

Site Description

Study Name	CBWQ-Windermere
Site	NAWIN01
Sampling Date	Sep 23 2009
Know Your Watershed Basin	Upper Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Western Continental Ranges EcoRegion
Coordinates (decimal degrees)	50.47642 N, 115.84508 W
Altitude	4268
Local Basin Name	Windermere Creek
Stream Order	4



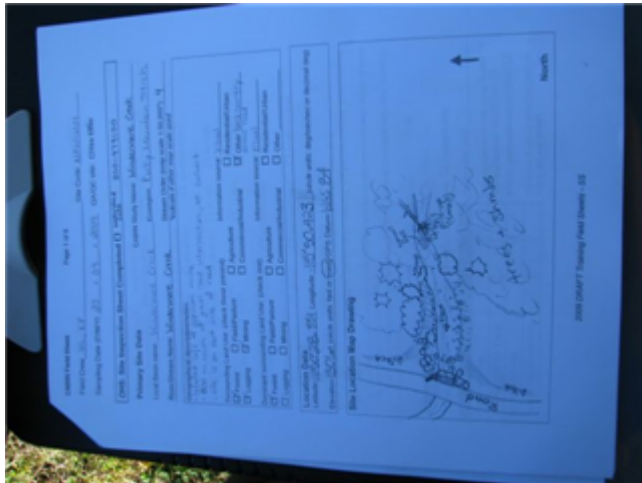
Figure 1. Location Map



Across Reach
Aerial (No image found)

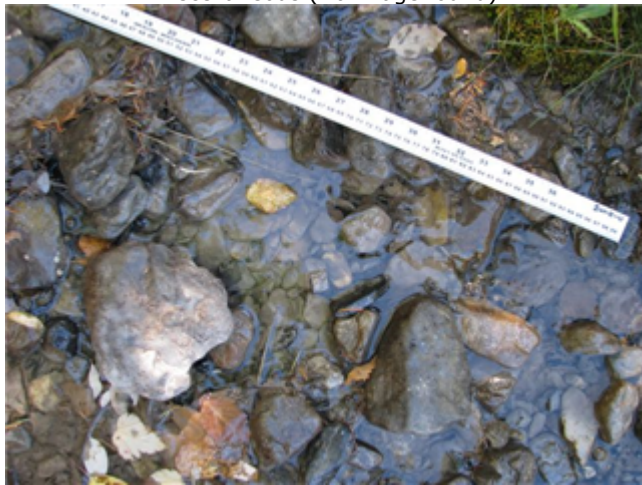


Down Stream



Field Sheet

Miscellaneous (No image found)



Substrate



Up Stream

Cabin Assessment Results

Reference Model Summary					
Model	Columbia-Okanagan Preliminary March 2010				
Analysis Date	November 07, 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%	0.1%	31.3%	28.3%	40.3%
CABIN Assessment of NAWIN01 on Sep 23, 2009	Similar to Reference				

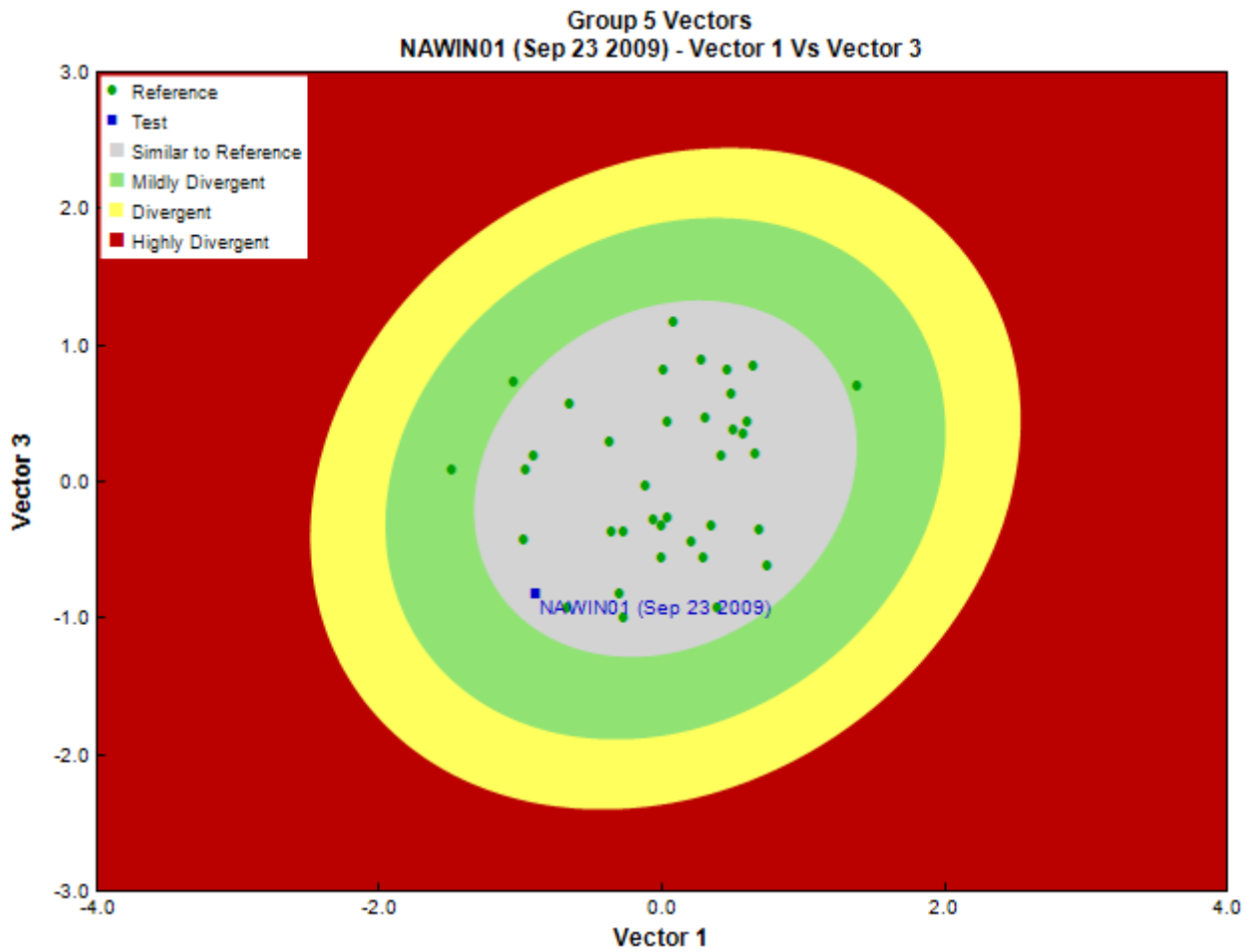


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Eco Analsyts, EcoAnalysts
Date Taxonomy Completed	February 26, 2010
	Marchant Box
Sub-Sample Proportion	44/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	8	18.2
Arthropoda	Insecta	Arachnida		1	2.3
			Sarcoptiformes	4	9.1
		Diptera		1	2.3
			Chironomidae	53	120.4
			Simuliidae	16	36.4
			Tipulidae	2	4.5
		Ephemeroptera	Ameletidae	29	65.9
			Baetidae	44	100.0
			Ephemerellidae	16	36.4
			Heptageniidae	10	22.7
		Plecoptera	Capniidae	13	29.5
			Nemouridae	53	120.4
			Perlodidae	1	2.3
			Taeniopterygidae	67	152.3

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
		Trichoptera	Rhyacophilidae	2	4.5
			Total	320	727.2

NAWIN04 2013 and 2014 - question of Group Placement. will run separate Reports

Metrics

Name	NAWIN01	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.52	0.4 \pm 0.1
Biotic Indices		
Hilsenhoff Family index (North-West)	3.5	2.8 \pm 0.3
Intolerant taxa	--	1.0 \pm 0.0
Long-lived taxa	--	1.0 \pm 0.0
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	5.0	1.7 \pm 1.7
% Gatherers	71.3	50.6 \pm 14.6
% Predatores	22.5	15.3 \pm 9.0
% Scrapers	42.8	67.2 \pm 16.8
% Shredder	42.2	38.1 \pm 18.2
No. Clinger Taxa	9.0	19.8 \pm 3.4
Number Of Individuals		
% Chironomidae	16.9	4.6 \pm 5.0
% Coleoptera	0.0	0.0 \pm 0.0
% Diptera + Non-insects	25.2	6.3 \pm 5.3
% Ephemeroptera	31.5	44.9 \pm 17.3
% Ephemeroptera that are Baetidae	44.4	26.1 \pm 20.5
% EPT Individuals	74.8	93.7 \pm 5.3
% Odonata	--	0.0 \pm 0.0
% of 2 dominant taxa	38.2	60.2 \pm 11.4
% of 5 dominant taxa	78.3	84.5 \pm 5.9
% of dominant taxa	21.3	39.3 \pm 12.3
% Plecoptera	42.7	42.9 \pm 17.2
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	0.0	27.4 \pm 27.1
% Tricoptera	0.6	5.8 \pm 5.7
No. EPT individuals/Chironomids+EPT Individuals	0.8	1.0 \pm 0.1
Total Abundance	727.2	2163.6 \pm 1274.4
Richness		
Chironomidae taxa (genus level only)	1.0	0.9 \pm 0.2
Coleoptera taxa	0.0	0.1 \pm 0.2
Diptera taxa	3.0	2.4 \pm 1.0
Ephemeroptera taxa	4.0	3.7 \pm 0.5
EPT Individuals (Sum)	534.1	2023.9 \pm 1195.7
EPT taxa (no)	9.0	12.3 \pm 1.9
Odonata taxa	--	0.0 \pm 0.0
Pielou's Evenness	0.8	0.7 \pm 0.1
Plecoptera taxa	4.0	5.5 \pm 1.1
Shannon-Wiener Diversity	2.1	1.9 \pm 0.3
Simpson's Diversity	0.9	0.8 \pm 0.1
Simpson's Evenness	0.6	0.3 \pm 0.1
Total No. of Taxa	13.0	16.0 \pm 3.0
Trichoptera taxa	1.0	3.2 \pm 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99
Chironomidae	100%	100%	100%	100%	95%	0.98
Chloroperlidae	78%	88%	94%	100%	100%	0.98

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN01
	Group 1	Group 2	Group 3	Group 4	Group 5	
EphemereIIDae	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
Perlodidae	78%	78%	89%	92%	81%	0.87
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.97

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	11.99
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	0.75
RIVPACS : Expected taxa P>0.70	9.61
RIVPACS : Observed taxa P>0.70	8.00
RIVPACS : O:E (p > 0.7)	0.83

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Alluvium (%)	0.00000	0.00000 \pm 0.00000
Intrusive (%)	0.00000	0.46153 \pm 2.09955
Metamorphic (%)	0.00000	0.17691 \pm 0.85012
Sedimentary (%)	100.00000	99.36155 \pm 2.22799
Ultramafic (%)	0.00000	0.00000 \pm 0.00000
Volcanic (%)	0.00000	0.00000 \pm 0.00000
Channel		
Depth-Avg (cm)	4.9	21.5 \pm 9.7
Depth-BankfullMinusWetted (cm)	20.00	38.14 \pm 36.11
Depth-Max (cm)	6.5	31.0 \pm 16.5
Macrophyte (PercentRange)	0	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	3.00	1.54 \pm 1.28
Reach-DomStreamsideVeg (Category (1-4))	4	3 \pm 1
Reach-Pools (Binary)	1	1 \pm 0
Reach-Rapids (Binary)	0	0 \pm 0
Reach-Riffles (Binary)	1	1 \pm 0
Reach-StraightRun (Binary)	0	0 \pm 1
Slope (m/m)	0.0360000	0.0581357 \pm 0.0554952
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)	0.25	0.51 \pm 0.27
Velocity-Max (m/s)	0.31	0.78 \pm 0.40
Width-Bankfull (m)	3.4	13.7 \pm 16.4
Width-Wetted (m)	1.6	9.0 \pm 13.1
XSEC-VelMethod (Category (1-3))	1	2 \pm 1
Climate		
Precip01_JAN (mm)	78.00000	130.45668 \pm 67.17180
Precip02_FEB (mm)	63.00000	102.48242 \pm 52.12836
Precip03_MAR (mm)	61.00000	89.80929 \pm 42.79174
Precip04_APR (mm)	78.00000	135.11134 \pm 66.06707
Precip05_MAY (mm)	63.00000	70.51109 \pm 13.79432
Precip06_JUN (mm)	70.00000	86.65922 \pm 19.93623
Precip07_JUL (mm)	64.00000	79.11475 \pm 19.88523
Precip08_AUG (mm)	64.00000	76.86606 \pm 21.34619
Precip09_SEP (mm)	52.00000	71.16784 \pm 23.11306
Precip10_OCT (mm)	51.00000	88.14083 \pm 44.84739
Precip11_NOV (mm)	83.00000	134.64587 \pm 63.61897
Precip12_DEC (mm)	91.00000	142.32359 \pm 65.85239

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
PrecipTotal_ANNUAL (mm)	795.00000	1143.02476 \pm 453.62461
Temp01_JANMax (Degrees Celsius)	-6.00000	-6.18206 \pm 1.69263
Temp01_JANmin (Degrees Celsius)	-16.00000	-13.62029 \pm 2.05208
Temp02_FEBmax (Degrees Celsius)	-3.00000	-2.89816 \pm 1.88421
Temp02_FEBmin (Degrees Celsius)	-13.00000	-11.14625 \pm 1.99282
Temp03_MARmax (Degrees Celsius)	0.00000	0.98920 \pm 2.35950
Temp03_MARmin (Degrees Celsius)	-9.00000	-7.98295 \pm 1.94687
Temp04_APRmax (Degrees Celsius)	5.00000	5.37616 \pm 3.02243
Temp04_APRmin (Degrees Celsius)	-5.00000	-3.74673 \pm 1.66191
Temp05_MAYmax (Degrees Celsius)	10.00000	10.12548 \pm 3.18022
Temp05_MAYmin (Degrees Celsius)	0.00000	0.09616 \pm 1.15628
Temp06_JUNMax (Degrees Celsius)	14.00000	13.85415 \pm 3.23839
Temp06_JUNMin (Degrees Celsius)	2.00000	2.79527 \pm 1.60213
Temp07_JULmax (Degrees Celsius)	17.00000	17.45582 \pm 3.27590
Temp07_JULmin (Degrees Celsius)	4.00000	4.99257 \pm 1.52992
Temp08_AUGmax (Degrees Celsius)	17.00000	17.36896 \pm 3.11866
Temp08_AUGmin (Degrees Celsius)	4.00000	4.84827 \pm 1.46649
Temp09_SEPmax (Degrees Celsius)	12.00000	12.13974 \pm 2.86510
Temp09_SEPmin (Degrees Celsius)	0.00000	1.12535 \pm 1.20660
Temp10_OCTmax (Degrees Celsius)	6.00000	5.04078 \pm 2.46521
Temp10_OCTmin (Degrees Celsius)	-3.00000	-2.41023 \pm 1.18961
Temp11_NOVmax (Degrees Celsius)	-3.00000	-2.24818 \pm 1.93047
Temp11_NOVmin (Degrees Celsius)	-10.00000	-8.35137 \pm 1.96467
Temp12_DECmax (Degrees Celsius)	-7.00000	-6.49458 \pm 1.76429
Temp12_DECmin (Degrees Celsius)	-15.00000	-12.72330 \pm 1.87798
TempANNUALmax (Degrees Celsius)	5.00000	5.16639 \pm 2.57569
TempANNUALmean (Degrees Celsius)	0.00000	0.71683 \pm 1.81248
TempANNUALmin (Degrees Celsius)	-5.00000	-3.38604 \pm 1.60598
Hydrology		
Drainage-Area (km ²)	1.92955	135.66658 \pm 373.96803
Perimeter (Km)	8.58990	55.78285 \pm 83.00734
StreamDensity (m/km ²)	1879.81859	2198.74079 \pm 886.68339
StreamLength (m)	3627.20	293250.33 \pm 851854.38
Landcover		
Natl-AnnCrops (%)	0.00000	0.00000 \pm 0.00000
Natl-Barren (%)	0.00000	0.00000 \pm 0.00000
Natl-BroadleafDense (%)	0.00000	0.00523 \pm 0.02638
Natl-BroadleafOpen (%)	0.00000	1.35705 \pm 2.04550
Natl-BroadleafSparse (%)	0.00000	0.31953 \pm 0.53788
Natl-Coniferous (%)	0.00000	0.00000 \pm 0.00000
Natl-ConiferousDense (%)	1.87137	4.95677 \pm 7.46543
Natl-ConiferousOpen (%)	77.74379	34.34335 \pm 18.65764
Natl-ConiferousSparse (%)	0.00000	1.39163 \pm 1.60111
Natl-Deciduous (%)	0.00000	0.00000 \pm 0.00000
Natl-Developed (%)	0.00000	0.00002 \pm 0.00009
Natl-ExposedLand (%)	2.18266	16.95282 \pm 9.64125
Natl-Grassland (%)	0.16214	5.60615 \pm 5.17505
Natl-Herb (%)	6.70339	2.04978 \pm 2.79736
Natl-MixedForest (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodDense (%)	0.00000	0.02636 \pm 0.08976
Natl-MixedwoodOpen (%)	0.00000	2.10440 \pm 2.63686
Natl-MixedwoodSparse (%)	0.00000	0.01817 \pm 0.04448
Natl-PerennCropsPast (%)	0.00000	0.00000 \pm 0.00000
Natl-Rock/Rubble (%)	0.00000	6.97447 \pm 7.52078
Natl-Shrubland (%)	0.00000	0.00000 \pm 0.00000
Natl-ShrubLow (%)	5.87352	4.49178 \pm 5.44294
Natl-ShrubTall (%)	0.00000	0.33533 \pm 1.14136
Natl-SnowIce (%)	0.00000	7.70046 \pm 9.06096
Natl-Water (%)	0.00000	0.14384 \pm 0.45543
Natl-Wetland (%)	0.00000	0.00000 \pm 0.00000
Natl-WetlandHerb (%)	0.00000	0.00639 \pm 0.02401
Natl-WetlandShrub (%)	0.00000	0.00868 \pm 0.02574

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Natl-WetlandTreed (%)	0.00000	0.00226 \pm 0.00959
Reg-Ice (%)	0.00000	3.06094 \pm 5.65390
Substrate Data		
%Bedrock (%)	0	1 \pm 1
%Boulder (%)	0	3 \pm 3
%Cobble (%)	24	64 \pm 17
%Gravel (%)	28	2 \pm 2
%Pebble (%)	48	31 \pm 16
%Sand (%)	0	0 \pm 0
%Silt+Clay (%)	0	0 \pm 0
D50 (cm)	4.00	19.61 \pm 30.65
Dg (cm)	2.9	20.3 \pm 30.8
Dominant-1st (Category(0-9))	5	7 \pm 1
Dominant-2nd (Category(0-9))	3	6 \pm 1
Embeddedness (Category(1-5))	4	4 \pm 1
PeriphytonCoverage (Category(1-5))	1	2 \pm 1
SurroundingMaterial (Category(0-9))	2	3 \pm 1
Topography		
ElevationMax (m)	2451.00000	2829.64865 \pm 315.67549
ElevationMin (m)	1341.00000	1172.81081 \pm 249.32284
ElevationStdev (m)	268.98831	342.56455 \pm 77.02221
Reg-SlopeLT30% (%)	9.52894	16.26604 \pm 8.50298
Slope30-50% (%)	32.91724	28.13773 \pm 4.86732
Slope50-60% (%)	22.33010	14.11202 \pm 1.82185
SlopeAvg (%)	54.07872	56.75540 \pm 7.27461
SlopeGT60% (%)	33.98058	39.57775 \pm 9.82818
SlopeLT30% (%)	10.77208	18.17250 \pm 6.88627
SlopeMax (%)	140.26332	317.81636 \pm 141.61151
SlopeMin (%)	2.51720	0.79557 \pm 1.30240
SlopeStdev (%)	20.24787	29.56849 \pm 5.64880
Water Chemistry		
General-Alkalinity (mg/L)	0.5000000	68.5944444 \pm 52.1098452
General-Conductivity (μ S/cm)	558.0000000	110.5428571 \pm 89.3409737
General-DO (mg/L)	13.0000000	11.0635135 \pm 0.9899052
General-pH (pH)	8.6	7.7 \pm 0.7
General-SolidsTSS (mg/L)	4.0000000	2.8140173 \pm 7.8143482
General-TempAir (Degrees Celsius)	15.5	10.5 \pm 0.7
General-TempWater (Degrees Celsius)	6.7000000	5.5262162 \pm 1.8860693
Nitrogen-TN (mg/L)	0.0800000	0.0983333 \pm 0.0651811
Phosphorus-TP (mg/L)	0.0050000	0.0025000 \pm 0.0041986

Landslide Upstream of NAWIN03 in 2011 smothered site in fine sediment, no macro-invertebrates found

Site Description

Study Name	CBWQ-Windermere
Site	NAWIN01
Sampling Date	Aug 24 2010
Know Your Watershed Basin	Upper Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Western Continental Ranges EcoRegion
Coordinates (decimal degrees)	50.47642 N, 115.84508 W
Altitude	4268
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Stream Order	4



Figure 1. Location Map



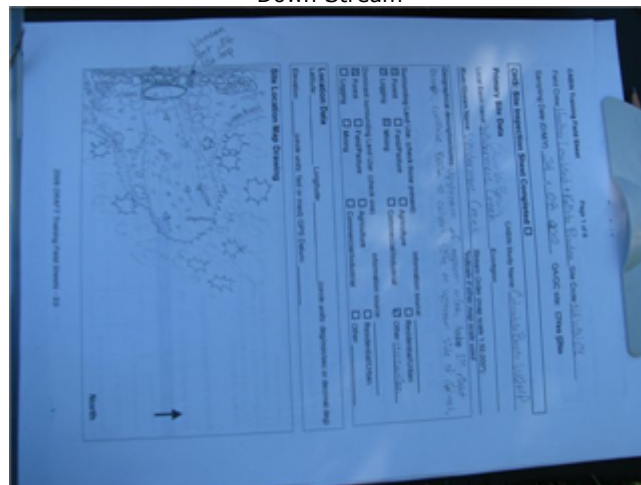
Across Reach



Aerial



Down Stream



Field Sheet
Miscellaneous (No image found)



Substrate



Up Stream

Cabin Assessment Results

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Analysis Date	November 07, 2017				
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Number of Reference Sites	9	43	17	12	33
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Overall Model Error Rate	26.4%				
Probability of Group Membership	0.0%	0.1%	31.4%	27.8%	40.8%
CABIN Assessment of NAWIN01 on Aug 24, 2010	Divergent				

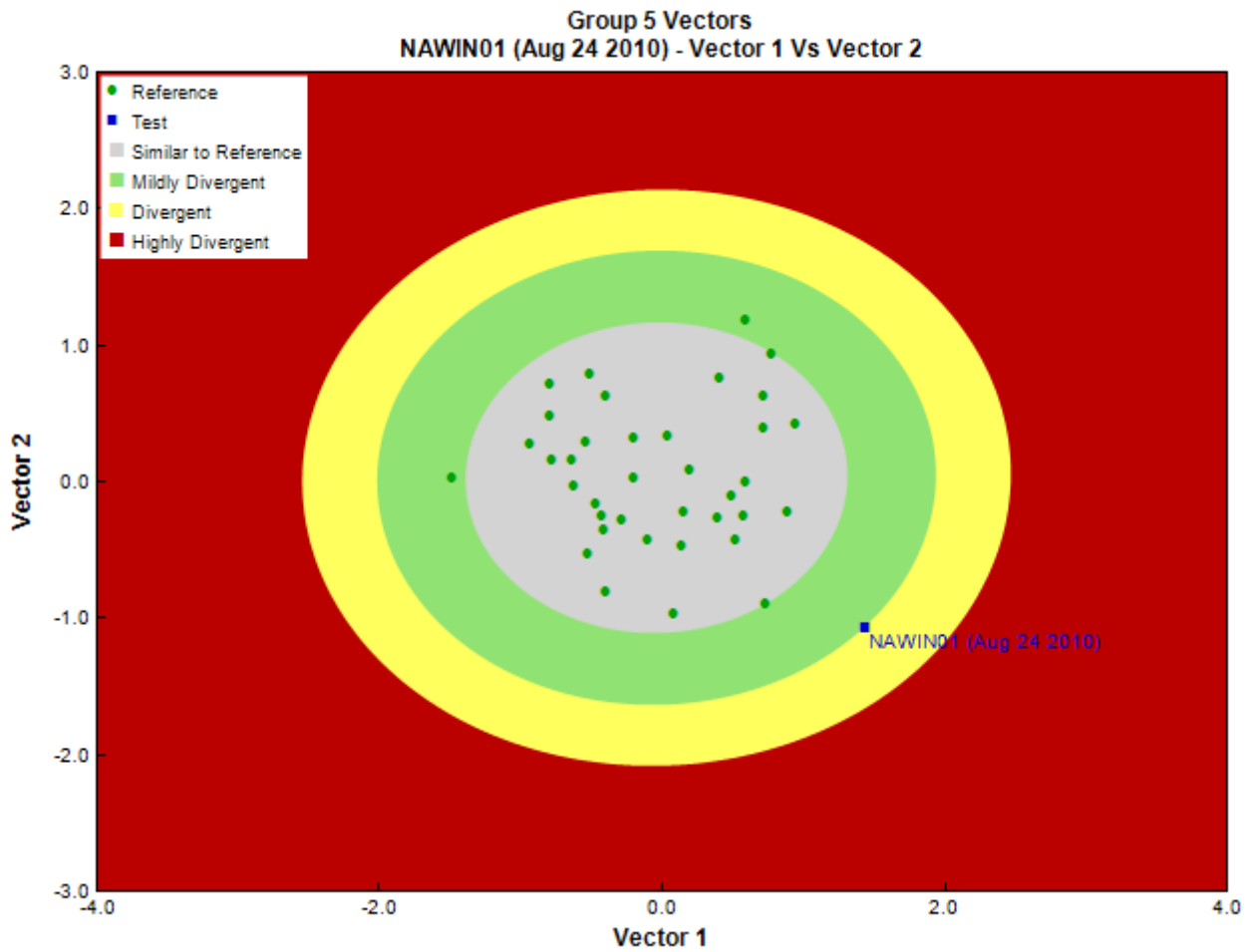


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Gary Lester, Ecoanalysts Inc.
Date Taxonomy Completed	March 09, 2011
	Marchant Box
Sub-Sample Proportion	49/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	27	55.1
Arthropoda	Insecta	Diptera		1	2.0
			Chironomidae	165	336.7
			Dixidae	3	6.1
			Empididae	2	4.1
			Tipulidae	3	6.1
		Ephemeroptera	Ameletidae	3	6.1
			Baetidae	108	220.4
			Ephemerellidae	6	12.2
			Heptageniidae	4	8.2
		Plecoptera	Capniidae	1	2.0
			Nemouridae	3	6.1
			Perlodidae	1	2.0
		Trichoptera	Hydropsychidae	1	2.0
			Limnephilidae	1	2.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Total	329	671.1

NAWIN04 2013 and 2014 - question of Group Placement. will run separate Reports

Metrics

Name	NAWIN01	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.76	0.4 \pm 0.1
Biotic Indices		
Hilsenhoff Family index (North-West)	5.4	2.8 \pm 0.3
Intolerant taxa	--	1.0 \pm 0.0
Long-lived taxa	--	1.0 \pm 0.0
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	0.3	1.7 \pm 1.7
% Gatherers	63.8	50.6 \pm 14.6
% Predatores	51.4	15.3 \pm 9.0
% Scrapers	34.3	67.2 \pm 16.8
% Shredder	2.4	38.1 \pm 18.2
No. Clinger Taxa	8.0	19.8 \pm 3.4
Number Of Individuals		
% Chironomidae	50.3	4.6 \pm 5.0
% Coleoptera	0.0	0.0 \pm 0.0
% Diptera + Non-insects	61.0	6.3 \pm 5.3
% Ephemeroptera	36.9	44.9 \pm 17.3
% Ephemeroptera that are Baetidae	89.3	26.1 \pm 20.5
% EPT Individuals	39.0	93.7 \pm 5.3
% Odonata	--	0.0 \pm 0.0
% of 2 dominant taxa	83.2	60.2 \pm 11.4
% of 5 dominant taxa	94.5	84.5 \pm 5.9
% of dominant taxa	50.3	39.3 \pm 12.3
% Plecoptera	1.5	42.9 \pm 17.2
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	50.0	27.4 \pm 27.1
% Tricoptera	0.6	5.8 \pm 5.7
No. EPT individuals/Chironomids+EPT Individuals	0.4	1.0 \pm 0.1
Total Abundance	671.4	2163.6 \pm 1274.4
Richness		
Chironomidae taxa (genus level only)	1.0	0.9 \pm 0.2
Coleoptera taxa	0.0	0.1 \pm 0.2
Diptera taxa	4.0	2.4 \pm 1.0
Ephemeroptera taxa	4.0	3.7 \pm 0.5
EPT Individuals (Sum)	261.2	2023.9 \pm 1195.7
EPT taxa (no)	9.0	12.3 \pm 1.9
Odonata taxa	--	0.0 \pm 0.0
Pielou's Evenness	0.5	0.7 \pm 0.1
Plecoptera taxa	3.0	5.5 \pm 1.1
Shannon-Wiener Diversity	1.3	1.9 \pm 0.3
Simpson's Diversity	0.6	0.8 \pm 0.1
Simpson's Evenness	0.2	0.3 \pm 0.1
Total No. of Taxa	14.0	16.0 \pm 3.0
Trichoptera taxa	2.0	3.2 \pm 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99
Chironomidae	100%	100%	100%	100%	95%	0.98
Chloroperlidae	78%	88%	94%	100%	100%	0.98
Ephemereillidae	78%	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 NAWIN01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Heptageniidae	100%	100%	100%	100%	100%	1.00
Hydropsychidae	11%	92%	78%	92%	86%	0.85
Nemouridae	100%	100%	100%	100%	100%	1.00
Perlodidae	78%	78%	89%	92%	81%	0.86
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.97

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	11.99
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	0.75
RIVPACS : Expected taxa P>0.70	9.61
RIVPACS : Observed taxa P>0.70	7.00
RIVPACS : O:E (p > 0.7)	0.73

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Alluvium (%)	0.00000	0.00000 \pm 0.00000
Intrusive (%)	0.00000	0.46153 \pm 2.09955
Metamorphic (%)	0.00000	0.17691 \pm 0.85012
Sedimentary (%)	100.00000	99.36155 \pm 2.22799
Ultramafic (%)	0.00000	0.00000 \pm 0.00000
Volcanic (%)	0.00000	0.00000 \pm 0.00000
Channel		
Depth-Avg (cm)	2.3	21.5 \pm 9.7
Depth-Max (cm)	3.3	31.0 \pm 16.5
Macrophyte (PercentRange)	0	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	2.00	1.54 \pm 1.28
Reach-DomStreamsideVeg (Category (1-4))	2	3 \pm 1
Reach-Pools (Binary)	1	1 \pm 0
Reach-Rapids (Binary)	0	0 \pm 0
Reach-Riffles (Binary)	1	1 \pm 0
Reach-StraightRun (Binary)	0	0 \pm 1
Slope (m/m)	0.0360000	0.0581357 \pm 0.0554952
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)	0.09	0.51 \pm 0.27
Velocity-Max (m/s)	0.28	0.78 \pm 0.40
Width-Bankfull (m)	3.0	13.7 \pm 16.4
Width-Wetted (m)	1.2	9.0 \pm 13.1
XSEC-VelMethod (Category (1-3))	1	2 \pm 1
Climate		
Precip01_JAN (mm)	78.00000	130.45668 \pm 67.17180
Precip02_FEB (mm)	63.00000	102.48242 \pm 52.12836
Precip03_MAR (mm)	61.00000	89.80929 \pm 42.79174
Precip04_APR (mm)	78.00000	135.11134 \pm 66.06707
Precip05_MAY (mm)	63.00000	70.51109 \pm 13.79432
Precip06_JUN (mm)	70.00000	86.65922 \pm 19.93623
Precip07_JUL (mm)	64.00000	79.11475 \pm 19.88523
Precip08_AUG (mm)	64.00000	76.86606 \pm 21.34619
Precip09_SEP (mm)	52.00000	71.16784 \pm 23.11306
Precip10_OCT (mm)	51.00000	88.14083 \pm 44.84739
Precip11_NOV (mm)	83.00000	134.64587 \pm 63.61897
Precip12_DEC (mm)	91.00000	142.32359 \pm 65.85239
PrecipTotal_ANNUAL (mm)	795.00000	1143.02476 \pm 453.62461
Temp01_JANMax (Degrees Celsius)	-6.00000	-6.18206 \pm 1.69263

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Temp01_JANmin (Degrees Celsius)	-16.00000	-13.62029 \pm 2.05208
Temp02_FEBmax (Degrees Celsius)	-3.00000	-2.89816 \pm 1.88421
Temp02_FEBmin (Degrees Celsius)	-13.00000	-11.14625 \pm 1.99282
Temp03_MARmax (Degrees Celsius)	0.00000	0.98920 \pm 2.35950
Temp03_MARmin (Degrees Celsius)	-9.00000	-7.98295 \pm 1.94687
Temp04_APRmax (Degrees Celsius)	5.00000	5.37616 \pm 3.02243
Temp04_APRmin (Degrees Celsius)	-5.00000	-3.74673 \pm 1.66191
Temp05_MAYmax (Degrees Celsius)	10.00000	10.12548 \pm 3.18022
Temp05_MAYmin (Degrees Celsius)	0.00000	0.09616 \pm 1.15628
Temp06_JUNMax (Degrees Celsius)	14.00000	13.85415 \pm 3.23839
Temp06_JUNMin (Degrees Celsius)	2.00000	2.79527 \pm 1.60213
Temp07_JULmax (Degrees Celsius)	17.00000	17.45582 \pm 3.27590
Temp07_JULmin (Degrees Celsius)	4.00000	4.99257 \pm 1.52992
Temp08_AUGmax (Degrees Celsius)	17.00000	17.36896 \pm 3.11866
Temp08_AUGmin (Degrees Celsius)	4.00000	4.84827 \pm 1.46649
Temp09_SEPmax (Degrees Celsius)	12.00000	12.13974 \pm 2.86510
Temp09_SEPmin (Degrees Celsius)	0.00000	1.12535 \pm 1.20660
Temp10_OCTmax (Degrees Celsius)	6.00000	5.04078 \pm 2.46521
Temp10_OCTmin (Degrees Celsius)	-3.00000	-2.41023 \pm 1.18961
Temp11_NOVmax (Degrees Celsius)	-3.00000	-2.24818 \pm 1.93047
Temp11_NOVmin (Degrees Celsius)	-10.00000	-8.35137 \pm 1.96467
Temp12_DECmax (Degrees Celsius)	-7.00000	-6.49458 \pm 1.76429
Temp12_DECmin (Degrees Celsius)	-15.00000	-12.72330 \pm 1.87798
TempANNUALmax (Degrees Celsius)	5.00000	5.16639 \pm 2.57569
TempANNUALmean (Degrees Celsius)	0.00000	0.71683 \pm 1.81248
TempANNUALmin (Degrees Celsius)	-5.00000	-3.38604 \pm 1.60598
Hydrology		
Drainage-Area (km ²)	1.92955	135.66658 \pm 373.96803
Perimeter (Km)	8.58990	55.78285 \pm 83.00734
StreamDensity (m/km ²)	1879.81859	2198.74079 \pm 886.68339
StreamLength (m)	3627.20	293250.33 \pm 851854.38
Landcover		
Natl-AnnCrops (%)	0.00000	0.00000 \pm 0.00000
Natl-Barren (%)	0.00000	0.00000 \pm 0.00000
Natl-BroadleafDense (%)	0.00000	0.00523 \pm 0.02638
Natl-BroadleafOpen (%)	0.00000	1.35705 \pm 2.04550
Natl-BroadleafSparse (%)	0.00000	0.31953 \pm 0.53788
Natl-Coniferous (%)	0.00000	0.00000 \pm 0.00000
Natl-ConiferousDense (%)	1.87137	4.95677 \pm 7.46543
Natl-ConiferousOpen (%)	77.74379	34.34335 \pm 18.65764
Natl-ConiferousSparse (%)	0.00000	1.39163 \pm 1.60111
Natl-Deciduous (%)	0.00000	0.00000 \pm 0.00000
Natl-Developed (%)	0.00000	0.00002 \pm 0.00009
Natl-ExposedLand (%)	2.18266	16.95282 \pm 9.64125
Natl-Grassland (%)	0.16214	5.60615 \pm 5.17505
Natl-Herb (%)	6.70339	2.04978 \pm 2.79736
Natl-MixedForest (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodDense (%)	0.00000	0.02636 \pm 0.08976
Natl-MixedwoodOpen (%)	0.00000	2.10440 \pm 2.63686
Natl-MixedwoodSparse (%)	0.00000	0.01817 \pm 0.04448
Natl-PerennCropsPast (%)	0.00000	0.00000 \pm 0.00000
Natl-Rock/Rubble (%)	0.00000	6.97447 \pm 7.52078
Natl-Shrubland (%)	0.00000	0.00000 \pm 0.00000
Natl-ShrubLow (%)	5.87352	4.49178 \pm 5.44294
Natl-ShrubTall (%)	0.00000	0.33533 \pm 1.14136
Natl-SnowIce (%)	0.00000	7.70046 \pm 9.06096
Natl-Water (%)	0.00000	0.14384 \pm 0.45543
Natl-Wetland (%)	0.00000	0.00000 \pm 0.00000
Natl-WetlandHerb (%)	0.00000	0.00639 \pm 0.02401
Natl-WetlandShrub (%)	0.00000	0.00868 \pm 0.02574
Natl-WetlandTreed (%)	0.00000	0.00226 \pm 0.00959
Reg-Ice (%)	0.00000	3.06094 \pm 5.65390

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Substrate Data		
%Bedrock (%)	0	1 \pm 1
%Boulder (%)	0	3 \pm 3
%Cobble (%)	16	64 \pm 17
%Gravel (%)	29	2 \pm 2
%Pebble (%)	56	31 \pm 16
%Sand (%)	0	0 \pm 0
%Silt+Clay (%)	0	0 \pm 0
D50 (cm)	2.75	19.61 \pm 30.65
Dg (cm)	2.6	20.3 \pm 30.8
Dominant-1st (Category(0-9))	3	7 \pm 1
Dominant-2nd (Category(0-9))	5	6 \pm 1
Embeddedness (Category(1-5))	3	4 \pm 1
PeriphytonCoverage (Category(1-5))	2	2 \pm 1
SurroundingMaterial (Category(0-9))	2	3 \pm 1
Topography		
ElevationMax (m)	2451.00000	2829.64865 \pm 315.67549
ElevationMin (m)	1341.00000	1172.81081 \pm 249.32284
ElevationStdev (m)	268.98831	342.56455 \pm 77.02221
Reg-SlopeLT30% (%)	9.52894	16.26604 \pm 8.50298
Slope30-50% (%)	32.91724	28.13773 \pm 4.86732
Slope50-60% (%)	22.33010	14.11202 \pm 1.82185
SlopeAvg (%)	54.07872	56.75540 \pm 7.27461
SlopeGT60% (%)	33.98058	39.57775 \pm 9.82818
SlopeLT30% (%)	10.77208	18.17250 \pm 6.88627
SlopeMax (%)	140.26332	317.81636 \pm 141.61151
SlopeMin (%)	2.51720	0.79557 \pm 1.30240
SlopeStdev (%)	20.24787	29.56849 \pm 5.64880
Water Chemistry		
General-Alkalinity (mg/L)	2.8000000	68.5944444 \pm 52.1098452
General-DO (mg/L)	13.0000000	11.0635135 \pm 0.9899052
General-pH (pH)	8.6	7.7 \pm 0.7
General-SpCond (μ S/cm)	404.6000000	160.3567568 \pm 118.4083015
General-TempAir (Degrees Celsius)	12.5	10.5 \pm 0.7
General-TempWater (Degrees Celsius)	6.0000000	5.5262162 \pm 1.8860693
General-Turbidity (NTU)	0.3800000	0.1015000 \pm 0.0459619
Nitrogen-NO2 (mg/L)	0.0025000	0.0074306 \pm 0.0217095
Nitrogen-NO2+NO3 (mg/L)	0.0500000	0.0315000 \pm 0.0316491
Nitrogen-NO3 (mg/L)	0.0500000	0.0699722 \pm 0.0547511
Phosphorus-OrthoP (mg/L)	0.0025000	0.0008750 \pm 0.0012583

Landslide Upstream of NAWIN03 in 2011 smothered site in fine sediment, no macro-invertebrates found

Site Description

Study Name	CBWQ-Windermere
Site	NAWIN01
Sampling Date	Oct 12 2011
Know Your Watershed Basin	Upper Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Western Continental Ranges EcoRegion
Coordinates (decimal degrees)	50.47642 N, 115.84508 W
Altitude	4268
Local Basin Name	Windermere Creek
Stream Order	4



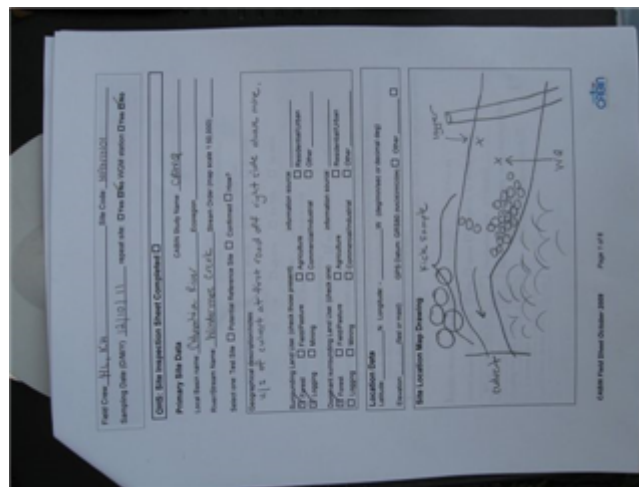
Figure 1. Location Map

Across Reach (No image found)

Aerial (No image found)



Down Stream



Field Sheet
Miscellaneous (No image found)



Substrate



Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Columbia-Okanagan Preliminary March 2010
Analysis Date	November 15, 2017
Taxonomic Level	Family

Cabin Assessment Results

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%	0.1%	31.3%	28.2%	40.4%
CABIN Assessment of NAWIN01 on Oct 12, 2011	Mildly Divergent				

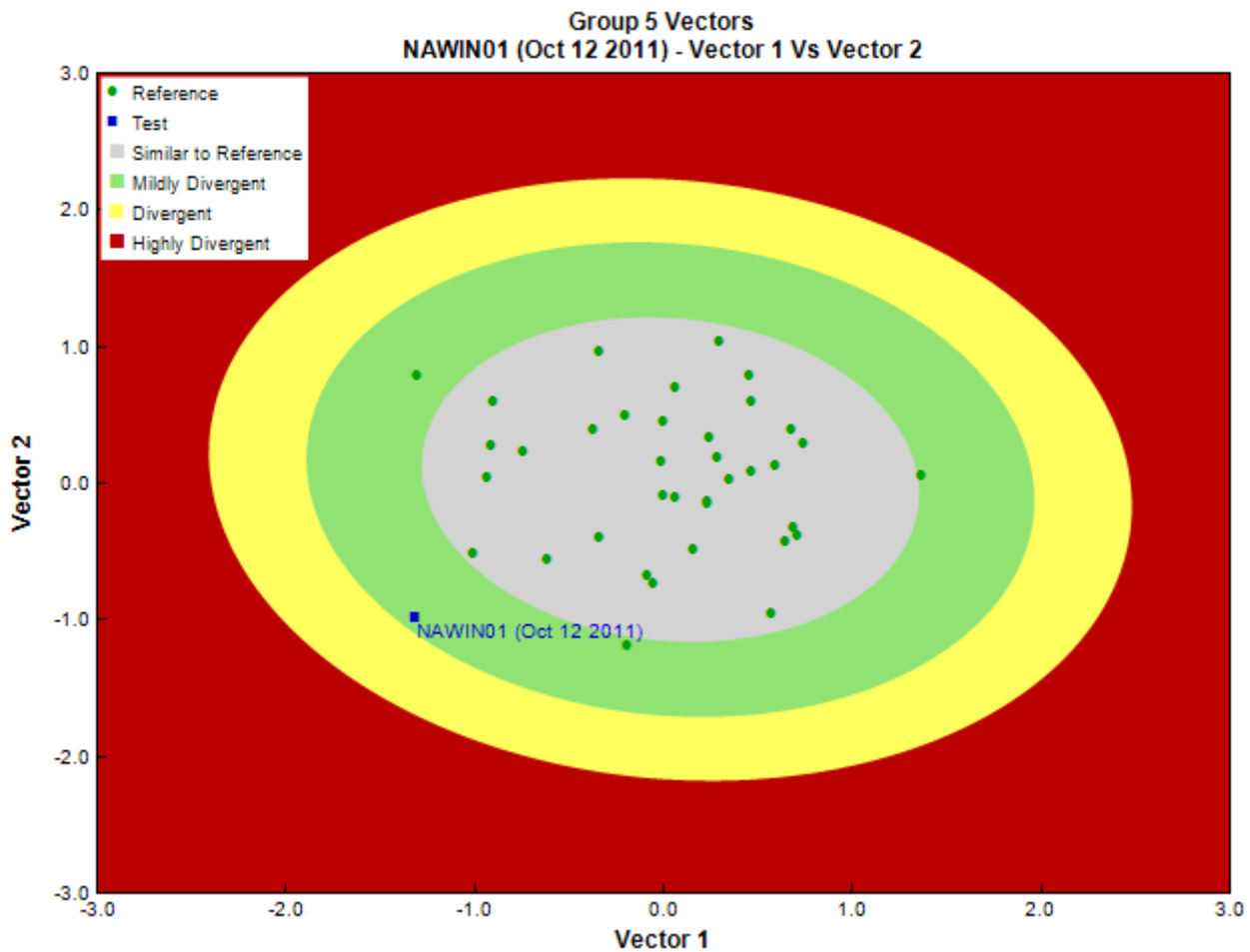


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Eco Analyts, EcoAnalysts
Date Taxonomy Completed	January 27, 2011
	Marchant Box
Sub-Sample Proportion	24/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	1	4.2
Arthropoda	Arachnida			1	4.2
	Insecta	Diptera	Chironomidae	97	404.2
			Psychodidae	2	8.3
			Simuliidae	3	12.5
		Ephemeroptera	Baetidae	11	45.8
			Ephemerellidae	6	25.0
			Heptageniidae	4	16.7
		Plecoptera	Capniidae	5	20.8
			Nemouridae	197	820.8
			Perlodidae	3	12.5
			Total	330	1,375.0

Metrics

Name	NAWIN01	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.8	0.4 \pm 0.1
Biotic Indices		
Hilsenhoff Family index (North-West)	3.3	2.8 \pm 0.3
Intolerant taxa	--	1.0 \pm 0.0
Long-lived taxa	--	1.0 \pm 0.0
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	0.9	1.7 \pm 1.7
% Gatherers	91.8	50.6 \pm 14.6
% Predatores	31.2	15.3 \pm 9.0
% Scrapers	5.5	67.2 \pm 16.8
% Shredder	61.2	38.1 \pm 18.2
No. Clinger Taxa	7.0	19.8 \pm 3.4
Number Of Individuals		
% Chironomidae	29.5	4.6 \pm 5.0
% Coleoptera	0.0	0.0 \pm 0.0
% Diptera + Non-insects	31.3	6.3 \pm 5.3
% Ephemeroptera	6.4	44.9 \pm 17.3
% Ephemeroptera that are Baetidae	52.4	26.1 \pm 20.5
% EPT Individuals	68.7	93.7 \pm 5.3
% Odonata	--	0.0 \pm 0.0
% of 2 dominant taxa	89.4	60.2 \pm 11.4
% of 5 dominant taxa	96.0	84.5 \pm 5.9
% of dominant taxa	59.9	39.3 \pm 12.3
% Plecoptera	62.3	42.9 \pm 17.2
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	--	27.4 \pm 27.1
% Tricoptera	0.0	5.8 \pm 5.7
No. EPT individuals/Chironomids+EPT Individuals	0.7	1.0 \pm 0.1
Total Abundance	1375.0	2163.6 \pm 1274.4
Richness		
Chironomidae taxa (genus level only)	1.0	0.9 \pm 0.2
Coleoptera taxa	0.0	0.1 \pm 0.2
Diptera taxa	3.0	2.4 \pm 1.0
Ephemeroptera taxa	3.0	3.7 \pm 0.5
EPT Individuals (Sum)	941.7	2023.9 \pm 1195.7
EPT taxa (no)	6.0	12.3 \pm 1.9
Odonata taxa	--	0.0 \pm 0.0
Pielou's Evenness	0.5	0.7 \pm 0.1
Plecoptera taxa	3.0	5.5 \pm 1.1
Shannon-Wiener Diversity	1.1	1.9 \pm 0.3
Simpson's Diversity	0.6	0.8 \pm 0.1
Simpson's Evenness	0.2	0.3 \pm 0.1
Total No. of Taxa	10.0	16.0 \pm 3.0
Trichoptera taxa	0.0	3.2 \pm 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99
Chironomidae	100%	100%	100%	100%	95%	0.98
Chloroperlidae	78%	88%	94%	100%	100%	0.98
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
Perlodidae	78%	78%	89%	92%	81%	0.87
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.97

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	11.99
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	0.58
RIVPACS : Expected taxa P>0.70	9.61
RIVPACS : Observed taxa P>0.70	6.00
RIVPACS : O:E (p > 0.7)	0.62

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Alluvium (%)	0.00000	0.00000 \pm 0.00000
Intrusive (%)	0.00000	0.46153 \pm 2.09955
Metamorphic (%)	0.00000	0.17691 \pm 0.85012
Sedimentary (%)	100.00000	99.36155 \pm 2.22799
Ultramafic (%)	0.00000	0.00000 \pm 0.00000
Volcanic (%)	0.00000	0.00000 \pm 0.00000
Channel		
Depth-Avg (cm)	4.3	21.5 \pm 9.7
Depth-BankfullMinusWetted (cm)	15.00	38.14 \pm 36.11
Depth-Max (cm)	6.3	31.0 \pm 16.5
Macrophyte (PercentRange)	0	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	3.00	1.54 \pm 1.28
Reach-Pools (Binary)	1	1 \pm 0
Reach-Rapids (Binary)	0	0 \pm 0
Reach-Riffles (Binary)	1	1 \pm 0
Reach-StraightRun (Binary)	1	0 \pm 1
Slope (m/m)	0.0360000	0.0581357 \pm 0.0554952
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)	0.22	0.51 \pm 0.27
Velocity-Max (m/s)	0.40	0.78 \pm 0.40
Width-Bankfull (m)	3.6	13.7 \pm 16.4
Width-Wetted (m)	2.2	9.0 \pm 13.1
XSEC-VelMethod (Category (1-3))	1	2 \pm 1
Climate		
Precip01_JAN (mm)	78.00000	130.45668 \pm 67.17180
Precip02_FEB (mm)	63.00000	102.48242 \pm 52.12836
Precip03_MAR (mm)	61.00000	89.80929 \pm 42.79174
Precip04_APR (mm)	78.00000	135.11134 \pm 66.06707
Precip05_MAY (mm)	63.00000	70.51109 \pm 13.79432
Precip06_JUN (mm)	70.00000	86.65922 \pm 19.93623
Precip07_JUL (mm)	64.00000	79.11475 \pm 19.88523
Precip08_AUG (mm)	64.00000	76.86606 \pm 21.34619
Precip09_SEP (mm)	52.00000	71.16784 \pm 23.11306
Precip10_OCT (mm)	51.00000	88.14083 \pm 44.84739

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
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Precip12_DEC (mm)	91.00000	142.32359 \pm 65.85239
PrecipTotal_ANNUAL (mm)	795.00000	1143.02476 \pm 453.62461
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Landcover		
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Natl-Barren (%)	0.00000	0.00000 \pm 0.00000
Natl-BroadleafDense (%)	0.00000	0.00523 \pm 0.02638
Natl-BroadleafOpen (%)	0.00000	1.35705 \pm 2.04550
Natl-BroadleafSparse (%)	0.00000	0.31953 \pm 0.53788
Natl-Coniferous (%)	0.00000	0.00000 \pm 0.00000
Natl-ConiferousDense (%)	1.87137	4.95677 \pm 7.46543
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Natl-Developed (%)	0.00000	0.00002 \pm 0.00009
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Natl-Herb (%)	6.70339	2.04978 \pm 2.79736
Natl-MixedForest (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodDense (%)	0.00000	0.02636 \pm 0.08976
Natl-MixedwoodOpen (%)	0.00000	2.10440 \pm 2.63686
Natl-MixedwoodSparse (%)	0.00000	0.01817 \pm 0.04448
Natl-PerennCropsPast (%)	0.00000	0.00000 \pm 0.00000
Natl-Rock/Rubble (%)	0.00000	6.97447 \pm 7.52078
Natl-Shrubland (%)	0.00000	0.00000 \pm 0.00000
Natl-ShrubLow (%)	5.87352	4.49178 \pm 5.44294
Natl-ShrubTall (%)	0.00000	0.33533 \pm 1.14136
Natl-SnowIce (%)	0.00000	7.70046 \pm 9.06096
Natl-Water (%)	0.00000	0.14384 \pm 0.45543
Natl-Wetland (%)	0.00000	0.00000 \pm 0.00000

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Natl-WetlandHerb (%)	0.00000	0.00639 \pm 0.02401
Natl-WetlandShrub (%)	0.00000	0.00868 \pm 0.02574
Natl-WetlandTreed (%)	0.00000	0.00226 \pm 0.00959
Reg-Ice (%)	0.00000	3.06094 \pm 5.65390
Substrate Data		
%Bedrock (%)	0	1 \pm 1
%Boulder (%)	0	3 \pm 3
%Cobble (%)	17	64 \pm 17
%Gravel (%)	26	2 \pm 2
%Pebble (%)	56	31 \pm 16
%Sand (%)	1	0 \pm 0
%Silt+Clay (%)	0	0 \pm 0
D50 (cm)	2.80	19.61 \pm 30.65
Dg (cm)	2.6	20.3 \pm 30.8
Dominant-1st (Category(0-9))	4	7 \pm 1
Dominant-2nd (Category(0-9))	5	6 \pm 1
Embeddedness (Category(1-5))	4	4 \pm 1
PeriphytonCoverage (Category(1-5))	2	2 \pm 1
SurroundingMaterial (Category(0-9))	3	3 \pm 1
Topography		
ElevationMax (m)	2451.00000	2829.64865 \pm 315.67549
ElevationMin (m)	1341.00000	1172.81081 \pm 249.32284
ElevationStdev (m)	268.98831	342.56455 \pm 77.02221
Reg-SlopeLT30% (%)	9.53000	16.26604 \pm 8.50298
Slope30-50% (%)	32.91724	28.13773 \pm 4.86732
Slope50-60% (%)	22.33010	14.11202 \pm 1.82185
SlopeAvg (%)	54.07872	56.75540 \pm 7.27461
SlopeGT60% (%)	33.98058	39.57775 \pm 9.82818
SlopeLT30% (%)	10.77208	18.17250 \pm 6.88627
SlopeMax (%)	140.26332	317.81636 \pm 141.61151
SlopeMin (%)	2.51720	0.79557 \pm 1.30240
SlopeStdev (%)	20.24787	29.56849 \pm 5.64880
Water Chemistry		
CO3 (mg/L)	0.2500000	0.0000000 \pm 0.0000000
General-Alkalinity (mg/L)	150.0000000	68.5944444 \pm 52.1098452
General-DO (mg/L)	12.0000000	11.0635135 \pm 0.9899052
General-pH (pH)	8.2	7.7 \pm 0.7
General-SpCond (μ S/cm)	638.0000000	160.3567568 \pm 118.4083015
General-TempAir (Degrees Celsius)	7.0	10.5 \pm 0.7
General-TempWater (Degrees Celsius)	3.0000000	5.5262162 \pm 1.8860693
General-Turbidity (NTU)	0.4500000	0.1015000 \pm 0.0459619
HCO3 (mg/L)	180.0000000	0.0000000 \pm 0.0000000
Nitrogen-NO2 (mg/L)	0.0025000	0.0074306 \pm 0.0217095
Nitrogen-NO2+NO3 (mg/L)	0.0500000	0.0315000 \pm 0.0316491
Nitrogen-NO3 (mg/L)	0.0500000	0.0699722 \pm 0.0547511
Phosphorus-OrthoP (mg/L)	0.0025000	0.0008750 \pm 0.0012583

Site Description

Study Name	CBWQ-Windermere
Site	NAWIN01
Sampling Date	Nov 06 2012
Know Your Watershed Basin	Upper Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Western Continental Ranges EcoRegion
Coordinates (decimal degrees)	50.47642 N, 115.84508 W
Altitude	4268
Local Basin Name	Windermere Creek
Stream Order	4



Figure 1. Location Map

Across Reach (No image found)

Aerial (No image found)



Down Stream



Field Sheet
Miscellaneous (No image found)



Substrate



Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Columbia-Okanagan Preliminary March 2010
Analysis Date	November 07, 2017
Taxonomic Level	Family

Cabin Assessment Results

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%	0.1%	31.3%	28.3%	40.3%
CABIN Assessment of NAWIN01 on Nov 06, 2012	Mildly Divergent				

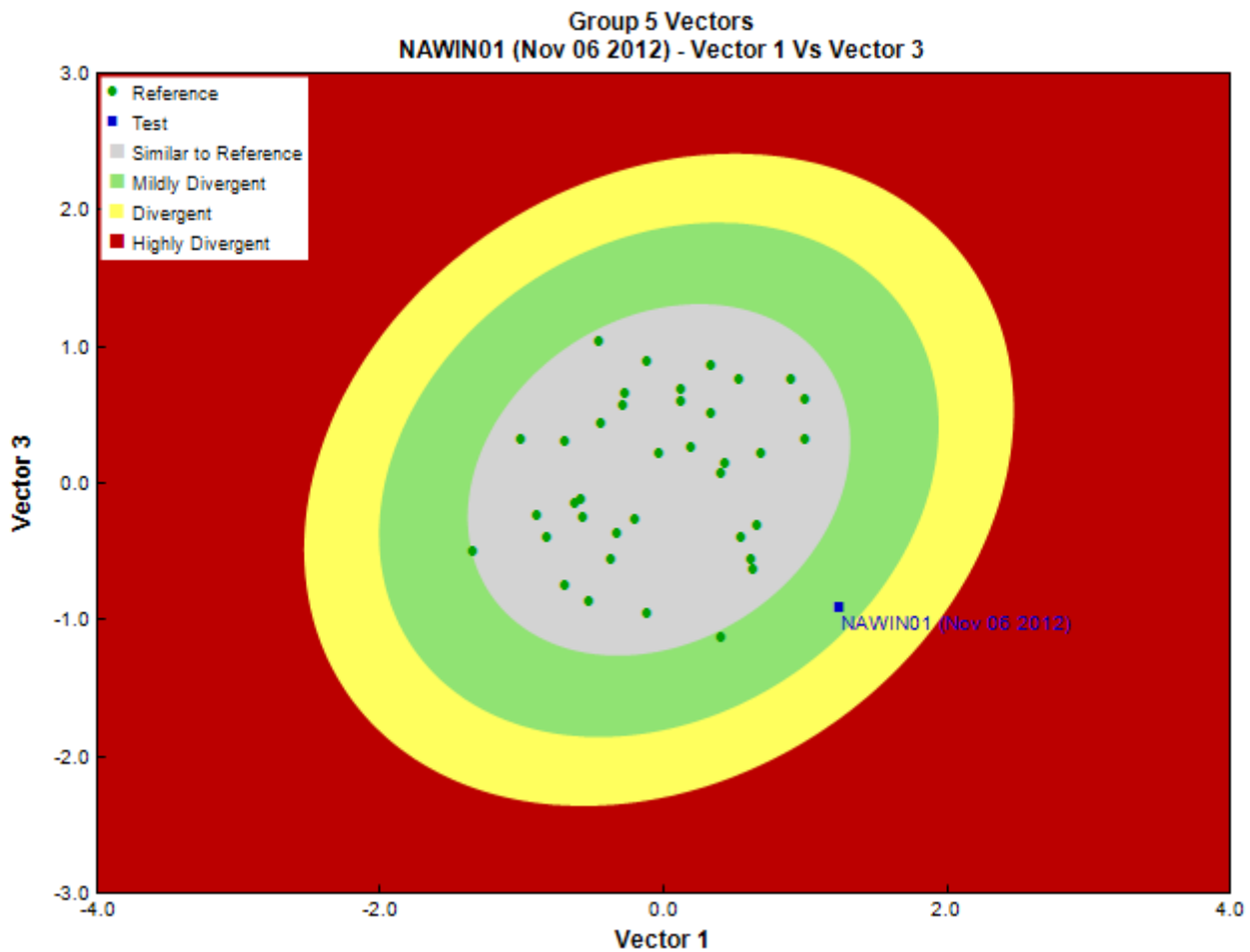


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Eco Analysts, EcoAnalysts
Date Taxonomy Completed	February 13, 2013
	Marchant Box
Sub-Sample Proportion	17/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Arachnida	Sarcoptiformes		5	29.4
		Trombidiformes	Sperchontidae	1	5.9
	Insecta	Diptera	Ceratopogonidae	1	5.9
			Chironomidae	58	341.2
			Simuliidae	8	47.0
			Tipulidae	4	23.5
		Ephemeroptera	Baetidae	31	182.4
			Ephemerellidae	1	5.9
			Heptageniidae	8	47.0
		Plecoptera	Capniidae	12	70.6
			Leuctridae	1	5.9
			Nemouridae	213	1,252.9
			Taeniopterygidae	17	100.0
		Trichoptera	Hydropsychidae	1	5.9
			Lepidostomatidae	1	5.9
			Rhyacophilidae	1	5.9
			Total	363	2,135.3

NAWIN04 2013 and 2014 - question of Group Placement. will run separate Reports

Metrics

Name	NAWIN01	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.72	0.4 \pm 0.1
Biotic Indices		
Hilsenhoff Family index (North-West)	2.9	2.8 \pm 0.3
Intolerant taxa	--	1.0 \pm 0.0
Long-lived taxa	--	1.0 \pm 0.0
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	2.5	1.7 \pm 1.7
% Gatherers	81.0	50.6 \pm 14.6
% Predatores	19.3	15.3 \pm 9.0
% Scrapers	17.9	67.2 \pm 16.8
% Shredder	68.3	38.1 \pm 18.2
No. Clinger Taxa	11.0	19.8 \pm 3.4
Number Of Individuals		
% Chironomidae	16.2	4.6 \pm 5.0
% Coleoptera	0.0	0.0 \pm 0.0
% Diptera + Non-insects	20.1	6.3 \pm 5.3
% Ephemeroptera	11.2	44.9 \pm 17.3
% Ephemeroptera that are Baetidae	77.5	26.1 \pm 20.5
% EPT Individuals	79.9	93.7 \pm 5.3
% Odonata	--	0.0 \pm 0.0
% of 2 dominant taxa	75.7	60.2 \pm 11.4
% of 5 dominant taxa	92.5	84.5 \pm 5.9
% of dominant taxa	59.5	39.3 \pm 12.3
% Plecoptera	67.9	42.9 \pm 17.2
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	33.3	27.4 \pm 27.1
% Tricoptera	0.8	5.8 \pm 5.7
No. EPT individuals/Chironomids+EPT Individuals	0.8	1.0 \pm 0.1
Total Abundance	2135.2	2163.6 \pm 1274.4
Richness		
Chironomidae taxa (genus level only)	1.0	0.9 \pm 0.2
Coleoptera taxa	0.0	0.1 \pm 0.2
Diptera taxa	4.0	2.4 \pm 1.0
Ephemeroptera taxa	3.0	3.7 \pm 0.5
EPT Individuals (Sum)	1682.3	2023.9 \pm 1195.7
EPT taxa (no)	10.0	12.3 \pm 1.9
Odonata taxa	--	0.0 \pm 0.0

Metrics

Name	NAWIN01	Predicted Group Reference Mean \pm SD
Pielou's Evenness	0.5	0.7 \pm 0.1
Plecoptera taxa	4.0	5.5 \pm 1.1
Shannon-Wiener Diversity	1.4	1.9 \pm 0.3
Simpson's Diversity	0.6	0.8 \pm 0.1
Simpson's Evenness	0.2	0.3 \pm 0.1
Total No. of Taxa	15.0	16.0 \pm 3.0
Trichoptera taxa	3.0	3.2 \pm 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99
Chironomidae	100%	100%	100%	100%	95%	0.98
Chloroperlidae	78%	88%	94%	100%	100%	0.98
EphemereIIDae	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
Perlodidae	78%	78%	89%	92%	81%	0.87
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.97

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	11.99
RIVPACS : Observed taxa P>0.50	11.00
RIVPACS : O:E (p > 0.5)	0.92
RIVPACS : Expected taxa P>0.70	9.61
RIVPACS : Observed taxa P>0.70	8.00
RIVPACS : O:E (p > 0.7)	0.83

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Alluvium (%)	0.00000	0.00000 \pm 0.00000
Intrusive (%)	0.00000	0.46153 \pm 2.09955
Metamorphic (%)	0.00000	0.17691 \pm 0.85012
Sedimentary (%)	100.00000	99.36155 \pm 2.22799
Ultramafic (%)	0.00000	0.00000 \pm 0.00000
Volcanic (%)	0.00000	0.00000 \pm 0.00000
Channel		
Depth-Avg (cm)	4.9	21.5 \pm 9.7
Depth-BankfullMinusWetted (cm)	18.00	38.14 \pm 36.11
Depth-Max (cm)	7.0	31.0 \pm 16.5
Macrophyte (PercentRange)	0	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	2.00	1.54 \pm 1.28
Reach-DomStreamsideVeg (Category (1-4))	3	3 \pm 1
Reach-Pools (Binary)	1	1 \pm 0
Reach-Rapids (Binary)	0	0 \pm 0
Reach-Riffles (Binary)	1	1 \pm 0
Reach-StraightRun (Binary)	0	0 \pm 1
Slope (m/m)	0.0360000	0.0581357 \pm 0.0554952
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)	0.16	0.51 \pm 0.27
Velocity-Max (m/s)	0.24	0.78 \pm 0.40
Width-Bankfull (m)	3.2	13.7 \pm 16.4

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Width-Wetted (m)	1.8	9.0 \pm 13.1
XSEC-VelMethod (Category (1-3))	1	2 \pm 1
Climate		
Precip01_JAN (mm)	78.00000	130.45668 \pm 67.17180
Precip02_FEB (mm)	63.00000	102.48242 \pm 52.12836
Precip03_MAR (mm)	61.00000	89.80929 \pm 42.79174
Precip04_APR (mm)	78.00000	135.11134 \pm 66.06707
Precip05_MAY (mm)	63.00000	70.51109 \pm 13.79432
Precip06_JUN (mm)	70.00000	86.65922 \pm 19.93623
Precip07_JUL (mm)	64.00000	79.11475 \pm 19.88523
Precip08_AUG (mm)	64.00000	76.86606 \pm 21.34619
Precip09_SEP (mm)	52.00000	71.16784 \pm 23.11306
Precip10_OCT (mm)	51.00000	88.14083 \pm 44.84739
Precip11_NOV (mm)	83.00000	134.64587 \pm 63.61897
Precip12_DEC (mm)	91.00000	142.32359 \pm 65.85239
PrecipTotal_ANNUAL (mm)	795.00000	1143.02476 \pm 453.62461
Temp01_JANMax (Degrees Celsius)	-6.00000	-6.18206 \pm 1.69263
Temp01_JANmin (Degrees Celsius)	-16.00000	-13.62029 \pm 2.05208
Temp02_FEBmax (Degrees Celsius)	-3.00000	-2.89816 \pm 1.88421
Temp02_FEBmin (Degrees Celsius)	-13.00000	-11.14625 \pm 1.99282
Temp03_MARmax (Degrees Celsius)	0.00000	0.98920 \pm 2.35950
Temp03_MARmin (Degrees Celsius)	-9.00000	-7.98295 \pm 1.94687
Temp04_APRmax (Degrees Celsius)	5.00000	5.37616 \pm 3.02243
Temp04_APRmin (Degrees Celsius)	-5.00000	-3.74673 \pm 1.66191
Temp05_MAYmax (Degrees Celsius)	10.00000	10.12548 \pm 3.18022
Temp05_MAYmin (Degrees Celsius)	0.00000	0.09616 \pm 1.15628
Temp06_JUNMax (Degrees Celsius)	14.00000	13.85415 \pm 3.23839
Temp06_JUNMin (Degrees Celsius)	2.00000	2.79527 \pm 1.60213
Temp07_JULmax (Degrees Celsius)	17.00000	17.45582 \pm 3.27590
Temp07_JULmin (Degrees Celsius)	4.00000	4.99257 \pm 1.52992
Temp08_AUGmax (Degrees Celsius)	17.00000	17.36896 \pm 3.11866
Temp08_AUGmin (Degrees Celsius)	4.00000	4.84827 \pm 1.46649
Temp09_SEPmax (Degrees Celsius)	12.00000	12.13974 \pm 2.86510
Temp09_SEPmin (Degrees Celsius)	0.00000	1.12535 \pm 1.20660
Temp10_OCTmax (Degrees Celsius)	6.00000	5.04078 \pm 2.46521
Temp10_OCTmin (Degrees Celsius)	-3.00000	-2.41023 \pm 1.18961
Temp11_NOVmax (Degrees Celsius)	-3.00000	-2.24818 \pm 1.93047
Temp11_NOVmin (Degrees Celsius)	-10.00000	-8.35137 \pm 1.96467
Temp12_DECmax (Degrees Celsius)	-7.00000	-6.49458 \pm 1.76429
Temp12_DECmin (Degrees Celsius)	-15.00000	-12.72330 \pm 1.87798
TempANNUALmax (Degrees Celsius)	5.00000	5.16639 \pm 2.57569
TempANNUALmean (Degrees Celsius)	0.00000	0.71683 \pm 1.81248
TempANNUALmin (Degrees Celsius)	-5.00000	-3.38604 \pm 1.60598
Hydrology		
Drainage-Area (km ²)	1.92955	135.66658 \pm 373.96803
Perimeter (Km)	8.58990	55.78285 \pm 83.00734
StreamDensity (m/km ²)	1879.81859	2198.74079 \pm 886.68339
StreamLength (m)	3627.20	293250.33 \pm 851854.38
Landcover		
Natl-AnnCrops (%)	0.00000	0.00000 \pm 0.00000
Natl-Barren (%)	0.00000	0.00000 \pm 0.00000
Natl-BroadleafDense (%)	0.00000	0.00523 \pm 0.02638
Natl-BroadleafOpen (%)	0.00000	1.35705 \pm 2.04550
Natl-BroadleafSparse (%)	0.00000	0.31953 \pm 0.53788
Natl-Coniferous (%)	0.00000	0.00000 \pm 0.00000
Natl-ConiferousDense (%)	1.87137	4.95677 \pm 7.46543
Natl-ConiferousOpen (%)	77.74379	34.34335 \pm 18.65764
Natl-ConiferousSparse (%)	0.00000	1.39163 \pm 1.60111
Natl-Deciduous (%)	0.00000	0.00000 \pm 0.00000
Natl-Developed (%)	0.00000	0.00002 \pm 0.00009
Natl-ExposedLand (%)	2.18266	16.95282 \pm 9.64125
Natl-Grassland (%)	0.16214	5.60615 \pm 5.17505

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Natl-Herb (%)	6.70339	2.04978 \pm 2.79736
Natl-MixedForest (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodDense (%)	0.00000	0.02636 \pm 0.08976
Natl-MixedwoodOpen (%)	0.00000	2.10440 \pm 2.63686
Natl-MixedwoodSparse (%)	0.00000	0.01817 \pm 0.04448
Natl-PerennCropsPast (%)	0.00000	0.00000 \pm 0.00000
Natl-Rock/Rubble (%)	0.00000	6.97447 \pm 7.52078
Natl-Shrubland (%)	0.00000	0.00000 \pm 0.00000
Natl-ShrubLow (%)	5.87352	4.49178 \pm 5.44294
Natl-ShrubTall (%)	0.00000	0.33533 \pm 1.14136
Natl-SnowIce (%)	0.00000	7.70046 \pm 9.06096
Natl-Water (%)	0.00000	0.14384 \pm 0.45543
Natl-Wetland (%)	0.00000	0.00000 \pm 0.00000
Natl-WetlandHerb (%)	0.00000	0.00639 \pm 0.02401
Natl-WetlandShrub (%)	0.00000	0.00868 \pm 0.02574
Natl-WetlandTreed (%)	0.00000	0.00226 \pm 0.00959
Reg-Ice (%)	0.00000	3.06094 \pm 5.65390
Substrate Data		
%Bedrock (%)	0	1 \pm 1
%Boulder (%)	0	3 \pm 3
%Cobble (%)	13	64 \pm 17
%Gravel (%)	17	2 \pm 2
%Pebble (%)	70	31 \pm 16
%Sand (%)	0	0 \pm 0
%Silt+Clay (%)	0	0 \pm 0
D50 (cm)	3.20	19.61 \pm 30.65
Dg (cm)	2.9	20.3 \pm 30.8
Dominant-1st (Category(0-9))	5	7 \pm 1
Dominant-2nd (Category(0-9))	4	6 \pm 1
Embeddedness (Category(1-5))	4	4 \pm 1
PeriphytonCoverage (Category(1-5))	2	2 \pm 1
SurroundingMaterial (Category(0-9))	2	3 \pm 1
Topography		
ElevationMax (m)	2451.00000	2829.64865 \pm 315.67549
ElevationMin (m)	1341.00000	1172.81081 \pm 249.32284
ElevationStdev (m)	268.98831	342.56455 \pm 77.02221
Reg-SlopeLT30% (%)	9.53000	16.26604 \pm 8.50298
Slope30-50% (%)	32.91724	28.13773 \pm 4.86732
Slope50-60% (%)	22.33010	14.11202 \pm 1.82185
SlopeAvg (%)	54.07872	56.75540 \pm 7.27461
SlopeGT60% (%)	33.98058	39.57775 \pm 9.82818
SlopeLT30% (%)	10.77208	18.17250 \pm 6.88627
SlopeMax (%)	140.26332	317.81636 \pm 141.61151
SlopeMin (%)	2.51720	0.79557 \pm 1.30240
SlopeStdev (%)	20.24787	29.56849 \pm 5.64880
Water Chemistry		
CO3 (mg/L)	0.2500000	0.0000000 \pm 0.0000000
General-Alkalinity (mg/L)	166.0000000	68.5944444 \pm 52.1098452
General-DO (mg/L)	11.0000000	11.0635135 \pm 0.9899052
General-pH (pH)	8.4	7.7 \pm 0.7
General-SpCond (μ S/cm)	626.3000000	160.3567568 \pm 118.4083015
General-TempAir (Degrees Celsius)	3.0	10.5 \pm 0.7
General-TempWater (Degrees Celsius)	1.0000000	5.5262162 \pm 1.8860693
General-Turbidity (NTU)	0.7000000	0.1015000 \pm 0.0459619
HCO3 (mg/L)	203.0000000	0.0000000 \pm 0.0000000
Nitrogen-NO2 (mg/L)	0.0025000	0.0074306 \pm 0.0217095
Nitrogen-NO2+NO3 (mg/L)	0.1570000	0.0315000 \pm 0.0316491
Nitrogen-NO3 (mg/L)	0.1570000	0.0699722 \pm 0.0547511
Phosphorus-OrthoP (mg/L)	2.5000000	0.0008750 \pm 0.0012583

Landslide Upstream of NAWIN03 in 2011 smothered site in fine sediment, no macro-invertebrates found

Site Description

Study Name	CBWQ-Windermere
Site	NAWIN01
Sampling Date	Oct 01 2013
Know Your Watershed Basin	Upper Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Western Continental Ranges EcoRegion
Coordinates (decimal degrees)	50.47642 N, 115.84508 W
Altitude	4265
Local Basin Name	Windermere Creek
	Windermere Creek
Stream Order	4



Figure 1. Location Map

Across Reach (No image found)

Aerial (No image found)



Down Stream

Field Sheet (No image found)

Miscellaneous (No image found)

Substrate (No image found)



Up Stream

Cabin Assessment Results

Reference Model Summary					
Model	Columbia-Okanagan Preliminary March 2010				
Analysis Date	November 07, 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%	0.2%	48.9%	22.3%	28.5%
CABIN Assessment of NAWIN01 on Oct 01, 2013	Mildly Divergent				

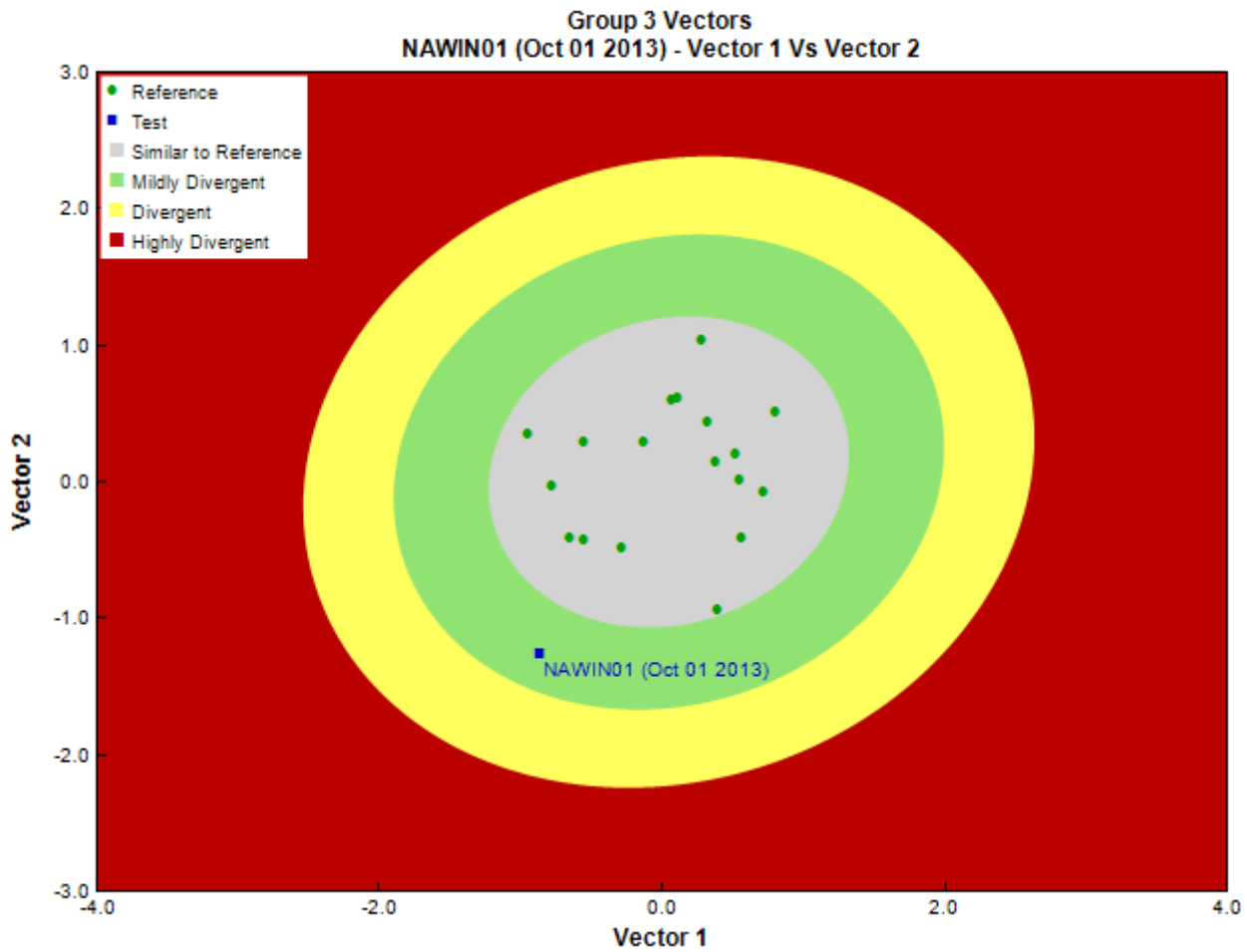


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Pina Viola, Consultant
Date Taxonomy Completed	February 04, 2014
	Marchant Box
Sub-Sample Proportion	20/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Arachnida	Sarcoptiformes		1	5.0
		Insecta	Diptera	Chironomidae	65
	Psychodidae			1	5.0
	Simuliidae		7	35.0	
	Tipulidae		1	5.0	
	Ephemeroptera		Ameletidae	11	55.0
			Baetidae	15	75.0
			Ephemerellidae	2	10.0
	Plecoptera		Heptageniidae	9	45.0
			Capniidae	14	70.0
			Nemouridae	149	745.0
		Perlodidae	4	20.0	
		Taeniopterygidae	31	155.0	
	Trichoptera	Limnephilidae	3	15.0	
		Rhyacophilidae	1	5.0	

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Total	314	1,570.0

NAWIN04 2013 and 2014 - question of Group Placement. will run separate Reports

Metrics

Name	NAWIN01	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.74	0.4 \pm 0.2
Biotic Indices		
Hilsenhoff Family index (North-West)	3.1	3.2 \pm 0.7
Intolerant taxa	--	
Long-lived taxa	--	1.9 \pm 1.3
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	2.2	1.8 \pm 1.6
% Gatherers	82.8	52.4 \pm 14.6
% Predatores	24.5	18.3 \pm 13.3
% Scrapers	20.7	61.8 \pm 17.2
% Shredder	63.1	30.3 \pm 18.6
No. Clinger Taxa	15.0	19.8 \pm 3.9
Number Of Individuals		
% Chironomidae	20.8	8.2 \pm 13.6
% Coleoptera	0.0	0.8 \pm 1.9
% Diptera + Non-insects	23.6	14.3 \pm 14.2
% Ephemeroptera	11.8	43.3 \pm 15.7
% Ephemeroptera that are Baetidae	40.5	33.9 \pm 27.7
% EPT Individuals	76.4	84.9 \pm 14.3
% Odonata	--	0.0 \pm 0.0
% of 2 dominant taxa	68.4	58.9 \pm 10.0
% of 5 dominant taxa	87.5	83.8 \pm 7.3
% of dominant taxa	47.6	39.5 \pm 10.9
% Plecoptera	63.3	34.7 \pm 17.8
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	0.0	27.8 \pm 25.2
% Tricoptera	1.3	6.9 \pm 8.6
No. EPT individuals/Chironomids+EPT Individuals	0.8	0.9 \pm 0.1
Total Abundance	1570.0	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	4.0	3.4 \pm 1.0
Ephemeroptera taxa	4.0	3.4 \pm 0.5
EPT Individuals (Sum)	1195.0	4527.1 \pm 3161.8
EPT taxa (no)	10.0	11.5 \pm 1.2
Odonata taxa	--	0.0 \pm 0.0
Pielou's Evenness	0.6	0.7 \pm 0.1
Plecoptera taxa	4.0	5.3 \pm 0.9
Shannon-Wiener Diversity	1.7	1.9 \pm 0.3
Simpson's Diversity	0.7	0.8 \pm 0.1
Simpson's Evenness	0.2	0.3 \pm 0.1
Total No. of Taxa	14.0	17.7 \pm 2.6
Trichoptera taxa	2.0	2.8 \pm 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99
Chironomidae	100%	100%	100%	100%	95%	0.98
Chloroperlidae	78%	88%	94%	100%	100%	0.97
Ephemereillidae	78%	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 NAWIN01
	Group 1	Group 2	Group 3	Group 4	Group 5	
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%	0.87
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.97

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	12.43
RIVPACS : Observed taxa P>0.50	10.00
RIVPACS : O:E (p > 0.5)	0.80
RIVPACS : Expected taxa P>0.70	9.61
RIVPACS : Observed taxa P>0.70	8.00
RIVPACS : O:E (p > 0.7)	0.83

Habitat Description

Variable	NAWIN01	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)	6.2	22.5 \pm 10.5
Depth-BankfullMinusWetted (cm)	18.00	67.33 \pm 71.65
Depth-Max (cm)	9.5	32.9 \pm 17.9
Macrophyte (PercentRange)	0	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	3.00	0.94 \pm 0.80
Reach-DomStreamsideVeg (Category (1-4))	3	3 \pm 1
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)	0.0360000	0.0235102 \pm 0.0284557
Veg-Coniferous (Binary)	1	1 \pm 0
Veg-Deciduous (Binary)	1	1 \pm 0
Veg-GrassesFerns (Binary)	0	1 \pm 0
Veg-Shrubs (Binary)	1	1 \pm 0
Velocity-Avg (m/s)	0.44	0.50 \pm 0.25
Velocity-Max (m/s)	0.67	0.75 \pm 0.28
Width-Bankfull (m)	2.2	15.6 \pm 12.8
Width-Wetted (m)	1.3	10.2 \pm 7.0
XSEC-VelMethod (Category (1-3))	1	2 \pm 1
Climate		
Precip01_JAN (mm)	78.00000	86.74590 \pm 34.16045
Precip02_FEB (mm)	63.00000	69.04735 \pm 26.39011
Precip03_MAR (mm)	61.00000	64.57566 \pm 18.91423
Precip04_APR (mm)	78.00000	86.74590 \pm 34.16045
Precip05_MAY (mm)	63.00000	67.06098 \pm 7.34190
Precip06_JUN (mm)	70.00000	73.16508 \pm 8.19897
Precip07_JUL (mm)	64.00000	59.23624 \pm 10.43324
Precip08_AUG (mm)	64.00000	57.24656 \pm 12.22117
Precip09_SEP (mm)	52.00000	50.72037 \pm 11.15833
Precip10_OCT (mm)	51.00000	52.92857 \pm 22.22704
Precip11_NOV (mm)	83.00000	87.53373 \pm 31.98739
Precip12_DEC (mm)	91.00000	93.52725 \pm 32.58764
PrecipTotal_ANNUAL (mm)	795.00000	818.18624 \pm 207.74339

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Temp01_JANMax (Degrees Celsius)	-6.00000	-5.23929 \pm 1.38664
Temp01_JANmin (Degrees Celsius)	-16.00000	-13.71495 \pm 2.15775
Temp02_FEBmax (Degrees Celsius)	-3.00000	-2.11812 \pm 1.36153
Temp02_FEBmin (Degrees Celsius)	-13.00000	-11.26786 \pm 1.82315
Temp03_MARmax (Degrees Celsius)	0.00000	0.95304 \pm 1.72292
Temp03_MARmin (Degrees Celsius)	-9.00000	-7.99378 \pm 1.86235
Temp04_APRmax (Degrees Celsius)	5.00000	5.89775 \pm 2.29856
Temp04_APRmin (Degrees Celsius)	-5.00000	-3.52196 \pm 1.40541
Temp05_MAYmax (Degrees Celsius)	10.00000	10.80516 \pm 2.26497
Temp05_MAYmin (Degrees Celsius)	0.00000	0.15132 \pm 0.77159
Temp06_JUNMax (Degrees Celsius)	14.00000	14.89775 \pm 2.29856
Temp06_JUNMin (Degrees Celsius)	2.00000	2.98532 \pm 1.30119
Temp07_JULmax (Degrees Celsius)	17.00000	18.39881 \pm 2.25732
Temp07_JULmin (Degrees Celsius)	4.00000	5.51058 \pm 1.28471
Temp08_AUGmax (Degrees Celsius)	17.00000	18.26442 \pm 2.32790
Temp08_AUGmin (Degrees Celsius)	4.00000	5.11071 \pm 1.22615
Temp09_SEPmax (Degrees Celsius)	12.00000	13.01495 \pm 2.08648
Temp09_SEPmin (Degrees Celsius)	0.00000	1.09127 \pm 1.16620
Temp10_OCTmax (Degrees Celsius)	6.00000	6.62235 \pm 1.52687
Temp10_OCTmin (Degrees Celsius)	-3.00000	-1.89907 \pm 1.00747
Temp11_NOVmax (Degrees Celsius)	-3.00000	-1.28638 \pm 1.23662
Temp11_NOVmin (Degrees Celsius)	-10.00000	-8.37103 \pm 1.70714
Temp12_DECmax (Degrees Celsius)	-7.00000	-5.50172 \pm 1.56005
Temp12_DECmin (Degrees Celsius)	-15.00000	-12.82063 \pm 2.01422
TempANNUALmax (Degrees Celsius)	5.00000	5.95278 \pm 1.80268
TempANNUALmean (Degrees Celsius)	0.00000	0.92011 \pm 1.31158
TempANNUALmin (Degrees Celsius)	-5.00000	-3.49114 \pm 1.47732
Hydrology		
Drainage-Area (km ²)	1.92955	166.32560 \pm 185.60049
Perimeter (Km)	8.58990	75.52547 \pm 54.66392
StreamDensity (m/km ²)	1879.81859	2635.49639 \pm 656.67294
StreamLength (m)	3627.20	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 (%)	1.87137	9.07482 \pm 13.04849
Natl-ConiferousOpen (%)	77.74379	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 (%)	2.18266	14.05381 \pm 9.29865
Natl-Grassland (%)	0.16214	4.92979 \pm 5.99508
Natl-Herb (%)	6.70339	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 (%)	5.87352	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

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Reg-Ice (%)	0.00000	0.46949 \pm 1.15785
Substrate Data		
%Bedrock (%)	0	0 \pm 0
%Boulder (%)	0	6 \pm 7
%Cobble (%)	17	61 \pm 27
%Gravel (%)	19	1 \pm 2
%Pebble (%)	57	31 \pm 28
%Sand (%)	0	0 \pm 0
%Silt+Clay (%)	7	0 \pm 1
D50 (cm)	3.05	79.45 \pm 47.98
Dg (cm)	2.4	73.9 \pm 48.0
Dominant-1st (Category(0-9))	5	6 \pm 1
Dominant-2nd (Category(0-9))	4	6 \pm 2
Embeddedness (Category(1-5))	5	4 \pm 1
PeriphytonCoverage (Category(1-5))	2	2 \pm 1
SurroundingMaterial (Category(0-9))	2	3 \pm 1
Topography		
ElevationMax (m)	2451.00000	2690.61111 \pm 390.38324
ElevationMin (m)	1341.00000	1251.33333 \pm 280.98168
ElevationStdev (m)	268.98831	287.70131 \pm 73.20073
Reg-SlopeLT30% (%)	21.74500	27.92073 \pm 14.83033
Slope30-50% (%)	32.91724	27.15573 \pm 3.09032
Slope50-60% (%)	22.33010	12.76339 \pm 3.54018
SlopeAvg (%)	54.07872	48.68089 \pm 8.41381
SlopeGT60% (%)	33.98058	30.74349 \pm 11.05846
SlopeLT30% (%)	10.77208	29.33739 \pm 12.62448
SlopeMax (%)	140.26332	616.97887 \pm 680.88955
SlopeMin (%)	2.51720	0.03296 \pm 0.13984
SlopeStdev (%)	20.24787	28.19409 \pm 6.96382
Water Chemistry		
CO3 (mg/L)	0.2500000	0.0000000 \pm 0.0000000
General-Alkalinity (mg/L)	141.0000000	121.5944444 \pm 36.7225924
General-Conductivity (μ S/cm)	270.2000000	186.8500000 \pm 84.0864011
General-DO (mg/L)	12.0000000	10.4922222 \pm 0.8833463
General-pH (pH)	8.3	8.0 \pm 0.6
General-SpCond (μ S/cm)	507.8500000	214.2437500 \pm 77.1891440
General-TempAir (Degrees Celsius)	8.5	10.5 \pm 4.2
General-TempWater (Degrees Celsius)	0.5000000	6.6716667 \pm 2.0277755
General-Turbidity (NTU)	5.8000000	0.0000000 \pm 0.0000000
HCO3 (mg/L)	172.0000000	0.0000000 \pm 0.0000000
Nitrogen-NO2 (mg/L)	0.0025000	0.0023889 \pm 0.0063351
Nitrogen-NO2+NO3 (mg/L)	0.0590000	0.0130000 \pm 0.0088111
Nitrogen-NO3 (mg/L)	0.0590000	0.0245003 \pm 0.0229452
Phosphorus-OrthoP (mg/L)	2.5000000	0.0035000 \pm 0.0018292

Landslide Upstream of NAWIN03 in 2011 smothered site in fine sediment, no macro-invertebrates found

Site Description

Study Name	CBWQ-Windermere
Site	NAWIN01
Sampling Date	Sep 18 2014
Know Your Watershed Basin	Upper Columbia
Province / Territory	British Columbia
Terrestrial Ecological Classification	Montane Cordillera EcoZone Western Continental Ranges EcoRegion
Coordinates (decimal degrees)	50.47272 N, 115.84039 W
Altitude	4327
Local Basin Name	Windermere Creek
	Windermere Creek
Stream Order	4

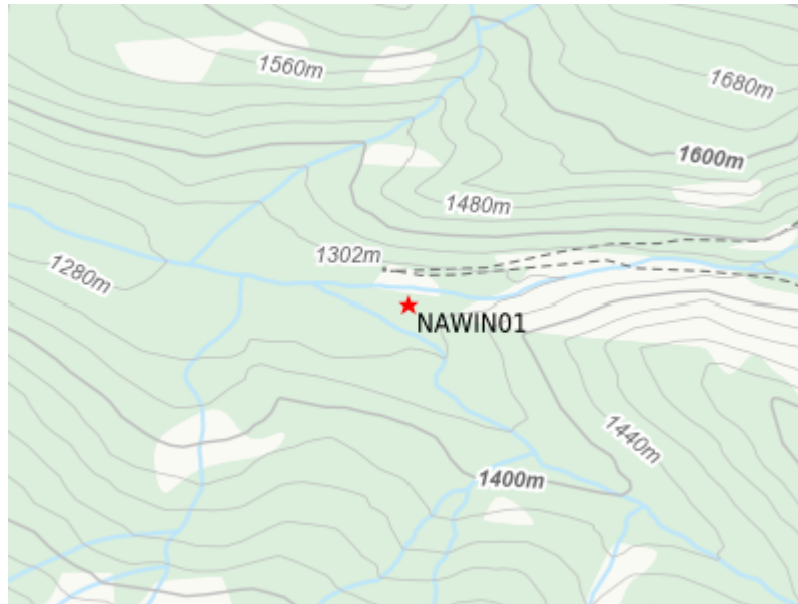


Figure 1. Location Map

- Across Reach (No image found)
- Aerial (No image found)
- Down Stream (No image found)
- Field Sheet (No image found)
- Miscellaneous (No image found)
- Substrate (No image found)
- Up Stream (No image found)

Cabin Assessment Results

		Reference Model Summary				
Model	Columbia-Okanagan Preliminary March 2010					
Analysis Date	November 07, 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%	0.1%	31.4%	29.0%	39.5%	
CABIN Assessment of NAWIN01 on Sep 18, 2014	Similar to Reference					

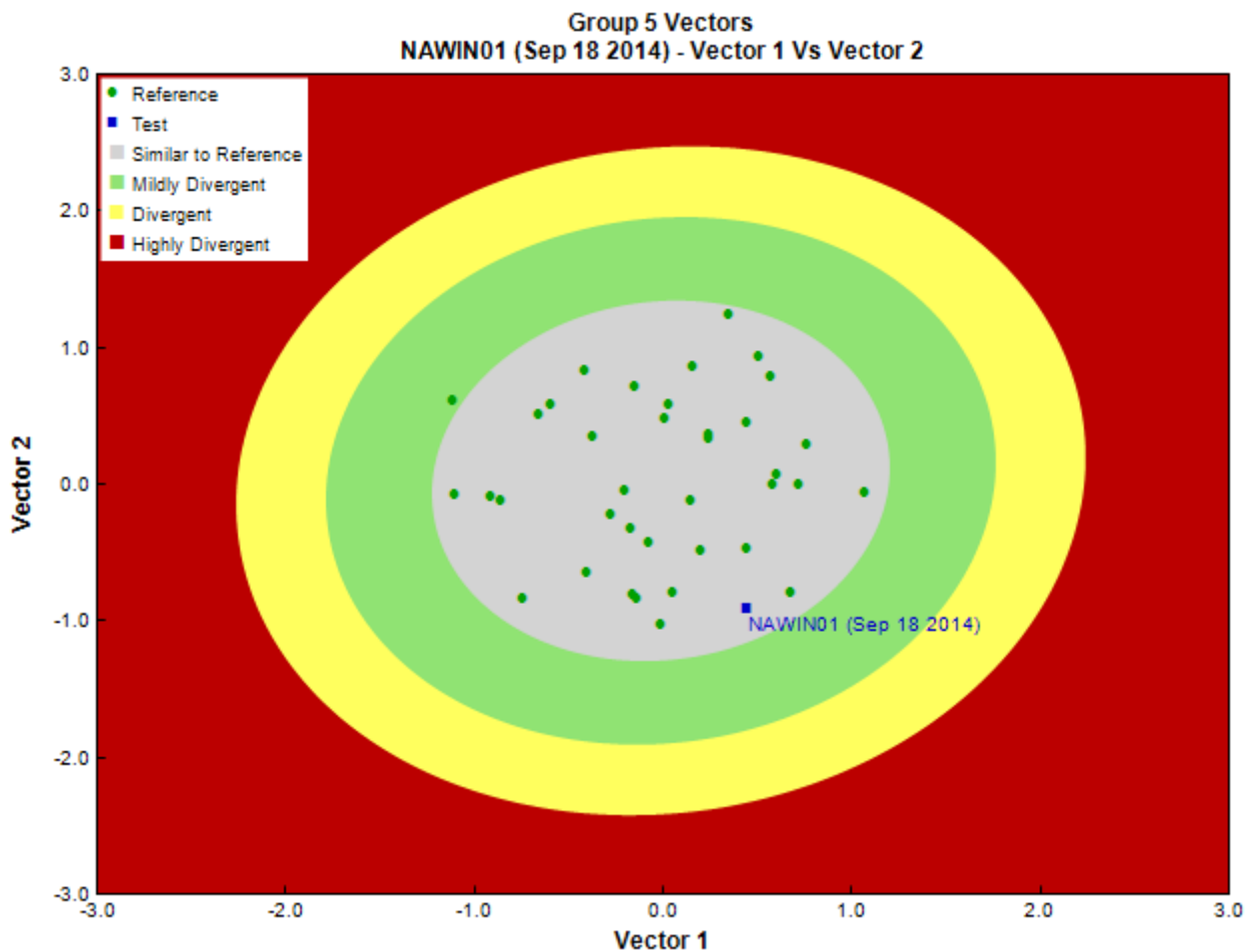


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	400
Sampling Time	3
Taxonomist	Pina Viola, Consultant
Date Taxonomy Completed	November 14, 2014
	Marchant Box
Sub-Sample Proportion	22/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	7	31.8
		Tubificida		1	4.5
Arthropoda	Insecta	Coleoptera	Curculionidae	1	4.5
			Diptera	Chironomidae	56
			Empididae	1	4.5
			Tipulidae	3	13.6
		Ephemeroptera	Ameletidae	7	31.8
			Baetidae	10	45.4
			Ephemerellidae	6	27.3
			Heptageniidae	17	77.3
		Plecoptera	Capniidae	5	22.7
			Chloroperlidae	1	4.5
			Nemouridae	57	259.1
			Perlodidae	1	4.5
			Taeniopterygidae	144	654.5

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
		Trichoptera		1	4.5
			Hydropsychidae	1	4.5
			Limnephilidae	3	13.6
			Total	322	1,463.1

NAWIN04 2013 and 2014 - question of Group Placement. will run separate Reports

Metrics

Name	NAWIN01	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.46	0.4 \pm 0.1
Biotic Indices		
Hilsenhoff Family index (North-West)	3.1	2.8 \pm 0.3
Intolerant taxa	--	1.0 \pm 0.0
Long-lived taxa	--	1.0 \pm 0.0
Tolerant individuals (%)	--	0.3
Functional Measures		
% Filterers	0.3	1.7 \pm 1.7
% Gatherers	87.3	50.6 \pm 14.6
% Predatores	18.6	15.3 \pm 9.0
% Scrapers	54.3	67.2 \pm 16.8
% Shredder	66.1	38.1 \pm 18.2
No. Clinger Taxa	14.0	19.8 \pm 3.4
Number Of Individuals		
% Chironomidae	17.5	4.6 \pm 5.0
% Coleoptera	0.3	0.0 \pm 0.0
% Diptera + Non-insects	20.9	6.3 \pm 5.3
% Ephemeroptera	12.5	44.9 \pm 17.3
% Ephemeroptera that are Baetidae	25.0	26.1 \pm 20.5
% EPT Individuals	78.7	93.7 \pm 5.3
% Odonata	--	0.0 \pm 0.0
% of 2 dominant taxa	62.8	60.2 \pm 11.4
% of 5 dominant taxa	88.7	84.5 \pm 5.9
% of dominant taxa	45.0	39.3 \pm 12.3
% Plecoptera	65.0	42.9 \pm 17.2
% Tribe Tanyatarisini	--	
% Trichoptera that are Hydropsychida	25.0	27.4 \pm 27.1
% Tricoptera	1.3	5.8 \pm 5.7
No. EPT individuals/Chironomids+EPT Individuals	0.8	1.0 \pm 0.1
Total Abundance	1463.6	2163.6 \pm 1274.4
Richness		
Chironomidae taxa (genus level only)	1.0	0.9 \pm 0.2
Coleoptera taxa	1.0	0.1 \pm 0.2
Diptera taxa	3.0	2.4 \pm 1.0
Ephemeroptera taxa	4.0	3.7 \pm 0.5
EPT Individuals (Sum)	1145.4	2023.9 \pm 1195.7
EPT taxa (no)	11.0	12.3 \pm 1.9
Odonata taxa	--	0.0 \pm 0.0
Pielou's Evenness	0.6	0.7 \pm 0.1
Plecoptera taxa	5.0	5.5 \pm 1.1
Shannon-Wiener Diversity	1.7	1.9 \pm 0.3
Simpson's Diversity	0.7	0.8 \pm 0.1
Simpson's Evenness	0.2	0.3 \pm 0.1
Total No. of Taxa	16.0	16.0 \pm 3.0
Trichoptera taxa	2.0	3.2 \pm 1.0

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Baetidae	100%	100%	100%	100%	97%	0.99

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at NAWIN01
	Group 1	Group 2	Group 3	Group 4	Group 5	
Chironomidae	100%	100%	100%	100%	95%	0.98
Chloroperlidae	78%	88%	94%	100%	100%	0.98
EphemereIIDae	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
Perlodidae	78%	78%	89%	92%	81%	0.87
Rhyacophilidae	100%	92%	100%	100%	95%	0.98
Taeniopterygidae	89%	49%	100%	92%	97%	0.96

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	11.99
RIVPACS : Observed taxa P>0.50	11.00
RIVPACS : O:E (p > 0.5)	0.92
RIVPACS : Expected taxa P>0.70	9.61
RIVPACS : Observed taxa P>0.70	9.00
RIVPACS : O:E (p > 0.7)	0.94

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Alluvium (%)	0.00000	0.00000 \pm 0.00000
Intrusive (%)	0.00000	0.46153 \pm 2.09955
Metamorphic (%)	0.00000	0.17691 \pm 0.85012
Sedimentary (%)	100.00000	99.36155 \pm 2.22799
Ultramafic (%)	0.00000	0.00000 \pm 0.00000
Volcanic (%)	0.00000	0.00000 \pm 0.00000
Channel		
Depth-Avg (cm)	8.3	21.5 \pm 9.7
Depth-BankfullMinusWetted (cm)	58.00	38.14 \pm 36.11
Depth-Max (cm)	9.5	31.0 \pm 16.5
Macrophyte (PercentRange)	0	0 \pm 0
Reach-%CanopyCoverage (PercentRange)	2.00	1.54 \pm 1.28
Reach-DomStreamsideVeg (Category (1-4))	3	3 \pm 1
Reach-Pools (Binary)	0	1 \pm 0
Reach-Rapids (Binary)	0	0 \pm 0
Reach-Riffles (Binary)	1	1 \pm 0
Reach-StraightRun (Binary)	0	0 \pm 1
Slope (m/m)	0.0360000	0.0581357 \pm 0.0554952
Veg-Coniferous (Binary)	0	1 \pm 0
Veg-Deciduous (Binary)	1	1 \pm 0
Veg-GrassesFerns (Binary)	0	1 \pm 0
Veg-Shrubs (Binary)	1	1 \pm 0
Velocity-Avg (m/s)	0.50	0.51 \pm 0.27
Velocity-Max (m/s)	0.67	0.78 \pm 0.40
Width-Bankfull (m)	3.4	13.7 \pm 16.4
Width-Wetted (m)	1.1	9.0 \pm 13.1
XSEC-VelMethod (Category (1-3))	1	2 \pm 1
Climate		
Precip01_JAN (mm)	78.00000	130.45668 \pm 67.17180
Precip02_FEB (mm)	63.00000	102.48242 \pm 52.12836
Precip03_MAR (mm)	61.00000	89.80929 \pm 42.79174
Precip04_APR (mm)	78.00000	135.11134 \pm 66.06707
Precip05_MAY (mm)	63.00000	70.51109 \pm 13.79432
Precip06_JUN (mm)	70.00000	86.65922 \pm 19.93623
Precip07_JUL (mm)	64.00000	79.11475 \pm 19.88523
Precip08_AUG (mm)	64.00000	76.86606 \pm 21.34619
Precip09_SEP (mm)	52.00000	71.16784 \pm 23.11306
Precip10_OCT (mm)	51.00000	88.14083 \pm 44.84739

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Precip11_NOV (mm)	83.00000	134.64587 \pm 63.61897
Precip12_DEC (mm)	91.00000	142.32359 \pm 65.85239
PrecipTotal_ANNUAL (mm)	795.00000	1143.02476 \pm 453.62461
Temp01_JANMax (Degrees Celsius)	-6.00000	-6.18206 \pm 1.69263
Temp01_JANmin (Degrees Celsius)	-16.00000	-13.62029 \pm 2.05208
Temp02_FEBmax (Degrees Celsius)	-3.00000	-2.89816 \pm 1.88421
Temp02_FEBmin (Degrees Celsius)	-13.00000	-11.14625 \pm 1.99282
Temp03_MARmax (Degrees Celsius)	0.00000	0.98920 \pm 2.35950
Temp03_MARmin (Degrees Celsius)	-9.00000	-7.98295 \pm 1.94687
Temp04_APRmax (Degrees Celsius)	5.00000	5.37616 \pm 3.02243
Temp04_APRmin (Degrees Celsius)	-5.00000	-3.74673 \pm 1.66191
Temp05_MAYmax (Degrees Celsius)	10.00000	10.12548 \pm 3.18022
Temp05_MAYmin (Degrees Celsius)	0.00000	0.09616 \pm 1.15628
Temp06_JUNMax (Degrees Celsius)	14.00000	13.85415 \pm 3.23839
Temp06_JUNMin (Degrees Celsius)	2.00000	2.79527 \pm 1.60213
Temp07_JULmax (Degrees Celsius)	17.00000	17.45582 \pm 3.27590
Temp07_JULmin (Degrees Celsius)	4.00000	4.99257 \pm 1.52992
Temp08_AUGmax (Degrees Celsius)	17.00000	17.36896 \pm 3.11866
Temp08_AUGmin (Degrees Celsius)	4.00000	4.84827 \pm 1.46649
Temp09_SEPmax (Degrees Celsius)	12.00000	12.13974 \pm 2.86510
Temp09_SEPmin (Degrees Celsius)	0.00000	1.12535 \pm 1.20660
Temp10_OCTmax (Degrees Celsius)	6.00000	5.04078 \pm 2.46521
Temp10_OCTmin (Degrees Celsius)	-3.00000	-2.41023 \pm 1.18961
Temp11_NOVmax (Degrees Celsius)	-3.00000	-2.24818 \pm 1.93047
Temp11_NOVmin (Degrees Celsius)	-10.00000	-8.35137 \pm 1.96467
Temp12_DECmax (Degrees Celsius)	-7.00000	-6.49458 \pm 1.76429
Temp12_DECmin (Degrees Celsius)	-15.00000	-12.72330 \pm 1.87798
TempANNUALmax (Degrees Celsius)	5.00000	5.16639 \pm 2.57569
TempANNUALmean (Degrees Celsius)	0.00000	0.71683 \pm 1.81248
TempANNUALmin (Degrees Celsius)	-5.00000	-3.38604 \pm 1.60598
Hydrology		
Drainage-Area (km ²)	1.92955	135.66658 \pm 373.96803
Perimeter (Km)	8.58990	55.78285 \pm 83.00734
StreamDensity (m/km ²)	1879.81859	2198.74079 \pm 886.68339
StreamLength (m)	3627.20	293250.33 \pm 851854.38
Landcover		
Natl-AnnCrops (%)	0.00000	0.00000 \pm 0.00000
Natl-Barren (%)	0.00000	0.00000 \pm 0.00000
Natl-BroadleafDense (%)	0.00000	0.00523 \pm 0.02638
Natl-BroadleafOpen (%)	0.00000	1.35705 \pm 2.04550
Natl-BroadleafSparse (%)	0.00000	0.31953 \pm 0.53788
Natl-Coniferous (%)	0.00000	0.00000 \pm 0.00000
Natl-ConiferousDense (%)	1.87137	4.95677 \pm 7.46543
Natl-ConiferousOpen (%)	77.74379	34.34335 \pm 18.65764
Natl-ConiferousSparse (%)	0.00000	1.39163 \pm 1.60111
Natl-Deciduous (%)	0.00000	0.00000 \pm 0.00000
Natl-Developed (%)	0.00000	0.00002 \pm 0.00009
Natl-ExposedLand (%)	2.18266	16.95282 \pm 9.64125
Natl-Grassland (%)	0.16214	5.60615 \pm 5.17505
Natl-Herb (%)	6.70339	2.04978 \pm 2.79736
Natl-MixedForest (%)	0.00000	0.00000 \pm 0.00000
Natl-MixedwoodDense (%)	0.00000	0.02636 \pm 0.08976
Natl-MixedwoodOpen (%)	0.00000	2.10440 \pm 2.63686
Natl-MixedwoodSparse (%)	0.00000	0.01817 \pm 0.04448
Natl-PerennCropsPast (%)	0.00000	0.00000 \pm 0.00000
Natl-Rock/Rubble (%)	0.00000	6.97447 \pm 7.52078
Natl-Shrubland (%)	0.00000	0.00000 \pm 0.00000
Natl-ShrubLow (%)	5.87352	4.49178 \pm 5.44294
Natl-ShrubTall (%)	0.00000	0.33533 \pm 1.14136
Natl-SnowIce (%)	0.00000	7.70046 \pm 9.06096
Natl-Water (%)	0.00000	0.14384 \pm 0.45543
Natl-Wetland (%)	0.00000	0.00000 \pm 0.00000

Habitat Description

Variable	NAWIN01	Predicted Group Reference Mean \pm SD
Natl-WetlandHerb (%)	0.00000	0.00639 \pm 0.02401
Natl-WetlandShrub (%)	0.00000	0.00868 \pm 0.02574
Natl-WetlandTreed (%)	0.00000	0.00226 \pm 0.00959
Reg-Ice (%)	0.00000	3.06094 \pm 5.65390
Substrate Data		
%Bedrock (%)	0	1 \pm 1
%Boulder (%)	0	3 \pm 3
%Cobble (%)	20	64 \pm 17
%Gravel (%)	13	2 \pm 2
%Pebble (%)	65	31 \pm 16
%Sand (%)	0	0 \pm 0
%Silt+Clay (%)	2	0 \pm 0
D50 (cm)	3.05	19.61 \pm 30.65
Dg (cm)	3.0	20.3 \pm 30.8
Dominant-1st (Category(0-9))	4	7 \pm 1
Dominant-2nd (Category(0-9))	5	6 \pm 1
Embeddedness (Category(1-5))	5	4 \pm 1
PeriphytonCoverage (Category(1-5))	1	2 \pm 1
SurroundingMaterial (Category(0-9))	3	3 \pm 1
Topography		
ElevationMax (m)	2451.00000	2829.64865 \pm 315.67549
ElevationMin (m)	1341.00000	1172.81081 \pm 249.32284
ElevationStdev (m)	268.98831	342.56455 \pm 77.02221
Reg-SlopeLT30% (%)	9.52894	16.26604 \pm 8.50298
Slope30-50% (%)	32.91724	28.13773 \pm 4.86732
Slope50-60% (%)	22.33010	14.11202 \pm 1.82185
SlopeAvg (%)	54.07872	56.75540 \pm 7.27461
SlopeGT60% (%)	33.98058	39.57775 \pm 9.82818
SlopeLT30% (%)	10.77208	18.17250 \pm 6.88627
SlopeMax (%)	140.26332	317.81636 \pm 141.61151
SlopeMin (%)	2.51720	0.79557 \pm 1.30240
SlopeStdev (%)	20.24787	29.56849 \pm 5.64880
Water Chemistry		
CO3 (mg/L)	0.2500000	0.0000000 \pm 0.0000000
General-Alkalinity (mg/L)	147.0000000	68.5944444 \pm 52.1098452
General-DO (mg/L)	10.0000000	11.0635135 \pm 0.9899052
General-pH (pH)	8.1	7.7 \pm 0.7
General-SpCond (μ S/cm)	589.0000000	160.3567568 \pm 118.4083015
General-TempAir (Degrees Celsius)	14.5	10.5 \pm 0.7
General-TempWater (Degrees Celsius)	7.5000000	5.5262162 \pm 1.8860693
General-Turbidity (NTU)	0.7000000	0.1015000 \pm 0.0459619
HCO3 (mg/L)	179.0000000	0.0000000 \pm 0.0000000
Nitrogen-NO2 (mg/L)	0.0025000	0.0074306 \pm 0.0217095
Nitrogen-NO2+NO3 (mg/L)	0.0790000	0.0315000 \pm 0.0316491
Nitrogen-NO3 (mg/L)	0.0790000	0.0699722 \pm 0.0547511
Phosphorus-OrthoP (mg/L)	0.0025000	0.0008750 \pm 0.0012583
Phosphorus-TP (mg/L)	0.0025000	0.0025000 \pm 0.0041986

Landslide Upstream of NAWIN03 in 2011 smothered site in fine sediment, no macro-invertebrates found