

Site Description

Study Name	CBWQ-Slocan
Site	NJSLO02
Sampling Date	Sep 11 2014
Know Your Watershed Basin	Slocan
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Columbia Mountains and Highlands EcoRegion
Coordinates (decimal degrees)	49.76667 N, 117.48333 W
Altitude	1775
Local Basin Name	Slocan
	Slocan
Stream Order	5



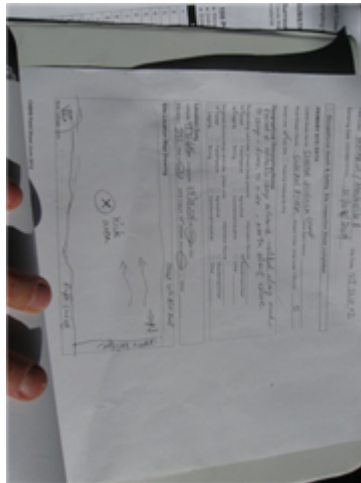
Figure 1. Location Map



Across Reach
Aerial (No image found)



Down Stream



Field Sheet

Miscellaneous (No image found)



Substrate



Up Stream

Cabin Assessment Results

Reference Model Summary					
Model	Columbia-Okanagan Preliminary March 2010				
Analysis Date	September 05, 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	65.3%	1.2%	3.2%	27.7%	2.6%
CABIN Assessment of NJSLO02 on Sep 11, 2014	Divergent				

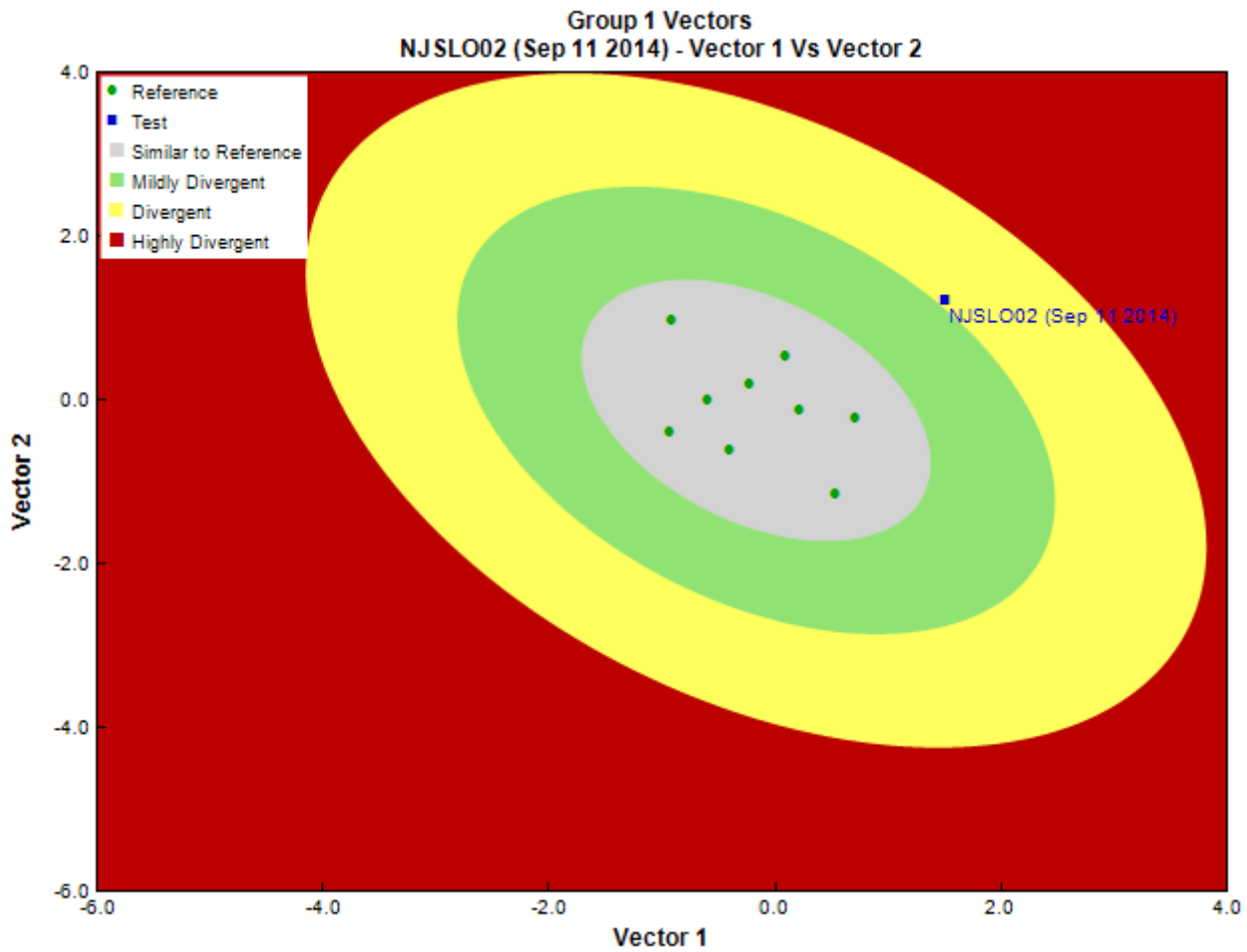


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Pina Viola, Consultant
Date Taxonomy Completed	January 21, 2015
	Marchant Box
Sub-Sample Proportion	24/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count		
Arthropoda	Arachnida	Trombidiformes		1	4.2		
			Hygrobatidae	2	8.3		
				Sperchontidae	1	4.2	
	Insecta	Coleoptera		Elmidae	35	145.8	
			Diptera		Chironomidae	21	87.5
					Empididae	5	20.8
				Simuliidae	4	16.7	
				Tipulidae	1	4.2	
		Ephemeroptera		Baetidae	3	12.5	
				Ephemerellidae	46	191.7	
			Odonata	Gomphidae	1	4.2	
			Plecoptera	Perlodidae	4	16.7	
			Trichoptera		Glossosomatidae	53	220.8
				Hydropsychidae	91	379.1	
		Leptoceridae		25	104.1		

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Limnephilidae	1	4.2
Cnidaria	Hydrozoa	Anthoathecatae	Hydridae	8	33.3
Mollusca	Bivalvia	Veneroida	Pisidiidae	12	50.0
			Total	314	1,308.3

Metrics

Name	NJSLO02	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.92	0.4 \pm 0.2
Biotic Indices		
Hilsenhoff Family index (North-West)	3.0	3.3 \pm 0.5
Intolerant taxa	--	1.0
Long-lived taxa	3.0	2.3 \pm 1.5
Tolerant individuals (%)	--	
Functional Measures		
% Filterers	30.3	1.1 \pm 1.5
% Gatherers	44.6	35.2 \pm 11.4
% Predatores	43.6	16.9 \pm 7.6
% Scrapers	30.6	60.6 \pm 17.9
% Shredder	19.7	19.4 \pm 13.9
No. Clinger Taxa	16.0	18.6 \pm 4.2
Number Of Individuals		
% Chironomidae	6.7	8.1 \pm 6.9
% Coleoptera	11.2	0.5 \pm 1.7
% Diptera + Non-insects	17.3	11.2 \pm 7.6
% Ephemeroptera	15.7	61.6 \pm 17.6
% Ephemeroptera that are Baetidae	6.1	50.3 \pm 24.0
% EPT Individuals	71.2	88.3 \pm 7.4
% Odonata	0.3	0.0 \pm 0.0
% of 2 dominant taxa	46.0	59.1 \pm 14.3
% of 5 dominant taxa	79.9	84.1 \pm 7.1
% of dominant taxa	29.1	41.5 \pm 15.1
% Plecoptera	1.3	23.9 \pm 14.1
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	53.5	12.9 \pm 23.9
% Tricoptera	54.3	2.8 \pm 2.9
No. EPT individuals/Chironomids+EPT Individuals	0.9	0.9 \pm 0.1
Total Abundance	1308.2	1453.9 \pm 1355.4
Richness		
Chironomidae taxa (genus level only)	1.0	1.0 \pm 0.0
Coleoptera taxa	1.0	0.2 \pm 0.4
Diptera taxa	4.0	2.9 \pm 1.0
Ephemeroptera taxa	2.0	3.6 \pm 0.6
EPT Individuals (Sum)	929.1	1288.9 \pm 1149.7
EPT taxa (no)	7.0	11.1 \pm 2.1
Odonata taxa	1.0	0.0 \pm 0.0
Pielou's Evenness	0.7	0.7 \pm 0.1
Plecoptera taxa	1.0	5.1 \pm 1.2
Shannon-Wiener Diversity	2.1	1.8 \pm 0.4
Simpson's Diversity	0.8	0.7 \pm 0.1
Simpson's Evenness	0.4	0.3 \pm 0.1
Total No. of Taxa	17.0	16.3 \pm 3.2
Trichoptera taxa	4.0	2.3 \pm 1.3

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NJSLO02
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	1.00
Capniidae	78%	55%	50%	92%	68%	0.80
Chironomidae	100%	100%	100%	100%	95%	1.00
Chloroperlidae	78%	88%	94%	100%	100%	0.85

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NJSLO02
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ephemerellidae	78%	100%	100%	100%	100%	0.85
Heptageniidae	100%	100%	100%	100%	100%	1.00
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.82
Rhyacophilidae	100%	92%	100%	100%	95%	1.00
Taeniopterygidae	89%	49%	100%	92%	97%	0.90

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	12.34
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	0.57
RIVPACS : Expected taxa P>0.70	9.22
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.43

Habitat Description

Variable	NJSLO02	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Alluvium (%)	0.00000	0.00000 \pm 0.00000
Intrusive (%)	46.09158	13.40132 \pm 26.65230
Metamorphic (%)	19.90524	0.73186 \pm 1.11377
Sedimentary (%)	32.38783	85.86682 \pm 26.25895
Ultramafic (%)	0.00000	0.00000 \pm 0.00000
Volcanic (%)	1.61535	0.00000 \pm 0.00000
Channel		
Depth-Avg (cm)	64.2	39.4 \pm 23.6
Depth-BankfullMinusWetted (cm)	7.65	33.28 \pm 13.75
Depth-Max (cm)	74.0	55.6 \pm 30.6
Macrophyte (PercentRange)	0	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	1.00	0.67 \pm 1.00
Reach-DomStreamsideVeg (Category (1-4))	4	3 \pm 1
Reach-Pools (Binary)	0	0 \pm 1
Reach-Rapids (Binary)	0	0 \pm 0
Reach-Riffles (Binary)	0	1 \pm 1
Reach-StraightRun (Binary)	1	1 \pm 1
Slope (m/m)	0.2350000	0.0440367 \pm 0.0734738
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)	0.77	0.64 \pm 0.29
Velocity-Max (m/s)	0.89	0.81 \pm 0.28
Width-Bankfull (m)	65.0	27.7 \pm 17.6
Width-Wetted (m)	59.0	17.6 \pm 11.6
XSEC-VelMethod (Category (1-3))	1	1 \pm 1
Climate		
Precip01_JAN (mm)	140.23333	135.62744 \pm 42.73491
Precip02_FEB (mm)	113.93333	109.88064 \pm 33.20254
Precip03_MAR (mm)	101.70000	99.70303 \pm 25.98060
Precip04_APR (mm)	140.23333	135.62744 \pm 42.73491
Precip05_MAY (mm)	80.73333	73.20589 \pm 7.25987
Precip06_JUN (mm)	92.06667	90.96448 \pm 10.81805
Precip07_JUL (mm)	75.93333	86.58283 \pm 13.49738
Precip08_AUG (mm)	72.90000	84.09596 \pm 14.12059
Precip09_SEP (mm)	69.56667	75.27542 \pm 14.70704
Precip10_OCT (mm)	86.90000	93.43771 \pm 28.45319
Precip11_NOV (mm)	137.40000	147.35253 \pm 38.45018
Precip12_DEC (mm)	153.70000	151.46044 \pm 42.16075
PrecipTotal_ANNUAL (mm)	1205.23333	1223.65219 \pm 273.62669

Habitat Description

Variable	NJSLO02	Predicted Group Reference Mean \pm SD
Temp01_JANMax (Degrees Celsius)	-4.90000	-6.88199 \pm 1.93195
Temp01_JANmin (Degrees Celsius)	-10.90000	-13.71414 \pm 2.38881
Temp02_FEBmax (Degrees Celsius)	-2.13333	-3.85034 \pm 2.06368
Temp02_FEBmin (Degrees Celsius)	-9.00000	-11.56330 \pm 2.44788
Temp03_MARmax (Degrees Celsius)	1.23333	0.01768 \pm 2.47627
Temp03_MARmin (Degrees Celsius)	-6.40000	-8.72492 \pm 2.28722
Temp04_APRmax (Degrees Celsius)	5.63333	3.78081 \pm 3.17957
Temp04_APRmin (Degrees Celsius)	-2.96667	-4.54360 \pm 1.94670
Temp05_MAYmax (Degrees Celsius)	10.56667	8.77003 \pm 3.36878
Temp05_MAYmin (Degrees Celsius)	0.60000	-0.39933 \pm 1.33596
Temp06_JUNMax (Degrees Celsius)	14.26667	12.51111 \pm 3.51659
Temp06_JUNMin (Degrees Celsius)	3.63333	2.15774 \pm 1.71410
Temp07_JULmax (Degrees Celsius)	18.06667	15.97172 \pm 3.60230
Temp07_JULmin (Degrees Celsius)	6.03333	4.26852 \pm 1.68829
Temp08_AUGmax (Degrees Celsius)	18.00000	15.95404 \pm 3.61582
Temp08_AUGmin (Degrees Celsius)	5.83333	4.26852 \pm 1.68829
Temp09_SEPmax (Degrees Celsius)	12.80000	10.75690 \pm 3.16095
Temp09_SEPmin (Degrees Celsius)	1.90000	0.82828 \pm 1.34778
Temp10_OCTmax (Degrees Celsius)	5.50000	3.78199 \pm 2.61196
Temp10_OCTmin (Degrees Celsius)	-1.46667	-2.86650 \pm 1.41557
Temp11_NOVmax (Degrees Celsius)	-1.60000	-3.03434 \pm 2.15061
Temp11_NOVmin (Degrees Celsius)	-6.80000	-9.02744 \pm 2.23762
Temp12_DECmax (Degrees Celsius)	-5.16667	-7.12424 \pm 2.04773
Temp12_DECmin (Degrees Celsius)	-10.56667	-13.10724 \pm 2.40381
TempANNUALmax (Degrees Celsius)	5.76667	3.82054 \pm 2.80061
TempANNUALmean (Degrees Celsius)	1.30000	0.08754 \pm 2.10549
TempANNUALmin (Degrees Celsius)	-2.16667	-4.01465 \pm 1.92102
Hydrology		
Drainage-Area (km ²)	1831.58153	248.05797 \pm 212.27501
Perimeter (Km)	383.42203	115.90189 \pm 79.39444
StreamDensity (m/km ²)	2341.92206	1641.77078 \pm 689.92032
StreamLength (m)	4289421.19	386293.17 \pm 275066.40
Landcover		
Natl-AnnCrops (%)	0.00000	0.00000 \pm 0.00000
Natl-Barren (%)	0.00000	0.00000 \pm 0.00000
Natl-BroadleafDense (%)	0.00000	0.00000 \pm 0.00000
Natl-BroadleafOpen (%)	3.29522	1.11783 \pm 1.18871
Natl-BroadleafSparse (%)	0.00000	0.05014 \pm 0.07576
Natl-Coniferous (%)	0.00000	0.00000 \pm 0.00000
Natl-ConiferousDense (%)	0.36107	6.38699 \pm 4.34837
Natl-ConiferousOpen (%)	48.11508	40.47833 \pm 22.06760
Natl-ConiferousSparse (%)	1.20271	1.22915 \pm 1.10282
Natl-Deciduous (%)	0.00000	0.00000 \pm 0.00000
Natl-Developed (%)	0.09726	0.00000 \pm 0.00000
Natl-ExposedLand (%)	17.93118	10.56536 \pm 3.88369
Natl-Grassland (%)	1.55726	4.29128 \pm 3.56936
Natl-Herb (%)	6.99990	1.97139 \pm 2.48389
Natl-MixedForest (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodDense (%)	0.00000	0.02198 \pm 0.03299
Natl-MixedwoodOpen (%)	0.10073	0.99757 \pm 1.29290
Natl-MixedwoodSparse (%)	0.00000	0.00671 \pm 0.01007
Natl-PerennCropsPast (%)	0.00000	0.00000 \pm 0.00000
Natl-Rock/Rubble (%)	0.55735	6.91669 \pm 6.91715
Natl-Shrubland (%)	0.00000	0.00000 \pm 0.00000
Natl-ShrubLow (%)	1.13178	3.03173 \pm 2.25077
Natl-ShrubTall (%)	0.00000	0.01289 \pm 0.02622
Natl-SnowIce (%)	0.28557	12.85833 \pm 16.61270
Natl-Water (%)	4.56848	0.57284 \pm 0.84888
Natl-Wetland (%)	0.00000	0.00000 \pm 0.00000
Natl-WetlandHerb (%)	0.03308	0.00632 \pm 0.00950
Natl-WetlandShrub (%)	0.00798	0.00789 \pm 0.01184
Natl-WetlandTreed (%)	0.00132	0.00063 \pm 0.00125

Habitat Description

Variable	NJSLO02	Predicted Group Reference Mean \pm SD
Reg-Ice (%)	0.11972	11.04418 \pm 12.39512
Substrate Data		
%Bedrock (%)	0	1 \pm 2
%Boulder (%)	0	1 \pm 2
%Cobble (%)	77	55 \pm 30
%Gravel (%)	0	2 \pm 2
%Pebble (%)	23	40 \pm 28
%Sand (%)	0	0 \pm 0
%Silt+Clay (%)	0	0 \pm 1
D50 (cm)	9.00	8.05 \pm 3.69
Dg (cm)	8.2	7.5 \pm 3.2
Dominant-1st (Category(0-9))	6	6 \pm 2
Dominant-2nd (Category(0-9))	5	6 \pm 1
Embeddedness (Category(1-5))	4	4 \pm 1
PeriphytonCoverage (Category(1-5))	3	3 \pm 1
SurroundingMaterial (Category(0-9))	3	3 \pm 3
Topography		
ElevationMax (m)	3015.00000	3078.00000 \pm 457.09463
ElevationMin (m)	527.00000	930.22222 \pm 360.76162
ElevationStdev (m)	503.68703	413.05115 \pm 88.46112
Reg-SlopeLT30% (%)	21.69000	27.80144 \pm 15.50843
Slope30-50% (%)	26.50074	29.30660 \pm 5.70051
Slope50-60% (%)	14.01621	12.36184 \pm 3.15640
SlopeAvg (%)	51.10791	48.95258 \pm 9.21336
SlopeGT60% (%)	35.68147	29.36303 \pm 11.20971
SlopeLT30% (%)	23.80159	28.96853 \pm 14.39762
SlopeMax (%)	495.07895	415.78743 \pm 182.64978
SlopeMin (%)	0.00000	0.39554 \pm 1.18662
SlopeStdev (%)	28.75933	29.25364 \pm 5.81334
Water Chemistry		
CO3 (mg/L)	0.2500000	0.0000000 \pm 0.0000000
General-Alkalinity (mg/L)	36.5000000	50.0555556 \pm 32.0615467
General-DO (mg/L)	9.0000000	11.4277778 \pm 1.0113454
General-TempAir (Degrees Celsius)	20.0	4.2
General-TempWater (Degrees Celsius)	17.0000000	5.7844444 \pm 2.4754197
HCO3 (mg/L)	44.5000000	0.0000000 \pm 0.0000000
Nitrogen-NO2 (mg/L)	0.0025000	0.0052222 \pm 0.0048677
Nitrogen-NO2+NO3 (mg/L)	0.0330000	0.0000000 \pm 0.0000000
Nitrogen-NO3 (mg/L)	0.0330000	0.1022222 \pm 0.0873138
Phosphorus-OrthoP (mg/L)	0.0025000	0.0002000 \pm 0.0004472
Phosphorus-TP (mg/L)	0.0025000	0.0218889 \pm 0.0522409