

Site Description

Study Name	CBWQ-Central Kootenay
Site	NGMAT01
Sampling Date	Sep 26 2017
Know Your Watershed Basin	Central Kootenay
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Southern Rocky Mountain Trench EcoRegion
Coordinates (decimal degrees)	49.68753 N, 115.71656 W
Altitude	2595
Local Basin Name	Mather Cr
	Mather Cr
Stream Order	4



Figure 1. Location Map



Across Reach
Aerial (No image found)



Down Stream
Field Sheet (No image found)



Miscellaneous



Substrate



Up Stream

Cabin Assessment Results

Reference Model Summary					
Model	Columbia-Okanagan Preliminary March 2010				
Analysis Date	January 30, 2018				
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%	21.1%	74.5%	4.0%	0.4%
CABIN Assessment of NGMAT01 on Sep 26, 2017	Mildly Divergent				

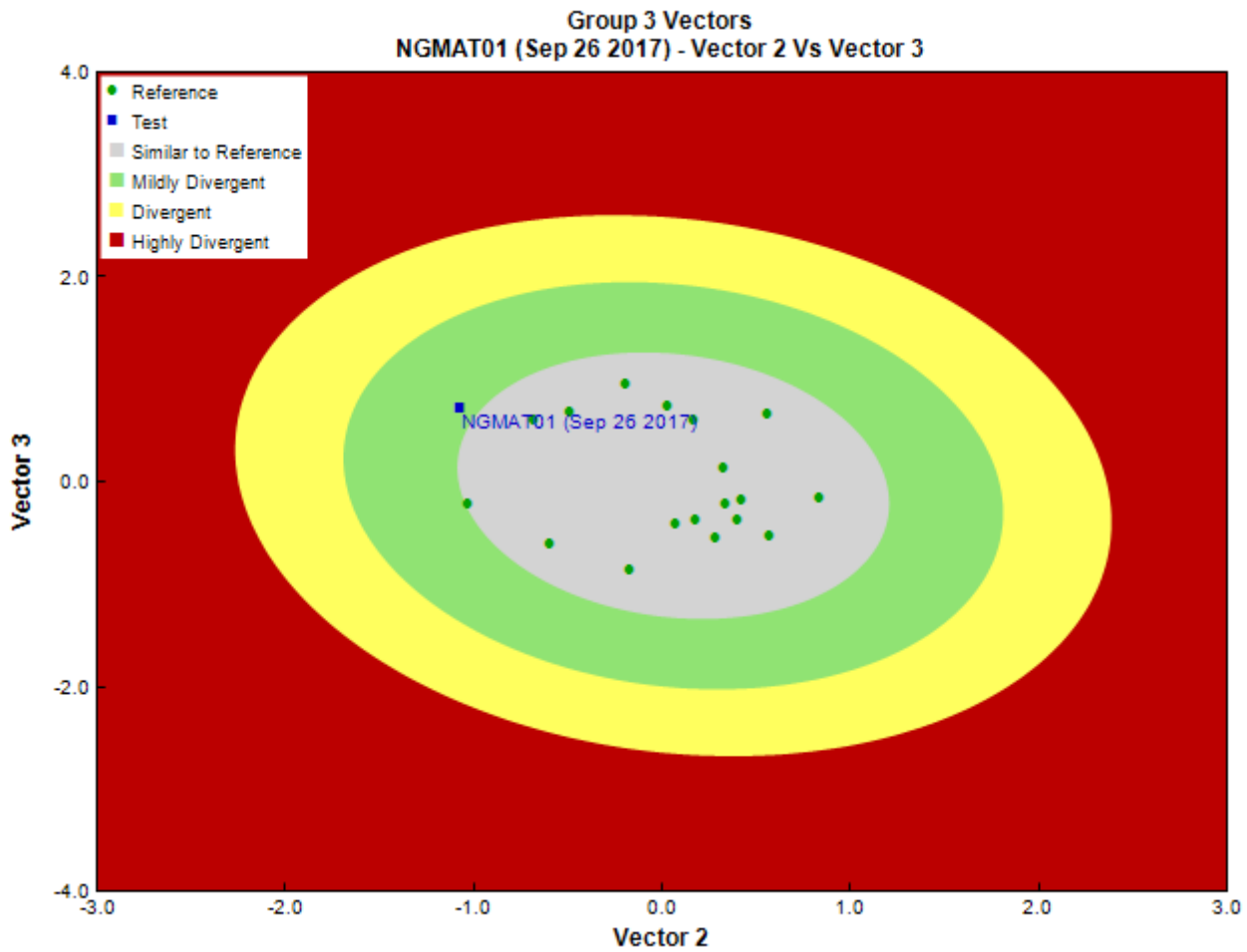


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Pina Viola, Consultant
Date Taxonomy Completed	December 17, 2017
	Marchant Box
Sub-Sample Proportion	14/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count				
Annelida	Oligochaeta	Tubificida	Naididae	6	42.9				
Arthropoda	Arachnida	Trombidiformes		1	7.1				
			Aturidae	1	7.1				
			Hydryphantidae	1	7.1				
			Lebertiidae	1	7.1				
			Sperchontidae	2	14.3				
			Torrenticolidae	7	50.0				
			Insecta	Coleoptera	Diptera	Elmidae	79	564.3	
						Chironomidae	16	114.3	
						Empididae	2	14.2	
						Psychodidae	2	14.3	
						Simuliidae	1	7.1	
						Tipulidae	1	7.1	
						Ephemeroptera	Baetidae	52	371.4
							Ephemerellidae	24	171.4

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Heptageniidae	18	128.6
			Leptophlebiidae	16	114.3
		Plecoptera	Chloroperlidae	1	7.1
			Nemouridae	15	107.1
			Perlidae	15	107.2
			Perlodidae	2	14.3
		Trichoptera		2	14.3
			Brachycentridae	4	28.6
			Glossosomatidae	3	21.4
			Hydropsychidae	44	314.3
			Hydroptilidae	2	14.3
			Lepidostomatidae	13	92.9
			Philopotamidae	1	7.1
			Rhyacophilidae	3	21.4
			Total	335	2,392.6

Metrics

Name	NGMAT01	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.64	0.4 \pm 0.2
Biotic Indices		
Hilsenhoff Family index (North-West)	3.4	3.2 \pm 0.7
Intolerant taxa	--	
Long-lived taxa	5.0	1.9 \pm 1.3
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	14.9	1.8 \pm 1.6
% Gatherers	49.6	52.4 \pm 14.6
% Predatores	28.7	18.3 \pm 13.3
% Scrapers	46.6	61.8 \pm 17.2
% Shredder	33.4	30.3 \pm 18.6
No. Clinger Taxa	30.0	19.8 \pm 3.9
Number Of Individuals		
% Chironomidae	4.8	8.2 \pm 13.6
% Coleoptera	23.8	0.8 \pm 1.9
% Diptera + Non-insects	12.0	14.3 \pm 14.2
% Ephemeroptera	33.1	43.3 \pm 15.7
% Ephemeroptera that are Baetidae	47.3	33.9 \pm 27.7
% EPT Individuals	64.2	84.9 \pm 14.3
% Odonata	0.0	0.0 \pm 0.0
% of 2 dominant taxa	39.5	58.9 \pm 10.0
% of 5 dominant taxa	65.4	83.8 \pm 7.3
% of dominant taxa	23.8	39.5 \pm 10.9
% Plecoptera	9.9	34.7 \pm 17.8
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	62.9	27.8 \pm 25.2
% Tricoptera	21.1	6.9 \pm 8.6
No. EPT individuals/Chironomids+EPT Individuals	0.9	0.9 \pm 0.1
Total Abundance	2392.9	5780.5 \pm 4895.3
Richness		
Chironomidae taxa (genus level only)	1.0	1.0 \pm 0.0
Coleoptera taxa	1.0	0.4 \pm 0.6
Diptera taxa	5.0	3.4 \pm 1.0
Ephemeroptera taxa	4.0	3.4 \pm 0.5
EPT Individuals (Sum)	1521.4	4527.1 \pm 3161.8
EPT taxa (no)	15.0	11.5 \pm 1.2
Odonata taxa	0.0	0.0 \pm 0.0
Pielou's Evenness	0.8	0.7 \pm 0.1
Plecoptera taxa	4.0	5.3 \pm 0.9
Shannon-Wiener Diversity	2.5	1.9 \pm 0.3
Simpson's Diversity	0.9	0.8 \pm 0.1
Simpson's Evenness	0.3	0.3 \pm 0.1

Metrics

Name	NGMAT01	Predicted Group Reference Mean \pm SD
Total No. of Taxa	27.0	17.7 \pm 2.6
Trichoptera taxa	7.0	2.8 \pm 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NGMAT01
	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%	0.93
Ephemerellidae	78%	100%	100%	100%	100%	1.00
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.81
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.87
Psychodidae	22%	65%	94%	8%	11%	0.85
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.89

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	13.53
RIVPACS : Observed taxa P>0.50	13.00
RIVPACS : O:E (p > 0.5)	0.96
RIVPACS : Expected taxa P>0.70	10.33
RIVPACS : Observed taxa P>0.70	10.00
RIVPACS : O:E (p > 0.7)	0.97

Habitat Description

Variable	NGMAT01	Predicted Group Reference Mean \pm SD
Channel		
Depth-Avg (cm)	18.5	22.5 \pm 10.5
Depth-Max (cm)	30.5	32.9 \pm 17.9
Macrophyte (PercentRange)	0	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	2.00	0.94 \pm 0.80
Reach-DomStreamsideVeg (Category(1-4))	3	3 \pm 1
Reach-Pools (Binary)	1	0 \pm 1
Reach-Riffles (Binary)	1	1 \pm 0
Reach-StraightRun (Binary)	1	1 \pm 0
Slope (m/m)	0.0291000	0.0235102 \pm 0.0284557
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)	0.66	0.50 \pm 0.25
Velocity-Max (m/s)	1.16	0.75 \pm 0.28
Width-Bankfull (m)	12.4	15.6 \pm 12.8
Width-Wetted (m)	7.0	10.2 \pm 7.0
XSEC-VelMethod (Category(1-3))	1	2 \pm 1
Landcover		
Reg-Agriculture (%)	2.94400	0.00000 \pm 0.00000
Reg-Alpine (%)	3.10900	0.00000 \pm 0.00000
Reg-Avalanche (%)	2.75700	0.00000 \pm 0.00000
Reg-Forest (%)	73.51400	0.00000 \pm 0.00000
Reg-Ice (%)	0.00000	0.46949 \pm 1.15785
Reg-Lake (%)	0.56040	0.00000 \pm 0.00000
Reg-Rangeland (%)	1.89500	0.00000 \pm 0.00000
Reg-River (%)	0.00000	0.00000 \pm 0.00000
Reg-Wetland (%)	1.24000	0.00000 \pm 0.00000
Substrate Data		

Habitat Description

Variable	NGMAT01	Predicted Group Reference Mean \pm SD
%Bedrock (%)	0	0 \pm 0
%Boulder (%)	0	6 \pm 7
%Cobble (%)	65	61 \pm 27
%Gravel (%)	0	1 \pm 2
%Pebble (%)	35	31 \pm 28
%Sand (%)	0	0 \pm 0
%Silt+Clay (%)	0	0 \pm 1
D50 (cm)	7.35	79.45 \pm 47.98
Dg (cm)	7.2	73.9 \pm 48.0
Dominant-1st (Category(0-9))	6	6 \pm 1
Dominant-2nd (Category(0-9))	5	6 \pm 2
Embeddedness (Category(1-5))	4	4 \pm 1
PeriphytonCoverage (Category(1-5))	2	2 \pm 1
SurroundingMaterial (Category(0-9))	6	3 \pm 1
Topography		
Reg-SlopeLT30% (%)	72.16400	27.92073 \pm 14.83033
Water Chemistry		
Ag (mg/L)	0.0000100	0.0000004 \pm 0.0000014
Al (mg/L)	0.0093000	0.0059500 \pm 0.0039700
As (mg/L)	0.0002500	0.0002175 \pm 0.0001795
B (mg/L)	0.0250000	0.0500000
Ba (mg/L)	0.0790000	0.0639025 \pm 0.0450861
Be (mg/L)	0.0000500	0.0000025 \pm 0.0000062
Bi (mg/L)	0.0000500	0.0000004 \pm 0.0000014
Ca (mg/L)	27.6000000	38.6142857 \pm 14.8464843
Cd (mg/L)	0.0000050	0.0000059 \pm 0.0000067
Chloride-Dissolved (mg/L)	2.1000000	3.5428571 \pm 8.1653449
Co (mg/L)	0.0001000	0.0000043 \pm 0.0000057
CO3 (mg/L)	2.9000000	0.0000000 \pm 0.0000000
Cr (mg/L)	0.0005000	0.0000833 \pm 0.0001403
Cu (mg/L)	0.0025000	0.0001875 \pm 0.0001434
Fe (mg/L)	0.0590000	0.0090000
General-Alkalinity (mg/L)	133.0000000	121.5944444 \pm 36.7225924
General-DO (mg/L)	13.0000000	10.4922222 \pm 0.8833463
General-Hardness (mg/L)	119.0000000	146.8222222 \pm 41.6699011
General-pH (pH)	8.3	8.0 \pm 0.6
General-SolidsTSS (mg/L)	2.0000000	0.5604289 \pm 1.4627232
General-SpCond (μ S/cm)	226.1000000	214.2437500 \pm 77.1891440
General-TempAir (Degrees Celsius)	17.0	10.5 \pm 4.2
General-TempWater (Degrees Celsius)	9.0000000	6.6716667 \pm 2.0277755
General-Turbidity (NTU)	0.6900000	0.0000000 \pm 0.0000000
HCO3 (mg/L)	157.0000000	0.0000000 \pm 0.0000000
Hg (ng/L)	5.0000000	0.0000000 \pm 0.0000000
K (mg/L)	0.5510000	0.6471429 \pm 0.7154652
Li (mg/L)	0.0010000	0.0011817 \pm 0.0004768
Mg (mg/L)	12.2000000	9.8814286 \pm 6.1601202
Mn (mg/L)	0.0027000	0.0011426 \pm 0.0016097
Mo (mg/L)	0.0005000	0.0024883 \pm 0.0065339
Na (mg/L)	2.4500000	2.6357143 \pm 3.7712414
Ni (mg/L)	0.0005000	0.0000808 \pm 0.0000811
Nitrogen-NH4+ (mg/L)	0.0100000	0.0000000 \pm 0.0000000
Nitrogen-NO2 (mg/L)	0.0025000	0.0023889 \pm 0.0063351
Nitrogen-NO2+NO3 (mg/L)	0.0330000	0.0130000 \pm 0.0088111
Nitrogen-NO3 (mg/L)	0.0330000	0.0245003 \pm 0.0229452
Nitrogen-TN (mg/L)	0.1820000	0.0688889 \pm 0.0759171
Pb (mg/L)	0.0001000	0.0000224 \pm 0.0000176
Phosphorus-OrthoP (mg/L)	0.0025000	0.0035000 \pm 0.0018292
Phosphorus-TP (mg/L)	0.0059000	0.0032778 \pm 0.0061816
S (mg/L)	1.5000000	5.0000000
Sb (mg/L)	0.0002500	0.0000361 \pm 0.0000135
Se (mg/L)	0.0000500	0.0004382 \pm 0.0004486
Si (mg/L)	3.8200000	3.0657143 \pm 1.4070046

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Variable	NGMAT01	Predicted Group Reference Mean \pmSD
Sn (mg/L)	0.0025000	0.0000167 \pm 0.0000078
SO4 (mg/L)	9.4000000	14.9647059 \pm 10.8432549
Sr (mg/L)	0.0583000	0.1159167 \pm 0.0982749
Ti (mg/L)	0.0025000	0.0009000
Tl (mg/L)	0.0000050	0.0000038 \pm 0.0000064
U (mg/L)	0.0010500	0.0005298 \pm 0.0003220
V (mg/L)	0.0025000	0.0001642 \pm 0.0001203
Zn (mg/L)	0.0025000	0.0004083 \pm 0.0008361
Zr (mg/L)	0.0000500	0.0000000 \pm 0.0000000