

Site Description

Study Name	CBWQ-Kimberley
Site	NGKMB02
Sampling Date	Oct 03 2007
Know Your Watershed Basin	Central Kootenay
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Southern Rocky Mountain Trench EcoRegion
Coordinates (decimal degrees)	49.69500 N, 115.97611 W
Altitude	3740
Local Basin Name	Kimberley Creek
	St Mary River
Stream Order	2



Figure 1. Location Map



Across Reach
Aerial (No image found)



Down Stream

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Field Crew: Karen Ryniec & Lisa Sander-Greco Site Code: KMB0207

Sampling Date (D/M/Y): 03/10/07 QA/QC site (circle one): Yes No

Primary Site Data

CABIN STUDY NAME: Kootenay Central WATERSHED: Central Kootenay
St. Mary's (e.g. Know Your Watershed)

Basin name: St. Mary's Stream/River Name: Kimberley CK

Geographical description: North end Morrison Rd. Kimberley
directly downstream of Meadowbrook waterworks
dam

Latitude: 49°42' Longitude: 116° 15' (circle one: deg/min/sec or decimal deg)

Elevation: _____ (circle one: feet or masl) GPS Datum: _____ Ecoregion: _____

Field Sheet

Miscellaneous (No image found)



Substrate



Up Stream

Cabin Assessment Results

Reference Model Summary					
Model	Columbia-Okanagan Preliminary March 2010				
Analysis Date	August 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	0.0%	34.0%	61.1%	4.4%	0.5%
CABIN Assessment of NGKMB02 on Oct 03, 2007	Divergent				

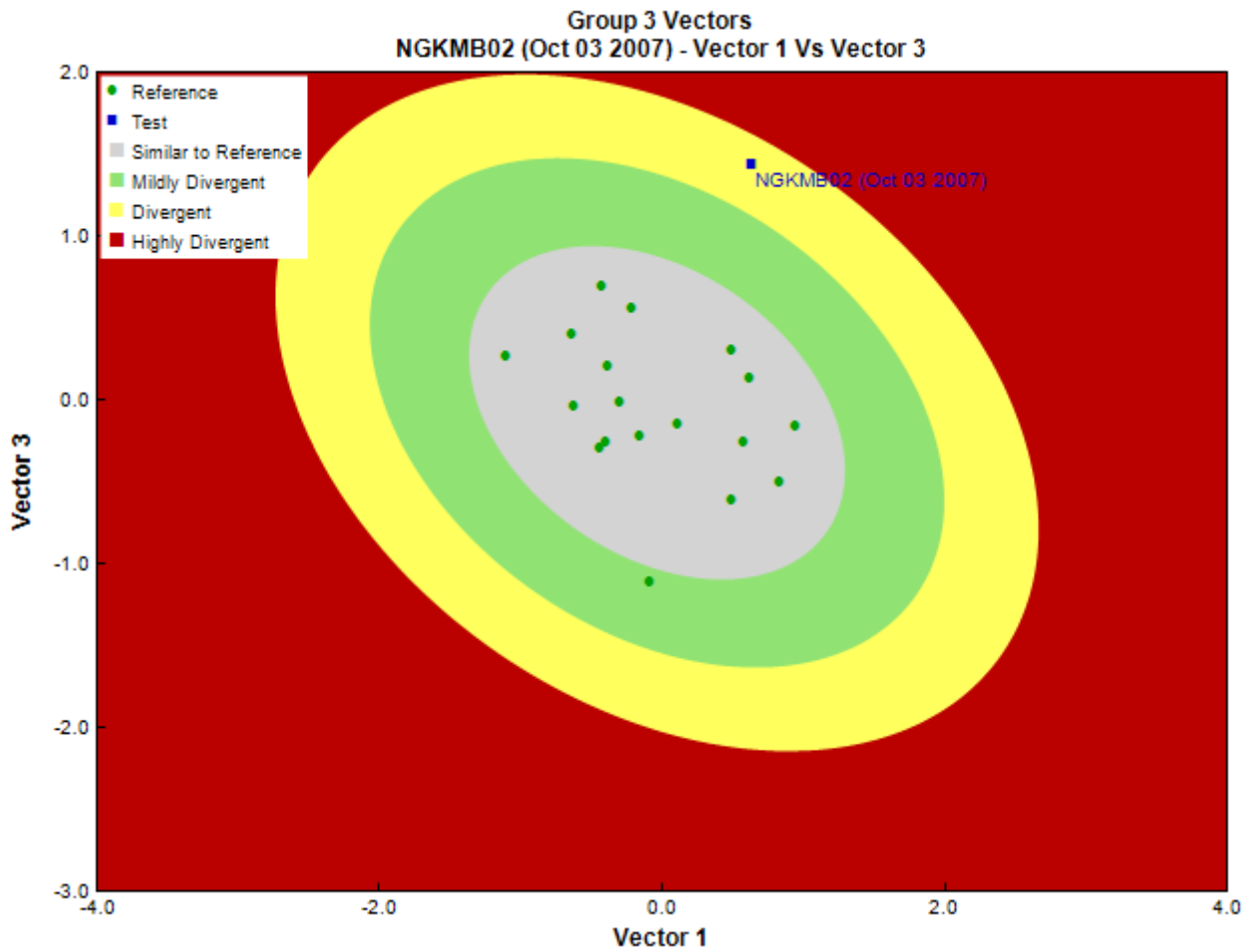


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Dave Langill, EcoAnalysts, Inc.
Date Taxonomy Completed	October 03, 2007
	Marchant Box
Sub-Sample Proportion	6/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count		
Annelida	Oligochaeta	Tubificida	Naididae	9	150.0		
Arthropoda	Arachnida	Trombidiformes	Hygrobatidae	3	50.0		
			Lebertiidae	1	16.7		
			Torrenticolidae	2	33.3		
			Chironomidae	9	150.0		
			Empididae	1	16.7		
		Insecta	Diptera	Tipulidae	1	16.7	
				Ephemeroptera	Baetidae	21	350.0
				Ephemerellidae	1	16.7	
				Heptageniidae	42	700.0	
				Leptophlebiidae	19	316.7	
		Hemiptera	Odonata	Corixidae	1	16.7	
				Aeshnidae	2	33.3	
				Plecoptera	Capniidae	25	416.7

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Chloroperlidae	9	150.0
			Nemouridae	5	83.3
			Perlodidae	1	16.7
		Trichoptera	Brachycentridae	1	16.7
			Glossosomatidae	1	16.7
			Hydroptilidae	3	50.0
			Lepidostomatidae	116	1,933.3
			Limnephilidae	1	16.7
			Polycentropodidae	4	66.7
			Rhyacophilidae	2	33.3
Mollusca	Bivalvia	Veneroida	Pisidiidae	3	50.0
	Gastropoda	Basommatophora	Planorbidae	23	383.3
			Total	307	5,116.9

Metrics

Name	NGKMB02	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.66	0.4 \pm 0.2
Biotic Indices		
Hilsenhoff Family index (North-West)	3.4	3.2 \pm 0.7
Intolerant taxa	--	
Long-lived taxa	--	1.9 \pm 1.3
Tolerant individuals (%)	7.5	0.3
Functional Measures		
% Filterers	1.6	1.8 \pm 1.6
% Gatherers	19.9	52.4 \pm 14.6
% Predatores	11.4	18.3 \pm 13.3
% Scrapers	32.6	61.8 \pm 17.2
% Shredder	48.5	30.3 \pm 18.6
No. Clinger Taxa	15.0	19.8 \pm 3.9
Number Of Individuals		
% Chironomidae	2.9	8.2 \pm 13.6
% Coleoptera	0.0	0.8 \pm 1.9
% Diptera + Non-insects	17.3	14.3 \pm 14.2
% Ephemeroptera	27.1	43.3 \pm 15.7
% Ephemeroptera that are Baetidae	25.3	33.9 \pm 27.7
% EPT Individuals	82.0	84.9 \pm 14.3
% Odonata	0.7	0.0 \pm 0.0
% of 2 dominant taxa	51.6	58.9 \pm 10.0
% of 5 dominant taxa	74.2	83.8 \pm 7.3
% of dominant taxa	37.9	39.5 \pm 10.9
% Plecoptera	13.1	34.7 \pm 17.8
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	--	27.8 \pm 25.2
% Tricoptera	41.8	6.9 \pm 8.6
No. EPT individuals/Chironomids+EPT Individuals	1.0	0.9 \pm 0.1
Total Abundance	5116.6	5780.5 \pm 4895.3
Richness		
Chironomidae taxa (genus level only)	1.0	1.0 \pm 0.0
Coleoptera taxa	0.0	0.4 \pm 0.6
Diptera taxa	3.0	3.4 \pm 1.0
Ephemeroptera taxa	4.0	3.4 \pm 0.5
EPT Individuals (Sum)	4183.3	4527.1 \pm 3161.8
EPT taxa (no)	15.0	11.5 \pm 1.2
Odonata taxa	1.0	0.0 \pm 0.0
Pielou's Evenness	0.7	0.7 \pm 0.1
Plecoptera taxa	4.0	5.3 \pm 0.9
Shannon-Wiener Diversity	2.2	1.9 \pm 0.3
Simpson's Diversity	0.8	0.8 \pm 0.1
Simpson's Evenness	0.2	0.3 \pm 0.1
Total No. of Taxa	26.0	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 NGKMB02
	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%	0.92
Ephemerellidae	78%	100%	100%	100%	100%	1.00
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.83
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.85
Psychodidae	22%	65%	94%	8%	11%	0.80
Rhyacophilidae	100%	92%	100%	100%	95%	0.97
Taeniopterygidae	89%	49%	100%	92%	97%	0.82

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	13.48
RIVPACS : Observed taxa P>0.50	10.00
RIVPACS : O:E (p > 0.5)	0.74
RIVPACS : Expected taxa P>0.70	10.21
RIVPACS : Observed taxa P>0.70	8.00
RIVPACS : O:E (p > 0.7)	0.78

Habitat Description

Variable	NGKMB02	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Alluvium (%)	0.00000	0.00000 \pm 0.00000
Intrusive (%)	0.00000	4.80136 \pm 20.34839
Metamorphic (%)	0.00000	1.91481 \pm 8.12386
Sedimentary (%)	100.00000	92.18813 \pm 22.65908
Ultramafic (%)	0.00000	0.00000 \pm 0.00000
Volcanic (%)	0.00000	1.09569 \pm 2.57323
Channel		
Depth-Avg (cm)	10.0	22.5 \pm 10.5
Depth-Max (cm)	13.0	32.9 \pm 17.9
Macrophyte (PercentRange)	1	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	2.00	0.94 \pm 0.80
Reach-Pools (Binary)	1	0 \pm 1
Reach-Rapids (Binary)	0	0 \pm 1
Reach-Riffles (Binary)	1	1 \pm 0
Reach-StraightRun (Binary)	1	1 \pm 0
Slope (m/m)	0.0070000	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)	0.12	0.50 \pm 0.25
Velocity-Max (m/s)	0.13	0.75 \pm 0.28
Width-Bankfull (m)	5.5	15.6 \pm 12.8
Width-Wetted (m)	2.3	10.2 \pm 7.0
XSEC-VelInstrumentDirect (Category (1-3))	3	2
XSEC-VelMethod (Category (1-3))	3	2 \pm 1
Climate		
Precip01_JAN (mm)	57.00000	86.74590 \pm 34.16045
Precip02_FEB (mm)	44.00000	69.04735 \pm 26.39011
Precip03_MAR (mm)	38.00000	64.57566 \pm 18.91423
Precip04_APR (mm)	57.00000	86.74590 \pm 34.16045
Precip05_MAY (mm)	49.00000	67.06098 \pm 7.34190
Precip06_JUN (mm)	57.00000	73.16508 \pm 8.19897
Precip07_JUL (mm)	44.00000	59.23624 \pm 10.43324
Precip08_AUG (mm)	39.00000	57.24656 \pm 12.22117
Precip09_SEP (mm)	36.00000	50.72037 \pm 11.15833

Habitat Description

Variable	NGKMB02	Predicted Group Reference Mean \pm SD
Precip10_OCT (mm)	33.00000	52.92857 \pm 22.22704
Precip11_NOV (mm)	61.00000	87.53373 \pm 31.98739
Precip12_DEC (mm)	63.00000	93.52725 \pm 32.58764
PrecipTotal_ANNUAL (mm)	563.00000	818.18624 \pm 207.74339
Temp01_JANMax (Degrees Celsius)	-4.00000	-5.23929 \pm 1.38664
Temp01_JANmin (Degrees Celsius)	-12.00000	-13.71495 \pm 2.15775
Temp02_FEBmax (Degrees Celsius)	0.00000	-2.11812 \pm 1.36153
Temp02_FEBmin (Degrees Celsius)	-9.00000	-11.26786 \pm 1.82315
Temp03_MARmax (Degrees Celsius)	4.00000	0.95304 \pm 1.72292
Temp03_MARmin (Degrees Celsius)	-5.00000	-7.99378 \pm 1.86235
Temp04_APRmax (Degrees Celsius)	10.00000	5.89775 \pm 2.29856
Temp04_APRmin (Degrees Celsius)	-1.00000	-3.52196 \pm 1.40541
Temp05_MAYmax (Degrees Celsius)	15.00000	10.80516 \pm 2.26497
Temp05_MAYmin (Degrees Celsius)	2.00000	0.15132 \pm 0.77159
Temp06_JUNMax (Degrees Celsius)	19.00000	14.89775 \pm 2.29856
Temp06_JUNmin (Degrees Celsius)	5.00000	2.98532 \pm 1.30119
Temp07_JULmax (Degrees Celsius)	22.00000	18.39881 \pm 2.25732
Temp07_JULmin (Degrees Celsius)	8.00000	5.51058 \pm 1.28471
Temp08_AUGmax (Degrees Celsius)	22.00000	18.26442 \pm 2.32790
Temp08_AUGmin (Degrees Celsius)	7.00000	5.11071 \pm 1.22615
Temp09_SEPmax (Degrees Celsius)	17.00000	13.01495 \pm 2.08648
Temp09_SEPmin (Degrees Celsius)	3.00000	1.09127 \pm 1.16620
Temp10_OCTmax (Degrees Celsius)	9.00000	6.62235 \pm 1.52687
Temp10_OCTmin (Degrees Celsius)	-1.00000	-1.89907 \pm 1.00747
Temp11_NOVmax (Degrees Celsius)	0.00000	-1.28638 \pm 1.23662
Temp11_NOVmin (Degrees Celsius)	-6.00000	-8.37103 \pm 1.70714
Temp12_DECmax (Degrees Celsius)	-4.00000	-5.50172 \pm 1.56005
Temp12_DECmin (Degrees Celsius)	-11.00000	-12.82063 \pm 2.01422
TempANNUALmax (Degrees Celsius)	9.00000	5.95278 \pm 1.80268
TempANNUALmean (Degrees Celsius)	3.00000	0.92011 \pm 1.31158
TempANNUALmin (Degrees Celsius)	-1.00000	-3.49114 \pm 1.47732
Hydrology		
Drainage-Area (km ²)	9.42582	166.32560 \pm 185.60049
Perimeter (Km)	30.93566	75.52547 \pm 54.66392
StreamDensity (m/km ²)	1570.24459	2635.49639 \pm 656.67294
StreamLength (m)	14800.84	398904.91 \pm 414313.30
Landcover		
Natl-AnnCrops (%)	0.00000	0.00000 \pm 0.00000
Natl-Barren (%)	0.00000	0.00000 \pm 0.00000
Natl-BroadleafDense (%)	0.00000	0.53318 \pm 1.35704
Natl-BroadleafOpen (%)	0.76170	0.81233 \pm 2.68694
Natl-BroadleafSparse (%)	0.00000	0.00053 \pm 0.00223
Natl-Coniferous (%)	0.00000	0.00000 \pm 0.00000
Natl-ConiferousDense (%)	0.52449	9.07482 \pm 13.04849
Natl-ConiferousOpen (%)	97.26074	46.52170 \pm 20.90683
Natl-ConiferousSparse (%)	0.00000	0.88302 \pm 1.79706
Natl-Deciduous (%)	0.00000	0.00000 \pm 0.00000
Natl-Developed (%)	0.09536	0.00000 \pm 0.00000
Natl-ExposedLand (%)	0.19609	14.05381 \pm 9.29865
Natl-Grassland (%)	0.00000	4.92979 \pm 5.99508
Natl-Herb (%)	0.05251	6.99262 \pm 5.00471
Natl-MixedForest (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodDense (%)	0.00000	0.00129 \pm 0.00548
Natl-MixedwoodOpen (%)	0.00000	0.90796 \pm 2.58154
Natl-MixedwoodSparse (%)	0.00000	0.00000 \pm 0.00000
Natl-PerennCropsPast (%)	0.00000	0.00000 \pm 0.00000
Natl-Rock/Rubble (%)	0.00000	2.56296 \pm 3.90199
Natl-Shrubland (%)	0.00000	0.00000 \pm 0.00000
Natl-ShrubLow (%)	0.75150	1.89085 \pm 1.59075
Natl-ShrubTall (%)	0.00000	1.09076 \pm 2.22843
Natl-SnowIce (%)	0.00000	0.50588 \pm 1.17001
Natl-Water (%)	0.00000	0.22269 \pm 0.34683

Habitat Description

Variable	NGKMB02	Predicted Group Reference Mean \pm SD
Natl-Wetland (%)	0.00000	0.00000 \pm 0.00000
Natl-WetlandHerb (%)	0.00000	0.03577 \pm 0.04831
Natl-WetlandShrub (%)	0.00000	0.05535 \pm 0.09516
Natl-WetlandTreed (%)	0.00000	0.00268 \pm 0.01136
Reg-Ice (%)	0.00000	0.46949 \pm 1.15785
Substrate Data		
%Bedrock (%)	0	0 \pm 0
%Boulder (%)	0	6 \pm 7
%Cobble (%)	26	61 \pm 27
%Gravel (%)	20	1 \pm 2
%Pebble (%)	52	31 \pm 28
%Sand (%)	2	0 \pm 0
%Silt+Clay (%)	0	0 \pm 1
D50 (cm)	4.50	79.45 \pm 47.98
Dg (cm)	3.2	73.9 \pm 48.0
Dominant-1st (Category(0-9))	5	6 \pm 1
Dominant-2nd (Category(0-9))	6	6 \pm 2
Embeddedness (Category(1-5))	4	4 \pm 1
SurroundingMaterial (Category(0-9))	8	3 \pm 1
Topography		
ElevationMax (m)	1807.00000	2690.61111 \pm 390.38324
ElevationMin (m)	1133.00000	1251.33333 \pm 280.98168
ElevationStdev (m)	183.48349	287.70131 \pm 73.20073
Reg-SlopeLT30% (%)	70.87000	27.92073 \pm 14.83033
Slope30-50% (%)	24.40653	27.15573 \pm 3.09032
Slope50-60% (%)	6.35200	12.76339 \pm 3.54018
SlopeAvg (%)	26.89305	48.68089 \pm 8.41381
SlopeGT60% (%)	5.50816	30.74349 \pm 11.05846
SlopeLT30% (%)	63.73331	29.33739 \pm 12.62448
SlopeMax (%)	108.11418	616.97887 \pm 680.88955
SlopeMin (%)	0.00000	0.03296 \pm 0.13984
SlopeStdev (%)	17.56506	28.19409 \pm 6.96382
Water Chemistry		
General-Alkalinity (mg/L)	102.0000000	121.5944444 \pm 36.7225924
General-Conductivity (μ S/cm)	207.0000000	186.8500000 \pm 84.0864011
General-DO (mg/L)	11.0000000	10.4922222 \pm 0.8833463
General-Hardness (mg/L)	105.0000000	146.8222222 \pm 41.6699011
General-pH (pH)	7.8	8.0 \pm 0.6
General-SolidsTSS (mg/L)	0.0000000	0.5604289 \pm 1.4627232
General-TempWater (Degrees Celsius)	5.9000000	6.6716667 \pm 2.0277755
Nitrogen-TN (mg/L)	0.3900000	0.0688889 \pm 0.0759171
Phosphorus-TP (mg/L)	0.0050000	0.0032778 \pm 0.0061816