

Site Description

Study Name	CBWQ-Central Kootenay
Site	NGJOS03
Sampling Date	Oct 15 2013
Know Your Watershed Basin	Central Kootenay
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Southern Rocky Mountain Trench EcoRegion
Coordinates (decimal degrees)	49.57822 N, 115.75881 W
Altitude	2756
Local Basin Name	Joseph Creek
Stream Order	3



Figure 1. Location Map



Across Reach
Aerial (No image found)



Down Stream

A photograph of a field sheet form. The form is titled "CABIN/RCBA" and contains various sections for data collection. Handwritten information includes "Field Crew: [unclear]", "Site Code: 2420003", "Sampling Date (DMY): 8/10/13", "Local Reach name: [unclear]", "River/Stream Name: [unclear]", and "CABIN Study Name: [unclear]". The form also includes checkboxes for "Site Inspection Sheet Completed", "Surrounding Land Use", and "Dominant Surrounding Land Use".

Field Sheet

Miscellaneous (No image found)



Substrate



Up Stream

Cabin Assessment Results

Reference Model Summary					
Model	Columbia-Okanagan Preliminary March 2010				
Analysis Date	August 18, 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%	53.1%	45.6%	1.2%	0.1%
CABIN Assessment of NGJOS03 on Oct 15, 2013	Similar to Reference				

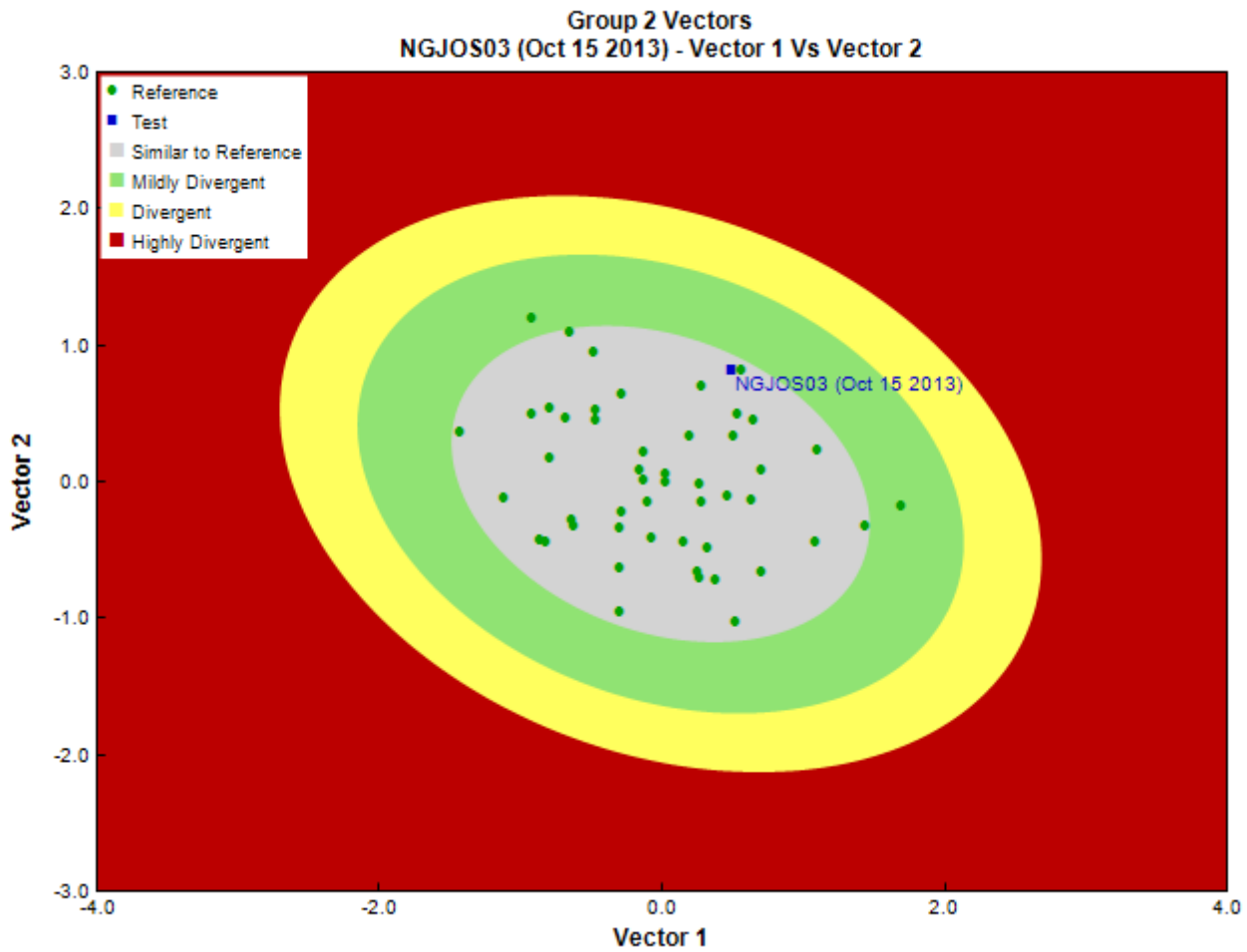


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Pina Viola, Consultant
Date Taxonomy Completed	February 25, 2014
	Marchant Box
Sub-Sample Proportion	10/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Arachnida	Trombidiformes	Hygrobatidae	1	10.0
		Insecta	Coleoptera	Elmidae	16
	Diptera		Chironomidae	20	200.0
			Simuliidae	2	20.0
		Tipulidae	5	50.0	
		Ephemeroptera	Baetidae	120	1,200.0
			Ephemerellidae	40	400.0
	Heptageniidae		20	200.0	
	Plecoptera	Nemouridae	2	20.0	
		Perlidae	2	20.0	
	Trichoptera	Brachycentridae	14	140.0	
		Glossosomatidae	13	130.0	
		Hydropsychidae	9	90.0	
		Lepidostomatidae	67	670.0	
		Rhyacophilidae	2	20.0	

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Total	333	3,330.0

Metrics

Name	NGJOS03	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.49	0.5 \pm 0.1
Biotic Indices		
Hilsenhoff Family index (North-West)	3.2	3.3 \pm 0.5
Intolerant taxa	--	1.0 \pm 0.0
Long-lived taxa	5.0	3.7 \pm 1.9
Tolerant individuals (%)	--	1.3 \pm 1.5
Functional Measures		
% Filterers	7.5	4.5 \pm 4.6
% Gatherers	29.1	46.7 \pm 12.1
% Predatores	10.8	22.1 \pm 11.2
% Scrapers	51.4	53.4 \pm 16.1
% Shredder	31.2	27.8 \pm 12.7
No. Clinger Taxa	18.0	25.5 \pm 6.3
Number Of Individuals		
% Chironomidae	6.0	8.7 \pm 10.4
% Coleoptera	4.8	5.7 \pm 8.6
% Diptera + Non-insects	8.4	15.7 \pm 11.6
% Ephemeroptera	54.1	45.6 \pm 14.3
% Ephemeroptera that are Baetidae	66.7	44.5 \pm 20.4
% EPT Individuals	86.8	78.6 \pm 14.0
% Odonata	0.0	0.0 \pm 0.0
% of 2 dominant taxa	56.2	49.3 \pm 10.6
% of 5 dominant taxa	80.2	76.4 \pm 9.1
% of dominant taxa	36.0	30.6 \pm 8.9
% Plecoptera	1.2	23.2 \pm 13.6
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	8.6	27.4 \pm 25.1
% Tricoptera	31.5	9.8 \pm 7.1
No. EPT individuals/Chironomids+EPT Individuals	0.9	0.9 \pm 0.1
Total Abundance	3330.0	3018.4 \pm 2496.0
Richness		
Chironomidae taxa (genus level only)	1.0	1.0 \pm 0.1
Coleoptera taxa	1.0	0.8 \pm 0.7
Diptera taxa	3.0	3.8 \pm 1.4
Ephemeroptera taxa	3.0	4.3 \pm 0.6
EPT Individuals (Sum)	2890.0	2266.9 \pm 1692.6
EPT taxa (no)	10.0	14.0 \pm 2.7
Odonata taxa	0.0	0.0 \pm 0.0
Pielou's Evenness	0.7	0.7 \pm 0.1
Plecoptera taxa	2.0	5.3 \pm 1.7
Shannon-Wiener Diversity	2.0	2.2 \pm 0.3
Simpson's Diversity	0.8	0.8 \pm 0.1
Simpson's Evenness	0.3	0.3 \pm 0.1
Total No. of Taxa	15.0	21.8 \pm 4.8
Trichoptera taxa	5.0	4.5 \pm 1.5

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NGJOS03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	1.00
Chironomidae	100%	100%	100%	100%	95%	1.00
Chloroperlidae	78%	88%	94%	100%	100%	0.91
Ephemerellidae	78%	100%	100%	100%	100%	1.00
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.85
Nemouridae	100%	100%	100%	100%	100%	1.00

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NGJOS03
	Group 1	Group 2	Group 3	Group 4	Group 5	
Perlodidae	78%	78%	89%	92%	81%	0.83
Psychodidae	22%	65%	94%	8%	11%	0.78
Rhyacophilidae	100%	92%	100%	100%	95%	0.96
Taeniopterygidae	89%	49%	100%	92%	97%	0.73

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	14.56
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	0.62
RIVPACS : Expected taxa P>0.70	10.06
RIVPACS : Observed taxa P>0.70	7.00
RIVPACS : O:E (p > 0.7)	0.70

Habitat Description

Variable	NGJOS03	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Alluvium (%)	0.00000	0.35019 \pm 1.57957
Intrusive (%)	0.00000	38.47891 \pm 37.43781
Metamorphic (%)	0.00000	18.30802 \pm 31.64814
Sedimentary (%)	100.00000	27.06556 \pm 35.27962
Ultramafic (%)	0.00000	0.00401 \pm 0.02776
Volcanic (%)	0.00000	15.79332 \pm 25.94101
Channel		
Depth-Avg (cm)	2.6	18.0 \pm 7.8
Depth-BankfullMinusWetted (cm)	21.00	52.85 \pm 27.13
Depth-Max (cm)	4.2	23.9 \pm 10.9
Macrophyte (PercentRange)	0	0 \pm 1
Reach-%CanopyCoverage (PercentRange)	1.00	2.37 \pm 1.20
Reach-DomStreamsideVeg (Category (1-4))	1	3 \pm 1
Reach-Pools (Binary)	1	1 \pm 0
Reach-Rapids (Binary)	0	0 \pm 0
Reach-Riffles (Binary)	0	1 \pm 0
Reach-StraightRun (Binary)	1	1 \pm 0
Slope (m/m)	0.0120000	0.0325815 \pm 0.0231391
Veg-Coniferous (Binary)	0	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)	0.47	0.35 \pm 0.17
Velocity-Max (m/s)	0.63	0.49 \pm 0.22
Width-Bankfull (m)	6.2	10.4 \pm 7.4
Width-Wetted (m)	5.2	5.6 \pm 3.7
XSEC-VelMethod (Category (1-3))	1	2 \pm 1
Climate		
Precip01_JAN (mm)	55.20000	81.47047 \pm 35.20275
Precip02_FEB (mm)	42.80000	65.66698 \pm 29.19106
Precip03_MAR (mm)	37.60000	58.35127 \pm 26.58828
Precip04_APR (mm)	55.20000	81.47047 \pm 35.20275
Precip05_MAY (mm)	53.20000	63.34988 \pm 14.97909
Precip06_JUN (mm)	58.80000	69.14147 \pm 14.59973
Precip07_JUL (mm)	45.00000	54.44728 \pm 11.94186
Precip08_AUG (mm)	38.20000	51.57730 \pm 11.68151
Precip09_SEP (mm)	36.80000	47.67378 \pm 13.13706
Precip10_OCT (mm)	33.40000	52.16713 \pm 21.59297
Precip11_NOV (mm)	60.60000	81.75742 \pm 35.32603
Precip12_DEC (mm)	61.40000	90.32297 \pm 36.08654
PrecipTotal_ANNUAL (mm)	566.40000	772.44527 \pm 255.72743
Temp01_JANMax (Degrees Celsius)	-3.20000	-3.37090 \pm 1.49863
Temp01_JANmin (Degrees Celsius)	-11.20000	-10.49459 \pm 1.79438

Habitat Description

Variable	NGJOS03	Predicted Group Reference Mean \pm SD
Temp02_FEBmax (Degrees Celsius)	0.40000	-0.57452 \pm 1.44723
Temp02_FEBmin (Degrees Celsius)	-8.40000	-8.42703 \pm 1.64036
Temp03_MARmax (Degrees Celsius)	5.20000	3.12925 \pm 2.32321
Temp03_MARmin (Degrees Celsius)	-4.60000	-5.50804 \pm 1.70878
Temp04_APRmax (Degrees Celsius)	10.80000	7.96831 \pm 2.90525
Temp04_APRmin (Degrees Celsius)	-0.80000	-2.11456 \pm 1.53933
Temp05_MAYmax (Degrees Celsius)	15.60000	12.59416 \pm 3.03418
Temp05_MAYmin (Degrees Celsius)	2.20000	1.10761 \pm 1.48840
Temp06_JUNMax (Degrees Celsius)	19.60000	16.26020 \pm 3.04103
Temp06_JUNMin (Degrees Celsius)	5.40000	4.34060 \pm 1.59755
Temp07_JULmax (Degrees Celsius)	23.60000	19.99784 \pm 2.98893
Temp07_JULmin (Degrees Celsius)	7.80000	6.68707 \pm 1.50784
Temp08_AUGmax (Degrees Celsius)	23.20000	19.88203 \pm 2.98805
Temp08_AUGmin (Degrees Celsius)	7.20000	6.60034 \pm 1.49681
Temp09_SEPmax (Degrees Celsius)	17.80000	15.00959 \pm 2.72415
Temp09_SEPmin (Degrees Celsius)	2.80000	2.53046 \pm 1.35863
Temp10_OCTmax (Degrees Celsius)	10.00000	7.86008 \pm 2.25227
Temp10_OCTmin (Degrees Celsius)	-0.60000	-1.03881 \pm 1.02336
Temp11_NOVmax (Degrees Celsius)	1.00000	0.06401 \pm 1.60290
Temp11_NOVmin (Degrees Celsius)	-5.60000	-5.88590 \pm 1.72037
Temp12_DECmax (Degrees Celsius)	-3.40000	-3.51268 \pm 1.54963
Temp12_DECmin (Degrees Celsius)	-10.40000	-9.74443 \pm 1.75768
TempANNUALmax (Degrees Celsius)	9.80000	7.66280 \pm 2.34917
TempANNUALmean (Degrees Celsius)	4.20000	2.66373 \pm 1.75457
TempANNUALmin (Degrees Celsius)	-0.80000	-1.55489 \pm 1.29635
Hydrology		
Drainage-Area (km ²)	221.47386	120.15520 \pm 156.34507
Perimeter (Km)	155.93977	73.54528 \pm 45.71924
StreamDensity (m/km ²)	1242.23428	1876.24064 \pm 506.52423
StreamLength (m)	275122.42	237532.09 \pm 321793.78
Landcover		
Natl-AnnCrops (%)	0.02200	0.00068 \pm 0.00479
Natl-Barren (%)	0.00000	0.00000 \pm 0.00000
Natl-BroadleafDense (%)	0.00000	0.00288 \pm 0.01695
Natl-BroadleafOpen (%)	0.13752	3.22025 \pm 3.93337
Natl-BroadleafSparse (%)	0.00000	0.05623 \pm 0.18673
Natl-Coniferous (%)	0.00000	0.00000 \pm 0.00000
Natl-ConiferousDense (%)	1.17292	9.84810 \pm 8.09809
Natl-ConiferousOpen (%)	74.03588	60.67486 \pm 15.67333
Natl-ConiferousSparse (%)	0.00000	0.63143 \pm 0.83590
Natl-Deciduous (%)	0.00000	0.00000 \pm 0.00000
Natl-Developed (%)	13.22800	0.00276 \pm 0.01063
Natl-ExposedLand (%)	5.24804	4.04930 \pm 6.04778
Natl-Grassland (%)	0.40816	0.94826 \pm 3.07450
Natl-Herb (%)	1.55822	6.97580 \pm 4.84794
Natl-MixedForest (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodDense (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodOpen (%)	0.00000	2.53336 \pm 4.19462
Natl-MixedwoodSparse (%)	0.00000	0.00000 \pm 0.00000
Natl-PerennCropsPast (%)	0.39323	0.00000 \pm 0.00000
Natl-Rock/Rubble (%)	0.07646	0.80304 \pm 4.44694
Natl-Shrubland (%)	0.00000	0.00000 \pm 0.00000
Natl-ShrubLow (%)	2.60614	6.02525 \pm 3.72888
Natl-ShrubTall (%)	0.00000	0.11588 \pm 0.81115
Natl-SnowIce (%)	0.00000	0.16875 \pm 0.99747
Natl-Water (%)	0.52114	0.42594 \pm 0.89498
Natl-Wetland (%)	0.00000	0.00000 \pm 0.00000
Natl-WetlandHerb (%)	0.03925	0.03236 \pm 0.06982
Natl-WetlandShrub (%)	0.05051	0.05636 \pm 0.09937
Natl-WetlandTreed (%)	0.00000	0.10971 \pm 0.21983
Reg-Ice (%)	0.00000	0.00000 \pm 0.00000
Sediment Chemistry		

Habitat Description

Variable	NGJOS03	Predicted Group Reference Mean \pm SD
Ag (ppm)	0.025	0.000 \pm 0.000
Al (ppm)	6190.000	0.020 \pm 0.025
As (ppm)	1.740	0.001 \pm 0.001
Ba (ppm)	23.900	0.039 \pm 0.018
Be (ppm)	0.020	0.000 \pm 0.000
Bi (ppm)	0.050	0.000 \pm 0.000
Ca (ppm)	4660.000	22.562 \pm 16.531
Cd (ppm)	0.055	0.000 \pm 0.000
Co (ppm)	4.390	0.000 \pm 0.000
Cr (ppm)	7.600	0.000 \pm 0.000
Cu (ppm)	3.960	0.001 \pm 0.001
Fe (ppm)	11400.000	0.163 \pm 0.203
Hg (ppm)	0.025	0.000 \pm 0.000
K (ppm)	325.000	1.302 \pm 0.678
Li (ppm)	8.600	0.001 \pm 0.001
Mg (ppm)	6070.000	4.815 \pm 3.987
Mn (ppm)	171.000	0.005 \pm 0.009
Mo (ppm)	0.050	0.000 \pm 0.000
Na (ppm)	50.000	3.891 \pm 3.607
Ni (ppm)	7.480	0.000 \pm 0.000
Pb (ppm)	6.490	0.000 \pm 0.000
Sb (ppm)	0.120	0.000 \pm 0.000
Se (ppm)	0.250	0.000 \pm 0.000
Sn (ppm)	0.220	0.000 \pm 0.000
Sr (ppm)	7.330	0.081 \pm 0.037
Ti (ppm)	118.000	0.001 \pm 0.000
Tl (ppm)	0.025	0.000 \pm 0.000
U (ppm)	0.235	0.000 \pm 0.000
V (ppm)	9.400	0.000 \pm 0.000
Zn (ppm)	41.400	0.001 \pm 0.000
Zr (ppm)	1.010	0.000 \pm 0.000
Substrate Data		
%Bedrock (%)	0	0 \pm 1
%Boulder (%)	0	10 \pm 9
%Cobble (%)	52	56 \pm 12
%Gravel (%)	0	5 \pm 5
%Pebble (%)	48	27 \pm 13
%Sand (%)	0	1 \pm 3
%Silt+Clay (%)	0	1 \pm 1
D50 (cm)	6.50	13.08 \pm 14.78
Dg (cm)	6.4	10.8 \pm 15.3
Dominant-1st (Category(0-9))	6	7 \pm 1
Dominant-2nd (Category(0-9))	5	6 \pm 1
Embeddedness (Category(1-5))	3	4 \pm 1
PeriphytonCoverage (Category(1-5))	4	2 \pm 1
SurroundingMaterial (Category(0-9))	3	3 \pm 1
Topography		
ElevationMax (m)	2203.00000	2134.20408 \pm 321.45042
ElevationMin (m)	817.00000	753.95918 \pm 280.87289
ElevationStdev (m)	266.03230	264.36445 \pm 85.50507
Reg-SlopeLT30% (%)	85.87830	56.46157 \pm 21.18067
Slope30-50% (%)	15.19089	26.07460 \pm 7.88363
Slope50-60% (%)	2.80627	7.33846 \pm 3.98933
SlopeAvg (%)	20.40240	33.03264 \pm 10.18224
SlopeGT60% (%)	2.75855	11.60303 \pm 10.29853
SlopeLT30% (%)	79.24428	54.98391 \pm 18.66092
SlopeMax (%)	162.92787	187.01305 \pm 78.76238
SlopeMin (%)	0.00000	0.05345 \pm 0.18372
SlopeStdev (%)	15.40728	19.94845 \pm 5.16411
Water Chemistry		
CO3 (mg/L)	0.2500000	0.0000000 \pm 0.0000000
General-Alkalinity (mg/L)	164.0000000	74.2090909 \pm 49.2896792

Habitat Description

Variable	NGJOS03	Predicted Group Reference Mean \pmSD
General-DO (mg/L)	11.0000000	10.7197872 \pm 0.8550553
General-pH (pH)	8.2	7.9 \pm 0.4
General-SpCond (μS/cm)	322.2000000	143.9481481 \pm 95.8528053
General-TempAir (Degrees Celsius)	-4.0	16.9 \pm 5.3
General-TempWater (Degrees Celsius)	3.0000000	9.5837917 \pm 2.8075507
General-Turbidity (NTU)	10.5000000	0.3928571 \pm 0.4025218
HCO3 (mg/L)	200.0000000	0.0000000 \pm 0.0000000
Nitrogen-NO2 (mg/L)	0.0051000	0.0061486 \pm 0.0067934
Nitrogen-NO2+NO3 (mg/L)	0.2820000	0.0178069 \pm 0.0412372
Nitrogen-NO3 (mg/L)	0.2770000	0.0258108 \pm 0.0256957
Phosphorus-OrthoP (mg/L)	0.0101000	0.0078875 \pm 0.0114003