

**Proctor Creek Groundwater Channel  
Coho Assessment  
Spring – Summer 2007**



prepared by

Leaf Thunderstorm and Brenda Donas  
**Department of Fisheries and Oceans**  
Smithers, B.C.

December 2007

## **Introduction**

A groundwater study was conducted from May 15, 2007 to August 07, 2007 on a small groundwater channel (GWC) located on private property near Proctor Road just east of Smithers, B C. For the purpose of this report, this groundwater channel is referred to as the Proctor Road Groundwater Channel. The UTM coordinates for the site were recorded using a Garmin eTrex Vista CX Global Positioning System (GPS). Site coordinates are: Zone 09 U with the UTM coordinates: 615496 6074672.

Water flow originates through a gravel bank at the upstream end of the channel i.e. at the Proctor Road end of the channel and flows downstream approximately 300 m and to its confluence with McKinnon Creek. Water depths throughout most of the channel are too shallow to provide fish habitat. However, the 25 m section of channel just upstream from the confluence with McKinnon Creek is being utilized by juvenile salmonids. Water depths in this 25 m section of channel vary between approximately 15 cms and 39 cms.

The study area consisted of a 15 meter section of channel upstream from the channel confluence with McKinnon Creek. The Proctor GWC flows into McKinnon Creek, a tributary of Kathlyn Creek which flows to the Bulkley River. The purpose of this study was to conduct some preliminary monitoring to determine if the GWC is a suitable candidate for habitat enhancement. The monitoring study involved monitoring of fish presence, condition, species composition, water levels, water temperature, pH and dissolved oxygen levels.

## **Methods and Materials**

The study site was visited bimonthly, until the study was discontinued in August, due to low water levels. All data was recorded on pre-formatted data sheets as per Appendix 1.

The same procedures were followed on each site visit. Prior to setting traps, limnology measurements were taken including dissolved oxygen, pH, water temperature and water level. Refer to Table 1 for a listing of limnology readings taken at the GWC site.

Three Gee Minnow Traps (GMT) were baited with salmon roe and placed in a cluster on the bottom of the groundwater channel. The first trap location was 4 m upstream from the confluence, with the others placed 1 – 1.5 meters apart moving upstream from there. Trap soak time was approximately 24 hours and all traps were allowed to soak overnight. The same trapping locations were used for each sample period until early August when the water levels were insufficient to properly cover the traps.

Traps were collected and assessed separately so that Catch per Unit Effort could be calculated. A five gallon bucket was filled with water and one trap was emptied into the bucket. Fry were dip netted a few at a time from the large bucket into a smaller container of water containing an anesthetic solution consisting of Alka-Seltzer and baking soda. After the fish were sufficiently anaesthetized, each fish was individually sampled for fork length in millimeters and weight in grams. Fry were placed into a recovery bucket

immediately after being sampled. Upon recovery, fry were released to the GWC at the trapping location.

Refer to Table 2 for equipment used in sampling this site.

**Table 1. Physical and Chemical Properties Recorded Bimonthly**

Parameter	Unit/Categories	Method
Air temperature	Celsius	Truck thermometer
Stream Flow	None, Low, Moderate, High	Visual estimate
Potential for fish migration	None, Low, Moderate, High	Visual estimate
Water depth	Centimeters	Meter stick
Turbidity	None, Low, Moderate, Clear	Visual estimate
Dissolved Oxygen (DO)	ppm	OxyGuard DO Meter
Water temperature	Celsius	OxyGuard DO Meter
pH	pH units	Hanna H 19812 ph Meter

**Table 2. Tools and Supplies Used in Fish enumeration**

2 five-gallon buckets
small bucket (2 litres)
metric scale (AND SV – 610)
1 – 1 ½ tablets of Alka-Seltzer
½ – 1 tsp baking soda
metric fish measuring board
small container to weigh fish in

## **Results**

Sampling of the Proctor GWC site occurred from May 15 to August 8, 2007. A total of 533 coho were captured during the sampling period. Water temperature, pH and dissolved oxygen levels were within safe limits for juvenile salmonids on all sample dates. (Refer to Appendix 1).

### **Fork Length and Fulton's Condition Coefficient**

Fork length data was collected for 249 of the 533 coho captured (46.7%), and weight data was collected for 248 of the 533 coho captured (46.5%).

Fulton's condition factor was calculated for 246 of the 533 coho captured (46.2%) using the formula below.

**Fulton's Condition Factor (FCC) equation:**

$$K = 10^5 (w / l^3)$$

Where:        K = Fulton's condition factor  
                  w = weight (g)  
                  l = length (mm)

During the timeframe of this study, the species composition for the Proctor GWC was found to consist exclusively of coho fry. Age class of the coho juveniles has been defined as follows:

Age 0+ (fry of the year) are fish that are less than or equal to 80 mm in length  
Age 1+ (have reared for one winter or more) are fish that are more than 80 mm in length

Within the less than or equal to 80 mm fork length class, fork lengths ranged from 49 mm to 80 mm and FCC ranged from 0.92 to 1.37. There were two fry with FCC's greater than 1.80 and these were removed from the data set as outliers.

Within the greater than 80 mm fork length class, fork lengths ranged from 81 mm to 98 mm and FCC ranged from 0.95 to 1.21.

Mean fork lengths and FCC's by fork length class are shown in Table 3.

**Table 3. Proctor GWC Summary of Mean FL and FCC by Sample Date**

<u>Sample Date</u>	<u>Mean FL ≤ 80mm</u>	<u>Mean FL &gt; 80mm</u>	<u>Mean FCC ≤ 80mm</u>	<u>Mean FCC &gt; 80mm</u>
May 15, 2007	59	82	1.17	1.22
May 29, 2007	62	91	1.16	1.00
June 13, 2007	66	81	1.09	1.11
June 27, 2007	68	82	1.20	1.13
July 10, 2007	70	83	1.13	1.15
July 25, 2007	60	None captured	1.17	Na
Aug 7, 2007	60	88	1.19	1.17

It is interesting to note that only 10 (4%) of the 249 coho sampled for fork length were in the greater than 80 mm fork length category. In previous overwintering studies (Donas and Saimoto – June 2000), it was determined that juvenile salmonids that did not attain a FCC of 1.0 prior to the onset of winter were unlikely to survive the winter. The FCC for coho in both fork length categories was 1.0 or greater throughout the sampling period.

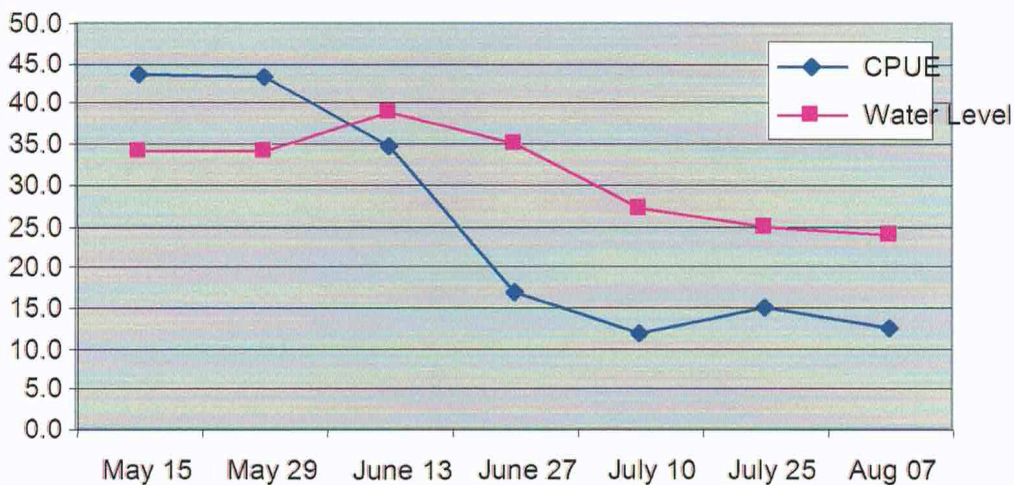
### Catch Per Unit Effort

The catch per unit effort (CPUE) ranged from 3 to 52 coho per trap with mean CPUE per sample date ranging from 11.7 to 43.7 coho per trap. Table 4 shows CPUE by sample date.

**Table 4: Proctor GWC Summary of CPUE by Sample Date**

Sample Date	Trap 1 Catch	Trap 2 Catch	Trap 3 Catch	Mean Catch per Unit Effort
May 15, 2007	40	52	39	43.7
May 29, 2007	38	32	50	43.3
June 13, 2007	41	28	25	34.7
June 27, 2007	29	4	18	17.0
July 10, 2007	3	15	17	11.7
July 25, 2007	17	20	8	15.0
Aug 7, 2007	6	11	20	12.3

Total Catch per sample date begins to decrease after June 13, 2007 and this could be due to decreasing water levels in the GWC. It is likely that fry migrated out to McKinnon Creek as water level decreased. Figure 1 compares water level and CPUE for the Proctor GWC.



**Figure 1.** Comparison of CPUE and Water Depth by Sample Date in Proctor GWC (2007).

## **Discussion**

The Proctor Creek GWC was found to be used exclusively by juvenile coho. Water quality parameters were within safe limits for juvenile salmonids and the presence of juvenile coho indicates that this site is a good candidate for future habitat enhancement projects.

CPUE ranged from 11.7 to 43.7 coho per trap. Coho juveniles were visible in the GWC at the time of most site visits indicating that this habitat area is regularly utilized by salmonid juveniles.

During the 2006 – 2007 Bulkley River Watershed Overwintering Study, there were 8 GMT traps set on three dates during the period from December 19, 2006 to March 27, 2007 which yielded a total capture of 158 coho juveniles. During that study CPUE ranged from 1 to 44 fish per trap and species composition was 100 % coho (Newman and Donas, 2007). This indicates that this GWC is utilized by rearing salmonids year round.

The FCC for both fork length categories was 1.0 or greater throughout the study indicating good condition prior to the onset of winter. (Donas and Saimoto – June 2000).

It is interesting to note that there was a drop in the water levels in mid June at which time the CPUE dropped as well (Figure 1). Sampling was discontinued in August due to low water levels in the GWC. During August, flow through the GWC seemed to decrease and connectivity to the McKinnon Creek became minimal. The reason for the decrease in water level is unknown at this time however monitoring will be ongoing throughout the winter of 2007/2008.

## **Conclusions and Recommendations**

The Proctor Road GWC has been monitored regularly since the spring of 2005. Monitoring has shown that water quality parameters fall within safe limits for juvenile salmonids. Juvenile trapping surveys have shown that coho are present in the groundwater channel for most of the year and are in good condition.

Fork length data shows that mean fork length ranges between 59 and 70 mms. Mean fork length is greatest at the July 10<sup>th</sup> sample date and then mean fork length decreases to a mean of 60 mms in late July and early August. The relatively low number of juveniles in the greater than 80mm fork length category may indicate that the GWC habitat is best suited to smaller fish. It is likely that as fish approach and then exceed the 80 mm fork length, they migrate out of the GWC into habitat that is deeper and more suitable as over-wintering habitat.

The channel is wetted for approximately 300 metres however most of the channel is shallow. The channel is a good candidate for habitat enhancement to provide additional habitat for juvenile salmonids. This could be accomplished by excavating the channel to

enhance groundwater flows and water level. Deeper water may encourage juvenile coho that are 80 mms or larger to utilize the GWC as over-wintering habitat.

Banks would require stabilization with rock and woody debris could be added to the channel to provide additional habitat for juvenile salmonids.

## **Appendix 1**

### Proctor Groundwater Channel Sampling Data



Site Identification

Proctor Rd. GWC

Sampling Date

May 15/07

Atmospheric and Water Conditions

Air Temp ©	9
Stream Flow	low
Potential for Migration	mod

Water Depth (cm)	34
Water Temp ©	8.4
Turbidity	clear
DO	11.4ppm
pH	6.8

Set Locations

Number of traps set 3

4 m from confluence with McKinnon Creek

Set duration overnight

Comments

traps set May 15 at 15:00  
traps picked up May 16 at 13:00

Juvenile Capture and Sampling Summary

Location Proctor Road GWC  
Date May 16/07

Species	No. Caught	Min Ln (mm)	Max Ln (mm)	species composition
coho	131	52	82	coho 100%
<b>Coho CPUE</b>				
Mean				43.67
Trap 1				40
Trap 2				52
Trap 3				39

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Count
GMT	1	1	CO	52	1.3	u/m	0.92	1
GMT	1	1	CO	53	1.7	u/m	1.14	2
GMT	1	1	CO	53	1.8	u/m	1.21	3
GMT	1	1	CO	53	1.8	u/m	1.21	4
GMT	1	1	CO	54	2.0	u/m	1.27	5
GMT	1	1	CO	55	2.1	u/m	1.26	6
GMT	1	1	CO	55	2.1	u/m	1.26	7
GMT	1	1	CO	55	2.3	u/m	1.38	8
GMT	1	1	CO	56	2.0	u/m	1.14	9
GMT	1	1	CO	56	2.1	u/m	1.20	10
GMT	1	1	CO	56	2	u/m	1.14	11
GMT	1	1	CO	57	2.1	u/m	1.13	12
GMT	1	1	CO	57	1.8	u/m	0.97	13
GMT	1	1	CO	57	2	u/m	1.08	14
GMT	1	1	CO	57	1.9	u/m	1.03	15
GMT	1	1	CO	58	2.4	u/m	1.23	16
GMT	1	1	CO	61	2.7	u/m	1.19	17
GMT	1	1	CO	61	3.1	u/m	1.37	18
GMT	1	1	CO	61	2.6	u/m	1.15	19
GMT	1	1	CO	62	3	u/m	1.26	20
GMT	1	1	CO	62	3	u/m	1.26	21

**Juvenile Capture and Sampling Summary**

**Location** Proctor Road GWC  
**Date** May 16/07

Page 3 of 3

<u>Capture Method</u>	<u>Cluster #</u>	<u>Trap #</u>	<u>Species</u>	<u>FL(mm)</u>	<u>Weight(g)</u>	<u>Mark type</u>	<u>FCC</u>	<u>Count</u>
GMT	1	1	CO	62	2.8	u/m	1.17	22
GMT	1	1	CO	62	2.8	u/m	1.17	23
GMT	1	1	CO	64	3.1	u/m	1.18	24
GMT	1	1	CO	65	3.1	u/m	1.13	25
GMT	1	1	CO	65	2.8	u/m	1.02	26
GMT	1	1	CO	67	3.3	u/m	1.10	27
GMT	1	1	CO	67	3.7	u/m	1.23	28
GMT	1	1	CO	74	4.6	u/m	1.14	29
GMT	1	1	CO	81	6.6	u/m	1.24	30
GMT	1	1	CO	82	6.6	u/m	1.20	31

mean FCC coho ≤ 80mm	1.17
mean FCC coho > 80mm	1.22
mean FL coho ≤ 80mm	59
mean FL coho > 80mm	82
mean Wt coho (g) ≤ 80mm	2.48
mean Wt coho (g) > 80mm	6.60

**Comments:** Resample in two weeks May 29-30  
 Trap 1: 9 coho not sampled  
 Trap 2: 52 coho not sampled  
 Trap 3: 39 coho not sampled

**Site Identification**

Proctor Road GWC

**Sampling Date**

May29/07

**Atmospheric and Water Conditions**

<b>Air Temp ©</b>	10
<b>Stream Flow</b>	low
<b>Potential for Migration</b>	moderate
<b>Water Depth (cm)</b>	34
<b>Water Temp ©</b>	8.5
<b>Turbidity</b>	clear
<b>DO</b>	5.3
<b>pH</b>	6.8

**Number of traps set**      **Set Locations**

3

4 m from confluence with McKinnon Creek

**Set duration**

overnight

**Comments**

overcast and slight rain  
some weights n/a due to scale not zeroing out quickly enough  
Possible mistake on the DO readout. Very low.  
Traps set May 29 at 09:20, picked up on May 30 at 09:00

Juvenile Capture and Sampling Summary

Location Proctor Road GWC  
Date May 30-2007

Species	No. Caught	Min Ln (mm)	Max Ln (mm)
Coho	130	52	98

species composition
coho 100%

Coho CPUE	
Mean	43.3
Trap 1	38
Trap 2	32
Trap 3	50

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Count
GMT	1	1	CO	52	1.7	u/m	1.21	1
GMT	1	1	CO	54	1.6	u/m	1.02	2
GMT	1	1	CO	55	2.0	u/m	1.20	3
GMT	1	1	CO	55	2.5	u/m	1.50	4
GMT	1	1	CO	55	2.7	u/m	1.62	5
GMT	1	1	CO	57	1.8	u/m	0.97	6
GMT	1	1	CO	57	2.2	u/m	1.19	7
GMT	1	1	CO	57	2.2	u/m	1.19	8
GMT	1	1	CO	57	2.2	u/m	1.19	9
GMT	1	1	CO	58	2.2	u/m	1.13	10
GMT	1	1	CO	58	2.6	u/m	1.33	11
GMT	1	1	CO	58	2.4	u/m	1.23	12
GMT	1	1	CO	59	2.6	u/m	1.27	13
GMT	1	1	CO	60	2.3	u/m	1.06	14
GMT	1	1	CO	61	2.4	u/m	1.06	15
GMT	1	1	CO	62	2.8	u/m	1.17	16
GMT	1	1	CO	63	3.0	u/m	1.20	17
GMT	1	1	CO	63	2.8	u/m	1.12	18
GMT	1	1	CO		2.7	u/m	1.03	19
GMT	1	1	CO		3.2	u/m	1.22	20
GMT	1	1	CO	4	2.7	u/m	1.03	21
GMT	1	1	CO	65	2.8	u/m	1.02	22

Juvenile Capture and Sampling Summary

Location Proctor Road GWC  
Date May 30-2007

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Count
GMT	1	1	CO	65	3.5	u/m	1.27	23
GMT	1	1	CO	65	3.0	u/m	1.09	24
GMT	1	1	CO	65	3.0	u/n	1.09	25
GMT	1	1	CO	65	3.2	u/m	1.17	26
GMT	1	1	CO	66	3.2	u/m	1.11	27
GMT	1	1	CO	66	3.2	u/m	1.11	28
GMT	1	1	CO	67	3.1	u/m	1.03	29
GMT	1	1	CO	73	4.2	u/m	1.08	30
GMT	1	1	CO	77	5.1	u/m	1.12	31
GMT	1	1	CO	79	n/a	u/m	n/a	32
GMT	1	1	CO	84	6.3	u/m	1.06	33
GMT	1	1	CO	92	7.4	u/m	0.95	34
GMT	1	1	CO	98	9.2	u/m	0.98	35

mean FCC coho ≤ 80mm	1.16
mean FCC coho > 80mm	1.00
mean FL coho ≤ 80mm	62
mean FL coho > 80mm	91
mean Wt coho (g) ≤ 80mm	2.7
mean WT coho (g) > 80mm	7.6

Comments: Resample in two weeks June 12-13

Trap 1: 13 coho not sampled

Trap 2: 32 coho not sampled

Trap 3: 50 coho not sampled

Site Identification

Proctor Road GWC

Sampling Date

13-Jun-07

Atmospheric and Water Conditions

Air Temp ©	11
Stream Flow	low
Potential for Migration	moderate

Water Depth (cm)	39
Water Temp ©	6.7
Turbidity	clear
DO	7.2 ppm
pH	6.4

Set Locations

Number of traps set 3

Set duration overnight

4 meters upstream from confluence with McKinnon Creek

Comments

photos of channel taken  
Traps set June 13 at 10:00, traps picked up June 14 at 10:00  
pH appeared low compared to other samples. Possible error.

Juvenile Capture and Sampling Summary

Location Doctor Road GWC  
Date 14-Jun-07

Species	No. Caught	Min Ln (mm)	Max Ln (mm)
Coho	104	55	81

Species composition  
Coho 100%

	Mean	Collection
	34.7	coho per 24 h period per trap
Trap 1	41	
Trap 2	28	
Trap 3	25	

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Count
GMT	1	1	CO	55	1.8	u/m	1.08	1
GMT	1	1	CO	58	2.2	u/m	1.13	2
GMT	1	1	CO	60	2.4	u/m	1.11	3
GMT	1	1	CO	61	2.6	u/m	1.15	4
GMT	1	1	CO	62	2.7	u/m	1.13	5
GMT	1	1	CO	62	2.7	u/m	1.13	6
GMT	1	1	CO	63	2.6	u/m	1.04	7
GMT	1	1	CO	63	2.8	u/m	1.12	8
GMT	1	1	CO	64	2.9	u/m	1.11	9
GMT	1	1	CO	64	3.1	u/m	1.18	10
GMT	1	1	CO	64	3	u/m	1.14	11
GMT	1	1	CO	65	2.5	u/m	0.91	12
GMT	1	1	CO	65	3.1	u/m	1.13	13
GMT	1	1	CO	66	3	u/m	1.04	14
GMT	1	1	CO	66	3.1	u/m	1.08	15
GMT	1	1	CO	66	3.1	u/m	1.08	16
GMT	1	1	CO	66	3.2	u/m	1.11	17
GMT	1	1	CO	66	2.9	u/m	1.01	18
GMT	1	1	CO	67	3.3	u/m	1.10	19
GMT	1	1	CO	67	3.4	u/m	1.13	20
GMT	1	1	CO	68	3.2	u/m	1.02	21
GMT	1	1	CO	68	3.6	u/m	1.14	22



Juvenile Capture and Sampling Summary

Location Proctor Road GWC  
Date 14-Jun-07

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Count
GMT	1	1	CO	68	3.3	u/m	1.05	23
GMT	1	1	CO	70	3.5	u/m	1.02	24
GMT	1	1	CO	71	4.4	u/m	1.23	25
GMT	1	1	CO	71	3.5	u/m	0.98	26
GMT	1	1	CO	71	3.8	u/m	1.06	27
GMT	1	1	CO	71	3.8	u/m	1.06	28
GMT	1	1	CO	72	4.1	u/m	1.10	29
GMT	1	1	CO	81	5.9	u/m	1.11	30

mean FCC coho ≤ 80mm	1.09
mean FCC coho > 80mm	1.11
mean FL coho ≤ 80mm	66
mean FL coho > 80 mm	81
mean Wt coho (g) ≤ 80mm	3.09
mean Wt coho (g) > 80 mm	5.90

Comments: Resample in two weeks June 27-28

Trap 1: 11 coho not sampled

Trap 2: 28 coho not sampled

Trap 3: 35 coho not sampled

Proctor Road GWC

27-Jun-07

Site Identification

Sampling Date

Atmospheric and Water Conditions

Air Temp ©	17
Stream Flow	low
Potential for Migration	mod

Water Depth (cm)	35
Water Temp ©	13.7
Turbidity	clear
DO	10.3
pH	6.9

4 meters upstream from confluence with McKinnon Creek

Number of traps set	3
---------------------	---

Set Locations

Set duration	overnight
--------------	-----------

Traps set June 27 at 14:40  
Traps picked up June 28 at 14:40

Comments

Juvenile Capture and Sampling Summary

Location Proctor Road GWC

Page 2 of 4

Date 28-Jun-07

Species	No. Caught	Min Ln (mm)	Max Ln (mm)
Coho	51	55	85

species composition
coho 100%

**Coho CPUE**

	Mean	coho per 24 h period per trap
Trap 1	17.0	
Trap 2	29	
Trap 3	4	
	18	

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Count
GMT	1	1	CO	56	3.8	u/m	2.16	1
GMT	1	1	CO	59	3.8	u/m	1.85	2
GMT	1	1	CO	59	2.4	u/m	1.17	3
GMT	1	1	CO	62	3	u/m	1.26	4
GMT	1	1	CO	63	2.9	u/m	1.16	5
GMT	1	1	CO	64	3.4	u/m	1.30	6
GMT	1	1	CO	64	2.3	u/m	0.88	7
GMT	1	1	CO	64	2.8	u/m	1.07	8
GMT	1	1	CO	65	3.7	u/m	1.35	9
GMT	1	1	CO	65	3.7	u/m	1.35	10
GMT	1	1	CO	65	3.1	u/m	1.13	11
GMT	1	1	CO	66	3.5	u/m	1.22	12
GMT	1	1	CO	66	3.6	u/m	1.25	13
GMT	1	1	CO	67	4	u/m	1.33	14
GMT	1	1	CO	67	3.2	u/m	1.06	15
GMT	1	1	CO	68	4.6	u/m	1.46	16
GMT	1	1	CO	69	3.2	u/m	0.97	17
GMT	1	1	CO	69	3.8	u/m	1.16	18
GMT	1	1	CO	69	4	u/m	1.22	19
GMT	1	1	CO	70	4.5	u/m	1.31	20
GMT	1	1	CO	71	3.8	u/m	1.06	21
GMT	1	1	CO	71	4.1	u/m	1.15	22

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Count
GMT	1	1	CO	71	3.9	u/m	1.09	23
GMT	1	1	CO	72	4.5	u/m	1.21	24
GMT	1	1	CO	74	4.7	u/m	1.16	25
GMT	1	1	CO	74	4.6	u/m	1.14	26
GMT	1	1	CO	74	4.1	u/m	1.01	27
GMT	1	1	CO	75	4.1	u/m	0.97	28
GMT	1	1	CO	76	5.1	u/m	1.16	29
GMT	1	2	CO	70	3.2	u/m	0.93	30
GMT	1	2	CO	81	6.3	u/m	1.19	31
GMT	1	2	CO	82	5.8	u/m	1.05	32
GMT	1	2	CO	85	6.9	u/m	1.12	33
GMT	1	3	CO	55	2.1	u/m	1.26	34
GMT	1	3	CO	56	2.3	u/m	1.31	35
GMT	1	3	CO	58	2.4	u/m	1.23	36
GMT	1	3	CO	62	2.7	u/m	1.13	37
GMT	1	3	CO	63	2.9	u/m	1.16	38
GMT	1	3	CO	64	2.9	u/m	1.11	39
GMT	1	3	CO	66	3.3	u/m	1.15	40
GMT	1	3	CO	66	3.1	u/m	1.08	41
GMT	1	3	CO	67	3.7	u/m	1.23	42
GMT	1	3	CO	68	4	u/m	1.27	43
GMT	1	3	CO	71	4	u/m	1.12	44
GMT	1	3	CO	72	4	u/m	1.07	45
GMT	1	3	CO	72	4.3	u/m	1.15	46
GMT	1	3	CO	77	4.9	u/m	1.07	47
GMT	1	3	CO	77	5.2	u/m	1.14	48
GMT	1	3	CO	78	5.7	u/m	1.20	49
GMT	1	3	CO	80	6.1	u/m	1.19	50
GMT	1	3	CO	81	6.1	u/m	1.15	51

Juvenile Capture and Sampling Summary

Location Proctor Road GWC  
Date 28-Jun-07

Page 4 of 4

mean FCC coho $\leq$ 80mm	1.20
mean FCC coho $>$ 80mm	1.13
mean FL coho $\leq$ 80mm	68
mean FL coho $>$ 80mm	82
mean Wt coho (g) $\leq$ 80mm	3.72
mean Wt coho (g) $>$ 80 mm	6.28

Comments: Resample in two weeks July 11-12

**Site Identification**

Proctor Road GWC

**Sampling Date**

10-Jul-07

**Atmospheric and Water Conditions**

<b>Air Temp (deg Celsius)</b>	21
<b>Stream Flow</b>	low
<b>Potential for Migration</b>	low

<b>Water Depth (cm)</b>	27
<b>Water Temp ©</b>	16.2
<b>Turbidity</b>	clear
<b>DO</b>	8.5
<b>pH</b>	6.7

**Number of traps set**

3

**Set Locations**

4 m upstream from confluence with McKinnon Creek

**Set duration**

overnight

**Comments**

Traps in at 1:30pm on July 10  
 Traps picked up at 2:30 on July 11  
 Temperature was 28 degrees C on sampling day  
 water very stagnant seeming, lots of debris floating on surface  
 saw several fish outside trap, up 10cm long.

Juvenile Capture and Sampling Summary

Location Proctor Road GWC  
Date 11-Jul-07

Species	No. Caught	Min Ln (mm)	Max Ln (mm)
Coho	35	57	84

species composition	
Coho	100%

Coho CPUE	
Mean	11.7 coho per 24 h period per trap
Trap 1	3
Trap 2	15
Trap 3	17

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Width(mm)	count
GMT	1	1	CO	69	3.7	u/m	1.13	14	1
GMT	1	1	CO	75	4.2	u/m	1.00	13	2
GMT	1	1	CO	84	6.2	u/m	1.05	15	3
GMT	1	2	CO	61	2.7	u/m	1.19	10	4
GMT	1	2	CO	61	2.5	u/m	1.10	10	5
GMT	1	2	CO	66	3.1	u/m	1.08	11	6
GMT	1	2	CO	67	3.7	u/m	1.23	11	7
GMT	1	2	CO	69	4.0	u/m	1.22	12	8
GMT	1	2	CO	70	3.8	u/m	1.11	12	9
GMT	1	2	CO	70	3.8	u/m	1.11	13	10
GMT	1	2	CO	70	3.8	u/m	1.11	13	11
GMT	1	2	CO	71	4.1	u/m	1.15	13	12
GMT	1	2	CO	71	3.7	u/m	1.03	12	13
GMT	1	2	CO	72	4.1	u/m	1.10	13	14
GMT	1	2	CO	73	4.6	u/m	1.18	14	15
GMT	1	2	CO	73	4.9	u/m	1.26	15	16
GMT	1	2	CO	74	4.6	u/m	1.14	14	17
GMT	1	2	CO	74	7.3	u/m	1.23	17	18
GMT	1	3	CO	57	2.1	u/m	1.13	9	19
GMT	1		CO		3.2	u/m	1.17	11	20
GMT	1		CO		3.2	u/m	1.06	11	21
GMT	1		CO	68	3.6	u/m	1.14	12	22

Juvenile Capture and Sampling Summary

Location Proctor Road GWC  
Date 11-Jul-07

Page 3 of 3

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Width(mm)	Count
GMT	1	3	CO	68	3.6	u/m	1.14	12	22
GMT	1	3	CO	68	3.4	u/m	1.08	12	23
GMT	1	3	CO	72	4.5	u/m	1.21	13	24
GMT	1	3	CO	72	4.2	u/m	1.13	12	25
GMT	1	3	CO	72	4.6	u/m	1.23	13	26
GMT	1	3	CO	72	4.2	u/m	1.13	12	27
GMT	1	3	CO	72	4	u/m	1.07	13	28
GMT	1	3	CO	73	4.3	u/m	1.11	13	29
GMT	1	3	CO	73	4.3	u/m	1.11	13	30
GMT	1	3	CO	74	4.2	u/m	1.04	14	31
GMT	1	3	CO	77	4.8	u/m	1.05	13	32
GMT	1	3	CO	78	5.6	u/m	1.18	16	33
GMT	1	3	CO	81	6.1	u/m	1.15	16	34
GMT	1	3	CO	83	6.7	u/m	1.17	16	35

mean FCC coho ≤ 80mm	1.13
mean FCC coho > 80mm	1.15
mean FL coho ≤ 80mm	70
mean FL coho > 80mm	83
mean Wt coho (g) ≤ 80mm	3.92
mean Wt coho (g) > 80 mm	6.58

Comments: Resample in two weeks Aug 8-9

Trap 1:  
Trap 2:  
Trap 3:



Site Identification

Proctor Road GWC

Sampling Date

25-Jul-07

Atmospheric and Water Conditions

Air Temp (deg Celsius)	21
Stream Flow	low
Potential for Migration	low

Water Depth (cm)	25
Water Temp ©	14.7
Turbidity	clear
DO	9.5
pH	6.76

**Set Locations**

Number of traps set	3
---------------------	---

4 meters upstream from confluence with McKinnon Creek

Set duration	overnight
--------------	-----------

Comments

fish sighted at time of trap set (coho)

Juvenile Capture and Sampling Summary

Location Proctor Road GWC  
Date 26-Jul-07

Page 2 of 3

Species	No. Caught	Min Ln (mm)	Max Ln (mm)
coho	45	49	79

species composition

coho	100%
------	------

Coho CPUE

Mean	15.0	coho per 24 h period per trap
Trap 1	17	
Trap 2	20	
Trap 3	8	

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Width(mm)	count
GMT	1	1	CO	49	1.4	u/m	1.19	7	1
GMT	1	1	CO	50	1.8	u/m	1.44	7	2
GMT	1	1	CO	54	1.8	u/m	1.14	9	3
GMT	1	1	CO	55	2.1	u/m	1.26	8	4
GMT	1	1	CO	55	1.9	u/m	1.14	7	5
GMT	1	1	CO	56	2.0	u/m	1.14	10	6
GMT	1	1	CO	56	2.1	u/m	1.20	8	7
GMT	1	1	CO	56	2.5	u/m	1.42	8	8
GMT	1	1	CO	57	1.8	u/m	0.97	8	9
GMT	1	1	CO	60	2.7	u/m	1.25	10	10
GMT	1	1	CO	61	2.8	u/m	1.23	12	11
GMT	1	1	CO	61	2.7	u/m	1.19	9	12
GMT	1	1	CO	72	4.1	u/m	1.10	13	13
GMT	1	1	CO	74	4.2	u/m	1.04	16	14
GMT	1	1	CO	77	5.0	u/m	1.10	15	15
GMT	1	1	CO	79	4.4	u/m	0.89	n/a	16
GMT	1	1	CO	79	5.6	u/m	1.14	15	17
GMT	1	2	CO	50	1.5	u/m	1.20	9	18
GMT	1	2	CO	50	1.7	u/m	1.36	7	19
GMT	1	2	CO	50	1.7	u/m	1.36	7	20
GMT	1	2	CO	51	1.6	u/m	1.21	8	21
GMT	1	2	CO	51	1.6	u/m	1.21	9	22

Juvenile Capture and Sampling Summary

Location Proctor Road GWC  
Date 26-Jul-07

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Width(mm)	count
GMT	1	2	CO	54	2.0	u/m	1.27	8	23
GMT	1	2	CO	55	2.0	u/m	1.20	10	24
GMT	1	2	CO	56	1.7	u/m	0.97	9	25
GMT	1	2	CO	59	2.4	u/m	1.17	9	26
GMT	1	2	CO	61	2.5	u/m	1.10	10	27
GMT	1	2	CO	74	4.2	u/m	1.04	11	28
GMT	1	2	CO	74	4.3	u/m	1.06	13	29
GMT	1	2	CO	76	5.5	u/m	1.25	13	30

mean FCC coho ≤ 80mm	1.17
mean FCC coho > 80mm	0
mean FL coho ≤ 80mm	60
mean FL coho > 80mm	0
mean Wt coho (g) ≤ 80mm	2.7
mean Wt coho (g) > 80 mm	0

Comments: Resample in two weeks Aug 8-9

Trap 1:

Trap 2: 7 coho not sampled

Trap 3: 8 coho not sampled

Individual Sampling Data

Capture Method	Cluster #	Trap #	Species	FL(mm)	Weight(g)	Mark type	FCC	Count
GMT	1	3	CO	55	2.1	u/m	1.26	23
GMT	1	3	CO	57	2.4	u/m	1.30	24
GMT	1	3	CO	58	2.4	u/m	1.23	25
GMT	1	3	CO	58	2.4	u/m	1.23	26
GMT	1	3	CO	58	2.4	u/m	1.23	27
GMT	1	3	CO	60	2.7	u/m	1.25	28
GMT	1	3	CO	60	2.4	u/m	1.11	29
GMT	1	3	CO	62	3	u/m	1.26	30
GMT	1	3	CO	63	2.8	u/m	1.12	31
GMT	1	3	CO	66	3.2	u/m	1.11	32
GMT	1	3	CO	67	3.9	u/m	1.30	33
GMT	1	3	CO	70	3.7	u/m	1.08	34
GMT	1	3	CO	77	5.3	u/m	1.16	35
GMT	1	3	CO	80	6.2	u/m	1.21	36
GMT	1	3	CO	82	6.4	u/m	1.16	37

mean FCC coho ≤ 80mm	1.19
mean FCC coho > 80mm	1.17
mean FL coho ≤ 80mm	60
mean FL coho > 80mm	88
mean Wt coho (g) ≤ 80mm	2.78
mean Wt coho (g) > 80 mm	7.93

Comments: Resample in two weeks Aug 22-23

Trap 1:

Trap 2:

Trap 3: