Site Description

Study Name	Yukon Territory - UWO
Site	YPS-082
Sampling Date	Jul 29 2015
Know Your Watershed Basin	Klondike
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.88861 N, 139.29611 W
Altitude	1771
Local Basin Name	Eldorado Creek at Little Eldorado airstrip
	Klondike River
Stream Order	2

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	7.8%	28.8%	10.5%	45.6%	7.4%
CABIN Assessment of YPS-082 on Jul 29, 2015	Similar to Reference				

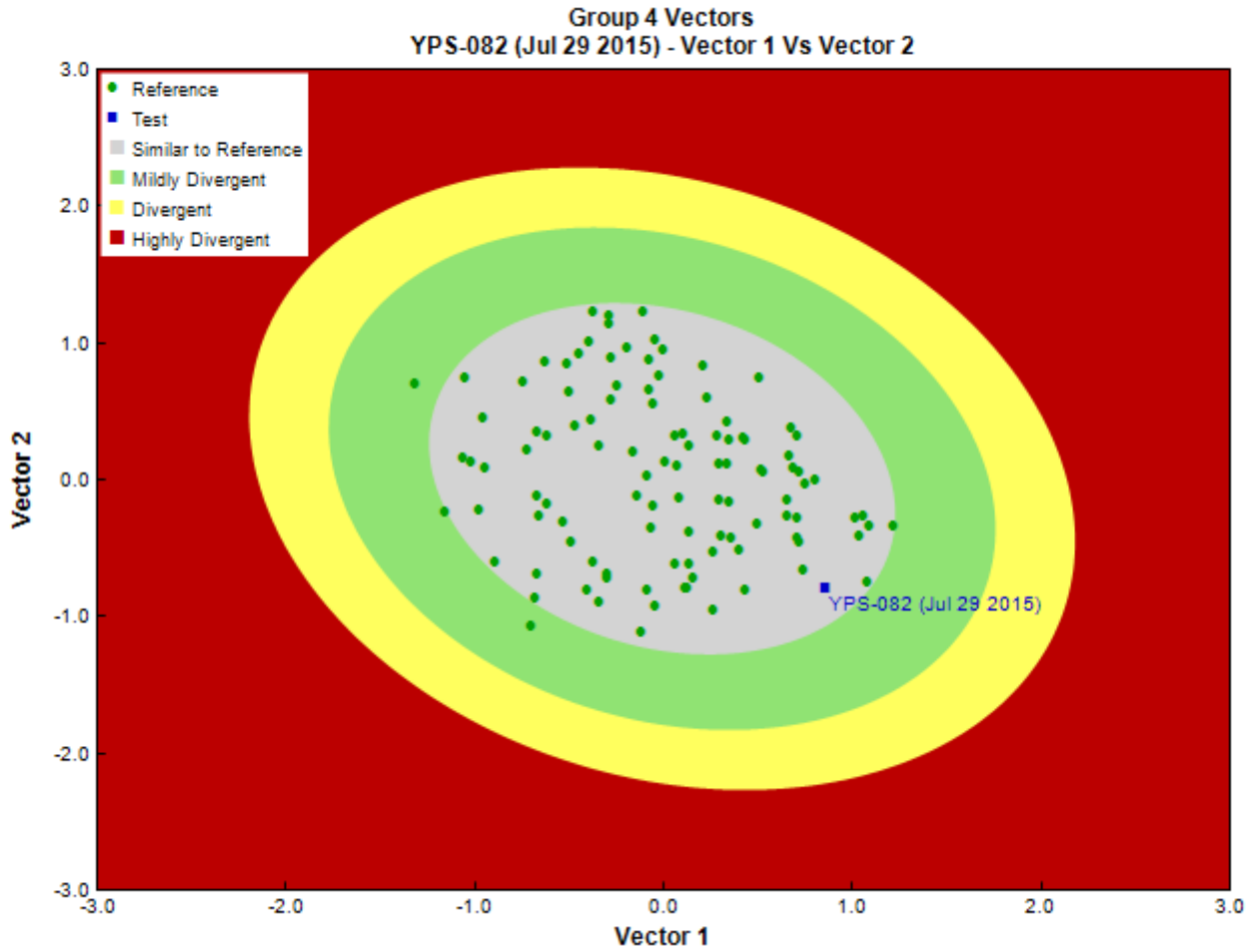


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	76	76.0
Arthropoda	Arachnida	Trombidiformes	Sperchontidae	3	3.0
	Insecta	Diptera	Ceratopogonidae	1	1.0
			Chironomidae	251	251.0
			Empididae	92	92.0
			Muscidae	1	1.0
			Psychodidae	5	5.0
			Simuliidae	6	6.0
			Tipulidae	2	2.0
		Ephemeroptera	Baetidae	53	53.0
			Heptageniidae	34	34.0
		Plecoptera	Capniidae	1	1.0
			Chloroperlidae	3	3.0
			Nemouridae	50	50.0
			Perlodidae	2	2.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
		Trichoptera	Limnephilidae	1	1.0
			Total	581	581.0

Metrics

Name	YPS-082	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.44	0.5 ± 0.2
Number Of Individuals		
Total Abundance	581.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	16.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-082
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.37
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.85
Blephariceridae	0%	0%	5%	0%	0%	0.00
Brachycentridae	0%	15%	7%	23%	8%	0.16
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.40
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.48
Corixidae	13%	8%	0%	0%	0%	0.03
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.10
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.54
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.38
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.14
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.70
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.12
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.18
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.18
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.39
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.12

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-082
	Group 1	Group 2	Group 3	Group 4	Group 5	
Limnephilidae	13%	48%	43%	46%	23%	0.42
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.05
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.28
Nemouridae	39%	74%	100%	81%	100%	0.79
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.44
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.04
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.30
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.80
Sperchontidae	22%	49%	68%	68%	31%	0.56
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.54
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.78
RIVPACS : Observed taxa P>0.50	8.00
RIVPACS : O:E (p > 0.5)	1.38
RIVPACS : Expected taxa P>0.70	4.14
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.21

Habitat Description

Variable	YPS-082	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	17.0	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	25.00	0.00 ± 0.00
Depth-Max (cm)	23.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	0	1 ± 0
Reach-Rapids (Binary)	0	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0

Habitat Description

Variable	YPS-082	Predicted Group Reference Mean ±SD
Slope (m/m)	0.0250000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	0	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.33	0.52 ± 0.32
Velocity-Max (m/s)	0.40	0.70 ± 0.43
Width-Bankfull (m)	10.7	14.0 ± 18.2
Width-Wetted (m)	3.0	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	34.38333	29.33781 ± 11.78911
Precip03_MAR (mm)	33.05667	27.45595 ± 11.91497
Precip06_JUN (mm)	55.11333	53.48783 ± 18.48854
Precip07_JUL (mm)	69.41667	65.85484 ± 22.37167
Rainfall06_JUN (mm)	52.83333	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-4.09333	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.37844	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.08230	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	3	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	231.4000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.8800000	10.8405333 ± 1.2341710
General-pH (pH)	7.7	7.8 ± 0.6
General-SolidsTDS (mg/L)	202.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	550.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	340.8000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	17.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	8.2000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	350.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-084
Sampling Date	Jul 29 2015
Know Your Watershed Basin	Klondike
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.91972 N, 139.31333 W
Altitude	1574
Local Basin Name	Bonanza Creek upstream of Eldorado inflow
	Klondike River
Stream Order	3

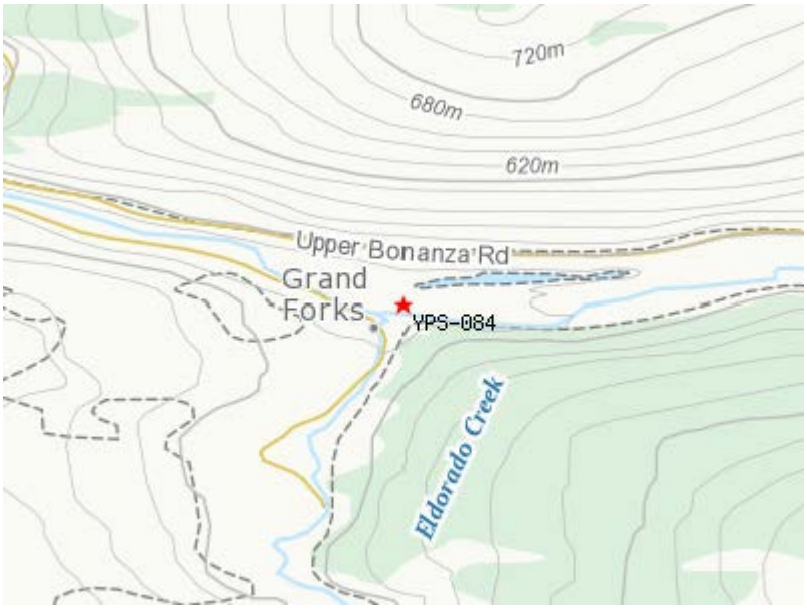


Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	8.1%	24.4%	16.0%	44.7%	6.9%
CABIN Assessment of YPS-084 on Jul 29, 2015	Highly Divergent				

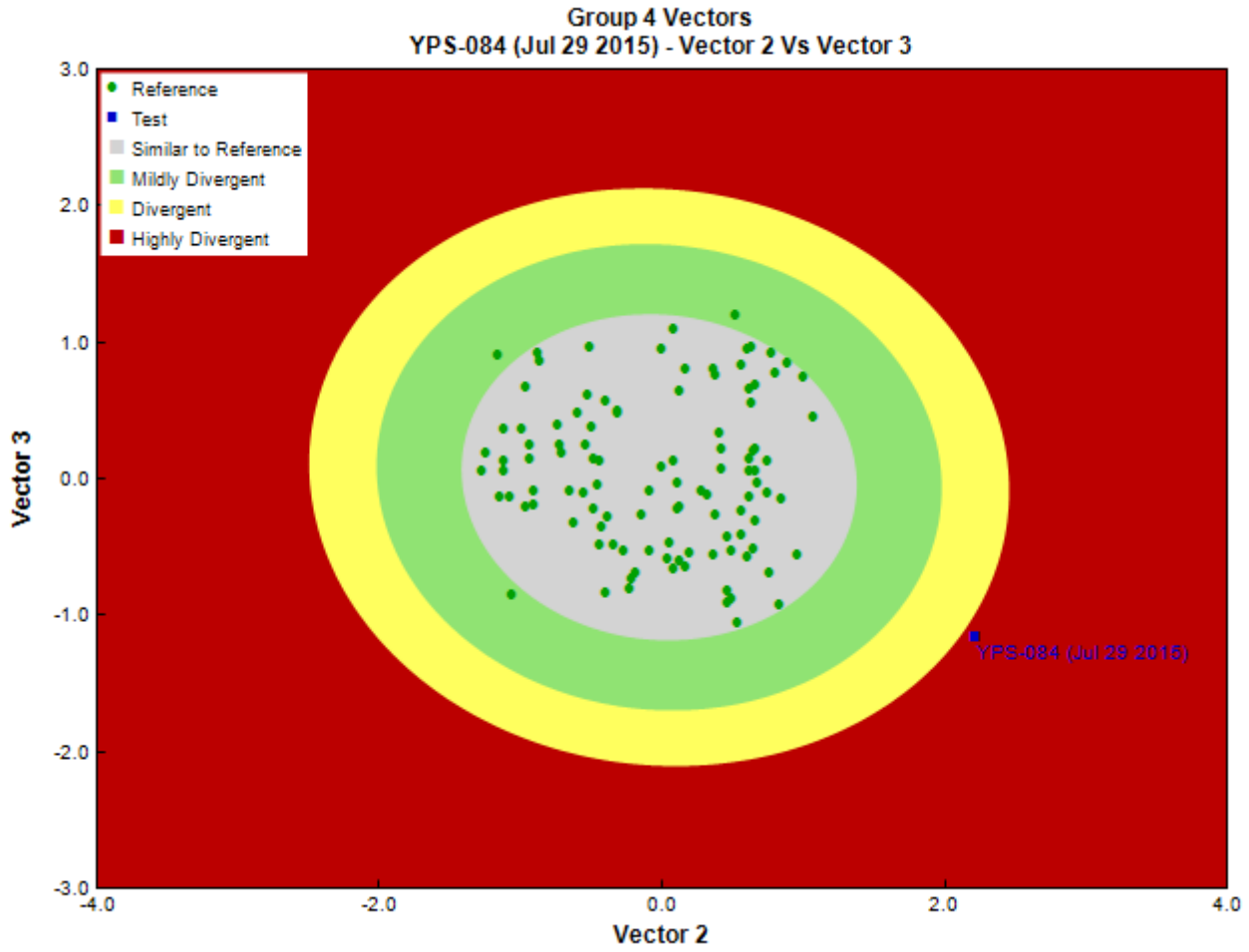


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	1	1.0
		Lumbriculida	Lumbriculidae	1	1.0
Arthropoda	Arachnida	Sarcoptiformes		1	1.0
	Insecta	Diptera	Chironomidae	37	37.0
			Empididae	6	6.0
			Simuliidae	1	1.0
			Tipulidae	10	10.0
		Ephemeroptera	Baetidae	13	13.0
			Heptageniidae	1	1.0
		Lepidoptera		1	1.0
		Plecoptera	Perlodidae	4	4.0
			Total	76	76.0

Metrics

Name	YPS-084	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.87	0.5 ± 0.2
Number Of Individuals		
Total Abundance	76.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	9.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-084
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.39
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.85
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.16
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.41
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.50
Corixidae	13%	8%	0%	0%	0%	0.03
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.10
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.55
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.40
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.72
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.13
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.19
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.19
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.40
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.13
Limnephilidae	13%	48%	43%	46%	23%	0.42
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.05
Metretopodidae	0%	1%	0%	1%	0%	0.01

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-084
	Group 1	Group 2	Group 3	Group 4	Group 5	
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.27
Nemouridae	39%	74%	100%	81%	100%	0.81
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.46
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.04
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.32
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.80
Sperchontidae	22%	49%	68%	68%	31%	0.57
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.54
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.07
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.83
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	1.03
RIVPACS : Expected taxa P>0.70	4.17
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.96

Habitat Description

Variable	YPS-084	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	31.2	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	45.00	0.00 ± 0.00
Depth-Max (cm)	44.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	0	1 ± 0
Reach-Rapids (Binary)	0	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0050000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	0	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.70	0.52 ± 0.32

Habitat Description

Variable	YPS-084	Predicted Group Reference Mean ±SD
Velocity-Max (m/s)	0.80	0.70 ± 0.43
Width-Bankfull (m)	7.4	14.0 ± 18.2
Width-Wetted (m)	5.0	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	33.49500	29.33781 ± 11.78911
Precip03_MAR (mm)	32.09000	27.45595 ± 11.91497
Precip06_JUN (mm)	54.56250	53.48783 ± 18.48854
Precip07_JUL (mm)	68.30000	65.85484 ± 22.37167
Rainfall06_JUN (mm)	52.18375	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-3.86875	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.86435	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.22616	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	3	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	1	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	79.4000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.8900000	10.8405333 ± 1.2341710
General-pH (pH)	7.4	7.8 ± 0.6
General-SolidsTDS (mg/L)	97.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	795.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	137.5000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	13.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	5.2000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	150.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-086
Sampling Date	Jul 28 2015
Know Your Watershed Basin	Central Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.60861 N, 140.03861 W
Altitude	1299
Local Basin Name	10-Mile Creek at 60-Mile River
	Sixty Mile River
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	27.6%	20.0%	10.6%	38.8%	2.9%
CABIN Assessment of YPS-086 on Jul 28, 2015	Similar to Reference				

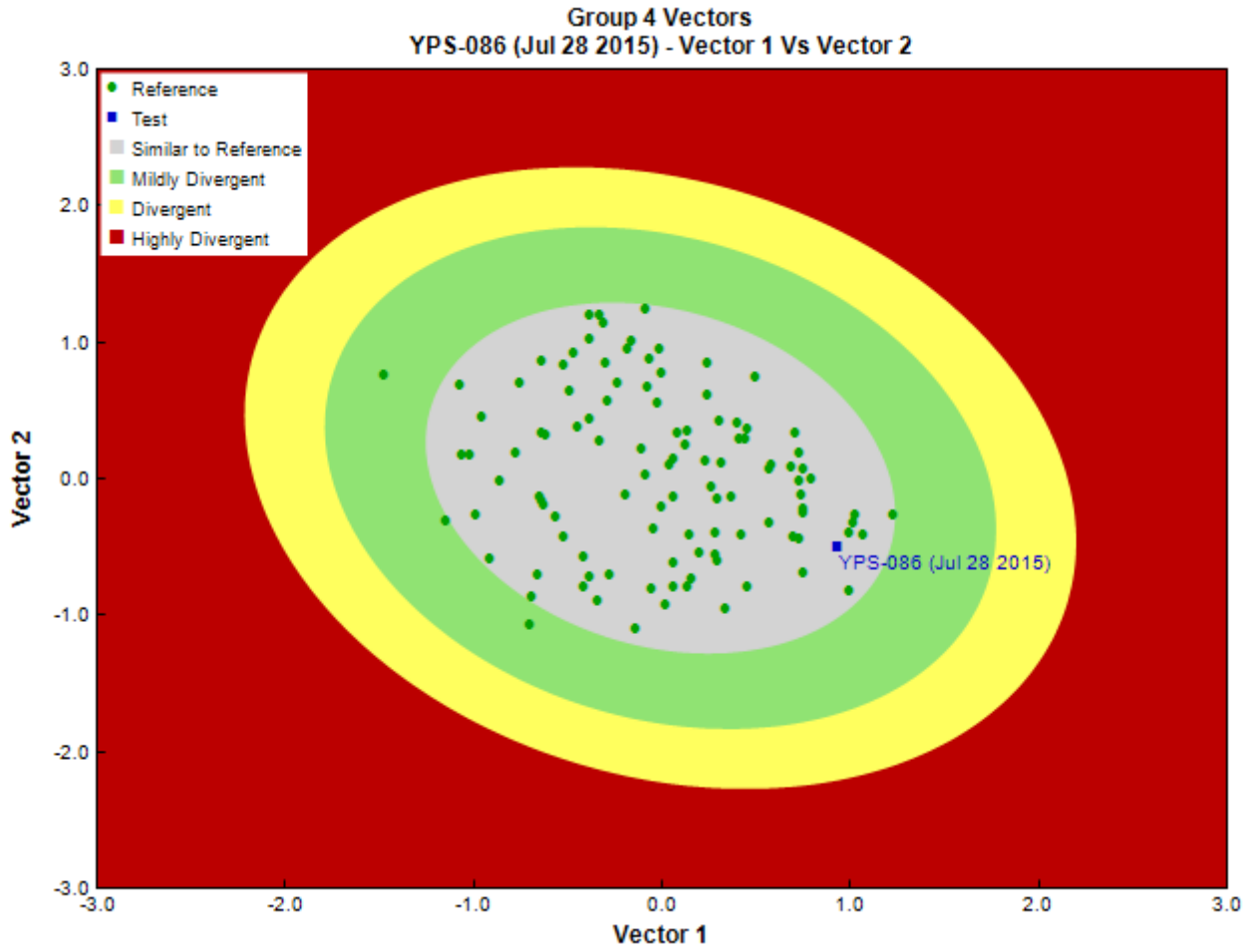


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	1	1.0
Arthropoda	Arachnida	Sarcoptiformes		1	1.0
		Trombidiformes	Sperchontidae	1	1.0
	Insecta	Diptera	Ceratopogonidae	7	7.0
			Chironomidae	387	387.0
			Simuliidae	11	11.0
		Ephemeroptera	Baetidae	2	2.0
			Heptageniidae	7	7.0
		Plecoptera	Capniidae	3	3.0
			Chloroperlidae	6	6.0
			Nemouridae	2	2.0
			Perlodidae	1	1.0
	Malacostraca	Amphipoda	Gammaridae	1	1.0
			Total	430	430.0

Metrics

Name	YPS-086	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.36	0.5 ± 0.2
Number Of Individuals		
Total Abundance	430.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	12.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-086
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.33
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.01
Baetidae	30%	85%	82%	94%	100%	0.73
Blephariceridae	0%	0%	5%	0%	0%	0.00
Brachycentridae	0%	15%	7%	23%	8%	0.13
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.33
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.43
Corixidae	13%	8%	0%	0%	0%	0.05
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.02
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.03
Empididae	9%	49%	77%	59%	54%	0.45
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.36
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.12
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.60
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.04
Hydropsychidae	4%	13%	36%	8%	0%	0.11
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.16
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.15
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.35
Lepidostomatidae	0%	1%	5%	4%	8%	0.02
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.11
Limnephilidae	13%	48%	43%	46%	23%	0.36
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.32
Lymnaeidae	13%	9%	0%	3%	0%	0.07
Metretopodidae	0%	1%	0%	1%	0%	0.01

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-086
	Group 1	Group 2	Group 3	Group 4	Group 5	
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.04
Naididae	35%	43%	9%	22%	31%	0.29
Nemouridae	39%	74%	100%	81%	100%	0.71
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.39
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.10
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.06
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.20
Rhyacophilidae	4%	34%	68%	25%	15%	0.25
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.72
Sperchontidae	22%	49%	68%	68%	31%	0.50
Staphylinidae	4%	0%	0%	1%	0%	0.02
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.50
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.05
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	4.73
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	1.27
RIVPACS : Expected taxa P>0.70	3.13
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	1.28

Habitat Description

Variable	YPS-086	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	35.8	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	40.00	0.00 ± 0.00
Depth-Max (cm)	66.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Rapids (Binary)	0	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0100000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.78	0.52 ± 0.32

Habitat Description

Variable	YPS-086	Predicted Group Reference Mean ±SD
Velocity-Max (m/s)	1.00	0.70 ± 0.43
Width-Bankfull (m)	14.8	14.0 ± 18.2
Width-Wetted (m)	11.0	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	34.24500	29.33781 ± 11.78911
Precip03_MAR (mm)	33.19167	27.45595 ± 11.91497
Precip06_JUN (mm)	51.90556	53.48783 ± 18.48854
Precip07_JUL (mm)	68.32056	65.85484 ± 22.37167
Rainfall06_JUN (mm)	49.70833	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-2.72167	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.25464	0.37555 ± 1.31381
Natl-Bryoids (%)	0.52289	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	1.62205	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00237	0.14452 ± 0.46324
Substrate Data		
Dominant-1st (Category(0-9))	4	5 ± 2
Dominant-2nd (Category(0-9))	3	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	126.9000000	171.6423077 ± 110.8405401
General-DO (mg/L)	12.0900000	10.8405333 ± 1.2341710
General-pH (pH)	7.2	7.8 ± 0.6
General-SolidsTDS (mg/L)	109.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	346.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	198.4000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	12.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	6.1000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	96.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-108
Sampling Date	Jul 29 2015
Know Your Watershed Basin	Klondike
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.91250 N, 139.20944 W
Altitude	1840
Local Basin Name	Bonanza Creek-Park's Site
	Klondike River
Stream Order	3

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	6.5%	19.5%	13.9%	49.5%	10.7%
CABIN Assessment of YPS-108 on Jul 29, 2015	Mildly Divergent				

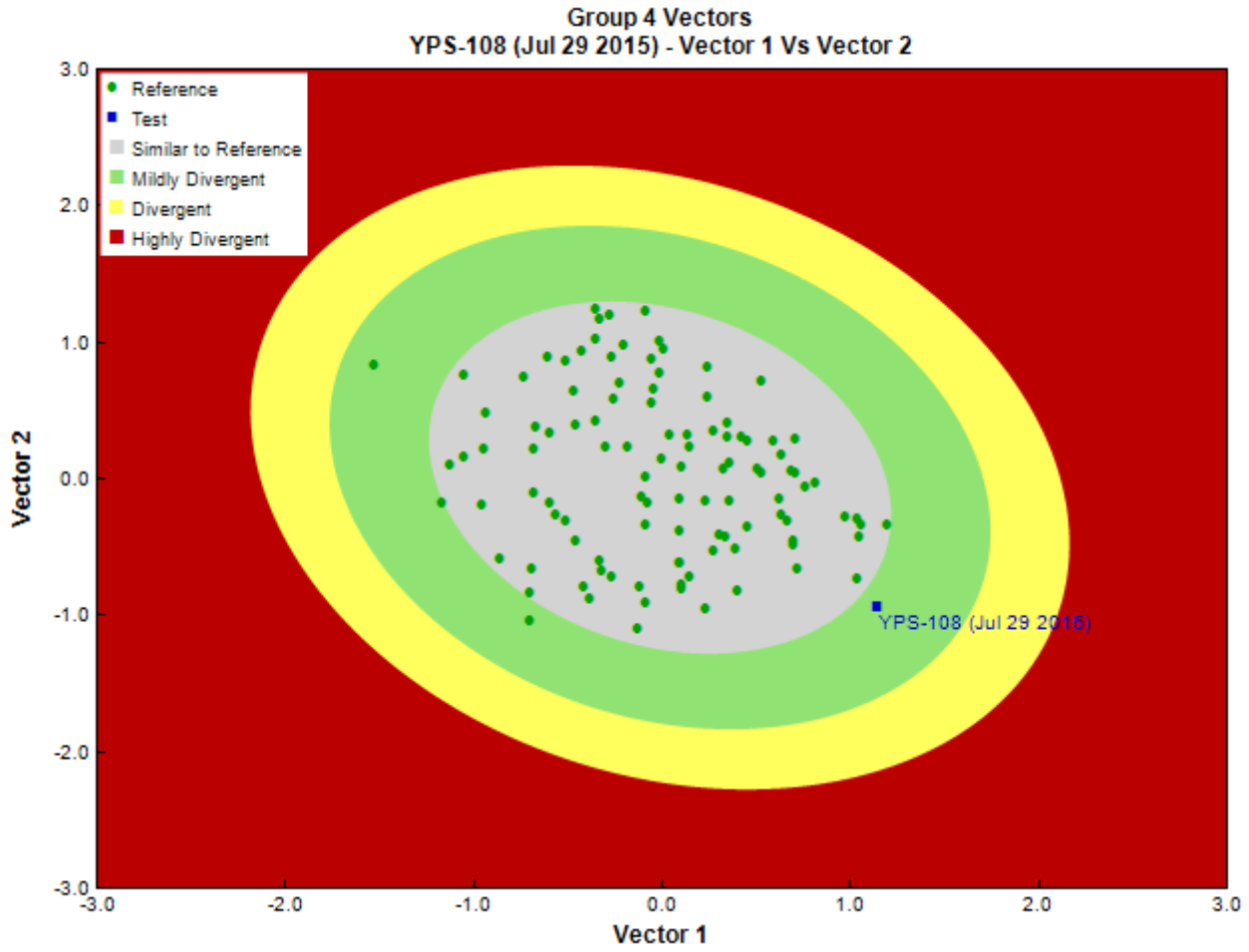


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Arachnida	Sarcoptiformes		2	2.0
	Insecta	Coleoptera	Dytiscidae	1	1.0
		Diptera		1	1.0
			Chironomidae	92	92.0
			Simuliidae	3	3.0
		Ephemeroptera	Ameletidae	2	2.0
			Baetidae	95	95.0
			Heptageniidae	23	23.0
		Plecoptera	Capniidae	2	2.0
			Nemouridae	17	17.0
		Trichoptera	Limnephilidae	2	2.0
			Total	240	240.0

Metrics

Name	YPS-108	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.58	0.5 ± 0.2
Number Of Individuals		
Total Abundance	240.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	9.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-108
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.38
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.87
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.16
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.44
Ceratopogonidae	22%	28%	30%	24%	0%	0.23
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.49
Corixidae	13%	8%	0%	0%	0%	0.02
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.56
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.39
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.10
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.14
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.73
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.12
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.21
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.19
Isotomidae	9%	5%	2%	1%	0%	0.02
Lebertiidae	13%	20%	52%	54%	23%	0.41
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.13
Limnephilidae	13%	48%	43%	46%	23%	0.42
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.34
Lymnaeidae	13%	9%	0%	3%	0%	0.04
Metretopodidae	0%	1%	0%	1%	0%	0.01

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-108
	Group 1	Group 2	Group 3	Group 4	Group 5	
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.26
Nemouridae	39%	74%	100%	81%	100%	0.82
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.48
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.04
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.30
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.81
Sperchontidae	22%	49%	68%	68%	31%	0.57
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.55
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.90
RIVPACS : Observed taxa P>0.50	5.00
RIVPACS : O:E (p > 0.5)	0.85
RIVPACS : Expected taxa P>0.70	4.22
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.18

Habitat Description

Variable	YPS-108	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	15.0	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	30.00	0.00 ± 0.00
Depth-Max (cm)	18.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	0	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	0	1 ± 0
Slope (m/m)	0.0300000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.63	0.52 ± 0.32

Habitat Description

Variable	YPS-108	Predicted Group Reference Mean ±SD
Velocity-Max (m/s)	0.90	0.70 ± 0.43
Width-Bankfull (m)	12.6	14.0 ± 18.2
Width-Wetted (m)	4.1	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	34.62000	29.33781 ± 11.78911
Precip03_MAR (mm)	33.31000	27.45595 ± 11.91497
Precip06_JUN (mm)	55.77000	53.48783 ± 18.48854
Precip07_JUL (mm)	70.00000	65.85484 ± 22.37167
Rainfall06_JUN (mm)	53.44000	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-4.23000	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	194.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.1400000	10.8405333 ± 1.2341710
General-pH (pH)	7.9	7.8 ± 0.6
General-SolidsTDS (mg/L)	155.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	90.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	292.6000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	17.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	7.4000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	19.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-114
Sampling Date	Jul 28 2015
Know Your Watershed Basin	Central Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.70028 N, 140.30333 W
Altitude	1601
Local Basin Name	Matson Creek
	Sixty Mile River
Stream Order	5

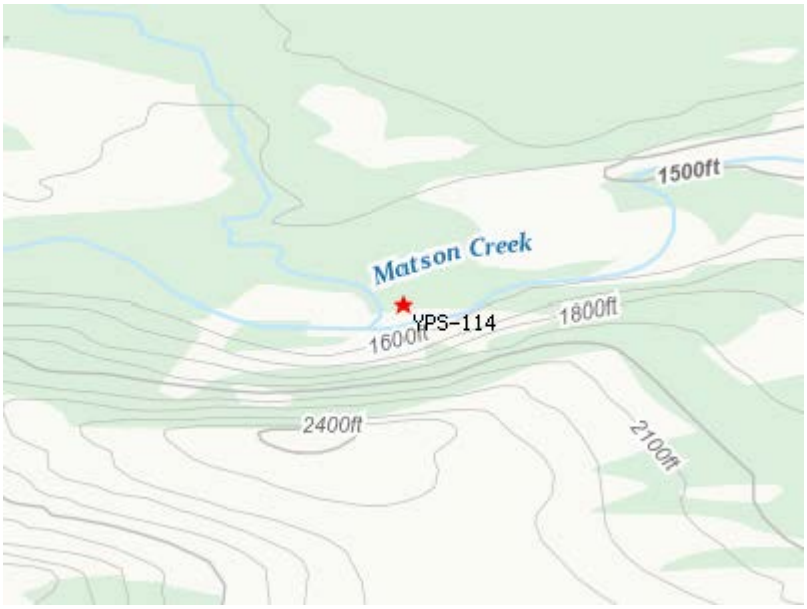


Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	26.0%	20.4%	12.2%	38.7%	2.8%
CABIN Assessment of YPS-114 on Jul 28, 2015	Similar to Reference				

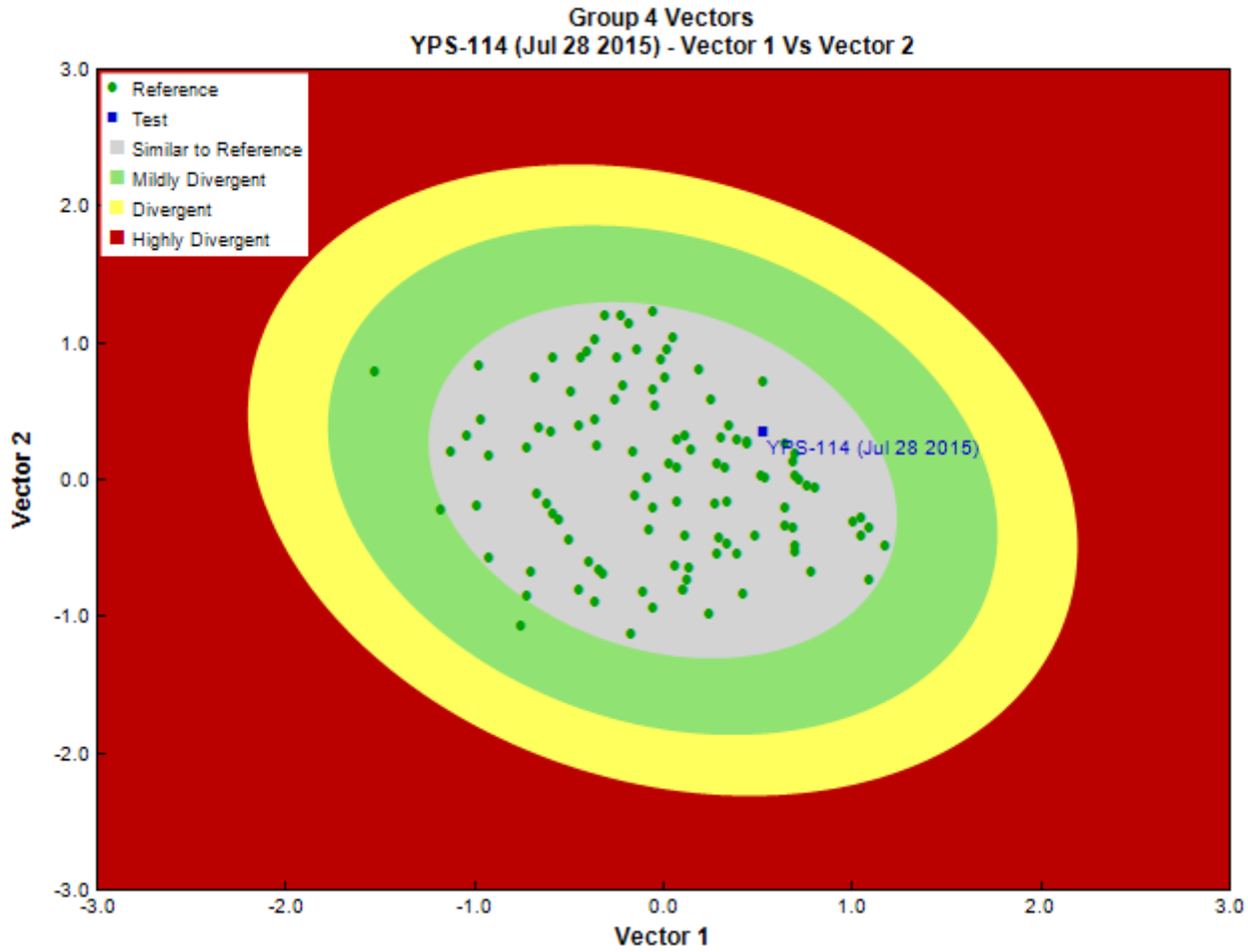


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	22/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	21	95.5
Arthropoda	Arachnida	Trombidiformes	Hygrobatidae	1	4.5
			Lebertiidae	6	27.3
			Sperchontidae	2	9.1
	Insecta	Diptera	Chironomidae	152	690.8
			Empididae	6	27.2
			Simuliidae	15	68.1
			Tipulidae	6	27.3
		Ephemeroptera	Baetidae	69	313.7
			Ephemerellidae	56	254.5
			Heptageniidae	4	18.1
		Plecoptera	Chloroperlidae	6	27.2
			Nemouridae	3	13.6
			Perlodidae	2	9.1
		Trichoptera	Brachycentridae	9	40.9

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Total	358	1,626.9

Metrics

Name	YPS-114	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.36	0.5 ± 0.2
Number Of Individuals		
Total Abundance	1627.3	2059.4 ± 1572.9
Richness		
Total No. of Taxa	15.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-114
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.34
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.01
Baetidae	30%	85%	82%	94%	100%	0.74
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.13
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.34
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.44
Corixidae	13%	8%	0%	0%	0%	0.05
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.46
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.37
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.08
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.12
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.61
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.04
Hydropsychidae	4%	13%	36%	8%	0%	0.11
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.16
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.16
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.35
Lepidostomatidae	0%	1%	5%	4%	8%	0.02
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.12
Limnephilidae	13%	48%	43%	46%	23%	0.37

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-114
	Group 1	Group 2	Group 3	Group 4	Group 5	
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.32
Lymnaeidae	13%	9%	0%	3%	0%	0.06
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.28
Nemouridae	39%	74%	100%	81%	100%	0.72
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.40
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.10
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.05
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.20
Rhyacophilidae	4%	34%	68%	25%	15%	0.26
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.72
Sperchontidae	22%	49%	68%	68%	31%	0.51
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.51
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	4.78
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	1.46
RIVPACS : Expected taxa P>0.70	3.16
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	1.27

Habitat Description

Variable	YPS-114	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	44.8	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	40.00	0.00 ± 0.00
Depth-Max (cm)	57.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	0	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0075000	0.5004989 ± 0.7204958

Habitat Description

Variable	YPS-114	Predicted Group Reference Mean ±SD
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.72	0.52 ± 0.32
Velocity-Max (m/s)	0.90	0.70 ± 0.43
Width-Bankfull (m)	27.5	14.0 ± 18.2
Width-Wetted (m)	24.4	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	32.68686	29.33781 ± 11.78911
Precip03_MAR (mm)	31.70800	27.45595 ± 11.91497
Precip06_JUN (mm)	50.48686	53.48783 ± 18.48854
Precip07_JUL (mm)	66.89257	65.85484 ± 22.37167
Rainfall06_JUN (mm)	48.16600	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-2.05486	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.44392	0.37555 ± 1.31381
Natl-Bryoids (%)	0.33381	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.13532	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00772	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	7	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	2	0 ± 0
SurroundingMaterial (Category(0-9))	3	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	117.4000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.7500000	10.8405333 ± 1.2341710
General-pH (pH)	7.7	7.8 ± 0.6
General-SolidsTDS (mg/L)	85.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	8.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	159.8000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	18.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	11.1000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	1.7000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-115
Sampling Date	Jul 28 2015
Know Your Watershed Basin	Central Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.71756 N, 140.19610 W
Altitude	1433
Local Basin Name	Matson Creek at 60-Mile Rive
	Sixty Mile River
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	13.9%	10.4%	21.1%	46.9%	7.7%
CABIN Assessment of YPS-115 on Jul 28, 2015	Mildly Divergent				

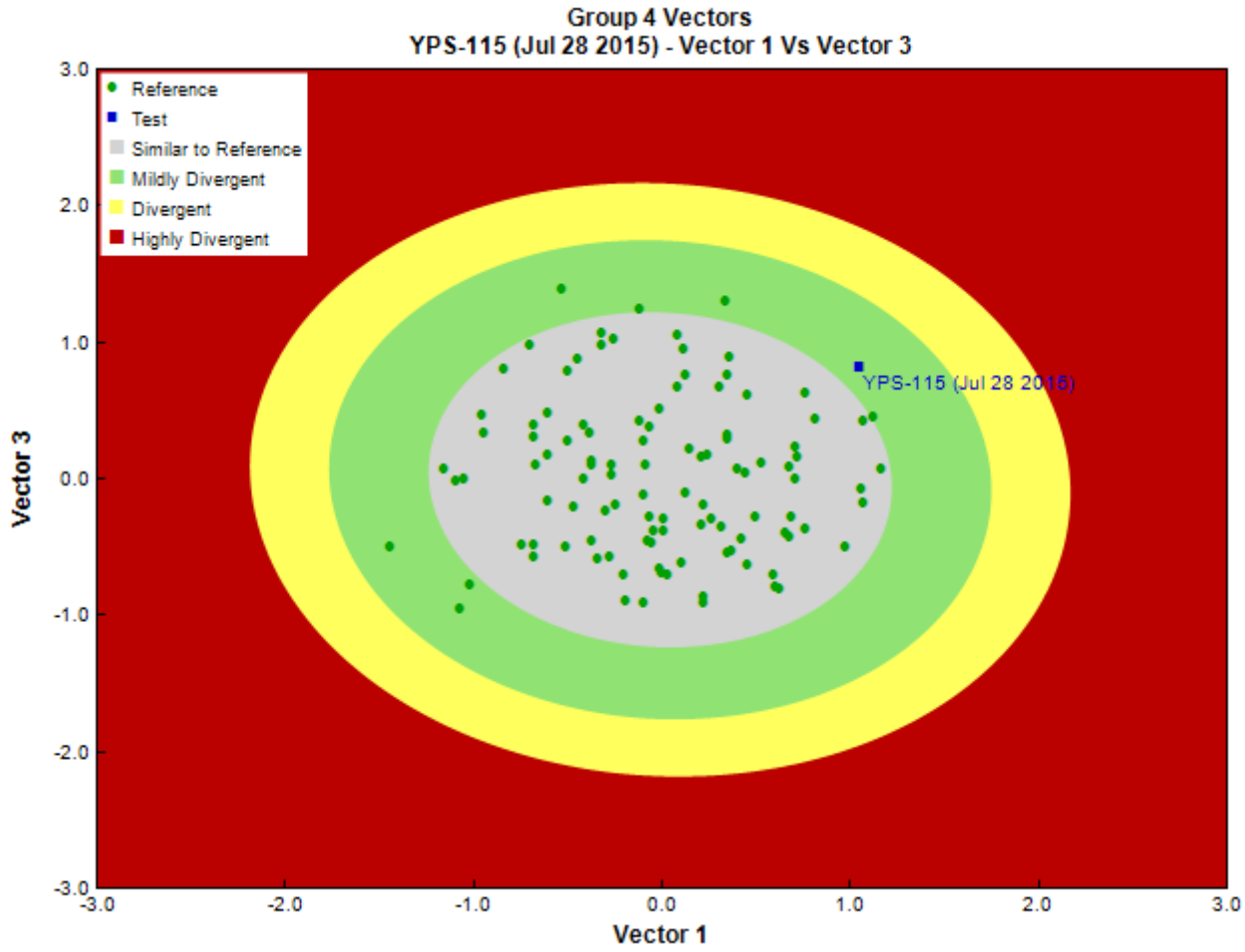


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	27	27.0
Arthropoda	Arachnida	Sarcoptiformes		1	1.0
		Trombidiformes	Hygrobatidae	8	8.0
			Lebertiidae	6	6.0
			Sperchontidae	1	1.0
	Insecta	Coleoptera	Dytiscidae	2	2.0
			Staphylinidae	1	1.0
		Diptera	Athericidae	1	1.0
			Chironomidae	101	101.0
			Empididae	3	3.0
			Muscidae	1	1.0
			Simuliidae	21	21.0
			Tipulidae	35	35.0
		Ephemeroptera		2	2.0
			Ameletidae	1	1.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Baetidae	159	159.0
			Ephemerellidae	65	65.0
			Heptageniidae	37	37.0
		Plecoptera	Chloroperlidae	59	59.0
			Perlodidae	2	2.0
		Trichoptera		1	1.0
			Apataniidae	13	13.0
			Brachycentridae	1	1.0
			Glossosomatidae	7	7.0
			Limnephilidae	1	1.0
			Total	556	556.0

Metrics

Name	YPS-115	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.61	0.5 ± 0.2
Number Of Individuals		
Total Abundance	556.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	22.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-115
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.39
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.82
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.14
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.42
Ceratopogonidae	22%	28%	30%	24%	0%	0.23
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.50
Corixidae	13%	8%	0%	0%	0%	0.03
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.01
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.08
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.55
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.40
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.14
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.71
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.14
Hydroptilidae	4%	7%	0%	6%	0%	0.04

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-115
	Group 1	Group 2	Group 3	Group 4	Group 5	
Hydrozetidae	4%	3%	20%	28%	31%	0.21
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.19
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.42
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.14
Limnephilidae	13%	48%	43%	46%	23%	0.39
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.34
Lymnaeidae	13%	9%	0%	3%	0%	0.04
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.24
Nemouridae	39%	74%	100%	81%	100%	0.80
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.48
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.04
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.31
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.78
Sperchontidae	22%	49%	68%	68%	31%	0.57
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.54
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.09
Uenoidae	0%	8%	30%	1%	0%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.26
RIVPACS : Observed taxa P>0.50	8.00
RIVPACS : O:E (p > 0.5)	1.28
RIVPACS : Expected taxa P>0.70	4.11
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.97

Habitat Description

Variable	YPS-115	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		

Habitat Description

Variable	YPS-115	Predicted Group Reference Mean ±SD
Depth-Avg (cm)	42.2	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	65.00	0.00 ± 0.00
Depth-Max (cm)	57.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0100000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	1.38	0.52 ± 0.32
Velocity-Max (m/s)	1.60	0.70 ± 0.43
Width-Bankfull (m)	27.3	14.0 ± 18.2
Width-Wetted (m)	12.7	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	32.73816	29.33781 ± 11.78911
Precip03_MAR (mm)	31.74579	27.45595 ± 11.91497
Precip06_JUN (mm)	50.55947	53.48783 ± 18.48854
Precip07_JUL (mm)	66.91895	65.85484 ± 22.37167
Rainfall06_JUN (mm)	48.26132	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-2.12500	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.41688	0.37555 ± 1.31381
Natl-Bryoids (%)	0.32198	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.12708	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.01287	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	5	4 ± 1
PeriphytonCoverage (Category(1-5))	2	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	91.9000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.7200000	10.8405333 ± 1.2341710
General-pH (pH)	7.5	7.8 ± 0.6
General-SolidsTDS (mg/L)	69.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	29.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	130.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	15.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	9.7000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	14.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-118
Sampling Date	Jul 28 2015
Know Your Watershed Basin	Central Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.79335 N, 140.19650 W
Altitude	1476
Local Basin Name	60-Mile River at 50-Mile Creek
	Sixty Mile River
Stream Order	5

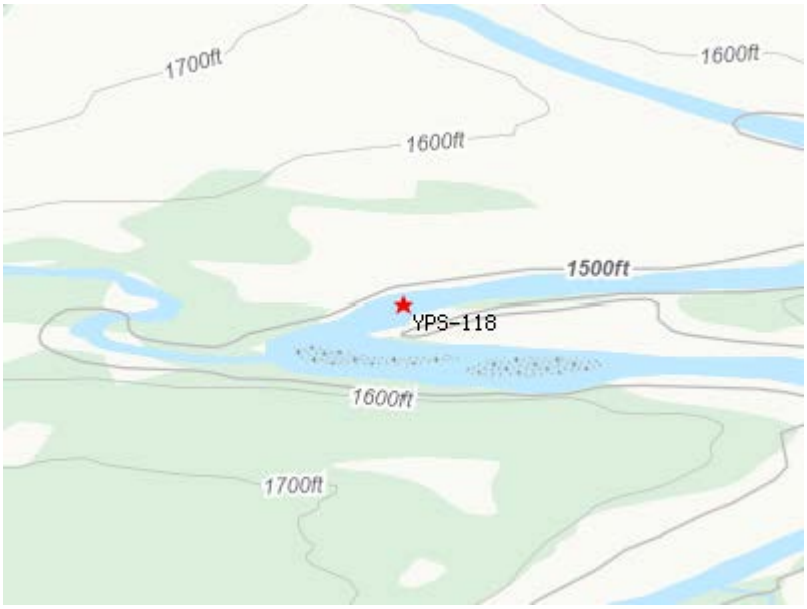


Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	46.1%	18.2%	13.0%	21.8%	0.9%
CABIN Assessment of YPS-118 on Jul 28, 2015	Similar to Reference				

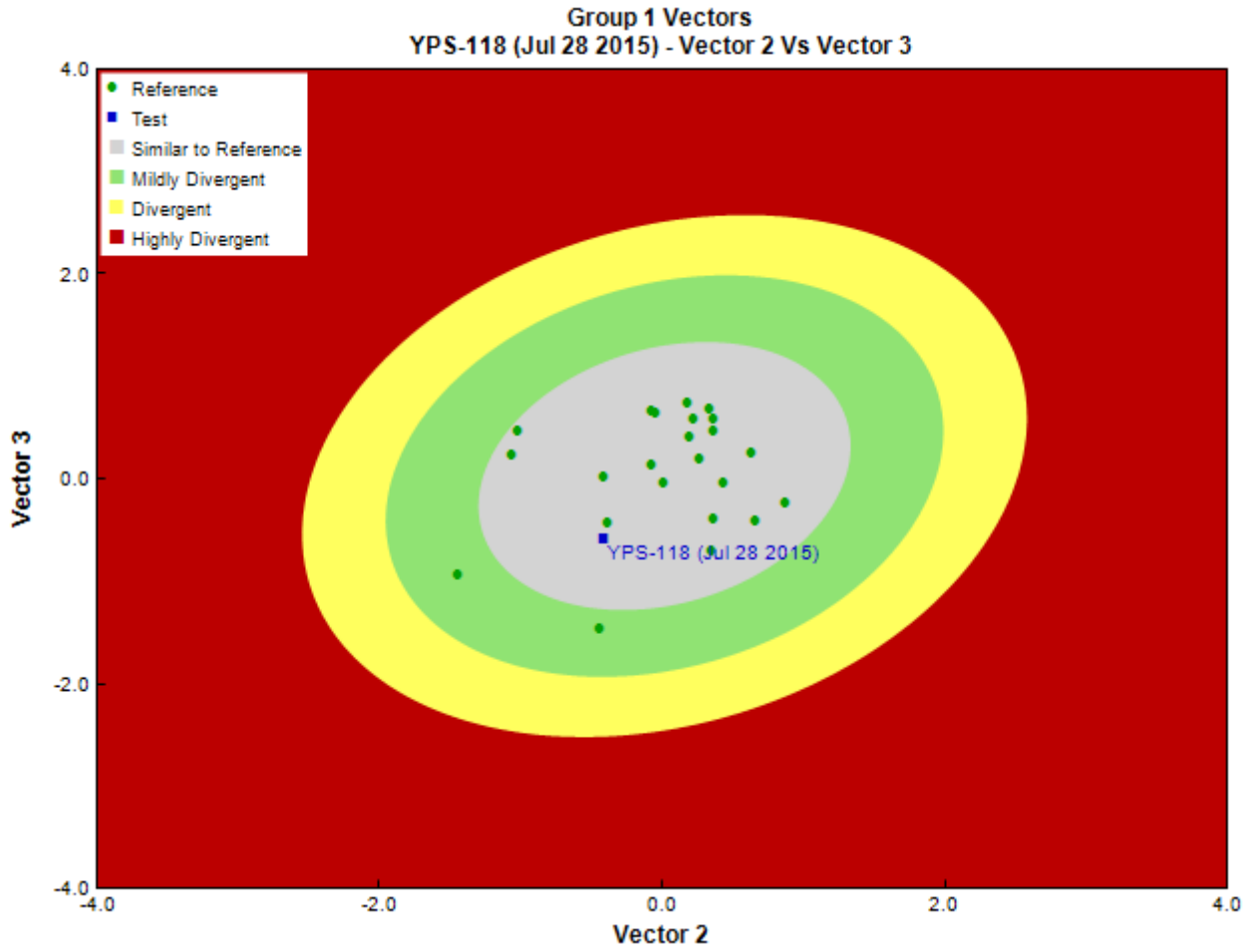


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	1	1.0
Arthropoda	Arachnida	Trombidiformes	Sperchontidae	1	1.0
	Insecta	Diptera	Ceratopogonidae	9	9.0
			Chironomidae	13	13.0
			Dolichopodidae	1	1.0
			Empididae	4	4.0
			Simuliidae	2	2.0
			Tipulidae	2	2.0
		Ephemeroptera		1	1.0
			Baetidae	19	19.0
			Ephemerellidae	2	2.0
			Heptageniidae	3	3.0
		Plecoptera	Chloroperlidae	2	2.0
			Nemouridae	1	1.0
		Trichoptera	Apataniidae	1	1.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Brachycentridae	1	1.0
			Total	63	63.0

Metrics

Name	YPS-118	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.7	0.6 ± 0.3
Number Of Individuals		
Total Abundance	63.0	192.2 ± 127.1
Richness		
Total No. of Taxa	15.0	10.1 ± 4.5

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-118
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.28
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.01
Baetidae	30%	85%	82%	94%	100%	0.61
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.09
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.25
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.96
Chloroperlidae	22%	43%	77%	50%	38%	0.39
Corixidae	13%	8%	0%	0%	0%	0.08
Culicidae	9%	0%	0%	0%	0%	0.04
Curculionidae	0%	1%	0%	1%	0%	0.00
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.01
Dolichopodidae	0%	0%	2%	1%	0%	0.00
Dytiscidae	4%	14%	0%	13%	0%	0.07
Elmidae	4%	3%	0%	2%	0%	0.03
Empididae	9%	49%	77%	59%	54%	0.36
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.35
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.09
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.49
Hirudinidae	0%	1%	0%	1%	0%	0.00
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.05
Hydropsychidae	4%	13%	36%	8%	0%	0.11
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.12
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.11
Isotomidae	9%	5%	2%	1%	0%	0.05
Lebertiidae	13%	20%	52%	54%	23%	0.28
Lepidostomatidae	0%	1%	5%	4%	8%	0.02
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.11

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-118
	Group 1	Group 2	Group 3	Group 4	Group 5	
Limnephilidae	13%	48%	43%	46%	23%	0.31
Limnesiidae	0%	1%	2%	6%	8%	0.02
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.30
Lymnaeidae	13%	9%	0%	3%	0%	0.08
Metretopodidae	0%	1%	0%	1%	0%	0.00
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.03
Naididae	35%	43%	9%	22%	31%	0.30
Nemouridae	39%	74%	100%	81%	100%	0.63
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.34
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.12
Planariidae	0%	2%	2%	3%	0%	0.01
Planorbidae	13%	4%	2%	2%	8%	0.08
Poduridae	0%	1%	0%	1%	0%	0.00
Psychodidae	22%	15%	11%	25%	8%	0.20
Rhyacophilidae	4%	34%	68%	25%	15%	0.23
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.63
Sperchontidae	22%	49%	68%	68%	31%	0.43
Staphylinidae	4%	0%	0%	1%	0%	0.02
Stratiomyidae	0%	0%	0%	2%	0%	0.00
Tabanidae	4%	0%	0%	0%	0%	0.02
Taeniopterygidae	0%	1%	5%	2%	15%	0.01
Tipulidae	35%	47%	55%	62%	46%	0.46
Torrenticolidae	0%	0%	0%	5%	8%	0.01
Tubificidae	4%	1%	9%	13%	0%	0.06
Uenoidae	0%	8%	30%	1%	0%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.07

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	2.84
RIVPACS : Observed taxa P>0.50	4.00
RIVPACS : O:E (p > 0.5)	1.41
RIVPACS : Expected taxa P>0.70	0.96
RIVPACS : Observed taxa P>0.70	1.00
RIVPACS : O:E (p > 0.7)	1.04

Habitat Description

Variable	YPS-118	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	103.0	36.5 ± 24.3
Depth-BankfullMinusWetted (cm)	110.00	0.00 ± 0.00
Depth-Max (cm)	103.0	39.2 ± 22.7
Macrophyte (PercentRange)	0	0 ± 0
Reach-%CanopyCoverage (PercentRange)	1.00	1.58 ± 1.31
Reach-Pools (Binary)	0	1 ± 0
Reach-Rapids (Binary)	0	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	0 ± 0

Habitat Description

Variable	YPS-118	Predicted Group Reference Mean ±SD
Slope (m/m)	0.0100000	0.5088889 ± 0.9950150
Veg-Coniferous (Binary)	1	0 ± 0
Veg-Deciduous (Binary)	1	1 ± 1
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	1.10	0.42 ± 0.29
Velocity-Max (m/s)	1.10	0.55 ± 0.38
Width-Bankfull (m)	42.0	23.3 ± 30.9
Width-Wetted (m)	35.0	6.1 ± 4.9
Climate		
Precip02_FEB (mm)	33.00113	27.73943 ± 9.10561
Precip03_MAR (mm)	31.98380	25.54674 ± 9.71520
Precip06_JUN (mm)	52.07366	49.78117 ± 15.10067
Precip07_JUL (mm)	68.04197	63.45366 ± 19.76560
Rainfall06_JUN (mm)	50.22127	45.78194 ± 13.48156
Temp04_APRmax (Degrees Celsius)	-3.06268	-0.26448 ± 3.57165
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.02230	0.19525 ± 0.41187
Natl-Bryoids (%)	0.57964	0.16846 ± 0.41890
Natl-MixedwoodOpen (%)	0.00169	2.45662 ± 5.01153
Natl-WetlandHerb (%)	0.00968	0.22137 ± 0.64189
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	5	4 ± 2
Dominant-2nd (Category(0-9))	4	6 ± 2
Embeddedness (Category(1-5))	5	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	2	4 ± 3
Water Chemistry		
General-Conductivity (µS/cm)	126.1000000	214.2500000 ± 85.7203992
General-DO (mg/L)	10.2600000	10.3865217 ± 1.3012114
General-pH (pH)	7.4	7.5 ± 0.6
General-SolidsTDS (mg/L)	90.0000000	163.3333333 ± 119.2444967
General-SolidsTSS (mg/L)	280.0000000	618.8714286 ± 2167.8373709
General-SpCond (µS/cm)	167.1000000	318.4782609 ± 182.1592384
General-TempAir (Degrees Celsius)	18.0	19.0 ± 3.0
General-TempWater (Degrees Celsius)	12.1000000	10.0104762 ± 4.2555205
General-Turbidity (NTU)	160.0000000	1062.3160000 ± 2079.8139483

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-119
Sampling Date	Jul 20 2015
Know Your Watershed Basin	Upper Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	62.92278 N, 139.17639 W
Altitude	1250
Local Basin Name	Sparkling Creek
	Yukon River South
Stream Order	3

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	59.2%	10.2%	5.7%	24.6%	0.3%
CABIN Assessment of YPS-119 on Jul 20, 2015	Mildly Divergent				

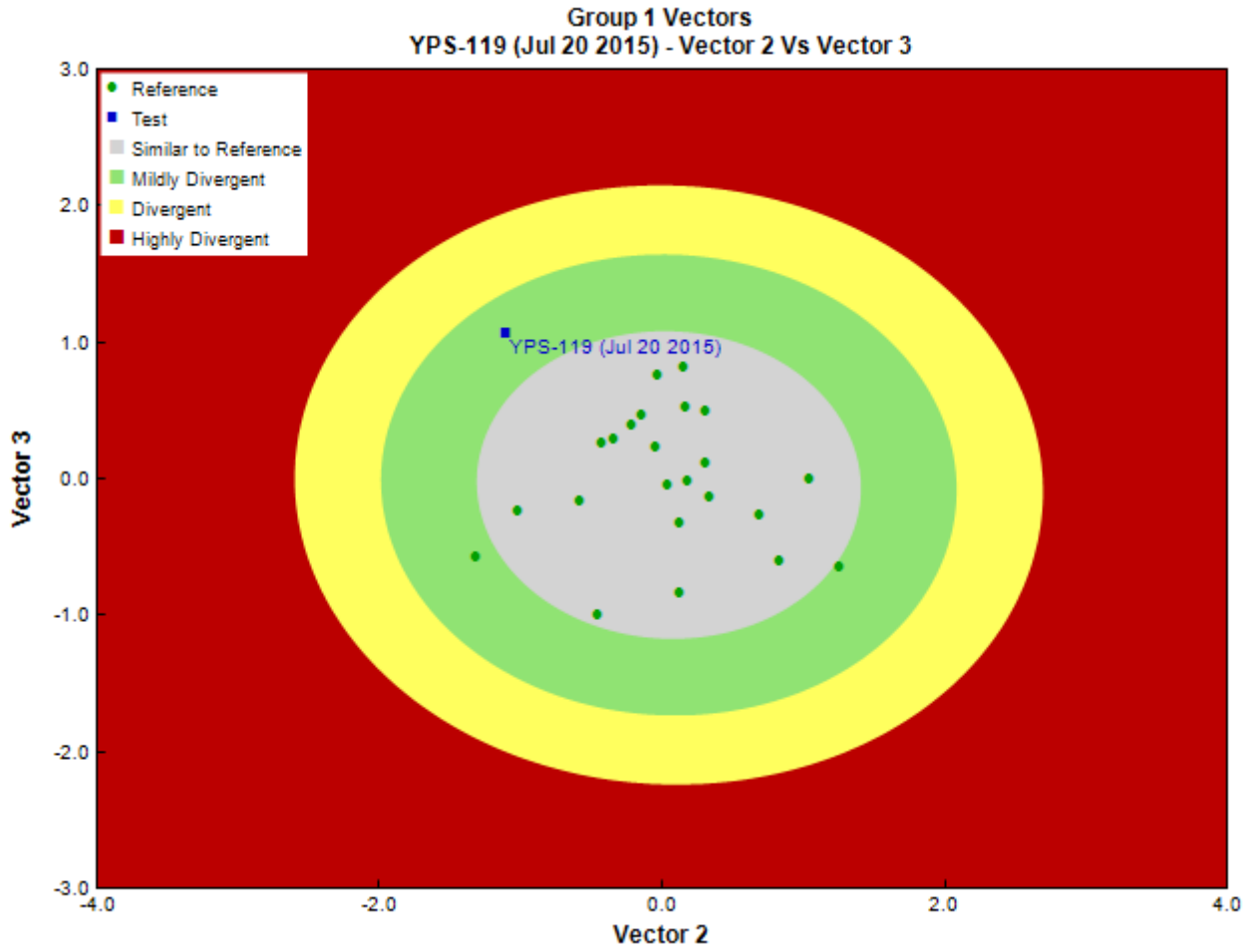


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	2	2.0
Arthropoda	Arachnida	Sarcoptiformes		1	1.0
	Insecta	Coleoptera	Elmidae	1	1.0
		Diptera	Chironomidae	81	81.0
			Empididae	16	16.0
			Simuliidae	38	38.0
			Tipulidae	1	1.0
		Ephemeroptera	Baetidae	375	375.0
			Heptageniidae	1	1.0
		Plecoptera	Capniidae	1	1.0
			Nemouridae	2	2.0
		Trichoptera	Limnephilidae	1	1.0
			Total	520	520.0

Metrics

Name	YPS-119	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.96	0.6 ± 0.3
Number Of Individuals		
Total Abundance	520.0	192.2 ± 127.1
Richness		
Total No. of Taxa	11.0	10.1 ± 4.5

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-119
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.23
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.01
Baetidae	30%	85%	82%	94%	100%	0.55
Blephariceridae	0%	0%	5%	0%	0%	0.00
Brachycentridae	0%	15%	7%	23%	8%	0.08
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.23
Ceratopogonidae	22%	28%	30%	24%	0%	0.23
Chironomidae	91%	100%	100%	100%	100%	0.95
Chloroperlidae	22%	43%	77%	50%	38%	0.34
Corixidae	13%	8%	0%	0%	0%	0.09
Culicidae	9%	0%	0%	0%	0%	0.05
Curculionidae	0%	1%	0%	1%	0%	0.00
Deuterophlebiidae	0%	3%	14%	1%	0%	0.01
Dixidae	0%	5%	2%	1%	0%	0.01
Dolichopodidae	0%	0%	2%	1%	0%	0.00
Dytiscidae	4%	14%	0%	13%	0%	0.07
Elmidae	4%	3%	0%	2%	0%	0.03
Empididae	9%	49%	77%	59%	54%	0.29
Enchytraeidae	0%	0%	9%	2%	0%	0.01
Ephemerellidae	26%	37%	61%	37%	31%	0.32
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.07
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.41
Hirudinidae	0%	1%	0%	1%	0%	0.00
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.00
Hydrobiidae	9%	3%	2%	1%	0%	0.06
Hydropsychidae	4%	13%	36%	8%	0%	0.08
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.11
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.09
Isotomidae	9%	5%	2%	1%	0%	0.06
Lebertiidae	13%	20%	52%	54%	23%	0.26
Lepidostomatidae	0%	1%	5%	4%	8%	0.01
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.08
Limnephilidae	13%	48%	43%	46%	23%	0.27
Limnesiidae	0%	1%	2%	6%	8%	0.02
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.30
Lymnaeidae	13%	9%	0%	3%	0%	0.09
Metretopodidae	0%	1%	0%	1%	0%	0.00

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-119
	Group 1	Group 2	Group 3	Group 4	Group 5	
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.03
Naididae	35%	43%	9%	22%	31%	0.31
Nemouridae	39%	74%	100%	81%	100%	0.57
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.30
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.04
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.13
Planariidae	0%	2%	2%	3%	0%	0.01
Planorbidae	13%	4%	2%	2%	8%	0.09
Poduridae	0%	1%	0%	1%	0%	0.00
Psychodidae	22%	15%	11%	25%	8%	0.21
Rhyacophilidae	4%	34%	68%	25%	15%	0.16
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.58
Sperchontidae	22%	49%	68%	68%	31%	0.38
Staphylinidae	4%	0%	0%	1%	0%	0.03
Stratiomyidae	0%	0%	0%	2%	0%	0.00
Tabanidae	4%	0%	0%	0%	0%	0.03
Taeniopterygidae	0%	1%	5%	2%	15%	0.01
Tipulidae	35%	47%	55%	62%	46%	0.44
Torrenticolidae	0%	0%	0%	5%	8%	0.01
Tubificidae	4%	1%	9%	13%	0%	0.06
Uenoidae	0%	8%	30%	1%	0%	0.03
Valvatidae	4%	9%	5%	11%	8%	0.07

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	2.64
RIVPACS : Observed taxa P>0.50	4.00
RIVPACS : O:E (p > 0.5)	1.52
RIVPACS : Expected taxa P>0.70	0.95
RIVPACS : Observed taxa P>0.70	1.00
RIVPACS : O:E (p > 0.7)	1.05

Habitat Description

Variable	YPS-119	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	10.4	36.5 ± 24.3
Depth-BankfullMinusWetted (cm)	50.00	0.00 ± 0.00
Depth-Max (cm)	12.0	39.2 ± 22.7
Macrophyte (PercentRange)	0	0 ± 0
Reach-%CanopyCoverage (PercentRange)	4.00	1.58 ± 1.31
Reach-Pools (Binary)	1	1 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Slope (m/m)	0.0250000	0.5088889 ± 0.9950150
Veg-Coniferous (Binary)	1	0 ± 0
Veg-Deciduous (Binary)	1	1 ± 1
Veg-GrassesFerns (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.37	0.42 ± 0.29
Velocity-Max (m/s)	0.50	0.55 ± 0.38
Width-Bankfull (m)	1.5	23.3 ± 30.9
Width-Wetted (m)	1.5	6.1 ± 4.9

Habitat Description

Variable	YPS-119	Predicted Group Reference Mean ±SD
Climate		
Precip02_FEB (mm)	35.64000	27.73943 ± 9.10561
Precip03_MAR (mm)	34.77500	25.54674 ± 9.71520
Precip06_JUN (mm)	56.18500	49.78117 ± 15.10067
Precip07_JUL (mm)	72.86000	63.45366 ± 19.76560
Rainfall06_JUN (mm)	53.06500	45.78194 ± 13.48156
Temp04_APRmax (Degrees Celsius)	-1.71000	-0.26448 ± 3.57165
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	1.52272	0.19525 ± 0.41187
Natl-Bryoids (%)	0.10848	0.16846 ± 0.41890
Natl-MixedwoodOpen (%)	5.64740	2.45662 ± 5.01153
Natl-WetlandHerb (%)	0.00000	0.22137 ± 0.64189
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	4 ± 2
Dominant-2nd (Category(0-9))	4	6 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	3	4 ± 3
Water Chemistry		
General-Conductivity (µS/cm)	412.0000000	214.2500000 ± 85.7203992
General-DO (mg/L)	11.8000000	10.3865217 ± 1.3012114
General-pH (pH)	8.0	7.5 ± 0.6
General-SolidsTDS (mg/L)	381.0000000	163.3333333 ± 119.2444967
General-SolidsTSS (mg/L)	1.5000000	618.8714286 ± 2167.8373709
General-SpCond (µS/cm)	618.0000000	318.4782609 ± 182.1592384
General-TempAir (Degrees Celsius)	21.0	19.0 ± 3.0
General-TempWater (Degrees Celsius)	7.5700000	10.0104762 ± 4.2555205
General-Turbidity (NTU)	0.3600000	1062.3160000 ± 2079.8139483

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-147
Sampling Date	Jul 30 2015
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -North EcoRegion
Coordinates (decimal degrees)	63.78361 N, 135.50639 W
Altitude	2184
Local Basin Name	Duncan Creek
	Mayo
Stream Order	5

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	11.0%	20.3%	25.5%	42.3%	0.9%
CABIN Assessment of YPS-147 on Jul 30, 2015	Mildly Divergent				

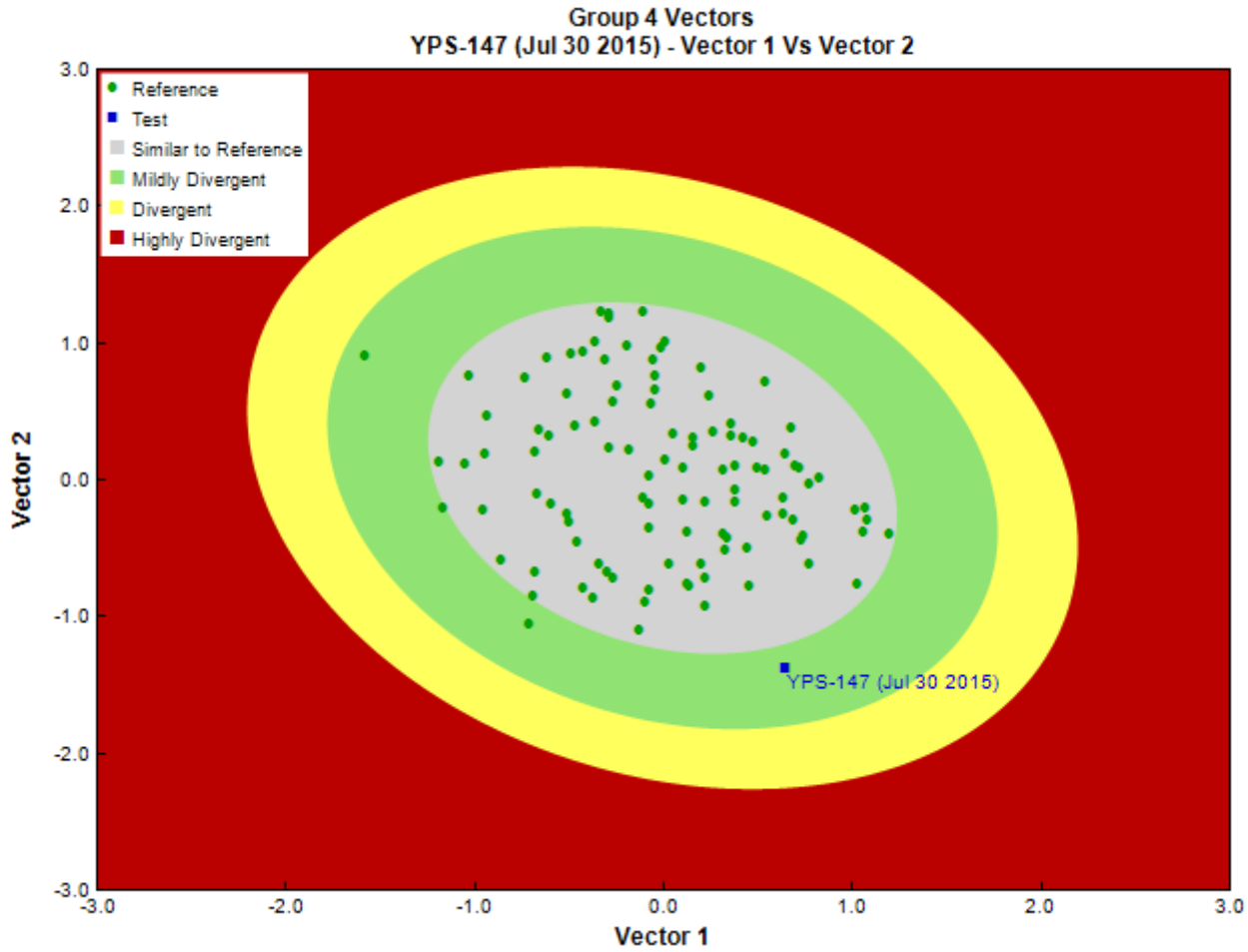


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	1	1.0
Arthropoda	Arachnida	Trombidiformes		1	1.0
			Lebertiidae	5	5.0
			Sperchontidae	20	20.0
	Insecta	Diptera		3	3.0
			Ceratopogonidae	5	5.0
			Chironomidae	74	74.0
			Empididae	7	7.0
			Simuliidae	3	3.0
			Tipulidae	1	1.0
		Ephemeroptera	Baetidae	9	9.0
			Ephemerellidae	10	10.0
			Heptageniidae	87	87.0
		Plecoptera	Capniidae	27	27.0
			Chloroperlidae	79	79.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Nemouridae	42	42.0
			Perlodidae	10	10.0
		Trichoptera	Rhyacophilidae	3	3.0
Mollusca	Gastropoda	Basommatophora	Lymnaeidae	1	1.0
			Total	388	388.0

Metrics

Name	YPS-147	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.68	0.5 ± 0.2
Number Of Individuals		
Total Abundance	388.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	17.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-147
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.43
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.82
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.15
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.39
Ceratopogonidae	22%	28%	30%	24%	0%	0.26
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.52
Corixidae	13%	8%	0%	0%	0%	0.03
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.56
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.42
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.16
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.72
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.16
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.18
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.20
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.42
Lepidostomatidae	0%	1%	5%	4%	8%	0.03

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-147
	Group 1	Group 2	Group 3	Group 4	Group 5	
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.16
Limnephilidae	13%	48%	43%	46%	23%	0.42
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.34
Lymnaeidae	13%	9%	0%	3%	0%	0.04
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.25
Nemouridae	39%	74%	100%	81%	100%	0.80
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.47
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.04
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.35
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.80
Sperchontidae	22%	49%	68%	68%	31%	0.59
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.54
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.10
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.34
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	1.42
RIVPACS : Expected taxa P>0.70	4.13
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.21

Habitat Description

Variable	YPS-147	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	32.8	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	25.00	0.00 ± 0.00
Depth-Max (cm)	40.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	0	1 ± 0

Habitat Description

Variable	YPS-147	Predicted Group Reference Mean ±SD
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0200000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.80	0.52 ± 0.32
Velocity-Max (m/s)	1.10	0.70 ± 0.43
Width-Bankfull (m)	16.7	14.0 ± 18.2
Width-Wetted (m)	15.5	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	17.44200	29.33781 ± 11.78911
Precip03_MAR (mm)	15.97200	27.45595 ± 11.91497
Precip06_JUN (mm)	49.25600	53.48783 ± 18.48854
Precip07_JUL (mm)	53.59733	65.85484 ± 22.37167
Rainfall06_JUN (mm)	44.93667	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	0.93800	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.56653	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.09716	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.02310	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	8	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	3	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	166.6000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.1500000	10.8405333 ± 1.2341710
General-pH (pH)	8.0	7.8 ± 0.6
General-SolidsTDS (mg/L)	141.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	20.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	249.1000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	12.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	7.6000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	11.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-149
Sampling Date	Jul 30 2015
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -North EcoRegion
Coordinates (decimal degrees)	63.90444 N, 135.33500 W
Altitude	2874
Local Basin Name	Duncan Creek
	Mayo
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	7.8%	12.0%	29.3%	47.2%	3.6%
CABIN Assessment of YPS-149 on Jul 30, 2015	Similar to Reference				

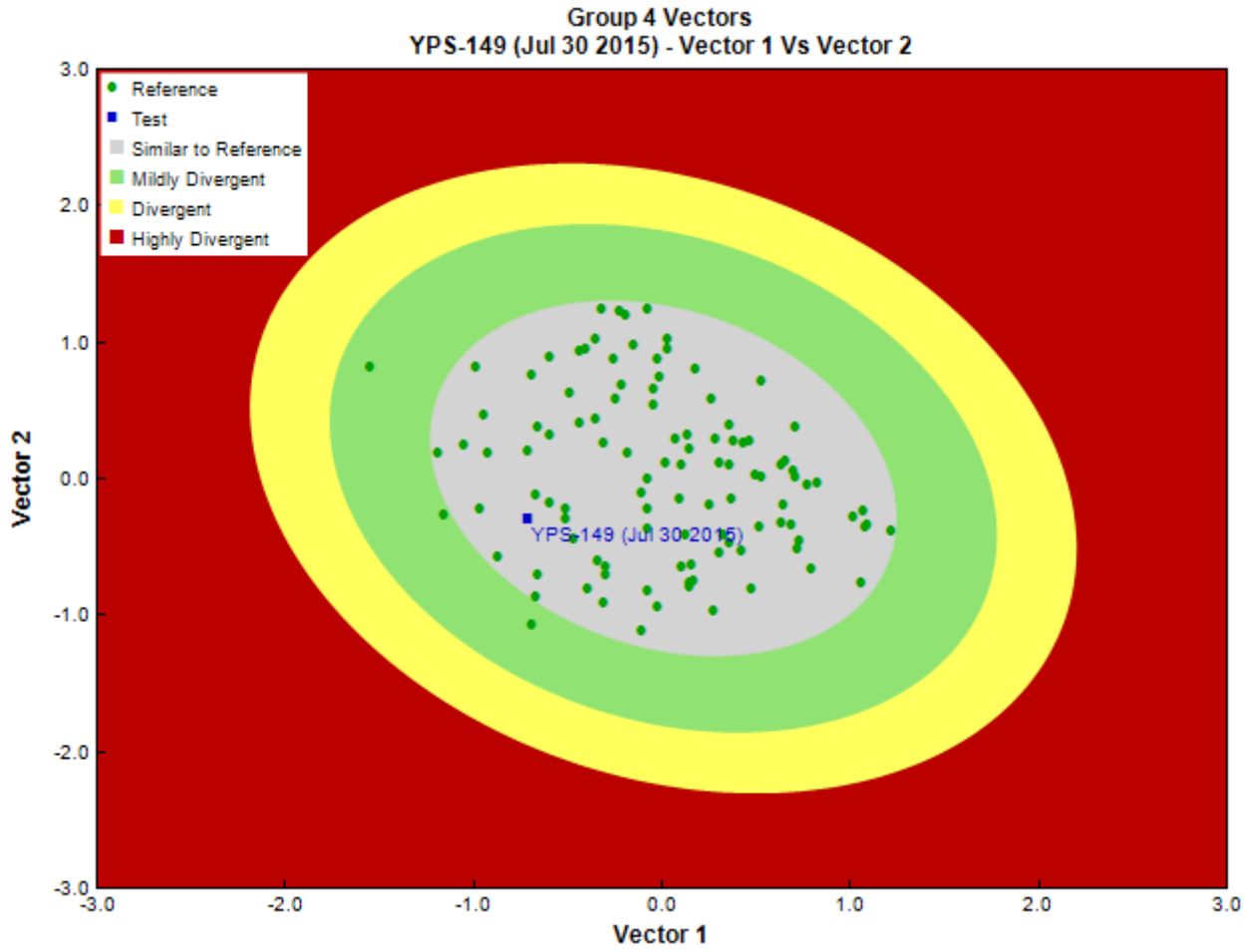


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	19/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	1	5.3
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	4	21.1
			Sperchontidae	12	63.2
	Insecta	Diptera	Chironomidae	118	620.9
			Empididae	5	26.3
			Simuliidae	5	26.3
		Ephemeroptera	Baetidae	51	268.4
			Ephemerellidae	11	57.9
			Heptageniidae	95	499.9
		Plecoptera	Capniidae	5	26.3
			Chloroperlidae	3	15.8
			Nemouridae	129	678.9
			Perlodidae	9	47.3
		Trichoptera	Rhyacophilidae	59	310.5
			Total	507	2,668.1

Metrics

Name	YPS-149	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.53	0.5 ± 0.2
Number Of Individuals		
Total Abundance	2668.4	2059.4 ± 1572.9
Richness		
Total No. of Taxa	14.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-149
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.45
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.84
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.15
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.43
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.54
Corixidae	13%	8%	0%	0%	0%	0.02
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.05
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.08
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.59
Enchytraeidae	0%	0%	9%	2%	0%	0.04
Ephemerellidae	26%	37%	61%	37%	31%	0.43
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.08
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.16
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.76
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.17
Hydroptilidae	4%	7%	0%	6%	0%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.21
Hydryphantidae	4%	0%	9%	6%	0%	0.06
Hygrobatidae	0%	9%	25%	28%	0%	0.22
Isotomidae	9%	5%	2%	1%	0%	0.02
Lebertiidae	13%	20%	52%	54%	23%	0.45
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.16
Limnephilidae	13%	48%	43%	46%	23%	0.42
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.35
Lymnaeidae	13%	9%	0%	3%	0%	0.03
Metretopodidae	0%	1%	0%	1%	0%	0.01

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-149
	Group 1	Group 2	Group 3	Group 4	Group 5	
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.22
Nemouridae	39%	74%	100%	81%	100%	0.83
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.51
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.02
Pisidiidae	17%	9%	2%	7%	8%	0.07
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.03
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.37
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.82
Sperchontidae	22%	49%	68%	68%	31%	0.61
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.55
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.09
Uenoidae	0%	8%	30%	1%	0%	0.10
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	7.05
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	1.28
RIVPACS : Expected taxa P>0.70	4.24
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.18

Habitat Description

Variable	YPS-149	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	32.4	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	30.00	0.00 ± 0.00
Depth-Max (cm)	48.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	2.00	1.37 ± 0.92
Reach-Pools (Binary)	0	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0250000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.84	0.52 ± 0.32

Habitat Description

Variable	YPS-149	Predicted Group Reference Mean ±SD
Velocity-Max (m/s)	1.10	0.70 ± 0.43
Width-Bankfull (m)	5.2	14.0 ± 18.2
Width-Wetted (m)	4.5	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	16.56444	29.33781 ± 11.78911
Precip03_MAR (mm)	15.04889	27.45595 ± 11.91497
Precip06_JUN (mm)	47.86667	53.48783 ± 18.48854
Precip07_JUL (mm)	51.83556	65.85484 ± 22.37167
Rainfall06_JUN (mm)	43.85889	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	1.22556	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.48785	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.02258	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.04428	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	7	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	4	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	120.2000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.2000000	10.8405333 ± 1.2341710
General-pH (pH)	7.6	7.8 ± 0.6
General-SolidsTDS (mg/L)	105.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	17.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	184.8000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	12.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	6.7000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	7.8000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-164
Sampling Date	Jul 20 2015
Know Your Watershed Basin	Upper Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.07472 N, 139.31556 W
Altitude	1515
Local Basin Name	Thistle Creek
	Yukon River South
Stream Order	5

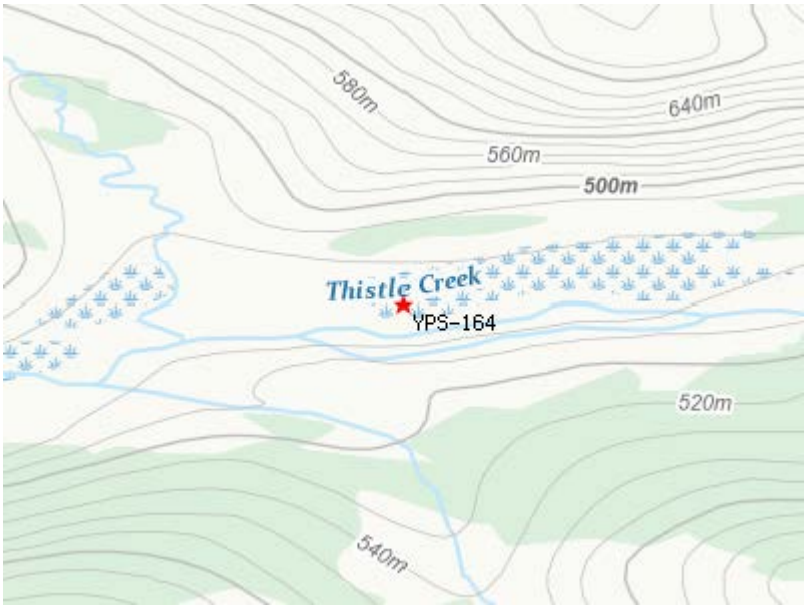


Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	25.8%	13.5%	12.8%	44.9%	3.1%
CABIN Assessment of YPS-164 on Jul 20, 2015	Divergent				

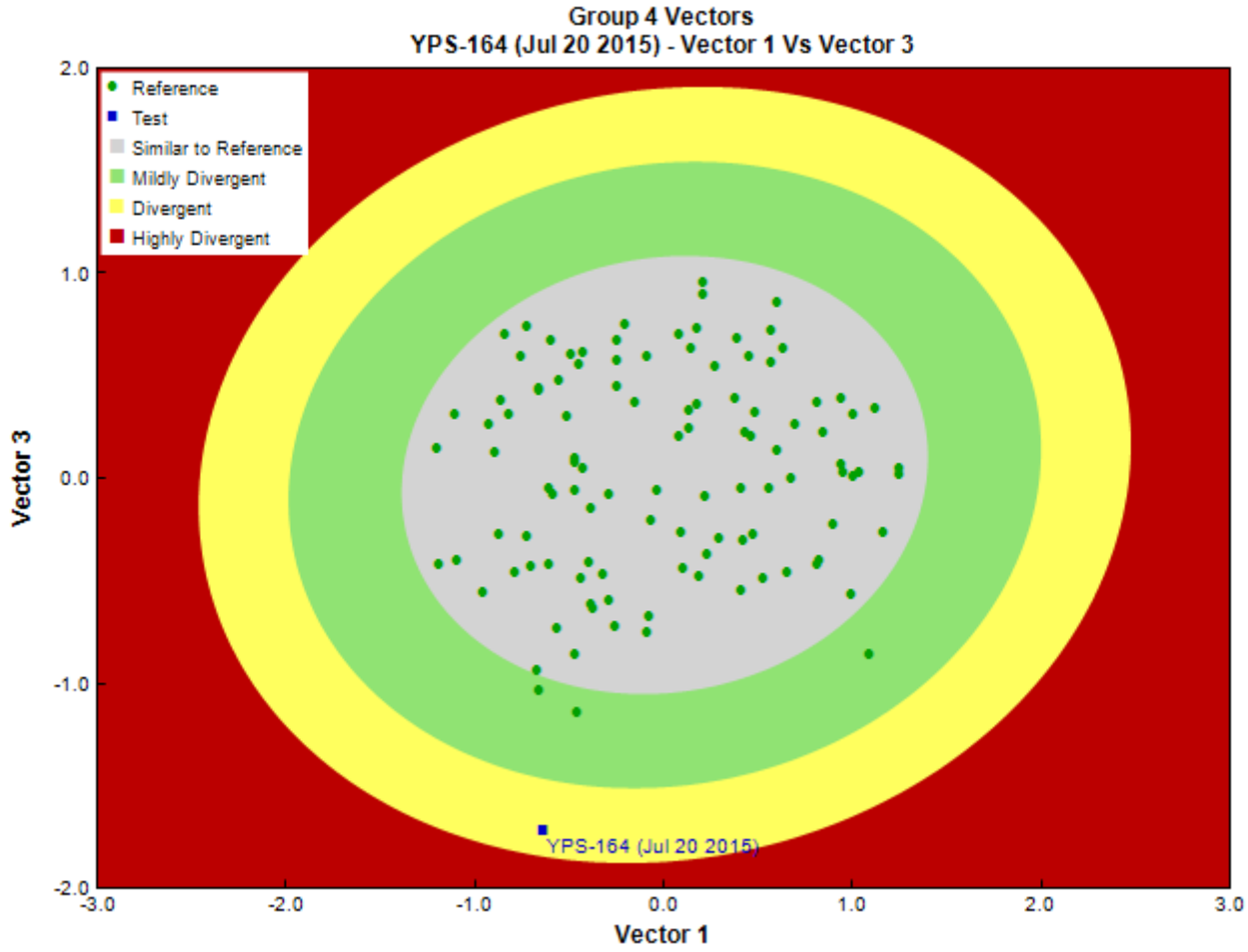


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Tubificida	Naididae	1	1.0
Arthropoda	Insecta	Coleoptera	Elmidae	1	1.0
		Diptera	Ceratopogonidae	2	2.0
			Chironomidae	8	8.0
			Empididae	1	1.0
			Simuliidae	6	6.0
			Tipulidae	1	1.0
		Ephemeroptera	Baetidae	268	268.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Heptageniidae	3	3.0
		Plecoptera	Nemouridae	11	11.0
			Perlodidae	1	1.0
			Total	303	303.0

Metrics

Name	YPS-164	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.77	0.5 ± 0.2
Number Of Individuals		
Total Abundance	303.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	11.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-164
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.34
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.75
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.14
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.36
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.45
Corixidae	13%	8%	0%	0%	0%	0.04
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.01
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.47
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.37
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.12
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.62
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.11
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.18
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.17
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.38
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-164
	Group 1	Group 2	Group 3	Group 4	Group 5	
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.12
Limnephilidae	13%	48%	43%	46%	23%	0.37
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.34
Lymnaeidae	13%	9%	0%	3%	0%	0.06
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.27
Nemouridae	39%	74%	100%	81%	100%	0.73
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.42
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.10
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.05
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.21
Rhyacophilidae	4%	34%	68%	25%	15%	0.26
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.73
Sperchontidae	22%	49%	68%	68%	31%	0.52
Staphylinidae	4%	0%	0%	1%	0%	0.02
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.52
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.05
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	4.84
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	1.24
RIVPACS : Expected taxa P>0.70	3.18
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	1.26

Habitat Description

Variable	YPS-164	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	18.7	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	0.25	0.00 ± 0.00
Depth-Max (cm)	28.5	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	2.00	1.37 ± 0.92
Reach-Riffles (Binary)	1	1 ± 0
Slope (m/m)	0.0150000	0.5004989 ± 0.7204958

Habitat Description

Variable	YPS-164	Predicted Group Reference Mean ±SD
Veg-Deciduous (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.84	0.52 ± 0.32
Velocity-Max (m/s)	1.10	0.70 ± 0.43
Width-Bankfull (m)	9.8	14.0 ± 18.2
Width-Wetted (m)	8.6	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	35.29625	29.33781 ± 11.78911
Precip03_MAR (mm)	34.36125	27.45595 ± 11.91497
Precip06_JUN (mm)	55.59125	53.48783 ± 18.48854
Precip07_JUL (mm)	71.90375	65.85484 ± 22.37167
Rainfall06_JUN (mm)	52.60375	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-2.03875	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.52951	0.37555 ± 1.31381
Natl-Bryoids (%)	0.28321	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	2.85226	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00420	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	5	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	4	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	312.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.4700000	10.8405333 ± 1.2341710
General-pH (pH)	8.0	7.8 ± 0.6
General-SolidsTDS (mg/L)	258.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	7.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	439.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	20.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	9.9000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	2.2000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-172
Sampling Date	Jul 21 2015
Know Your Watershed Basin	Headwaters Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -Central EcoRegion
Coordinates (decimal degrees)	62.40056 N, 137.08511 W
Altitude	1953
Local Basin Name	BIG CREEK
	BIG CREEK
Stream Order	5

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	12.1%	32.7%	17.4%	36.9%	0.9%
CABIN Assessment of YPS-172 on Jul 21, 2015	Similar to Reference				

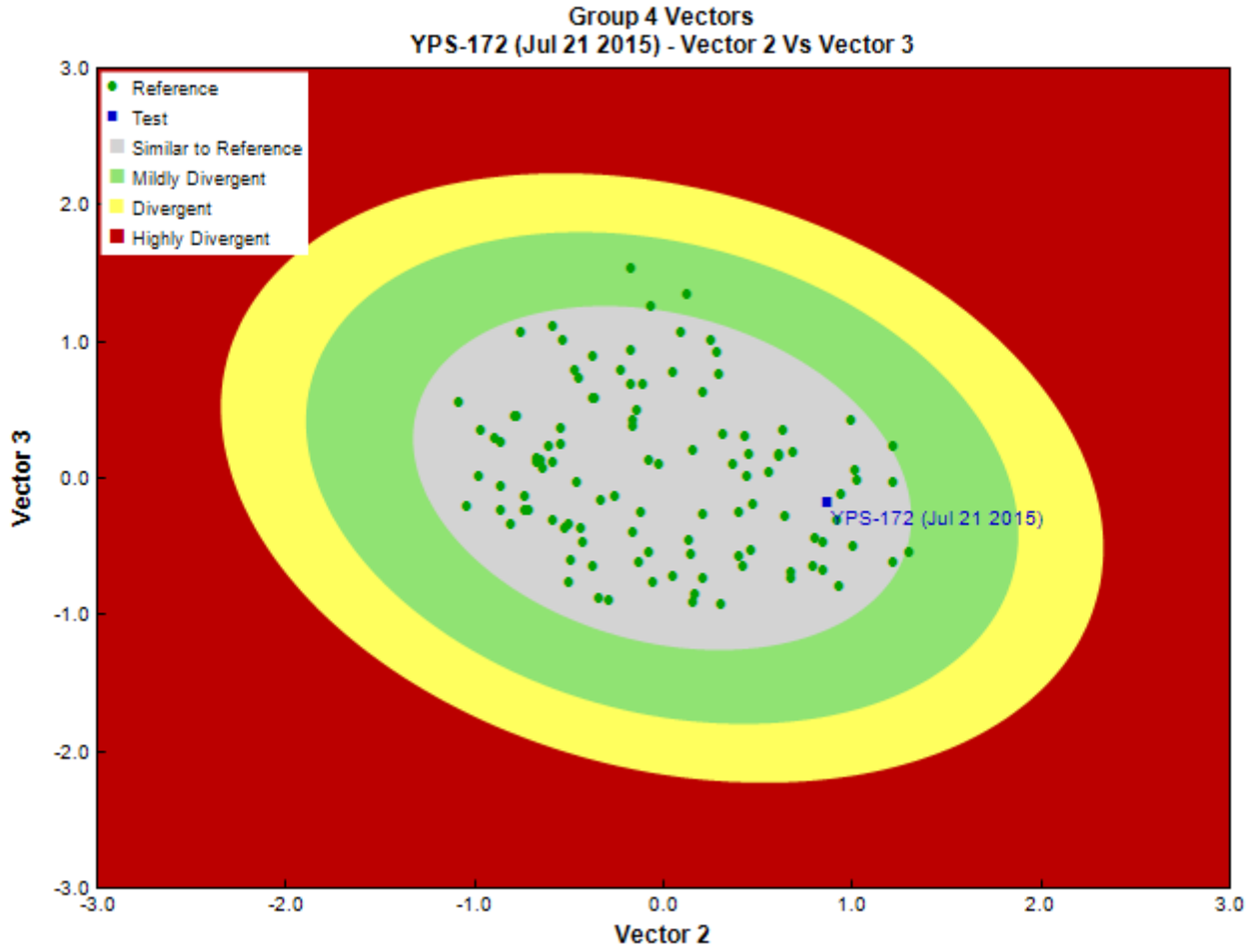


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	11/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Arachnida	Trombidiformes	Hygrobatidae	1	9.1
			Lebertiidae	14	127.3
			Sperchontidae	9	81.8
	Insecta	Diptera	Chironomidae	200	1,818.1
			Empididae	3	27.3
			Psychodidae	2	18.2
		Ephemeroptera	Baetidae	34	309.0
			Ephemerellidae	42	381.9

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Heptageniidae	9	81.8
		Plecoptera	Chloroperlidae	6	54.6
			Nemouridae	1	9.1
			Perlodidae	2	18.2
		Trichoptera	Glossosomatidae	1	9.1
			Limnephilidae	8	72.7
			Rhyacophilidae	1	9.1
			Total	333	3,027.3

Metrics

Name	YPS-172	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.61	0.5 ± 0.2
Number Of Individuals		
Total Abundance	3027.3	2059.4 ± 1572.9
Richness		
Total No. of Taxa	15.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-172
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.40
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.81
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.15
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.35
Ceratopogonidae	22%	28%	30%	24%	0%	0.26
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.49
Corixidae	13%	8%	0%	0%	0%	0.04
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.10
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.53
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.40
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.68
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.14
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.16
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.18

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-172
	Group 1	Group 2	Group 3	Group 4	Group 5	
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.37
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.14
Limnephilidae	13%	48%	43%	46%	23%	0.42
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.32
Lymnaeidae	13%	9%	0%	3%	0%	0.06
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.28
Nemouridae	39%	74%	100%	81%	100%	0.77
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.43
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.04
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.33
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.78
Sperchontidae	22%	49%	68%	68%	31%	0.56
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.52
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.65
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	1.06
RIVPACS : Expected taxa P>0.70	3.35
RIVPACS : Observed taxa P>0.70	3.00
RIVPACS : O:E (p > 0.7)	0.89

Habitat Description

Variable	YPS-172	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	73.6	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	100.00	0.00 ± 0.00
Depth-Max (cm)	78.5	36.8 ± 17.2

Habitat Description

Variable	YPS-172	Predicted Group Reference Mean ±SD
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0100000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.48	0.52 ± 0.32
Velocity-Max (m/s)	0.60	0.70 ± 0.43
Width-Bankfull (m)	37.1	14.0 ± 18.2
Width-Wetted (m)	13.6	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	38.69208	29.33781 ± 11.78911
Precip03_MAR (mm)	38.42146	27.45595 ± 11.91497
Precip06_JUN (mm)	70.31292	53.48783 ± 18.48854
Precip07_JUL (mm)	88.57896	65.85484 ± 22.37167
Rainfall06_JUN (mm)	63.21208	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-1.63271	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.59121	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00050	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.02780	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	5	4 ± 1
PeriphytonCoverage (Category(1-5))	2	0 ± 0
SurroundingMaterial (Category(0-9))	5	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	149.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.0900000	10.8405333 ± 1.2341710
General-pH (pH)	8.0	7.8 ± 0.6
General-SolidsTDS (mg/L)	107.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	16.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	197.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	25.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	12.1100000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	3.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-201
Sampling Date	Jul 21 2015
Know Your Watershed Basin	Headwaters Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -Central EcoRegion
Coordinates (decimal degrees)	62.50667 N, 136.99611 W
Altitude	1673
Local Basin Name	BIG CREEK
	BIG CREEK
Stream Order	5

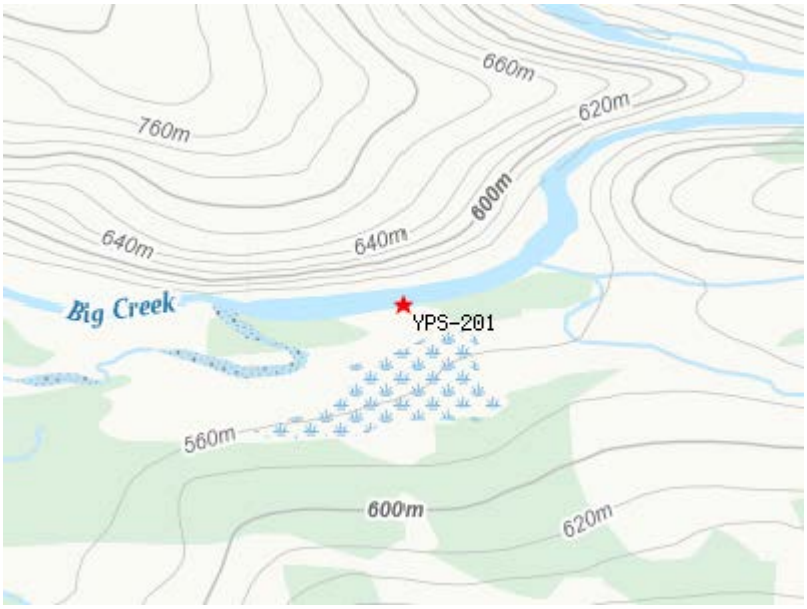


Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	4.4%	25.7%	19.7%	48.1%	2.1%
CABIN Assessment of YPS-201 on Jul 21, 2015	Mildly Divergent				

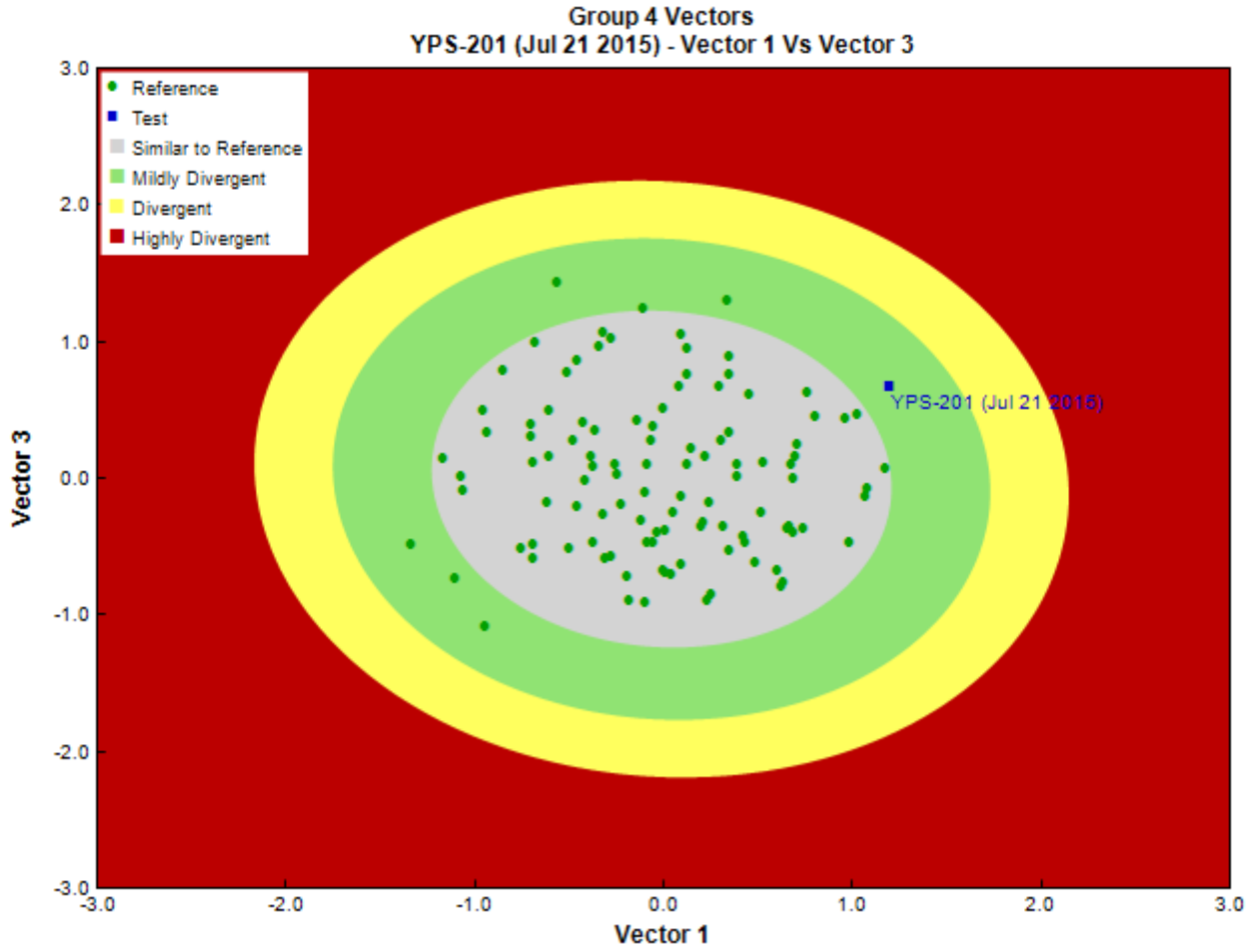


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	6	6.0
			Sperchontidae	10	10.0
	Insecta	Coleoptera	Dytiscidae	1	1.0
		Diptera	Chironomidae	143	143.0
			Empididae	2	2.0
			Tipulidae	7	7.0
		Ephemeroptera	Baetidae	148	148.0
			Ephemerellidae	114	114.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Heptageniidae	3	3.0
		Plecoptera	Capniidae	1	1.0
			Chloroperlidae	16	16.0
			Perlodidae	1	1.0
		Trichoptera		15	15.0
			Apataniidae	1	1.0
			Glossosomatidae	7	7.0
			Limnephilidae	1	1.0
			Rhyacophilidae	14	14.0
	Malacostraca	Amphipoda	Crangonyctidae	1	1.0
			Total	491	491.0

Metrics

Name	YPS-201	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.59	0.5 ± 0.2
Number Of Individuals		
Total Abundance	491.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	17.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-201
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.43
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.86
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.17
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.41
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.52
Corixidae	13%	8%	0%	0%	0%	0.03
Culicidae	9%	0%	0%	0%	0%	0.00
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.10
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.58
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.41
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.08
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.16
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.74
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.15
Hydroptilidae	4%	7%	0%	6%	0%	0.05

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-201
	Group 1	Group 2	Group 3	Group 4	Group 5	
Hydrozetidae	4%	3%	20%	28%	31%	0.19
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.21
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.42
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.15
Limnephilidae	13%	48%	43%	46%	23%	0.44
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.34
Lymnaeidae	13%	9%	0%	3%	0%	0.04
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.26
Nemouridae	39%	74%	100%	81%	100%	0.82
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.47
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.07
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.03
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.35
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.82
Sperchontidae	22%	49%	68%	68%	31%	0.60
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.55
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.49
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	1.08
RIVPACS : Expected taxa P>0.70	4.24
RIVPACS : Observed taxa P>0.70	3.00
RIVPACS : O:E (p > 0.7)	0.71

Habitat Description

Variable	YPS-201	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		

Habitat Description

Variable	YPS-201	Predicted Group Reference Mean ±SD
Depth-Avg (cm)	39.8	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	180.00	0.00 ± 0.00
Depth-Max (cm)	53.5	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0010000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.74	0.52 ± 0.32
Velocity-Max (m/s)	1.00	0.70 ± 0.43
Width-Bankfull (m)	31.0	14.0 ± 18.2
Width-Wetted (m)	18.0	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	39.26537	29.33781 ± 11.78911
Precip03_MAR (mm)	39.04955	27.45595 ± 11.91497
Precip06_JUN (mm)	71.61791	53.48783 ± 18.48854
Precip07_JUL (mm)	89.81119	65.85484 ± 22.37167
Rainfall06_JUN (mm)	64.29746	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-2.13149	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.40304	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00062	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.06576	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
PeriphytonCoverage (Category(1-5))	2	0 ± 0
SurroundingMaterial (Category(0-9))	4	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	156.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	9.8300000	10.8405333 ± 1.2341710
General-pH (pH)	8.1	7.8 ± 0.6
General-SolidsTDS (mg/L)	107.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	7.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	204.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	22.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	12.6900000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	1.9000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-347
Sampling Date	Jul 23 2015
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -North EcoRegion
Coordinates (decimal degrees)	63.84556 N, 137.21389 W
Altitude	2988
Local Basin Name	Clear Creek
	Stewart River
Stream Order	3

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	0.8%	8.8%	22.7%	36.9%	30.8%
CABIN Assessment of YPS-347 on Jul 23, 2015	Mildly Divergent				

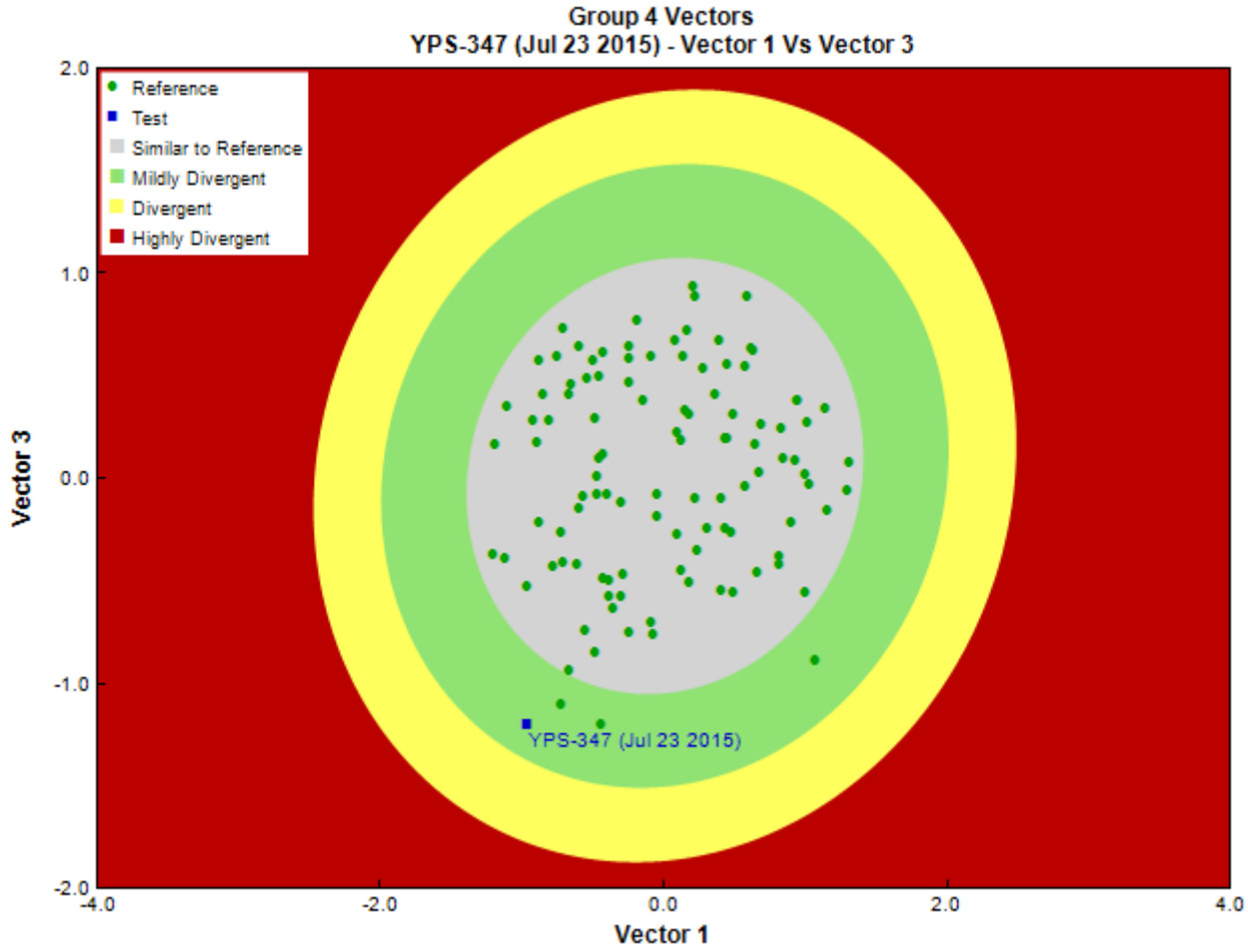


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	33/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	4	12.1
		Tubificida	Naididae	1	3.0
Arthropoda	Insecta	Coleoptera	Dytiscidae	1	3.0
		Diptera	Chironomidae	15	45.4
			Empididae	19	57.6
		Ephemeroptera	Ameletidae	2	6.1
			Baetidae	45	136.3
			Ephemerellidae	5	15.2

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Heptageniidae	174	527.2
		Plecoptera	Chloroperlidae	8	24.2
			Nemouridae	19	57.6
			Perlodidae	11	33.4
			Taeniopterygidae	1	3.0
		Trichoptera	Glossosomatidae	2	6.1
			Rhyacophilidae	4	12.1
			Total	311	942.3

Metrics

Name	YPS-347	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.72	0.5 ± 0.2
Number Of Individuals		
Total Abundance	942.4	2059.4 ± 1572.9
Richness		
Total No. of Taxa	15.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-347
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.38
Apataniidae	0%	1%	0%	3%	8%	0.03
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.04
Baetidae	30%	85%	82%	94%	100%	0.92
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.14
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.54
Ceratopogonidae	22%	28%	30%	24%	0%	0.18
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.52
Corixidae	13%	8%	0%	0%	0%	0.01
Culicidae	9%	0%	0%	0%	0%	0.00
Curculionidae	0%	1%	0%	1%	0%	0.00
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.01
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.06
Elmidae	4%	3%	0%	2%	0%	0.01
Empididae	9%	49%	77%	59%	54%	0.60
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.41
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.05
Gammaridae	9%	2%	0%	13%	23%	0.12
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.13
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.81
Hirudinidae	0%	1%	0%	1%	0%	0.00
Hyalellidae	4%	5%	0%	6%	0%	0.03
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.01
Hydropsychidae	4%	13%	36%	8%	0%	0.13
Hydroptilidae	4%	7%	0%	6%	0%	0.03
Hydrozetidae	4%	3%	20%	28%	31%	0.25
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.17

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-347
	Group 1	Group 2	Group 3	Group 4	Group 5	
Isotomidae	9%	5%	2%	1%	0%	0.01
Lebertiidae	13%	20%	52%	54%	23%	0.41
Lepidostomatidae	0%	1%	5%	4%	8%	0.05
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.12
Limnephilidae	13%	48%	43%	46%	23%	0.38
Limnesiidae	0%	1%	2%	6%	8%	0.05
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.32
Lymnaeidae	13%	9%	0%	3%	0%	0.02
Metretopodidae	0%	1%	0%	1%	0%	0.00
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.24
Nemouridae	39%	74%	100%	81%	100%	0.90
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.56
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.02
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.07
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.04
Poduridae	0%	1%	0%	1%	0%	0.00
Psychodidae	22%	15%	11%	25%	8%	0.16
Rhyacophilidae	4%	34%	68%	25%	15%	0.32
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.83
Sperchontidae	22%	49%	68%	68%	31%	0.54
Staphylinidae	4%	0%	0%	1%	0%	0.00
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.07
Tipulidae	35%	47%	55%	62%	46%	0.54
Torrenticolidae	0%	0%	0%	5%	8%	0.04
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	7.76
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	0.90
RIVPACS : Expected taxa P>0.70	4.46
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.90

Habitat Description

Variable	YPS-347	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	25.8	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	50.00	0.00 ± 0.00
Depth-Max (cm)	27.5	36.8 ± 17.2

Habitat Description

Variable	YPS-347	Predicted Group Reference Mean ±SD
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Riffles (Binary)	1	1 ± 0
Slope (m/m)	0.0150000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.57	0.52 ± 0.32
Velocity-Max (m/s)	0.60	0.70 ± 0.43
Width-Bankfull (m)	15.8	14.0 ± 18.2
Width-Wetted (m)	3.8	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	33.23500	29.33781 ± 11.78911
Precip03_MAR (mm)	32.33333	27.45595 ± 11.91497
Precip06_JUN (mm)	65.16000	53.48783 ± 18.48854
Precip07_JUL (mm)	76.13500	65.85484 ± 22.37167
Rainfall06_JUN (mm)	60.49833	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-4.85833	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.04606	0.37555 ± 1.31381
Natl-Bryoids (%)	0.98694	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	5	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	3	0 ± 0
SurroundingMaterial (Category(0-9))	4	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	61.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.3000000	10.8405333 ± 1.2341710
General-pH (pH)	8.2	7.8 ± 0.6
General-SolidsTDS (mg/L)	50.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	9.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	99.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	20.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	4.5500000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	2.6000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-348
Sampling Date	Jul 23 2015
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -North EcoRegion
Coordinates (decimal degrees)	63.73167 N, 137.63500 W
Altitude	1683
Local Basin Name	Clear Creek
	Stewart River
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	5.7%	27.9%	23.0%	42.1%	1.3%
CABIN Assessment of YPS-348 on Jul 23, 2015	Mildly Divergent				

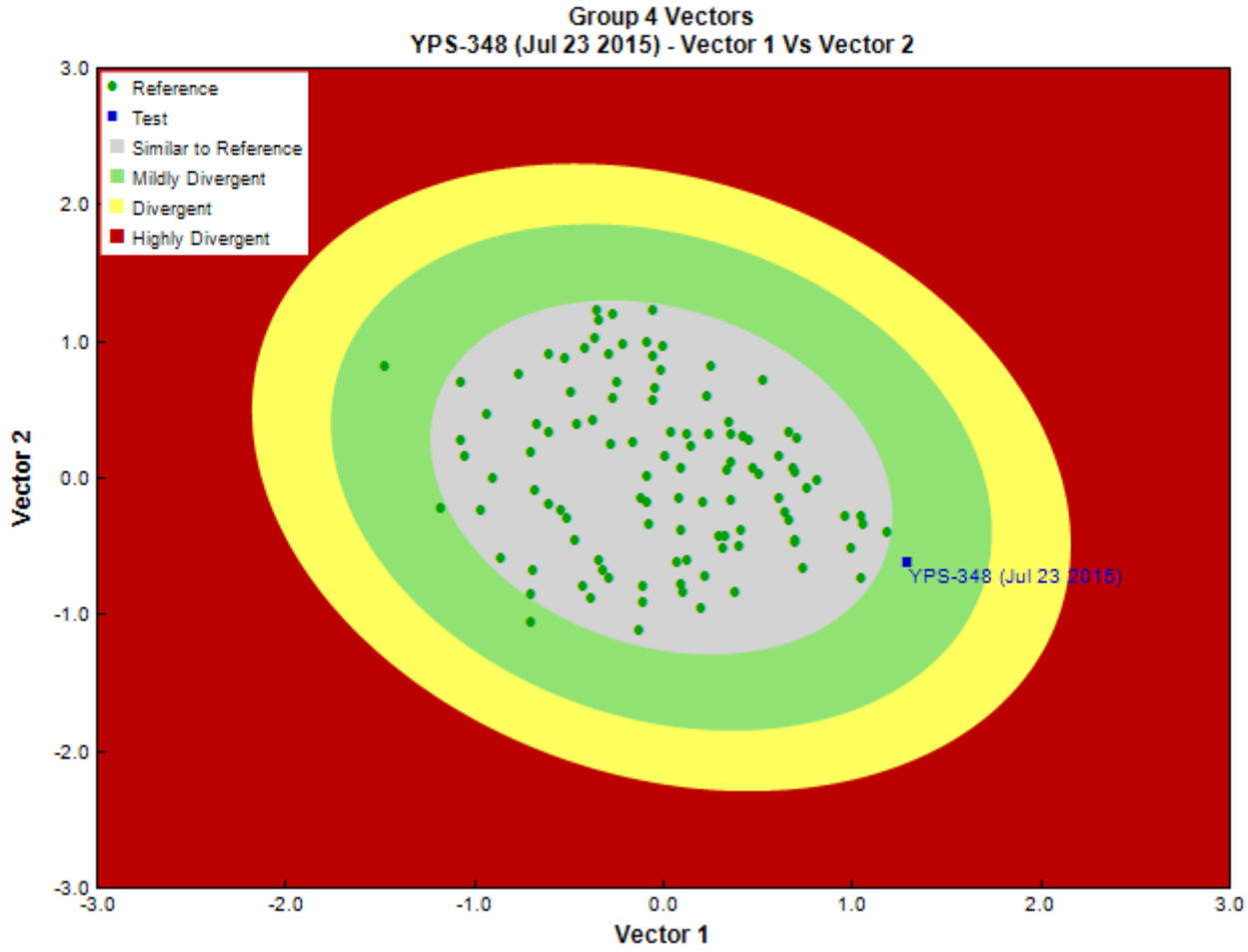


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Arachnida	Trombidiformes	Hygrobatidae	6	6.0
			Lebertiidae	4	4.0
			Sperchontidae	30	30.0
	Insecta	Diptera		1	1.0
			Ceratopogonidae	2	2.0
			Chironomidae	112	112.0
			Empididae	3	3.0
			Simuliidae	4	4.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Tipulidae	2	2.0
		Ephemeroptera	Ameletidae	1	1.0
			Baetidae	84	84.0
			Ephemerellidae	75	75.0
			Heptageniidae	19	19.0
		Plecoptera	Chloroperlidae	5	5.0
			Nemouridae	4	4.0
			Perlodidae	4	4.0
		Trichoptera	Glossosomatidae	9	9.0
			Hydropsychidae	1	1.0
			Rhyacophilidae	17	17.0
			Total	383	383.0

Metrics

Name	YPS-348	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.61	0.5 ± 0.2
Number Of Individuals		
Total Abundance	383.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	18.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-348
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.44
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.85
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.16
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.39
Ceratopogonidae	22%	28%	30%	24%	0%	0.26
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.53
Corixidae	13%	8%	0%	0%	0%	0.03
Culicidae	9%	0%	0%	0%	0%	0.00
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.10
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.58
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.42
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.16
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.74
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.16

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-348
	Group 1	Group 2	Group 3	Group 4	Group 5	
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.18
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.20
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.41
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.16
Limnephilidae	13%	48%	43%	46%	23%	0.44
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.04
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.26
Nemouridae	39%	74%	100%	81%	100%	0.82
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.47
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.07
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.03
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.36
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.81
Sperchontidae	22%	49%	68%	68%	31%	0.59
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.54
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.09
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.45
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	1.40
RIVPACS : Expected taxa P>0.70	4.21
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.19

Habitat Description

Variable	YPS-348	Predicted Group Reference Mean ±SD
Bedrock Geology		

Habitat Description

Variable	YPS-348	Predicted Group Reference Mean ±SD
Channel		
Depth-Avg (cm)	35.0	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	120.00	0.00 ± 0.00
Depth-Max (cm)	48.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	2.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0100000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.56	0.52 ± 0.32
Velocity-Max (m/s)	0.70	0.70 ± 0.43
Width-Bankfull (m)	21.6	14.0 ± 18.2
Width-Wetted (m)	13.9	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	33.11800	29.33781 ± 11.78911
Precip03_MAR (mm)	32.15040	27.45595 ± 11.91497
Precip06_JUN (mm)	63.52680	53.48783 ± 18.48854
Precip07_JUL (mm)	74.85880	65.85484 ± 22.37167
Rainfall06_JUN (mm)	59.17240	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-4.49480	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.36959	0.37555 ± 1.31381
Natl-Bryoids (%)	0.24769	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.07279	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	5	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	2	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	120.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.0800000	10.8405333 ± 1.2341710
General-pH (pH)	8.2	7.8 ± 0.6
General-SolidsTDS (mg/L)	91.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	12.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	170.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	11.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	9.4300000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	3.9000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	Yps-375
Sampling Date	Jul 27 2015
Know Your Watershed Basin	Fortymile
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	64.38639 N, 140.63556 W
Altitude	909
Local Basin Name	Maiden Creek
	Fortymile
Stream Order	3

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	33.0%	33.3%	9.0%	24.3%	0.3%
CABIN Assessment of Yps-375 on Jul 27, 2015	Similar to Reference				

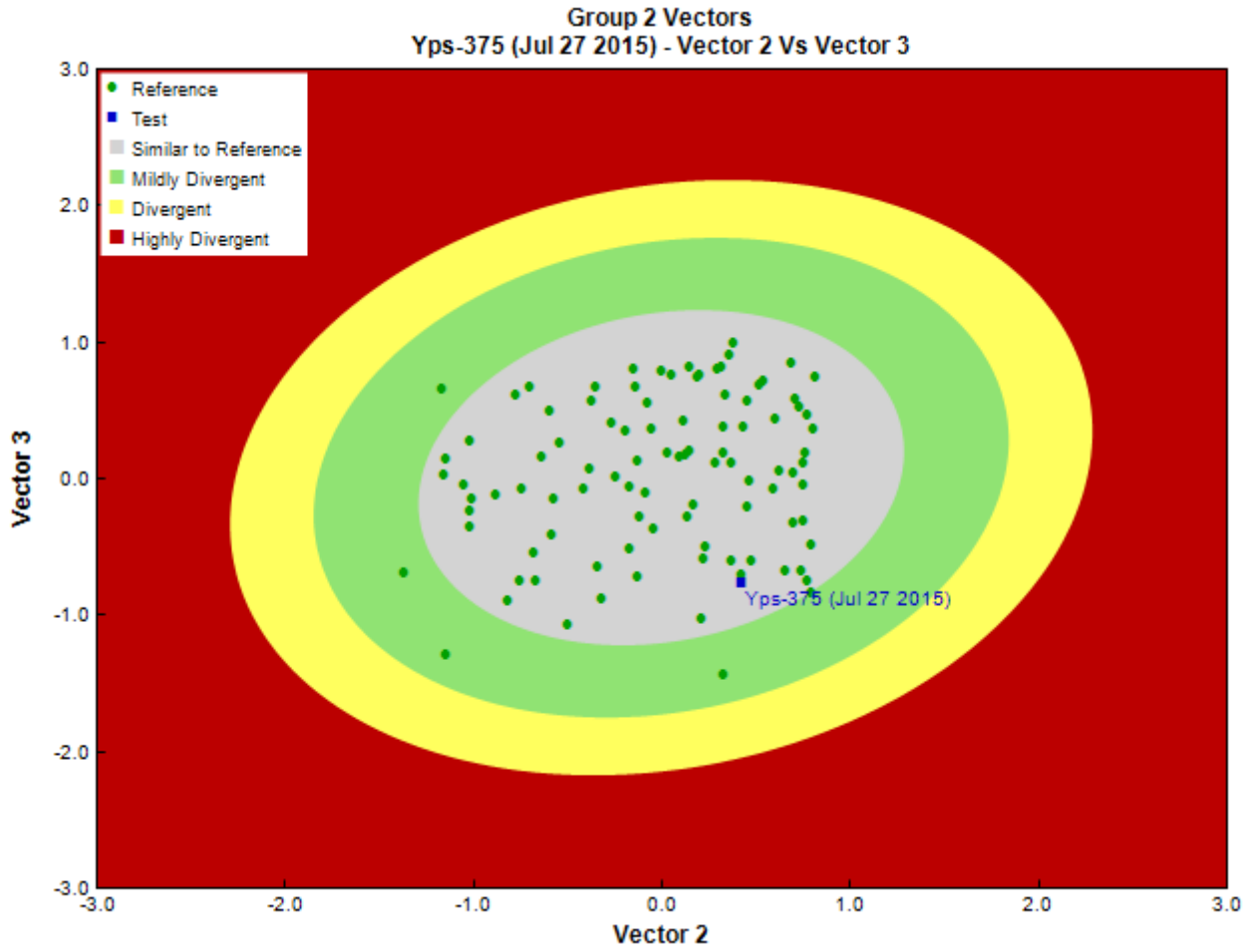


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	11	11.0
		Tubificida	Naididae	3	3.0
Arthropoda	Arachnida	Sarcoptiformes		1	1.0
		Trombidiformes		1	1.0
	Insecta	Diptera		3	3.0
			Chironomidae	55	55.0
			Simuliidae	12	12.0
			Tipulidae	1	1.0
		Ephemeroptera	Baetidae	2	2.0
			Heptageniidae	4	4.0
		Plecoptera	Capniidae	6	6.0
			Nemouridae	14	14.0
	Malacostraca	Amphipoda	Gammaridae	2	2.0
			Hyalellidae	1	1.0
Mollusca	Bivalvia	Veneroida	Pisidiidae	1	1.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Total	117	117.0

Metrics

Name	Yps-375	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.37	0.5 ± 0.2
Number Of Individuals		
Total Abundance	117.0	265.3 ± 160.6
Richness		
Total No. of Taxa	12.0	11.5 ± 4.3

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at Yps-375
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.31
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.01
Baetidae	30%	85%	82%	94%	100%	0.69
Blephariceridae	0%	0%	5%	0%	0%	0.00
Brachycentridae	0%	15%	7%	23%	8%	0.11
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.27
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.97
Chloroperlidae	22%	43%	77%	50%	38%	0.41
Corixidae	13%	8%	0%	0%	0%	0.07
Culicidae	9%	0%	0%	0%	0%	0.03
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.02
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.00
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.03
Empididae	9%	49%	77%	59%	54%	0.41
Enchytraeidae	0%	0%	9%	2%	0%	0.01
Ephemerellidae	26%	37%	61%	37%	31%	0.35
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.11
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.54
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.04
Hydropsychidae	4%	13%	36%	8%	0%	0.11
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.11
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.12
Isotomidae	9%	5%	2%	1%	0%	0.05
Lebertiidae	13%	20%	52%	54%	23%	0.29
Lepidostomatidae	0%	1%	5%	4%	8%	0.02
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.12
Limnephilidae	13%	48%	43%	46%	23%	0.36

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at Yps-375
	Group 1	Group 2	Group 3	Group 4	Group 5	
Limnesiidae	0%	1%	2%	6%	8%	0.02
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.29
Lymnaeidae	13%	9%	0%	3%	0%	0.08
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.04
Naididae	35%	43%	9%	22%	31%	0.32
Nemouridae	39%	74%	100%	81%	100%	0.67
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.34
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.11
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.06
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.25
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.68
Sperchontidae	22%	49%	68%	68%	31%	0.46
Staphylinidae	4%	0%	0%	1%	0%	0.02
Stratiomyidae	0%	0%	0%	2%	0%	0.00
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.01
Tipulidae	35%	47%	55%	62%	46%	0.47
Torrenticolidae	0%	0%	0%	5%	8%	0.01
Tubificidae	4%	1%	9%	13%	0%	0.06
Uenoidae	0%	8%	30%	1%	0%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	3.55
RIVPACS : Observed taxa P>0.50	5.00
RIVPACS : O:E (p > 0.5)	1.41
RIVPACS : Expected taxa P>0.70	0.97
RIVPACS : Observed taxa P>0.70	1.00
RIVPACS : O:E (p > 0.7)	1.03

Habitat Description

Variable	Yps-375	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	48.2	31.4 ± 19.7
Depth-BankfullMinusWetted (cm)	75.00	0.00 ± 0.00
Depth-Max (cm)	69.0	33.5 ± 20.7
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	2.00	1.58 ± 1.15
Reach-Pools (Binary)	1	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 1
Slope (m/m)	0.0200000	0.3767517 ± 0.6750726

Habitat Description

Variable	Yps-375	Predicted Group Reference Mean ±SD
Veg-Coniferous (Binary)	1	1 ± 1
Veg-Deciduous (Binary)	1	1 ± 1
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.74	0.43 ± 0.26
Velocity-Max (m/s)	1.20	0.53 ± 0.30
Width-Bankfull (m)	5.9	28.0 ± 97.2
Width-Wetted (m)	4.3	6.2 ± 8.2
Climate		
Precip02_FEB (mm)	34.40400	28.51137 ± 7.47006
Precip03_MAR (mm)	33.22400	26.48398 ± 7.72519
Precip06_JUN (mm)	54.57600	57.13713 ± 13.58676
Precip07_JUL (mm)	70.02000	73.01094 ± 17.73562
Rainfall06_JUN (mm)	53.12400	49.31793 ± 11.37423
Temp04_APRmax (Degrees Celsius)	-4.54600	0.93101 ± 4.20058
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.14237 ± 0.34395
Natl-Bryoids (%)	0.00000	0.31369 ± 0.60856
Natl-MixedwoodOpen (%)	0.00000	0.75166 ± 1.44254
Natl-WetlandHerb (%)	0.00000	0.11375 ± 0.31492
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	5	4 ± 2
Embeddedness (Category(1-5))	5	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	2	3 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	81.0000000	192.5806818 ± 116.8768611
General-DO (mg/L)	12.1300000	11.2243011 ± 9.1001720
General-pH (pH)	6.9	7.7 ± 0.7
General-SolidsTDS (mg/L)	73.0000000	133.0338983 ± 98.2995012
General-SolidsTSS (mg/L)	368.0000000	38.4976667 ± 226.6657939
General-SpCond (µS/cm)	136.4000000	227.5520408 ± 138.3954622
General-TempAir (Degrees Celsius)	14.0	17.3 ± 4.0
General-TempWater (Degrees Celsius)	3.7000000	9.6186022 ± 3.7315158
General-Turbidity (NTU)	130.0000000	97.7623529 ± 349.3049610

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-379
Sampling Date	Jul 27 2015
Know Your Watershed Basin	Fortymile
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	64.36131 N, 140.77577 W
Altitude	1118
Local Basin Name	Bruin Creek
	Fortymile
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	28.2%	27.8%	12.0%	31.3%	0.7%
CABIN Assessment of YPS-379 on Jul 27, 2015	Highly Divergent				

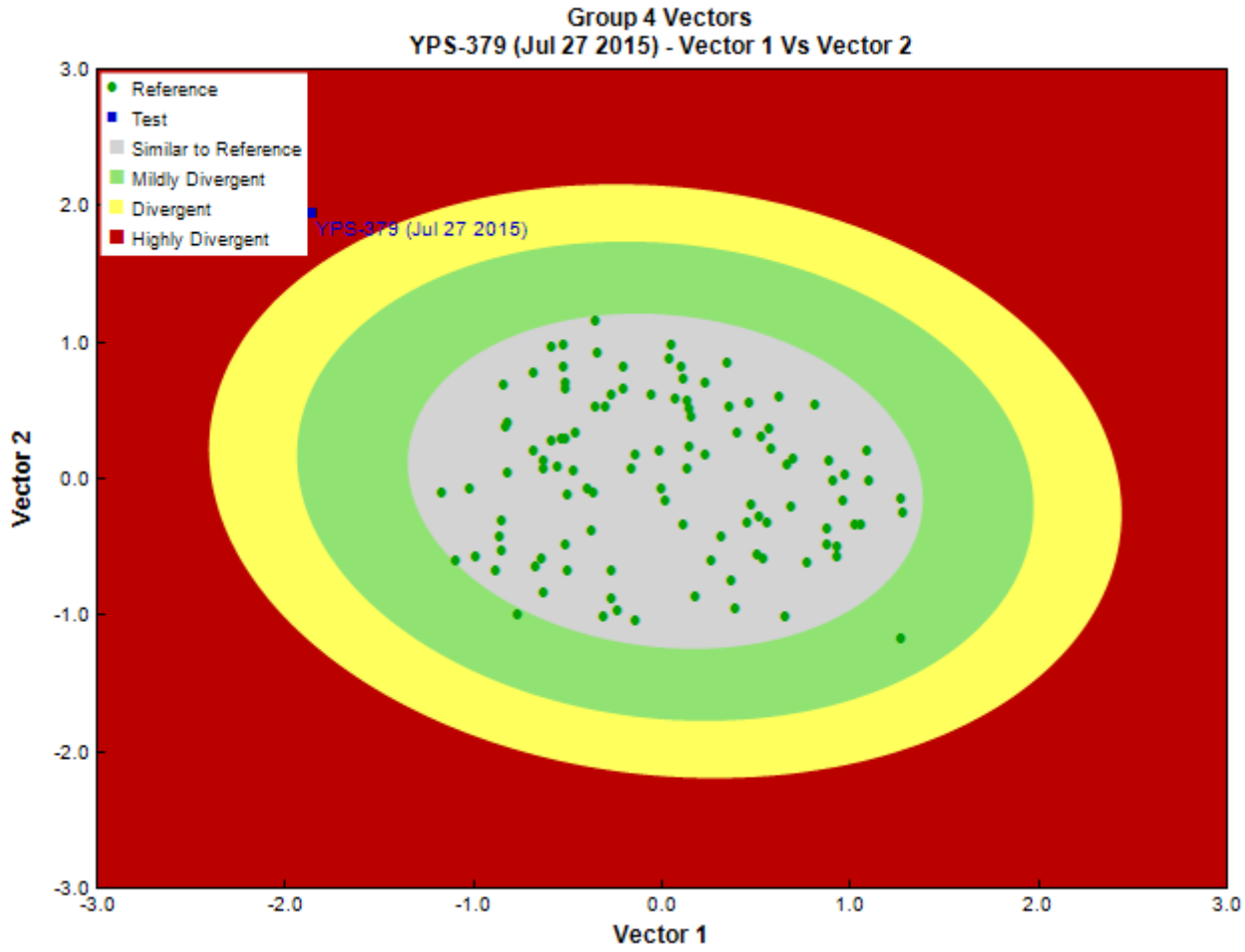


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	1	1.0
		Tubificida	Naididae	1	1.0
Arthropoda	Arachnida	Sarcoptiformes		1	1.0
		Trombidiformes	Lebertiidae	2	2.0
	Insecta	Diptera	Chironomidae	33	33.0
			Empididae	3	3.0
			Simuliidae	5	5.0
		Ephemeroptera	Baetidae	1	1.0
			Heptageniidae	7	7.0
		Plecoptera	Chloroperlidae	13	13.0
			Nemouridae	1	1.0
			Peltoperlidae	1	1.0
			Perlodidae	1	1.0
		Trichoptera	Limnephilidae	1	1.0
	Malacostraca	Amphipoda	Gammaridae	2	2.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Mollusca	Bivalvia	Veneroida	Pisidiidae	1	1.0
	Gastropoda	Basommatophora	Lymnaeidae	1	1.0
			Total	75	75.0

Metrics

Name	YPS-379	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.89	0.5 ± 0.2
Number Of Individuals		
Total Abundance	75.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	16.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-379
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.33
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.01
Baetidae	30%	85%	82%	94%	100%	0.72
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.12
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.30
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.43
Corixidae	13%	8%	0%	0%	0%	0.06
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.03
Empididae	9%	49%	77%	59%	54%	0.44
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.37
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.12
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.58
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.04
Hydropsychidae	4%	13%	36%	8%	0%	0.12
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.13
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.14
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.33
Lepidostomatidae	0%	1%	5%	4%	8%	0.02
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-379
	Group 1	Group 2	Group 3	Group 4	Group 5	
Leuctridae	4%	14%	32%	10%	0%	0.12
Limnephilidae	13%	48%	43%	46%	23%	0.37
Limnesiidae	0%	1%	2%	6%	8%	0.02
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.31
Lymnaeidae	13%	9%	0%	3%	0%	0.07
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.04
Naididae	35%	43%	9%	22%	31%	0.30
Nemouridae	39%	74%	100%	81%	100%	0.70
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.38
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.10
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.06
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.20
Rhyacophilidae	4%	34%	68%	25%	15%	0.27
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.71
Sperchontidae	22%	49%	68%	68%	31%	0.49
Staphylinidae	4%	0%	0%	1%	0%	0.02
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.49
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	3.68
RIVPACS : Observed taxa P>0.50	5.00
RIVPACS : O:E (p > 0.5)	1.36
RIVPACS : Expected taxa P>0.70	2.40
RIVPACS : Observed taxa P>0.70	3.00
RIVPACS : O:E (p > 0.7)	1.25

Habitat Description

Variable	YPS-379	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	35.0	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	60.00	0.00 ± 0.00
Depth-Max (cm)	41.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0

Habitat Description

Variable	YPS-379	Predicted Group Reference Mean ±SD
Slope (m/m)	0.0200000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.84	0.52 ± 0.32
Velocity-Max (m/s)	0.90	0.70 ± 0.43
Width-Bankfull (m)	20.9	14.0 ± 18.2
Width-Wetted (m)	15.3	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	33.70765	29.33781 ± 11.78911
Precip03_MAR (mm)	32.53824	27.45595 ± 11.91497
Precip06_JUN (mm)	53.46588	53.48783 ± 18.48854
Precip07_JUL (mm)	68.93882	65.85484 ± 22.37167
Rainfall06_JUN (mm)	51.88647	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-4.02176	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.08076	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.01378	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	5	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	3	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	162.6000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.0700000	10.8405333 ± 1.2341710
General-pH (pH)	7.7	7.8 ± 0.6
General-SolidsTDS (mg/L)	142.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	52.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	253.2000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	16.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	6.3000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	15.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-411
Sampling Date	Jul 22 2015
Know Your Watershed Basin	Headwaters Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -Central EcoRegion
Coordinates (decimal degrees)	62.34793 N, 137.30255 W
Altitude	2700
Local Basin Name	Mechanic Creek
	Big Creek
Stream Order	2

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	1.7%	26.9%	13.2%	47.8%	10.5%
CABIN Assessment of YPS-411 on Jul 22, 2015	Mildly Divergent				

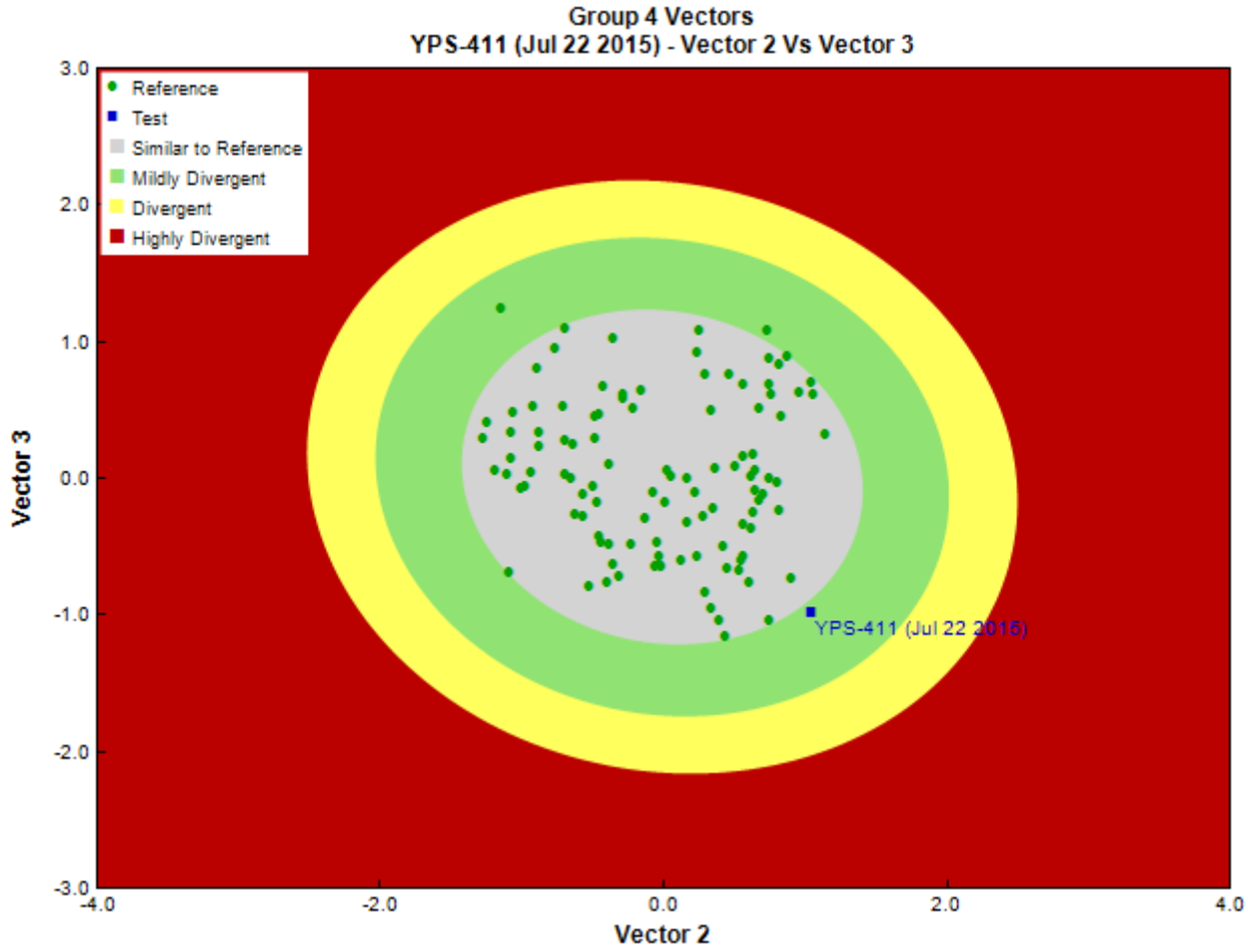


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	21	21.0
		Tubificida	Naididae	1	1.0
Arthropoda	Insecta	Coleoptera	Carabidae	1	1.0
			Staphylinidae	6	6.0
		Diptera		5	5.0
			Chironomidae	163	163.0
			Empididae	44	44.0
			Psychodidae	8	8.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Tipulidae	1	1.0
		Ephemeroptera	Baetidae	14	14.0
			Ephemerellidae	2	2.0
			Heptageniidae	3	3.0
		Plecoptera	Nemouridae	6	6.0
		Trichoptera	Glossosomatidae	3	3.0
			Limnephilidae	3	3.0
			Total	281	281.0

Metrics

Name	YPS-411	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.66	0.5 ± 0.2
Number Of Individuals		
Total Abundance	281.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	14.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-411
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.40
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.89
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.17
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.44
Ceratopogonidae	22%	28%	30%	24%	0%	0.23
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.50
Corixidae	13%	8%	0%	0%	0%	0.02
Culicidae	9%	0%	0%	0%	0%	0.00
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.10
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.57
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.39
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.75
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.12
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.20
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.19

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-411
	Group 1	Group 2	Group 3	Group 4	Group 5	
Isotomidae	9%	5%	2%	1%	0%	0.02
Lebertiidae	13%	20%	52%	54%	23%	0.41
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.13
Limnephilidae	13%	48%	43%	46%	23%	0.43
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.04
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.27
Nemouridae	39%	74%	100%	81%	100%	0.83
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.48
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.02
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.07
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.03
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.32
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.83
Sperchontidae	22%	49%	68%	68%	31%	0.58
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.55
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.07
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.50
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	0.92
RIVPACS : Expected taxa P>0.70	4.30
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.93

Habitat Description

Variable	YPS-411	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	7.9	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	80.00	0.00 ± 0.00
Depth-Max (cm)	11.4	36.8 ± 17.2

Habitat Description

Variable	YPS-411	Predicted Group Reference Mean ±SD
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0500000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.10	0.52 ± 0.32
Velocity-Max (m/s)	0.10	0.70 ± 0.43
Width-Bankfull (m)	8.2	14.0 ± 18.2
Width-Wetted (m)	1.7	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	42.82750	29.33781 ± 11.78911
Precip03_MAR (mm)	42.75250	27.45595 ± 11.91497
Precip06_JUN (mm)	76.96250	53.48783 ± 18.48854
Precip07_JUL (mm)	96.10000	65.85484 ± 22.37167
Rainfall06_JUN (mm)	69.40750	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-3.55250	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	5	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	4	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	528.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	9.6600000	10.8405333 ± 1.2341710
General-pH (pH)	8.1	7.8 ± 0.6
General-SolidsTDS (mg/L)	418.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	33.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	662.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	21.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	14.4100000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	59.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-412
Sampling Date	Jul 22 2015
Know Your Watershed Basin	Headwaters Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -Central EcoRegion
Coordinates (decimal degrees)	62.34988 N, 137.27151 W
Altitude	2211
Local Basin Name	Big Creek
	Big Creek
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	6.8%	23.2%	15.4%	50.9%	3.8%
CABIN Assessment of YPS-412 on Jul 22, 2015	Mildly Divergent				

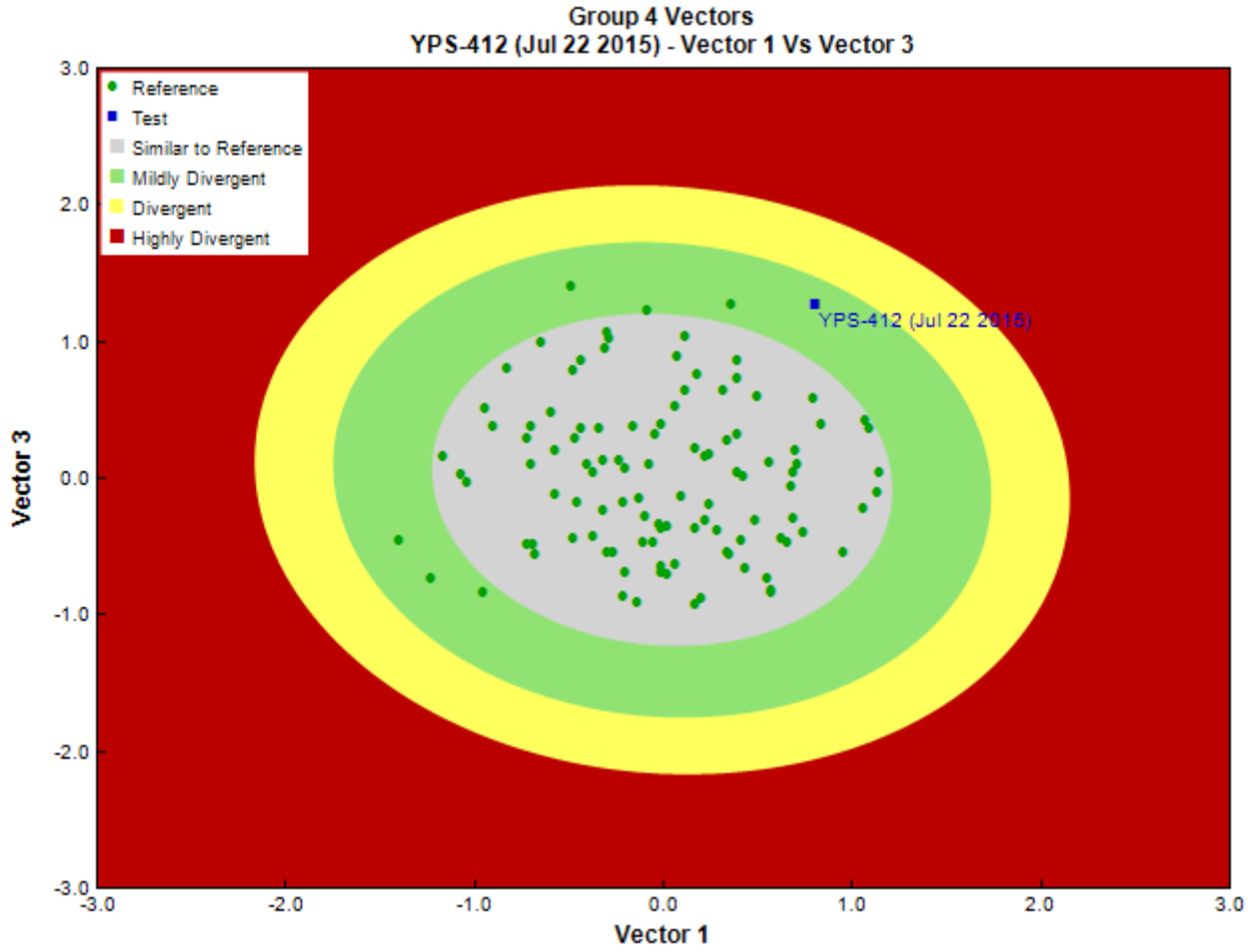


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	25/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	1	4.0
Arthropoda	Insecta	Diptera		1	4.0
			Chironomidae	20	80.0
			Empididae	3	12.0
			Simuliidae	7	28.0
			Tipulidae	1	4.0
		Ephemeroptera		1	4.0
			Baetidae	104	416.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Ephemerellidae	117	468.0
			Heptageniidae	19	76.0
		Plecoptera	Chloroperlidae	28	112.0
			Perlodidae	2	8.0
		Trichoptera	Glossosomatidae	8	32.0
			Limnephilidae	3	12.0
			Total	315	1,260.0

Metrics

Name	YPS-412	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.74	0.5 ± 0.2
Number Of Individuals		
Total Abundance	1260.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	12.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-412
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.40
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.86
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.17
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.41
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.50
Corixidae	13%	8%	0%	0%	0%	0.03
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.10
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.56
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.40
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.72
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.13
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.19
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.20
Isotomidae	9%	5%	2%	1%	0%	0.03

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-412
	Group 1	Group 2	Group 3	Group 4	Group 5	
Lebertiidae	13%	20%	52%	54%	23%	0.42
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.14
Limnephilidae	13%	48%	43%	46%	23%	0.43
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.34
Lymnaeidae	13%	9%	0%	3%	0%	0.04
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.26
Nemouridae	39%	74%	100%	81%	100%	0.81
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.46
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.03
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.20
Rhyacophilidae	4%	34%	68%	25%	15%	0.32
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.81
Sperchontidae	22%	49%	68%	68%	31%	0.59
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.55
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.09
Uenoidae	0%	8%	30%	1%	0%	0.07
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.39
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	1.10
RIVPACS : Expected taxa P>0.70	4.19
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.95

Habitat Description

Variable	YPS-412	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	37.0	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	190.00	0.00 ± 0.00
Depth-Max (cm)	73.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1

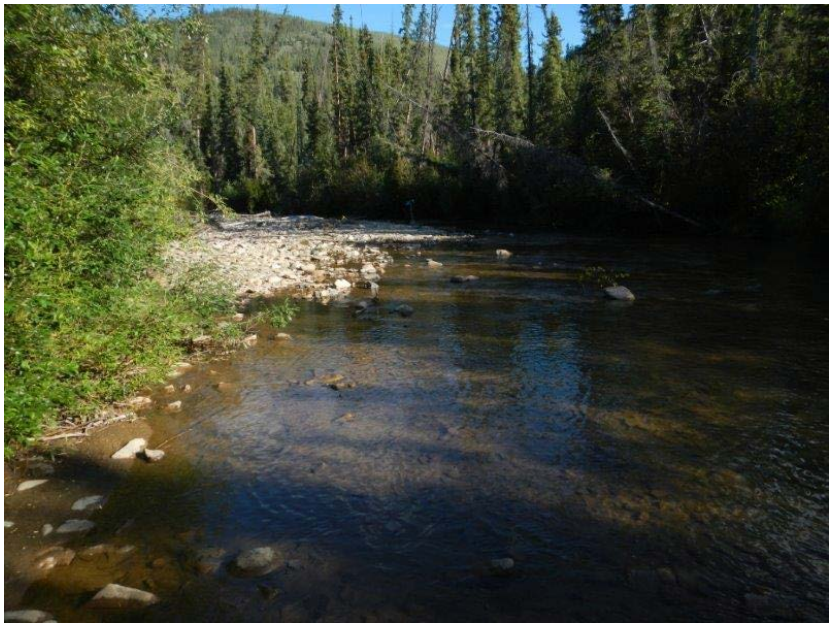
Habitat Description

Variable	YPS-412	Predicted Group Reference Mean ±SD
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Slope (m/m)	0.0100000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.48	0.52 ± 0.32
Velocity-Max (m/s)	0.80	0.70 ± 0.43
Width-Bankfull (m)	34.5	14.0 ± 18.2
Width-Wetted (m)	13.1	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	37.11241	29.33781 ± 11.78911
Precip03_MAR (mm)	36.77483	27.45595 ± 11.91497
Precip06_JUN (mm)	66.72414	53.48783 ± 18.48854
Precip07_JUL (mm)	84.58965	65.85484 ± 22.37167
Rainfall06_JUN (mm)	60.44793	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-0.86379	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.46954	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.04757	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	5	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	2	0 ± 0
SurroundingMaterial (Category(0-9))	3	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	123.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	9.9800000	10.8405333 ± 1.2341710
General-pH (pH)	7.9	7.8 ± 0.6
General-SolidsTDS (mg/L)	92.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	7.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	175.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	20.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	7.2400000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	1.1000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-414
Sampling Date	Jul 22 2015
Know Your Watershed Basin	Headwaters Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -Central EcoRegion
Coordinates (decimal degrees)	62.35588 N, 137.17303 W
Altitude	2093
Local Basin Name	Seymour Creek
	Big Creek
Stream Order	5

Figure 1. Location Map



Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	1.4%	17.8%	24.9%	50.2%	5.7%
CABIN Assessment of YPS-414 on Jul 22, 2015	Mildly Divergent				

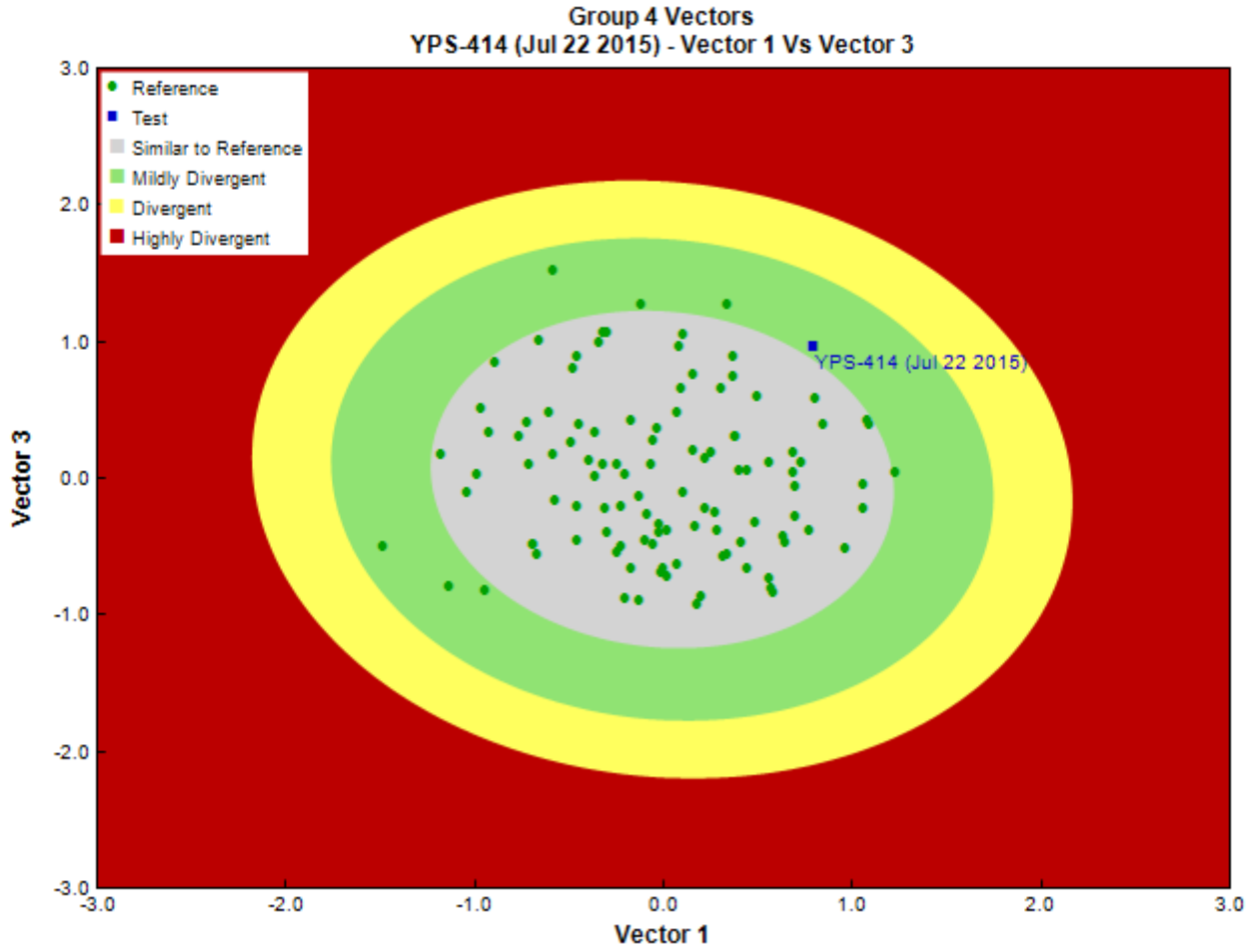


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	25/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	1	4.0
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	1	4.0
			Sperchontidae	21	84.0
	Insecta	Diptera	Chironomidae	50	200.0
			Empididae	5	20.0
			Simuliidae	5	20.0
			Tipulidae	1	4.0
		Ephemeroptera	Baetidae	68	272.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Ephemerellidae	79	316.0
			Heptageniidae	112	448.0
		Plecoptera	Chloroperlidae	20	80.0
			Leuctridae	2	8.0
			Nemouridae	2	8.0
			Perlodidae	5	20.0
		Trichoptera	Glossosomatidae	17	68.0
			Limnephilidae	1	4.0
			Rhyacophilidae	5	20.0
			Total	395	1,580.0

Metrics

Name	YPS-414	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.67	0.5 ± 0.2
Number Of Individuals		
Total Abundance	1580.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	17.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-414
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.45
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.03
Baetidae	30%	85%	82%	94%	100%	0.89
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.16
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.45
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.54
Corixidae	13%	8%	0%	0%	0%	0.02
Culicidae	9%	0%	0%	0%	0%	0.00
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.61
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.43
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.08
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.17
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.78
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.16
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.21

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-414
	Group 1	Group 2	Group 3	Group 4	Group 5	
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.22
Isotomidae	9%	5%	2%	1%	0%	0.02
Lebertiidae	13%	20%	52%	54%	23%	0.45
Lepidostomatidae	0%	1%	5%	4%	8%	0.04
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.16
Limnephilidae	13%	48%	43%	46%	23%	0.44
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.35
Lymnaeidae	13%	9%	0%	3%	0%	0.03
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.23
Nemouridae	39%	74%	100%	81%	100%	0.85
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.51
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.07
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.03
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.36
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.84
Sperchontidae	22%	49%	68%	68%	31%	0.62
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.56
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.09
Uenoidae	0%	8%	30%	1%	0%	0.09
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	7.21
RIVPACS : Observed taxa P>0.50	10.00
RIVPACS : O:E (p > 0.5)	1.39
RIVPACS : Expected taxa P>0.70	4.36
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.15

Habitat Description

Variable	YPS-414	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	15.4	29.8 ± 14.6

Habitat Description

Variable	YPS-414	Predicted Group Reference Mean ±SD
Depth-BankfullMinusWetted (cm)	45.00	0.00 ± 0.00
Depth-Max (cm)	20.5	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	2.00	1.37 ± 0.92
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0100000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.48	0.52 ± 0.32
Velocity-Max (m/s)	0.70	0.70 ± 0.43
Width-Bankfull (m)	12.3	14.0 ± 18.2
Width-Wetted (m)	11.7	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	41.42474	29.33781 ± 11.78911
Precip03_MAR (mm)	41.25474	27.45595 ± 11.91497
Precip06_JUN (mm)	75.84053	53.48783 ± 18.48854
Precip07_JUL (mm)	94.88737	65.85484 ± 22.37167
Rainfall06_JUN (mm)	67.69737	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-2.81158	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	1.20780	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00191	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	5	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	173.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.3300000	10.8405333 ± 1.2341710
General-pH (pH)	8.2	7.8 ± 0.6
General-SolidsTDS (mg/L)	144.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	11.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	271.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	15.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	6.0600000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	4.8000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-428
Sampling Date	Jul 21 2015
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -Central EcoRegion
Coordinates (decimal degrees)	63.25575 N, 138.69150 W
Altitude	1417
Local Basin Name	Black Hills Creek
	Stewart
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	16.6%	35.4%	8.5%	37.9%	1.6%
CABIN Assessment of YPS-428 on Jul 21, 2015	Highly Divergent				

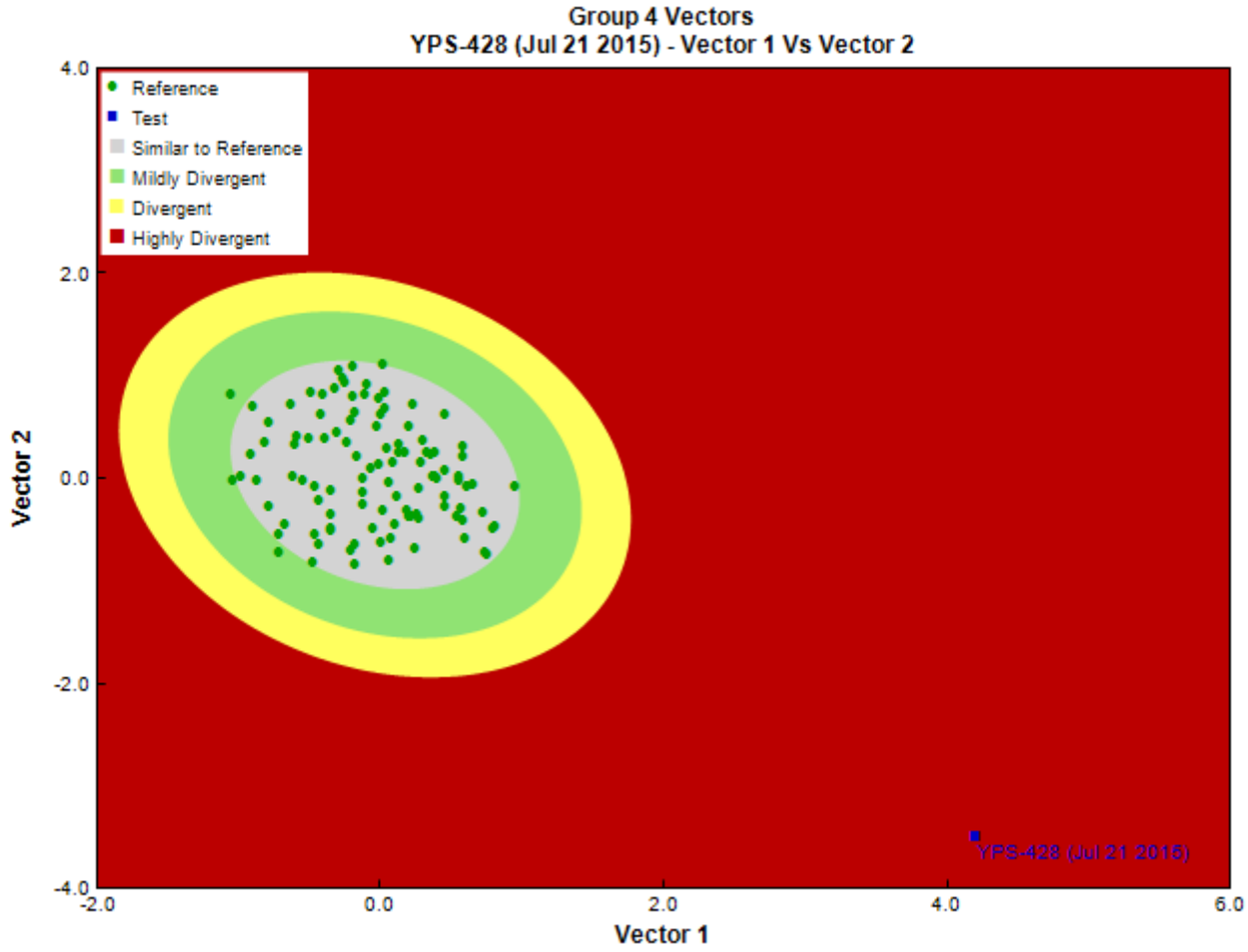


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Tubificida	Naididae	1	1.0
Arthropoda	Insecta	Diptera		1	1.0
			Chironomidae	9	9.0
		Ephemeroptera	Baetidae	9	9.0
			Heptageniidae	4	4.0
		Plecoptera	Chloroperlidae	1	1.0
			Perlodidae	1	1.0
			Total	26	26.0

Metrics

Name	YPS-428	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.95	0.5 ± 0.2
Number Of Individuals		
Total Abundance	26.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	6.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-428
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.35
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.01
Baetidae	30%	85%	82%	94%	100%	0.79
Blephariceridae	0%	0%	5%	0%	0%	0.00
Brachycentridae	0%	15%	7%	23%	8%	0.15
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.34
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.45
Corixidae	13%	8%	0%	0%	0%	0.05
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.11
Elmidae	4%	3%	0%	2%	0%	0.03
Empididae	9%	49%	77%	59%	54%	0.49
Enchytraeidae	0%	0%	9%	2%	0%	0.01
Ephemerellidae	26%	37%	61%	37%	31%	0.37
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.13
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.64
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.05
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.12
Hydroptilidae	4%	7%	0%	6%	0%	0.06
Hydrozetidae	4%	3%	20%	28%	31%	0.15
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.16
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.35
Lepidostomatidae	0%	1%	5%	4%	8%	0.02
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.12
Limnephilidae	13%	48%	43%	46%	23%	0.41
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.31
Lymnaeidae	13%	9%	0%	3%	0%	0.06
Metretopodidae	0%	1%	0%	1%	0%	0.01

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-428
	Group 1	Group 2	Group 3	Group 4	Group 5	
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.31
Nemouridae	39%	74%	100%	81%	100%	0.74
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.39
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.09
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.05
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.20
Rhyacophilidae	4%	34%	68%	25%	15%	0.28
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.76
Sperchontidae	22%	49%	68%	68%	31%	0.53
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.51
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	4.95
RIVPACS : Observed taxa P>0.50	3.00
RIVPACS : O:E (p > 0.5)	0.61
RIVPACS : Expected taxa P>0.70	3.27
RIVPACS : Observed taxa P>0.70	2.00
RIVPACS : O:E (p > 0.7)	0.61

Habitat Description

Variable	YPS-428	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	37.4	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	130.00	0.00 ± 0.00
Depth-Max (cm)	72.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	2.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0050000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.36	0.52 ± 0.32
Velocity-Max (m/s)	0.50	0.70 ± 0.43
Width-Bankfull (m)	13.1	14.0 ± 18.2

Habitat Description

Variable	YPS-428	Predicted Group Reference Mean ±SD
Width-Wetted (m)	12.1	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	34.01810	29.33781 ± 11.78911
Precip03_MAR (mm)	32.93857	27.45595 ± 11.91497
Precip06_JUN (mm)	55.95952	53.48783 ± 18.48854
Precip07_JUL (mm)	70.65905	65.85484 ± 22.37167
Rainfall06_JUN (mm)	52.91857	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-2.75619	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00575	0.37555 ± 1.31381
Natl-Bryoids (%)	0.47477	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.60225	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00846	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	2	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	2	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	1	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	196.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.3400000	10.8405333 ± 1.2341710
General-pH (pH)	8.1	7.8 ± 0.6
General-SolidsTDS (mg/L)	148.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	182.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	269.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	20.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	10.8900000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	260.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-429
Sampling Date	Jul 21 2015
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.43833 N, 138.82333 W
Altitude	1804
Local Basin Name	Black Hills Creek (Upper)
	Stewart
Stream Order	4

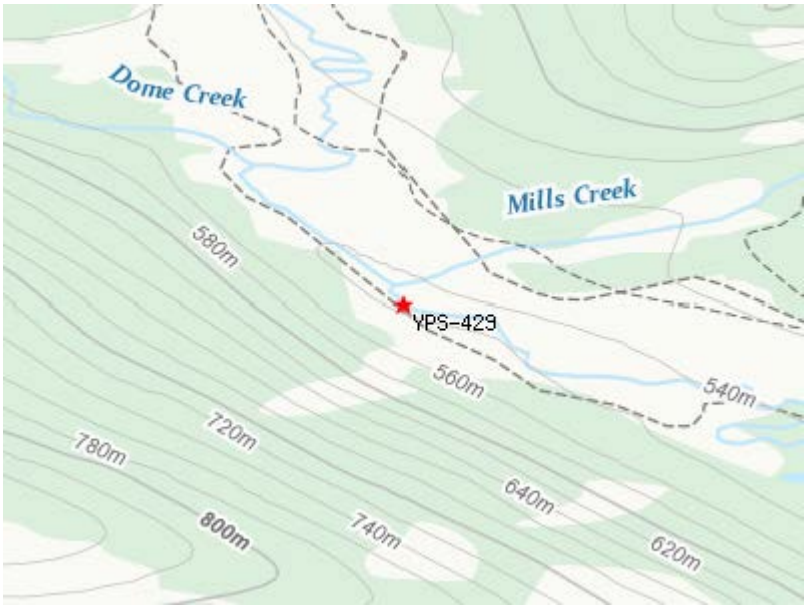
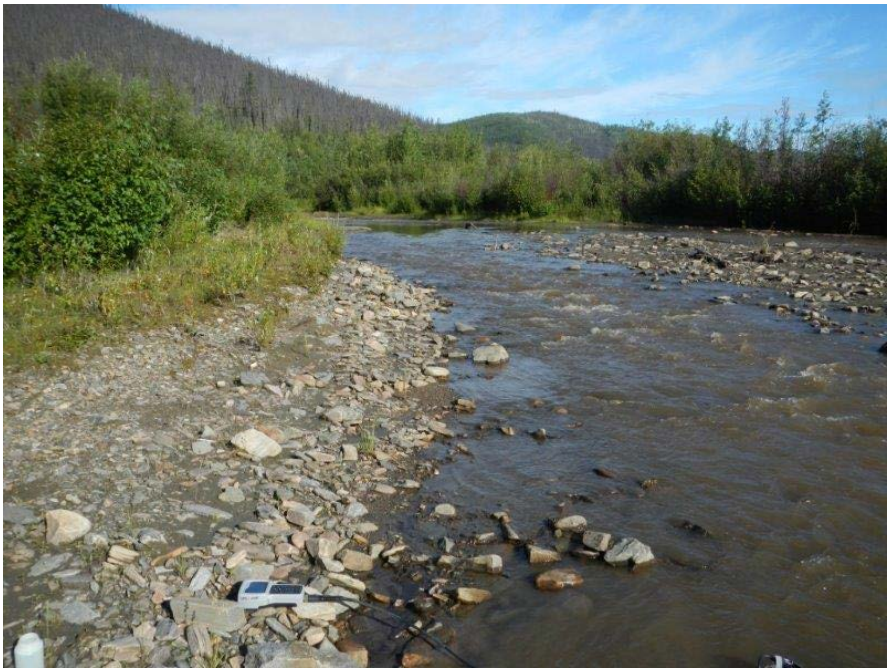


Figure 1. Location Map

Down Stream



Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	4.9%	21.5%	11.6%	49.7%	12.4%
CABIN Assessment of YPS-429 on Jul 21, 2015	Mildly Divergent				

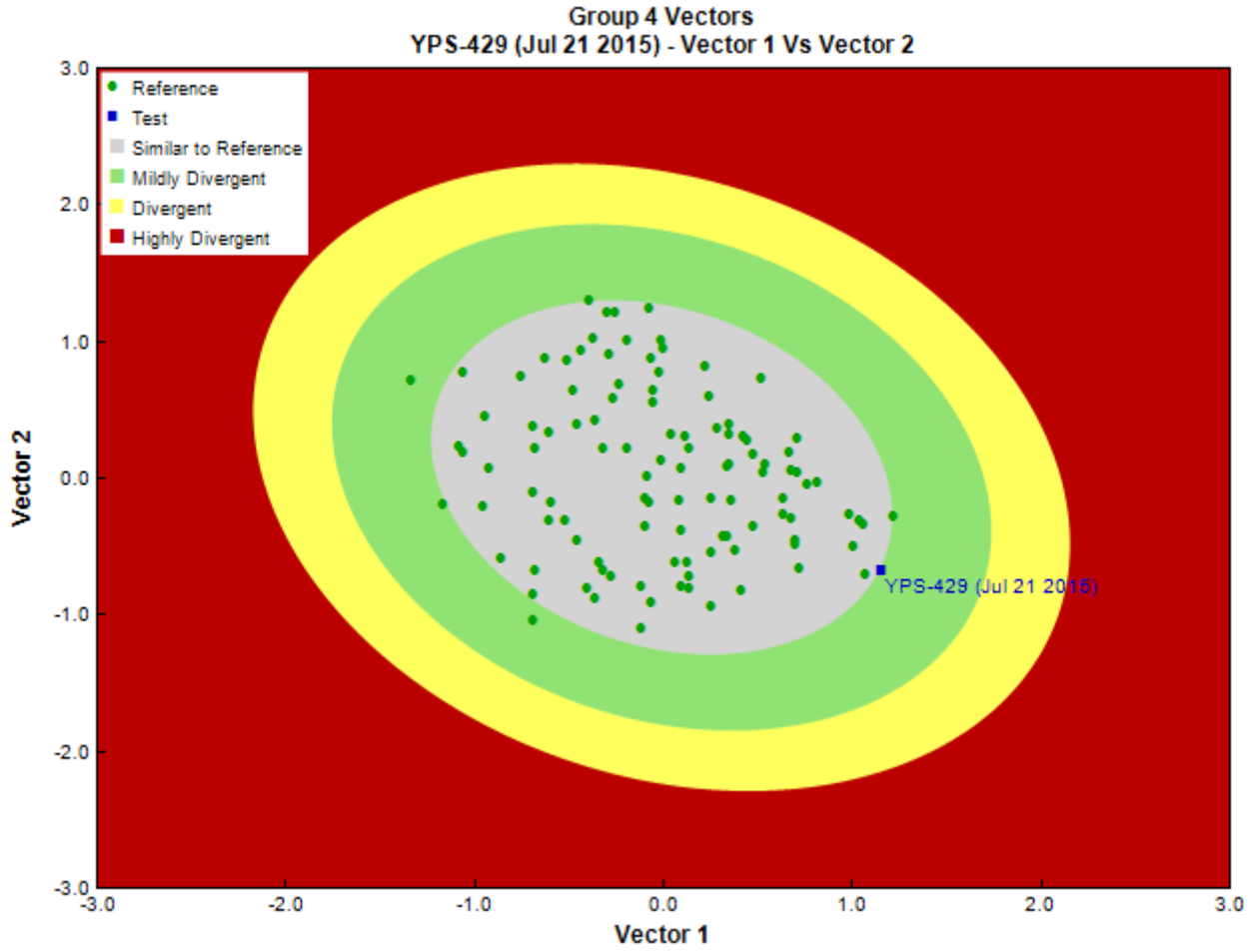


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	4	4.0
Arthropoda	Insecta	Diptera		1	1.0
			Chironomidae	142	142.0
			Simuliidae	12	12.0
		Ephemeroptera	Baetidae	104	104.0
			Heptageniidae	3	3.0
		Plecoptera	Chloroperlidae	1	1.0
			Nemouridae	1	1.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
		Trichoptera	Brachycentridae	1	1.0
			Total	269	269.0

Metrics

Name	YPS-429	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.54	0.5 ± 0.2
Number Of Individuals		
Total Abundance	269.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	8.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-429
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.38
Apataniidae	0%	1%	0%	3%	8%	0.03
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.88
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.17
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.45
Ceratopogonidae	22%	28%	30%	24%	0%	0.22
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.49
Corixidae	13%	8%	0%	0%	0%	0.02
Culicidae	9%	0%	0%	0%	0%	0.00
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.10
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.56
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.38
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.10
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.14
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.74
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.11
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.21
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.19
Isotomidae	9%	5%	2%	1%	0%	0.02
Lebertiidae	13%	20%	52%	54%	23%	0.41
Lepidostomatidae	0%	1%	5%	4%	8%	0.04
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.12

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-429
	Group 1	Group 2	Group 3	Group 4	Group 5	
Limnephilidae	13%	48%	43%	46%	23%	0.42
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.34
Lymnaeidae	13%	9%	0%	3%	0%	0.04
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.27
Nemouridae	39%	74%	100%	81%	100%	0.82
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.48
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.04
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.30
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.81
Sperchontidae	22%	49%	68%	68%	31%	0.57
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.04
Tipulidae	35%	47%	55%	62%	46%	0.55
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.92
RIVPACS : Observed taxa P>0.50	5.00
RIVPACS : O:E (p > 0.5)	0.84
RIVPACS : Expected taxa P>0.70	4.25
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.18

Habitat Description

Variable	YPS-429	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	13.7	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	20.00	0.00 ± 0.00
Depth-Max (cm)	19.5	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0100000	0.5004989 ± 0.7204958

Habitat Description

Variable	YPS-429	Predicted Group Reference Mean ±SD
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.52	0.52 ± 0.32
Velocity-Max (m/s)	0.60	0.70 ± 0.43
Width-Bankfull (m)	18.5	14.0 ± 18.2
Width-Wetted (m)	15.2	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	32.93308	29.33781 ± 11.78911
Precip03_MAR (mm)	31.74385	27.45595 ± 11.91497
Precip06_JUN (mm)	54.28461	53.48783 ± 18.48854
Precip07_JUL (mm)	68.60923	65.85484 ± 22.37167
Rainfall06_JUN (mm)	51.32615	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-2.44462	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.86963	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.05175	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	4	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	164.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.9700000	10.8405333 ± 1.2341710
General-pH (pH)	8.1	7.8 ± 0.6
General-SolidsTDS (mg/L)	139.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	72.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	248.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	22.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	7.2300000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	84.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-506
Sampling Date	Jul 16 2015
Know Your Watershed Basin	White
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Ruby Ranges EcoRegion
Coordinates (decimal degrees)	61.41572 N, 139.22974 W
Altitude	2854
Local Basin Name	Burwash Creek
	White
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 27, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Up Stream

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	16.9%	24.9%	26.8%	27.7%	3.6%
CABIN Assessment of YPS-506 on Jul 16, 2015	Highly Divergent				

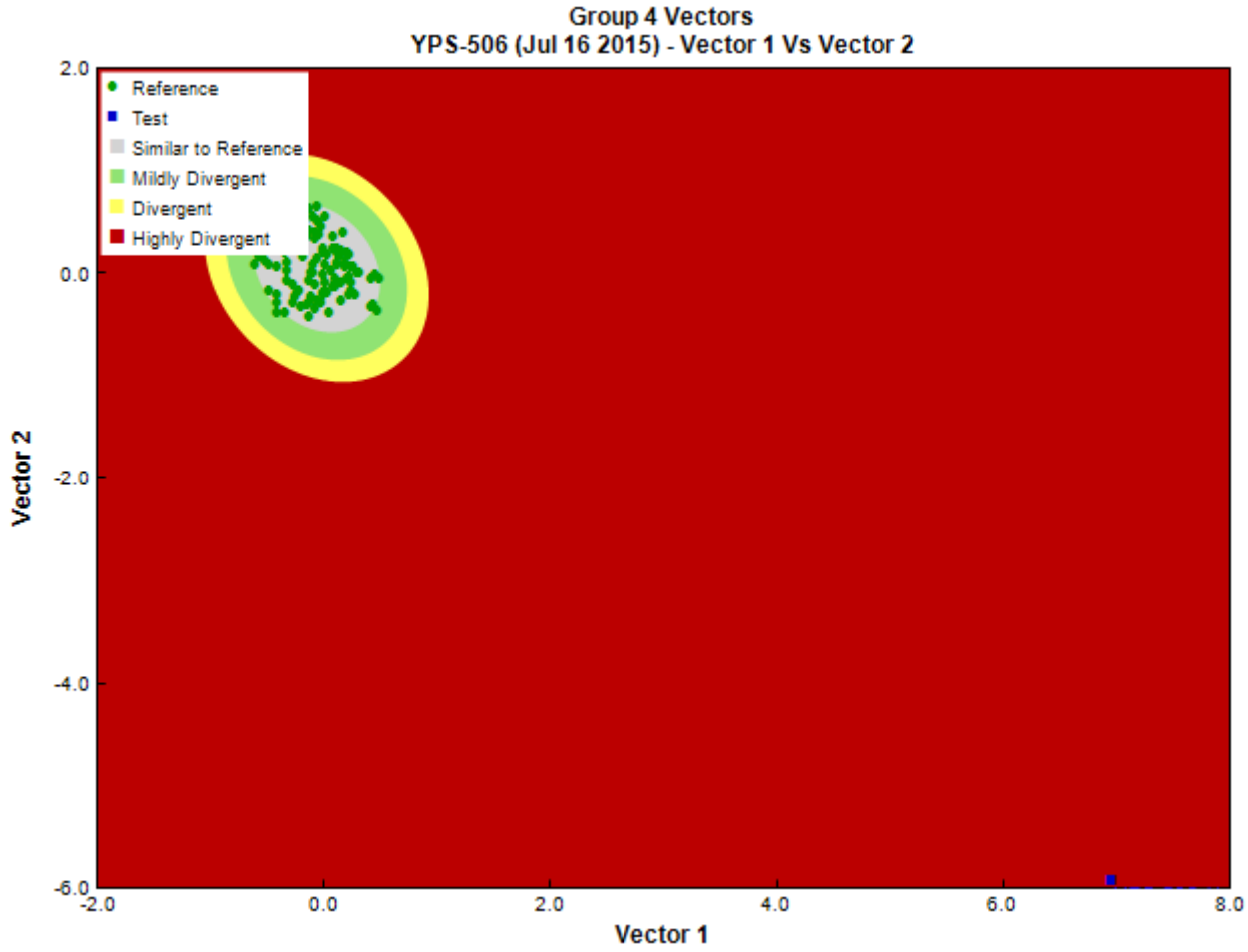


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Insecta	Coleoptera	Staphylinidae	1	1.0
		Diptera	Chironomidae	7	7.0
		Ephemeroptera	Baetidae	4	4.0
			Heptageniidae	1	1.0
		Hemiptera	Aphididae	1	1.0
		Plecoptera	Nemouridae	2	2.0
			Total	16	16.0

Metrics

Name	YPS-506	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.97	0.5 ± 0.2
Number Of Individuals		
Total Abundance	16.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	6.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-506
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.41
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.78
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.12
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.36
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.50
Corixidae	13%	8%	0%	0%	0%	0.04
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.05
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.08
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.53
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.41
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.06
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.14
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.68
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.16
Hydroptilidae	4%	7%	0%	6%	0%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.16
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.17
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.37
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.16
Limnephilidae	13%	48%	43%	46%	23%	0.39
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.32
Lymnaeidae	13%	9%	0%	3%	0%	0.05
Metretopodidae	0%	1%	0%	1%	0%	0.01

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-506
	Group 1	Group 2	Group 3	Group 4	Group 5	
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.26
Nemouridae	39%	74%	100%	81%	100%	0.78
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.45
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.05
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.18
Rhyacophilidae	4%	34%	68%	25%	15%	0.35
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.76
Sperchontidae	22%	49%	68%	68%	31%	0.54
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.51
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.10
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.07
RIVPACS : Observed taxa P>0.50	4.00
RIVPACS : O:E (p > 0.5)	0.66
RIVPACS : Expected taxa P>0.70	3.30
RIVPACS : Observed taxa P>0.70	3.00
RIVPACS : O:E (p > 0.7)	0.91

Habitat Description

Variable	YPS-506	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	26.1	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	70.00	0.00 ± 0.00
Depth-Max (cm)	40.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Riffles (Binary)	1	1 ± 0
Slope (m/m)	0.0210000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.70	0.52 ± 0.32
Velocity-Max (m/s)	1.10	0.70 ± 0.43
Width-Bankfull (m)	36.0	14.0 ± 18.2
Width-Wetted (m)	11.2	6.7 ± 6.7
Climate		

Habitat Description

Variable	YPS-506	Predicted Group Reference Mean ±SD
Precip02_FEB (mm)	33.69300	29.33781 ± 11.78911
Precip03_MAR (mm)	29.93800	27.45595 ± 11.91497
Precip06_JUN (mm)	55.56500	53.48783 ± 18.48854
Precip07_JUL (mm)	71.53200	65.85484 ± 22.37167
Rainfall06_JUN (mm)	53.11000	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	4.69200	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.03027	0.37555 ± 1.31381
Natl-Bryoids (%)	3.08870	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	5	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	4	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	252.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.0600000	10.8405333 ± 1.2341710
General-pH (pH)	8.2	7.8 ± 0.6
General-SolidsTDS (mg/L)	198.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	54.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	337.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	26.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	11.8200000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	57.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-508
Sampling Date	Jul 16 2015
Know Your Watershed Basin	White
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone St.Elias Mountains EcoRegion
Coordinates (decimal degrees)	61.46770 N, 139.46980 W
Altitude	3606
Local Basin Name	Quill Creek
	White
Stream Order	3

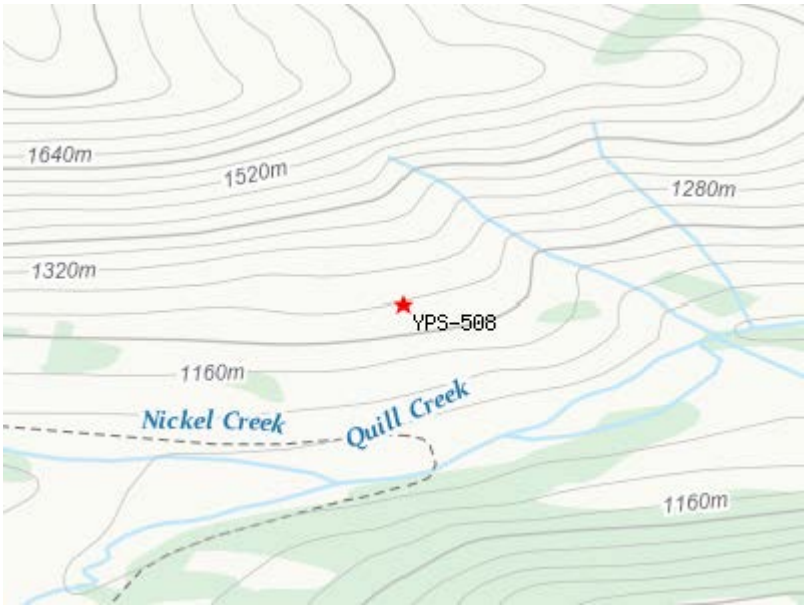


Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	10.9%	11.9%	28.7%	32.3%	16.2%
CABIN Assessment of YPS-508 on Jul 16, 2015	Mildly Divergent				

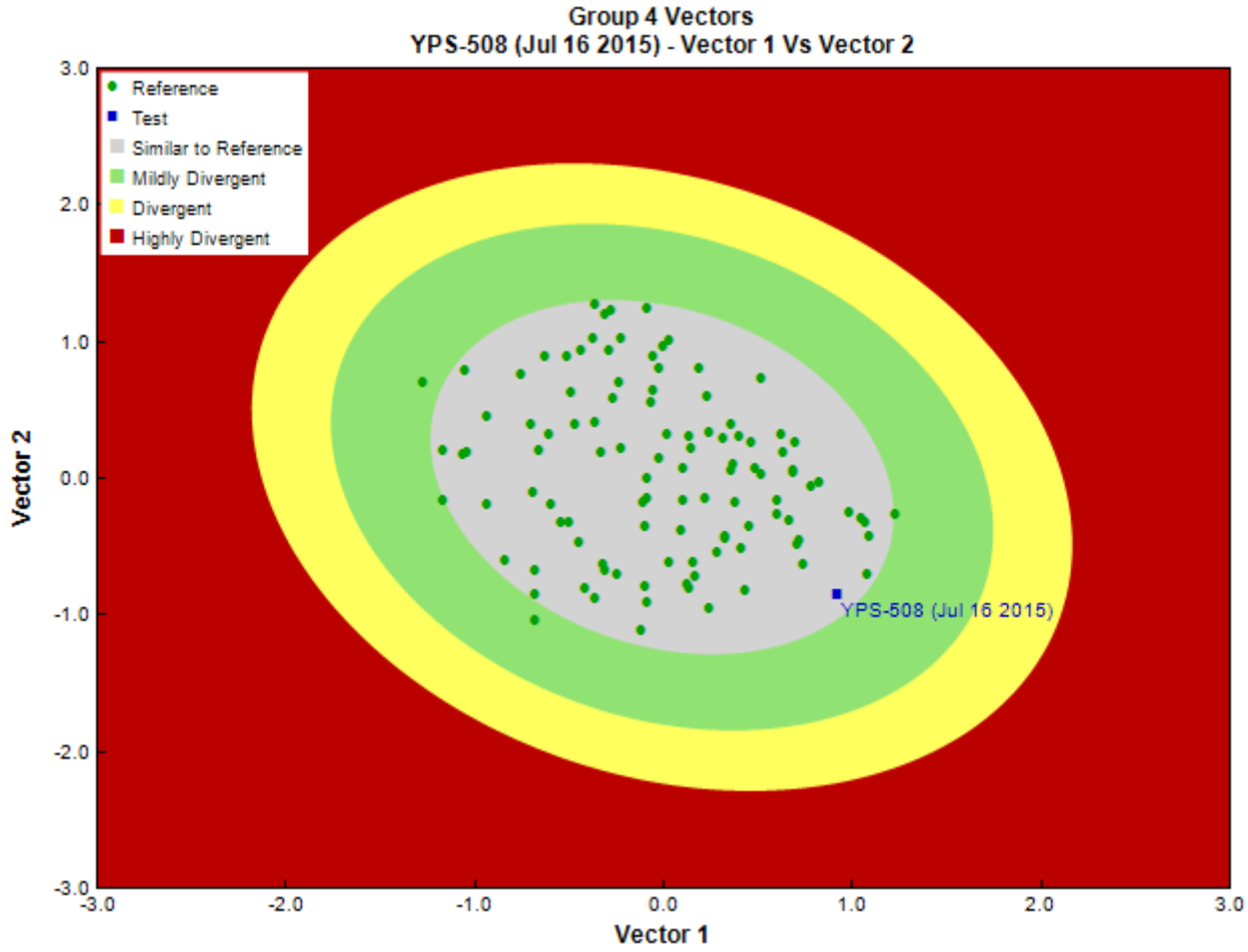


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Insecta	Diptera	Chironomidae	65	65.0
			Simuliidae	39	39.0
			Tipulidae	1	1.0
		Ephemeroptera	Ameletidae	3	3.0
			Baetidae	123	123.0
			Heptageniidae	37	37.0
		Hemiptera	Aphididae	1	1.0
		Plecoptera	Capniidae	6	6.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Chloroperlidae	1	1.0
			Nemouridae	21	21.0
			Perlodidae	8	8.0
			Taeniopterygidae	14	14.0
			Total	319	319.0

Metrics

Name	YPS-508	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.54	0.5 ± 0.2
Number Of Individuals		
Total Abundance	319.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	12.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-508
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.41
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.03
Baetidae	30%	85%	82%	94%	100%	0.83
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.13
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.45
Ceratopogonidae	22%	28%	30%	24%	0%	0.22
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.52
Corixidae	13%	8%	0%	0%	0%	0.02
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.00
Deuterophlebiidae	0%	3%	14%	1%	0%	0.05
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.06
Elmidae	4%	3%	0%	2%	0%	0.01
Empididae	9%	49%	77%	59%	54%	0.57
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.42
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.14
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.75
Hirudinidae	0%	1%	0%	1%	0%	0.00
Hyalellidae	4%	5%	0%	6%	0%	0.03
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.15
Hydroptilidae	4%	7%	0%	6%	0%	0.03
Hydrozetidae	4%	3%	20%	28%	31%	0.21
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.17
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.40
Lepidostomatidae	0%	1%	5%	4%	8%	0.04

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-508
	Group 1	Group 2	Group 3	Group 4	Group 5	
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.15
Limnephilidae	13%	48%	43%	46%	23%	0.38
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.03
Metretopodidae	0%	1%	0%	1%	0%	0.00
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.24
Nemouridae	39%	74%	100%	81%	100%	0.84
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.52
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.02
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.07
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.04
Poduridae	0%	1%	0%	1%	0%	0.00
Psychodidae	22%	15%	11%	25%	8%	0.17
Rhyacophilidae	4%	34%	68%	25%	15%	0.35
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.79
Sperchontidae	22%	49%	68%	68%	31%	0.55
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.05
Tipulidae	35%	47%	55%	62%	46%	0.53
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.10
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.88
RIVPACS : Observed taxa P>0.50	8.00
RIVPACS : O:E (p > 0.5)	1.16
RIVPACS : Expected taxa P>0.70	4.21
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.19

Habitat Description

Variable	YPS-508	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	19.5	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	115.50	0.00 ± 0.00
Depth-Max (cm)	24.5	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0

Habitat Description

Variable	YPS-508	Predicted Group Reference Mean ±SD
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Slope (m/m)	0.0320000	0.5004989 ± 0.7204958
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.73	0.52 ± 0.32
Velocity-Max (m/s)	1.00	0.70 ± 0.43
Width-Bankfull (m)	15.1	14.0 ± 18.2
Width-Wetted (m)	4.7	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	35.62000	29.33781 ± 11.78911
Precip03_MAR (mm)	32.34250	27.45595 ± 11.91497
Precip06_JUN (mm)	57.28000	53.48783 ± 18.48854
Precip07_JUL (mm)	74.06750	65.85484 ± 22.37167
Rainfall06_JUN (mm)	54.77500	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	3.68250	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.06732	0.37555 ± 1.31381
Natl-Bryoids (%)	2.34976	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	5	5 ± 2
Embeddedness (Category(1-5))	5	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	3	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	290.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.0400000	10.8405333 ± 1.2341710
General-pH (pH)	8.1	7.8 ± 0.6
General-SolidsTDS (mg/L)	276.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	1.5000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	466.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	13.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	5.2700000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	0.4300000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-538
Sampling Date	Jul 28 2015
Know Your Watershed Basin	Central Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.66768 N, 140.32224 W
Altitude	1660
Local Basin Name	Matson Creek
	Sixty Mile River
Stream Order	5

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	26.9%	21.4%	11.4%	37.6%	2.6%
CABIN Assessment of YPS-538 on Jul 28, 2015	Similar to Reference				

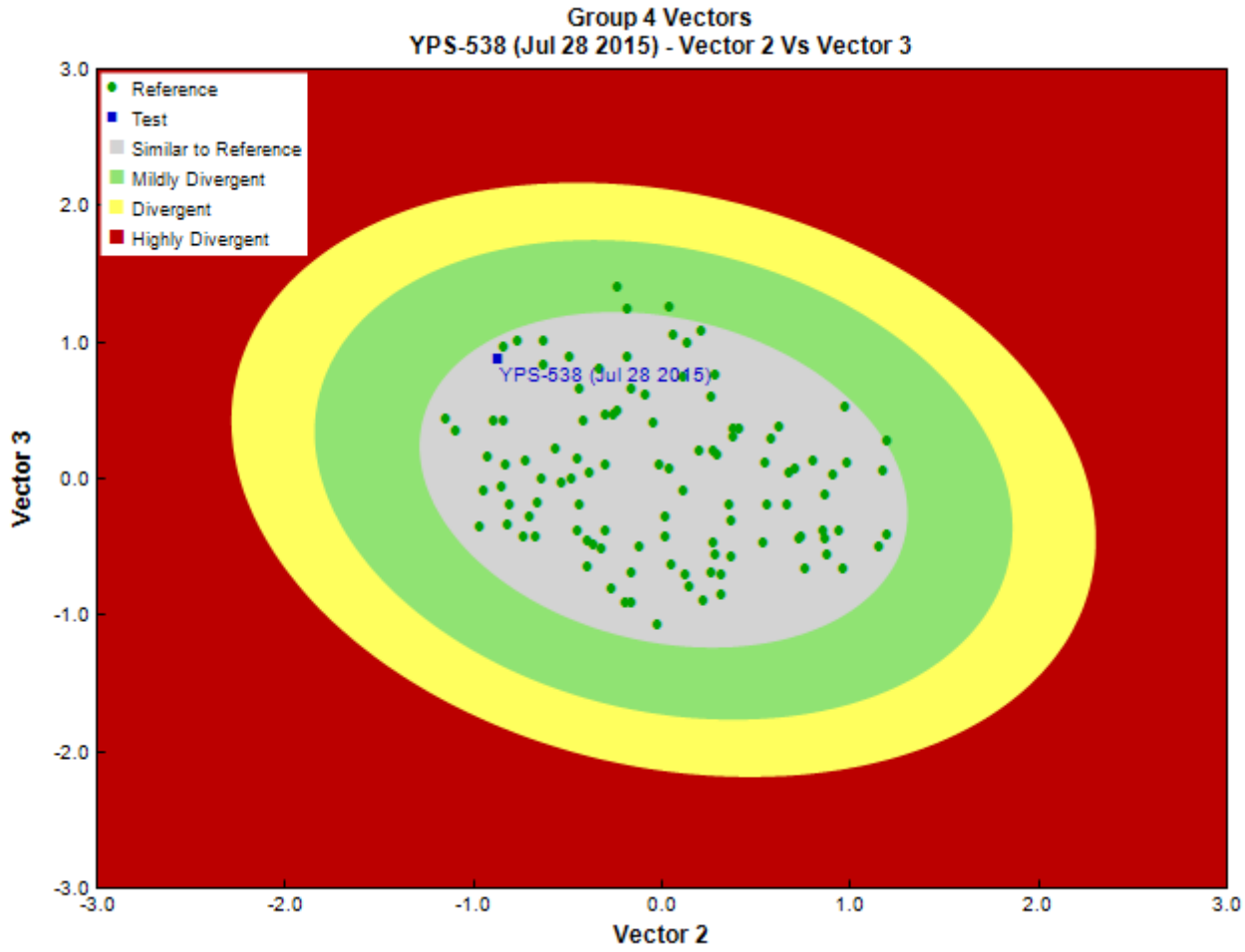


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	2	2.0
		Tubificida	Naididae	3	3.0
Arthropoda	Arachnida	Trombidiformes	Hygrobatidae	3	3.0
			Lebertiidae	14	14.0
			Sperchontidae	2	2.0
	Insecta	Coleoptera	Dytiscidae	5	5.0
		Diptera	Ceratopogonidae	13	13.0
			Chironomidae	142	142.0
			Empididae	6	6.0
			Simuliidae	365	365.0
			Tipulidae	5	5.0
		Ephemeroptera	Baetidae	134	134.0
			Ephemerellidae	27	27.0
			Heptageniidae	11	11.0
		Plecoptera	Perlodidae	2	2.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
		Trichoptera	Apataniidae	15	15.0
			Brachycentridae	13	13.0
			Glossosomatidae	7	7.0
			Limnephilidae	1	1.0
			Total	770	770.0

Metrics

Name	YPS-538	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.59	0.5 ± 0.2
Number Of Individuals		
Total Abundance	770.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	19.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-538
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.33
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.01
Baetidae	30%	85%	82%	94%	100%	0.73
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.13
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.33
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.44
Corixidae	13%	8%	0%	0%	0%	0.05
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.03
Empididae	9%	49%	77%	59%	54%	0.45
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.37
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.08
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.12
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.60
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.04
Hydropsychidae	4%	13%	36%	8%	0%	0.11
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.15
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.15
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.35
Lepidostomatidae	0%	1%	5%	4%	8%	0.02

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-538
	Group 1	Group 2	Group 3	Group 4	Group 5	
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.12
Limnephilidae	13%	48%	43%	46%	23%	0.37
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.32
Lymnaeidae	13%	9%	0%	3%	0%	0.07
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.04
Naididae	35%	43%	9%	22%	31%	0.29
Nemouridae	39%	74%	100%	81%	100%	0.71
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.39
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.10
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.06
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.20
Rhyacophilidae	4%	34%	68%	25%	15%	0.26
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.72
Sperchontidae	22%	49%	68%	68%	31%	0.50
Staphylinidae	4%	0%	0%	1%	0%	0.02
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.50
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.05
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	4.75
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	1.26
RIVPACS : Expected taxa P>0.70	3.14
RIVPACS : Observed taxa P>0.70	3.00
RIVPACS : O:E (p > 0.7)	0.96

Habitat Description

Variable	YPS-538	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	46.4	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	40.00	0.00 ± 0.00
Depth-Max (cm)	72.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	0	1 ± 0

Habitat Description

Variable	YPS-538	Predicted Group Reference Mean ±SD
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0100000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.60	0.52 ± 0.32
Velocity-Max (m/s)	0.80	0.70 ± 0.43
Width-Bankfull (m)	31.4	14.0 ± 18.2
Width-Wetted (m)	24.2	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	32.75103	29.33781 ± 11.78911
Precip03_MAR (mm)	31.79103	27.45595 ± 11.91497
Precip06_JUN (mm)	50.52069	53.48783 ± 18.48854
Precip07_JUL (mm)	67.00621	65.85484 ± 22.37167
Rainfall06_JUN (mm)	48.15966	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-1.98517	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.56296	0.37555 ± 1.31381
Natl-Bryoids (%)	0.41622	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.17156	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00979	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	2	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	142.7000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.5700000	10.8405333 ± 1.2341710
General-pH (pH)	7.7	7.8 ± 0.6
General-SolidsTDS (mg/L)	107.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	34.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	196.2000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	18.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	10.7000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	7.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-540
Sampling Date	Jul 27 2015
Know Your Watershed Basin	Central Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	64.26137 N, 140.82480 W
Altitude	1414
Local Basin Name	Browns Creek
	Forty Mile River
Stream Order	4

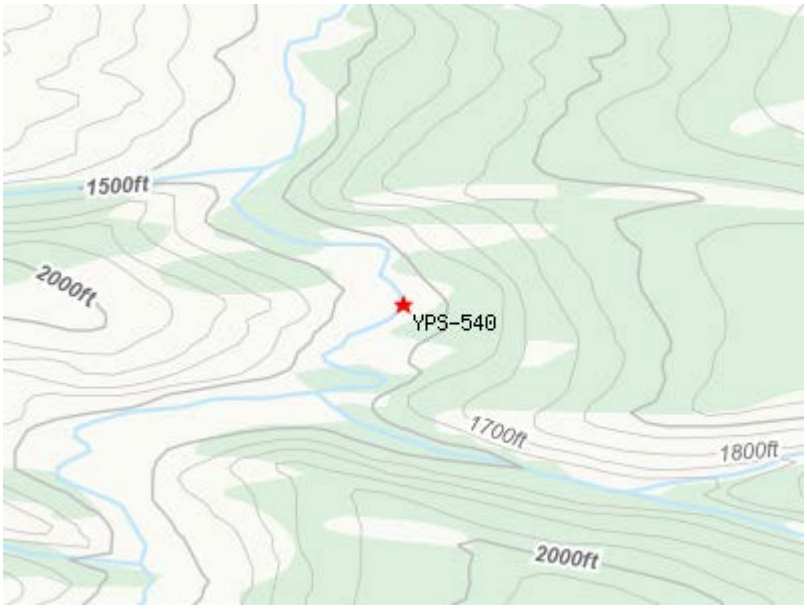


Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	34.2%	25.6%	10.9%	28.5%	0.8%
CABIN Assessment of YPS-540 on Jul 27, 2015	Mildly Divergent				

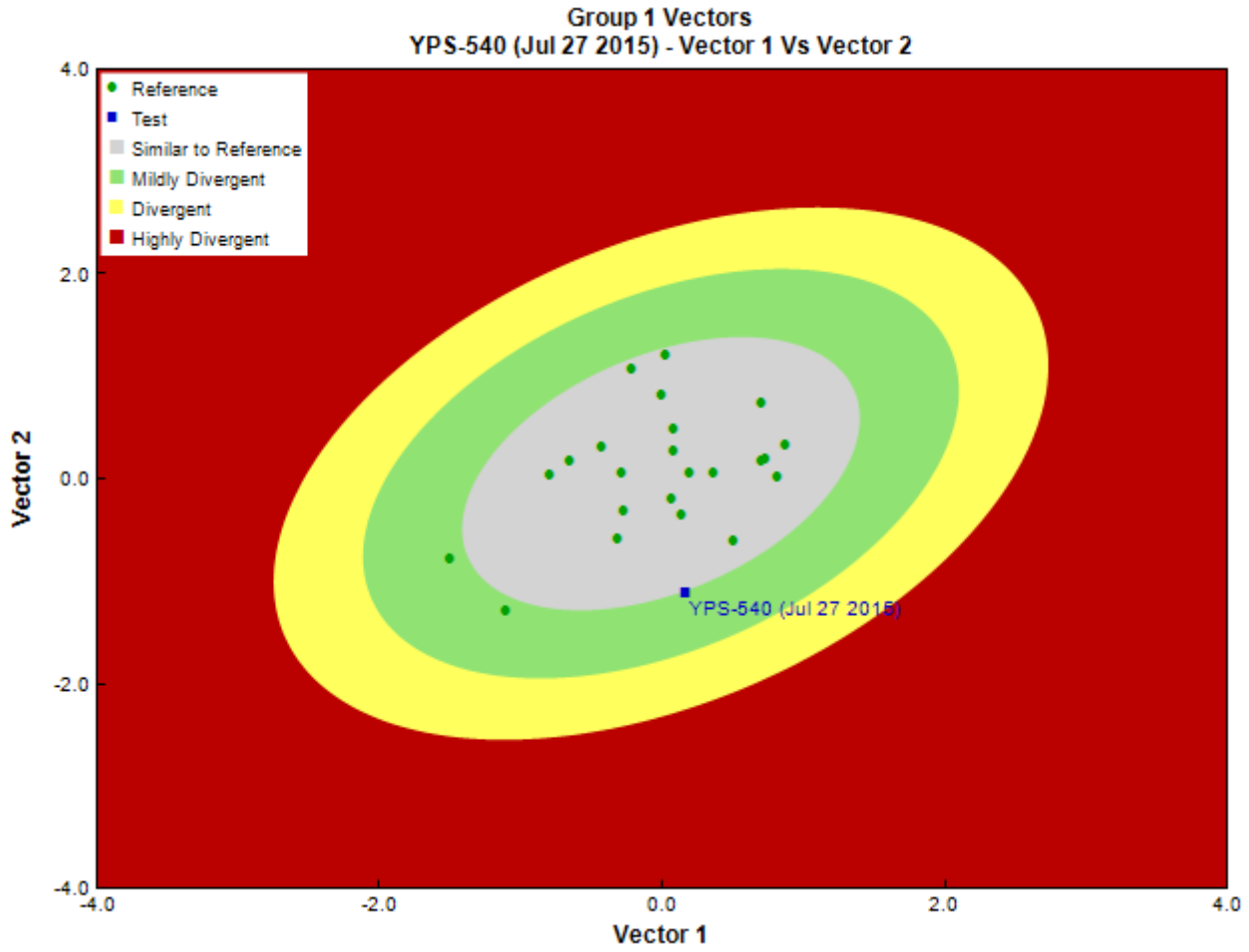


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	3	3.0
Arthropoda	Arachnida	Trombidiformes	Sperchontidae	3	3.0
	Insecta	Diptera	Ceratopogonidae	1	1.0
			Chironomidae	23	23.0
			Empididae	2	2.0
			Simuliidae	15	15.0
			Tipulidae	2	2.0
		Ephemeroptera	Baetidae	117	117.0
			Heptageniidae	16	16.0
		Plecoptera	Capniidae	8	8.0
			Chloroperlidae	2	2.0
			Nemouridae	8	8.0
			Peltoperlidae	1	1.0
			Perlodidae	14	14.0
	Malacostraca	Amphipoda	Gammaridae	2	2.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Total	217	217.0

Metrics

Name	YPS-540	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.9	0.6 ± 0.3
Number Of Individuals		
Total Abundance	217.0	192.2 ± 127.1
Richness		
Total No. of Taxa	15.0	10.1 ± 4.5

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-540
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.31
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.01
Baetidae	30%	85%	82%	94%	100%	0.68
Blephariceridae	0%	0%	5%	0%	0%	0.00
Brachycentridae	0%	15%	7%	23%	8%	0.11
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.29
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.97
Chloroperlidae	22%	43%	77%	50%	38%	0.41
Corixidae	13%	8%	0%	0%	0%	0.07
Culicidae	9%	0%	0%	0%	0%	0.03
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.03
Empididae	9%	49%	77%	59%	54%	0.41
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.36
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.11
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.55
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.04
Hydropsychidae	4%	13%	36%	8%	0%	0.11
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.13
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.13
Isotomidae	9%	5%	2%	1%	0%	0.05
Lebertiidae	13%	20%	52%	54%	23%	0.31
Lepidostomatidae	0%	1%	5%	4%	8%	0.02
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.12
Limnephilidae	13%	48%	43%	46%	23%	0.35

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-540
	Group 1	Group 2	Group 3	Group 4	Group 5	
Limnesiidae	0%	1%	2%	6%	8%	0.02
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.30
Lymnaeidae	13%	9%	0%	3%	0%	0.08
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.04
Naididae	35%	43%	9%	22%	31%	0.30
Nemouridae	39%	74%	100%	81%	100%	0.67
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.36
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.11
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.06
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.20
Rhyacophilidae	4%	34%	68%	25%	15%	0.25
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.68
Sperchontidae	22%	49%	68%	68%	31%	0.47
Staphylinidae	4%	0%	0%	1%	0%	0.02
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.01
Tipulidae	35%	47%	55%	62%	46%	0.48
Torrenticolidae	0%	0%	0%	5%	8%	0.01
Tubificidae	4%	1%	9%	13%	0%	0.06
Uenoidae	0%	8%	30%	1%	0%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	3.56
RIVPACS : Observed taxa P>0.50	5.00
RIVPACS : O:E (p > 0.5)	1.41
RIVPACS : Expected taxa P>0.70	0.97
RIVPACS : Observed taxa P>0.70	1.00
RIVPACS : O:E (p > 0.7)	1.03

Habitat Description

Variable	YPS-540	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	43.0	36.5 ± 24.3
Depth-BankfullMinusWetted (cm)	45.00	0.00 ± 0.00
Depth-Max (cm)	56.0	39.2 ± 22.7
Macrophyte (PercentRange)	0	0 ± 0
Reach-%CanopyCoverage (PercentRange)	1.00	1.58 ± 1.31
Reach-Pools (Binary)	1	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	0 ± 0
Slope (m/m)	0.0200000	0.5088889 ± 0.9950150

Habitat Description

Variable	YPS-540	Predicted Group Reference Mean ±SD
Veg-Coniferous (Binary)	1	0 ± 0
Veg-Deciduous (Binary)	1	1 ± 1
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.78	0.42 ± 0.29
Velocity-Max (m/s)	1.00	0.55 ± 0.38
Width-Bankfull (m)	16.6	23.3 ± 30.9
Width-Wetted (m)	7.6	6.1 ± 4.9
Climate		
Precip02_FEB (mm)	33.30545	27.73943 ± 9.10561
Precip03_MAR (mm)	32.21545	25.54674 ± 9.71520
Precip06_JUN (mm)	52.86727	49.78117 ± 15.10067
Precip07_JUL (mm)	68.61273	63.45366 ± 19.76560
Rainfall06_JUN (mm)	51.25636	45.78194 ± 13.48156
Temp04_APRmax (Degrees Celsius)	-3.63545	-0.26448 ± 3.57165
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.01437	0.19525 ± 0.41187
Natl-Bryoids (%)	0.00000	0.16846 ± 0.41890
Natl-MixedwoodOpen (%)	0.00000	2.45662 ± 5.01153
Natl-WetlandHerb (%)	0.00000	0.22137 ± 0.64189
Substrate Data		
Dominant-1st (Category(0-9))	6	4 ± 2
Dominant-2nd (Category(0-9))	7	6 ± 2
Embeddedness (Category(1-5))	5	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	2	4 ± 3
Water Chemistry		
General-Conductivity (µS/cm)	128.0000000	214.2500000 ± 85.7203992
General-DO (mg/L)	10.6200000	10.3865217 ± 1.3012114
General-pH (pH)	7.4	7.5 ± 0.6
General-SolidsTDS (mg/L)	105.0000000	163.3333333 ± 119.2444967
General-SolidsTSS (mg/L)	114.0000000	618.8714286 ± 2167.8373709
General-SpCond (µS/cm)	190.7000000	318.4782609 ± 182.1592384
General-TempAir (Degrees Celsius)	19.0	19.0 ± 3.0
General-TempWater (Degrees Celsius)	7.8000000	10.0104762 ± 4.2555205
General-Turbidity (NTU)	40.0000000	1062.3160000 ± 2079.8139483

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-541
Sampling Date	Jul 27 2015
Know Your Watershed Basin	Fortymile
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	64.23139 N, 140.68504 W
Altitude	1761
Local Basin Name	Bruin Creek
	Forty Mile River
Stream Order	3

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	20.0%	25.3%	12.3%	39.6%	2.8%
CABIN Assessment of YPS-541 on Jul 27, 2015	Mildly Divergent				

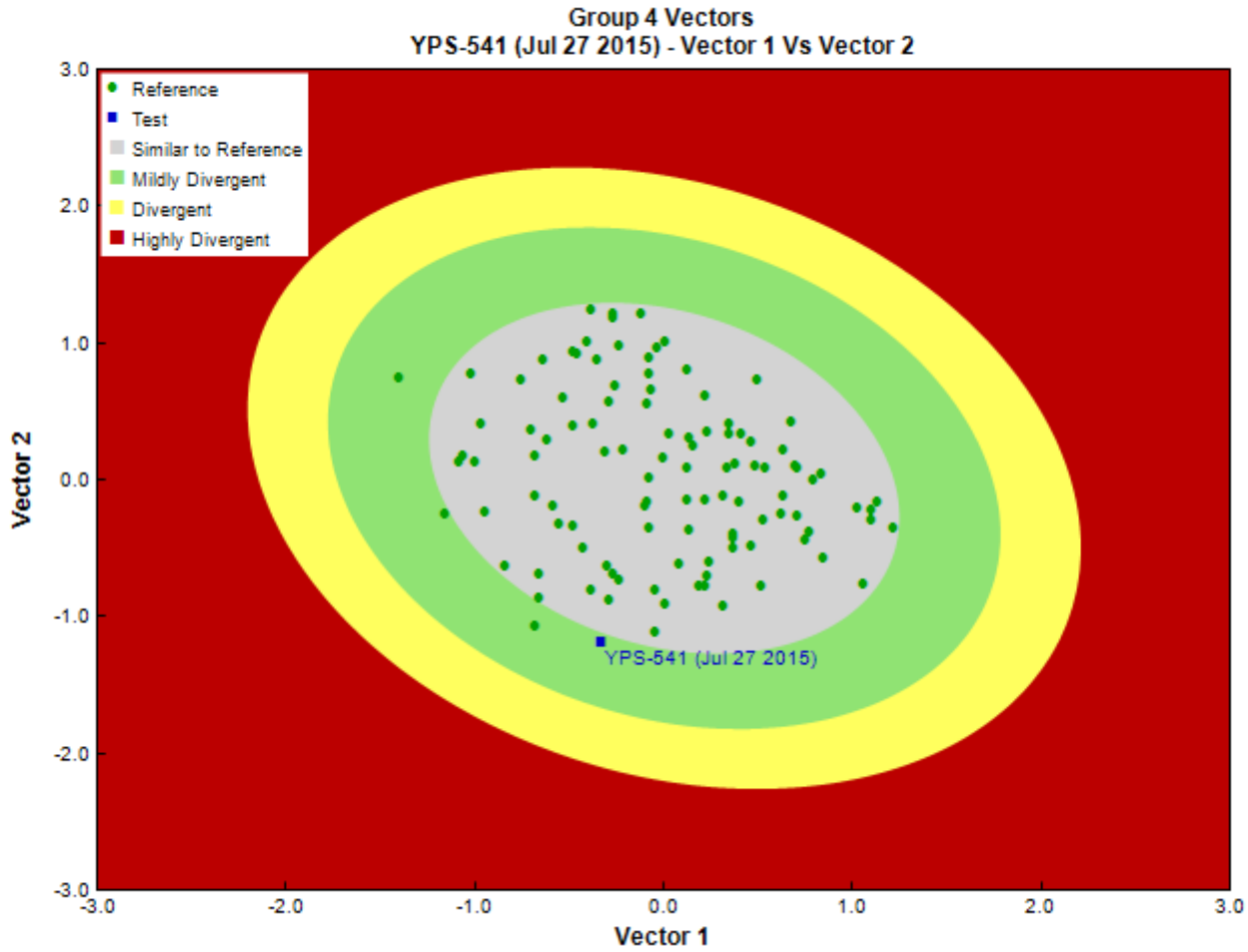


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	40/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	21	52.5
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	5	12.5
	Insecta	Diptera		2	5.0
			Chironomidae	39	97.5
			Simuliidae	65	162.5
			Tipulidae	1	2.5
		Ephemeroptera	Ameletidae	13	32.5
			Baetidae	18	45.0
			Heptageniidae	103	257.5
		Plecoptera	Chloroperlidae	16	40.0
			Nemouridae	100	250.0
			Perlodidae	1	2.5
		Trichoptera	Limnephilidae	5	12.5
			Rhyacophilidae	3	7.5
			Total	392	980.0

Metrics

Name	YPS-541	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.67	0.5 ± 0.2
Number Of Individuals		
Total Abundance	980.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	13.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-541
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.36
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.77
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.14
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.35
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.46
Corixidae	13%	8%	0%	0%	0%	0.05
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.10
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.49
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.38
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.08
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.13
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.64
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.12
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.16
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.16
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.36
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.12
Limnephilidae	13%	48%	43%	46%	23%	0.39
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.32
Lymnaeidae	13%	9%	0%	3%	0%	0.06
Metretopodidae	0%	1%	0%	1%	0%	0.01

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-541
	Group 1	Group 2	Group 3	Group 4	Group 5	
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.29
Nemouridae	39%	74%	100%	81%	100%	0.74
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.41
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.09
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.05
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.20
Rhyacophilidae	4%	34%	68%	25%	15%	0.28
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.75
Sperchontidae	22%	49%	68%	68%	31%	0.53
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.51
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	4.92
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	1.22
RIVPACS : Expected taxa P>0.70	3.24
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	1.23

Habitat Description

Variable	YPS-541	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	25.4	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	20.00	0.00 ± 0.00
Depth-Max (cm)	33.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	0	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0150000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.56	0.52 ± 0.32

Habitat Description

Variable	YPS-541	Predicted Group Reference Mean ±SD
Velocity-Max (m/s)	0.80	0.70 ± 0.43
Width-Bankfull (m)	9.5	14.0 ± 18.2
Width-Wetted (m)	6.7	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	34.04833	29.33781 ± 11.78911
Precip03_MAR (mm)	32.97167	27.45595 ± 11.91497
Precip06_JUN (mm)	53.79167	53.48783 ± 18.48854
Precip07_JUL (mm)	69.58333	65.85484 ± 22.37167
Rainfall06_JUN (mm)	52.20000	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-3.98333	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.20812	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Substrate Data		
Dominant-1st (Category(0-9))	7	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	3	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	124.2000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.4100000	10.8405333 ± 1.2341710
General-pH (pH)	7.6	7.8 ± 0.6
General-SolidsTDS (mg/L)	106.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	222.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	199.6000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	15.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	5.2000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	53.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-542
Sampling Date	Jul 27 2015
Know Your Watershed Basin	Fortymile
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	64.25975 N, 140.53305 W
Altitude	1679
Local Basin Name	Unnamed Trib to Bruin Creek
	Forty Mile River
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	20.6%	20.9%	16.0%	39.3%	3.2%
CABIN Assessment of YPS-542 on Jul 27, 2015	Similar to Reference				

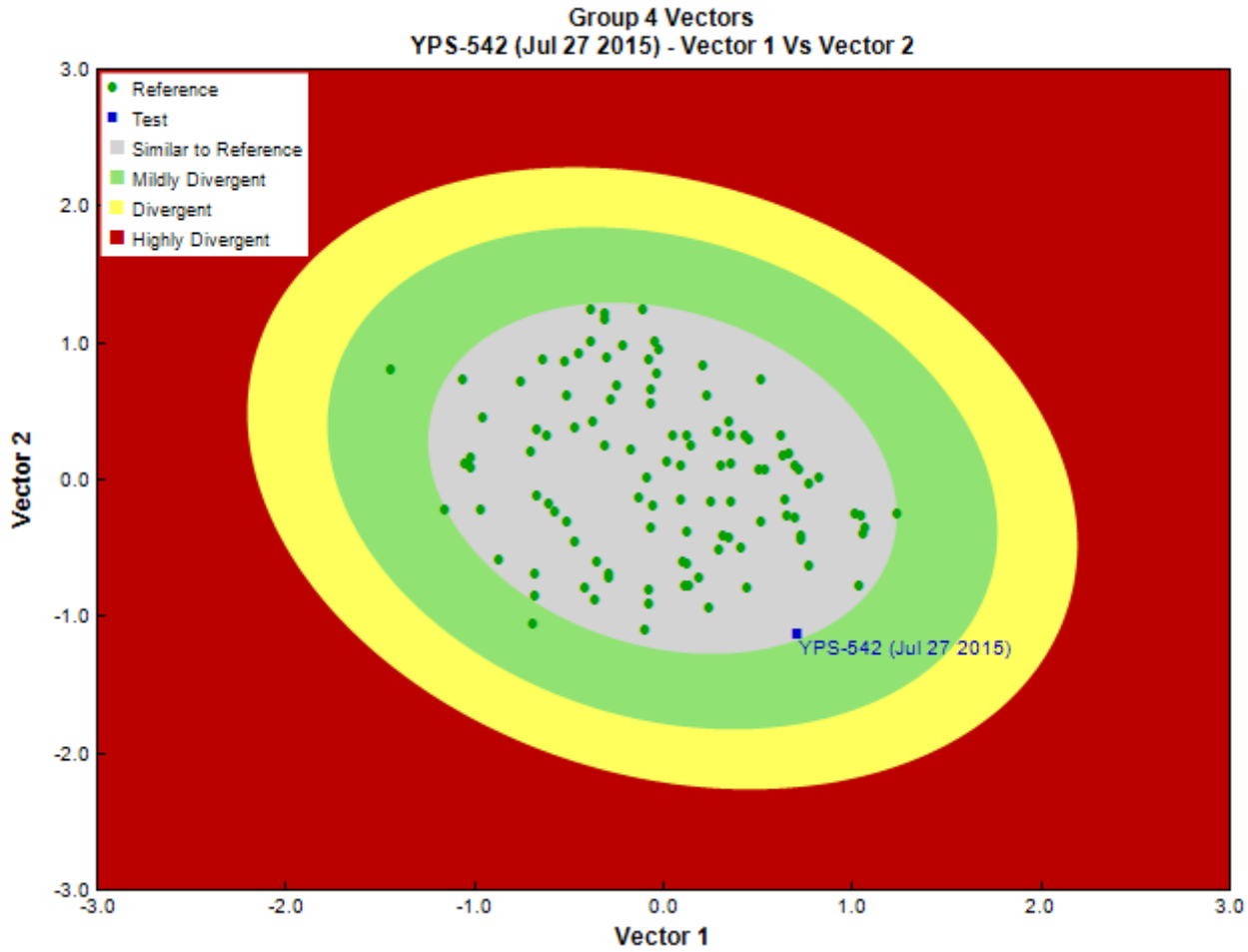


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	3	3.0
Arthropoda	Arachnida	Sarcoptiformes		2	2.0
		Trombidiformes	Lebertiidae	1	1.0
	Insecta	Diptera	Ceratopogonidae	1	1.0
			Chironomidae	170	170.0
			Simuliidae	33	33.0
			Tipulidae	4	4.0
		Ephemeroptera	Ameletidae	29	29.0
			Baetidae	18	18.0
			Ephemerellidae	1	1.0
			Heptageniidae	90	90.0
		Plecoptera	Chloroperlidae	31	31.0
			Nemouridae	35	35.0
		Trichoptera		1	1.0
	Malacostraca	Amphipoda		1	1.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Gammaridae	18	18.0
Mollusca	Gastropoda			1	1.0
			Total	439	439.0

Metrics

Name	YPS-542	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.52	0.5 ± 0.2
Number Of Individuals		
Total Abundance	439.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	13.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-542
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.37
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.77
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.14
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.36
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.47
Corixidae	13%	8%	0%	0%	0%	0.04
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.49
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.38
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.08
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.13
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.65
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.13
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.17
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.17
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.37
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-542
	Group 1	Group 2	Group 3	Group 4	Group 5	
Leuctridae	4%	14%	32%	10%	0%	0.13
Limnephilidae	13%	48%	43%	46%	23%	0.39
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.06
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.27
Nemouridae	39%	74%	100%	81%	100%	0.75
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.42
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.09
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.05
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.20
Rhyacophilidae	4%	34%	68%	25%	15%	0.29
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.75
Sperchontidae	22%	49%	68%	68%	31%	0.53
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.52
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.07
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	4.94
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	1.21
RIVPACS : Expected taxa P>0.70	3.25
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	1.23

Habitat Description

Variable	YPS-542	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	29.4	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	23.00	0.00 ± 0.00
Depth-Max (cm)	42.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0

Habitat Description

Variable	YPS-542	Predicted Group Reference Mean ±SD
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0150000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.86	0.52 ± 0.32
Velocity-Max (m/s)	1.10	0.70 ± 0.43
Width-Bankfull (m)	7.8	14.0 ± 18.2
Width-Wetted (m)	6.3	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	32.84000	29.33781 ± 11.78911
Precip03_MAR (mm)	31.54000	27.45595 ± 11.91497
Precip06_JUN (mm)	52.19000	53.48783 ± 18.48854
Precip07_JUL (mm)	67.22167	65.85484 ± 22.37167
Rainfall06_JUN (mm)	50.45667	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-3.67833	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.07384	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	156.8000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.4000000	10.8405333 ± 1.2341710
General-pH (pH)	7.7	7.8 ± 0.6
General-SolidsTDS (mg/L)	143.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	8.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	257.1000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	16.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	4.6000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	2.4000000	3.9486301 ± 9.4764159

Habitat Description

Variable	YPS-538	Predicted Group Reference Mean ±SD
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0100000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.60	0.52 ± 0.32
Velocity-Max (m/s)	0.80	0.70 ± 0.43
Width-Bankfull (m)	31.4	14.0 ± 18.2
Width-Wetted (m)	24.2	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	32.75103	29.33781 ± 11.78911
Precip03_MAR (mm)	31.79103	27.45595 ± 11.91497
Precip06_JUN (mm)	50.52069	53.48783 ± 18.48854
Precip07_JUL (mm)	67.00621	65.85484 ± 22.37167
Rainfall06_JUN (mm)	48.15966	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-1.98517	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.56296	0.37555 ± 1.31381
Natl-Bryoids (%)	0.41622	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.17156	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00979	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	2	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	142.7000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.5700000	10.8405333 ± 1.2341710
General-pH (pH)	7.7	7.8 ± 0.6
General-SolidsTDS (mg/L)	107.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	34.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	196.2000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	18.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	10.7000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	7.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-544
Sampling Date	Jul 28 2015
Know Your Watershed Basin	Klondike
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	64.02940 N, 139.17841 W
Altitude	1177
Local Basin Name	Hunker Creek
	Klondike River
Stream Order	4

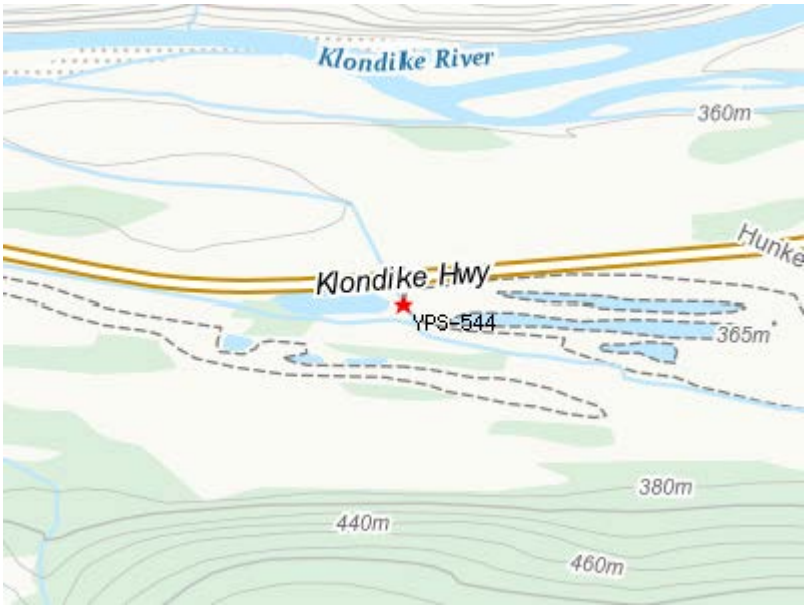
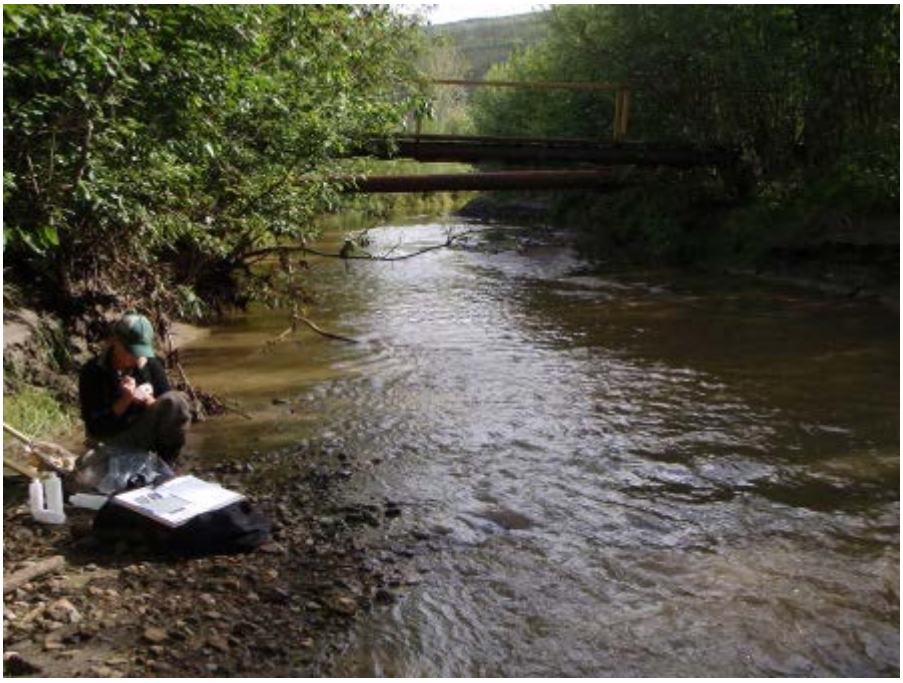


Figure 1. Location Map

Down Stream



Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	17.2%	34.6%	12.4%	34.7%	1.1%
CABIN Assessment of YPS-544 on Jul 28, 2015	Divergent				

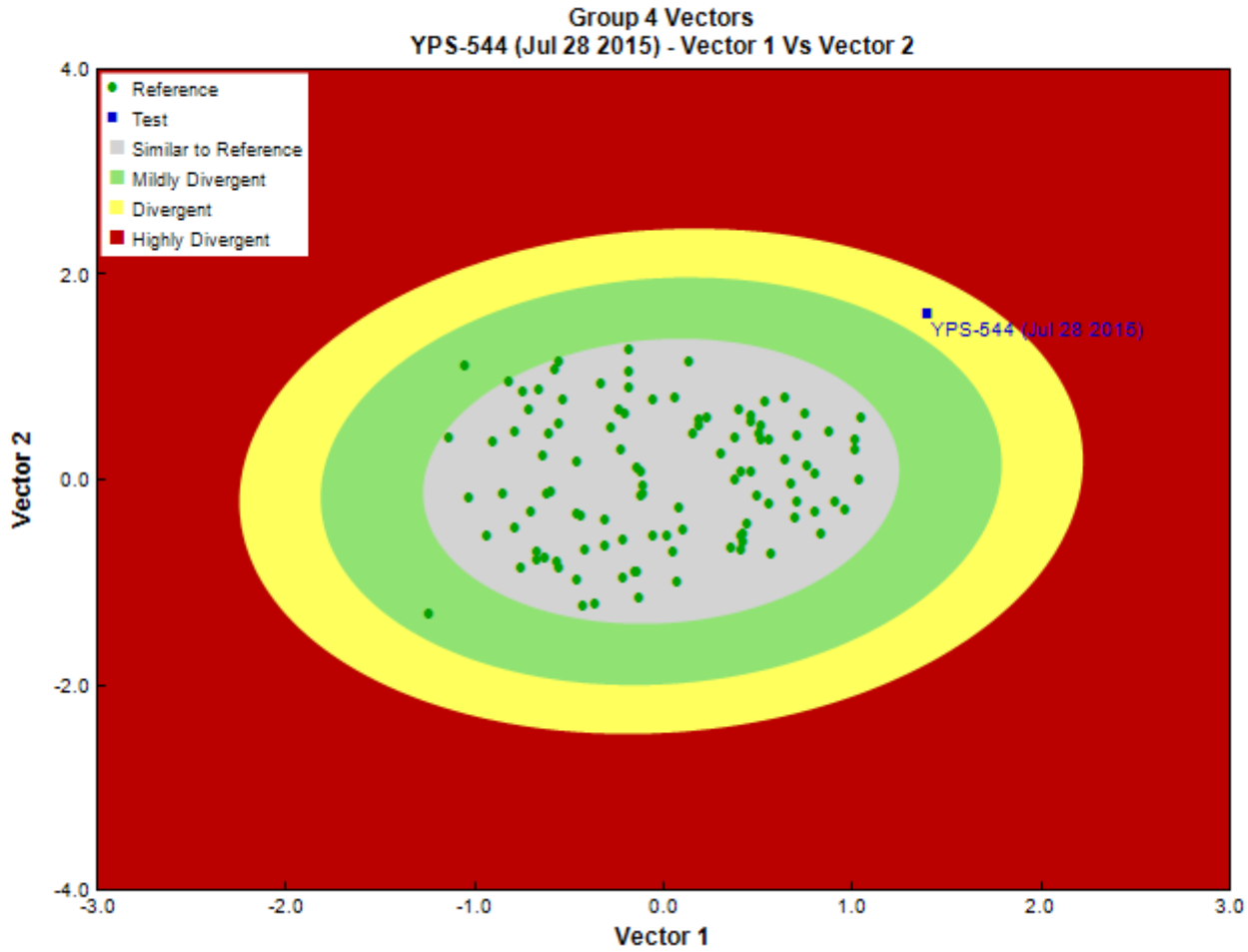


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	25	25.0
Arthropoda	Arachnida	Sarcoptiformes		1	1.0
		Trombidiformes	Hygrobatidae	1	1.0
			Lebertiidae	1	1.0
			Sperchontidae	2	2.0
	Insecta	Diptera	Blephariceridae	4	4.0
			Chironomidae	45	45.0
			Empididae	1	1.0
			Tipulidae	1	1.0
		Ephemeroptera	Baetidae	52	52.0
		Plecoptera	Perlodidae	4	4.0
		Trichoptera	Brachycentridae	5	5.0
Mollusca	Gastropoda	Basommatophora	Lymnaeidae	1	1.0
			Total	143	143.0

Metrics

Name	YPS-544	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.8	0.5 ± 0.2
Number Of Individuals		
Total Abundance	143.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	12.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-544
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.37
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.01
Baetidae	30%	85%	82%	94%	100%	0.78
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.14
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.33
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.46
Corixidae	13%	8%	0%	0%	0%	0.05
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.10
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.49
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.38
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.14
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.64
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.13
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.14
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.16
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.35
Lepidostomatidae	0%	1%	5%	4%	8%	0.02
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.13
Limnephilidae	13%	48%	43%	46%	23%	0.40
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.31
Lymnaeidae	13%	9%	0%	3%	0%	0.06
Metretopodidae	0%	1%	0%	1%	0%	0.01

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-544
	Group 1	Group 2	Group 3	Group 4	Group 5	
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.30
Nemouridae	39%	74%	100%	81%	100%	0.74
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.40
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.09
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.05
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.30
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.75
Sperchontidae	22%	49%	68%	68%	31%	0.53
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.51
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.07
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	4.94
RIVPACS : Observed taxa P>0.50	4.00
RIVPACS : O:E (p > 0.5)	0.81
RIVPACS : Expected taxa P>0.70	3.26
RIVPACS : Observed taxa P>0.70	2.00
RIVPACS : O:E (p > 0.7)	0.61

Habitat Description

Variable	YPS-544	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	38.2	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	120.00	0.00 ± 0.00
Depth-Max (cm)	111.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	0	1 ± 0
Reach-Rapids (Binary)	0	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0050000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	0	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.62	0.52 ± 0.32

Habitat Description

Variable	YPS-544	Predicted Group Reference Mean ±SD
Velocity-Max (m/s)	0.90	0.70 ± 0.43
Width-Bankfull (m)	8.8	14.0 ± 18.2
Width-Wetted (m)	6.7	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	32.50083	29.33781 ± 11.78911
Precip03_MAR (mm)	31.01083	27.45595 ± 11.91497
Precip06_JUN (mm)	53.96000	53.48783 ± 18.48854
Precip07_JUL (mm)	67.06000	65.85484 ± 22.37167
Rainfall06_JUN (mm)	51.47500	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-3.61583	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.44910	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.23290	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	5	5 ± 2
Dominant-2nd (Category(0-9))	1	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	1	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	533.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	9.7800000	10.8405333 ± 1.2341710
General-pH (pH)	8.0	7.8 ± 0.6
General-SolidsTDS (mg/L)	425.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	101.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	671.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	18.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	14.2000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	94.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-568
Sampling Date	Jul 16 2015
Know Your Watershed Basin	White
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone St.Elias Mountains EcoRegion
Coordinates (decimal degrees)	61.38845 N, 139.33148 W
Altitude	3992
Local Basin Name	Tatamagouche Creek
	White River
Stream Order	3

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	6.0%	10.5%	23.8%	26.9%	32.9%
CABIN Assessment of YPS-568 on Jul 16, 2015	Highly Divergent				

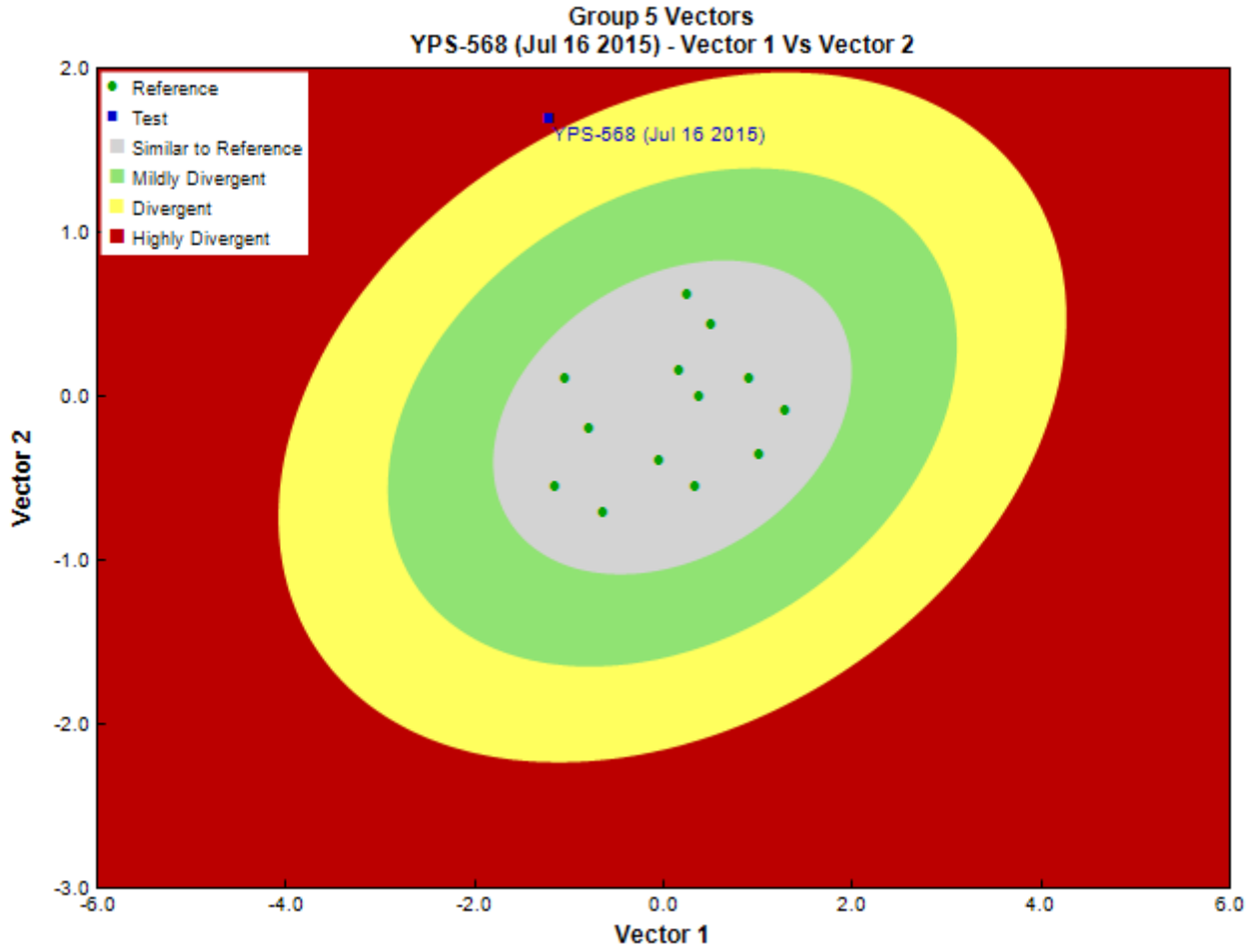


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Tubificida	Naididae	1	1.0
Arthropoda	Arachnida	Trombidiformes	Sperchontidae	3	3.0
	Insecta	Diptera	Chironomidae	22	22.0
			Muscidae	2	2.0
			Simuliidae	23	23.0
			Tipulidae	2	2.0
		Ephemeroptera	Baetidae	34	34.0
			Ephemerellidae	6	6.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Heptageniidae	16	16.0
		Plecoptera	Capniidae	10	10.0
			Chloroperlidae	1	1.0
			Nemouridae	450	450.0
		Trichoptera	Limnephilidae	1	1.0
			Total	571	571.0

Metrics

Name	YPS-568	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.94	0.4 ± 0.2
Number Of Individuals		
Total Abundance	571.0	12539.4 ± 5669.6
Richness		
Total No. of Taxa	13.0	11.3 ± 3.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-568
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.37
Apataniidae	0%	1%	0%	3%	8%	0.03
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.04
Baetidae	30%	85%	82%	94%	100%	0.88
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.12
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.52
Ceratopogonidae	22%	28%	30%	24%	0%	0.18
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.50
Corixidae	13%	8%	0%	0%	0%	0.02
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.00
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.01
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.05
Elmidae	4%	3%	0%	2%	0%	0.01
Empididae	9%	49%	77%	59%	54%	0.58
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.40
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.05
Gammaridae	9%	2%	0%	13%	23%	0.12
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.11
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.79
Hirudinidae	0%	1%	0%	1%	0%	0.00
Hyalellidae	4%	5%	0%	6%	0%	0.02
Hydraenidae	0%	2%	0%	1%	0%	0.00
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.13
Hydroptilidae	4%	7%	0%	6%	0%	0.03
Hydrozetidae	4%	3%	20%	28%	31%	0.23
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.14
Isotomidae	9%	5%	2%	1%	0%	0.02
Lebertiidae	13%	20%	52%	54%	23%	0.37

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-568
	Group 1	Group 2	Group 3	Group 4	Group 5	
Lepidostomatidae	0%	1%	5%	4%	8%	0.05
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.12
Limnephilidae	13%	48%	43%	46%	23%	0.36
Limnesiidae	0%	1%	2%	6%	8%	0.05
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.31
Lymnaeidae	13%	9%	0%	3%	0%	0.02
Metretopodidae	0%	1%	0%	1%	0%	0.00
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.04
Naididae	35%	43%	9%	22%	31%	0.25
Nemouridae	39%	74%	100%	81%	100%	0.89
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.54
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.02
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.07
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.05
Poduridae	0%	1%	0%	1%	0%	0.00
Psychodidae	22%	15%	11%	25%	8%	0.15
Rhyacophilidae	4%	34%	68%	25%	15%	0.32
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.80
Sperchontidae	22%	49%	68%	68%	31%	0.51
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.00
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.07
Tipulidae	35%	47%	55%	62%	46%	0.52
Torrenticolidae	0%	0%	0%	5%	8%	0.04
Tubificidae	4%	1%	9%	13%	0%	0.06
Uenoidae	0%	8%	30%	1%	0%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	7.52
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	1.20
RIVPACS : Expected taxa P>0.70	4.35
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.15

Habitat Description

Variable	YPS-568	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	22.5	24.0 ± 13.5
Depth-BankfullMinusWetted (cm)	30.00	0.00 ± 0.00
Depth-Max (cm)	31.5	33.6 ± 23.7
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	0.77 ± 0.44

Habitat Description

Variable	YPS-568	Predicted Group Reference Mean ±SD
Reach-Riffles (Binary)	1	1 ± 0
Slope (m/m)	0.0250000	1.2120000 ± 1.1465034
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.52	0.69 ± 0.41
Velocity-Max (m/s)	0.80	0.98 ± 0.54
Width-Bankfull (m)	14.0	12.7 ± 8.3
Width-Wetted (m)	6.1	5.9 ± 3.0
Climate		
Precip02_FEB (mm)	35.27400	23.64703 ± 9.87067
Precip03_MAR (mm)	31.85600	21.43418 ± 10.28637
Precip06_JUN (mm)	57.17800	42.70673 ± 20.01009
Precip07_JUL (mm)	73.73600	53.48428 ± 23.82521
Rainfall06_JUN (mm)	54.68800	39.58541 ± 18.10735
Temp04_APRmax (Degrees Celsius)	3.90600	-1.98555 ± 4.49028
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.03629	0.10660 ± 0.30602
Natl-Bryoids (%)	3.09908	1.00805 ± 2.53070
Natl-MixedwoodOpen (%)	0.00000	0.13901 ± 0.32395
Natl-WetlandHerb (%)	0.00000	0.03267 ± 0.07770
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 1
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	4	3 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	247.0000000	152.1000000 ± 59.8648478
General-DO (mg/L)	88.1000000	10.9833333 ± 1.0412813
General-pH (pH)	8.1	8.0 ± 0.6
General-SolidsTDS (mg/L)	209.0000000	185.5000000 ± 69.6566979
General-SolidsTSS (mg/L)	1.5000000	1.8237500 ± 2.8622378
General-SpCond (µS/cm)	353.0000000	233.7692308 ± 136.1997025
General-TempAir (Degrees Celsius)	22.0	15.9 ± 5.2
General-TempWater (Degrees Celsius)	9.1800000	9.3450000 ± 5.7101655
General-Turbidity (NTU)	0.1000000	0.5127273 ± 0.6444392

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-569
Sampling Date	Jul 29 2015
Know Your Watershed Basin	Klondike
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.93566 N, 138.62846 W
Altitude	1558
Local Basin Name	Allgold Creek
	Klondike River
Stream Order	4

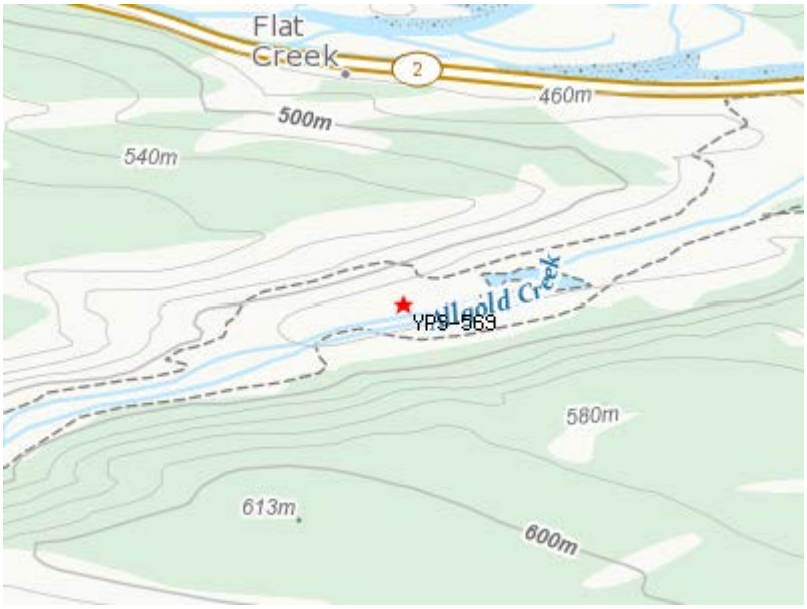


Figure 1. Location Map

Down Stream (No image found)
Up Stream (No image found)

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	**1**	**2**	**3**	**4**	**5**
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				

Probability of Group Membership	3.9%	15.6%	19.5%	50.1%	10.9%
CABIN Assessment of YPS-569 on Jul 29, 2015	Divergent				

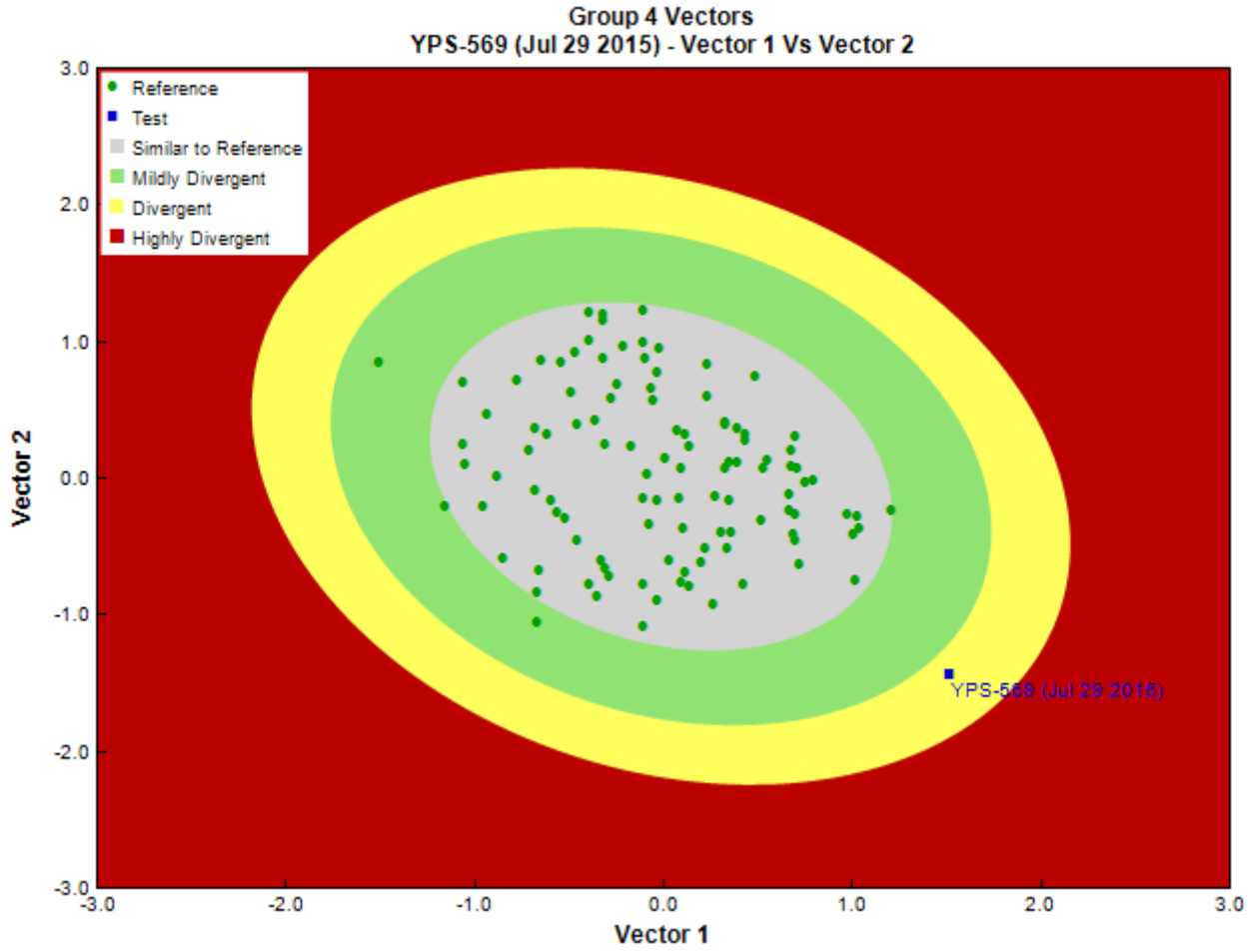


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	1	1.0
Arthropoda	Insecta	Diptera	Chironomidae	88	88.0
			Tipulidae	1	1.0
		Ephemeroptera	Baetidae	9	9.0
			Total	99	99.0

Metrics

Name	YPS-569	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.8	0.5 ± 0.2

Metrics

Name	YPS-569	Predicted Group Reference Mean ±SD
Number Of Individuals		
Total Abundance	99.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	4.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-569
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.41
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.03
Baetidae	30%	85%	82%	94%	100%	0.88
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.16
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.46
Ceratopogonidae	22%	28%	30%	24%	0%	0.23
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.52
Corixidae	13%	8%	0%	0%	0%	0.02
Culicidae	9%	0%	0%	0%	0%	0.00
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.59
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.41
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.10
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.76
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.14
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.22
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.20
Isotomidae	9%	5%	2%	1%	0%	0.02
Lebertiidae	13%	20%	52%	54%	23%	0.43
Lepidostomatidae	0%	1%	5%	4%	8%	0.04
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.14
Limnephilidae	13%	48%	43%	46%	23%	0.42
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.35
Lymnaeidae	13%	9%	0%	3%	0%	0.03
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-569
	Group 1	Group 2	Group 3	Group 4	Group 5	
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.24
Nemouridae	39%	74%	100%	81%	100%	0.84
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.51
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.07
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.03
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.33
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.82
Sperchontidae	22%	49%	68%	68%	31%	0.59
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.04
Tipulidae	35%	47%	55%	62%	46%	0.55
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.09
Uenoidae	0%	8%	30%	1%	0%	0.07
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	7.06
RIVPACS : Observed taxa P>0.50	3.00
RIVPACS : O:E (p > 0.5)	0.42
RIVPACS : Expected taxa P>0.70	4.31
RIVPACS : Observed taxa P>0.70	2.00
RIVPACS : O:E (p > 0.7)	0.46

Habitat Description

Variable	YPS-569	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	20.4	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	50.00	0.00 ± 0.00
Depth-Max (cm)	34.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	0.00	1.37 ± 0.92
Reach-Pools (Binary)	0	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	0	1 ± 0
Slope (m/m)	0.0150000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	0	1 ± 0
Veg-Deciduous (Binary)	0	1 ± 0
Veg-GrassesFerns (Binary)	0	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.98	0.52 ± 0.32
Velocity-Max (m/s)	1.80	0.70 ± 0.43

Habitat Description

Variable	YPS-569	Predicted Group Reference Mean ±SD
Width-Bankfull (m)	11.8	14.0 ± 18.2
Width-Wetted (m)	6.2	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	33.67875	29.33781 ± 11.78911
Precip03_MAR (mm)	32.33500	27.45595 ± 11.91497
Precip06_JUN (mm)	56.77625	53.48783 ± 18.48854
Precip07_JUL (mm)	69.88125	65.85484 ± 22.37167
Rainfall06_JUN (mm)	54.08625	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-4.15875	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.37541	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00717	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Substrate Data		
Dominant-1st (Category(0-9))	7	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	4	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	162.7000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.8300000	10.8405333 ± 1.2341710
General-pH (pH)	7.6	7.8 ± 0.6
General-SolidsTDS (mg/L)	135.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	199.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	236.2000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	16.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	8.7000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	120.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-571
Sampling Date	Jul 16 2015
Know Your Watershed Basin	White
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone St.Elias Mountains EcoRegion
Coordinates (decimal degrees)	61.43616 N, 139.56169 W
Altitude	4015
Local Basin Name	Maple Creek
	White River
Stream Order	5

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	0.0%	0.3%	1.2%	1.2%	97.4%
CABIN Assessment of YPS-571 on Jul 16, 2015	Divergent				

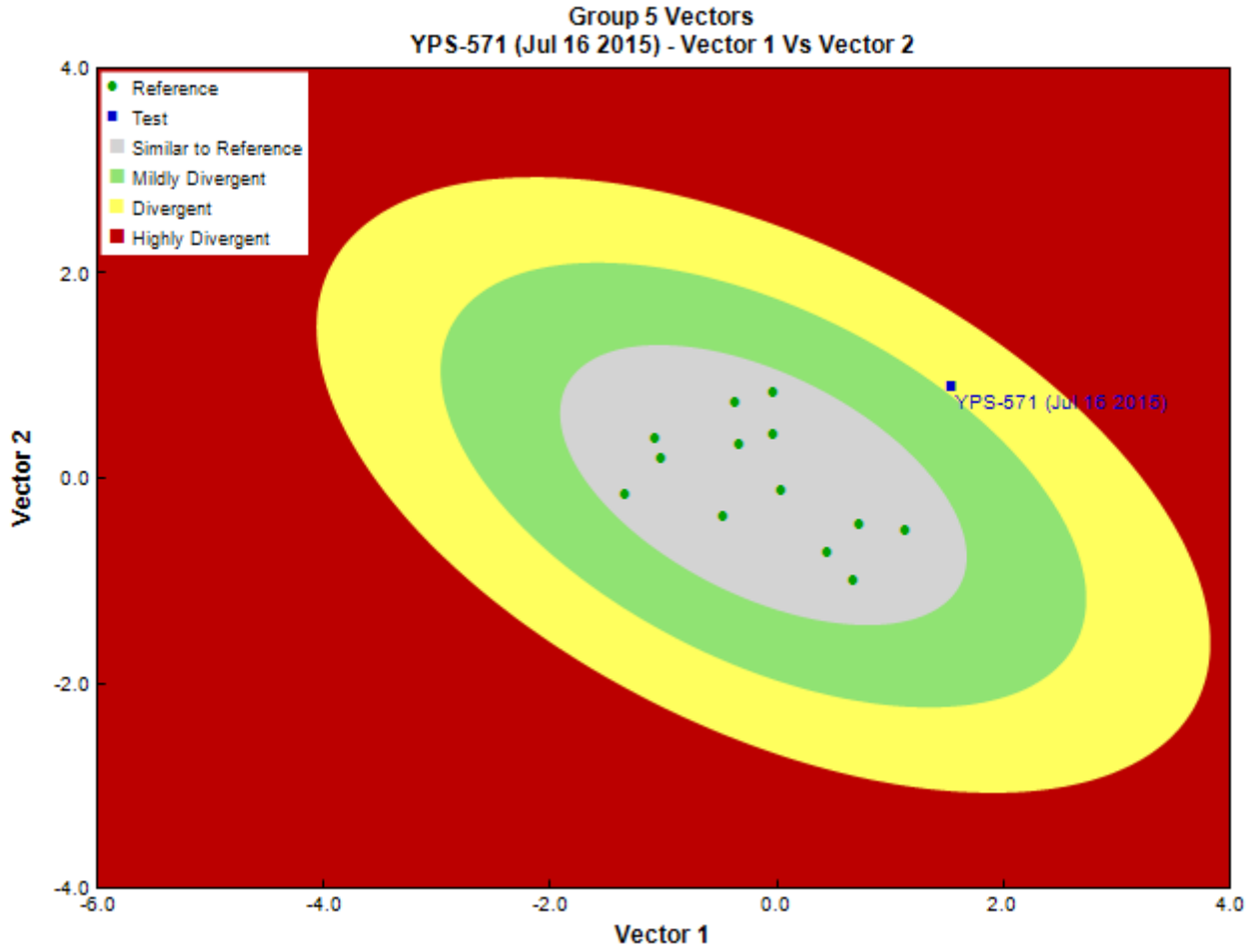


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	40/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	1	2.5
Arthropoda	Insecta	Diptera	Chironomidae	13	32.5
			Simuliidae	21	52.5
		Ephemeroptera	Baetidae	226	565.0
			Heptageniidae	18	45.0
		Plecoptera	Capniidae	4	10.0
			Chloroperlidae	1	2.5
			Leuctridae	1	2.5

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Nemouridae	27	67.5
			Total	312	780.0

Metrics

Name	YPS-571	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.84	0.4 ± 0.2
Number Of Individuals		
Total Abundance	780.0	12539.4 ± 5669.6
Richness		
Total No. of Taxa	9.0	11.3 ± 3.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-571
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.16
Apataniidae	0%	1%	0%	3%	8%	0.08
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.08
Baetidae	30%	85%	82%	94%	100%	1.00
Blephariceridae	0%	0%	5%	0%	0%	0.00
Brachycentridae	0%	15%	7%	23%	8%	0.08
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.76
Ceratopogonidae	22%	28%	30%	24%	0%	0.01
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.39
Corixidae	13%	8%	0%	0%	0%	0.00
Culicidae	9%	0%	0%	0%	0%	0.00
Curculionidae	0%	1%	0%	1%	0%	0.00
Deuterophlebiidae	0%	3%	14%	1%	0%	0.00
Dixidae	0%	5%	2%	1%	0%	0.00
Dolichopodidae	0%	0%	2%	1%	0%	0.00
Dytiscidae	4%	14%	0%	13%	0%	0.00
Elmidae	4%	3%	0%	2%	0%	0.00
Empididae	9%	49%	77%	59%	54%	0.54
Enchytraeidae	0%	0%	9%	2%	0%	0.00
Ephemerellidae	26%	37%	61%	37%	31%	0.31
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.08
Gammaridae	9%	2%	0%	13%	23%	0.23
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.01
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.85
Hirudinidae	0%	1%	0%	1%	0%	0.00
Hyalellidae	4%	5%	0%	6%	0%	0.00
Hydraenidae	0%	2%	0%	1%	0%	0.00
Hydrobiidae	9%	3%	2%	1%	0%	0.00
Hydropsychidae	4%	13%	36%	8%	0%	0.01
Hydroptilidae	4%	7%	0%	6%	0%	0.00
Hydrozetidae	4%	3%	20%	28%	31%	0.31
Hydryphantidae	4%	0%	9%	6%	0%	0.00
Hygrobatidae	0%	9%	25%	28%	0%	0.01
Isotomidae	9%	5%	2%	1%	0%	0.00
Lebertiidae	13%	20%	52%	54%	23%	0.24
Lepidostomatidae	0%	1%	5%	4%	8%	0.08
Leptoceridae	0%	1%	0%	2%	0%	0.00
Leptophlebiidae	4%	7%	0%	7%	8%	0.08
Leuctridae	4%	14%	32%	10%	0%	0.01

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-571
	Group 1	Group 2	Group 3	Group 4	Group 5	
Limnephilidae	13%	48%	43%	46%	23%	0.24
Limnesiidae	0%	1%	2%	6%	8%	0.08
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.23
Lymnaeidae	13%	9%	0%	3%	0%	0.00
Metretopodidae	0%	1%	0%	1%	0%	0.00
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.00
Naididae	35%	43%	9%	22%	31%	0.30
Nemouridae	39%	74%	100%	81%	100%	1.00
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.00
Perlodidae	17%	31%	70%	49%	62%	0.61
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.00
Pionidae	0%	0%	2%	2%	0%	0.00
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.00
Planorbidae	13%	4%	2%	2%	8%	0.08
Poduridae	0%	1%	0%	1%	0%	0.00
Psychodidae	22%	15%	11%	25%	8%	0.08
Rhyacophilidae	4%	34%	68%	25%	15%	0.16
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.77
Sperchontidae	22%	49%	68%	68%	31%	0.32
Staphylinidae	4%	0%	0%	1%	0%	0.00
Stratiomyidae	0%	0%	0%	2%	0%	0.00
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.15
Tipulidae	35%	47%	55%	62%	46%	0.46
Torrenticolidae	0%	0%	0%	5%	8%	0.08
Tubificidae	4%	1%	9%	13%	0%	0.00
Uenoidae	0%	8%	30%	1%	0%	0.00
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.53
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	0.92
RIVPACS : Expected taxa P>0.70	5.37
RIVPACS : Observed taxa P>0.70	6.00
RIVPACS : O:E (p > 0.7)	1.12

Habitat Description

Variable	YPS-571	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	15.0	24.0 ± 13.5
Depth-BankfullMinusWetted (cm)	45.00	0.00 ± 0.00
Depth-Max (cm)	19.0	33.6 ± 23.7
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	0.77 ± 0.44
Reach-Pools (Binary)	1	1 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Slope (m/m)	0.0650000	1.2120000 ± 1.1465034
Veg-Coniferous (Binary)	1	1 ± 1

Habitat Description

Variable	YPS-571	Predicted Group Reference Mean ±SD
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.53	0.69 ± 0.41
Velocity-Max (m/s)	0.80	0.98 ± 0.54
Width-Bankfull (m)	5.3	12.7 ± 8.3
Width-Wetted (m)	3.5	5.9 ± 3.0
Climate		
Precip02_FEB (mm)	32.75000	23.64703 ± 9.87067
Precip03_MAR (mm)	29.30500	21.43418 ± 10.28637
Precip06_JUN (mm)	53.69500	42.70673 ± 20.01009
Precip07_JUL (mm)	69.73000	53.48428 ± 23.82521
Rainfall06_JUN (mm)	51.10000	39.58541 ± 18.10735
Temp04_APRmax (Degrees Celsius)	4.84000	-1.98555 ± 4.49028
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.10056	0.10660 ± 0.30602
Natl-Bryoids (%)	7.92230	1.00805 ± 2.53070
Natl-MixedwoodOpen (%)	0.00000	0.13901 ± 0.32395
Natl-WetlandHerb (%)	0.00000	0.03267 ± 0.07770
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 1
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	5	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	4	3 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	162.0000000	152.1000000 ± 59.8648478
General-DO (mg/L)	10.6200000	10.9833333 ± 1.0412813
General-pH (pH)	8.2	8.0 ± 0.6
General-SolidsTDS (mg/L)	141.0000000	185.5000000 ± 69.6566979
General-SolidsTSS (mg/L)	1.5000000	1.8237500 ± 2.8622378
General-SpCond (µS/cm)	253.0000000	233.7692308 ± 136.1997025
General-TempAir (Degrees Celsius)	20.0	15.9 ± 5.2
General-TempWater (Degrees Celsius)	6.1900000	9.3450000 ± 5.7101655
General-Turbidity (NTU)	0.0400000	0.5127273 ± 0.6444392

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-572
Sampling Date	Jul 16 2015
Know Your Watershed Basin	White
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Ruby Ranges EcoRegion
Coordinates (decimal degrees)	61.49387 N, 139.39891 W
Altitude	2900
Local Basin Name	Quill Creek
	White River
Stream Order	3

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	21.7%	21.6%	23.2%	30.5%	2.9%
CABIN Assessment of YPS-572 on Jul 16, 2015	Mildly Divergent				

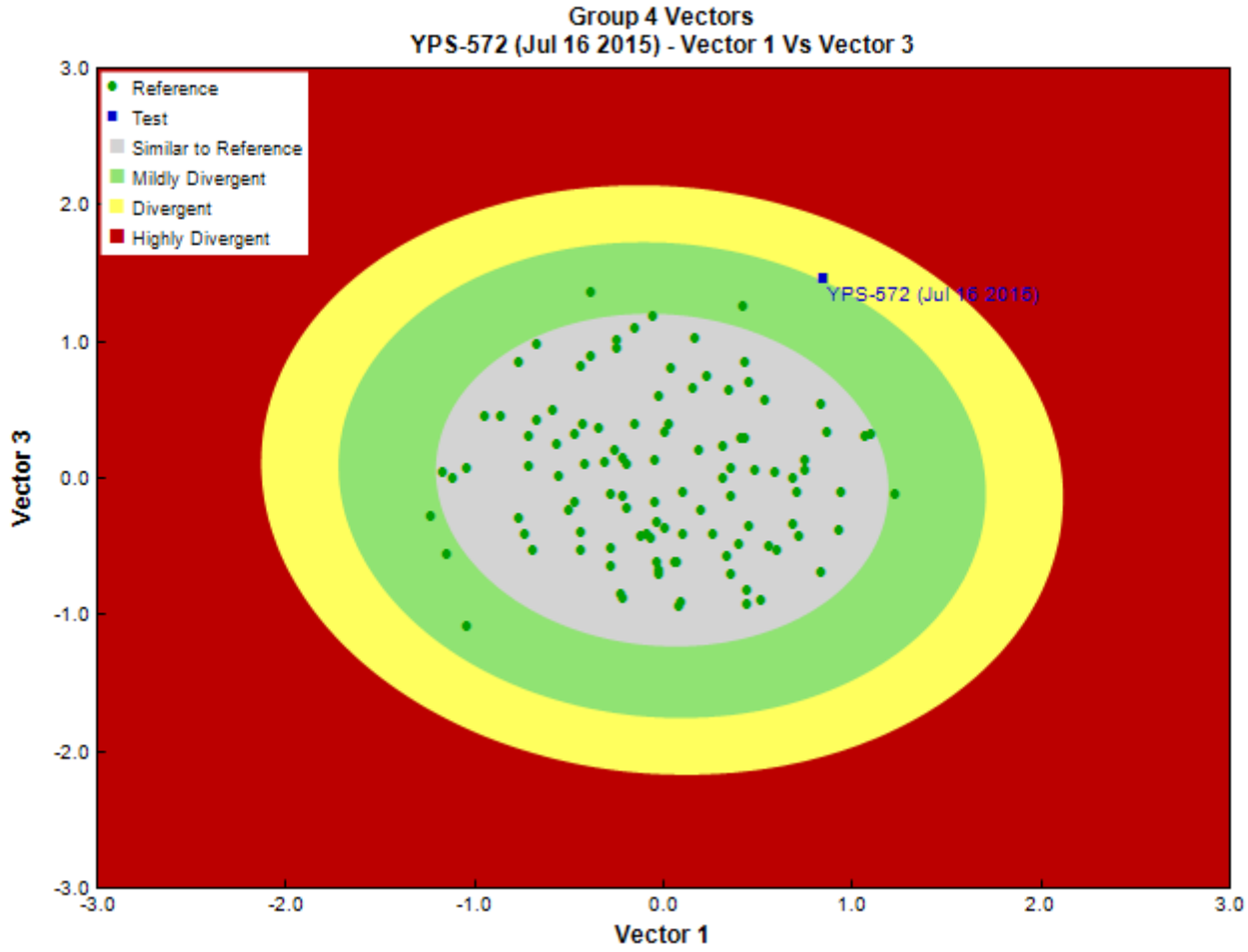


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Arachnida	Sarcoptiformes		1	1.0
		Trombidiformes		1	1.0
	Insecta	Coleoptera	Dytiscidae	1	1.0
		Diptera	Chironomidae	6	6.0
			Empididae	1	1.0
			Muscidae	1	1.0
			Simuliidae	31	31.0
		Ephemeroptera	Ameletidae	6	6.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Baetidae	281	281.0
			Heptageniidae	105	105.0
		Plecoptera	Capniidae	1	1.0
			Chloroperlidae	27	27.0
			Nemouridae	1	1.0
			Perlodidae	4	4.0
			Taeniopterygidae	3	3.0
			Total	470	470.0

Metrics

Name	YPS-572	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.71	0.5 ± 0.2
Number Of Individuals		
Total Abundance	470.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	13.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-572
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.39
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.75
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.12
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.35
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.48
Corixidae	13%	8%	0%	0%	0%	0.05
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.08
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.50
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.40
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.13
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.65
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.15
Hydroptilidae	4%	7%	0%	6%	0%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.16
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.16

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-572
	Group 1	Group 2	Group 3	Group 4	Group 5	
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.36
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.15
Limnephilidae	13%	48%	43%	46%	23%	0.38
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.32
Lymnaeidae	13%	9%	0%	3%	0%	0.06
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.27
Nemouridae	39%	74%	100%	81%	100%	0.76
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.44
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.09
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.05
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.32
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.74
Sperchontidae	22%	49%	68%	68%	31%	0.53
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.51
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.09
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.42
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	1.11
RIVPACS : Expected taxa P>0.70	3.23
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	1.24

Habitat Description

Variable	YPS-572	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	24.0	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	36.00	0.00 ± 0.00
Depth-Max (cm)	30.0	36.8 ± 17.2

Habitat Description

Variable	YPS-572	Predicted Group Reference Mean ±SD
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Slope (m/m)	0.0200000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.62	0.52 ± 0.32
Velocity-Max (m/s)	0.80	0.70 ± 0.43
Width-Bankfull (m)	34.5	14.0 ± 18.2
Width-Wetted (m)	5.2	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	35.62000	29.33781 ± 11.78911
Precip03_MAR (mm)	32.34250	27.45595 ± 11.91497
Precip06_JUN (mm)	57.28000	53.48783 ± 18.48854
Precip07_JUL (mm)	74.06750	65.85484 ± 22.37167
Rainfall06_JUN (mm)	54.77500	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	3.68250	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.21143	0.37555 ± 1.31381
Natl-Bryoids (%)	2.08704	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	5	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	291.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.2000000	10.8405333 ± 1.2341710
General-pH (pH)	8.3	7.8 ± 0.6
General-SolidsTDS (mg/L)	272.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	1.5000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	456.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	10.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	6.0600000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	0.6600000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-573
Sampling Date	Jul 30 2015
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -North EcoRegion
Coordinates (decimal degrees)	63.76778 N, 135.45047 W
Altitude	2162
Local Basin Name	Davidson Creek
	Mayo River
Stream Order	3

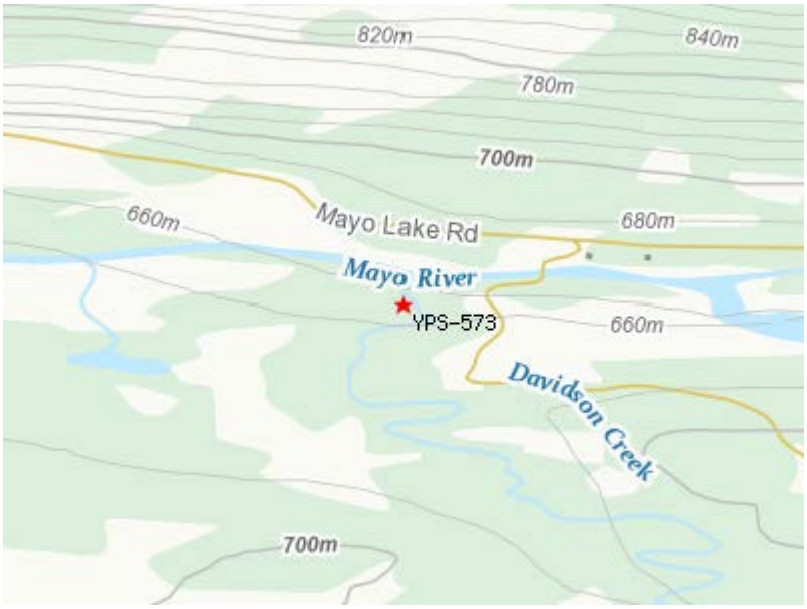


Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	13.2%	24.5%	22.1%	39.6%	0.5%
CABIN Assessment of YPS-573 on Jul 30, 2015	Divergent				

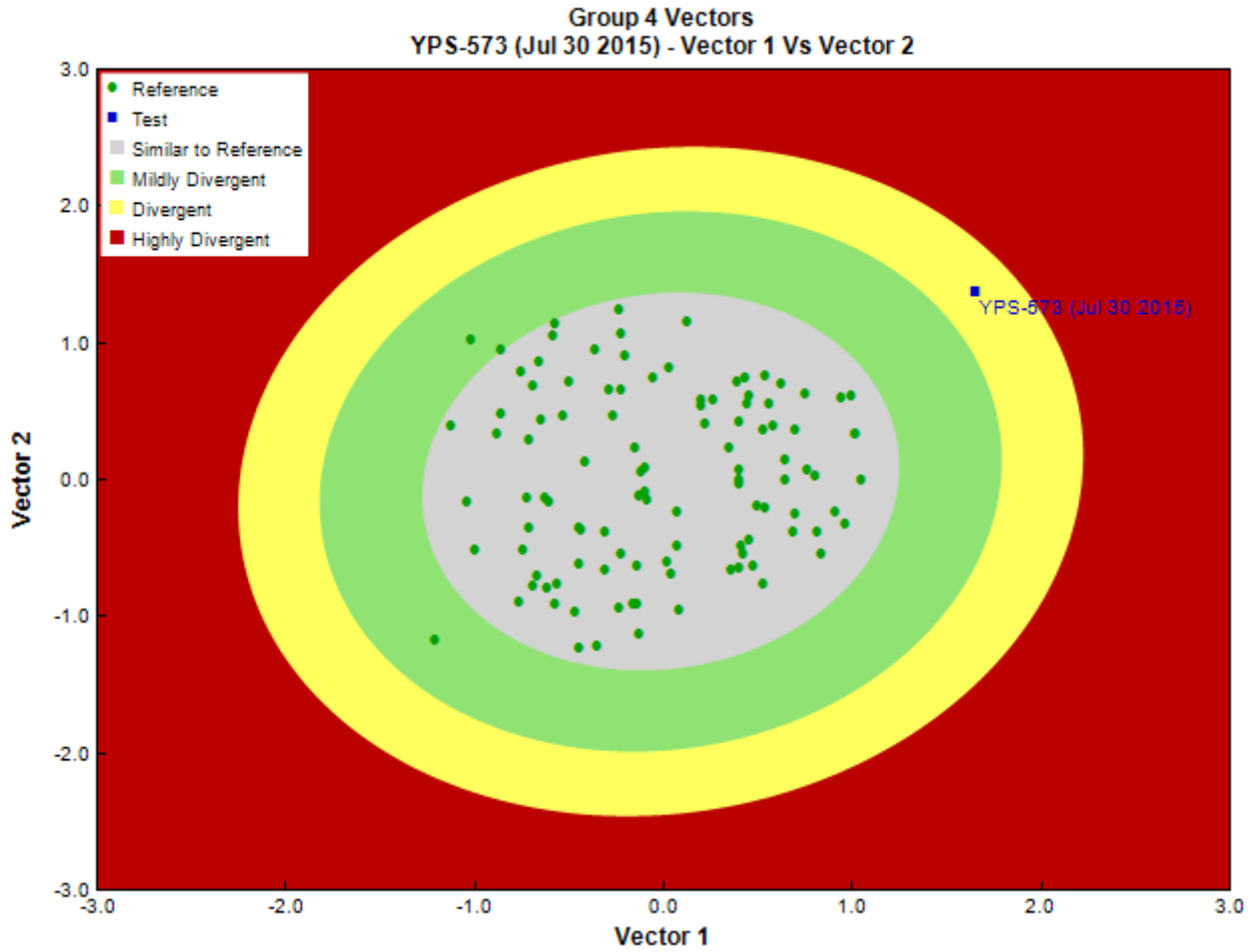


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	100/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	1	1.0
		Lumbriculida	Lumbriculidae	1	1.0
		Tubificida	Naididae	1	1.0
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	2	2.0
			Sperchontidae	10	10.0
	Insecta	Diptera	Ceratopogonidae	8	8.0
			Chironomidae	52	52.0
			Empididae	4	4.0
			Simuliidae	1	1.0
			Tipulidae	2	2.0
		Ephemeroptera	Ameletidae	9	9.0
			Baetidae	6	6.0
			Ephemerellidae	2	2.0
			Heptageniidae	30	30.0
		Plecoptera	Capniidae	2	2.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Chloroperlidae	14	14.0
			Nemouridae	1	1.0
			Perlodidae	2	2.0
		Trichoptera	Rhyacophilidae	2	2.0
			Total	150	150.0

Metrics

Name	YPS-573	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.78	0.5 ± 0.2
Number Of Individuals		
Total Abundance	150.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	19.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-573
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.41
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.80
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.14
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.37
Ceratopogonidae	22%	28%	30%	24%	0%	0.26
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.50
Corixidae	13%	8%	0%	0%	0%	0.04
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.54
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.41
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.69
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.15
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.17
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.19
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.40
Lepidostomatidae	0%	1%	5%	4%	8%	0.03

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-573
	Group 1	Group 2	Group 3	Group 4	Group 5	
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.15
Limnephilidae	13%	48%	43%	46%	23%	0.41
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.05
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.26
Nemouridae	39%	74%	100%	81%	100%	0.78
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.45
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.04
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.34
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.78
Sperchontidae	22%	49%	68%	68%	31%	0.57
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.53
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.09
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.20
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	1.45
RIVPACS : Expected taxa P>0.70	3.36
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	1.19

Habitat Description

Variable	YPS-573	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	25.2	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	20.00	0.00 ± 0.00
Depth-Max (cm)	39.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0

Habitat Description

Variable	YPS-573	Predicted Group Reference Mean ±SD
Reach-Rapids (Binary)	0	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0100000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	0	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.68	0.52 ± 0.32
Velocity-Max (m/s)	1.00	0.70 ± 0.43
Width-Bankfull (m)	10.7	14.0 ± 18.2
Width-Wetted (m)	7.0	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	18.35286	29.33781 ± 11.78911
Precip03_MAR (mm)	16.94429	27.45595 ± 11.91497
Precip06_JUN (mm)	50.91714	53.48783 ± 18.48854
Precip07_JUL (mm)	56.18000	65.85484 ± 22.37167
Rainfall06_JUN (mm)	45.82429	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	1.00143	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00483	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.01349	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00868	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	7	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	3	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	162.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.5400000	10.8405333 ± 1.2341710
General-pH (pH)	8.0	7.8 ± 0.6
General-SolidsTDS (mg/L)	132.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	484.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	235.8000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	12.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	8.6000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	660.0000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-574
Sampling Date	Jul 31 2015
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -North EcoRegion
Coordinates (decimal degrees)	63.84809 N, 134.97409 W
Altitude	3540
Local Basin Name	Granite Creek
	Mayo River
Stream Order	3

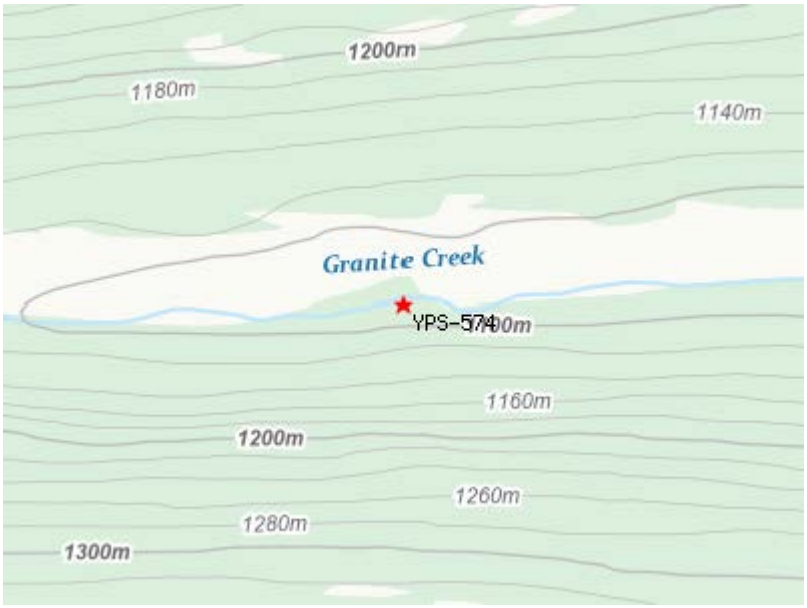


Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	6.9%	8.9%	26.6%	48.6%	9.1%
CABIN Assessment of YPS-574 on Jul 31, 2015	Similar to Reference				

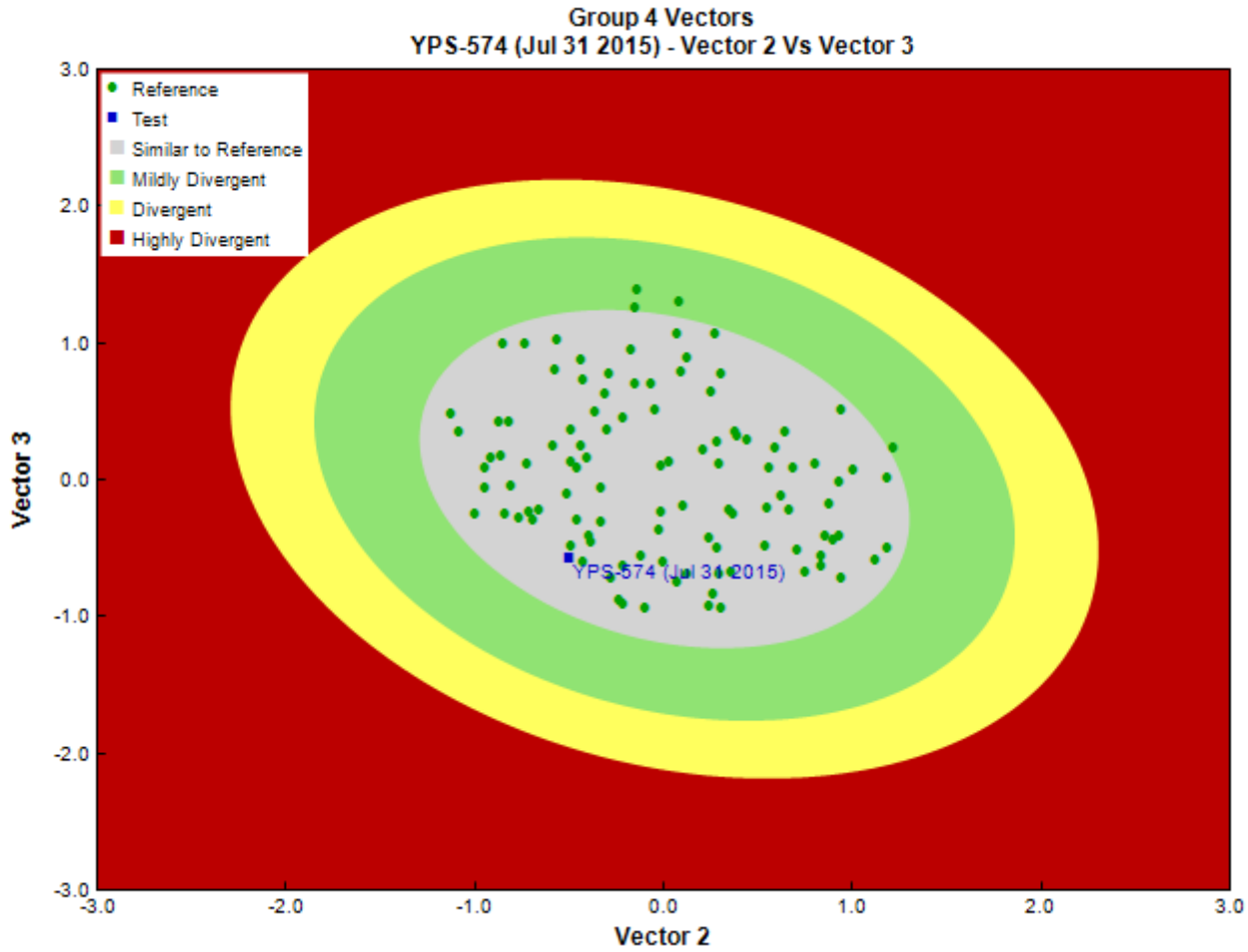


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	15/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	36	240.0
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	1	6.7
			Sperchontidae	2	13.3
	Insecta	Diptera	Chironomidae	95	633.4
			Simuliidae	6	40.0
		Ephemeroptera	Ameletidae	3	20.0
			Baetidae	9	60.0
			Heptageniidae	92	613.3
		Plecoptera	Capniidae	1	6.7
			Chloroperlidae	15	100.0
			Nemouridae	43	286.6
			Perlodidae	9	60.0
			Taeniopterygidae	3	20.0
		Trichoptera	Glossosomatidae	3	20.0
			Limnephilidae	2	13.3

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Uenoidae	2	13.3
			Total	322	2,146.6

Metrics

Name	YPS-574	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.48	0.5 ± 0.2
Number Of Individuals		
Total Abundance	2146.7	2059.4 ± 1572.9
Richness		
Total No. of Taxa	16.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-574
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.43
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.03
Baetidae	30%	85%	82%	94%	100%	0.86
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.15
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.45
Ceratopogonidae	22%	28%	30%	24%	0%	0.23
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.54
Corixidae	13%	8%	0%	0%	0%	0.02
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.08
Elmidae	4%	3%	0%	2%	0%	0.01
Empididae	9%	49%	77%	59%	54%	0.59
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.42
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.77
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.03
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.15
Hydroptilidae	4%	7%	0%	6%	0%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.22
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.21
Isotomidae	9%	5%	2%	1%	0%	0.02
Lebertiidae	13%	20%	52%	54%	23%	0.45
Lepidostomatidae	0%	1%	5%	4%	8%	0.04
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.15

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-574
	Group 1	Group 2	Group 3	Group 4	Group 5	
Limnephilidae	13%	48%	43%	46%	23%	0.41
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.35
Lymnaeidae	13%	9%	0%	3%	0%	0.03
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.22
Nemouridae	39%	74%	100%	81%	100%	0.85
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.52
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.02
Pisidiidae	17%	9%	2%	7%	8%	0.07
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.03
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.35
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.82
Sperchontidae	22%	49%	68%	68%	31%	0.60
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.04
Tipulidae	35%	47%	55%	62%	46%	0.55
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.09
Uenoidae	0%	8%	30%	1%	0%	0.09
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	7.08
RIVPACS : Observed taxa P>0.50	8.00
RIVPACS : O:E (p > 0.5)	1.13
RIVPACS : Expected taxa P>0.70	4.28
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.17

Habitat Description

Variable	YPS-574	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	37.0	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	30.00	0.00 ± 0.00
Depth-Max (cm)	52.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0

Habitat Description

Variable	YPS-574	Predicted Group Reference Mean ±SD
Slope (m/m)	0.0150000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	0	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.72	0.52 ± 0.32
Velocity-Max (m/s)	0.90	0.70 ± 0.43
Width-Bankfull (m)	6.7	14.0 ± 18.2
Width-Wetted (m)	5.7	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	16.19800	29.33781 ± 11.78911
Precip03_MAR (mm)	14.66800	27.45595 ± 11.91497
Precip06_JUN (mm)	47.40600	53.48783 ± 18.48854
Precip07_JUL (mm)	51.77400	65.85484 ± 22.37167
Rainfall06_JUN (mm)	43.26000	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	1.65600	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.53749	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.07454	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.21056	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	7	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	4	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	46.6000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.3900000	10.8405333 ± 1.2341710
General-pH (pH)	7.0	7.8 ± 0.6
General-SolidsTDS (mg/L)	39.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	5.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	75.2000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	9.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	5.2000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	0.9300000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-575
Sampling Date	Jul 31 2015
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -North EcoRegion
Coordinates (decimal degrees)	63.71734 N, 135.39713 W
Altitude	2785
Local Basin Name	Davidson Creek
	Mayo River
Stream Order	3

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	7.9%	12.2%	32.5%	44.7%	2.6%
CABIN Assessment of YPS-575 on Jul 31, 2015	Mildly Divergent				

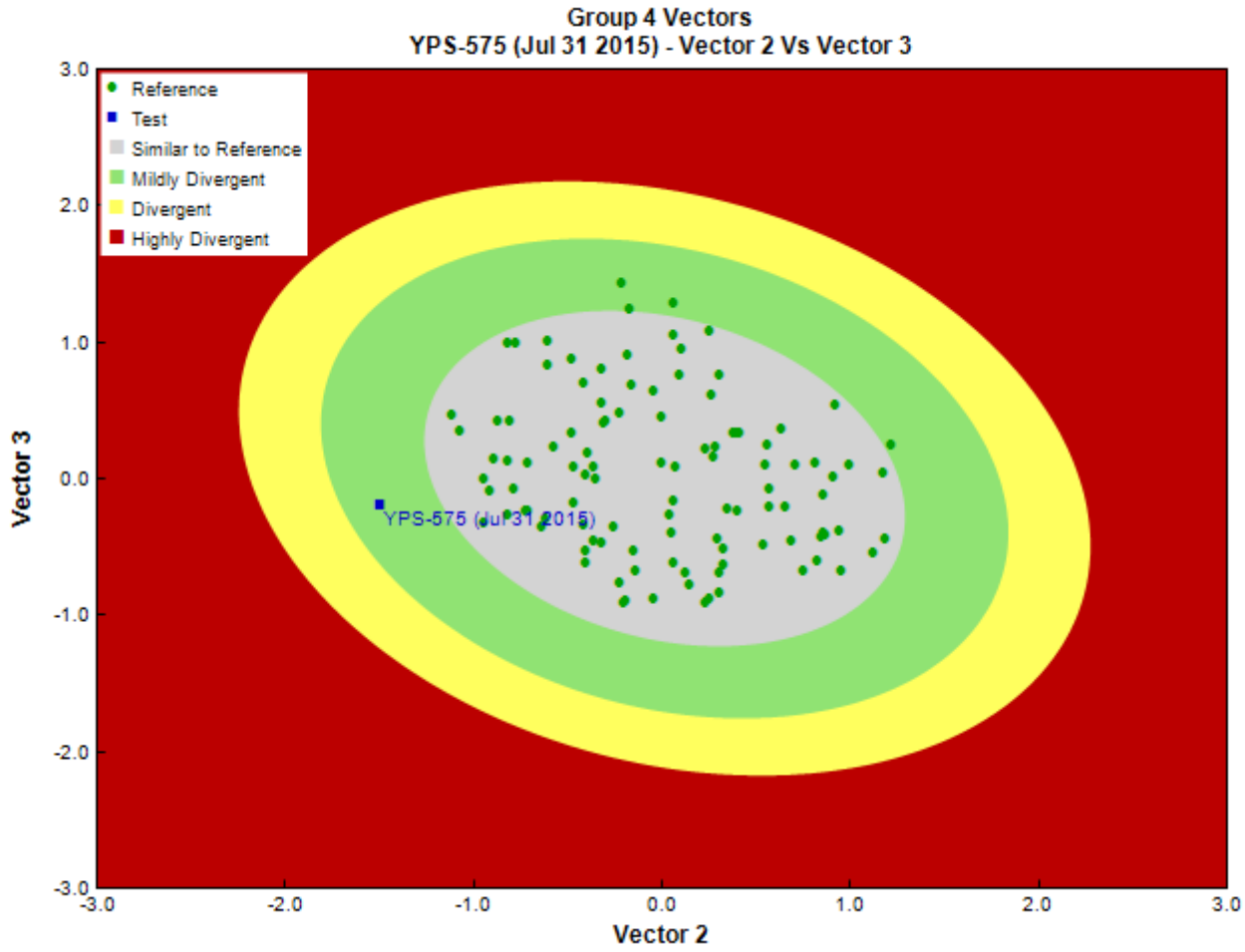


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	50/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	2	4.0
		Lumbriculida	Lumbriculidae	7	14.0
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	7	14.0
			Sperchontidae	2	4.0
	Insecta	Diptera	Ceratopogonidae	1	2.0
			Chironomidae	47	94.0
		Ephemeroptera	Ameletidae	7	14.0
			Baetidae	2	4.0
			Ephemerellidae	4	8.0
			Heptageniidae	116	232.0
		Plecoptera	Capniidae	2	4.0
			Chloroperlidae	5	10.0
			Leuctridae	3	6.0
			Nemouridae	96	192.0
			Perlodidae	1	2.0

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
		Trichoptera	Glossosomatidae	3	6.0
			Hydropsychidae	2	4.0
			Limnephilidae	2	4.0
			Rhyacophilidae	31	62.0
			Total	340	680.0

Metrics

Name	YPS-575	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.74	0.5 ± 0.2
Number Of Individuals		
Total Abundance	680.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	19.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-575
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.46
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.03
Baetidae	30%	85%	82%	94%	100%	0.84
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.15
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.42
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.55
Corixidae	13%	8%	0%	0%	0%	0.02
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.05
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.08
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.60
Enchytraeidae	0%	0%	9%	2%	0%	0.04
Ephemerellidae	26%	37%	61%	37%	31%	0.44
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.17
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.76
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.03
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.18
Hydroptilidae	4%	7%	0%	6%	0%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.21
Hydryphantidae	4%	0%	9%	6%	0%	0.06
Hygrobatidae	0%	9%	25%	28%	0%	0.22
Isotomidae	9%	5%	2%	1%	0%	0.02
Lebertiidae	13%	20%	52%	54%	23%	0.45
Lepidostomatidae	0%	1%	5%	4%	8%	0.03

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-575
	Group 1	Group 2	Group 3	Group 4	Group 5	
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.17
Limnephilidae	13%	48%	43%	46%	23%	0.42
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.35
Lymnaeidae	13%	9%	0%	3%	0%	0.03
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.22
Nemouridae	39%	74%	100%	81%	100%	0.84
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.52
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.02
Pisidiidae	17%	9%	2%	7%	8%	0.07
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.03
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.38
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.82
Sperchontidae	22%	49%	68%	68%	31%	0.61
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.55
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.09
Uenoidae	0%	8%	30%	1%	0%	0.11
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	7.08
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	0.99
RIVPACS : Expected taxa P>0.70	4.25
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.94

Habitat Description

Variable	YPS-575	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	26.0	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	10.00	0.00 ± 0.00
Depth-Max (cm)	30.0	36.8 ± 17.2
Macrophyte (PercentRange)	1	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	0	1 ± 0

Habitat Description

Variable	YPS-575	Predicted Group Reference Mean ±SD
Reach-Rapids (Binary)	0	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0050000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	0	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.94	0.52 ± 0.32
Velocity-Max (m/s)	1.10	0.70 ± 0.43
Width-Bankfull (m)	6.7	14.0 ± 18.2
Width-Wetted (m)	6.5	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	18.20667	29.33781 ± 11.78911
Precip03_MAR (mm)	16.79167	27.45595 ± 11.91497
Precip06_JUN (mm)	50.71333	53.48783 ± 18.48854
Precip07_JUL (mm)	55.99167	65.85484 ± 22.37167
Rainfall06_JUN (mm)	45.60333	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	1.10833	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.01780	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.01144	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	5	4 ± 1
PeriphytonCoverage (Category(1-5))	1	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	106.2000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.9200000	10.8405333 ± 1.2341710
General-pH (pH)	7.9	7.8 ± 0.6
General-SolidsTDS (mg/L)	85.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	12.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	162.4000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	15.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	6.9000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	2.2000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-576
Sampling Date	Jul 22 2015
Know Your Watershed Basin	Headwaters Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -Central EcoRegion
Coordinates (decimal degrees)	62.31479 N, 137.20802 W
Altitude	2293
Local Basin Name	Seymour Creek
	Big Creek
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5

Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	1.2%	11.9%	30.3%	48.0%	8.6%
CABIN Assessment of YPS-576 on Jul 22, 2015	Similar to Reference				

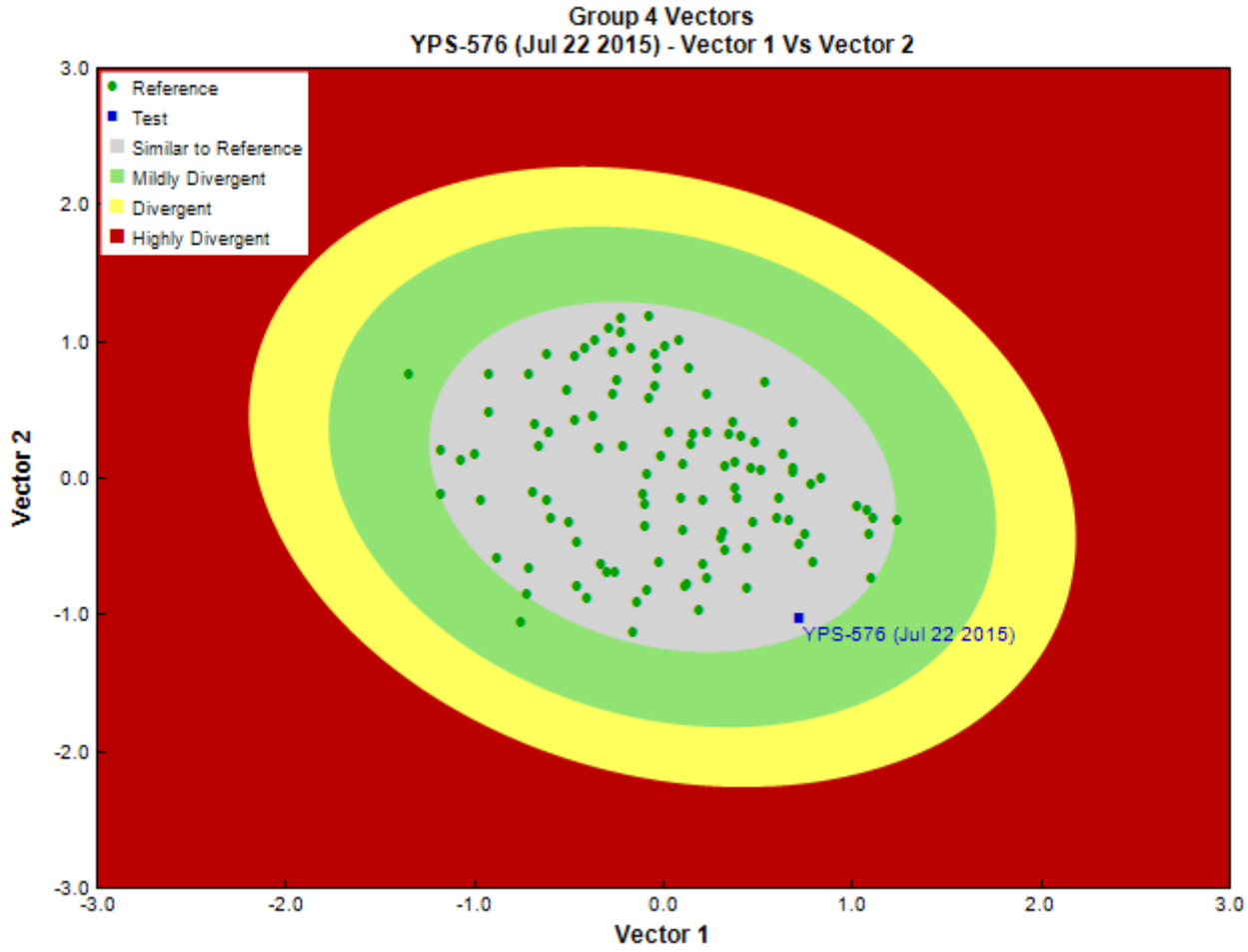


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	38/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	9	23.7
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	4	10.5
			Sperchontidae	4	10.5
	Insecta	Diptera	Chironomidae	49	129.0
			Empididae	4	10.5
			Simuliidae	2	5.3
		Ephemeroptera	Baetidae	38	100.0
			Ephemerellidae	16	42.1

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Heptageniidae	161	423.7
		Plecoptera	Chloroperlidae	15	39.4
			Nemouridae	10	26.2
			Perlodidae	2	5.2
		Trichoptera	Glossosomatidae	1	2.6
			Limnephilidae	3	7.9
			Total	318	836.6

Metrics

Name	YPS-576	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.61	0.5 ± 0.2
Number Of Individuals		
Total Abundance	836.8	2059.4 ± 1572.9
Richness		
Total No. of Taxa	14.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-576
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.46
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.03
Baetidae	30%	85%	82%	94%	100%	0.89
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.16
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.47
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.56
Corixidae	13%	8%	0%	0%	0%	0.01
Culicidae	9%	0%	0%	0%	0%	0.00
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.05
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.08
Elmidae	4%	3%	0%	2%	0%	0.01
Empididae	9%	49%	77%	59%	54%	0.62
Enchytraeidae	0%	0%	9%	2%	0%	0.04
Ephemerellidae	26%	37%	61%	37%	31%	0.44
Ephydridae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.17
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.80
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.03
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.17
Hydroptilidae	4%	7%	0%	6%	0%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.23
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.22
Isotomidae	9%	5%	2%	1%	0%	0.02

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-576
	Group 1	Group 2	Group 3	Group 4	Group 5	
Lebertiidae	13%	20%	52%	54%	23%	0.46
Lepidostomatidae	0%	1%	5%	4%	8%	0.04
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.16
Limnephilidae	13%	48%	43%	46%	23%	0.43
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.35
Lymnaeidae	13%	9%	0%	3%	0%	0.03
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.22
Nemouridae	39%	74%	100%	81%	100%	0.87
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.54
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.02
Pisidiidae	17%	9%	2%	7%	8%	0.06
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.03
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.18
Rhyacophilidae	4%	34%	68%	25%	15%	0.38
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.84
Sperchontidae	22%	49%	68%	68%	31%	0.62
Staphylinidae	4%	0%	0%	1%	0%	0.00
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.04
Tipulidae	35%	47%	55%	62%	46%	0.56
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.09
Uenoidae	0%	8%	30%	1%	0%	0.10
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	7.31
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	1.23
RIVPACS : Expected taxa P>0.70	4.41
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.14

Habitat Description

Variable	YPS-576	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	26.2	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	90.00	0.00 ± 0.00
Depth-Max (cm)	35.5	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1

Habitat Description

Variable	YPS-576	Predicted Group Reference Mean ±SD
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Rapids (Binary)	1	0 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Slope (m/m)	0.0200000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.68	0.52 ± 0.32
Velocity-Max (m/s)	0.90	0.70 ± 0.43
Width-Bankfull (m)	26.0	14.0 ± 18.2
Width-Wetted (m)	8.3	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	41.63467	29.33781 ± 11.78911
Precip03_MAR (mm)	41.46867	27.45595 ± 11.91497
Precip06_JUN (mm)	75.90400	53.48783 ± 18.48854
Precip07_JUL (mm)	95.03400	65.85484 ± 22.37167
Rainfall06_JUN (mm)	67.89533	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-2.84467	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	1.28703	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00203	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	5 ± 2
Dominant-2nd (Category(0-9))	7	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	2	0 ± 0
SurroundingMaterial (Category(0-9))	3	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	172.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.1700000	10.8405333 ± 1.2341710
General-pH (pH)	8.0	7.8 ± 0.6
General-SolidsTDS (mg/L)	142.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	8.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	266.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	22.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	6.4700000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	3.9000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-577
Sampling Date	Jul 22 2015
Know Your Watershed Basin	Headwaters Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -Central EcoRegion
Coordinates (decimal degrees)	62.40106 N, 137.44690 W
Altitude	2464
Local Basin Name	Big Creek
	Big Creek
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	8.3%	20.0%	15.2%	52.0%	4.6%
CABIN Assessment of YPS-577 on Jul 22, 2015	Similar to Reference				

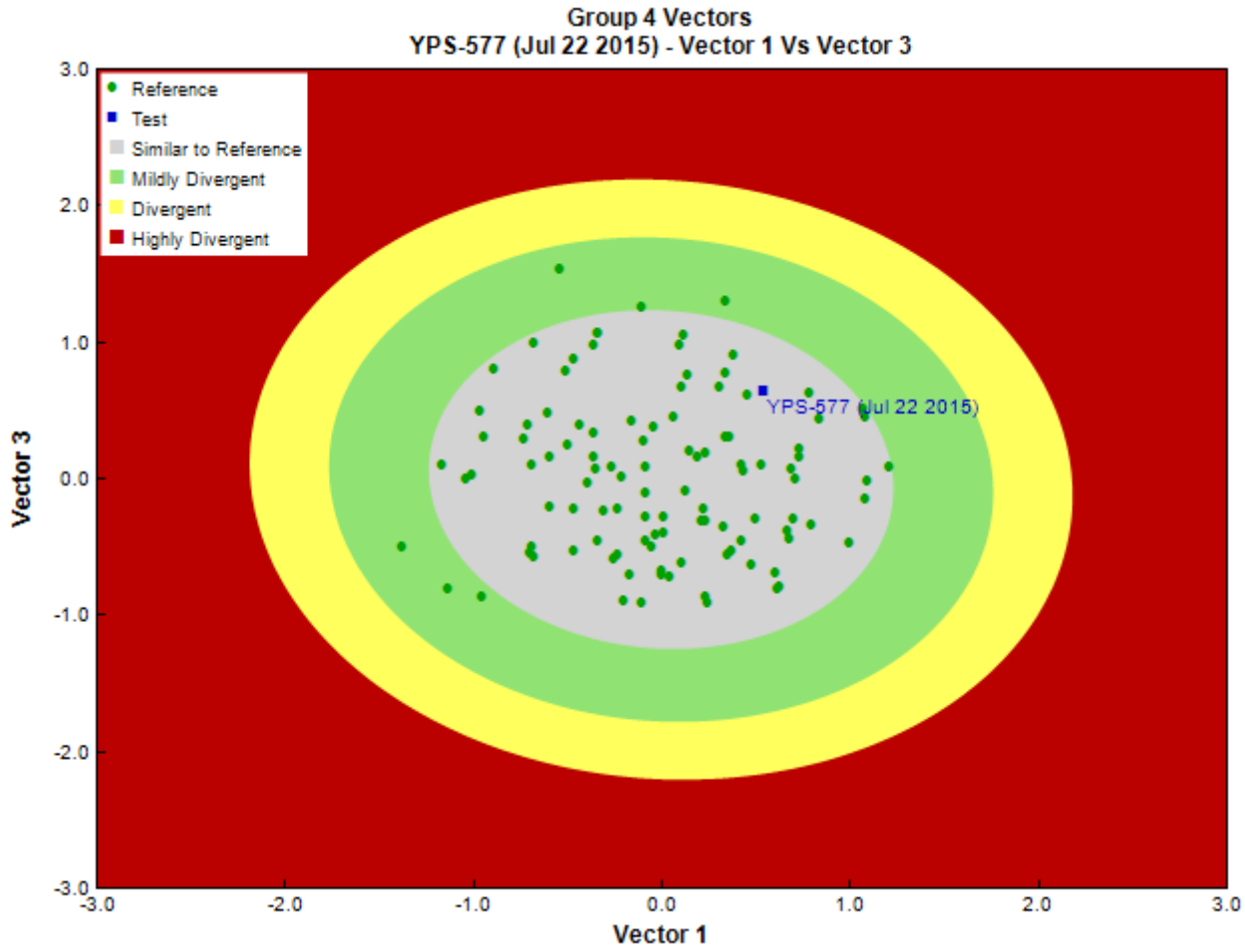


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	23/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	3	13.0
Arthropoda	Arachnida	Trombidiformes		1	4.3
			Lebertiidae	6	26.1
			Sperchontidae	13	56.5
	Insecta	Diptera	Chironomidae	95	413.1
			Empididae	9	39.1
			Simuliidae	1	4.3
		Ephemeroptera	Baetidae	140	608.7
			Ephemerellidae	32	139.1
			Heptageniidae	20	87.0
		Plecoptera	Chloroperlidae	13	56.5
			Nemouridae	6	26.1
			Perlodidae	4	17.4
		Trichoptera	Glossosomatidae	4	17.4
			Limnephilidae	15	65.2

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
			Total	362	1,573.8

Metrics

Name	YPS-577	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.49	0.5 ± 0.2
Number Of Individuals		
Total Abundance	1573.9	2059.4 ± 1572.9
Richness		
Total No. of Taxa	14.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-577
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.40
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.85
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.16
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.41
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.50
Corixidae	13%	8%	0%	0%	0%	0.03
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.03
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.10
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.56
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.39
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.09
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.72
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.13
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.20
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.20
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.42
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.13
Limnephilidae	13%	48%	43%	46%	23%	0.42

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-577
	Group 1	Group 2	Group 3	Group 4	Group 5	
Limnesiidae	0%	1%	2%	6%	8%	0.04
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.35
Lymnaeidae	13%	9%	0%	3%	0%	0.04
Metretopodidae	0%	1%	0%	1%	0%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.26
Nemouridae	39%	74%	100%	81%	100%	0.80
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.47
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.04
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.20
Rhyacophilidae	4%	34%	68%	25%	15%	0.31
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.81
Sperchontidae	22%	49%	68%	68%	31%	0.58
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.55
Torrenticolidae	0%	0%	0%	5%	8%	0.03
Tubificidae	4%	1%	9%	13%	0%	0.09
Uenoidae	0%	8%	30%	1%	0%	0.07
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.86
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	1.19
RIVPACS : Expected taxa P>0.70	4.17
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.20

Habitat Description

Variable	YPS-577	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	35.2	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	100.00	0.00 ± 0.00
Depth-Max (cm)	56.0	36.8 ± 17.2
Macrophyte (PercentRange)	1	0 ± 1
Reach-%CanopyCoverage (PercentRange)	1.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0050000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0

Habitat Description

Variable	YPS-577	Predicted Group Reference Mean ±SD
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.44	0.52 ± 0.32
Velocity-Max (m/s)	0.60	0.70 ± 0.43
Width-Bankfull (m)	22.6	14.0 ± 18.2
Width-Wetted (m)	11.4	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	35.63261	29.33781 ± 11.78911
Precip03_MAR (mm)	35.22826	27.45595 ± 11.91497
Precip06_JUN (mm)	64.07435	53.48783 ± 18.48854
Precip07_JUL (mm)	81.58522	65.85484 ± 22.37167
Rainfall06_JUN (mm)	58.13304	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-0.19261	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.55051	0.37555 ± 1.31381
Natl-Bryoids (%)	0.00000	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.06511	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	5	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	2	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	112.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	10.3200000	10.8405333 ± 1.2341710
General-pH (pH)	8.3	7.8 ± 0.6
General-SolidsTDS (mg/L)	85.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	8.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	162.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	18.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	7.7200000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	0.2700000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-578
Sampling Date	Jul 23 2015
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -North EcoRegion
Coordinates (decimal degrees)	63.76767 N, 137.55980 W
Altitude	1899
Local Basin Name	No Name
	Stewart River
Stream Order	4

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude NatI-BroadLeafopen NatI-Bryoids NatI-MixedWoodOpen NatI-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	3.7%	33.3%	16.6%	44.5%	1.9%
CABIN Assessment of YPS-578 on Jul 23, 2015	Similar to Reference				

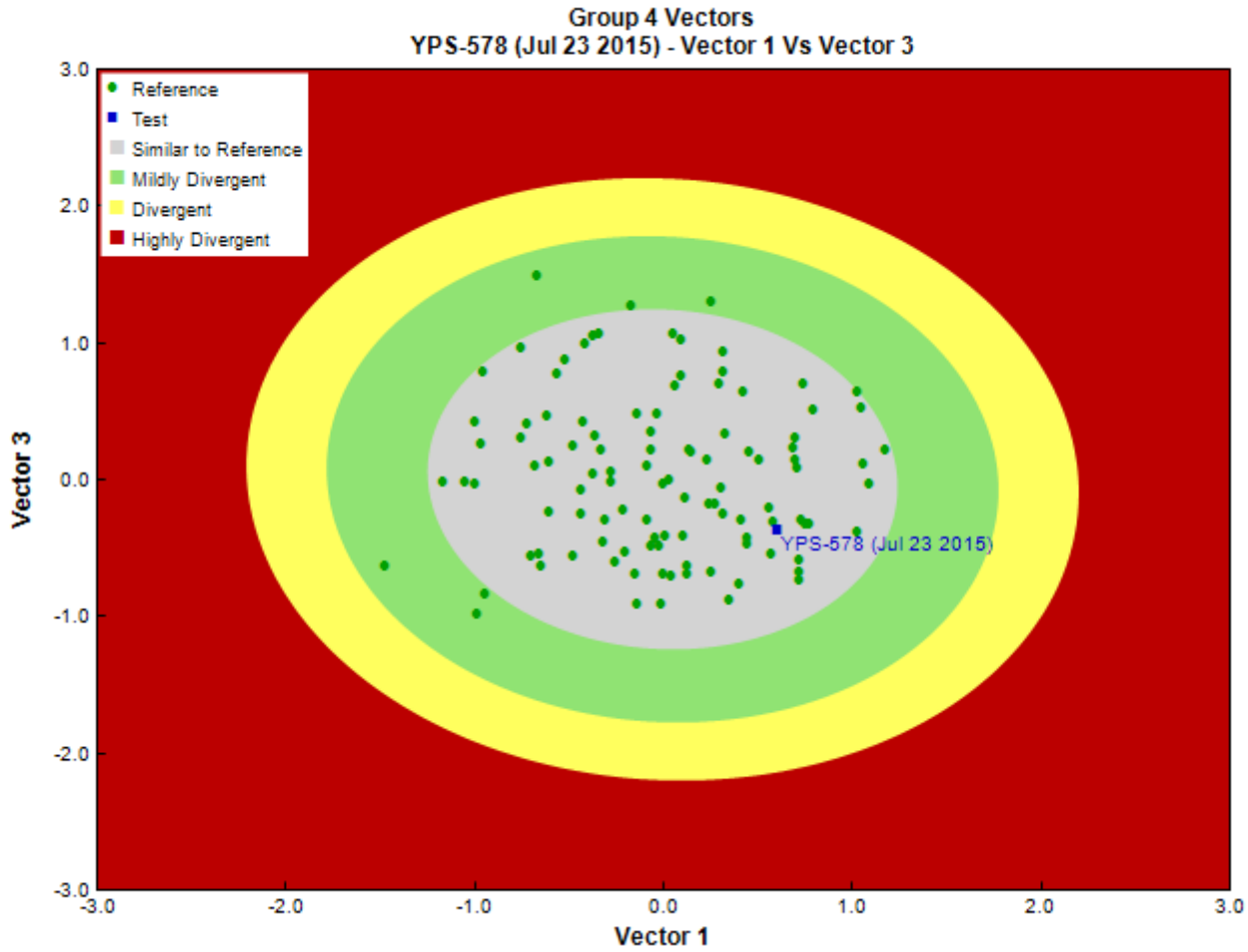


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	40/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	5	12.5
Arthropoda	Insecta	Diptera		1	2.5
			Chironomidae	254	635.0
			Simuliidae	44	110.0
			Tipulidae	1	2.5
		Ephemeroptera	Baetidae	15	37.5
		Plecoptera	Nemouridae	4	10.0
			Taeniopterygidae	1	2.5
		Trichoptera	Limnephilidae	1	2.5
			Total	326	815.0

Metrics

Name	YPS-578	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.19	0.5 ± 0.2
Number Of Individuals		
Total Abundance	815.0	2059.4 ± 1572.9
Richness		
Total No. of Taxa	8.0	13.0 ± 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-578
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.42
Apataniidae	0%	1%	0%	3%	8%	0.02
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.02
Baetidae	30%	85%	82%	94%	100%	0.86
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.17
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.39
Ceratopogonidae	22%	28%	30%	24%	0%	0.26
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.51
Corixidae	13%	8%	0%	0%	0%	0.03
Culicidae	9%	0%	0%	0%	0%	0.00
Curculionidae	0%	1%	0%	1%	0%	0.01
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.11
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.57
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.40
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.07
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.16
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.73
Hirudinidae	0%	1%	0%	1%	0%	0.01
Hyalellidae	4%	5%	0%	6%	0%	0.04
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.02
Hydropsychidae	4%	13%	36%	8%	0%	0.14
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.18
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.20
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.40
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.15
Limnephilidae	13%	48%	43%	46%	23%	0.45
Limnesiidae	0%	1%	2%	6%	8%	0.03
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.05
Metretopodidae	0%	1%	0%	1%	0%	0.01

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-578
	Group 1	Group 2	Group 3	Group 4	Group 5	
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.06
Naididae	35%	43%	9%	22%	31%	0.28
Nemouridae	39%	74%	100%	81%	100%	0.81
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.01
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.46
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.08
Planariidae	0%	2%	2%	3%	0%	0.02
Planorbidae	13%	4%	2%	2%	8%	0.03
Poduridae	0%	1%	0%	1%	0%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.34
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.82
Sperchontidae	22%	49%	68%	68%	31%	0.59
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.54
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.43
RIVPACS : Observed taxa P>0.50	5.00
RIVPACS : O:E (p > 0.5)	0.78
RIVPACS : Expected taxa P>0.70	4.22
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.95

Habitat Description

Variable	YPS-578	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	10.0	29.8 ± 14.6
Depth-BankfullMinusWetted (cm)	300.00	0.00 ± 0.00
Depth-Max (cm)	15.0	36.8 ± 17.2
Macrophyte (PercentRange)	0	0 ± 1
Reach-%CanopyCoverage (PercentRange)	4.00	1.37 ± 0.92
Reach-Pools (Binary)	1	1 ± 0
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	1 ± 0
Slope (m/m)	0.0250000	0.5004989 ± 0.7204958
Veg-Coniferous (Binary)	1	1 ± 0
Veg-Deciduous (Binary)	1	1 ± 0
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.20	0.52 ± 0.32
Velocity-Max (m/s)	0.20	0.70 ± 0.43

Habitat Description

Variable	YPS-578	Predicted Group Reference Mean ±SD
Width-Bankfull (m)	3.6	14.0 ± 18.2
Width-Wetted (m)	1.1	6.7 ± 6.7
Climate		
Precip02_FEB (mm)	32.82000	29.33781 ± 11.78911
Precip03_MAR (mm)	31.85526	27.45595 ± 11.91497
Precip06_JUN (mm)	63.63316	53.48783 ± 18.48854
Precip07_JUL (mm)	74.74842	65.85484 ± 22.37167
Rainfall06_JUN (mm)	59.17316	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-4.44579	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.26557	0.37555 ± 1.31381
Natl-Bryoids (%)	0.32016	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.06077	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	3	5 ± 2
Dominant-2nd (Category(0-9))	6	5 ± 2
Embeddedness (Category(1-5))	3	4 ± 1
PeriphytonCoverage (Category(1-5))	2	0 ± 0
SurroundingMaterial (Category(0-9))	2	2 ± 2
Water Chemistry		
General-Conductivity (µS/cm)	64.0000000	171.6423077 ± 110.8405401
General-DO (mg/L)	11.2600000	10.8405333 ± 1.2341710
General-pH (pH)	8.0	7.8 ± 0.6
General-SolidsTDS (mg/L)	53.0000000	162.5000000 ± 117.7553482
General-SolidsTSS (mg/L)	10.0000000	4.8187911 ± 8.8897627
General-SpCond (µS/cm)	105.0000000	238.8759259 ± 165.5853107
General-TempAir (Degrees Celsius)	16.0	18.4 ± 5.3
General-TempWater (Degrees Celsius)	4.7000000	9.0698507 ± 3.6420988
General-Turbidity (NTU)	4.9000000	3.9486301 ± 9.4764159

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-579
Sampling Date	Jul 20 2015
Know Your Watershed Basin	Upper Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.12120 N, 139.50748 W
Altitude	1236
Local Basin Name	Donahue Crek
	Yukon River South
Stream Order	5

Figure 1. Location Map

Down Stream

Up Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	December 14, 2016
Taxonomic Level	Family
Predictive Model Variables	Altitude Depth-Avg Longitude Natl-BroadLeafopen Natl-Bryoids Natl-MixedWoodOpen Natl-WetlandHerb Precip02_FEB Precip03_MAR Precip06_JUN Precip07_JUL RainFall06_JUN Temp04_APRmax Velocity-Avg

Reference Groups	1	2	3	4	5
Number of Reference Sites	23	98	44	108	13
Group Error Rate	34.8%	49.0%	59.1%	53.7%	30.8%
Overall Model Error Rate	50.3%				
Probability of Group Membership	41.7%	19.8%	5.9%	31.6%	1.1%
CABIN Assessment of YPS-579 on Jul 20, 2015	Divergent				

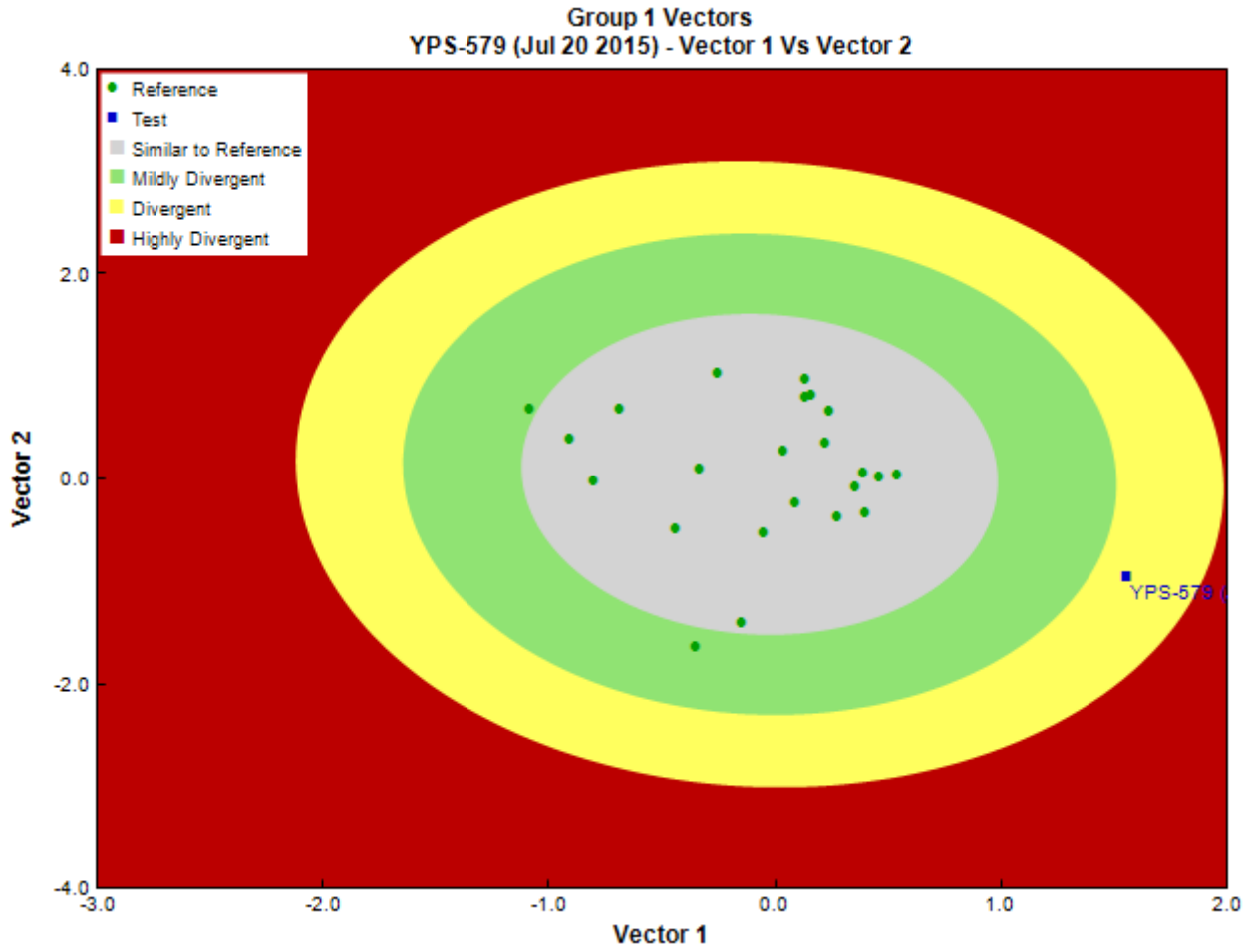


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
Mesh Size	500
Sampling Time	3
Taxonomist	Sue P. Salter, Cordillera Consulting
Date Taxonomy Completed	August 17, 2015
	Marchant Box
Sub-Sample Proportion	25/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	22	88.0
Arthropoda	Arachnida	Trombidiformes	Sperchontidae	1	4.0
	Insecta	Diptera	Chironomidae	117	468.0
			Muscidae	2	8.0
			Simuliidae	65	260.0
			Tipulidae	2	8.0
		Ephemeroptera	Ephemerellidae	2	8.0
		Hemiptera	Aphididae	2	8.0
		Plecoptera	Capniidae	55	220.0
			Nemouridae	90	360.0
			Perlodidae	1	4.0
	Malacostraca	Amphipoda	Crangonyctidae	2	8.0
Mollusca	Gastropoda	Neotaenioglossa	Hydrobiidae	1	4.0
			Total	362	1,448.0

Metrics

Name	YPS-579	Predicted Group Reference Mean ±SD
Bray-Curtis Distance	0.98	0.6 ± 0.3
Number Of Individuals		
Total Abundance	1448.0	192.2 ± 127.1
Richness		
Total No. of Taxa	13.0	10.1 ± 4.5

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-579
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.28
Apataniidae	0%	1%	0%	3%	8%	0.01
Arrenuridae	0%	0%	2%	0%	0%	0.00
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.01
Baetidae	30%	85%	82%	94%	100%	0.65
Blephariceridae	0%	0%	5%	0%	0%	0.00
Brachycentridae	0%	15%	7%	23%	8%	0.11
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.27
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.96
Chloroperlidae	22%	43%	77%	50%	38%	0.38
Corixidae	13%	8%	0%	0%	0%	0.07
Culicidae	9%	0%	0%	0%	0%	0.04
Curculionidae	0%	1%	0%	1%	0%	0.00
Deuterophlebiidae	0%	3%	14%	1%	0%	0.02
Dixidae	0%	5%	2%	1%	0%	0.01
Dolichopodidae	0%	0%	2%	1%	0%	0.00
Dytiscidae	4%	14%	0%	13%	0%	0.09
Elmidae	4%	3%	0%	2%	0%	0.03
Empididae	9%	49%	77%	59%	54%	0.37
Enchytraeidae	0%	0%	9%	2%	0%	0.01
Ephemerellidae	26%	37%	61%	37%	31%	0.34
Ephydridae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.08
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.09
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.50
Hirudinidae	0%	1%	0%	1%	0%	0.00
Hyalellidae	4%	5%	0%	6%	0%	0.05
Hydraenidae	0%	2%	0%	1%	0%	0.01
Hydrobiidae	9%	3%	2%	1%	0%	0.05
Hydropsychidae	4%	13%	36%	8%	0%	0.09
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.13
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.12
Isotomidae	9%	5%	2%	1%	0%	0.05
Lebertiidae	13%	20%	52%	54%	23%	0.30
Lepidostomatidae	0%	1%	5%	4%	8%	0.02
Leptoceridae	0%	1%	0%	2%	0%	0.01
Leptophlebiidae	4%	7%	0%	7%	8%	0.06
Leuctridae	4%	14%	32%	10%	0%	0.10
Limnephilidae	13%	48%	43%	46%	23%	0.32
Limnesiidae	0%	1%	2%	6%	8%	0.02
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.31
Lymnaeidae	13%	9%	0%	3%	0%	0.08
Metretopodidae	0%	1%	0%	1%	0%	0.00

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-579
	Group 1	Group 2	Group 3	Group 4	Group 5	
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.04
Naididae	35%	43%	9%	22%	31%	0.31
Nemouridae	39%	74%	100%	81%	100%	0.64
Noctuidae	0%	0%	0%	1%	0%	0.00
Oreoleptidae	0%	0%	0%	1%	0%	0.00
Oxidae	0%	0%	0%	1%	0%	0.00
Peltoperlidae	0%	2%	0%	0%	0%	0.00
Perlidae	0%	2%	2%	1%	0%	0.01
Perlodidae	17%	31%	70%	49%	62%	0.34
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.01
Pisidiidae	17%	9%	2%	7%	8%	0.12
Planariidae	0%	2%	2%	3%	0%	0.01
Planorbidae	13%	4%	2%	2%	8%	0.07
Poduridae	0%	1%	0%	1%	0%	0.00
Psychodidae	22%	15%	11%	25%	8%	0.21
Rhyacophilidae	4%	34%	68%	25%	15%	0.21
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.65
Sperchontidae	22%	49%	68%	68%	31%	0.44
Staphylinidae	4%	0%	0%	1%	0%	0.02
Stratiomyidae	0%	0%	0%	2%	0%	0.01
Tabanidae	4%	0%	0%	0%	0%	0.02
Taeniopterygidae	0%	1%	5%	2%	15%	0.01
Tipulidae	35%	47%	55%	62%	46%	0.47
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.04
Valvatidae	4%	9%	5%	11%	8%	0.07

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	3.40
RIVPACS : Observed taxa P>0.50	3.00
RIVPACS : O:E (p > 0.5)	0.88
RIVPACS : Expected taxa P>0.70	0.96
RIVPACS : Observed taxa P>0.70	1.00
RIVPACS : O:E (p > 0.7)	1.04

Habitat Description

Variable	YPS-579	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	12.5	36.5 ± 24.3
Depth-BankfullMinusWetted (cm)	60.00	0.00 ± 0.00
Depth-Max (cm)	16.5	39.2 ± 22.7
Macrophyte (PercentRange)	1	0 ± 0
Reach-%CanopyCoverage (PercentRange)	4.00	1.58 ± 1.31
Reach-Riffles (Binary)	1	1 ± 0
Reach-StraightRun (Binary)	1	0 ± 0
Slope (m/m)	0.0200000	0.5088889 ± 0.9950150
Veg-Coniferous (Binary)	1	0 ± 0
Veg-Deciduous (Binary)	1	1 ± 1
Veg-GrassesFerns (Binary)	1	1 ± 0
Veg-Shrubs (Binary)	1	1 ± 0
Velocity-Avg (m/s)	0.37	0.42 ± 0.29
Velocity-Max (m/s)	0.40	0.55 ± 0.38
Width-Bankfull (m)	3.3	23.3 ± 30.9

Habitat Description

Variable	YPS-579	Predicted Group Reference Mean ±SD
Width-Wetted (m)	3.1	6.1 ± 4.9
Climate		
Precip02_FEB (mm)	35.36250	27.73943 ± 9.10561
Precip03_MAR (mm)	34.33750	25.54674 ± 9.71520
Precip06_JUN (mm)	54.25750	49.78117 ± 15.10067
Precip07_JUL (mm)	70.70750	63.45366 ± 19.76560
Rainfall06_JUN (mm)	51.57250	45.78194 ± 13.48156
Temp04_APRmax (Degrees Celsius)	-2.27000	-0.26448 ± 3.57165
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.55560	0.19525 ± 0.41187
Natl-Bryoids (%)	0.58863	0.16846 ± 0.41890
Natl-MixedwoodOpen (%)	4.06261	2.45662 ± 5.01153
Natl-WetlandHerb (%)	0.00000	0.22137 ± 0.64189
Sediment Chemistry		
Substrate Data		
Dominant-1st (Category(0-9))	6	4 ± 2
Dominant-2nd (Category(0-9))	4	6 ± 2
Embeddedness (Category(1-5))	4	4 ± 1
PeriphytonCoverage (Category(1-5))	3	0 ± 0
SurroundingMaterial (Category(0-9))	3	4 ± 3
Water Chemistry		
General-Conductivity (µS/cm)	285.0000000	214.2500000 ± 85.7203992
General-DO (mg/L)	11.9800000	10.3865217 ± 1.3012114
General-pH (pH)	8.0	7.5 ± 0.6
General-SolidsTDS (mg/L)	279.0000000	163.3333333 ± 119.2444967
General-SolidsTSS (mg/L)	10.0000000	618.8714286 ± 2167.8373709
General-SpCond (µS/cm)	464.0000000	318.4782609 ± 182.1592384
General-TempAir (Degrees Celsius)	20.0	19.0 ± 3.0
General-TempWater (Degrees Celsius)	4.8300000	10.0104762 ± 4.2555205
General-Turbidity (NTU)	0.4600000	1062.3160000 ± 2079.8139483