

Site Description

Study Name	CBWQ-Slocan
Site	NJLEM03
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)	49.70649 N, 117.49236 W
Altitude	1752
Local Basin Name	Lemon Creek
	Slocan
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	September 15, 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	0.3%	3.7%	7.8%	78.6%	9.6%	
CABIN Assessment of NJLEM03 on Sep 11, 2014	Similar to Reference					

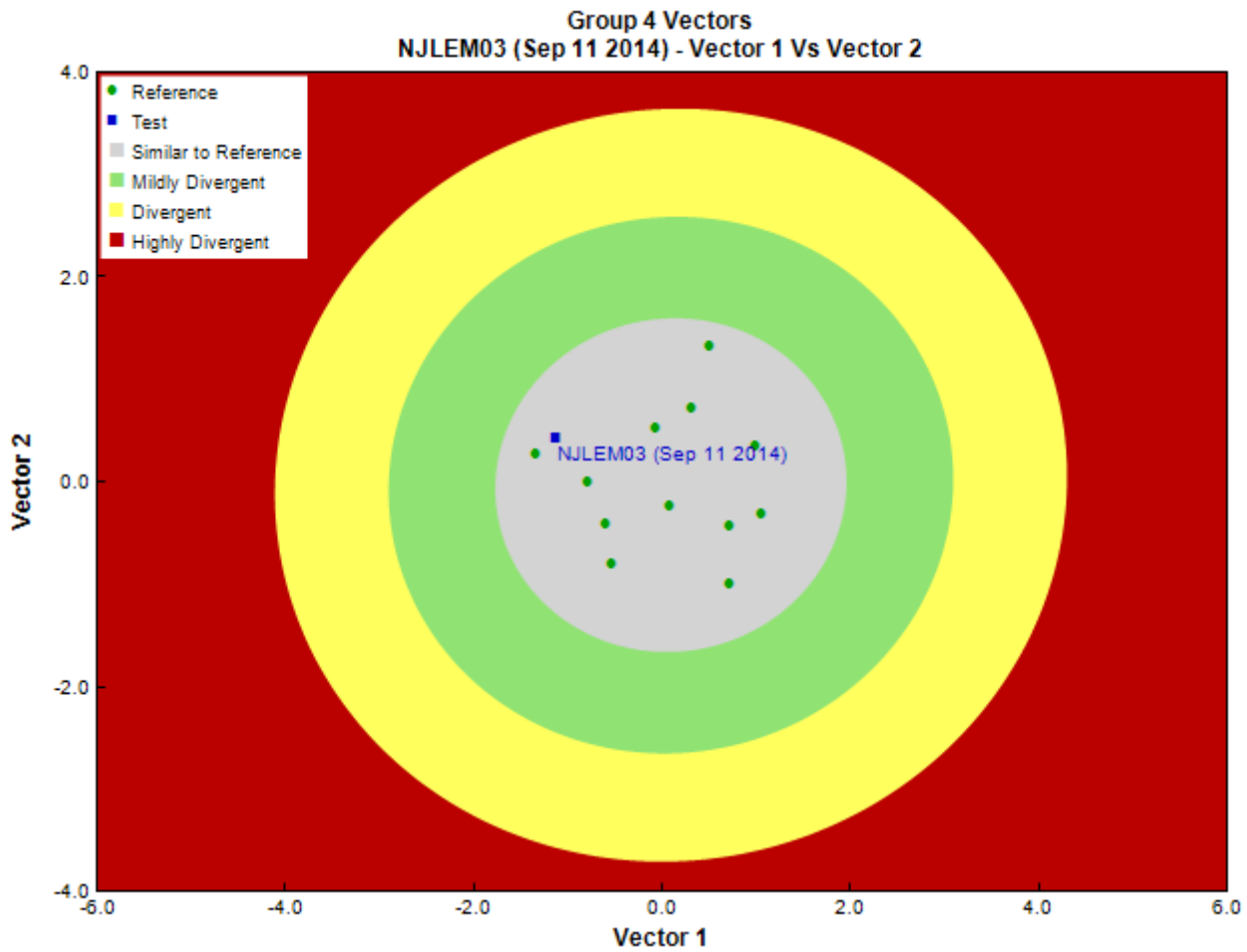


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

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

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count		
Annelida	Oligochaeta	Tubificida	Naididae	3	3.0		
Arthropoda	Insecta		Arachnida	Trombidiformes	Lebertiidae	1	1.0
					Sperchontidae	2	2.0
					Torrenticolidae	2	2.0
				Coleoptera	Elmidae	2	2.0
				Diptera	Chironomidae	25	25.0
					Empididae	16	16.0
					Simuliidae	1	1.0
				Ephemeroptera	Ameletidae	3	3.0
					Baetidae	460	460.0
					Ephemerellidae	39	39.0
					Heptageniidae	45	45.0
					Leptophlebiidae	1	1.0
				Plecoptera	Capniidae	1	1.0
					Nemouridae	14	14.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Perlidae	3	3.0
			Perlodidae	11	11.0
			Taeniopterygidae	1	1.0
		Trichoptera		2	2.0
			Apataniidae	1	1.0
			Glossosomatidae	1	1.0
			Hydropsychidae	42	42.0
			Rhyacophilidae	16	16.0
			Total	692	692.0

Metrics

Name	NJLEM03	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.55	0.4 \pm 0.1
Biotic Indices		
Hilsenhoff Family index (North-West)	3.8	3.2 \pm 0.3
Intolerant taxa	--	
Long-lived taxa	2.0	2.1 \pm 1.0
Tolerant individuals (%)	--	0.8 \pm 0.3
Functional Measures		
% Filterers	6.2	2.2 \pm 1.8
% Gatherers	12.7	38.4 \pm 12.4
% Predatores	17.2	19.0 \pm 8.5
% Scrapers	73.8	63.2 \pm 19.7
% Shredder	2.7	27.6 \pm 15.2
No. Clinger Taxa	29.0	23.2 \pm 6.3
Number Of Individuals		
% Chironomidae	3.6	7.4 \pm 6.4
% Coleoptera	0.3	1.5 \pm 3.9
% Diptera + Non-insects	7.2	10.8 \pm 7.6
% Ephemeroptera	79.4	51.7 \pm 18.8
% Ephemeroptera that are Baetidae	83.9	40.6 \pm 30.0
% EPT Individuals	92.5	87.7 \pm 7.4
% Odonata	0.0	0.0 \pm 0.0
% of 2 dominant taxa	73.2	57.9 \pm 14.2
% of 5 dominant taxa	88.6	81.6 \pm 7.9
% of dominant taxa	66.7	39.8 \pm 14.9
% Plecoptera	4.3	31.4 \pm 15.4
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	70.0	27.0 \pm 26.2
% Tricoptera	8.7	4.5 \pm 2.8
No. EPT individuals/Chironomids+EPT Individuals	1.0	0.9 \pm 0.1
Total Abundance	692.0	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	3.0	3.3 \pm 1.0
Ephemeroptera taxa	5.0	3.8 \pm 0.8
EPT Individuals (Sum)	638.0	526.0 \pm 285.8
EPT taxa (no)	14.0	13.3 \pm 2.7
Odonata taxa	0.0	0.0 \pm 0.0
Pielou's Evenness	0.5	0.7 \pm 0.1
Plecoptera taxa	5.0	6.3 \pm 1.1
Shannon-Wiener Diversity	1.4	1.9 \pm 0.4
Simpson's Diversity	0.5	0.8 \pm 0.1
Simpson's Evenness	0.1	0.3 \pm 0.1
Total No. of Taxa	22.0	19.3 \pm 3.7
Trichoptera taxa	4.0	3.2 \pm 1.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NJLEM03
	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%	0.99
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%	0.85
Perlodidae	78%	78%	89%	92%	81%	0.90
Rhyacophilidae	100%	92%	100%	100%	95%	0.99
Taeniopterygidae	89%	49%	100%	92%	97%	0.91

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	13.78
RIVPACS : Observed taxa P>0.50	13.00
RIVPACS : O:E (p > 0.5)	0.94
RIVPACS : Expected taxa P>0.70	11.38
RIVPACS : Observed taxa P>0.70	11.00
RIVPACS : O:E (p > 0.7)	0.97

Habitat Description

Variable	NJLEM03	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Alluvium (%)	0.00000	0.00000 \pm 0.00000
Intrusive (%)	99.06546	11.07346 \pm 28.63466
Metamorphic (%)	0.00000	17.96649 \pm 35.53463
Sedimentary (%)	0.93454	70.96005 \pm 44.90394
Ultramafic (%)	0.00000	0.00000 \pm 0.00000
Volcanic (%)	0.00000	0.00000 \pm 0.00000
Channel		
Depth-Avg (cm)	28.5	23.6 \pm 11.1
Depth-BankfullMinusWetted (cm)	63.00	51.38 \pm 29.42
Depth-Max (cm)	44.0	34.6 \pm 12.3
Macrophyte (PercentRange)	0	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	1.00	1.33 \pm 0.78
Reach-DomStreamsideVeg (Category (1-4))	4	4 \pm 1
Reach-Pools (Binary)	1	1 \pm 0
Reach-Riffles (Binary)	1	1 \pm 0
Slope (m/m)	0.0200000	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)	0.56	0.48 \pm 0.22
Velocity-Max (m/s)	0.77	0.76 \pm 0.36
Width-Bankfull (m)	65.0	13.4 \pm 9.9
Width-Wetted (m)	11.5	8.5 \pm 5.8
XSEC-VelMethod (Category (1-3))	1	1 \pm 0
Climate		
Precip01_JAN (mm)	133.66667	104.85000 \pm 26.28129
Precip02_FEB (mm)	111.33333	83.66667 \pm 27.10278
Precip03_MAR (mm)	102.66667	77.23611 \pm 27.15950
Precip04_APR (mm)	133.66667	104.85000 \pm 26.28129
Precip05_MAY (mm)	87.00000	71.65833 \pm 17.81753
Precip06_JUN (mm)	93.66667	78.56667 \pm 15.58521
Precip07_JUL (mm)	73.66667	64.39167 \pm 10.41611
Precip08_AUG (mm)	69.66667	60.53056 \pm 10.43373
Precip09_SEP (mm)	68.33333	56.91944 \pm 10.91783

Habitat Description

Variable	NJLEM03	Predicted Group Reference Mean \pm SD
Precip10_OCT (mm)	82.00000	65.08056 \pm 14.41229
Precip11_NOV (mm)	133.00000	105.93889 \pm 25.04104
Precip12_DEC (mm)	148.33333	116.84444 \pm 29.80954
PrecipTotal_ANNUAL (mm)	1188.00000	952.64722 \pm 226.04690
Temp01_JANMax (Degrees Celsius)	-4.66667	-4.39167 \pm 2.51268
Temp01_JANmin (Degrees Celsius)	-10.66667	-11.40833 \pm 3.53951
Temp02_FEBmax (Degrees Celsius)	-2.00000	-1.70000 \pm 2.12945
Temp02_FEBmin (Degrees Celsius)	-8.66667	-9.17500 \pm 3.33361
Temp03_MARmax (Degrees Celsius)	1.33333	2.50556 \pm 2.87525
Temp03_MARmin (Degrees Celsius)	-6.66667	-6.14167 \pm 2.98556
Temp04_APRmax (Degrees Celsius)	5.66667	7.12222 \pm 3.48771
Temp04_APRmin (Degrees Celsius)	-2.66667	-2.71667 \pm 2.22785
Temp05_MAYmax (Degrees Celsius)	10.66667	12.03889 \pm 3.55434
Temp05_MAYmin (Degrees Celsius)	0.66667	1.04722 \pm 2.08663
Temp06_JUNMax (Degrees Celsius)	14.00000	15.72500 \pm 3.40030
Temp06_JUNmin (Degrees Celsius)	3.33333	4.00278 \pm 2.41085
Temp07_JULmax (Degrees Celsius)	18.00000	19.56111 \pm 3.47275
Temp07_JULmin (Degrees Celsius)	6.33333	6.35833 \pm 2.28332
Temp08_AUGmax (Degrees Celsius)	18.00000	19.52222 \pm 3.51100
Temp08_AUGmin (Degrees Celsius)	6.33333	6.19167 \pm 2.34422
Temp09_SEPmax (Degrees Celsius)	13.00000	14.04444 \pm 3.03456
Temp09_SEPmin (Degrees Celsius)	2.33333	2.04722 \pm 2.37208
Temp10_OCTmax (Degrees Celsius)	6.00000	6.88889 \pm 2.71577
Temp10_OCTmin (Degrees Celsius)	-1.33333	-1.46111 \pm 1.64316
Temp11_NOVmax (Degrees Celsius)	-1.66667	-0.79722 \pm 2.43512
Temp11_NOVmin (Degrees Celsius)	-6.66667	-6.68056 \pm 2.97163
Temp12_DECmax (Degrees Celsius)	-5.00000	-4.66389 \pm 2.69757
Temp12_DECmin (Degrees Celsius)	-10.66667	-10.65833 \pm 3.71739
TempANNUALmax (Degrees Celsius)	6.00000	6.96389 \pm 3.06157
TempANNUALmean (Degrees Celsius)	1.33333	2.25278 \pm 2.66574
TempANNUALmin (Degrees Celsius)	-1.66667	-2.18056 \pm 2.41152
Hydrology		
Drainage-Area (km ²)	202.74219	124.42081 \pm 200.99192
Perimeter (Km)	102.41807	64.71360 \pm 56.15436
StreamDensity (m/km ²)	2000.71158	2246.06682 \pm 604.89962
StreamLength (m)	405628.65	302226.63 \pm 500983.26
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 (%)	0.54835	1.19263 \pm 2.03874
Natl-BroadleafSparse (%)	0.00000	0.00000 \pm 0.00000
Natl-Coniferous (%)	0.00000	0.00000 \pm 0.00000
Natl-ConiferousDense (%)	0.53722	0.64845 \pm 0.37668
Natl-ConiferousOpen (%)	64.67494	54.62780 \pm 18.30692
Natl-ConiferousSparse (%)	0.00000	0.94121 \pm 1.53621
Natl-Deciduous (%)	0.00000	0.00000 \pm 0.00000
Natl-Developed (%)	0.00000	0.00000 \pm 0.00000
Natl-ExposedLand (%)	4.91645	13.20054 \pm 11.11850
Natl-Grassland (%)	0.75713	1.87556 \pm 1.68508
Natl-Herb (%)	4.44424	5.75738 \pm 2.89836
Natl-MixedForest (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodDense (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodOpen (%)	0.00000	0.04060 \pm 0.10208
Natl-MixedwoodSparse (%)	0.00000	0.00000 \pm 0.00000
Natl-PerennCropsPast (%)	0.00000	0.00000 \pm 0.00000
Natl-Rock/Rubble (%)	0.75866	1.56403 \pm 2.75979
Natl-Shrubland (%)	0.00000	0.00000 \pm 0.00000
Natl-ShrubLow (%)	6.88836	4.98298 \pm 3.22579
Natl-ShrubTall (%)	0.00000	0.00000 \pm 0.00000
Natl-SnowIce (%)	0.00817	0.08491 \pm 0.15475
Natl-Water (%)	0.07759	0.22916 \pm 0.36834

Habitat Description

Variable	NJLEM03	Predicted Group Reference Mean \pm SD
Natl-Wetland (%)	0.00000	0.00000 \pm 0.00000
Natl-WetlandHerb (%)	0.00000	0.12918 \pm 0.35193
Natl-WetlandShrub (%)	0.00000	0.00000 \pm 0.00000
Natl-WetlandTreed (%)	0.00000	0.00000 \pm 0.00000
Reg-Ice (%)	0.00000	0.02487 \pm 0.06034
Substrate Data		
%Bedrock (%)	0	0 \pm 0
%Boulder (%)	4	9 \pm 9
%Cobble (%)	68	51 \pm 15
%Gravel (%)	0	3 \pm 3
%Pebble (%)	22	37 \pm 20
%Sand (%)	0	0 \pm 0
%Silt+Clay (%)	6	0 \pm 0
D50 (cm)	9.75	15.12 \pm 14.26
Dg (cm)	6.9	8.2 \pm 2.8
Dominant-1st (Category(0-9))	6	7 \pm 1
Dominant-2nd (Category(0-9))	7	7 \pm 1
Embeddedness (Category(1-5))	4	5 \pm 1
PeriphytonCoverage (Category(1-5))	1	1 \pm 0
SurroundingMaterial (Category(0-9))	4	4 \pm 1
Topography		
ElevationMax (m)	2576.00000	2634.66667 \pm 309.54023
ElevationMin (m)	548.00000	913.41667 \pm 271.25180
ElevationStdev (m)	376.83884	349.02363 \pm 92.12445
Reg-SlopeLT30% (%)	15.22000	18.88386 \pm 9.29866
Slope30-50% (%)	30.59235	29.00215 \pm 6.33837
Slope50-60% (%)	15.88002	13.91808 \pm 1.91315
SlopeAvg (%)	51.73067	52.79851 \pm 8.68755
SlopeGT60% (%)	33.83747	35.47207 \pm 13.39684
SlopeLT30% (%)	19.69016	21.60770 \pm 8.54172
SlopeMax (%)	574.77527	298.94390 \pm 146.30679
SlopeMin (%)	0.00000	0.19777 \pm 0.29213
SlopeStdev (%)	25.33031	26.57529 \pm 4.62351
Water Chemistry		
CO3 (mg/L)	0.2500000	0.0000000 \pm 0.0000000
General-Alkalinity (mg/L)	36.5000000	71.7000000 \pm 53.9231440
General-Conductivity (μ S/cm)	77.7000000	121.8083333 \pm 87.6800844
General-DO (mg/L)	11.0000000	11.4175000 \pm 0.7986708
General-pH (pH)	7.7	7.9 \pm 0.4
General-TempAir (Degrees Celsius)	22.0	26.0
General-TempWater (Degrees Celsius)	8.5000000	7.3183333 \pm 2.7240839
General-Turbidity (NTU)	0.0200000	0.2020000
HCO3 (mg/L)	44.6000000	0.0000000 \pm 0.0000000
Nitrogen-NO2 (mg/L)	0.0025000	0.0027500 \pm 0.0062831
Nitrogen-NO2+NO3 (mg/L)	0.0100000	0.0690000
Nitrogen-NO3 (mg/L)	0.0100000	0.0546667 \pm 0.0498148
Phosphorus-OrthoP (mg/L)	0.0025000	0.0002727 \pm 0.0004671
Phosphorus-TP (mg/L)	0.0025000	0.0045833 \pm 0.0049992