

Site Description

Study Name	CBWQ-East Shore
Site	NJCRA01
Sampling Date	Sep 12 2016
Know Your Watershed Basin	Lower Kootenay
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Columbia Mountains and Highlands EcoRegion
Coordinates (decimal degrees)	49.67244 N, 116.81494 W
Altitude	1653
Local Basin Name	Crawford Creek
	Kootenay
Stream Order	4



Figure 1. Location Map



Across Reach
Aerial (No image found)



Down Stream
Field Sheet (No image found)
Miscellaneous (No image found)



Substrate



Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Columbia-Okanagan Preliminary March 2010
Analysis Date	May 02, 2011
Taxonomic Level	Family

Cabin Assessment Results

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%	2.5%	17.3%	69.2%	11.0%
CABIN Assessment of NJCRA01 on Sep 12, 2016	Mildly Divergent				

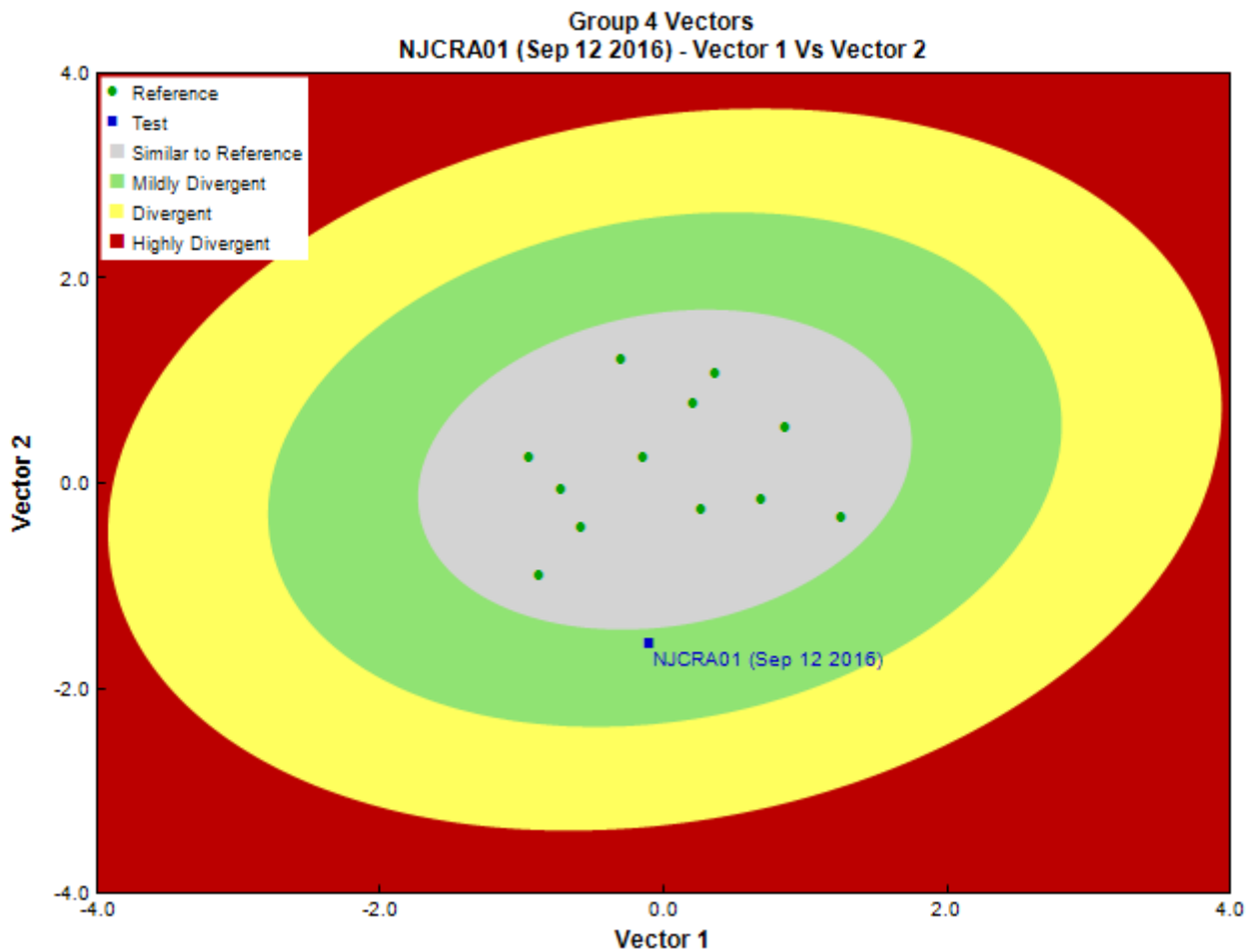


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Pina Viola, Consultant
Date Taxonomy Completed	September 12, 2016
	Marchant Box
Sub-Sample Proportion	16/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Tubificida	Naididae	6	37.5
Arthropoda	Arachnida	Trombidiformes		1	6.3
			Lebertiidae	2	12.5
			Sperchontidae	3	18.8
			Torrenticolidae	14	87.6
	Insecta	Diptera	Chironomidae	132	825.0
			Empididae	4	25.0
			Psychodidae	1	6.3
			Tipulidae	10	62.5
		Ephemeroptera	Baetidae	119	743.8
			Ephemerellidae	10	62.6
			Heptageniidae	12	75.1
			Leptophlebiidae	4	25.0
		Plecoptera	Nemouridae	3	18.8
			Perlodidae	2	12.5
			Taeniopterygidae	2	12.5
		Trichoptera	Apataniidae	2	12.5
			Brachycentridae	1	6.3
			Glossosomatidae	1	6.3
			Hydropsychidae	2	12.5
			Rhyacophilidae	2	12.5
			Uenoidae	1	6.3
			Total	334	2,088.2

Metrics

Name	NJCRA01	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.76	0.4 \pm 0.1
Biotic Indices		
Hilsenhoff Family index (North-West)	4.7	3.2 \pm 0.3
Intolerant taxa	--	
Long-lived taxa	--	2.1 \pm 1.0
Tolerant individuals (%)	--	0.8 \pm 0.3
Functional Measures		
% Filterers	0.9	2.2 \pm 1.8
% Gatherers	50.9	38.4 \pm 12.4
% Predatores	48.2	19.0 \pm 8.5
% Scrapers	41.0	63.2 \pm 19.7
% Shredder	5.4	27.6 \pm 15.2
No. Clinger Taxa	20.0	23.2 \pm 6.3
Number Of Individuals		
% Chironomidae	39.6	7.4 \pm 6.4
% Coleoptera	0.0	1.5 \pm 3.9
% Diptera + Non-insects	51.7	10.8 \pm 7.6
% Ephemeroptera	43.5	51.7 \pm 18.8
% Ephemeroptera that are Baetidae	82.1	40.6 \pm 30.0
% EPT Individuals	48.3	87.7 \pm 7.4
% Odonata	--	0.0 \pm 0.0
% of 2 dominant taxa	75.4	57.9 \pm 14.2
% of 5 dominant taxa	86.2	81.6 \pm 7.9
% of dominant taxa	39.6	39.8 \pm 14.9
% Plecoptera	2.1	31.4 \pm 15.4
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	22.2	27.0 \pm 26.2
% Tricoptera	2.7	4.5 \pm 2.8
No. EPT individuals/Chironomids+EPT Individuals	0.5	0.9 \pm 0.1
Total Abundance	2087.5	587.4 \pm 299.1
Richness		
Chironomidae taxa (genus level only)	1.0	1.0 \pm 0.0
Coleoptera taxa	0.0	0.4 \pm 0.5
Diptera taxa	4.0	3.3 \pm 1.0
Ephemeroptera taxa	4.0	3.8 \pm 0.8

Metrics

Name	NJCRA01	Predicted Group Reference Mean \pm SD
EPT Individuals (Sum)	1006.3	526.0 \pm 285.8
EPT taxa (no)	13.0	13.3 \pm 2.7
Odonata taxa	--	0.0 \pm 0.0
Pielou's Evenness	0.6	0.7 \pm 0.1
Plecoptera taxa	3.0	6.3 \pm 1.1
Shannon-Wiener Diversity	1.7	1.9 \pm 0.4
Simpson's Diversity	0.7	0.8 \pm 0.1
Simpson's Evenness	0.2	0.3 \pm 0.1
Total No. of Taxa	21.0	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 NJCRA01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	1.00
Capniidae	78%	55%	50%	92%	68%	0.81
Chironomidae	100%	100%	100%	100%	95%	0.99
Chloroperlidae	78%	88%	94%	100%	100%	0.99
Ephemereididae	78%	100%	100%	100%	100%	1.00
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.89
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlidae	11%	84%	33%	100%	3%	0.77
Perlodidae	78%	78%	89%	92%	81%	0.90
Rhyacophilidae	100%	92%	100%	100%	95%	0.99
Taeniopterygidae	89%	49%	100%	92%	97%	0.93

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	13.09
RIVPACS : Observed taxa P>0.50	11.00
RIVPACS : O:E (p > 0.5)	0.84
RIVPACS : Expected taxa P>0.70	11.26
RIVPACS : Observed taxa P>0.70	9.00
RIVPACS : O:E (p > 0.7)	0.80

Habitat Description

Variable	NJCRA01	Predicted Group Reference Mean \pm SD
Channel		
Depth-Avg (cm)	3.6	23.6 \pm 11.1
Depth-BankfullMinusWetted (cm)	64.00	51.38 \pm 29.42
Depth-Max (cm)	4.9	34.6 \pm 12.3
Discharge (m³/s)	2.740	0.000 \pm 0.000
Macrophyte (PercentRange)	1	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	1.00	1.33 \pm 0.78
Reach-%Logging (PercentRange)	0	0 \pm 0
Reach-DomStreamsideVeg (Category (1-4))	2	4 \pm 1
Reach-Pools (Binary)	1	1 \pm 0
Reach-Riffles (Binary)	1	1 \pm 0
Reach-StraightRun (Binary)	1	1 \pm 1
Slope (m/m)	0.0150000	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)	0.44	0.48 \pm 0.22
Velocity-Max (m/s)	0.75	0.76 \pm 0.36
Width-Bankfull (m)	20.0	13.4 \pm 9.9
Width-Wetted (m)	15.5	8.5 \pm 5.8

Habitat Description

Variable	NJCRA01	Predicted Group Reference Mean \pm SD
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 (%)	5	9 \pm 9
%Cobble (%)	92	51 \pm 15
%Gravel (%)	0	3 \pm 3
%Pebble (%)	3	37 \pm 20
%Sand (%)	0	0 \pm 0
%Silt+Clay (%)	0	0 \pm 0
D50 (cm)	13.50	15.12 \pm 14.26
Dg (cm)	13.2	8.2 \pm 2.8
Dominant-1st (Category(0-9))	7	7 \pm 1
Dominant-2nd (Category(0-9))	6	7 \pm 1
Embeddedness (Category(1-5))	4	5 \pm 1
PeriphytonCoverage (Category(1-5))	2	1 \pm 0
SurroundingMaterial (Category(0-9))	2	4 \pm 1
Topography		
Reg-SlopeLT30% (%)	15.66263	18.88386 \pm 9.29866
Water Chemistry		
Ag (mg/L)	0.0000100	0.0000050
Al (mg/L)	0.0054000	0.0049000
As (mg/L)	0.0001300	0.0002700
B (mg/L)	0.0250000	0.0500000
Ba (mg/L)	0.0215000	0.0682000
Be (mg/L)	0.0000500	0.0000100
Bi (mg/L)	0.0000500	0.0000050
Ca (mg/L)	0.0182000	21.1083333 \pm 16.8005659
Cd (mg/L)	0.0000050	0.0000050
Chloride-Dissolved (mg/L)	0.2500000	0.9750000 \pm 2.6309780
Co (mg/L)	0.0025000	0.0000100
CO3 (mg/L)	0.2500000	0.0000000 \pm 0.0000000
Cr (mg/L)	0.0005000	0.0001000
Cu (mg/L)	0.0025000	0.0001000
Fe (mg/L)	0.0120000	0.0080000
General-Alkalinity (mg/L)	60.9000000	71.7000000 \pm 53.9231440
General-Conductivity (μ S/cm)	74.0000000	121.8083333 \pm 87.6800844
General-DO (mg/L)	13.0000000	11.4175000 \pm 0.7986708
General-Hardness (mg/L)	63.5000000	84.2750000 \pm 70.6251066
General-pH (pH)	13.0	7.9 \pm 0.4
General-SolidsTSS (mg/L)	2.0000000	0.8849836 \pm 1.2378575
General-SpCond (μ S/cm)	107.0000000	168.9833333 \pm 123.7858182
General-TempAir (Degrees Celsius)	10.0	26.0
General-TempWater (Degrees Celsius)	8.5000000	7.3183333 \pm 2.7240839
General-Turbidity (NTU)	0.2400000	0.2020000
HCO3 (mg/L)	74.3000000	0.0000000 \pm 0.0000000
Hg (ng/L)	5.0000000	0.0000000 \pm 0.0000000
K (mg/L)	0.0005290	0.6141667 \pm 0.4056971
Li (mg/L)	0.0025000	0.0011000
Mg (mg/L)	0.0044000	7.6666667 \pm 7.9748848
Mn (mg/L)	0.0011000	0.0006100
Mo (mg/L)	0.0005000	0.0006900
Na (mg/L)	0.0011200	1.5383333 \pm 1.2751459
Ni (mg/L)	0.0005000	0.0003000
Nitrogen-NH4+ (mg/L)	0.0990000	0.0000000 \pm 0.0000000
Nitrogen-NO2 (mg/L)	0.0025000	0.0027500 \pm 0.0062831
Nitrogen-NO3 (mg/L)	0.0310000	0.0546667 \pm 0.0498148
Nitrogen-TN (mg/L)	0.1030000	0.0883333 \pm 0.0521943
Pb (mg/L)	0.0001000	0.0000520
Phosphorus-OrthoP (mg/L)	0.0025000	0.0002727 \pm 0.0004671

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Variable	NJCRA01	Predicted Group Reference Mean \pmSD
Phosphorus-TP (mg/L)	0.0025000	0.0045833 \pm 0.0049992
S (mg/L)	0.0015000	5.0000000
Sb (mg/L)	0.0002500	0.0000700
Se (mg/L)	0.0000500	0.0001200
Si (mg/L)	2.9100000	3.1516667 \pm 1.2277017
Sn (mg/L)	0.0025000	0.0000100
SO4 (mg/L)	8.4100000	17.2250000 \pm 25.9966125
Sr (mg/L)	0.0659000	0.0443000
Ti (mg/L)	0.0025000	0.0005000
Tl (mg/L)	0.0000250	0.0000020
U (mg/L)	0.0002100	0.0011700
V (mg/L)	0.0025000	0.0002000
Zn (mg/L)	0.0025000	0.0010000
Zr (mg/L)	0.0025000	0.0000000 \pm 0.0000000