

Site Description

Study Name	CBWQ-Salmo
Site	NESHP01
Sampling Date	Sep 23 2014
Know Your Watershed Basin	Central Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Selkirk-Bitterroot Foothills EcoRegion
Coordinates (decimal degrees)	49.14128 N, 117.25862 W
Altitude	2198
Local Basin Name	Sheep Creek
	Columbia Basin
Stream Order	4

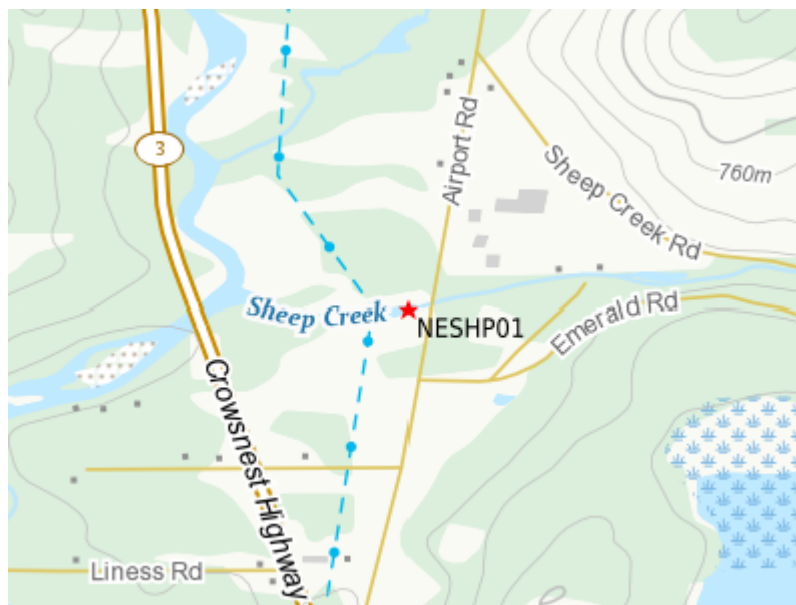


Figure 1. Location Map

Across Reach (No image found)
 Aerial (No image found)
 Down Stream (No image found)
 Field Sheet (No image found)
 Miscellaneous (No image found)
 Substrate (No image found)
 Up Stream (No image found)

Cabin Assessment Results

		Reference Model Summary				
Model	Columbia-Okanagan Preliminary March 2010					
Analysis Date	December 12, 2017					
Taxonomic Level	Family					
Predictive Model Variables	Depth-Avg Latitude Longitude Reg-Ice Reg-SlopeLT30%					
Reference Groups	1	2	3	4	5	
Number of Reference Sites	9	43	17	12	33	
Group Error Rate	22.2%	24.5%	22.2%	25.0%	32.4%	
Overall Model Error Rate	26.4%					
Probability of Group Membership	0.0%	8.1%	8.1%	81.3%	2.5%	
CABIN Assessment of NESHP01 on Sep 23, 2014	Similar to Reference					

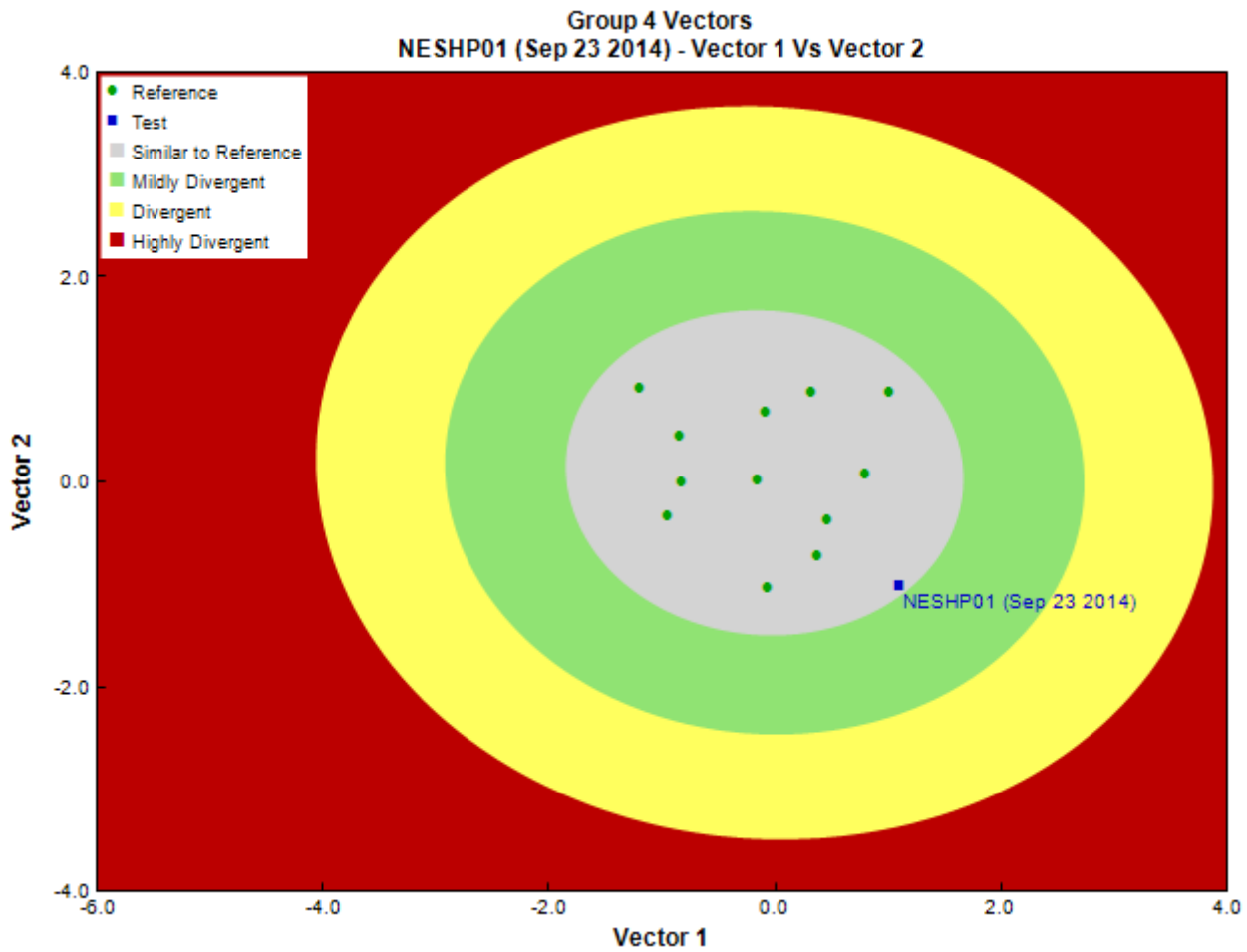


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Pina Viola, Consultant
Date Taxonomy Completed	December 11, 2015
	Marchant Box
Sub-Sample Proportion	22/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count		
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	1	4.5		
Arthropoda	Arachnida	Trombidiformes	Hydryphantidae	4	18.2		
			Hygrobatidae	2	9.0		
			Lebertiidae	10	45.5		
			Sperchontidae	1	4.5		
			Torrenticolidae	28	127.3		
			Insecta	Coleoptera	Elmidae	24	109.1
				Diptera	Ceratopogonidae	2	9.1
					Chironomidae	43	195.5
					Empididae	1	4.5
					Psychodidae	12	54.5
					Tipulidae	8	36.3
				Ephemeroptera	Ameletidae	7	31.8
					Baetidae	3	13.6
					Ephemerellidae	20	90.9

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Heptageniidae	93	422.7
			Leptophlebiidae	10	45.4
		Plecoptera	Capniidae	8	36.4
			Chloroperlidae	3	13.6
			Leuctridae	1	4.5
			Nemouridae	6	27.2
			Perlidae	1	4.5
			Perlodidae	2	9.1
			Taeniopterygidae	2	9.1
		Trichoptera		2	9.1
			Brachycentridae	9	40.9
			Glossosomatidae	22	100.0
			Hydropsychidae	5	22.7
			Lepidostomatidae	7	31.8
			Limnephilidae	2	9.1
			Rhyacophilidae	1	4.5
			Total	340	1,544.9

Metrics

Name	NESHP01	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.73	0.4 \pm 0.1
Biotic Indices		
Hilsenhoff Family index (North-West)	3.8	3.2 \pm 0.3
Intolerant taxa	--	
Long-lived taxa	4.0	2.1 \pm 1.0
Tolerant individuals (%)	--	0.8 \pm 0.3
Functional Measures		
% Filterers	4.1	2.2 \pm 1.8
% Gatherers	43.2	38.4 \pm 12.4
% Predatores	30.3	19.0 \pm 8.5
% Scrapers	44.4	63.2 \pm 19.7
% Shredder	19.7	27.6 \pm 15.2
No. Clinger Taxa	29.0	23.2 \pm 6.3
Number Of Individuals		
% Chironomidae	12.7	7.4 \pm 6.4
% Coleoptera	7.1	1.5 \pm 3.9
% Diptera + Non-insects	33.1	10.8 \pm 7.6
% Ephemeroptera	39.3	51.7 \pm 18.8
% Ephemeroptera that are Baetidae	2.3	40.6 \pm 30.0
% EPT Individuals	59.8	87.7 \pm 7.4
% Odonata	--	0.0 \pm 0.0
% of 2 dominant taxa	40.2	57.9 \pm 14.2
% of 5 dominant taxa	62.1	81.6 \pm 7.9
% of dominant taxa	27.5	39.8 \pm 14.9
% Plecoptera	6.8	31.4 \pm 15.4
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	10.9	27.0 \pm 26.2
% Tricoptera	13.6	4.5 \pm 2.8
No. EPT individuals/Chironomids+EPT Individuals	0.8	0.9 \pm 0.1
Total Abundance	1545.4	587.4 \pm 299.1
Richness		
Chironomidae taxa (genus level only)	1.0	1.0 \pm 0.0
Coleoptera taxa	1.0	0.4 \pm 0.5
Diptera taxa	5.0	3.3 \pm 1.0
Ephemeroptera taxa	5.0	3.8 \pm 0.8
EPT Individuals (Sum)	918.2	526.0 \pm 285.8
EPT taxa (no)	18.0	13.3 \pm 2.7
Odonata taxa	--	0.0 \pm 0.0
Pielou's Evenness	0.8	0.7 \pm 0.1
Plecoptera taxa	7.0	6.3 \pm 1.1
Shannon-Wiener Diversity	2.6	1.9 \pm 0.4

Metrics

Name	NESHP01	Predicted Group Reference Mean \pm SD
Simpson's Diversity	0.9	0.8 \pm 0.1
Simpson's Evenness	0.3	0.3 \pm 0.1
Total No. of Taxa	30.0	19.3 \pm 3.7
Trichoptera taxa	6.0	3.2 \pm 1.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NESHP01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	1.00
Capniidae	78%	55%	50%	92%	68%	0.85
Chironomidae	100%	100%	100%	100%	95%	1.00
Chloroperlidae	78%	88%	94%	100%	100%	0.99
Ephemerellidae	78%	100%	100%	100%	100%	1.00
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.90
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlidae	11%	84%	33%	100%	3%	0.91
Perlodidae	78%	78%	89%	92%	81%	0.90
Rhyacophilidae	100%	92%	100%	100%	95%	0.99
Taeniopterygidae	89%	49%	100%	92%	97%	0.89

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	14.40
RIVPACS : Observed taxa P>0.50	17.00
RIVPACS : O:E (p > 0.5)	1.18
RIVPACS : Expected taxa P>0.70	11.43
RIVPACS : Observed taxa P>0.70	12.00
RIVPACS : O:E (p > 0.7)	1.05

Habitat Description

Variable	NESHP01	Predicted Group Reference Mean \pm SD
Channel		
Depth-Avg (cm)	22.5	23.6 \pm 11.1
Depth-BankfullMinusWetted (cm)	102.00	51.38 \pm 29.42
Depth-Max (cm)	31.0	34.6 \pm 12.3
Macrophyte (PercentRange)	1	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	1.00	1.33 \pm 0.78
Reach-DomStreamsideVeg (Category (1-4))	1	4 \pm 1
Reach-Riffles (Binary)	1	1 \pm 0
Reach-StraightRun (Binary)	1	1 \pm 1
Slope (m/m)	0.0250000	0.0546683 \pm 0.0376269
Veg-Coniferous (Binary)	1	1 \pm 0
Veg-Deciduous (Binary)	1	1 \pm 0
Veg-GrassesFerns (Binary)	1	1 \pm 0
Veg-Shrubs (Binary)	1	1 \pm 0
Velocity-Avg (m/s)	0.28	0.48 \pm 0.22
Velocity-Max (m/s)	0.39	0.76 \pm 0.36
Width-Bankfull (m)	19.0	13.4 \pm 9.9
Width-Wetted (m)	15.0	8.5 \pm 5.8
XSEC-VelInstrumentDirect (Category (1-3))	3	0 \pm 0
XSEC-VelMethod (Category (1-3))	3	1 \pm 0
Landcover		
Reg-Ice (%)	0.00000	0.02487 \pm 0.06034
Substrate Data		
%Bedrock (%)	0	0 \pm 0
%Boulder (%)	17	9 \pm 9
%Cobble (%)	40	51 \pm 15
%Gravel (%)	11	3 \pm 3

Habitat Description

Variable	NESHP01	Predicted Group Reference Mean \pmSD
%Pebble (%)	32	37 \pm 20
%Sand (%)	0	0 \pm 0
%Silt+Clay (%)	0	0 \pm 0
D50 (cm)	7.50	15.12 \pm 14.26
Dg (cm)	7.9	8.2 \pm 2.8
Dominant-1st (Category(0-9))	6	7 \pm 1
Dominant-2nd (Category(0-9))	5	7 \pm 1
Embeddedness (Category(1-5))	4	5 \pm 1
PeriphytonCoverage (Category(1-5))	3	1 \pm 0
SurroundingMaterial (Category(0-9))	3	4 \pm 1
Topography		
Reg-SlopeLT30% (%)	19.60980	18.88386 \pm 9.29866
Water Chemistry		
General-DO (mg/L)	10.0000000	11.4175000 \pm 0.7986708
General-pH (pH)	8.3	7.9 \pm 0.4
General-TempAir (Degrees Celsius)	18.0	26.0
General-TempWater (Degrees Celsius)	11.0000000	7.3183333 \pm 2.7240839
General-Turbidity (NTU)	0.5000000	0.2020000