

Site Description

Study Name	CBWQ-Elk
Site	A1x-01
Sampling Date	Oct 29 2013
Know Your Watershed Basin	Central Kootenay
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Northern Continental Divide EcoRegion
Coordinates (decimal degrees)	49.67396 N, 114.77993 W
Altitude	4002
Local Basin Name	Alexander Creek
	Elk River
Stream Order	4

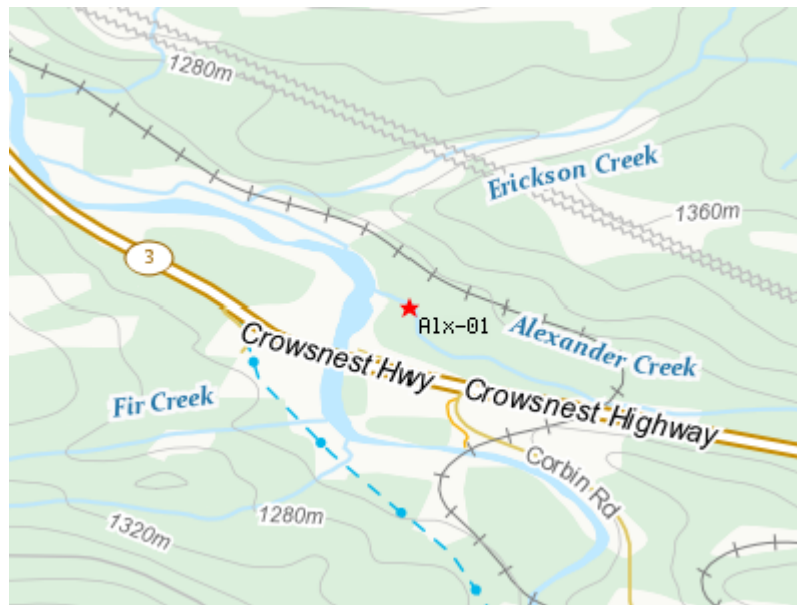


Figure 1. Location Map



Across Reach



Down Stream

Field Crew: Allie Dickhout, Ayla Bennett Site Code: Atx-01
Sampling Date: (DD/MM/YY) 29/10/2013

Occupational Health & Safety: Site Inspection Sheet completed

PRIMARY SITE DATA EIK River
CABIN Study Name: EIK River Tributaries Local Basin Name: Alexander
River/Stream Name: Alexander Creek Stream Order: (map scale 1:50,000) 4th
Select one: Test Site Potential Reference Site

Geographical Description/Notes: Alexander Creek, near mouth (confluence with Michel Creek) approx. 15 km east of Sparwood, BC. Parked at 3rd bridge over Michel Creek coming from Sparwood

Surrounding Land Use: (check those present) Information Source: visual/local knowledge
 Forest Field/Pasture Agriculture Residential/Urban
 Logging Mining Commercial/Industrial Other railway, highway

Dominant Surrounding Land Use: (check one) Information Source: visual/local knowledge
 Forest Field/Pasture Agriculture Residential/Urban
 Logging Mining Commercial/Industrial Other _____

Location Data
Latitude: 49°40'26.26"N Longitude: -114°46'47.73"W (DMS or DD)
Elevation: 1220 (ft or m) GPS Datum: GRS80 (NAD83/WGS84) Other _____

Site Location Map Drawing

Note: Indicate north

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Field Sheet



Up Stream

Cabin Assessment Results

Reference Model Summary					
Model	Columbia-Okanagan Preliminary March 2010				
Analysis Date	April 10, 2015				
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	0.1%	0.2%	85.7%	12.4%	1.6%
CABIN Assessment of Alx-01 on Oct 29, 2013	Mildly Divergent				

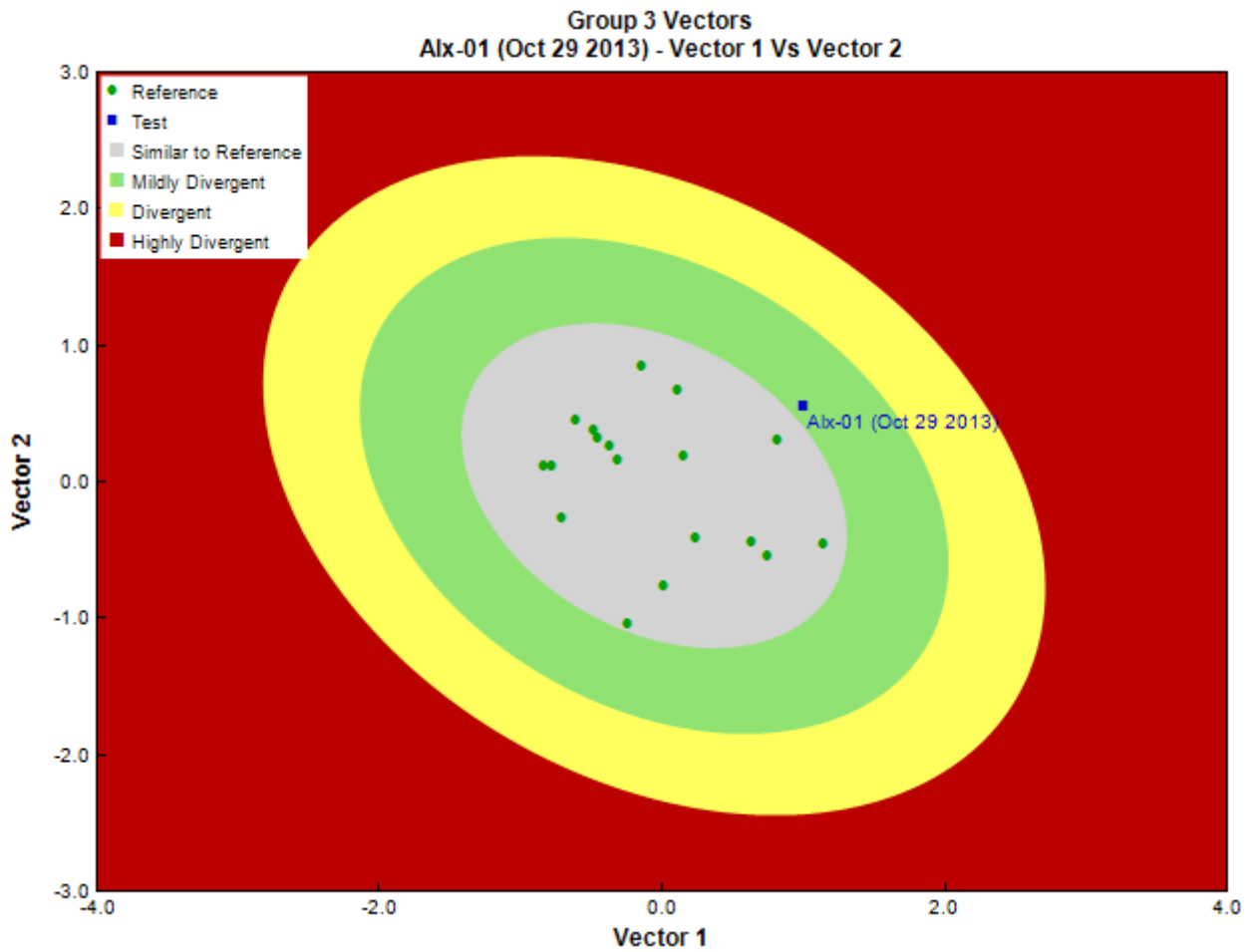


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	4/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	2	50.0
		Tubificida	Naididae	1	25.0
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	2	50.0
	Insecta	Coleoptera	Elmidae	1	25.0
Diptera			Chironomidae	49	1,225.0
			Empididae	1	25.0
			Psychodidae	7	175.0
			Tipulidae	3	75.0
		Ephemeroptera	Ameletidae	2	50.0
			Baetidae	17	425.0
			Ephemerellidae	54	1,350.0
			Heptageniidae	28	700.0
		Plecoptera	Capniidae	3	75.0
			Chloroperlidae	4	100.0
		Nemouridae	138	3,450.0	

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Perlodidae	3	75.0
			Taeniopterygidae	18	450.0
		Trichoptera	Apataniidae	3	75.0
			Brachycentridae	1	25.0
			Glossosomatidae	3	75.0
			Hydropsychidae	1	25.0
			Rhyacophilidae	8	200.0
			Uenoidae	1	25.0
			Total	350	8,750.0

Metrics

Name	Alx-01	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.59	0.4 \pm 0.2
Biotic Indices		
Long-lived taxa	1.0	1.9 \pm 1.3
Number Of Individuals		
No. EPT individuals/Chironomids+EPT Individuals	0.9	0.9 \pm 0.1
Total Abundance	8750.0	5757.3 \pm 4889.9
Richness		
EPT taxa (no)	15.0	11.5 \pm 1.2
Total No. of Taxa	23.0	17.1 \pm 2.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at Alx-01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	56%	53%	22%	50%	68%	0.26
Apataniidae	22%	24%	28%	25%	3%	0.27
Athericidae	0%	2%	0%	17%	0%	0.02
Aturidae	0%	8%	0%	0%	0%	0.00
Baetidae	100%	100%	100%	100%	97%	1.00
Blephariceridae	0%	0%	0%	0%	5%	0.00
Brachycentridae	11%	69%	0%	42%	3%	0.05
Capniidae	78%	55%	50%	92%	68%	0.55
Ceratopogonidae	0%	55%	28%	42%	5%	0.29
Chironomidae	100%	100%	100%	100%	95%	1.00
Chloroperlidae	78%	88%	94%	100%	100%	0.95
Corixidae	11%	0%	0%	0%	0%	0.00
Curculionidae	0%	4%	0%	0%	0%	0.00
Deuterophlebiidae	0%	0%	0%	0%	3%	0.00
Dixidae	0%	10%	0%	0%	0%	0.00
Dytiscidae	0%	8%	6%	0%	0%	0.05
Elmidae	0%	86%	50%	50%	5%	0.49
Empididae	67%	55%	50%	67%	57%	0.52
Enchytraeidae	11%	14%	0%	8%	0%	0.01
Ephemerellidae	78%	100%	100%	100%	100%	1.00
Ephydriidae	0%	2%	0%	0%	0%	0.00
Glossosomatidae	11%	49%	39%	42%	35%	0.39
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydraenidae	0%	4%	0%	0%	0%	0.00
Hydrophilidae	11%	2%	0%	0%	0%	0.00
Hydropsychidae	11%	92%	78%	92%	86%	0.80
Hydroptilidae	11%	8%	0%	0%	0%	0.00
Hydrozetidae	0%	10%	17%	8%	16%	0.16
Hydryphantidae	11%	31%	11%	8%	8%	0.11
Hygrobatidae	0%	29%	0%	0%	11%	0.00
Lebertiidae	78%	65%	39%	58%	5%	0.41
Lepidostomatidae	0%	53%	6%	17%	8%	0.07
Leptohyphidae	0%	2%	0%	0%	0%	0.00
Leptophlebiidae	0%	90%	11%	33%	3%	0.14
Leuctridae	22%	43%	56%	67%	54%	0.57

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at Aix-01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Limnephilidae	22%	31%	6%	25%	41%	0.09
Limnesiidae	0%	2%	0%	0%	0%	0.00
Lumbriculidae	0%	20%	17%	25%	3%	0.17
Mideopsidae	0%	2%	0%	0%	0%	0.00
Naididae	0%	6%	39%	0%	3%	0.33
Nemouridae	100%	100%	100%	100%	100%	1.00
Pelecoryhynchidae	0%	22%	6%	0%	0%	0.05
Peltoperlidae	22%	12%	6%	8%	41%	0.06
Perlidae	11%	84%	33%	100%	3%	0.41
Perlodidae	78%	78%	89%	92%	81%	0.89
Philopotamidae	0%	31%	0%	0%	3%	0.00
Pisidiidae	0%	6%	0%	8%	0%	0.01
Planariidae	0%	8%	67%	17%	3%	0.59
Planorbidae	0%	0%	0%	0%	3%	0.00
Psychodidae	22%	65%	94%	8%	11%	0.82
Pteronarcyidae	0%	12%	6%	0%	3%	0.05
Rhyacophilidae	100%	92%	100%	100%	95%	1.00
Simuliidae	33%	49%	39%	33%	16%	0.38
Sperchontidae	78%	63%	50%	42%	65%	0.49
Stygothrombidiidae	0%	4%	0%	17%	0%	0.02
Taeniopterygidae	89%	49%	100%	92%	97%	0.99
Thaumaleidae	11%	4%	0%	0%	0%	0.00
Tipulidae	56%	55%	28%	67%	43%	0.33
Torrenticolidae	11%	86%	11%	17%	11%	0.12
Tubificidae	0%	2%	0%	0%	0%	0.00
Uenoidae	22%	37%	17%	25%	46%	0.18
Valvatidae	0%	2%	6%	0%	0%	0.05

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	12.69
RIVPACS : Observed taxa P>0.50	13.00
RIVPACS : O:E (p > 0.5)	1.02
RIVPACS : Expected taxa P>0.70	10.45
RIVPACS : Observed taxa P>0.70	11.00
RIVPACS : O:E (p > 0.7)	1.05

Habitat Description

Variable	Aix-01	Predicted Group Reference Mean \pm SD
Channel		
Depth-Avg (cm)	30.0	22.5 \pm 10.5
Depth-BankfullMinusWetted (cm)	12.00	67.33 \pm 71.65
Depth-Max (cm)	60.0	32.9 \pm 17.9
Macrophyte (PercentRange)	0	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	1.00	0.94 \pm 0.80
Reach-DomStreamsideVeg (Category (1-4))	4	3 \pm 1
Reach-Pools (Binary)	0	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)	0.0060000	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)	0.55	0.51 \pm 0.25
Velocity-Max (m/s)	0.99	0.75 \pm 0.28
Width-Bankfull (m)	13.2	15.6 \pm 12.8
Width-Wetted (m)	11.5	10.2 \pm 7.0
XSEC-VelMethod (Category (1-3))	1	2 \pm 1

Habitat Description

Variable	Alx-01	Predicted Group Reference Mean \pm SD
Landcover		
Reg-Ice (%)	0.00000	0.46949 \pm 1.15785
Substrate Data		
%Bedrock (%)	0	0 \pm 0
%Boulder (%)	3	6 \pm 7
%Cobble (%)	37	61 \pm 27
%Gravel (%)	9	1 \pm 2
%Pebble (%)	49	31 \pm 28
%Sand (%)	1	0 \pm 0
%Silt+Clay (%)	1	1 \pm 3
D50 (cm)	5.05	79.45 \pm 47.98
Dg (cm)	4.9	73.9 \pm 48.0
Dominant-1st (Category(0-9))	5	6 \pm 2
Dominant-2nd (Category(0-9))	7	6 \pm 2
Embeddedness (Category(1-5))	3	4 \pm 1
PeriphytonCoverage (Category(1-5))	3	2 \pm 1
SurroundingMaterial (Category(0-9))	3	4 \pm 2
Topography		
Reg-SlopeLT30% (%)	37.93000	27.92073 \pm 14.83033
SlopeLT30% (%)	37.93000	27.74594 \pm 10.84742
Water Chemistry		
General-Conductivity (μ S/cm)	254.0000000	186.8500000 \pm 84.0864011
General-DO (mg/L)	11.0000000	10.4922222 \pm 0.8833463
General-pH (pH)	8.6	8.0 \pm 0.6
General-SolidsTSS (mg/L)	0.5000000	0.5604289 \pm 1.4627232
General-TempAir (Degrees Celsius)	-2.0	10.5 \pm 4.2
General-TempWater (Degrees Celsius)	1.1000000	6.6716667 \pm 2.0277755
General-Turbidity (NTU)	0.0000000	0.0000000 \pm 0.0000000
Nitrogen-NO2 (mg/L)	0.0049500	0.0023889 \pm 0.0063351
Nitrogen-NO2+NO3 (mg/L)	0.0350000	0.0130000 \pm 0.0088111
Nitrogen-NO3 (mg/L)	0.1600000	0.0245003 \pm 0.0229452
Phosphorus-TP (mg/L)	0.0015000	0.0032778 \pm 0.0061816