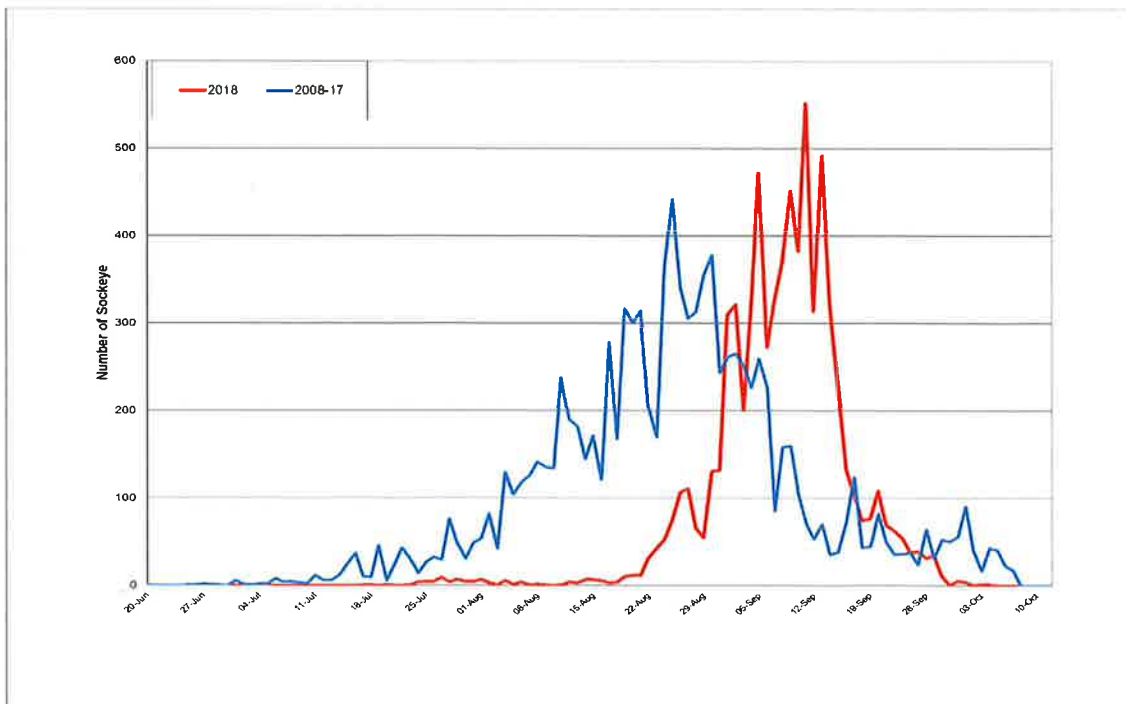


Figure 4. Daily counts of sockeye salmon through the Klukshu River weir, 2018 versus 2008-2017 average.

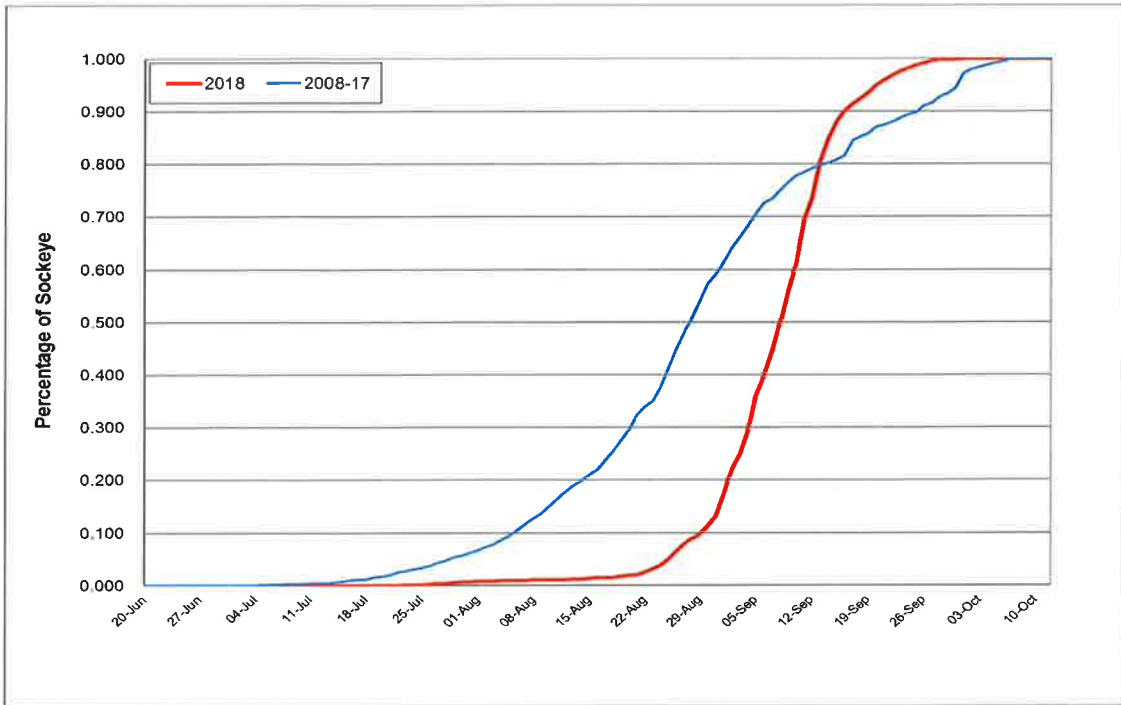


Figure 5. Cumulative passage of sockeye salmon through the Klukshu River weir, 2018 versus 2008-2017 average.

5.0 Budget Summary

The Northern Endowment Fund NEF allocation of \$51,399.60 was not fully expended as DFO increased in-kind contributions to the project. Total expenditures of NEF funds amounted to \$42,938.75 which shows here as \$8,460.85 under budget. The 10% holdback of \$5,139.96 is not required from the PSC, and once the final project report is accepted by the PSC, DFO will issue a refund of \$3,320.35 of unspent advance monies. A budget summary of expenditures can be referenced in Appendix 5.

6.0 Conclusion

The project objectives were largely achieved in 2018.

The 2018 Chinook count was 1,087 fish. This was near the midpoint of the escapement goal range of 800 to 1,200 Klukshu Chinook salmon, and between the principle brood year escapements of 693 fish in 2012, and 1,261 fish in 2013.

The 2018 sockeye salmon count of 7,143 fish was below the escapement goal range of 7,500 to 11,000 fish, but nearly double the primary brood year escapement of 3,792 in 2013 and well below the 2014 escapement of 12,150.

The goal of 700 sockeye samples was achieved, primarily from lake spawning fish in Klukshu Lake. A limited number of Chinook samples were collected, primarily from male carcasses that drifted onto the fence post-spawning.

This project maintained the long term escapement monitoring program for Klukshu Chinook and sockeye salmon. There was no directed Chinook fishery in Dry Bay, Alaska to permit GSI-based drainage-wide Chinook salmon run estimate, and the limited Dry Bay, Alaska directed sockeye fishery openings prevented enough samples being collected to generate a GSI-based run estimate for sockeye salmon using the Klukshu River escapement count.

7.0 Acknowledgments

CAFN support for the continuation of this project in their traditional territory is greatly appreciated by all Alsek River salmon stakeholders. CAFN game guardians supported this project, coordinated by Monica Krieger. Alfred Lavalley, Mike Terlesky and Ross Wilcox operated the weir and conducted the sampling. Bill Waugh provided technical support and expertise. Mark McFarland purchased supplies and assisted with logistics. Colleen Claggett, Conie Rogan and Katherine Lai assisted with financial administration and accounting.

8.0 Appendices

Appendix 1. Hourly counts of Chinook salmon passing through Klukshu River counter, 2018.

																								Counts				
	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Daily	Cum.		
14-Jun																										0	0	
15-Jun																											0	0
16-Jun		1																									1	1
17-Jun																											0	1
18-Jun																											0	1
19-Jun																											0	1
20-Jun																											0	1
21-Jun																											0	1
22-Jun																											0	1
23-Jun																											0	1
24-Jun																											0	1
25-Jun																											0	1
26-Jun																											0	1
27-Jun																											0	1
28-Jun																											0	1
29-Jun																											0	1
30-Jun																											0	1
01-Jul																											0	1
02-Jul																											0	1
03-Jul																											0	1
04-Jul													1														1	2
05-Jul		3																						1			4	6
06-Jul																											0	6
07-Jul																1		1	1								3	9
08-Jul			2				1							2			1										6	15
09-Jul							1																				1	16
10-Jul		1	1	1																							3	19
11-Jul		1	1																								2	21
12-Jul			1																						1		2	23
13-Jul			4			1	1																				8	31
14-Jul		1	2	4																							7	38
15-Jul				3												1		1									5	43
16-Jul			1	1													1				1						4	47
17-Jul		2	1	4	1									1	2		1	5	1		1				1	20	67	
18-Jul		3	1	2										1				2	9		1						19	86
19-Jul	2	5	3									4						1		1				1			17	103
20-Jul	6		5	1	1														1	3	1						18	121

																								Counts			
	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Daily	Cum.	
21-Jul	3	3	8	11	5	1		1						1	3		3		1					1	41	162	
22-Jul	7	13	16	5	1							1		2		1	3	1	2	2	1				55	217	
23-Jul	5	3	1	8	6	4			1						4	1	2	2	2	4	3				46	263	
24-Jul	13	10	9	6	5	1					1	1			1	3	3	2	2		1				58	321	
25-Jul	8	11	5	7	3	1								1	1		3	11	5	1	2	5			64	385	
26-Jul	7	3	5	4	2				1					2		2	10	2	3	2	1	1			45	430	
27-Jul	12	13	6	8	3	1								1	5	11	3	3		1					67	497	
28-Jul	4	6	8	1	2	2			1					1			2			4	5	7	4	2	49	546	
29-Jul	6	6	7	6	3	2								1			2	4	1		3		1		42	588	
30-Jul	12	8	4	3	3									1		1	3	1	2	5	8	2	1	1	56	644	
31-Jul	7	7	2	3	3								1		4	2	4			1	1				35	679	
01-Aug	4	6	6	3	5	1								1	0	2	1	2	2	3	4		1	1	42	721	
02-Aug	2	5	2	3	3	1									1	3			2		1		-1		22	743	
03-Aug		1	2	5	2									2				2						-1	3	16	759
04-Aug		2	4	3	3	3										2	3			-3	1				18	777	
05-Aug		1	2	1			1									1			1	2	2				11	788	
06-Aug	1	-3	1	3								1	1	-1					-1				-2	1	1	789	
07-Aug	1	2	1	1	2											1	1							3	12	801	
08-Aug	4	1	1	2							1													1	5	15	816
09-Aug	3			1	1			1					1	1									1	1	-1	10	826
10-Aug	0						1					1		1				2	1					-1	5	831	
11-Aug		-1	1	2		1					1		3		1	1	1	1			1				12	843	
12-Aug	0	1			-2	1							2	1	1		1			1		-2	-1	-2	1	844	
13-Aug	2	1	1	4	1		1														1		1		12	856	
14-Aug	2	3	1	1									1			1	1	2	1		1	1	1	1	17	873	
15-Aug	2		1	2								1			3	1	3	2	1				1	4	21	894	
16-Aug	3	1	0	1	2	1	1		1	1				1		1	1	2		2		1	4	7	30	924	
17-Aug			3	1	1	1						0	1				1		2	1			1	5	17	941	
18-Aug	1	1	2		1				1										1	5	2	1			15	956	
19-Aug	4	4	1	1													1	1	1	2	2	2		6	25	981	
20-Aug	5	3		2	3	3						1							1			1	3	4	26	1007	
21-Aug				1	1													1	2				1	1	7	1014	
22-Aug	1	2	1	1												1	1		1	1	1		1	1	12	1026	
23-Aug		3			1									1		1			1	2	3			3	15	1041	
24-Aug	1	2	2	3	1													1						1	11	1052	
25-Aug	2	1				1						1							1		2				8	1060	
26-Aug						1										1									2	1062	
27-Aug							1					1									1				3	1065	
28-Aug	1																		1		2		1		5	1070	
29-Aug	0		0	0																					0	1070	
30-Aug																		1		1			0		2	1072	
31-Aug																									0	1072	
01-Sep																				1	2				3	1075	
02-Sep				1																1		1			3	1078	
03-Sep						0	1														1				2	1080	
04-Sep																							1		1	1081	
05-Sep																									0	1081	
06-Sep																						2		1	3	1084	
07-Sep																									0	1084	
08-Sep		1					1						1												3	1087	

Appendix 2. Daily counts of Chinook salmon passing through Klukshu River counter, 2018.

Chinook Daily Counts 2018						
	Daily			Cumulative		
	UnSampled	Sampled	Total	UnSampled	Sampled	Total
16/Jun	1		1	1	0	1
17/Jun	0		0	1	0	1
18/Jun	0		0	1	0	1
19/Jun	0		0	1	0	1
20/Jun	0		0	1	0	1
21/Jun	0		0	1	0	1
22/Jun	0		0	1	0	1
23/Jun	0		0	1	0	1
24/Jun	0		0	1	0	1
25/Jun	0		0	1	0	1
26/Jun	0		0	1	0	1
27/Jun	0		0	1	0	1
28/Jun	0		0	1	0	1
29/Jun	0		0	1	0	1
30/Jun	0		0	1	0	1
1/Jul	0		0	1	0	1
2/Jul	0		0	1	0	1
3/Jul	0		0	1	0	1
4/Jul	1		1	2	0	2
5/Jul	4		4	6	0	6
6/Jul	0		0	6	0	6
7/Jul	3		3	9	0	9
8/Jul	6		6	15	0	15
9/Jul	1		1	16	0	16
10/Jul	3		3	19	0	19
11/Jul	2		2	21	0	21
12/Jul	2		2	23	0	23
13/Jul	8		8	31	0	31
14/Jul	7		7	38	0	38
15/Jul	5		5	43	0	43
16/Jul	4		4	47	0	47
17/Jul	20		20	67	0	67
18/Jul	19		19	86	0	86
19/Jul	17		17	103	0	103
20/Jul	18		18	121	0	121
21/Jul	41		41	162	0	162
22/Jul	55		55	217	0	217
23/Jul	46		46	263	0	263
24/Jul	58		58	321	0	321
25/Jul	64		64	385	0	385
26/Jul	45		45	430	0	430
27/Jul	67		67	497	0	497
28/Jul	49		49	546	0	546
29/Jul	42		42	588	0	588
30/Jul	56		56	644	0	644
31/Jul	35		35	679	0	679

Chinook Daily Counts 2018						
	Daily			Cumulative		
	UnSampled	Sampled	Total	UnSampled	Sampled	Total
1/Aug	42		42	721	0	721
2/Aug	22		22	743	0	743
3/Aug	16		16	759	0	759
4/Aug	18		18	777	0	777
5/Aug	11		11	788	0	788
6/Aug	1		1	789	0	789
7/Aug	12		12	801	0	801
8/Aug	15		15	816	0	816
9/Aug	10		10	826	0	826
10/Aug	5		5	831	0	831
11/Aug	12		12	843	0	843
12/Aug	1		1	844	0	844
13/Aug	12		12	856	0	856
14/Aug	17		17	873	0	873
15/Aug	21		21	894	0	894
16/Aug	30		30	924	0	924
17/Aug	17		17	941	0	941
18/Aug	15		15	956	0	956
19/Aug	25		25	981	0	981
20/Aug	26		26	1,007	0	1,007
21/Aug	7		7	1,014	0	1,014
22/Aug	12		12	1,026	0	1,026
23/Aug	15		15	1,041	0	1,041
24/Aug	11		11	1,052	0	1,052
25/Aug	8		8	1,060	0	1,060
26/Aug	2		2	1,062	0	1,062
27/Aug	3		3	1,065	0	1,065
28/Aug	5		5	1,070	0	1,070
29/Aug	0		0	1,070	0	1,070
30/Aug	2		2	1,072	0	1,072
31/Aug	0		0	1,072	0	1,072
1/Sep	3		3	1,075	0	1,075
2/Sep	3		3	1,078	0	1,078
3/Sep	2		2	1,080	0	1,080
4/Sep	1		1	1,081	0	1,081
5/Sep	0		0	1,081	0	1,081
6/Sep	3		3	1,084	0	1,084
7/Sep	0		0	1,084	0	1,084
8/Sep	3		3	1,087	0	1,087

Appendix 3. Hourly counts of sockeye salmon passing through Klukshu River weir, 2018.

																								Count		
	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Daily	Cum.
16-Jul																									0	0
17-Jul					1																				1	1
18-Jul			1																						1	2
19-Jul																									0	2
20-Jul			1																						1	3
21-Jul																									0	3
22-Jul																									0	3
23-Jul					1																				1	4
24-Jul				1	2	1																			4	8
25-Jul		1	1	1													1		1						5	13
26-Jul		3		2																					5	18
27-Jul	2	2	2	1	1							1													9	27
28-Jul		1	1	2																					4	31
29-Jul			1	3	3																				7	38
30-Jul	1	1			1		1													1					5	43
31-Jul		2		3																					5	48
01-Aug		3	2	2																					7	55
02-Aug		2																						1	3	58
03-Aug					1																				1	59
04-Aug			1	2	2									1											6	65
05-Aug				1	1																				2	67
06-Aug		1		2	1																				4	71
07-Aug			1																						1	72
08-Aug		2																							2	74
09-Aug	1																								1	75
10-Aug																									0	75
11-Aug																								1	1	76
12-Aug	1				1	1										1									4	80
13-Aug	1	1			1																				3	83
14-Aug	1	2	2														1		1						7	90
15-Aug	1	3	1	1			1																		7	97
16-Aug	1	2	2	1																					6	103
17-Aug					1	1					1														3	106
18-Aug	2	1			1																				4	110
19-Aug	3	6		1	1																				11	121
20-Aug	1	2	2	1	1	2																		3	12	133
21-Aug	1	5	1		1																		1	3	12	145

																								Count					
	0:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Daily	Cum.			
22-Aug	10	4	11	4																			3	32	177				
23-Aug	5	14	6	5	2																		3	8	43	220			
24-Aug	11	11	14	3	9		1										1							3	53	273			
25-Aug	13	39	13	1		2					1						1		1					4	75	348			
26-Aug	40	36	6	4	3	4																	1	13	107	455			
27-Aug	16	19	9	6	5	10	5																13	28	111	566			
28-Aug	15	4	6	3																				38	66	632			
29-Aug	15	13	6	2	3	1	5																1	9	55	687			
30-Aug	28	14	16	8	4	11	2													2		2	8	36	131	818			
31-Aug	20	18	11	11	9	4	5										3	4	1				17	29	132	950			
01-Sep	11	17	3	14	15	16	19	1									4	39	45	18	9	5	23	71	310	1260			
02-Sep	33	15	24	26	26	11	21	14										14	19	1		1	51	65	321	1581			
03-Sep	35	20	5	7	9	30	9																11	76	202	1783			
04-Sep	54	35	22	17	28	34	22	4											19	1	20	8	8	50	322	2105			
05-Sep	58	46	27	12	22	38	26	3													2	2	98	138	472	2577			
06-Sep	48	49	36	14	14	12	20																18	61	272	2849			
07-Sep	44	36	34	16	20	8	21															28	11	42	67	327	3176		
08-Sep	33	40	35	25	16	24	29	1										18	2	51	29		14	53	370	3546			
09-Sep	58	29	29	27	18	16	15													21	12	7	134	85	451	3997			
10-Sep	30	34	30	25	23	14	34	4										5	2	37	20	22	35	68	383	4380			
11-Sep	104	88	63	34	26	31	26	1												21	10	21	66	61	552	4932			
12-Sep	37	22	17	10	16	33	69	11														10	4	26	59	314	5246		
13-Sep	45	56	36	31	28	13	13	6														1	24	140	98	491	5737		
14-Sep	42	25	12	17	34	14	15	6														11	12	117	19	324	6061		
15-Sep	1	5		4	4	6	15	1															37	88	69	230	6291		
16-Sep	26	25	11	17	7	8	4	1															9	25	133	6424			
17-Sep	18	1	5	8	17	15	7	4															2	5	22	104	6528		
18-Sep	5	6	4	8	9	8	2																9	7	16	74	6602		
19-Sep	18	4	1	1	4	9	4	3															2	9	22	77	6679		
20-Sep	12	5	3	11	5	5	12	1															3	23	28	108	6787		
21-Sep	14	8	4	5	5	4	2																8	7	12	69	6856		
22-Sep	6	6	2	2	1	2	11	3															8	9	13	63	6919		
23-Sep	5	5	4		2	2	8	6															2	10	10	54	6973		
24-Sep	3	4	1	2	1	4	4	1															2	11	5	38	7011		
25-Sep	6	4	5	4		6	3	2																4	5	39	7050		
26-Sep	4	4	3		1	3	3	3															1	5	5	32	7082		
27-Sep	4	2	1	2	2	1	3	3														1	2	6	7	34	7116		
28-Sep	2	1		1	1	2	1															1	1	1	11	7127			
29-Sep																								1		1	7128		
30-Sep			1	2	1	1																		1		6	7134		
01-Oct		1	1				2																			4	7138		
02-Oct																									1		1	7139	
03-Oct	1		1																								2	7141	
04-Oct			1		1																						2	7143	

Appendix 4. Daily counts of sockeye salmon passing through Klukshu River weir, 2018.

Sockeye Daily Counts 2018								
	Daily				Cumulative			
	UnSampled	Harvest	Sampled	Total	UnSampled	Harvest	Sampled	Total
6/Jul	0			0	0	0	0	0
7/Jul	0			0	0	0	0	0
8/Jul	0			0	0	0	0	0
9/Jul	0			0	0	0	0	0
10/Jul	0			0	0	0	0	0
11/Jul	0			0	0	0	0	0
12/Jul	0			0	0	0	0	0
13/Jul	0			0	0	0	0	0
14/Jul	0			0	0	0	0	0
15/Jul	0			0	0	0	0	0
16/Jul	0			0	0	0	0	0
17/Jul	1			1	1	0	0	1
18/Jul	1			1	2	0	0	2
19/Jul	0			0	2	0	0	2
20/Jul	1			1	3	0	0	3
21/Jul	0			0	3	0	0	3
22/Jul	0			0	3	0	0	3
23/Jul	1			1	4	0	0	4
24/Jul	4			4	8	0	0	8
25/Jul	5			5	13	0	0	13
26/Jul	5			5	18	0	0	18
27/Jul	9			9	27	0	0	27
28/Jul	4			4	31	0	0	31
29/Jul	7			7	38	0	0	38
30/Jul	5			5	43	0	0	43
31/Jul	5			5	48	0	0	48
1/Aug	7			7	55	0	0	55
2/Aug	3			3	58	0	0	58
3/Aug	1			1	59	0	0	59
4/Aug	6			6	65	0	0	65
5/Aug	2			2	67	0	0	67
6/Aug	4			4	71	0	0	71
7/Aug	1			1	72	0	0	72
8/Aug	2			2	74	0	0	74
9/Aug	1			1	75	0	0	75
10/Aug	0			0	75	0	0	75
11/Aug	1			1	76	0	0	76
12/Aug	4			4	80	0	0	80
13/Aug	3			3	83	0	0	83
14/Aug	7			7	90	0	0	90
15/Aug	7			7	97	0	0	97

Sockeye Daily Counts 2018								
	Daily				Cumulative			
	UnSampled	Harvest	Sampled	Total	UnSampled	Harvest	Sampled	Total
16/Aug	6			6	103	0	0	103
17/Aug	3			3	106	0	0	106
18/Aug	4			4	110	0	0	110
19/Aug	11			11	121	0	0	121
20/Aug	12			12	133	0	0	133
21/Aug	12			12	145	0	0	145
22/Aug	32			32	177	0	0	177
23/Aug	43			43	220	0	0	220
24/Aug	53			53	273	0	0	273
25/Aug	75			75	348	0	0	348
26/Aug	107			107	455	0	0	455
27/Aug	111			111	566	0	0	566
28/Aug	66			66	632	0	0	632
29/Aug	55			55	687	0	0	687
30/Aug	131			131	818	0	0	818
31/Aug	132			132	950	0	0	950
1/Sep	310			310	1,260	0	0	1,260
2/Sep	321			321	1,581	0	0	1,581
3/Sep	202			202	1,783	0	0	1,783
4/Sep	322			322	2,105	0	0	2,105
5/Sep	472			472	2,577	0	0	2,577
6/Sep	272			272	2,849	0	0	2,849
7/Sep	327			327	3,176	0	0	3,176
8/Sep	370			370	3,546	0	0	3,546
9/Sep	451			451	3,997	0	0	3,997
10/Sep	383			383	4,380	0	0	4,380
11/Sep	552			552	4,932	0	0	4,932
12/Sep	314			314	5,246	0	0	5,246
13/Sep	491			491	5,737	0	0	5,737
14/Sep	324			324	6,061	0	0	6,061
15/Sep	230			230	6,291	0	0	6,291
16/Sep	133			133	6,424	0	0	6,424
17/Sep	104			104	6,528	0	0	6,528
18/Sep	74			74	6,602	0	0	6,602
19/Sep	77			77	6,679	0	0	6,679
20/Sep	108			108	6,787	0	0	6,787
21/Sep	69			69	6,856	0	0	6,856
22/Sep	63			63	6,919	0	0	6,919
23/Sep	54			54	6,973	0	0	6,973
24/Sep	38			38	7,011	0	0	7,011
25/Sep	39			39	7,050	0	0	7,050
26/Sep	32			32	7,082	0	0	7,082
27/Sep	34			34	7,116	0	0	7,116
28/Sep	11			11	7,127	0	0	7,127
29/Sep	1			1	7,128	0	0	7,128
30/Sep	6			6	7,134	0	0	7,134
1/Oct	4			4	7,138	0	0	7,138
2/Oct	1			1	7,139	0	0	7,139
3/Oct	2			2	7,141	0	0	7,141
4/Oct	2			2	7,143	0	0	7,143

Appendix 5. Financial Summary

Fisheries and Oceans Canada - PSC Project Budget Financial Report

Name of Project and PSC#:

Klukshu Chinook and Sockeye Enumeration, 2018 (NF-2018-VHPC-3)

EXPENDITURES

Labour

DFO Employee Salaries and Benefits

Position	Expenditures	Approved Budget	Total Expenditure	Variance
DFO Fishery Technician EG-4	\$ 18,258.76	\$ 22,650.00		
		\$ 4,530.00		
DFO Fishery Technician EG-3	\$ 24,679.99	\$ 20,183.00		
		\$ 4,038.60		
		\$ -		
Total Expended	\$ 42,938.75	Total Budget \$ 51,399.60	\$ 42,938.75	\$ 8,460.85

Subcontractors & Consultants

Contract	Contract Amount Expended	Approved Budget	Total Expenditure	Variance
Total Expended	\$ -	Total Budget \$ -	\$ -	\$ -
Total Labour Summary		\$ 51,399.60	\$ 42,938.75	\$ 8,460.85

Site / Project Costs

Item	Amount Expended	Approved Budget	Total Expenditure	Variance
Travel				
Small Tools & Equipment				
Site Supplies & Materials				
Equipment Rental				
Work & Safety Gear				
Repairs & Maintenance				
Permits				
Other costs				
Total Expended	\$ -	Total Budget \$ -	\$ -	\$ -
Total Site / Project Summary		\$ -	\$ -	\$ -

Training Costs

Item	Amount Expended	Approved Budget	Total Expenditure	Variance
Name of course				
Total Expended	\$ -	Total Budget \$ -	\$ -	\$ -
Total Training Summary		\$ -	\$ -	\$ -

Fisheries and Oceans Canada - PSC Project Budget Financial Report

Overhead / Indirect Costs					
Item	Amount Expended		Approved Budget	Total Expenditure	Variance
Office space; including utilities, etc.					
Insurance					
Office supplies					
Telephone & long Distance					
Photocopies & printing					
Indirect/overhead costs					
Administration and financial management					
(If the PSC contribution to indirect costs exceeds 20% of the total PSC grant submission of back-up documentation justifying the expense is required).					
Total Expended	\$ -		Total Budget	\$ -	\$ -
Total Overhead / Indirect Summary			\$ -	\$ -	\$ -

Capital Costs / Assets (Value > \$250.00)					
Item	Amount Expended		Approved Budget	Total Expenditure	Variance
Total Expended	\$ -		Total Budget	\$ -	\$ -
Total Capital Cost / Asset Summary			\$ -	\$ -	\$ -

Financial Report

Categories	Approved Budget (PSC Grant)	Project Expenditures	Variance
Labour	\$ 51,399.60	\$ 42,938.75	\$ 8,460.85
Site / Project Costs	\$ -	\$ -	\$ -
Training	\$ -	\$ -	\$ -
Overhead / Indirect Costs	\$ -	\$ -	\$ -
Capital Costs / Assets	\$ -	\$ -	\$ -
TOTAL	\$ 51,399.60	\$ 42,938.75	\$ 8,460.85

PST Project Funding Grant Advance Amount Received	\$ 46,259.10
PST Project Funding Grant Amount Remaining to be Paid	\$ -
Difference Between Grant Amount and Project Expenditures	\$ 3,320.35

Project Manager Name Aaron Foos

Project Manager Signature 

Date

03 April 2019

DFO Responsibility Center Manager Name

William Waugh

DFO Responsibility Center Manager Signature 

Date

April 3/19

Appendix 6. Photographs



Still image of a Klukshu River Chinook salmon passing through the counting chamber.



Aerial view of 2018 Klukshu River Enumeration Facility

