

Site Description

Study Name	CBWQ-Kimberley
Site	NGKMB01
Sampling Date	Oct 09 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)	49.69889 N, 115.25944 W
Altitude	3773
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 Rydler & Len Sudergran Site Code: KMB0107

Sampling Date (D/M/Y): 2001.10.10 QA/QC site (circle one): Yes No

Primary Site Data

CABIN STUDY NAME: Kooleney Central WATERSHED: Central Kooleney
(e.g. Know Your Watershed)

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

Geographical description: 500m upstream of dam /
water intake

Latitude: _____ Longitude: _____ (circle one: deg/min/sec or decimal deg)

Elevation: _____ (circle one: feet or meters) 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%	8.0%	88.7%	2.9%	0.3%
CABIN Assessment of NGKMB01 on Oct 09, 2007	Divergent				

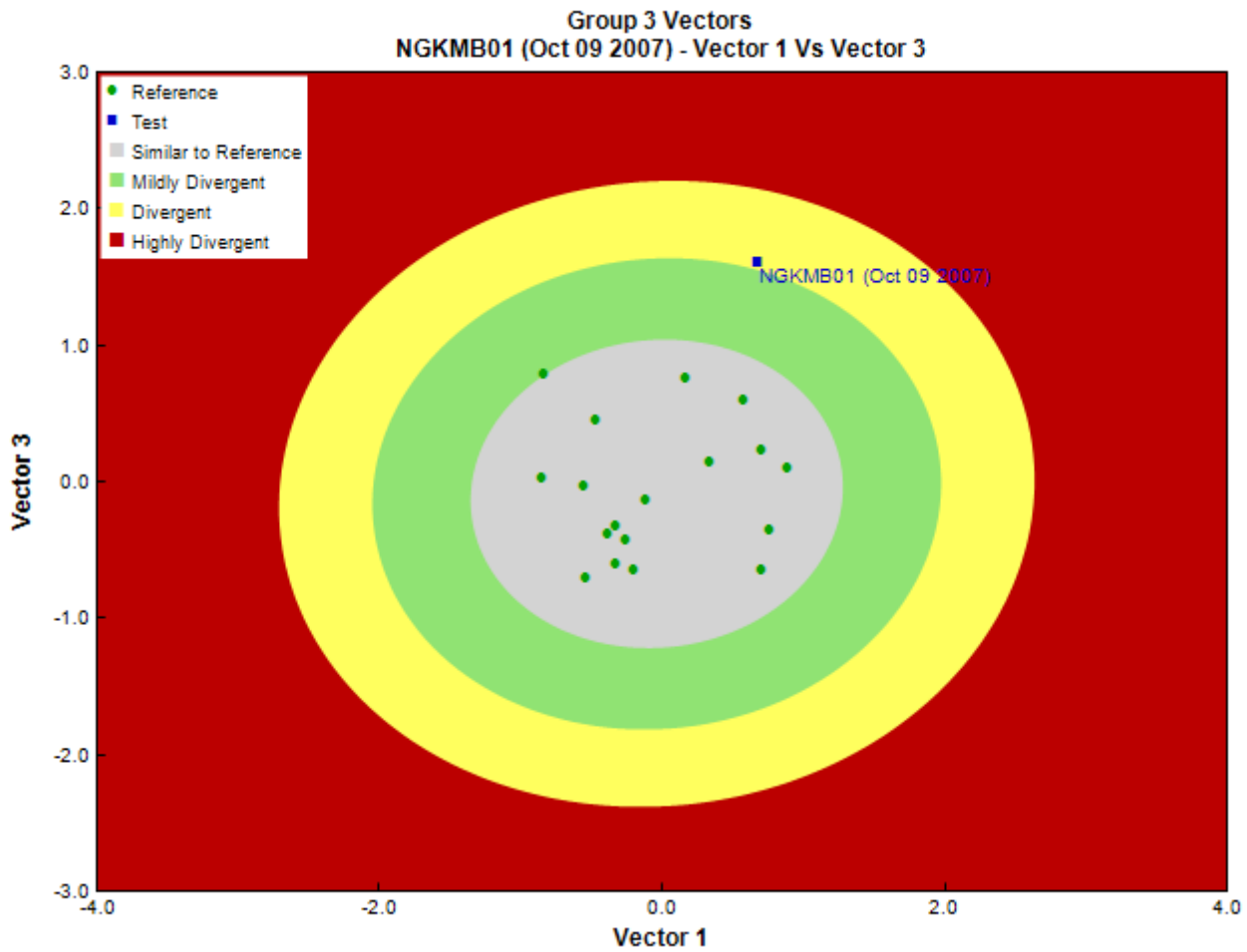


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Dave Langill, EcoAnalysts, Inc.
Date Taxonomy Completed	October 09, 2007
	Marchant Box
Sub-Sample Proportion	38/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count	
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	2	5.3	
		Tubificida		4	10.5	
Arthropoda	Arachnida	Trombidiformes	Naididae	1	2.6	
			Hygrobatidae	1	2.6	
			Lebertiidae	10	26.3	
			Sperchontidae	2	5.3	
				Torrenticolidae	2	5.3
		Insecta	Coleoptera	Elmidae	82	215.8
			Diptera	Ceratopogonidae	5	13.1
				Chironomidae	343	902.6
				Empididae	6	15.8
			Tipulidae	2	5.3	
		Ephemeroptera	Baetidae	2	5.3	
			Ephemerellidae	11	28.9	
			Heptageniidae	27	71.1	

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Leptophlebiidae	5	13.1
		Megaloptera	Sialidae	2	5.3
		Plecoptera	Capniidae	3	7.9
			Chloroperlidae	12	31.6
			Leuctridae	2	5.3
			Nemouridae	5	13.1
			Perlidae	1	2.6
			Perlodidae	2	5.3
		Trichoptera	Apataniidae	1	2.6
			Brachycentridae	7	18.4
			Glossosomatidae	8	21.0
			Hydroptilidae	3	7.9
			Limnephilidae	22	57.9
			Rhyacophilidae	11	28.9
	Ostracoda			1	2.6
Mollusca	Bivalvia	Veneroida	Pisidiidae	11	28.9
			Total	596	1,568.2

Metrics

Name	NGKMB01	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.87	0.4 \pm 0.2
Biotic Indices		
Hilsenhoff Family index (North-West)	5.0	3.2 \pm 0.7
Intolerant taxa	--	
Long-lived taxa	2.0	1.9 \pm 1.3
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	1.2	1.8 \pm 1.6
% Gatherers	82.0	52.4 \pm 14.6
% Predatores	66.6	18.3 \pm 13.3
% Scrapers	27.2	61.8 \pm 17.2
% Shredder	20.8	30.3 \pm 18.6
No. Clinger Taxa	16.0	19.8 \pm 3.9
Number Of Individuals		
% Chironomidae	58.0	8.2 \pm 13.6
% Coleoptera	13.9	0.8 \pm 1.9
% Diptera + Non-insects	65.1	14.3 \pm 14.2
% Ephemeroptera	7.6	43.3 \pm 15.7
% Ephemeroptera that are Baetidae	4.4	33.9 \pm 27.7
% EPT Individuals	20.6	84.9 \pm 14.3
% Odonata	0.0	0.0 \pm 0.0
% of 2 dominant taxa	71.9	58.9 \pm 10.0
% of 5 dominant taxa	82.2	83.8 \pm 7.3
% of dominant taxa	58.0	39.5 \pm 10.9
% Plecoptera	4.2	34.7 \pm 17.8
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	--	27.8 \pm 25.2
% Tricoptera	8.8	6.9 \pm 8.6
No. EPT individuals/Chironomids+EPT Individuals	0.3	0.9 \pm 0.1
Total Abundance	1568.3	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	4.0	3.4 \pm 1.0
Ephemeroptera taxa	4.0	3.4 \pm 0.5
EPT Individuals (Sum)	321.0	4527.1 \pm 3161.8
EPT taxa (no)	16.0	11.5 \pm 1.2
Odonata taxa	0.0	0.0 \pm 0.0
Pielou's Evenness	0.5	0.7 \pm 0.1
Plecoptera taxa	6.0	5.3 \pm 0.9
Shannon-Wiener Diversity	1.8	1.9 \pm 0.3

Metrics

Name	NGKMB01	Predicted Group Reference Mean \pm SD
Simpson's Diversity	0.6	0.8 \pm 0.1
Simpson's Evenness	0.1	0.3 \pm 0.1
Total No. of Taxa	29.0	17.7 \pm 2.6
Trichoptera taxa	6.0	2.8 \pm 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NGKMB01
	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%	0.94
EphemereIIDae	78%	100%	100%	100%	100%	1.00
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.79
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.88
Psychodidae	22%	65%	94%	8%	11%	0.89
Rhyacophilidae	100%	92%	100%	100%	95%	0.99
Taeniopterygidae	89%	49%	100%	92%	97%	0.96

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	13.67
RIVPACS : Observed taxa P>0.50	13.00
RIVPACS : O:E (p > 0.5)	0.95
RIVPACS : Expected taxa P>0.70	10.46
RIVPACS : Observed taxa P>0.70	8.00
RIVPACS : O:E (p > 0.7)	0.77

Habitat Description

Variable	NGKMB01	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)	12.6	22.5 \pm 10.5
Depth-Max (cm)	19.0	32.9 \pm 17.9
Macrophyte (PercentRange)	0	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)	0	1 \pm 0
Slope (m/m)	0.0200000	0.0235102 \pm 0.0284557
Veg-Coniferous (Binary)	1	1 \pm 0
Veg-Deciduous (Binary)	0	1 \pm 0
Veg-GrassesFerns (Binary)	1	1 \pm 0
Veg-Shrubs (Binary)	1	1 \pm 0
Velocity-Avg (m/s)	0.13	0.50 \pm 0.25
Velocity-Max (m/s)	0.15	0.75 \pm 0.28
Width-Bankfull (m)	2.8	15.6 \pm 12.8
Width-Wetted (m)	2.7	10.2 \pm 7.0
XSEC-VelInstrumentDirect (Category (1-3))	3	2
XSEC-VelMethod (Category (1-3))	3	2 \pm 1
Climate		

Habitat Description

Variable	NGKMB01	Predicted Group Reference Mean \pm SD
Precip01_JAN (mm)	74.00000	86.74590 \pm 34.16045
Precip02_FEB (mm)	57.00000	69.04735 \pm 26.39011
Precip03_MAR (mm)	51.00000	64.57566 \pm 18.91423
Precip04_APR (mm)	74.00000	86.74590 \pm 34.16045
Precip05_MAY (mm)	60.00000	67.06098 \pm 7.34190
Precip06_JUN (mm)	64.00000	73.16508 \pm 8.19897
Precip07_JUL (mm)	52.00000	59.23624 \pm 10.43324
Precip08_AUG (mm)	46.00000	57.24656 \pm 12.22117
Precip09_SEP (mm)	44.00000	50.72037 \pm 11.15833
Precip10_OCT (mm)	49.00000	52.92857 \pm 22.22704
Precip11_NOV (mm)	76.00000	87.53373 \pm 31.98739
Precip12_DEC (mm)	80.00000	93.52725 \pm 32.58764
PrecipTotal_ANNUAL (mm)	702.00000	818.18624 \pm 207.74339
Temp01_JANMax (Degrees Celsius)	-4.00000	-5.23929 \pm 1.38664
Temp01_JANmin (Degrees Celsius)	-13.00000	-13.71495 \pm 2.15775
Temp02_FEBmax (Degrees Celsius)	-1.00000	-2.11812 \pm 1.36153
Temp02_FEBmin (Degrees Celsius)	-10.00000	-11.26786 \pm 1.82315
Temp03_MARmax (Degrees Celsius)	3.00000	0.95304 \pm 1.72292
Temp03_MARmin (Degrees Celsius)	-6.00000	-7.99378 \pm 1.86235
Temp04_APRmax (Degrees Celsius)	8.00000	5.89775 \pm 2.29856
Temp04_APRmin (Degrees Celsius)	-3.00000	-3.52196 \pm 1.40541
Temp05_MAYmax (Degrees Celsius)	13.00000	10.80516 \pm 2.26497
Temp05_MAYmin (Degrees Celsius)	0.00000	0.15132 \pm 0.77159
Temp06_JUNMax (Degrees Celsius)	17.00000	14.89775 \pm 2.29856
Temp06_JUNMin (Degrees Celsius)	4.00000	2.98532 \pm 1.30119
Temp07_JULmax (Degrees Celsius)	21.00000	18.39881 \pm 2.25732
Temp07_JULmin (Degrees Celsius)	6.00000	5.51058 \pm 1.28471
Temp08_AUGmax (Degrees Celsius)	21.00000	18.26442 \pm 2.32790
Temp08_AUGmin (Degrees Celsius)	6.00000	5.11071 \pm 1.22615
Temp09_SEPmax (Degrees Celsius)	15.00000	13.01495 \pm 2.08648
Temp09_SEPmin (Degrees Celsius)	1.00000	1.09127 \pm 1.16620
Temp10_OCTmax (Degrees Celsius)	8.00000	6.62235 \pm 1.52687
Temp10_OCTmin (Degrees Celsius)	-2.00000	-1.89907 \pm 1.00747
Temp11_NOVmax (Degrees Celsius)	0.00000	-1.28638 \pm 1.23662
Temp11_NOVmin (Degrees Celsius)	-7.00000	-8.37103 \pm 1.70714
Temp12_DECmax (Degrees Celsius)	-5.00000	-5.50172 \pm 1.56005
Temp12_DECmin (Degrees Celsius)	-12.00000	-12.82063 \pm 2.01422
TempANNUALmax (Degrees Celsius)	8.00000	5.95278 \pm 1.80268
TempANNUALmean (Degrees Celsius)	2.00000	0.92011 \pm 1.31158
TempANNUALmin (Degrees Celsius)	-3.00000	-3.49114 \pm 1.47732
Hydrology		
Drainage-Area (km ²)	2.00803	166.32560 \pm 185.60049
Perimeter (Km)	7.68886	75.52547 \pm 54.66392
StreamDensity (m/km ²)	1452.70007	2635.49639 \pm 656.67294
StreamLength (m)	2917.06	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 (%)	0.00000	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 (%)	0.00000	9.07482 \pm 13.04849
Natl-ConiferousOpen (%)	93.28678	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 (%)	0.00000	0.00000 \pm 0.00000
Natl-ExposedLand (%)	0.00000	14.05381 \pm 9.29865
Natl-Grassland (%)	0.00000	4.92979 \pm 5.99508
Natl-Herb (%)	0.18177	6.99262 \pm 5.00471
Natl-MixedForest (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodDense (%)	0.00000	0.00129 \pm 0.00548

Habitat Description

Variable	NGKMB01	Predicted Group Reference Mean \pm SD
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 (%)	0.04042	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
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		
Dominant-1st (Category(0-9))	0	6 \pm 1
Dominant-2nd (Category(0-9))	4	6 \pm 2
Embeddedness (Category(1-5))	3	4 \pm 1
SurroundingMaterial (Category(0-9))	8	3 \pm 1
Topography		
ElevationMax (m)	1814.00000	2690.61111 \pm 390.38324
ElevationMin (m)	1218.00000	1251.33333 \pm 280.98168
ElevationStdev (m)	151.56862	287.70131 \pm 73.20073
Reg-SlopeLT30% (%)	70.66000	27.92073 \pm 14.83033
Slope30-50% (%)	39.21833	27.15573 \pm 3.09032
Slope50-60% (%)	18.77808	12.76339 \pm 3.54018
SlopeAvg (%)	47.74728	48.68089 \pm 8.41381
SlopeGT60% (%)	24.03414	30.74349 \pm 11.05846
SlopeLT30% (%)	17.96945	29.33739 \pm 12.62448
SlopeMax (%)	129.25969	616.97887 \pm 680.88955
SlopeMin (%)	1.32668	0.03296 \pm 0.13984
SlopeStdev (%)	19.28639	28.19409 \pm 6.96382
Water Chemistry		
Ca (mg/L)	25.9000000	38.6142857 \pm 14.8464843
General-Alkalinity (mg/L)	96.4000000	121.5944444 \pm 36.7225924
General-DO (mg/L)	12.0000000	10.4922222 \pm 0.8833463
General-Hardness (mg/L)	102.0000000	146.8222222 \pm 41.6699011
General-pH (pH)	8.2	8.0 \pm 0.6
General-SolidsTSS (mg/L)	0.0000000	0.5604289 \pm 1.4627232
Mg (mg/L)	8.9500000	9.8814286 \pm 6.1601202
Nitrogen-TN (mg/L)	0.1000000	0.0688889 \pm 0.0759171
Phosphorus-TP (mg/L)	0.0000000	0.0032778 \pm 0.0061816