

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-070
Sampling Date	Jul 26 2016
Know Your Watershed Basin	White
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	61.40667 N, 138.70250 W
Altitude	2572
Local Basin Name	Kluane Lake Talbot Arm Inflow w/placer equipment and stake
	White River
Stream Order	3



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	26.1%	21.8%	17.7%	33.1%	1.3%
CABIN Assessment of YPS-070 on Jul 26, 2016	Mildly Divergent				

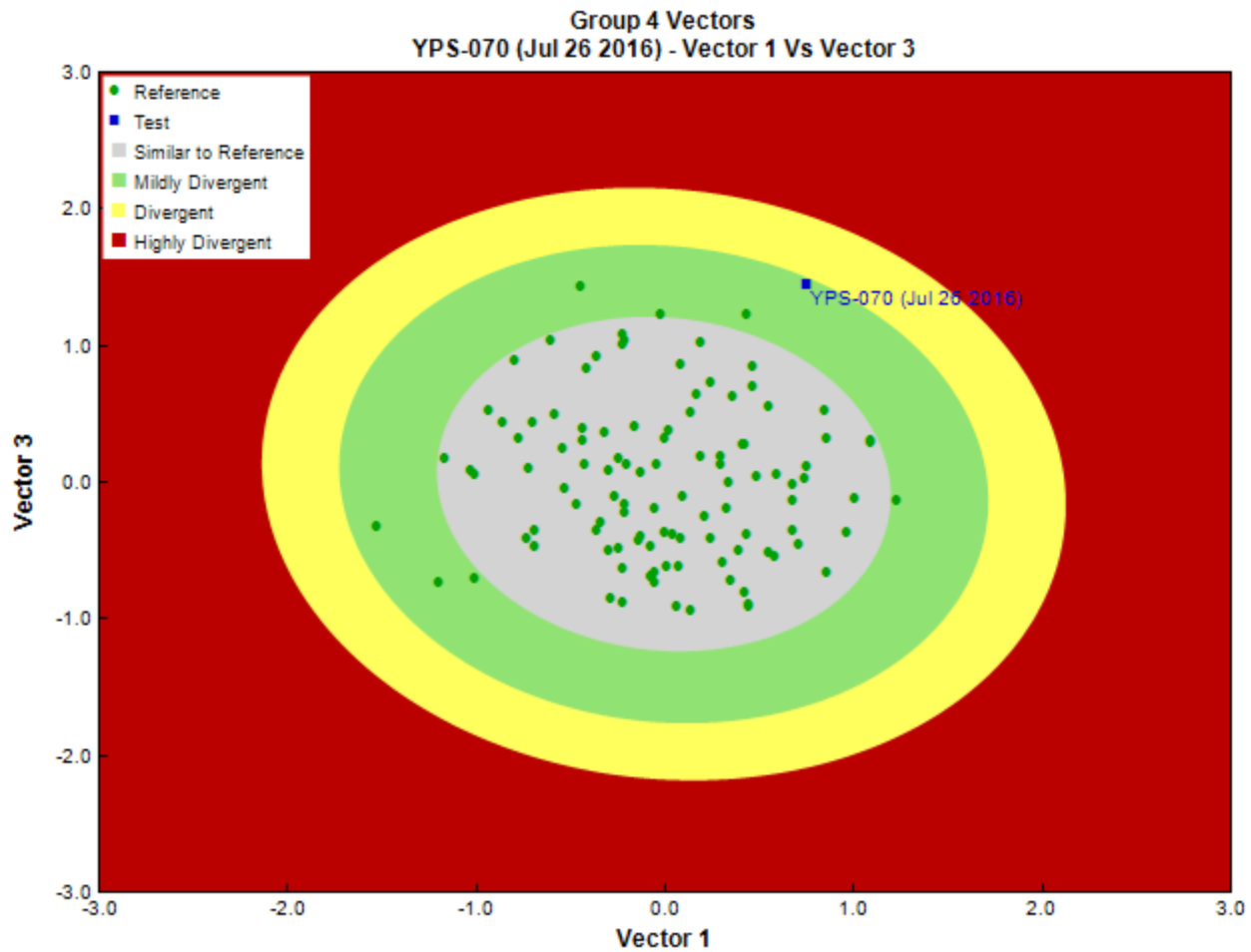


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	Ceratopogonidae	1	1.0
			Chironomidae	5	5.0
			Muscidae	5	5.0
			Simuliidae	24	24.0
			Tipulidae	2	2.0
		Ephemeroptera	Ameletidae	1	1.0
			Baetidae	338	338.0
			Heptageniidae	224	224.0
		Plecoptera	Perlodidae	2	2.0
		Trichoptera	Limnephilidae	3	3.0
			Total	606	606.0

Metrics

Name	YPS-070	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.75	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	606.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	11.0	13.0 \pm 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-070
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.36
Apataniidae	0%	1%	0%	3%	8%	0.01
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%	0.73
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%	0.33
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
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%	0.09
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%	0.38
Ephydriidae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.07

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-070
	Group 1	Group 2	Group 3	Group 4	Group 5	
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%	0.61
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%	0.13
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.15
Hydryphantidae	4%	0%	9%	6%	0%	0.05
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%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.13
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%	0.06
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%	0.41
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%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.29
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%	0.50
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	4.78
RIVPACS : Observed taxa P>0.50	5.00

RIVPACS Ratios

RIVPACS : O:E (p > 0.5)	1.05
RIVPACS : Expected taxa P>0.70	3.15
RIVPACS : Observed taxa P>0.70	3.00
RIVPACS : O:E (p > 0.7)	0.95

Habitat Description

Variable	YPS-070	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	24.3	29.8 \pm 14.6
Velocity-Avg (m/s)	0.77	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	40.30667	29.33781 \pm 11.78911
Precip03_MAR (mm)	37.87000	27.45595 \pm 11.91497
Precip06_JUN (mm)	65.92667	53.48783 \pm 18.48854
Precip07_JUL (mm)	84.79000	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	62.92333	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	1.28000	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 \pm 1.31381
Natl-Bryoids (%)	0.00000	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-078
Sampling Date	Jul 25 2016
Know Your Watershed Basin	Klondike
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.92250 N, 138.88389 W
Altitude	1923
Local Basin Name	Hunker Creek upstream of Ontario Cr.
	Klondike River
Stream Order	3



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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%	20.9%	15.6%	47.3%	8.3%
CABIN Assessment of YPS-078 on Jul 25, 2016	Mildly Divergent				

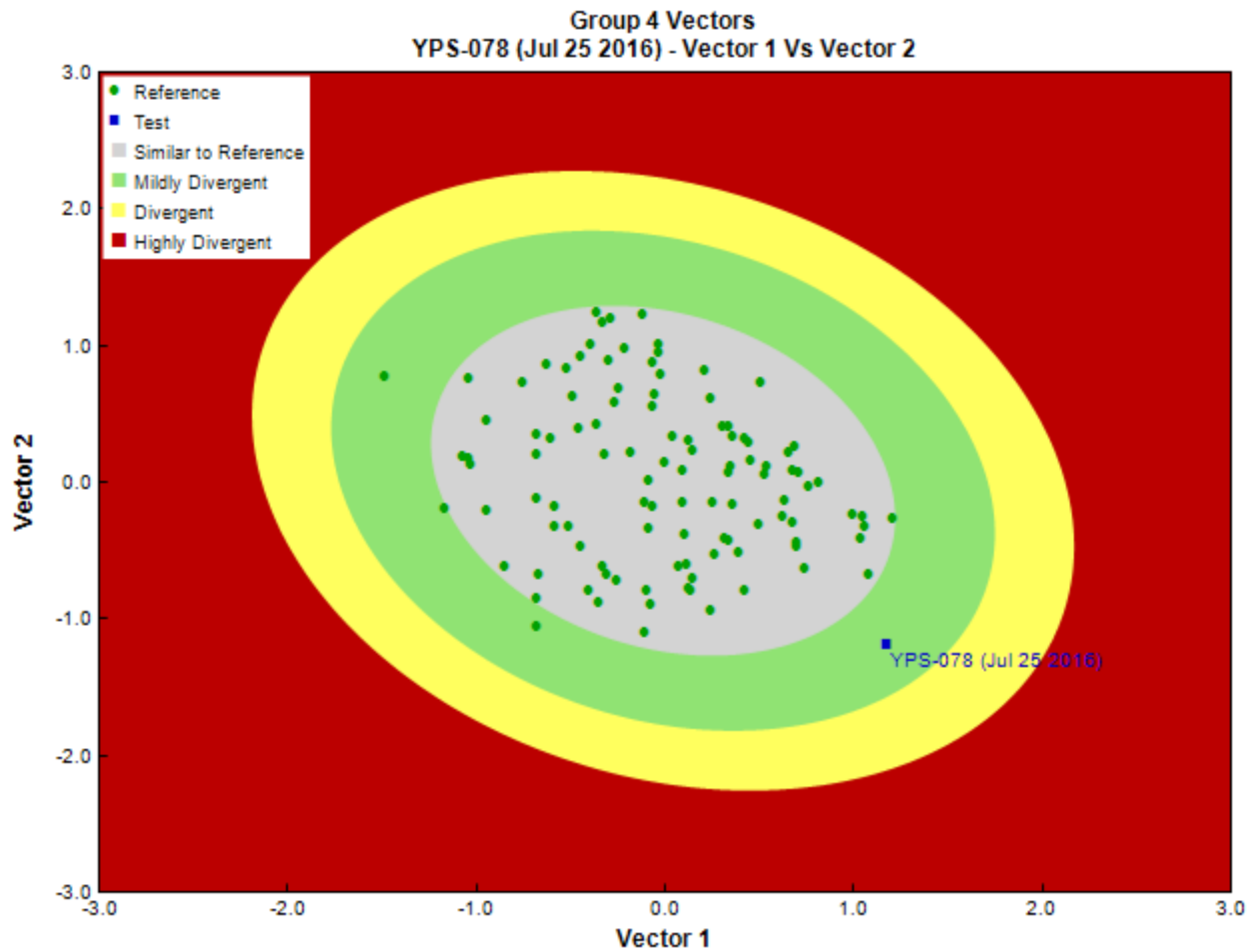


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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			1	1.0
		Enchytraeida	Enchytraeidae	2	2.0
		Lumbriculida	Lumbriculidae	9	9.0
Arthropoda	Arachnida	Sarcoptiformes		2	2.0
	Insecta	Coleoptera		1	1.0
			Elmidae	1	1.0
			Hydrophilidae	1	1.0
			Staphylinidae	2	2.0
		Diptera		22	22.0
			Ceratopogonidae	1	1.0
			Chironomidae	55	55.0
			Empididae	52	52.0
			Muscidae	1	1.0
			Phoridae	1	1.0
			Psychodidae	13	13.0
			Simuliidae	24	24.0
			Tipulidae	2	2.0
		Ephemeroptera		1	1.0
			Baetidae	48	48.0
			Heptageniidae	43	43.0
		Plecoptera	Capniidae	1	1.0
			Chloroperlidae	2	2.0
			Nemouridae	4	4.0
		Thysanoptera		1	1.0
		Trichoptera	Limnephilidae	4	4.0
			Total	294	294.0

Metrics

Name	YPS-078	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.68	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	294.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	19.0	13.0 \pm 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-078
	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%	0.42
Ceratopogonidae	22%	28%	30%	24%	0%	0.23
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.50

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-078
	Group 1	Group 2	Group 3	Group 4	Group 5	
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%	0.09
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
Ephydriidae	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%	0.72
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%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.19
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%	0.06
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
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%	0.81
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%	0.47
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%	0.31
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

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-078
	Group 1	Group 2	Group 3	Group 4	Group 5	
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	5.86
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	1.20
RIVPACS : Expected taxa P>0.70	4.19
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.19

Habitat Description

Variable	YPS-078	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	20.6	29.8 \pm 14.6
Velocity-Avg (m/s)	0.62	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	32.60750	29.33781 \pm 11.78911
Precip03_MAR (mm)	31.16250	27.45595 \pm 11.91497
Precip06_JUN (mm)	54.50750	53.48783 \pm 18.48854
Precip07_JUL (mm)	67.57250	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	51.92000	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-3.60000	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 \pm 1.31381
Natl-Bryoids (%)	0.23517	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	0.12961	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-081
Sampling Date	Jul 25 2016
Know Your Watershed Basin	Klondike
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	64.03078 N, 139.38913 W
Altitude	1089
Local Basin Name	Bonanza Creek at Highway Klondike River
Stream Order	4



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	13.3%	22.9%	19.7%	41.3%	2.8%
CABIN Assessment of YPS-081 on Jul 25, 2016	Similar to Reference				

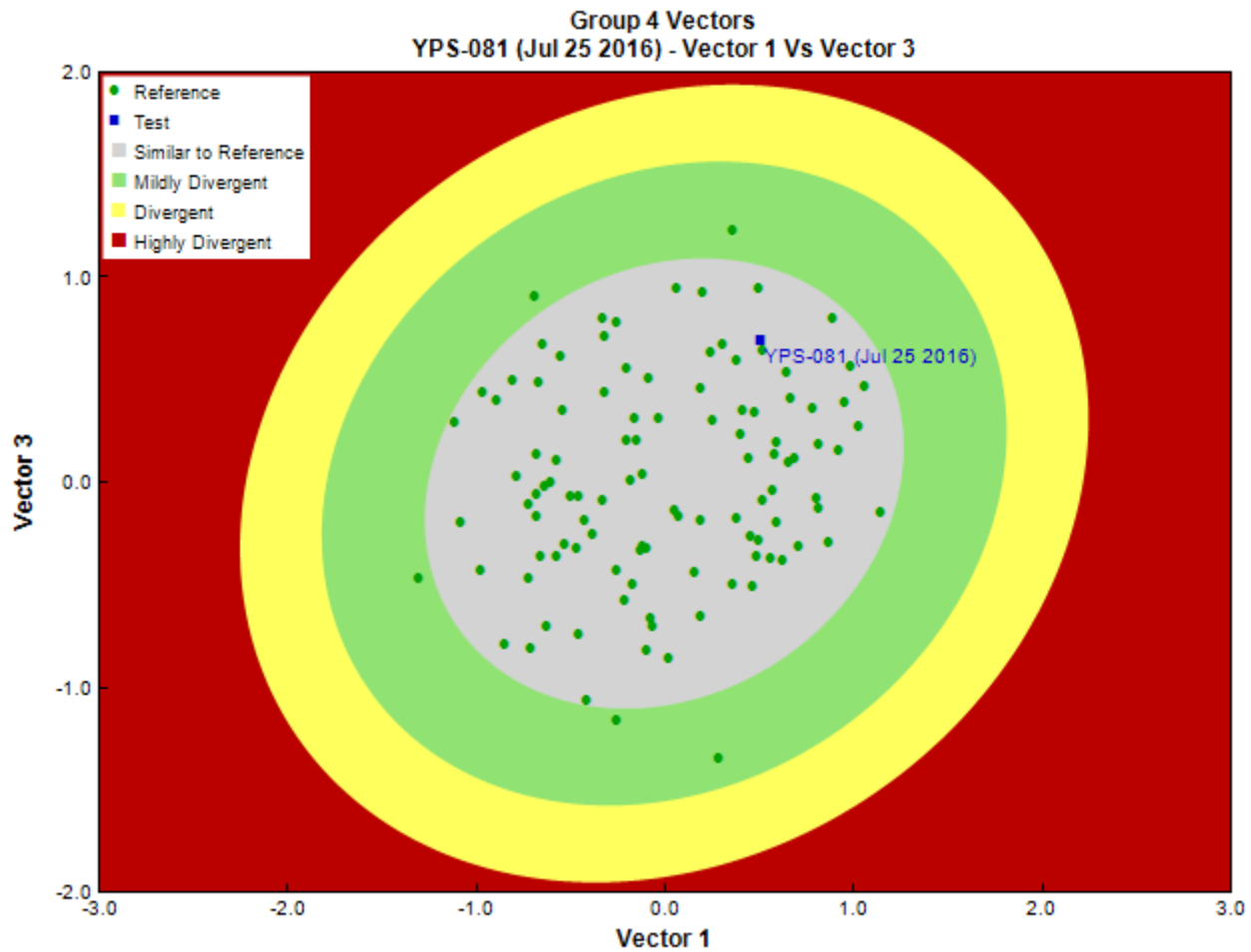


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	45/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	17	37.8
Arthropoda	Arachnida	Trombidiformes		1	2.2
	Collembola	Collembola		6	13.3
	Insecta	Coleoptera		2	4.4
		Diptera	Chironomidae	214	475.4
			Dolichopodidae	1	2.2
			Tipulidae	6	13.2
		Ephemeroptera	Baetidae	87	193.3
		Lepidoptera		1	2.2
		Plecoptera	Capniidae	1	2.2
			Perlodidae	6	13.3
		Trichoptera	Brachycentridae	3	6.6
			Limnephilidae	1	2.2
			Total	346	768.3

Metrics

Name	YPS-081	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.27	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	768.9	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	9.0	13.0 \pm 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-081
	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%	0.81
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%	0.38
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%	0.04
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%	0.40
Ephydriidae	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-081
	Group 1	Group 2	Group 3	Group 4	Group 5	
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%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.00
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%	0.14
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%	0.18
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%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.14
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%	0.00
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%	0.32
Scathophagidae	0%	2%	0%	0%	0%	0.00
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%	0.53
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%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.69
RIVPACS : Observed taxa P>0.50	3.00
RIVPACS : O:E (p > 0.5)	0.53
RIVPACS : Expected taxa P>0.70	3.36
RIVPACS : Observed taxa P>0.70	2.00
RIVPACS : O:E (p > 0.7)	0.59

Habitat Description

Variable	YPS-081	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	45.8	29.8 ± 14.6
Velocity-Avg (m/s)	1.10	0.52 ± 0.32
Climate		
Precip02_FEB (mm)	32.88733	29.33781 ± 11.78911
Precip03_MAR (mm)	31.43067	27.45595 ± 11.91497
Precip06_JUN (mm)	53.41933	53.48783 ± 18.48854
Precip07_JUL (mm)	67.10467	65.85484 ± 22.37167
Rainfall06_JUN (mm)	51.08667	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-3.60467	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.66132	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.18838	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-090
Sampling Date	Jul 27 2016
Know Your Watershed Basin	Central Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.76944 N, 139.63000 W
Altitude	1200
Local Basin Name	Indian Rive at Water Resources Station
	Indian River
Stream Order	6



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	16.4%	18.0%	27.0%	37.3%	1.3%
CABIN Assessment of YPS-090 on Jul 27, 2016	Similar to Reference				

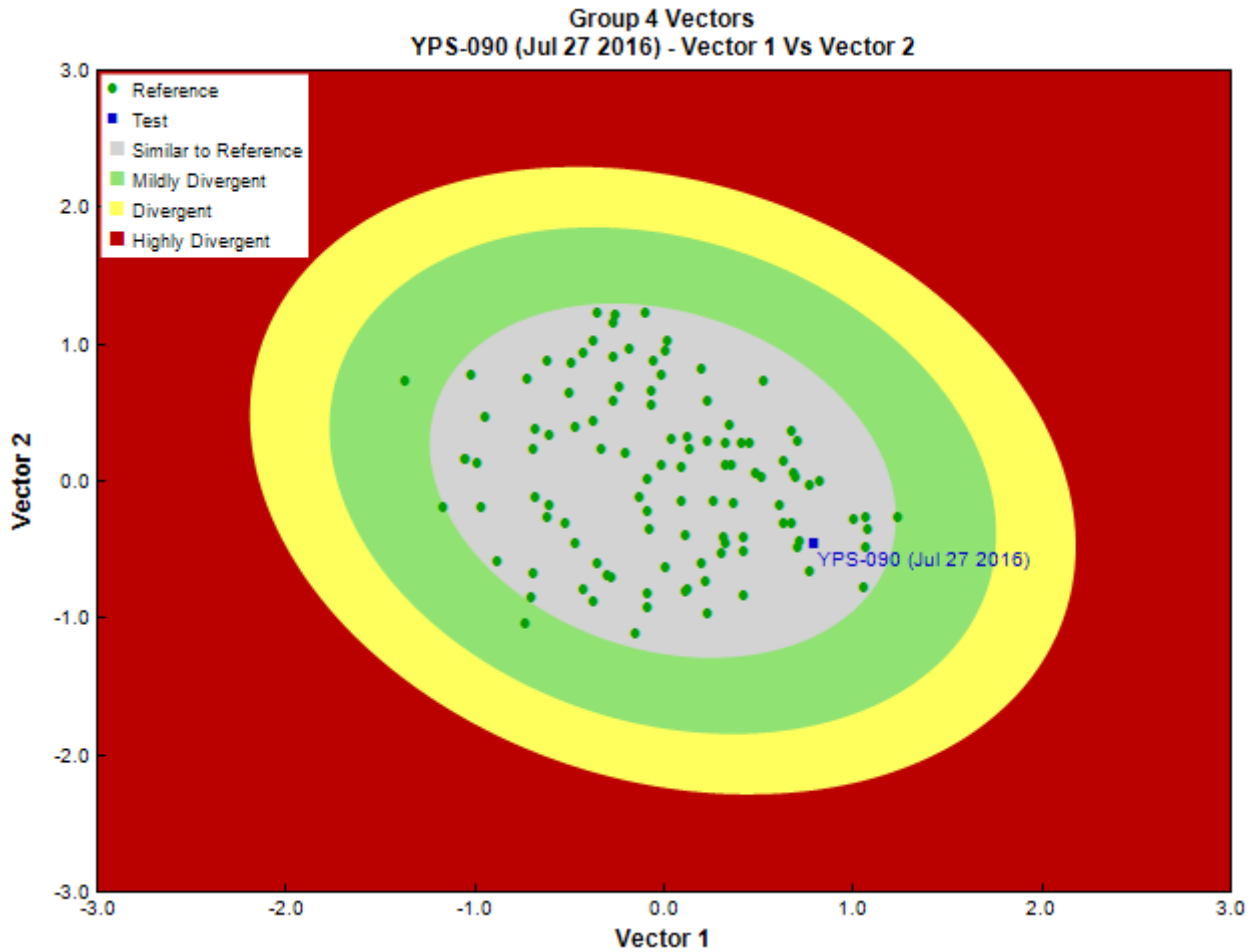


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	42/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count					
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	14	33.3					
		Tubificida	Naididae	3	7.1					
Arthropoda	Arachnida	Trombidiformes	Hygrobatidae	1	2.4					
			Lebertiidae	7	16.7					
	Insecta	Coleoptera	Staphylinidae	1	2.4					
			Diptera	Athericidae	1	2.4				
					Ceratopogonidae	8	19.0			
					Chironomidae	119	283.6			
					Empididae	1	2.4			
					Tabanidae	1	2.4			
					Tipulidae	2	4.8			
					Ephemeroptera	Ameletidae	4	9.5		
						Baetidae	72	171.4		
								Heptageniidae	49	116.6
								Leptophlebiidae	1	2.4
					Plecoptera			Capniidae	2	4.8
								Perlodidae	4	9.5
					Trichoptera			Pteronarcyidae	4	9.5
								Apataniidae	1	2.4
								Brachycentridae	2	4.8
								Glossosomatidae	1	2.4
Hydropsychidae	11	26.2								
Hydroptilidae	3	7.2								
Limnephilidae	1	2.4								
Mollusca	Gastropoda	Basommatophora	Lymnaeidae	3	7.1					
		Heterostropha	Valvatidae	3	7.1					
Total				319	759.8					

Metrics

Name	YPS-090	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.45	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	759.5	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	26.0	13.0 \pm 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-090
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.42
Apataniidae	0%	1%	0%	3%	8%	0.01
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%	0.79
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%	0.37
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.99

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-090
	Group 1	Group 2	Group 3	Group 4	Group 5	
Chloroperlidae	22%	43%	77%	50%	38%	0.51
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%	0.54
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.42
Ephydriidae	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%	0.16
Hydroptilidae	4%	7%	0%	6%	0%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.18
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
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%	0.40
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%	0.25
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%	0.00
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%	0.35
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.77
Sperchontidae	22%	49%	68%	68%	31%	0.56

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-090
	Group 1	Group 2	Group 3	Group 4	Group 5	
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%	0.10
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.16
RIVPACS : Observed taxa P>0.50	5.00
RIVPACS : O:E (p > 0.5)	0.81
RIVPACS : Expected taxa P>0.70	3.33
RIVPACS : Observed taxa P>0.70	2.00
RIVPACS : O:E (p > 0.7)	0.60

Habitat Description

Variable	YPS-090	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	63.5	29.8 \pm 14.6
Velocity-Avg (ms)	1.35	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	34.17494	29.33781 \pm 11.78911
Precip03_MAR (mm)	32.98776	27.45595 \pm 11.91497
Precip06_JUN (mm)	56.70424	53.48783 \pm 18.48854
Precip07_JUL (mm)	70.71882	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	53.88859	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-3.68141	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.01062	0.37555 \pm 1.31381
Natl-Bryoids (%)	0.87513	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	0.06701	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.12191	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-107
Sampling Date	Jul 25 2016
Know Your Watershed Basin	Klondike
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.86190 N, 139.24597 W
Altitude	2021
Local Basin Name	Eldorado Creek top
	Klondike River
Stream Order	2



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	5.5%	15.5%	14.9%	46.9%	17.1%
CABIN Assessment of YPS-107 on Jul 25, 2016	Similar to Reference				

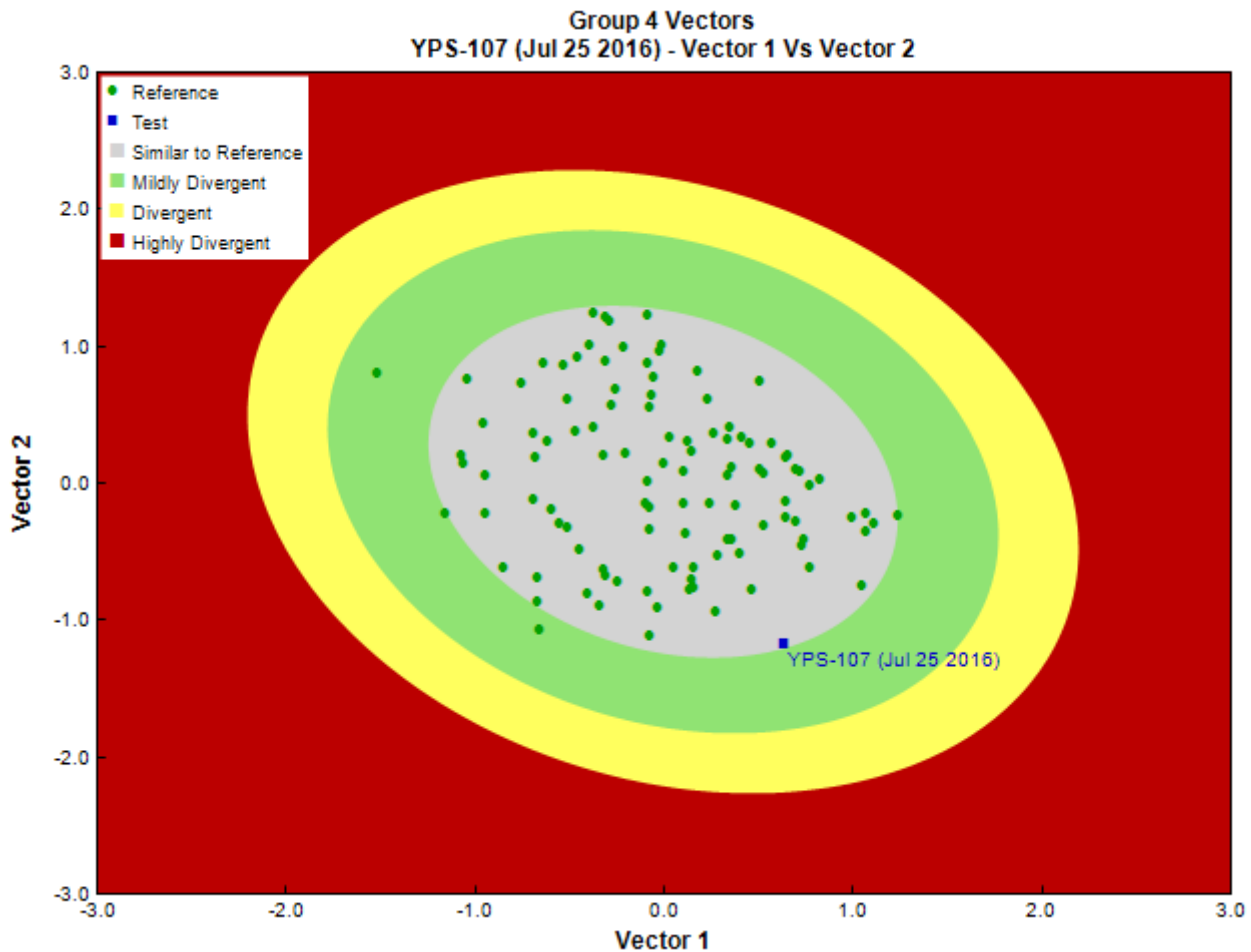


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	11	11.0
Arthropoda	Arachnida	Sarcoptiformes		2	2.0
	Insecta	Diptera		1	1.0
			Chironomidae	102	102.0
			Empididae	13	13.0
			Psychodidae	5	5.0
			Simuliidae	106	106.0
			Tipulidae	4	4.0
		Ephemeroptera	Ameletidae	7	7.0
			Baetidae	25	25.0
			Heptageniidae	62	62.0
		Plecoptera	Capniidae	4	4.0
			Chloroperlidae	6	6.0
			Nemouridae	26	26.0
			Perlodidae	4	4.0
			Total	379	379.0

Metrics

Name	YPS-107	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.57	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	379.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	14.0	13.0 \pm 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-107
	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%	0.03
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%	0.47
Ceratopogonidae	22%	28%	30%	24%	0%	0.21
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%	0.09
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.57

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-107
	Group 1	Group 2	Group 3	Group 4	Group 5	
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemereidae	26%	37%	61%	37%	31%	0.39
Ephydriidae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.11
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%	0.75
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%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.22
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.18
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
Limnephilidae	13%	48%	43%	46%	23%	0.40
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%	0.03
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%	0.26
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%	0.50
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%	0.08
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%	0.18
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%	0.56
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%	0.04
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%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.95
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	1.18
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-107	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	22.0	29.8 ± 14.6
Velocity-Avg (m/s)	0.70	0.52 ± 0.32
Climate		
Precip02_FEB (mm)	34.58500	29.33781 ± 11.78911
Precip03_MAR (mm)	33.27500	27.45595 ± 11.91497
Precip06_JUN (mm)	55.55500	53.48783 ± 18.48854
Precip07_JUL (mm)	69.84500	65.85484 ± 22.37167
Rainfall06_JUN (mm)	53.25500	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-4.20000	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.37555 ± 1.31381
Natl-Bryoids (%)	0.29546	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	0.14235	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - UWO
Site	YPS-115
Sampling Date	Jul 27 2016
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

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 21, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	23.9%	10.1%	23.2%	38.6%	4.2%
CABIN Assessment of YPS-115 on Jul 27, 2016	Mildly Divergent				

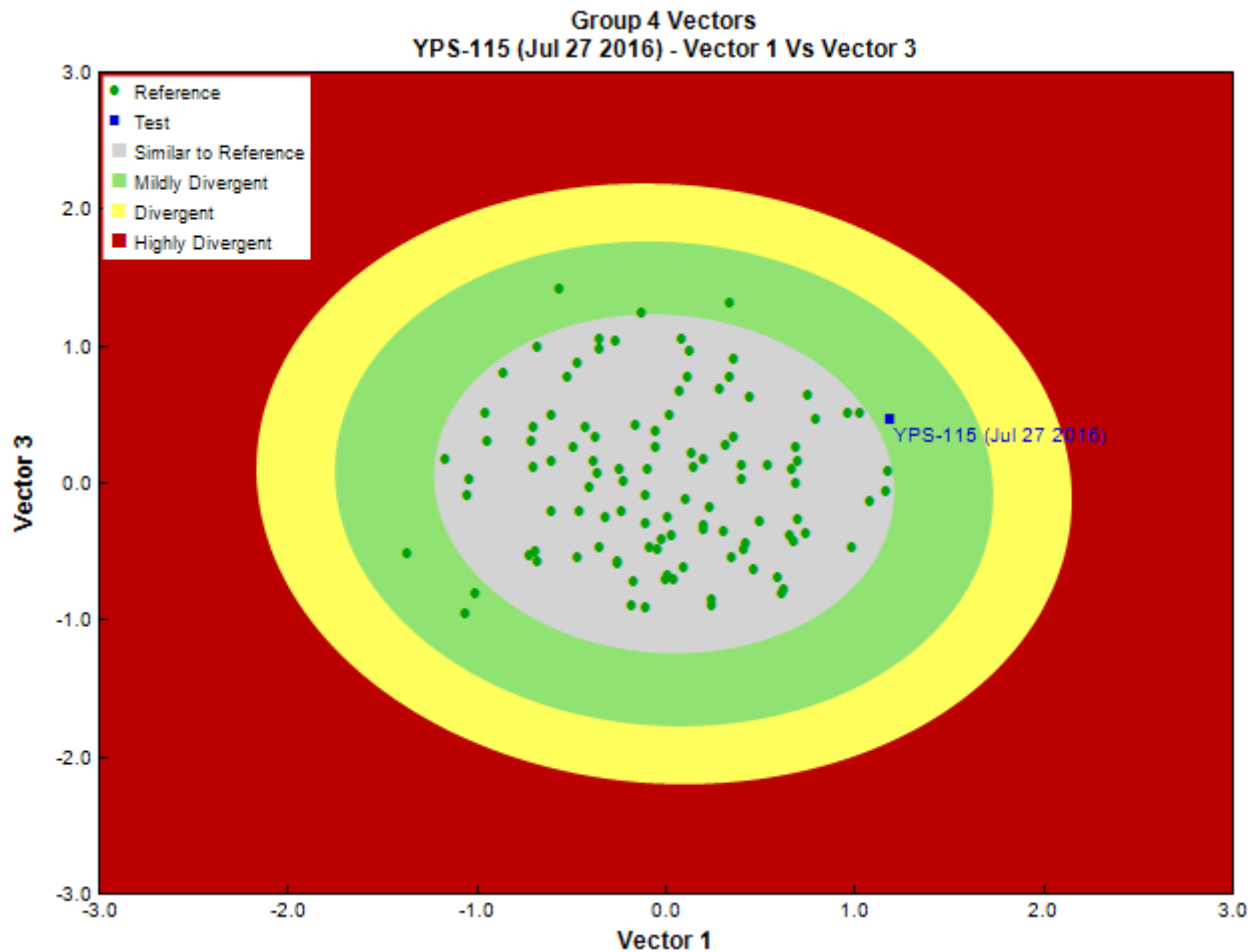


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	32/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	32	100.0
Arthropoda	Arachnida	Trombidiformes	Hygrobatiidae	7	21.9
			Lebertiidae	6	18.8
			Sperchontidae	3	9.4
	Insecta	Diptera		1	3.1
			Ceratopogonidae	1	3.1
			Chironomidae	64	200.1
			Empididae	12	37.5
			Muscidae	1	3.1
			Simuliidae	4	12.5
			Tipulidae	5	15.6
		Ephemeroptera	Baetidae	46	143.7
			Ephemerellidae	78	243.8
			Heptageniidae	3	9.4
		Plecoptera	Chloroperlidae	15	46.9
			Perlodidae	4	12.5
		Trichoptera	Apataniidae	56	175.0
			Brachycentridae	6	18.7
			Glossosomatidae	2	6.3
			Limnephilidae	1	3.1
			Total	347	1,084.5

Metrics

Name	YPS-115	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.64	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	1084.4	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	19.0	13.0 \pm 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%	0.38
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%	0.00
Capniidae	9%	23%	43%	50%	77%	0.37
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.48
Corixidae	13%	8%	0%	0%	0%	0.04
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	0%	1%	0%	1%	0%	0.00
Deuterophlebiidae	0%	3%	14%	1%	0%	0.04
Dixidae	0%	5%	2%	1%	0%	0.01

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	
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.07
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
Ephydriidae	0%	0%	2%	0%	0%	0.01
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%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.66
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%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.14
Hydroptilidae	4%	7%	0%	6%	0%	0.04
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%	0.03
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%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.14
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%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.05
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%	0.25
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%	0.45
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%	0.09
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%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.31
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%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.52
Torrenticolidae	0%	0%	0%	5%	8%	0.02

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	
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.43
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	1.29
RIVPACS : Expected taxa P>0.70	3.23
RIVPACS : Observed taxa P>0.70	3.00
RIVPACS : O:E (p > 0.7)	0.93

Habitat Description

Variable	YPS-115	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	70.0	29.8 \pm 14.6
Velocity-Avg (m/s)	1.50	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	32.73816	29.33781 \pm 11.78911
Precip03_MAR (mm)	31.74579	27.45595 \pm 11.91497
Precip06_JUN (mm)	50.55947	53.48783 \pm 18.48854
Precip07_JUL (mm)	66.91895	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	48.26132	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-2.12500	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.41688	0.37555 \pm 1.31381
Natl-Bryoids (%)	0.32198	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	0.12708	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.01287	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-124
Sampling Date	Jul 28 2016
Know Your Watershed Basin	Upper Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	62.85278 N, 138.69222 W
Altitude	1425
Local Basin Name	Britannia Creek
	Yukon River South
Stream Order	4



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	1.8%	10.7%	12.8%	47.4%	27.4%
CABIN Assessment of YPS-124 on Jul 28, 2016	Mildly Divergent				

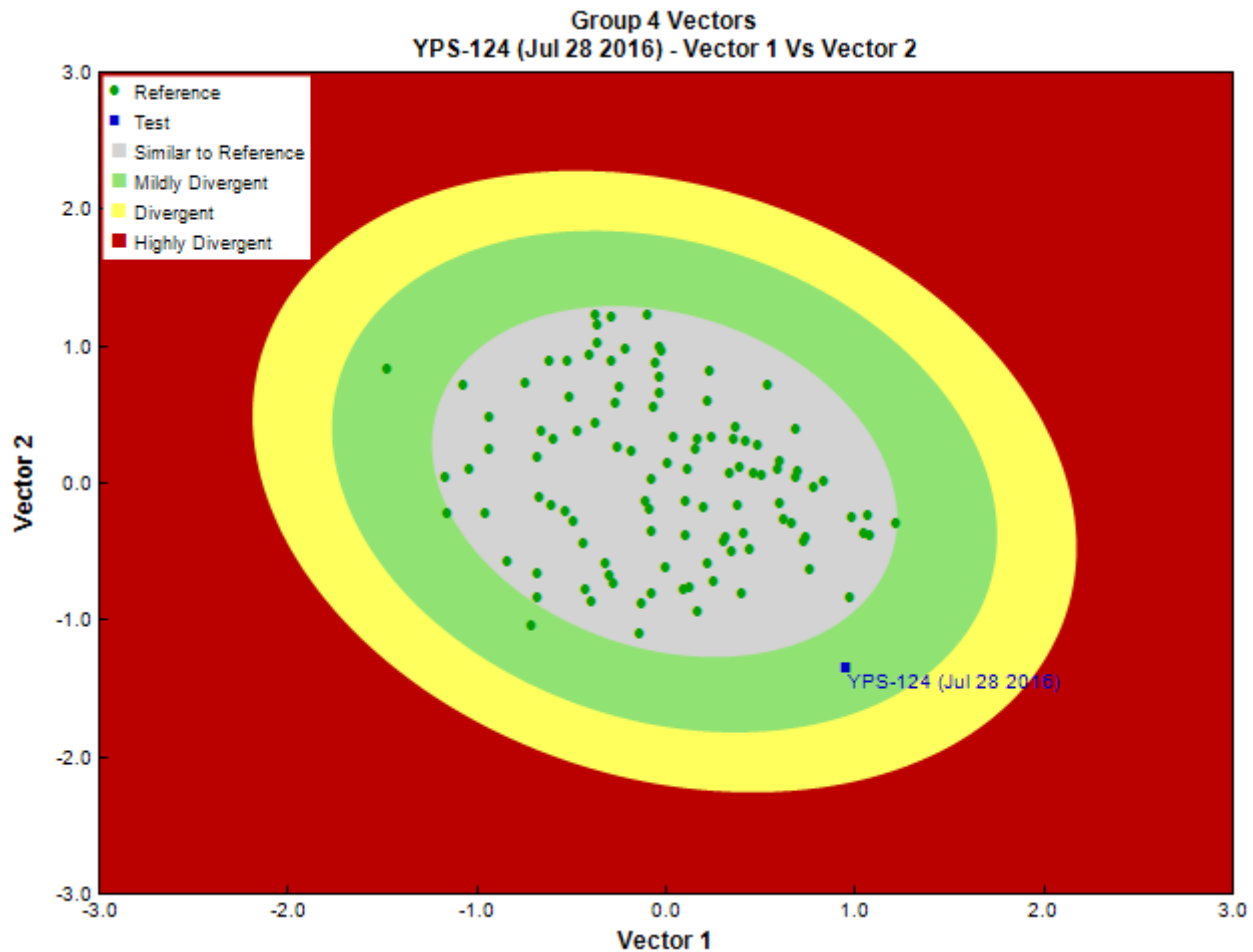


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	Arachnida	Trombidiformes	Sperchontidae	2	2.0
	Collembola	Collembola	Isotomidae	1	1.0
	Insecta	Coleoptera	Carabidae	1	1.0
			Curculionidae	1	1.0
		Diptera		1	1.0
			Chironomidae	72	72.0
			Empididae	6	6.0
			Tipulidae	3	3.0
		Ephemeroptera	Baetidae	30	30.0
			Ephemerellidae	44	44.0
			Heptageniidae	158	158.0
		Plecoptera	Chloroperlidae	21	21.0
			Nemouridae	6	6.0
		Trichoptera	Glossosomatidae	3	3.0
			Limnephilidae	12	12.0
			Total	365	365.0

Metrics

Name	YPS-124	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.73	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	365.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	15.0	13.0 \pm 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-124
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.36
Apataniidae	0%	1%	0%	3%	8%	0.04
Arrenuridae	0%	0%	2%	0%	0%	0.00
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%	0.16
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.53
Ceratopogonidae	22%	28%	30%	24%	0%	0.19
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.49
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%	0.03
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%	0.01
Empididae	9%	49%	77%	59%	54%	0.58

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-124
	Group 1	Group 2	Group 3	Group 4	Group 5	
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemereidae	26%	37%	61%	37%	31%	0.38
Ephydriidae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.05
Gammaridae	9%	2%	0%	13%	23%	0.13
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%	0.78
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%	0.01
Hydropsychidae	4%	13%	36%	8%	0%	0.10
Hydroptilidae	4%	7%	0%	6%	0%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.25
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.17
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%	0.10
Limnephilidae	13%	48%	43%	46%	23%	0.39
Limnesiidae	0%	1%	2%	6%	8%	0.05
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%	0.01
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.25
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%	0.53
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%	0.01
Psychodidae	22%	15%	11%	25%	8%	0.17
Rhyacophilidae	4%	34%	68%	25%	15%	0.28
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.82
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%	0.06
Tipulidae	35%	47%	55%	62%	46%	0.55
Torrenticolidae	0%	0%	0%	5%	8%	0.04
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.05
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	7.13
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	0.98
RIVPACS : Expected taxa P>0.70	4.40
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.91

Habitat Description

Variable	YPS-124	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	24.8	29.8 ± 14.6
Velocity-Avg (m/s)	0.74	0.52 ± 0.32
Climate		
Precip02_FEB (mm)	36.89182	29.33781 ± 11.78911
Precip03_MAR (mm)	36.28545	27.45595 ± 11.91497
Precip06_JUN (mm)	59.78636	53.48783 ± 18.48854
Precip07_JUL (mm)	77.00000	65.85484 ± 22.37167
Rainfall06_JUN (mm)	56.21545	48.43760 ± 16.05524
Temp04_APRmax (Degrees Celsius)	-1.59818	-0.98364 ± 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.82292	0.37555 ± 1.31381
Natl-Bryoids (%)	3.03624	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	2.33701	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 ± 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-164
Sampling Date	Jul 28 2016
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

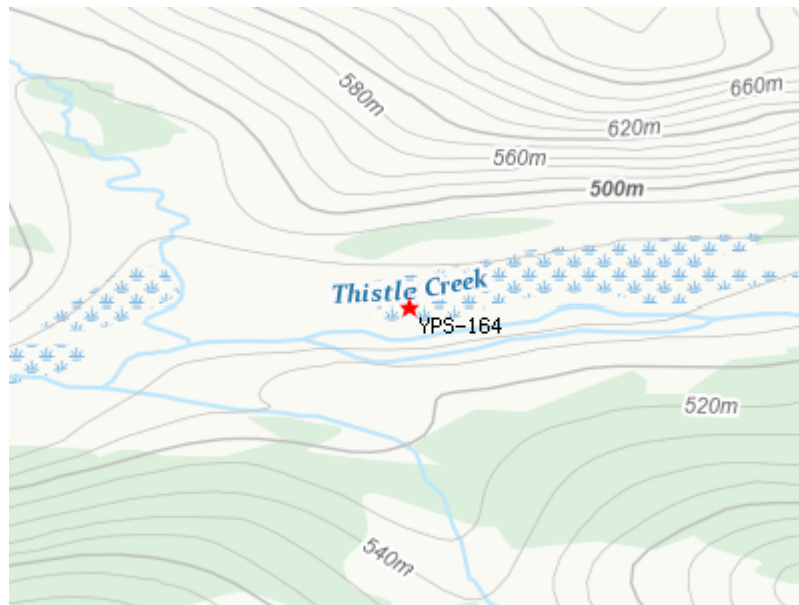


Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	29.8%	17.1%	9.9%	41.1%	2.0%
CABIN Assessment of YPS-164 on Jul 28, 2016	Mildly Divergent				

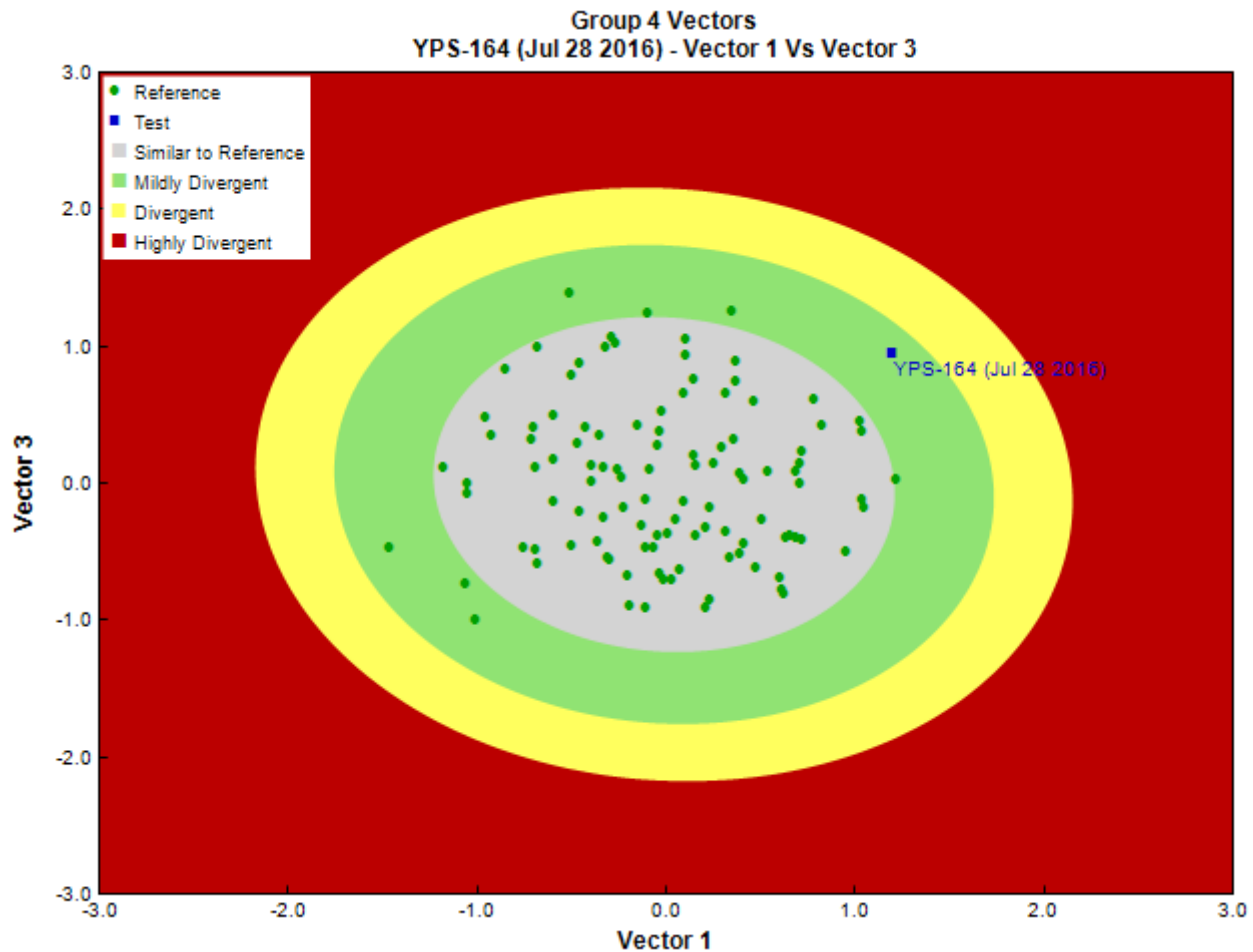


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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		
		Tubificida	Naididae	1	1.0		
Arthropoda	Insecta	Diptera	Ceratopogonidae	1	1.0		
			Chironomidae	88	88.0		
			Empididae	6	6.0		
					Psychodidae	1	1.0
					Simuliidae	10	10.0
			Ephemeroptera	Baetidae	144	144.0	
				Ephemerellidae	1	1.0	
				Heptageniidae	5	5.0	
			Plecoptera	Chloroperlidae	4	4.0	
				Nemouridae	3	3.0	
			Trichoptera	Glossosomatidae	3	3.0	
				Limnephilidae	2	2.0	
		Total	273	273.0			

Metrics

Name	YPS-164	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.62	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	273.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	14.0	13.0 \pm 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%	0.32
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%	0.00
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%	0.97
Chloroperlidae	22%	43%	77%	50%	38%	0.43
Corixidae	13%	8%	0%	0%	0%	0.05
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%	0.01
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%	0.36

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	
Ephyridae	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%	0.58
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%	0.11
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%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.07
Metreopodidae	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%	0.28
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%	0.00
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%	0.21
Rhyacophilidae	4%	34%	68%	25%	15%	0.24
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.71
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%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.05
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	4.69
RIVPACS : Observed taxa P>0.50	5.00
RIVPACS : O:E (p > 0.5)	1.07
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-164	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	18.0	29.8 ± 14.6
Velocity-Avg (m/s)	0.60	0.52 ± 0.32
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 (%)	0.52746	0.37555 ± 1.31381
Natl-Bryoids (%)	0.29763	0.53753 ± 1.04480
Natl-MixedwoodOpen (%)	2.84119	0.77433 ± 2.87383
Natl-WetlandHerb (%)	0.00418	0.14452 ± 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-165
Sampling Date	Jul 28 2016
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -North EcoRegion
Coordinates (decimal degrees)	63.64691 N, 137.08881 W
Altitude	1610
Local Basin Name	Vancouver Creek
	McQuesten River
Stream Order	4



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	9.6%	29.0%	22.4%	38.4%	0.6%
CABIN Assessment of YPS-165 on Jul 28, 2016	Divergent				

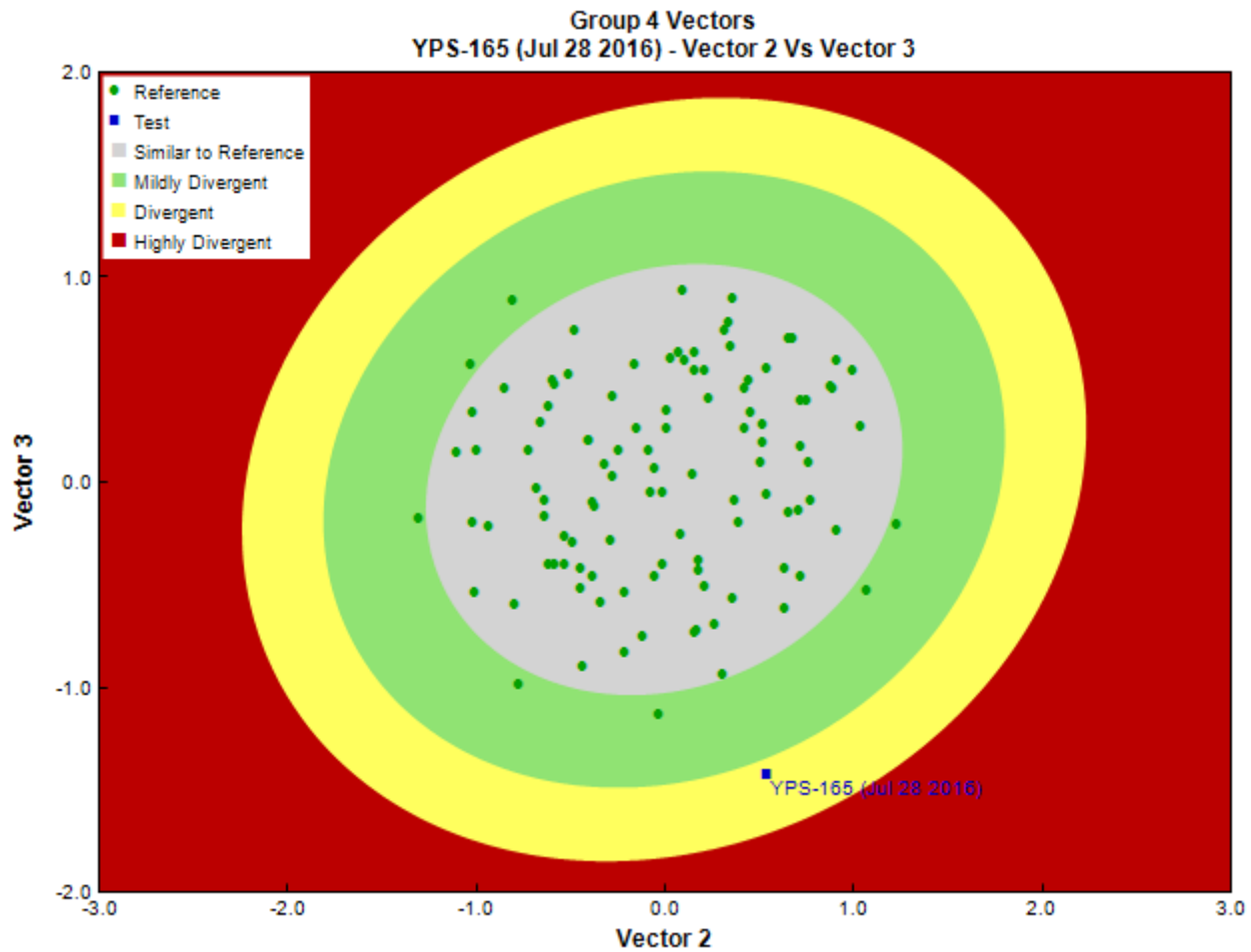


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	27/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	87	322.2
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	2	7.4
			Sperchontidae	7	25.9
	Insecta	Diptera	Ceratopogonidae	3	11.1
			Chironomidae	15	55.5
			Empididae	20	74.0
			Simuliidae	1	3.7
			Tipulidae	2	7.4
		Ephemeroptera	Ameletidae	2	7.4
			Baetidae	3	11.1
			Ephemerellidae	1	3.7
			Heptageniidae	98	362.9
		Plecoptera	Chloroperlidae	39	144.4
			Leuctridae	1	3.7
			Nemouridae	17	63.0
			Perlodidae	4	14.8
		Trichoptera	Limnephilidae	1	3.7
			Rhyacophilidae	7	25.9
			Uenoidae	2	7.4
			Total	312	1,155.2

Metrics

Name	YPS-165	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.81	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	1155.6	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	19.0	13.0 \pm 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-165
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.42
Apataniidae	0%	1%	0%	3%	8%	0.01
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%	0.37
Ceratopogonidae	22%	28%	30%	24%	0%	0.26
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.51
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

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-165
	Group 1	Group 2	Group 3	Group 4	Group 5	
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%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.41
Ephydriidae	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%	0.71
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%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.16
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
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%	0.03
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%	0.06
Naididae	35%	43%	9%	22%	31%	0.27
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%	0.01
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%	0.04
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%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.79
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%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.53
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.08

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-165
	Group 1	Group 2	Group 3	Group 4	Group 5	
Uenoidae	0%	8%	30%	1%	0%	0.09
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.29
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	1.43
RIVPACS : Expected taxa P>0.70	4.12
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.21

Habitat Description

Variable	YPS-165	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	32.8	29.8 \pm 14.6
Velocity-Avg (m/s)	0.72	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	28.95824	29.33781 \pm 11.78911
Precip03_MAR (mm)	27.86000	27.45595 \pm 11.91497
Precip06_JUN (mm)	59.88176	53.48783 \pm 18.48854
Precip07_JUL (mm)	69.63529	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	55.02882	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-2.67824	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.04962	0.37555 \pm 1.31381
Natl-Bryoids (%)	0.23445	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	0.33869	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-166
Sampling Date	Jul 28 2016
Know Your Watershed Basin	Stewart
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Yukon Plateau -North EcoRegion
Coordinates (decimal degrees)	63.68441 N, 137.06349 W
Altitude	1840
Local Basin Name	Right Hook Creek
	McQuesten River
Stream Order	4

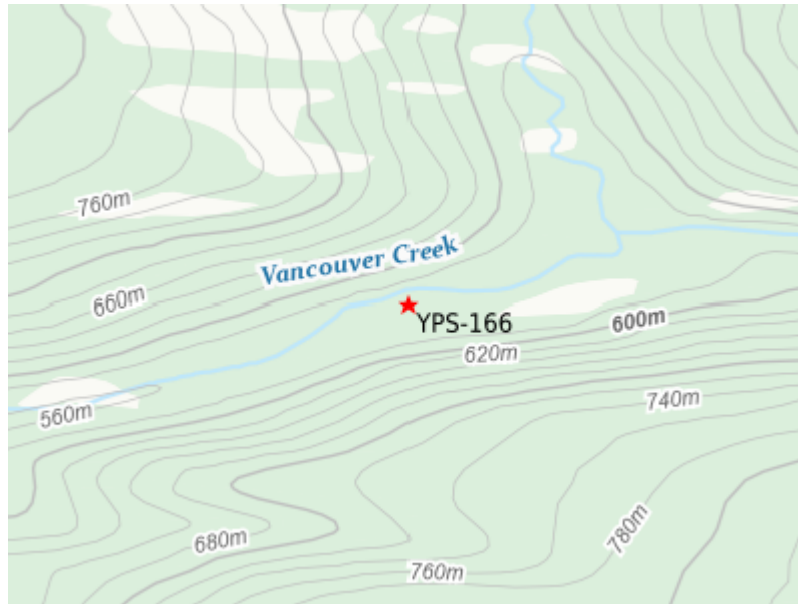


Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	10.4%	36.5%	17.4%	35.1%	0.5%
CABIN Assessment of YPS-166 on Jul 28, 2016	Mildly Divergent				

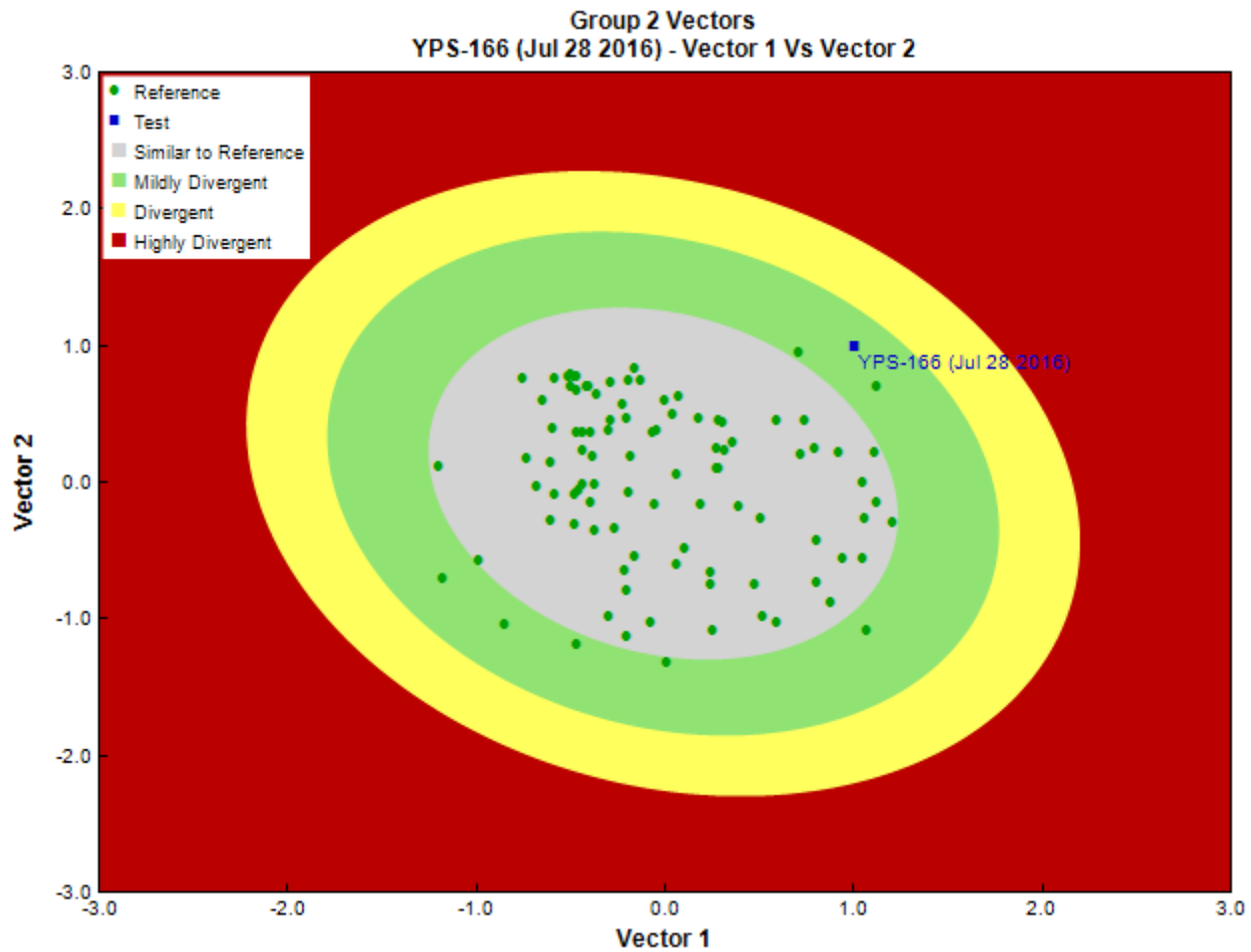


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	27/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	9	33.3
Arthropoda	Arachnida	Trombidiformes	Hygrobatae	1	3.7
			Lebertiidae	13	48.1
			Sperchontidae	12	44.4
	Insecta	Diptera		1	3.7
			Chironomidae	122	451.8
			Empididae	45	166.7
			Simuliidae	2	7.4
		Ephemeroptera	Ameletidae	7	25.9
			Baetidae	5	18.5
			Heptageniidae	38	140.7
		Plecoptera	Chloroperlidae	12	44.4
			Leuctridae	1	3.7
			Nemouridae	33	122.2
			Perlodidae	1	3.7
			Taeniopterygidae	1	3.7
		Trichoptera	Glossosomatidae	2	7.4
			Limnephilidae	7	25.9
			Rhyacophilidae	28	103.7
			Uenoidae	18	66.7
			Total	358	1,325.6

Metrics

Name	YPS-166	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	--	--
Number Of Individuals		
Total Abundance	1325.9	265.3 \pm 160.6
Richness		
Total No. of Taxa	19.0	11.5 \pm 4.3

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-166
	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%	0.01
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%	0.35
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%	0.03

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-166
	Group 1	Group 2	Group 3	Group 4	Group 5	
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
Ephydriidae	0%	0%	2%	0%	0%	0.00
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%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.00
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%	0.15
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.17
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%	0.15
Limnephilidae	13%	48%	43%	46%	23%	0.43
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%	0.29
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%	0.43
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%	0.00
Taeniopterygidae	0%	1%	5%	2%	15%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.52
Torrenticolidae	0%	0%	0%	5%	8%	0.02

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-166
	Group 1	Group 2	Group 3	Group 4	Group 5	
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.67
RIVPACS : Observed taxa P>0.50	0.00
RIVPACS : O:E (p > 0.5)	0.00
RIVPACS : Expected taxa P>0.70	3.37
RIVPACS : Observed taxa P>0.70	0.00
RIVPACS : O:E (p > 0.7)	0.00

Habitat Description

Variable	YPS-166	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	31.4	31.4 \pm 19.7
Velocity-Avg (m/s)	0.38	0.43 \pm 0.26
Climate		
Precip02_FEB (mm)	29.10818	28.51137 \pm 7.47006
Precip03_MAR (mm)	28.04000	26.48398 \pm 7.72519
Precip06_JUN (mm)	60.51455	57.13713 \pm 13.58676
Precip07_JUL (mm)	70.21091	73.01094 \pm 17.73562
Rainfall06_JUN (mm)	55.56364	49.31793 \pm 11.37423
Temp04_APRmax (Degrees Celsius)	-2.82727	0.93101 \pm 4.20058
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.04238	0.14237 \pm 0.34395
Natl-Bryoids (%)	0.22587	0.31369 \pm 0.60856
Natl-MixedwoodOpen (%)	0.31831	0.75166 \pm 1.44254
Natl-WetlandHerb (%)	0.00000	0.11375 \pm 0.31492
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-172
Sampling Date	Jul 27 2016
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

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	10.1%	17.0%	31.9%	39.3%	1.8%
CABIN Assessment of YPS-172 on Jul 27, 2016	Mildly Divergent				

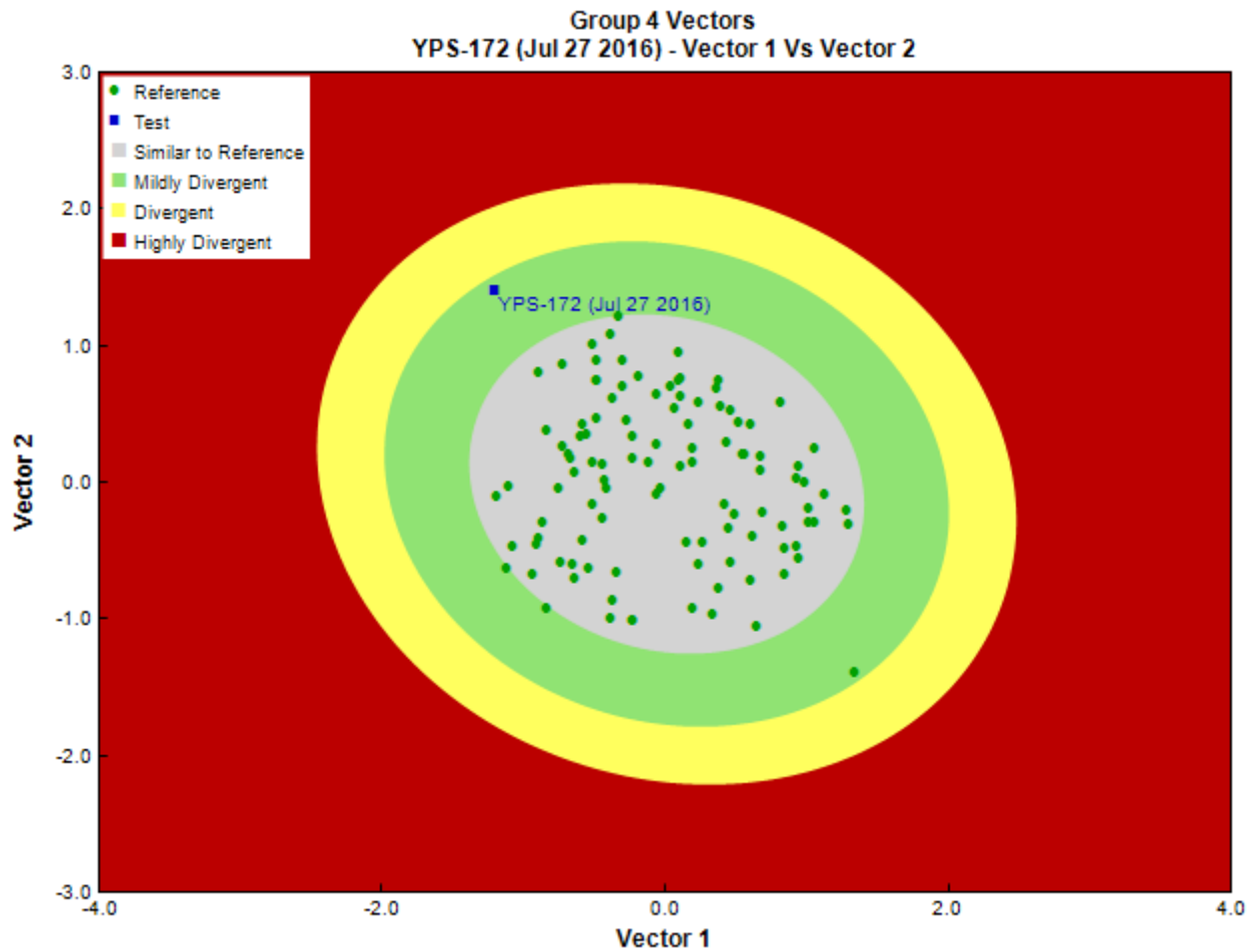


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	Lebertiidae	5	5.0
			Sperchontidae	1	1.0
	Insecta	Diptera	Chironomidae	19	19.0
			Empididae	1	1.0
			Muscidae	2	2.0
			Simuliidae	8	8.0
			Tipulidae	3	3.0
		Ephemeroptera	Ameletidae	4	4.0
			Baetidae	46	46.0
			Ephemerellidae	59	59.0
			Heptageniidae	38	38.0
		Plecoptera	Chloroperlidae	27	27.0
			Perlodidae	3	3.0
		Trichoptera	Apataniidae	2	2.0
			Glossosomatidae	10	10.0
			Limnephilidae	1	1.0
			Total	232	232.0

Metrics

Name	YPS-172	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.78	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	232.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	17.0	13.0 \pm 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%	0.45
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%	0.14
Caenidae	0%	1%	0%	1%	0%	0.01
Capniidae	9%	23%	43%	50%	77%	0.40
Ceratopogonidae	22%	28%	30%	24%	0%	0.26
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.54
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%	0.05
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

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	
Empididae	9%	49%	77%	59%	54%	0.58
Enchytraeidae	0%	0%	9%	2%	0%	0.04
Ephemerellidae	26%	37%	61%	37%	31%	0.44
Ephydriidae	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%	0.03
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%	0.19
Hydryphantidae	4%	0%	9%	6%	0%	0.06
Hygrobatidae	0%	9%	25%	28%	0%	0.20
Isotomidae	9%	5%	2%	1%	0%	0.03
Lebertiidae	13%	20%	52%	54%	23%	0.43
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%	0.17
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%	0.23
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%	0.50
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%	0.04
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%	0.80
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%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.54
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	6.44
RIVPACS : Observed taxa P>0.50	8.00
RIVPACS : O:E (p > 0.5)	1.24
RIVPACS : Expected taxa P>0.70	4.18
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.96

Habitat Description

Variable	YPS-172	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	88.9	29.8 \pm 14.6
Velocity-Avg (m/s)	1.12	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	38.69208	29.33781 \pm 11.78911
Precip03_MAR (mm)	38.42146	27.45595 \pm 11.91497
Precip06_JUN (mm)	70.31292	53.48783 \pm 18.48854
Precip07_JUL (mm)	88.57896	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	63.21208	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-1.63271	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.59121	0.37555 \pm 1.31381
Natl-Bryoids (%)	0.00000	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	0.00050	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.02780	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-201
Sampling Date	Jul 27 2016
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
Stream Order	5



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	16.8%	17.1%	35.4%	30.0%	0.6%
CABIN Assessment of YPS-201 on Jul 27, 2016	Divergent				

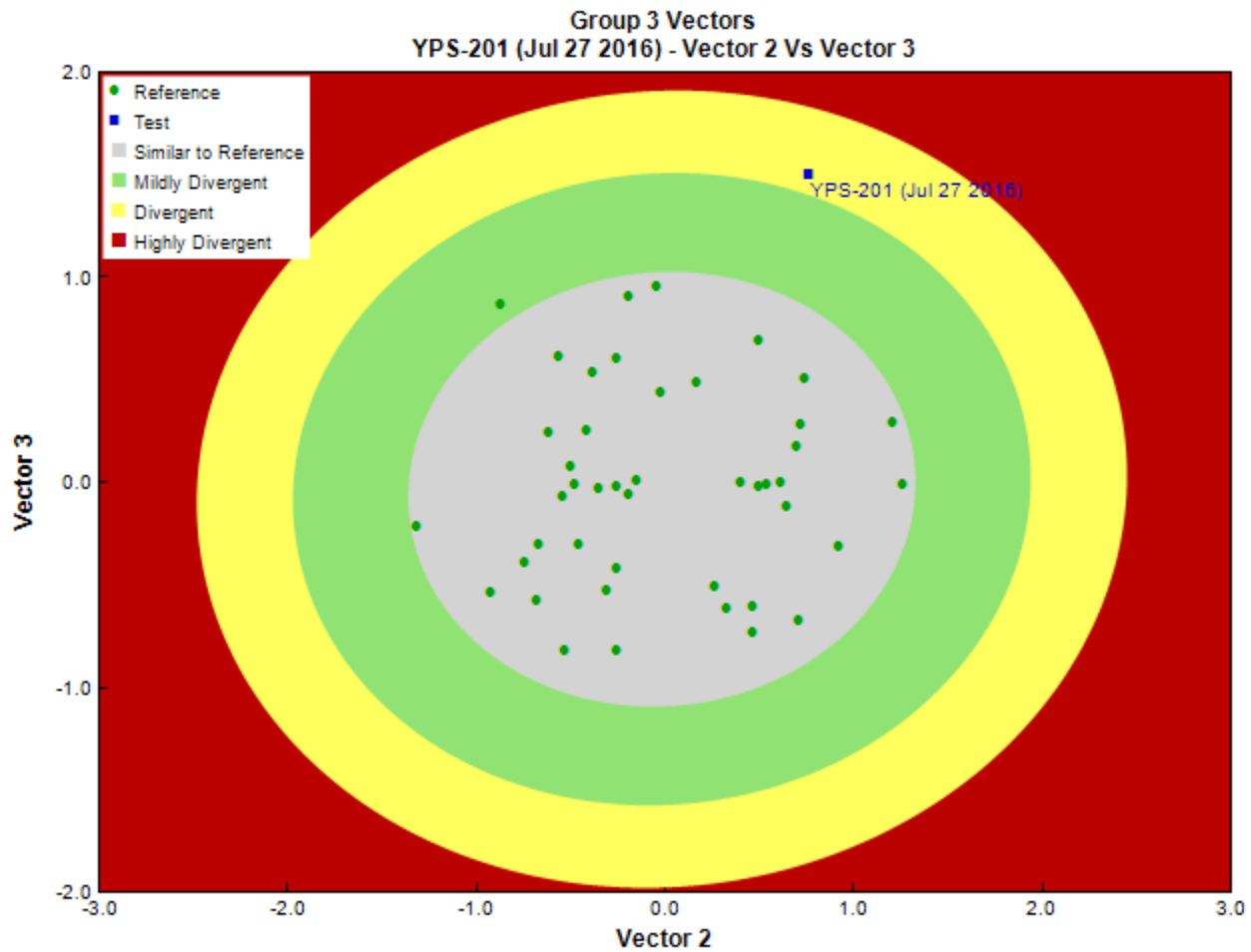


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	15	15.0
Arthropoda	Arachnida	Trombidiformes		2	2.0
			Hygrobatidae	1	1.0
			Lebertiidae	2	2.0
			Sperchontidae	1	1.0
	Insecta	Coleoptera	Hydrophilidae	2	2.0
		Diptera	Chironomidae	23	23.0
			Simuliidae	9	9.0
			Tipulidae	6	6.0
		Ephemeroptera	Baetidae	58	58.0
			Ephemerellidae	27	27.0
			Heptageniidae	4	4.0
		Plecoptera	Chloroperlidae	28	28.0
		Trichoptera	Rhyacophilidae	1	1.0
			Total	179	179.0

Metrics

Name	YPS-201	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.69	0.4 \pm 0.1
Number Of Individuals		
Total Abundance	179.0	567.0 \pm 737.1
Richness		
Total No. of Taxa	13.0	10.6 \pm 6.1

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%	0.44
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%	0.77
Blephariceridae	0%	0%	5%	0%	0%	0.02
Brachycentridae	0%	15%	7%	23%	8%	0.12
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.36
Ceratopogonidae	22%	28%	30%	24%	0%	0.26
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.54
Corixidae	13%	8%	0%	0%	0%	0.04
Culicidae	9%	0%	0%	0%	0%	0.01
Curculionidae	0%	1%	0%	1%	0%	0.00
Deuterophlebiidae	0%	3%	14%	1%	0%	0.06
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.07
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.55
Enchytraeidae	0%	0%	9%	2%	0%	0.04
Ephemerellidae	26%	37%	61%	37%	31%	0.44

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	
Ephydriidae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.06
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%	0.71
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%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.18
Hydroptilidae	4%	7%	0%	6%	0%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.17
Hydryphantidae	4%	0%	9%	6%	0%	0.06
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%	0.04
Leuctridae	4%	14%	32%	10%	0%	0.18
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%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.05
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%	0.23
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%	0.00
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%	0.77
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%	0.52
Torrenticolidae	0%	0%	0%	5%	8%	0.01
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.12
Valvatidae	4%	9%	5%	11%	8%	0.07

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.21
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	1.13
RIVPACS : Expected taxa P>0.70	4.04
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.99

Habitat Description

Variable	YPS-201	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	121.0	32.1 \pm 15.8
Velocity-Avg (m/s)	1.40	0.58 \pm 0.29
Climate		
Precip02_FEB (mm)	39.26537	36.13728 \pm 23.92832
Precip03_MAR (mm)	39.04955	33.12839 \pm 21.04203
Precip06_JUN (mm)	71.61791	64.67097 \pm 18.68912
Precip07_JUL (mm)	89.81119	78.30006 \pm 20.80864
Rainfall06_JUN (mm)	64.29746	52.72477 \pm 13.45837
Temp04_APRmax (Degrees Celsius)	-2.13149	1.37555 \pm 3.73745
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.40304	0.67948 \pm 1.61907
Natl-Bryoids (%)	0.00000	0.36641 \pm 0.83769
Natl-MixedwoodOpen (%)	0.00062	0.96002 \pm 1.72070
Natl-WetlandHerb (%)	0.06576	0.03164 \pm 0.10034
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-379
Sampling Date	Jul 26 2016
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

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	24.9%	26.5%	13.2%	34.5%	1.0%
CABIN Assessment of YPS-379 on Jul 26, 2016	Similar to Reference				

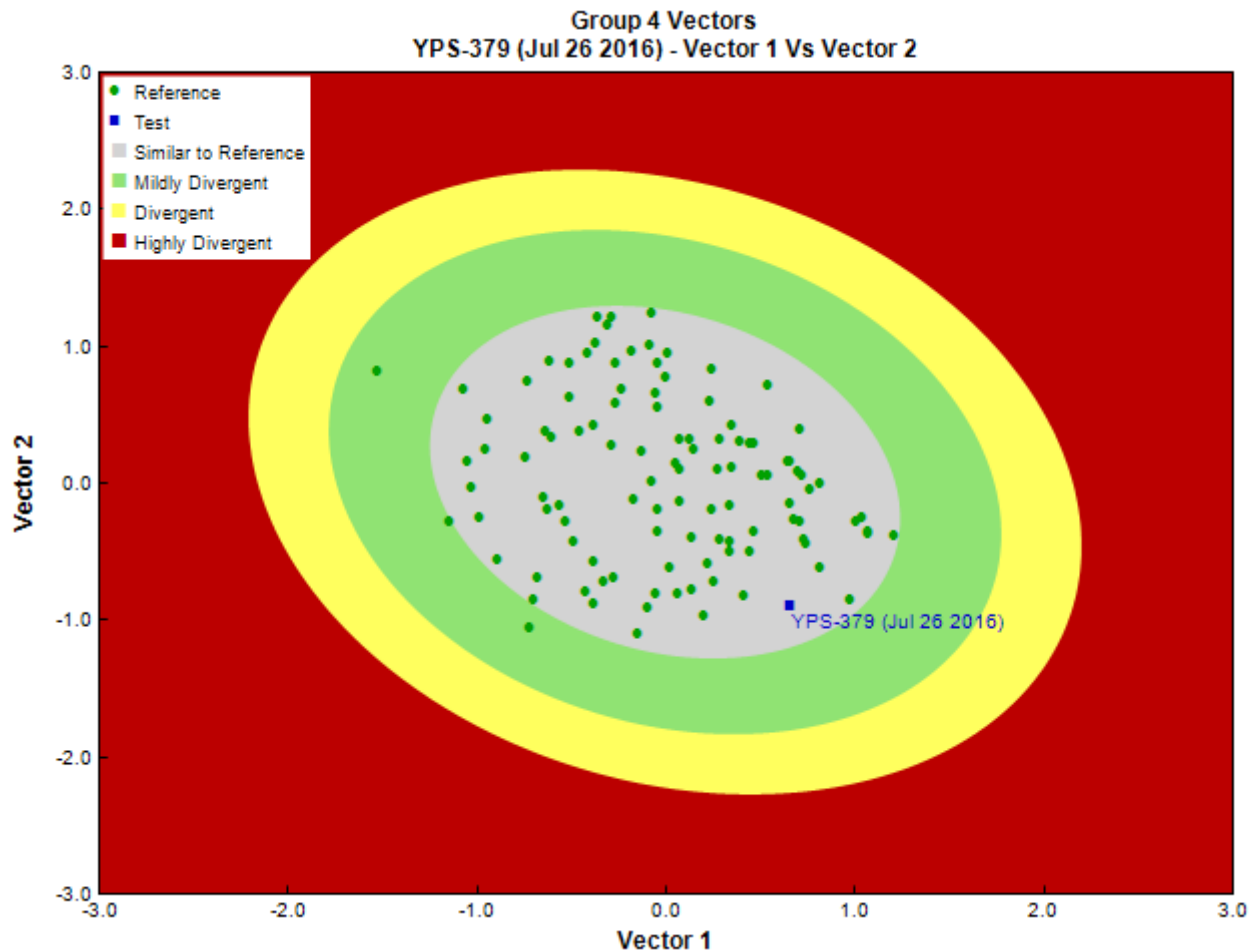


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	35/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Enchytraeida	Enchytraeidae	1	2.9
		Lumbriculida	Lumbriculidae	18	51.4
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	1	2.9
			Sperchontidae	1	2.9
	Insecta	Diptera	Ceratopogonidae	1	2.9
			Chironomidae	111	317.4
			Empididae	4	11.4
			Psychodidae	1	2.9
			Simuliidae	2	5.8
			Tipulidae	4	11.5
		Ephemeroptera	Baetidae	4	11.4
			Ephemerellidae	34	97.1
			Heptageniidae	49	140.0
		Plecoptera	Capniidae	3	8.6
			Chloroperlidae	24	68.6
			Nemouridae	6	17.2
			Perlodidae	15	42.9
		Trichoptera	Apataniidae	47	134.3
			Glossosomatidae	2	5.7
			Limnephilidae	15	42.9
	Malacostraca	Amphipoda	Crangonyctidae	22	62.9
				Hyalellidae	3
			Total	368	1,052.2

Metrics

Name	YPS-379	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.56	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	1051.4	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	22.0	13.0 \pm 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%	0.35
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%	0.32
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.45
Corixidae	13%	8%	0%	0%	0%	0.05
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	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-379
	Group 1	Group 2	Group 3	Group 4	Group 5	
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%	0.46
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.37
Ephydriidae	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%	0.61
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%	0.12
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%	0.15
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.34
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%	0.38
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%	0.07
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%	0.29
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%	0.01
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%	0.10
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%	0.28
Scathophagidae	0%	2%	0%	0%	0%	0.01
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

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	
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%	0.06
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-379	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	30.0	29.8 \pm 14.6
Velocity-Avg (m/s)	0.90	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	33.70765	29.33781 \pm 11.78911
Precip03_MAR (mm)	32.53824	27.45595 \pm 11.91497
Precip06_JUN (mm)	53.46588	53.48783 \pm 18.48854
Precip07_JUL (mm)	68.93882	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	51.88647	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-4.02176	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.08076	0.37555 \pm 1.31381
Natl-Bryoids (%)	0.00000	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	0.01378	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-442
Sampling Date	Jul 25 2016
Know Your Watershed Basin	Alsek
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Ruby Ranges EcoRegion
Coordinates (decimal degrees)	61.13369 N, 138.04436 W
Altitude	3135
Local Basin Name	4th of July Creek (lower)
	Alsek
Stream Order	3



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	17.5%	14.8%	37.7%	27.1%	2.9%
CABIN Assessment of YPS-442 on Jul 25, 2016	Divergent				

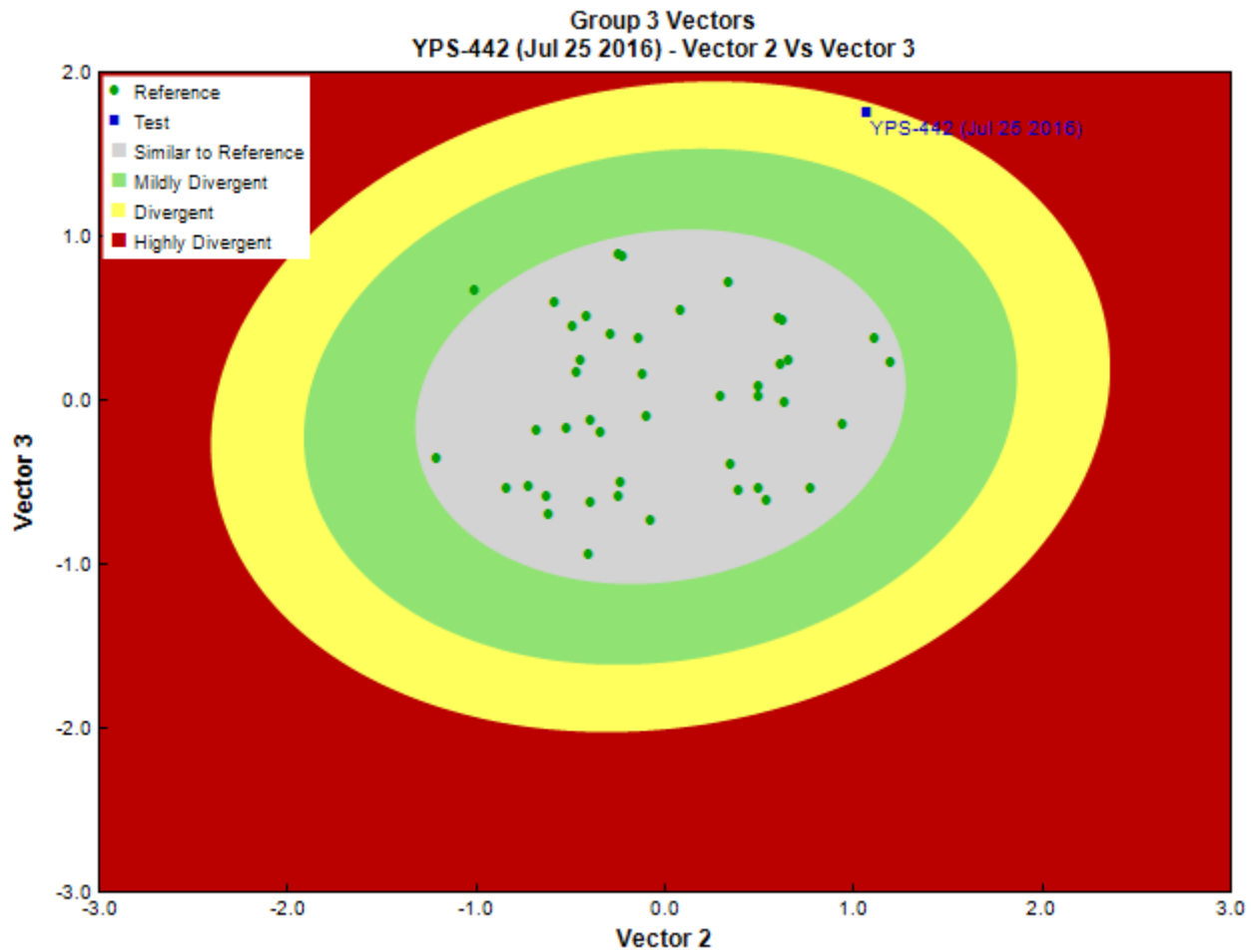


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	Sperchontidae	5	5.0
	Insecta	Diptera	Chironomidae	7	7.0
			Simuliidae	2	2.0
		Ephemeroptera	Baetidae	3	3.0
			Ephemerellidae	9	9.0
			Heptageniidae	27	27.0
		Plecoptera	Capniidae	20	20.0
			Chloroperlidae	3	3.0
			Nemouridae	3	3.0
		Trichoptera	Limnephilidae	3	3.0
			Total	82	82.0

Metrics

Name	YPS-442	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.83	0.4 \pm 0.1
Number Of Individuals		
Total Abundance	82.0	567.0 \pm 737.1
Richness		
Total No. of Taxa	10.0	10.6 \pm 6.1

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-442
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.44
Apataniidae	0%	1%	0%	3%	8%	0.01
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%	0.77
Blephariceridae	0%	0%	5%	0%	0%	0.02
Brachycentridae	0%	15%	7%	23%	8%	0.11
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.37
Ceratopogonidae	22%	28%	30%	24%	0%	0.26
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.54
Corixidae	13%	8%	0%	0%	0%	0.03
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	0%	1%	0%	1%	0%	0.00
Deuterophlebiidae	0%	3%	14%	1%	0%	0.06
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%	0.02
Empididae	9%	49%	77%	59%	54%	0.55
Enchytraeidae	0%	0%	9%	2%	0%	0.04
Ephemerellidae	26%	37%	61%	37%	31%	0.44
Ephydriidae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.03
Gammaridae	9%	2%	0%	13%	23%	0.06
Glossiphoniidae	0%	1%	0%	0%	0%	0.00

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-442
	Group 1	Group 2	Group 3	Group 4	Group 5	
Glossosomatidae	0%	14%	23%	17%	0%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.71
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%	0.03
Hydropsychidae	4%	13%	36%	8%	0%	0.19
Hydroptilidae	4%	7%	0%	6%	0%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.17
Hydryphantidae	4%	0%	9%	6%	0%	0.06
Hygrobatidae	0%	9%	25%	28%	0%	0.18
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%	0.04
Leuctridae	4%	14%	32%	10%	0%	0.18
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%	0.04
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%	0.23
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%	0.49
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%	0.04
Poduridae	0%	1%	0%	1%	0%	0.00
Psychodidae	22%	15%	11%	25%	8%	0.17
Rhyacophilidae	4%	34%	68%	25%	15%	0.39
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.77
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%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.52
Torrenticolidae	0%	0%	0%	5%	8%	0.01
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.13
Valvatidae	4%	9%	5%	11%	8%	0.07

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.21
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	1.13

RIVPACS Ratios

RIVPACS : Expected taxa P>0.70	4.04
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.24

Habitat Description

Variable	YPS-442	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	36.0	32.1 ± 15.8
Velocity-Avg (m/s)	1.18	0.58 ± 0.29
Climate		
Precip02_FEB (mm)	37.96909	36.13728 ± 23.92832
Precip03_MAR (mm)	35.14091	33.12839 ± 21.04203
Precip06_JUN (mm)	67.66818	64.67097 ± 18.68912
Precip07_JUL (mm)	86.33727	78.30006 ± 20.80864
Rainfall06_JUN (mm)	63.19546	52.72477 ± 13.45837
Temp04_APRmax (Degrees Celsius)	1.70000	1.37555 ± 3.73745
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.67948 ± 1.61907
Natl-Bryoids (%)	0.00000	0.36641 ± 0.83769
Natl-MixedwoodOpen (%)	0.00000	0.96002 ± 1.72070
Natl-WetlandHerb (%)	0.00000	0.03164 ± 0.10034
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-444
Sampling Date	Jul 25 2016
Know Your Watershed Basin	Alsek
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Ruby Ranges EcoRegion
Coordinates (decimal degrees)	61.07468 N, 137.91806 W
Altitude	2893
Local Basin Name	Jarvis River
	Alsek
Stream Order	5



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	53.5%	26.8%	10.7%	8.9%	0.1%
CABIN Assessment of YPS-444 on Jul 25, 2016	Mildly Divergent				

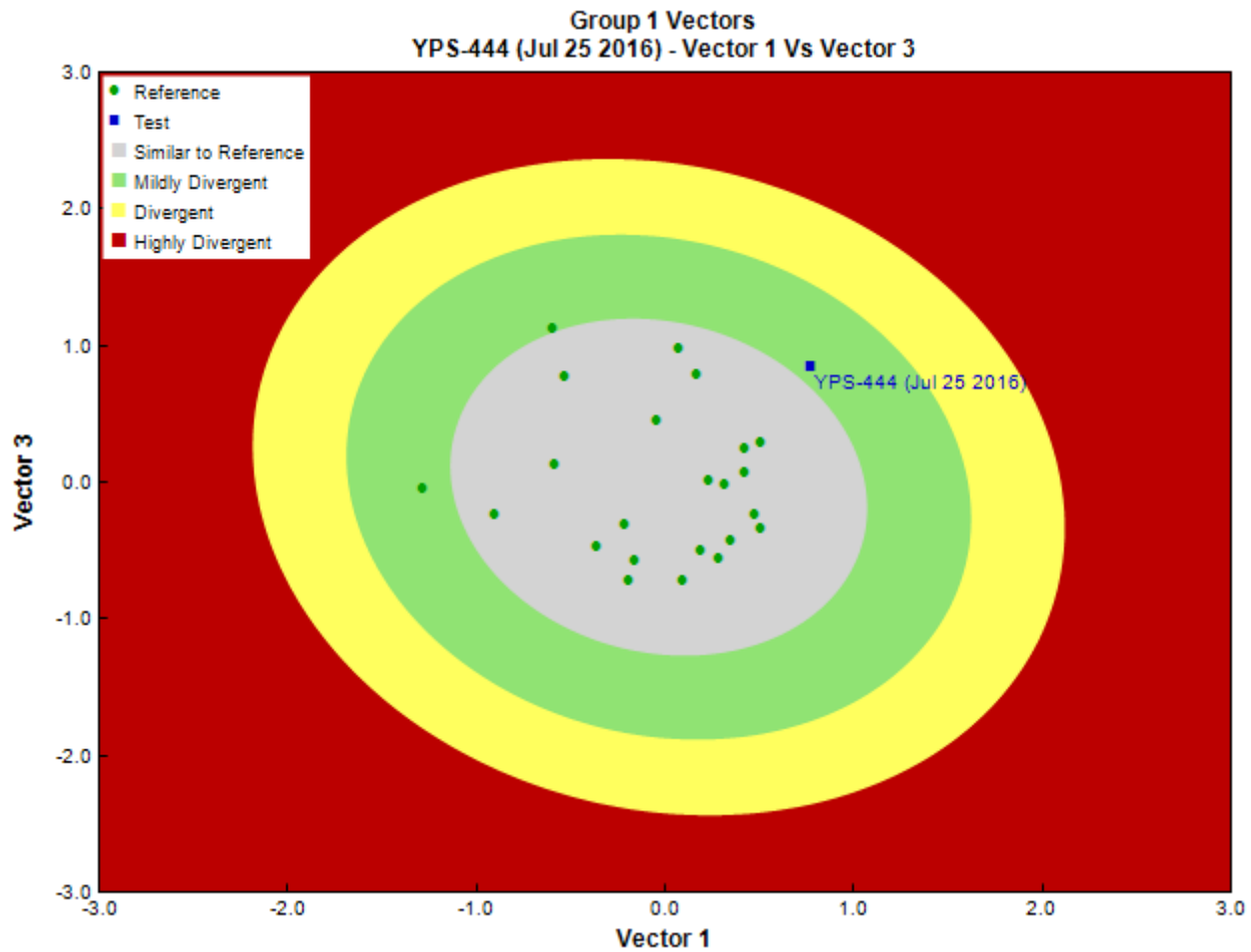


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	3	3.0
			Total	4	4.0

Metrics

Name	YPS-444	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.6	0.6 \pm 0.3
Number Of Individuals		
Total Abundance	4.0	192.2 \pm 127.1
Richness		
Total No. of Taxa	2.0	10.1 \pm 4.5

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-444
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.26
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%	0.56
Blephariceridae	0%	0%	5%	0%	0%	0.00
Brachycentridae	0%	15%	7%	23%	8%	0.07
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.20
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.95
Chloroperlidae	22%	43%	77%	50%	38%	0.36
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%	0.02
Dixidae	0%	5%	2%	1%	0%	0.02
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%	0.31
Enchytraeidae	0%	0%	9%	2%	0%	0.01
Ephemerellidae	26%	37%	61%	37%	31%	0.34
Ephydriidae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.01
Gammaridae	9%	2%	0%	13%	23%	0.06
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.08
Helophoridae	0%	0%	2%	0%	0%	0.00
Heptageniidae	17%	63%	95%	76%	85%	0.43
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%	0.06
Hydropsychidae	4%	13%	36%	8%	0%	0.11

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-444
	Group 1	Group 2	Group 3	Group 4	Group 5	
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.08
Hydryphantidae	4%	0%	9%	6%	0%	0.04
Hygrobatidae	0%	9%	25%	28%	0%	0.08
Isotomidae	9%	5%	2%	1%	0%	0.06
Lebertiidae	13%	20%	52%	54%	23%	0.23
Lepidostomatidae	0%	1%	5%	4%	8%	0.01
Leptoceridae	0%	1%	0%	2%	0%	0.00
Leptophlebiidae	4%	7%	0%	7%	8%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.10
Limnephilidae	13%	48%	43%	46%	23%	0.29
Limnesiidae	0%	1%	2%	6%	8%	0.01
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.27
Lymnaeidae	13%	9%	0%	3%	0%	0.10
Metretopodidae	0%	1%	0%	1%	0%	0.00
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.02
Naididae	35%	43%	9%	22%	31%	0.33
Nemouridae	39%	74%	100%	81%	100%	0.59
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%	0.29
Phryganeidae	0%	1%	0%	0%	0%	0.00
Physidae	4%	1%	2%	4%	0%	0.03
Pionidae	0%	0%	2%	2%	0%	0.00
Pisidiidae	17%	9%	2%	7%	8%	0.13
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%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.21
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.59
Sperchontidae	22%	49%	68%	68%	31%	0.38
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%	0.43
Torrenticolidae	0%	0%	0%	5%	8%	0.00
Tubificidae	4%	1%	9%	13%	0%	0.05
Uenoidae	0%	8%	30%	1%	0%	0.05
Valvatidae	4%	9%	5%	11%	8%	0.06

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	2.69
RIVPACS : Observed taxa P>0.50	1.00
RIVPACS : O:E (p > 0.5)	0.37
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-444	Predicted Group Reference Mean \pm SD
Bedrock Geology		

Habitat Description

Variable	YPS-444	Predicted Group Reference Mean \pmSD
Channel		
Depth-Avg (cm)	75.0	36.5 \pm 24.3
Velocity-Avg (m/s)	0.50	0.42 \pm 0.29
Climate		
Precip02_FEB (mm)	37.28222	27.73943 \pm 9.10561
Precip03_MAR (mm)	34.31444	25.54674 \pm 9.71520
Precip06_JUN (mm)	67.19389	49.78117 \pm 15.10067
Precip07_JUL (mm)	85.67778	63.45366 \pm 19.76560
Rainfall06_JUN (mm)	62.65445	45.78194 \pm 13.48156
Temp04_APRmax (Degrees Celsius)	1.94167	-0.26448 \pm 3.57165
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.19525 \pm 0.41187
Natl-Bryoids (%)	0.00000	0.16846 \pm 0.41890
Natl-MixedwoodOpen (%)	0.00000	2.45662 \pm 5.01153
Natl-WetlandHerb (%)	0.00000	0.22137 \pm 0.64189
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-481
Sampling Date	Jul 27 2016
Know Your Watershed Basin	Central Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.61597 N, 138.67836 W
Altitude	1759
Local Basin Name	Australia Creek
	Indian River
Stream Order	4



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	6.2%	25.0%	19.8%	43.5%	5.5%
CABIN Assessment of YPS-481 on Jul 27, 2016	Similar to Reference				

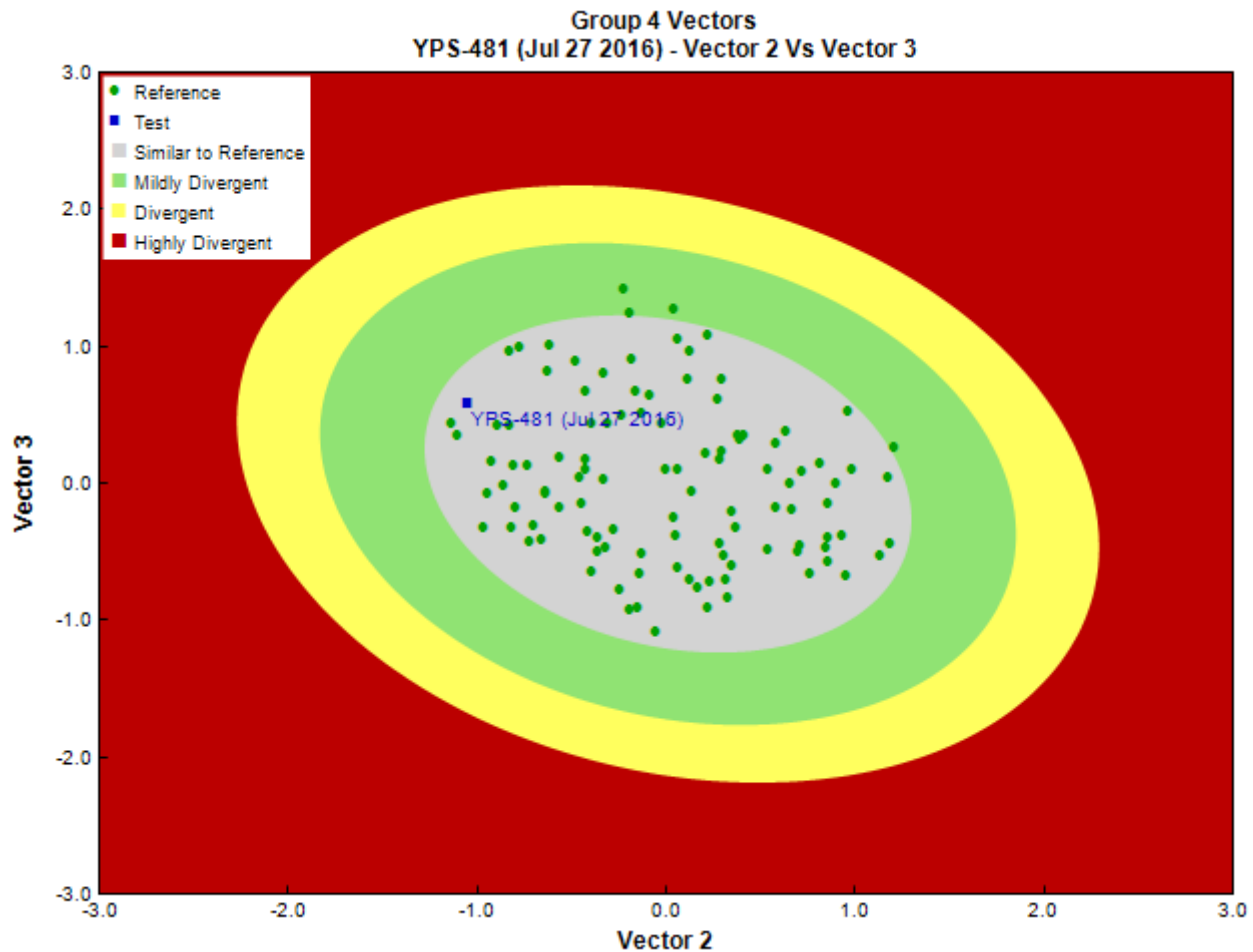


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	44/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count	
Arthropoda	Arachnida	Sarcoptiformes		2	4.5	
		Trombidiformes	Hygrobatidae	1	2.3	
			Lebertiidae	14	31.8	
			Sperchontidae	1	2.3	
	Insecta	Diptera		1	2.3	
			Ceratopogonidae	1	2.3	
			Chironomidae	78	177.2	
			Empididae	13	29.6	
			Psychodidae	2	4.5	
			Simuliidae	144	327.3	
			Tipulidae	3	6.8	
			Ephemeroptera	Baetidae	14	31.8
				Ephemerellidae	20	45.5
				Heptageniidae	6	13.6
			Plecoptera	Chloroperlidae	5	11.3
				Nemouridae	9	20.5
				Perlodidae	7	15.9
			Trichoptera	Brachycentridae	3	6.8
	Glossosomatidae	1		2.3		
	Rhyacophilidae	8		18.2		
	Total	333		756.8		

Metrics

Name	YPS-481	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.61	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	756.8	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	18.0	13.0 \pm 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-481
	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%	0.02
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%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.51
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

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-481
	Group 1	Group 2	Group 3	Group 4	Group 5	
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%	0.57
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.41
Ephydriidae	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%	0.15
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%	0.19
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%	0.41
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%	0.15
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%	0.26
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%	0.04
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%	0.01
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%	0.54
Torrenticolidae	0%	0%	0%	5%	8%	0.02

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-481
	Group 1	Group 2	Group 3	Group 4	Group 5	
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	6.42
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-481	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	46.4	29.8 \pm 14.6
Velocity-Avg (m/s)	0.70	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	33.19350	29.33781 \pm 11.78911
Precip03_MAR (mm)	32.08050	27.45595 \pm 11.91497
Precip06_JUN (mm)	57.79700	53.48783 \pm 18.48854
Precip07_JUL (mm)	71.08250	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	54.39850	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-3.18700	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.01437	0.37555 \pm 1.31381
Natl-Bryoids (%)	1.43359	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	0.03646	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-534
Sampling Date	Jul 28 2016
Know Your Watershed Basin	Upper Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.01108 N, 139.36092 W
Altitude	1483
Local Basin Name	Kirkman Creek
	Yukon River South
Stream Order	3



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	24.4%	23.0%	9.3%	41.5%	1.8%
CABIN Assessment of YPS-534 on Jul 28, 2016	Mildly Divergent				

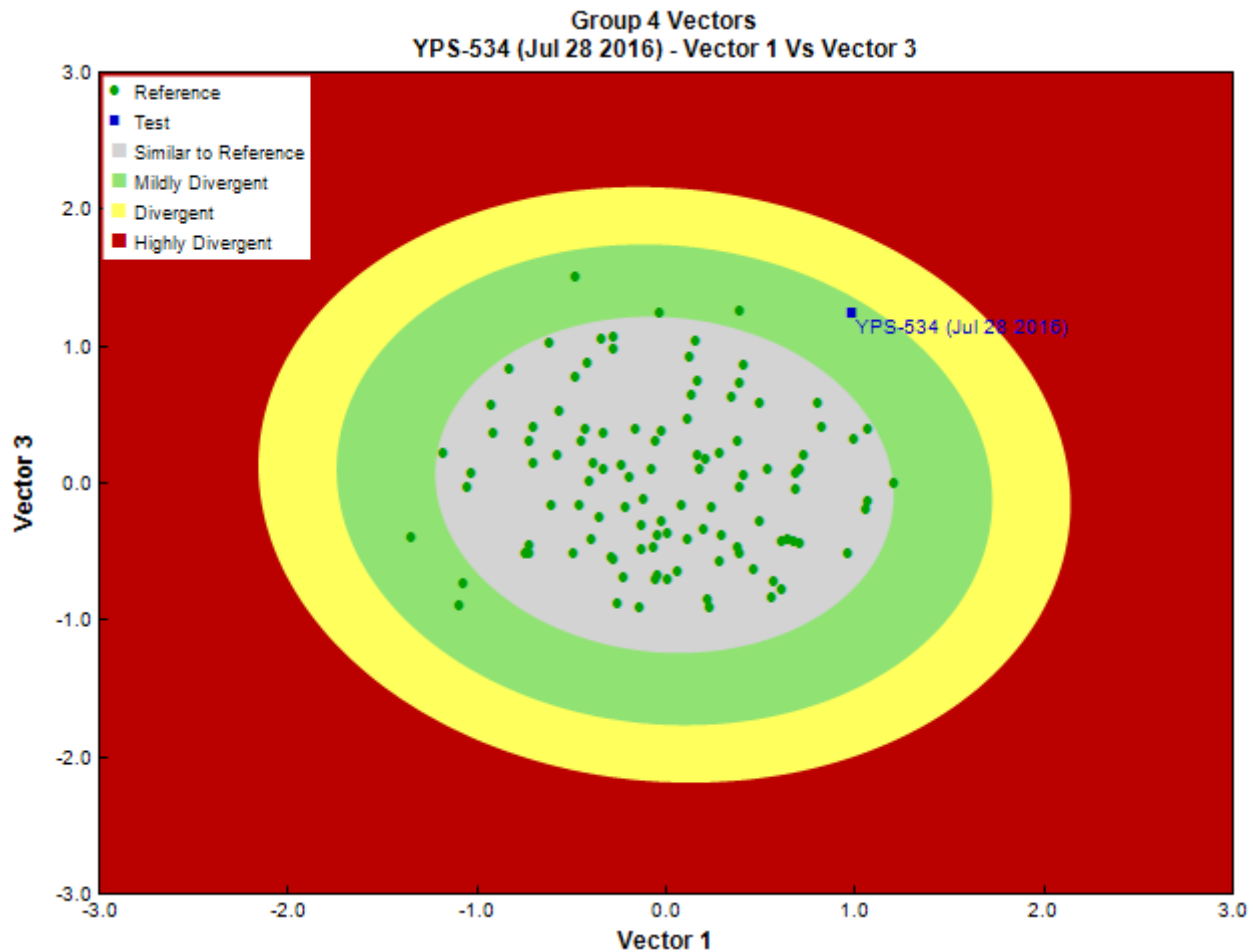


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	Sperchontidae	1	1.0
	Collembola	Collembola	Isotomidae	3	3.0
	Insecta	Diptera		1	1.0
			Chironomidae	82	82.0
			Simuliidae	1	1.0
			Tipulidae	2	2.0
		Ephemeroptera	Baetidae	356	356.0
			Heptageniidae	1	1.0
		Plecoptera	Capniidae	1	1.0
			Nemouridae	7	7.0
			Perlodidae	17	17.0
			Taeniopterygidae	3	3.0
		Trichoptera	Glossosomatidae	21	21.0
			Limnephilidae	8	8.0
	Malacostraca	Amphipoda	Crangonyctidae	1	1.0
			Total	505	505.0

Metrics

Name	YPS-534	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.71	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	505.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	14.0	13.0 \pm 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-534
	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%	0.01
Baetidae	30%	85%	82%	94%	100%	0.75
Blephariceridae	0%	0%	5%	0%	0%	0.00
Brachycentridae	0%	15%	7%	23%	8%	0.14
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%	0.02
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%	0.03
Empididae	9%	49%	77%	59%	54%	0.46
Enchytraeidae	0%	0%	9%	2%	0%	0.02

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-534
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ephemerellidae	26%	37%	61%	37%	31%	0.36
Ephydriidae	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%	0.05
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%	0.16
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%	0.38
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%	0.00
Muscidae	0%	4%	7%	7%	0%	0.05
Naididae	35%	43%	9%	22%	31%	0.29
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%	0.39
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%	0.05
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%	0.73
Sperchontidae	22%	49%	68%	68%	31%	0.52
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%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.05
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	4.81
RIVPACS : Observed taxa P>0.50	7.00
RIVPACS : O:E (p > 0.5)	1.46
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-534	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	25.0	29.8 \pm 14.6
Velocity-Avg (m/s)	0.47	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	34.30125	29.33781 \pm 11.78911
Precip03_MAR (mm)	33.31250	27.45595 \pm 11.91497
Precip06_JUN (mm)	53.98625	53.48783 \pm 18.48854
Precip07_JUL (mm)	70.30375	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	50.92625	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-1.29750	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.53403	0.37555 \pm 1.31381
Natl-Bryoids (%)	0.48838	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	1.45042	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-540
Sampling Date	Jul 26 2016
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

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	18.4%	15.1%	21.0%	42.1%	3.4%
CABIN Assessment of YPS-540 on Jul 26, 2016	Mildly Divergent				

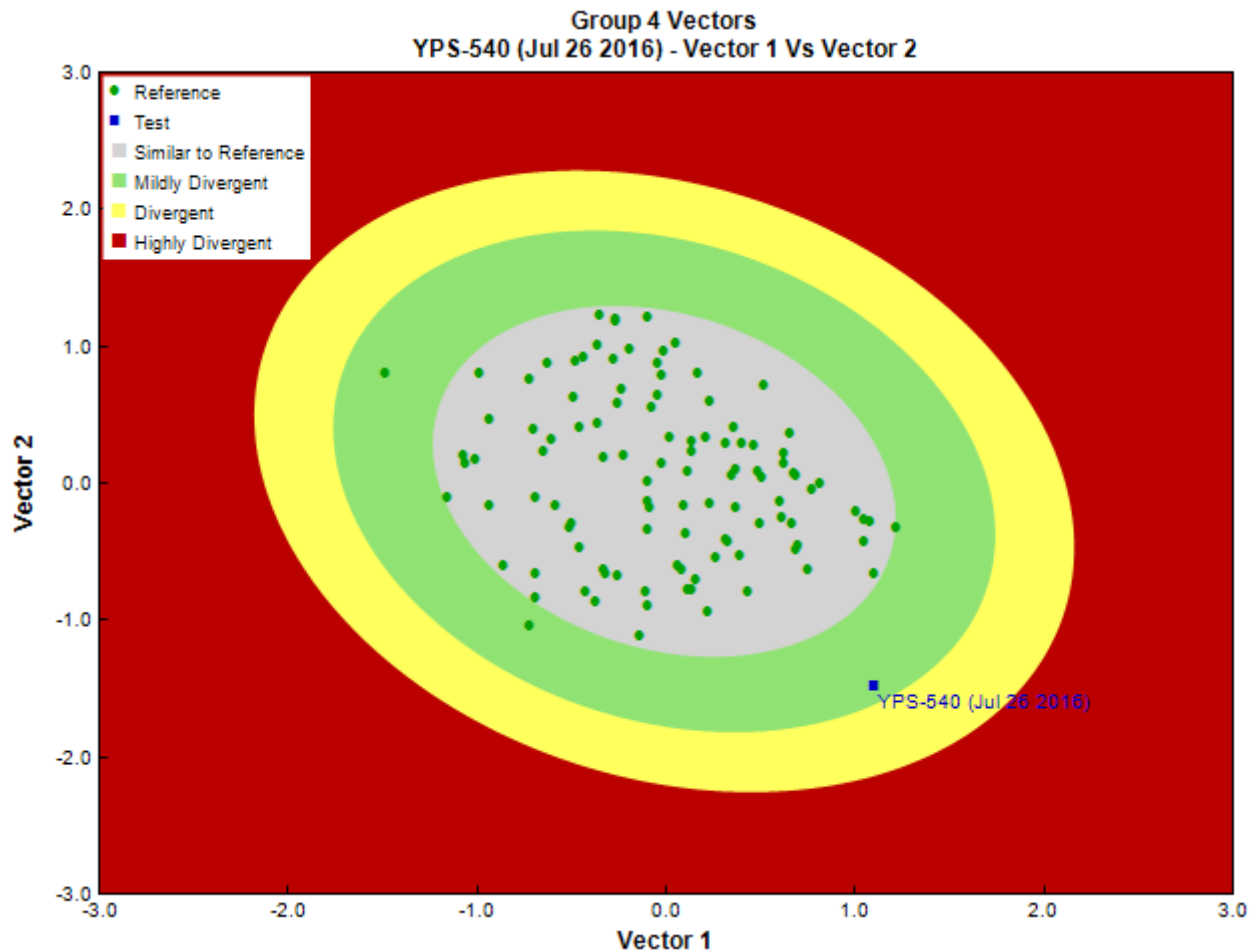


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	29	29.0
			Simuliidae	27	27.0
			Tipulidae	4	4.0
		Ephemeroptera	Baetidae	70	70.0
			Ephemerellidae	2	2.0
			Heptageniidae	53	53.0
		Plecoptera	Capniidae	5	5.0
			Chloroperlidae	24	24.0
			Nemouridae	4	4.0
			Perlodidae	1	1.0
		Trichoptera	Apataniidae	1	1.0
			Limnephilidae	3	3.0
	Malacostraca	Amphipoda	Crangonyctidae	1	1.0
			Total	226	226.0

Metrics

Name	YPS-540	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.66	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	226.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	14.0	13.0 \pm 4.4

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%	0.39
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%	0.78
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%	0.38
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.49
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%	0.04
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%	0.52
Enchytraeidae	0%	0%	9%	2%	0%	0.03

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	
Ephemerellidae	26%	37%	61%	37%	31%	0.40
Ephydriidae	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%	0.14
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%	0.18
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.18
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%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.14
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%	0.34
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%	0.25
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%	0.00
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%	0.05
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%	0.76
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%	0.01
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%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.58
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	1.08
RIVPACS : Expected taxa P>0.70	3.30
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	1.21

Habitat Description

Variable	YPS-540	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	30.4	29.8 \pm 14.6
Velocity-Avg (m/s)	1.32	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	33.30545	29.33781 \pm 11.78911
Precip03_MAR (mm)	32.21545	27.45595 \pm 11.91497
Precip06_JUN (mm)	52.86727	53.48783 \pm 18.48854
Precip07_JUL (mm)	68.61273	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	51.25636	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-3.63545	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.01437	0.37555 \pm 1.31381
Natl-Bryoids (%)	0.00000	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-544
Sampling Date	Jul 25 2016
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

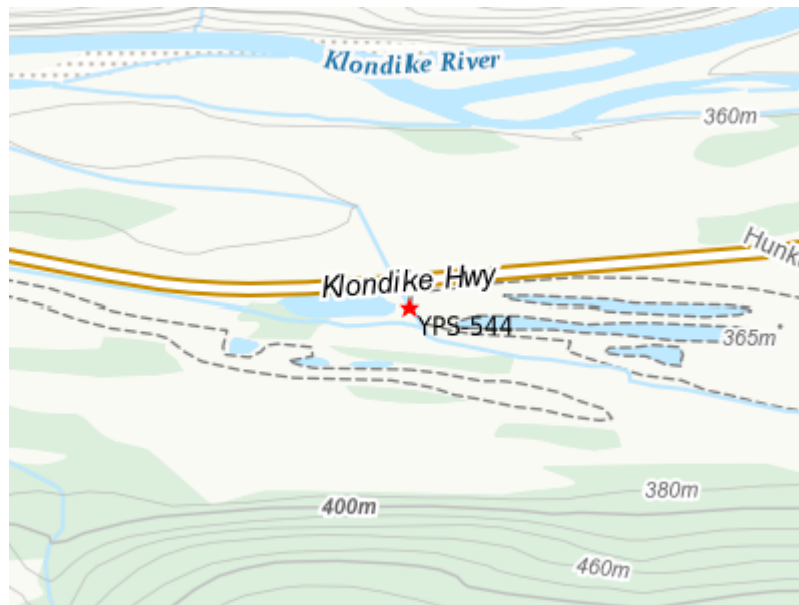


Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	20.7%	35.0%	12.1%	31.5%	0.8%
CABIN Assessment of YPS-544 on Jul 25, 2016	Similar to Reference				

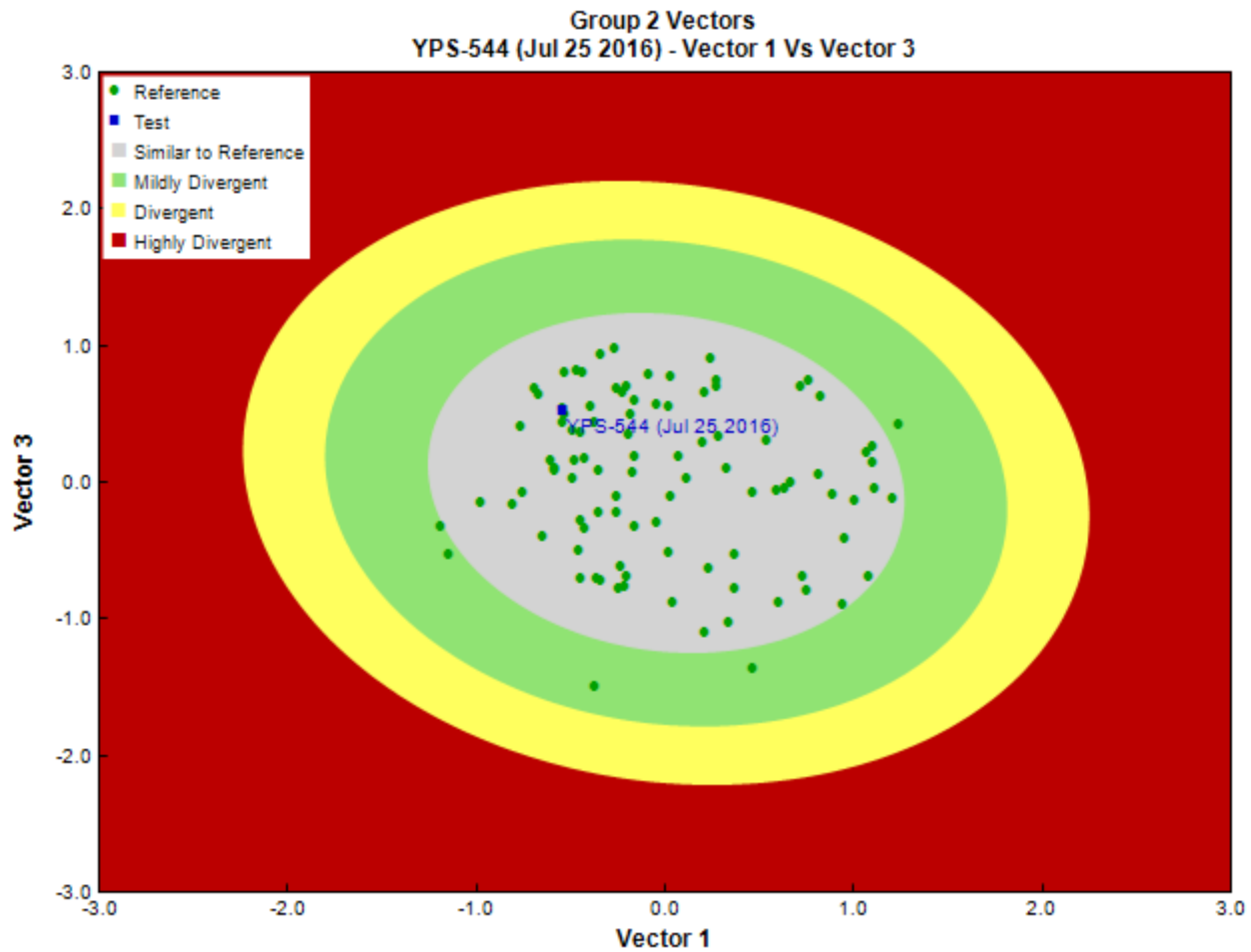


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	5	5.0
Arthropoda	Arachnida	Trombidiformes	Lebertiidae	2	2.0
			Sperchontidae	3	3.0
	Collembola	Collembola		1	1.0
	Insecta	Coleoptera		1	1.0
			Dytiscidae	2	2.0
		Diptera	Ceratopogonidae	1	1.0
			Chironomidae	157	157.0
			Empididae	2	2.0
			Muscidae	1	1.0
			Stratiomyidae	1	1.0
			Tipulidae	9	9.0
		Ephemeroptera	Baetidae	74	74.0
			Ephemerellidae	1	1.0
		Plecoptera	Perlodidae	3	3.0
		Trichoptera	Brachycentridae	4	4.0
			Limnephilidae	3	3.0
			Total	270	270.0

Metrics

Name	YPS-544	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.47	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	270.0	265.3 \pm 160.6
Richness		
Total No. of Taxa	15.0	11.5 \pm 4.3

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%	0.36
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%	0.76
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%	0.32
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.45
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%	0.10
Elmidae	4%	3%	0%	2%	0%	0.03

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	
Empididae	9%	49%	77%	59%	54%	0.47
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.38
Ephydriidae	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%	0.62
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%	0.13
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%	0.15
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
Leuctridae	4%	14%	32%	10%	0%	0.13
Limnephilidae	13%	48%	43%	46%	23%	0.39
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%	0.05
Naididae	35%	43%	9%	22%	31%	0.31
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%	0.01
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%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.29
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.74
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%	0.50
Torrenticolidae	0%	0%	0%	5%	8%	0.02
Tubificidae	4%	1%	9%	13%	0%	0.06
Uenoidae	0%	8%	30%	1%	0%	0.07
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	4.84
RIVPACS : Observed taxa P>0.50	4.00
RIVPACS : O:E (p > 0.5)	0.83
RIVPACS : Expected taxa P>0.70	3.21
RIVPACS : Observed taxa P>0.70	2.00
RIVPACS : O:E (p > 0.7)	0.62

Habitat Description

Variable	YPS-544	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	47.0	31.4 \pm 19.7
Velocity-Avg (m/s)	0.62	0.43 \pm 0.26
Climate		
Precip02_FEB (mm)	32.50083	28.51137 \pm 7.47006
Precip03_MAR (mm)	31.01083	26.48398 \pm 7.72519
Precip06_JUN (mm)	53.96000	57.13713 \pm 13.58676
Precip07_JUL (mm)	67.06000	73.01094 \pm 17.73562
Rainfall06_JUN (mm)	51.47500	49.31793 \pm 11.37423
Temp04_APRmax (Degrees Celsius)	-3.61583	0.93101 \pm 4.20058
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.14237 \pm 0.34395
Natl-Bryoids (%)	0.44910	0.31369 \pm 0.60856
Natl-MixedwoodOpen (%)	0.23290	0.75166 \pm 1.44254
Natl-WetlandHerb (%)	0.00000	0.11375 \pm 0.31492
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-547
Sampling Date	Jul 27 2016
Know Your Watershed Basin	Central Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.61737 N, 138.70642 W
Altitude	1660
Local Basin Name	Dominion Creek
	Indian River
Stream Order	5



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 21, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	11.2%	26.2%	20.7%	38.5%	3.4%
CABIN Assessment of YPS-547 on Jul 27, 2016	Mildly Divergent				

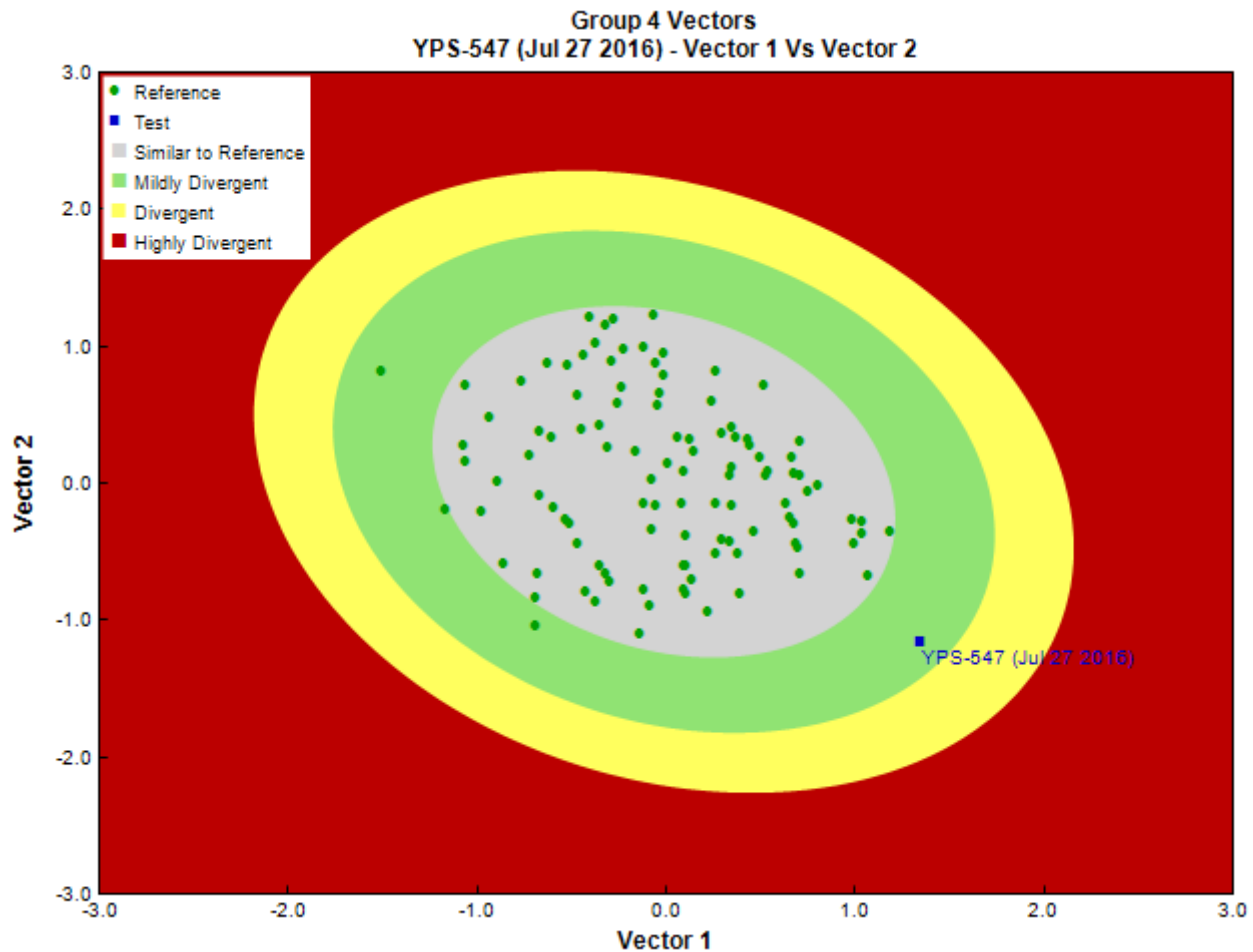


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	5	5.0	
		Tubificida	Naididae	1	1.0	
Arthropoda	Arachnida	Trombidiformes	Hygrobatae	3	3.0	
			Lebertiidae	22	22.0	
			Sperchontidae	2	2.0	
	Insecta	Diptera			2	2.0
			Ceratopogonidae	1	1.0	
			Chironomidae	63	63.0	
			Empididae	12	12.0	
			Simuliidae	6	6.0	
			Tabanidae	1	1.0	
			Tipulidae	6	6.0	
			Ephemeroptera	Baetidae	53	53.0
				Ephemerellidae	5	5.0
			Plecoptera	Chloroperlidae	1	1.0
				Nemouridae	2	2.0
				Perlodidae	2	2.0
			Trichoptera	Apataniidae	6	6.0
				Brachycentridae	6	6.0
	Hydropsychidae	4	4.0			
	Limnephilidae	2	2.0			
	Total	205	205.0			

Metrics

Name	YPS-547	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.74	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	205.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	20.0	13.0 \pm 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-547
	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%	0.02
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%	0.38
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%	0.04

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-547
	Group 1	Group 2	Group 3	Group 4	Group 5	
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
Ephydriidae	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%	0.70
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%	0.03
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%	0.18
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%	0.05
Leuctridae	4%	14%	32%	10%	0%	0.15
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%	0.33
Lymnaeidae	13%	9%	0%	3%	0%	0.05
Metreopodidae	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%	0.79
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%	0.46
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%	0.34
Scathophagidae	0%	2%	0%	0%	0%	0.01
Simuliidae	39%	78%	86%	87%	77%	0.79
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%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.53

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-547
	Group 1	Group 2	Group 3	Group 4	Group 5	
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	6.24
RIVPACS : Observed taxa P>0.50	8.00
RIVPACS : O:E (p > 0.5)	1.28
RIVPACS : Expected taxa P>0.70	4.09
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	0.98

Habitat Description

Variable	YPS-547	Predicted Group Reference Mean \pm SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	70.0	29.8 \pm 14.6
Velocity-Avg (m/s)	0.80	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	33.56042	29.33781 \pm 11.78911
Precip03_MAR (mm)	32.38688	27.45595 \pm 11.91497
Precip06_JUN (mm)	57.38250	53.48783 \pm 18.48854
Precip07_JUL (mm)	70.81812	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	54.25813	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-3.49667	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00925	0.37555 \pm 1.31381
Natl-Bryoids (%)	1.21600	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	0.04965	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-566
Sampling Date	Jul 26 2016
Know Your Watershed Basin	White
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone St.Elias Mountains EcoRegion
Coordinates (decimal degrees)	61.42436 N, 139.55238 W
Altitude	3648
Local Basin Name	Maple Creek
	White River
Stream Order	3



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	6.1%	9.9%	30.1%	27.3%	26.6%
CABIN Assessment of YPS-566 on Jul 26, 2016	Similar to Reference				

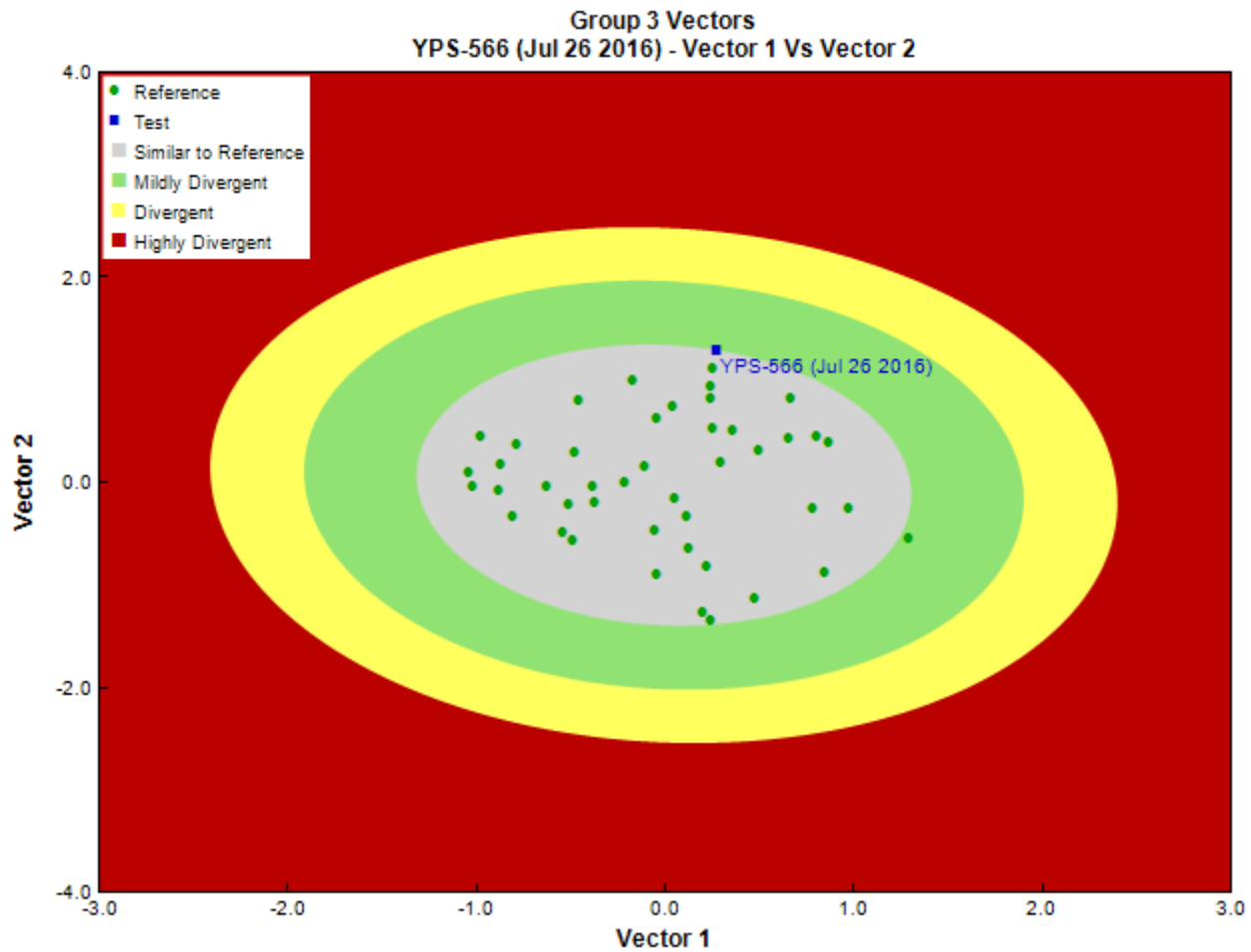


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	14/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Insecta	Diptera	Chironomidae	29	207.1
			Empididae	1	7.1
			Simuliidae	67	478.6
			Tipulidae	2	14.3
		Ephemeroptera	Baetidae	102	728.5
			Heptageniidae	115	821.4
		Plecoptera	Chloroperlidae	4	28.6
			Nemouridae	7	50.0
		Trichoptera	Limnephilidae	2	14.3
			Total	329	2,349.9

Metrics

Name	YPS-566	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.68	0.4 \pm 0.1
Number Of Individuals		
Total Abundance	2350.0	567.0 \pm 737.1
Richness		
Total No. of Taxa	9.0	10.6 \pm 6.1

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-566
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.40
Apataniidae	0%	1%	0%	3%	8%	0.03
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%	0.87
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%	0.50
Ceratopogonidae	22%	28%	30%	24%	0%	0.20
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.53
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%	0.01
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%	0.59
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.42
Ephydriidae	0%	0%	2%	0%	0%	0.01
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%	0.13

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-566
	Group 1	Group 2	Group 3	Group 4	Group 5	
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%	0.15
Hydroptilidae	4%	7%	0%	6%	0%	0.03
Hydrozetidae	4%	3%	20%	28%	31%	0.22
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.16
Isotomidae	9%	5%	2%	1%	0%	0.02
Lebertiidae	13%	20%	52%	54%	23%	0.39
Lepidostomatidae	0%	1%	5%	4%	8%	0.05
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%	0.37
Limnesiidae	0%	1%	2%	6%	8%	0.04
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%	0.04
Naididae	35%	43%	9%	22%	31%	0.23
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%	0.55
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%	0.15
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%	0.53
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%	0.06
Tipulidae	35%	47%	55%	62%	46%	0.52
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	7.07
RIVPACS : Observed taxa P>0.50	8.00
RIVPACS : O:E (p > 0.5)	1.13
RIVPACS : Expected taxa P>0.70	4.35

RIVPACS Ratios

RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.15

Habitat Description

Variable	YPS-566	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	21.4	32.1 ± 15.8
Velocity-Avg (m/s)	0.80	0.58 ± 0.29
Climate		
Precip02_FEB (mm)	33.44600	36.13728 ± 23.92832
Precip03_MAR (mm)	29.92400	33.12839 ± 21.04203
Precip06_JUN (mm)	54.68000	64.67097 ± 18.68912
Precip07_JUL (mm)	70.80800	78.30006 ± 20.80864
Rainfall06_JUN (mm)	52.15600	52.72477 ± 13.45837
Temp04_APRmax (Degrees Celsius)	4.63800	1.37555 ± 3.73745
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.08225	0.67948 ± 1.61907
Natl-Bryoids (%)	3.51398	0.36641 ± 0.83769
Natl-MixedwoodOpen (%)	0.02320	0.96002 ± 1.72070
Natl-WetlandHerb (%)	0.00000	0.03164 ± 0.10034
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-568 [Q2]
Sampling Date	Jul 26 2016
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

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	4.5%	7.7%	24.3%	24.8%	38.7%
CABIN Assessment of YPS-568 on Jul 26, 2016	Highly Divergent				

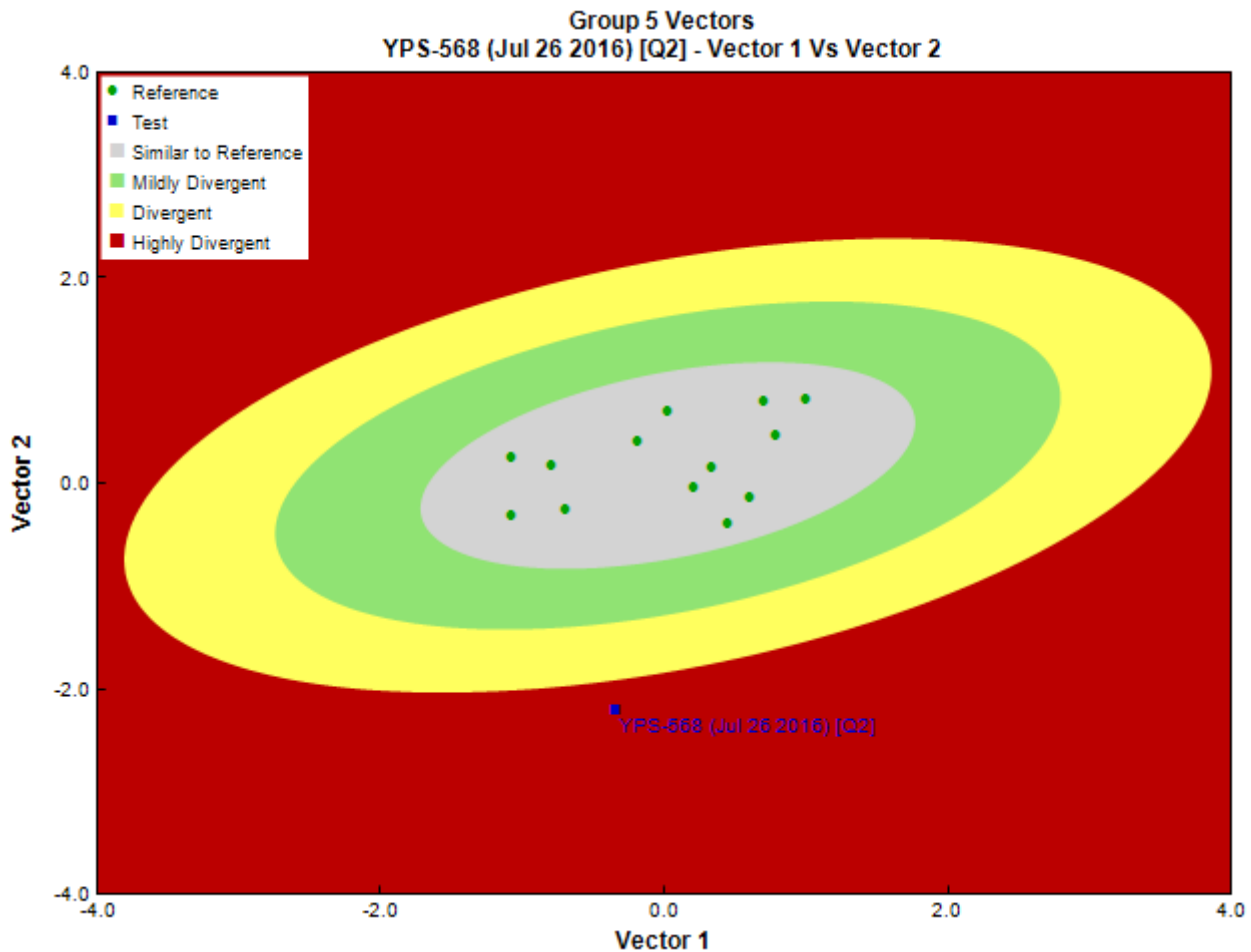


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	Sperchontidae	1	1.0
	Insecta	Diptera	Ceratopogonidae	1	1.0
			Chironomidae	28	28.0
			Muscidae	2	2.0
			Simuliidae	6	6.0
		Ephemeroptera	Baetidae	18	18.0
			Heptageniidae	5	5.0
		Plecoptera	Capniidae	16	16.0
			Nemouridae	197	197.0
			Total	274	274.0

Metrics

Name	YPS-568	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.95	0.4 \pm 0.2
Number Of Individuals		
Total Abundance	274.0	12539.4 \pm 5669.6
Richness		
Total No. of Taxa	9.0	11.3 \pm 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%	0.36
Apataniidae	0%	1%	0%	3%	8%	0.04
Arrenuridae	0%	0%	2%	0%	0%	0.01
Athericidae	0%	1%	0%	0%	0%	0.00
Aturidae	0%	0%	5%	2%	8%	0.05
Baetidae	30%	85%	82%	94%	100%	0.90
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%	0.55
Ceratopogonidae	22%	28%	30%	24%	0%	0.16
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.50
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%	0.05
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
Ephydriidae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.05
Gammaridae	9%	2%	0%	13%	23%	0.13
Glossiphoniidae	0%	1%	0%	0%	0%	0.00
Glossosomatidae	0%	14%	23%	17%	0%	0.11

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	
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.80
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%	0.01
Hydropsychidae	4%	13%	36%	8%	0%	0.12
Hydroptilidae	4%	7%	0%	6%	0%	0.02
Hydrozetidae	4%	3%	20%	28%	31%	0.24
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
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%	0.35
Limnesiidae	0%	1%	2%	6%	8%	0.05
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.30
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%	0.24
Nemouridae	39%	74%	100%	81%	100%	0.91
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%	0.01
Planorbidae	13%	4%	2%	2%	8%	0.05
Poduridae	0%	1%	0%	1%	0%	0.00
Psychodidae	22%	15%	11%	25%	8%	0.14
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%	0.50
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%	0.08
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	7.12
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	0.84
RIVPACS : Expected taxa P>0.70	4.40

RIVPACS Ratios

RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.14

Habitat Description

Variable	YPS-568	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	22.0	24.0 \pm 13.5
Velocity-Avg (m/s)	0.68	0.69 \pm 0.41
Climate		
Precip02_FEB (mm)	35.27400	23.64703 \pm 9.87067
Precip03_MAR (mm)	31.85600	21.43418 \pm 10.28637
Precip06_JUN (mm)	57.17800	42.70673 \pm 20.01009
Precip07_JUL (mm)	73.73600	53.48428 \pm 23.82521
Rainfall06_JUN (mm)	54.68800	39.58541 \pm 18.10735
Temp04_APRmax (Degrees Celsius)	3.90600	-1.98555 \pm 4.49028
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.03629	0.10660 \pm 0.30602
Natl-Bryoids (%)	3.09908	1.00805 \pm 2.53070
Natl-MixedwoodOpen (%)	0.00000	0.13901 \pm 0.32395
Natl-WetlandHerb (%)	0.00000	0.03267 \pm 0.07770
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-569
Sampling Date	Jul 25 2016
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

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	5.2%	17.5%	20.1%	48.8%	8.5%
CABIN Assessment of YPS-569 on Jul 25, 2016	Mildly Divergent				

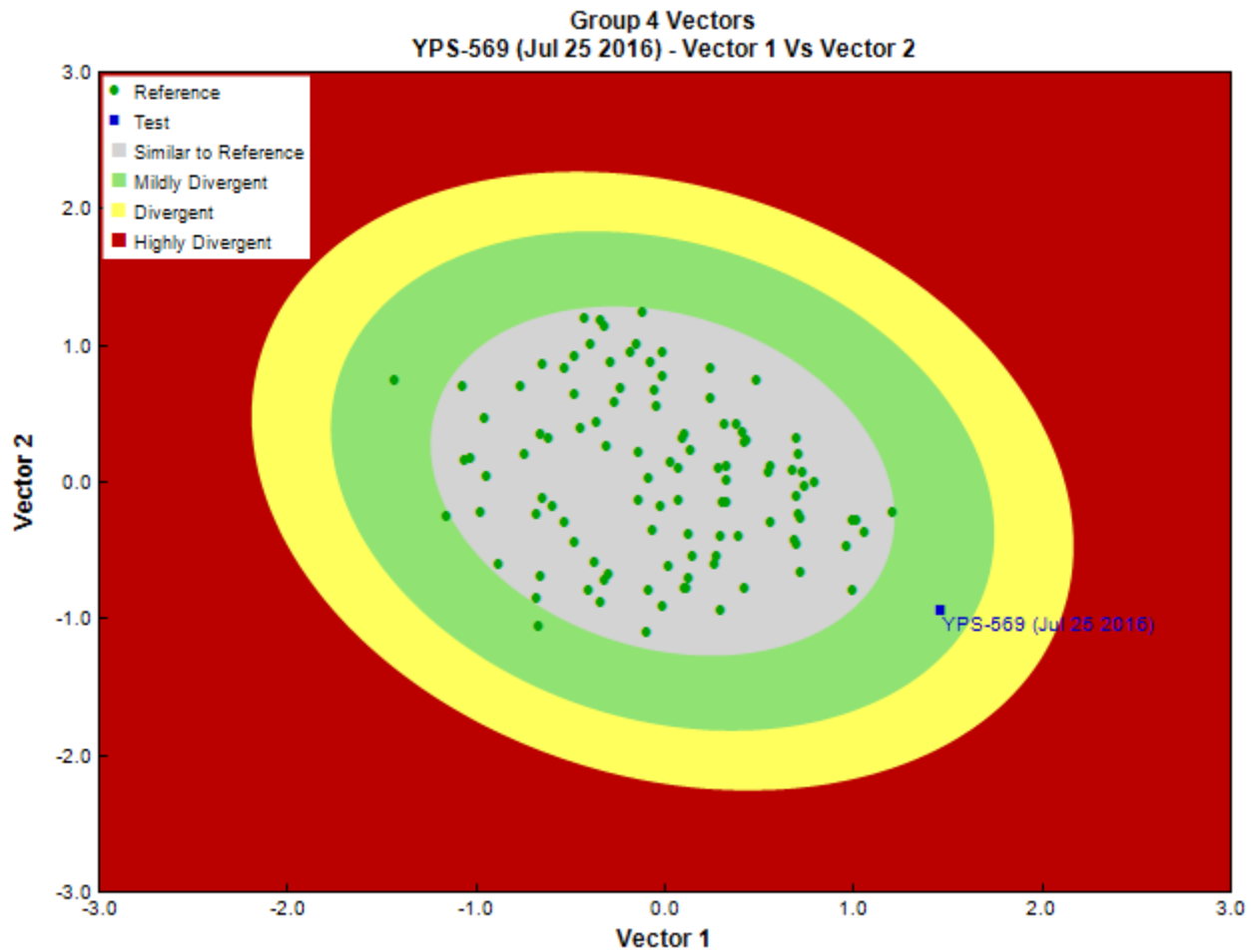


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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		1	1.0
	Insecta	Diptera		4	4.0
			Ceratopogonidae	3	3.0
			Chironomidae	147	147.0
			Muscidae	1	1.0
			Psychodidae	2	2.0
			Tipulidae	1	1.0
		Ephemeroptera	Baetidae	7	7.0
		Plecoptera	Nemouridae	1	1.0
		Trichoptera	Limnephilidae	2	2.0
			Total	172	172.0

Metrics

Name	YPS-569	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.7	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	172.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	9.0	13.0 \pm 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%	0.02
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%	0.24
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%	0.58
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.41
Ephydriidae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.04
Gammaridae	9%	2%	0%	13%	23%	0.09

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	
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%	0.14
Hydroptilidae	4%	7%	0%	6%	0%	0.05
Hydrozetidae	4%	3%	20%	28%	31%	0.21
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%	0.34
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%	0.25
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%	0.50
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%	0.03
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%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.51
RIVPACS : Observed taxa P>0.50	4.00

RIVPACS Ratios

RIVPACS : O:E (p > 0.5)	0.61
RIVPACS : Expected taxa P>0.70	4.27
RIVPACS : Observed taxa P>0.70	3.00
RIVPACS : O:E (p > 0.7)	0.70

Habitat Description

Variable	YPS-569	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	29.6	29.8 ± 14.6
Velocity-Avg (m/s)	0.96	0.52 ± 0.32
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		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-570
Sampling Date	Jul 28 2016
Know Your Watershed Basin	White
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	62.91865 N, 139.95653 W
Altitude	1433
Local Basin Name	Ballarat Creek
	White River
Stream Order	4



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	19.3%	19.2%	14.4%	45.6%	1.5%
CABIN Assessment of YPS-570 on Jul 28, 2016	Mildly Divergent				

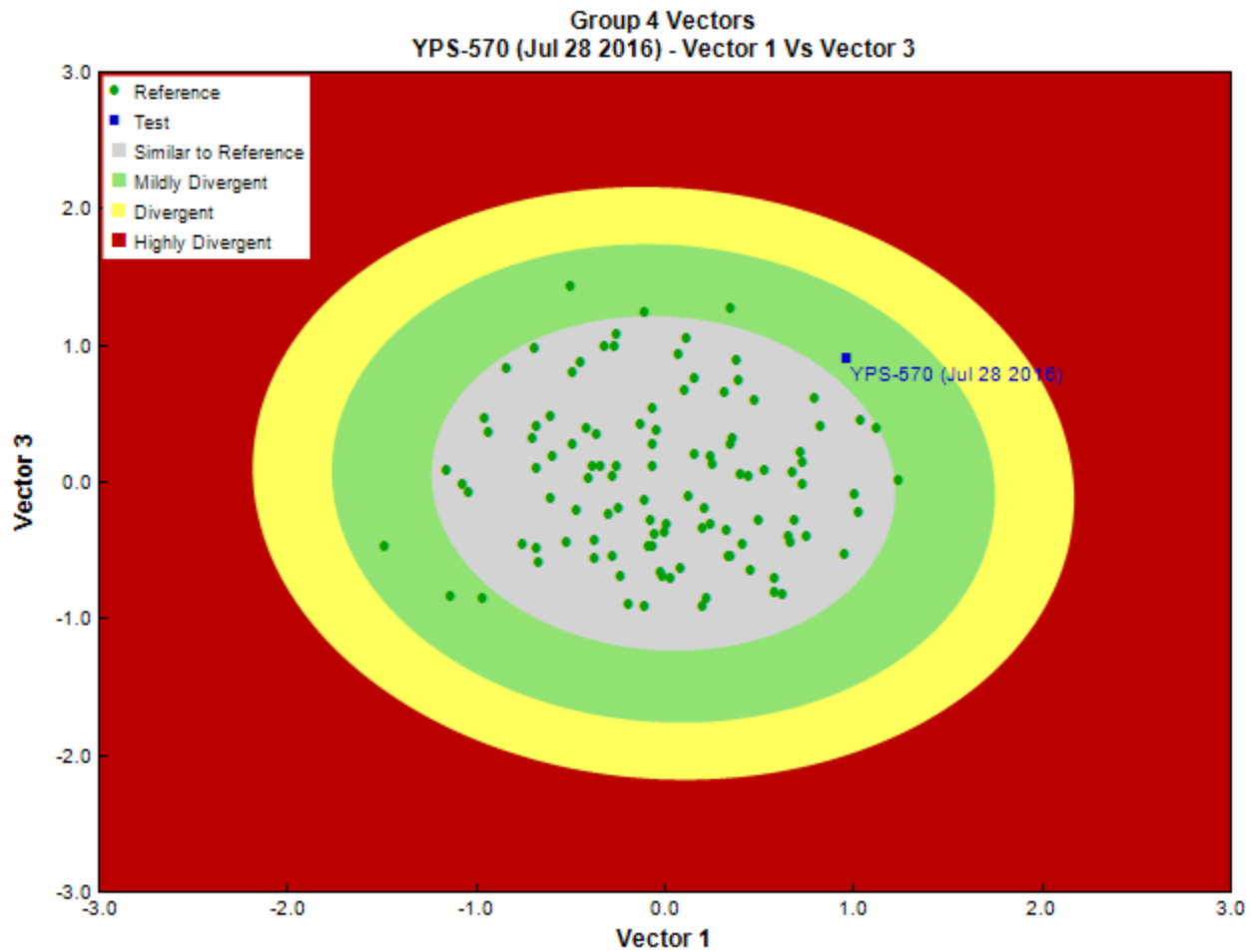


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	6	6.0
Arthropoda	Arachnida	Trombidiformes		1	1.0
	Insecta	Diptera		1	1.0
			Chironomidae	62	62.0
			Empididae	3	3.0
			Simuliidae	38	38.0
		Ephemeroptera	Ameletidae	10	10.0
			Baetidae	128	128.0
			Heptageniidae	73	73.0
		Plecoptera	Chloroperlidae	1	1.0
			Nemouridae	10	10.0
			Perlodidae	1	1.0
			Taeniopterygidae	1	1.0
		Trichoptera	Limnephilidae	15	15.0
			Total	351	351.0

Metrics

Name	YPS-570	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.56	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	351.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	13.0	13.0 \pm 4.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-570
	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%	0.78
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%	0.36
Ceratopogonidae	22%	28%	30%	24%	0%	0.25
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%	0.50
Enchytraeidae	0%	0%	9%	2%	0%	0.02

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-570
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ephemerellidae	26%	37%	61%	37%	31%	0.38
Ephydriidae	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%	0.14
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%	0.12
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%	0.18
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%	0.13
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%	0.34
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%	0.75
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%	0.43
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%	0.09
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%	0.76
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%	0.01
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%	0.06
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	5.49
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	1.09
RIVPACS : Expected taxa P>0.70	3.27
RIVPACS : Observed taxa P>0.70	4.00
RIVPACS : O:E (p > 0.7)	1.22

Habitat Description

Variable	YPS-570	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	17.3	29.8 \pm 14.6
Velocity-Avg (m/s)	0.57	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	36.67750	29.33781 \pm 11.78911
Precip03_MAR (mm)	35.91875	27.45595 \pm 11.91497
Precip06_JUN (mm)	58.31750	53.48783 \pm 18.48854
Precip07_JUL (mm)	75.08125	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	55.11125	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-2.25375	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.97306	0.37555 \pm 1.31381
Natl-Bryoids (%)	0.68030	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	1.80805	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.00000	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-574
Sampling Date	Jul 28 2016
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

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	8.0%	11.8%	22.9%	49.9%	7.3%
CABIN Assessment of YPS-574 on Jul 28, 2016	Similar to Reference				

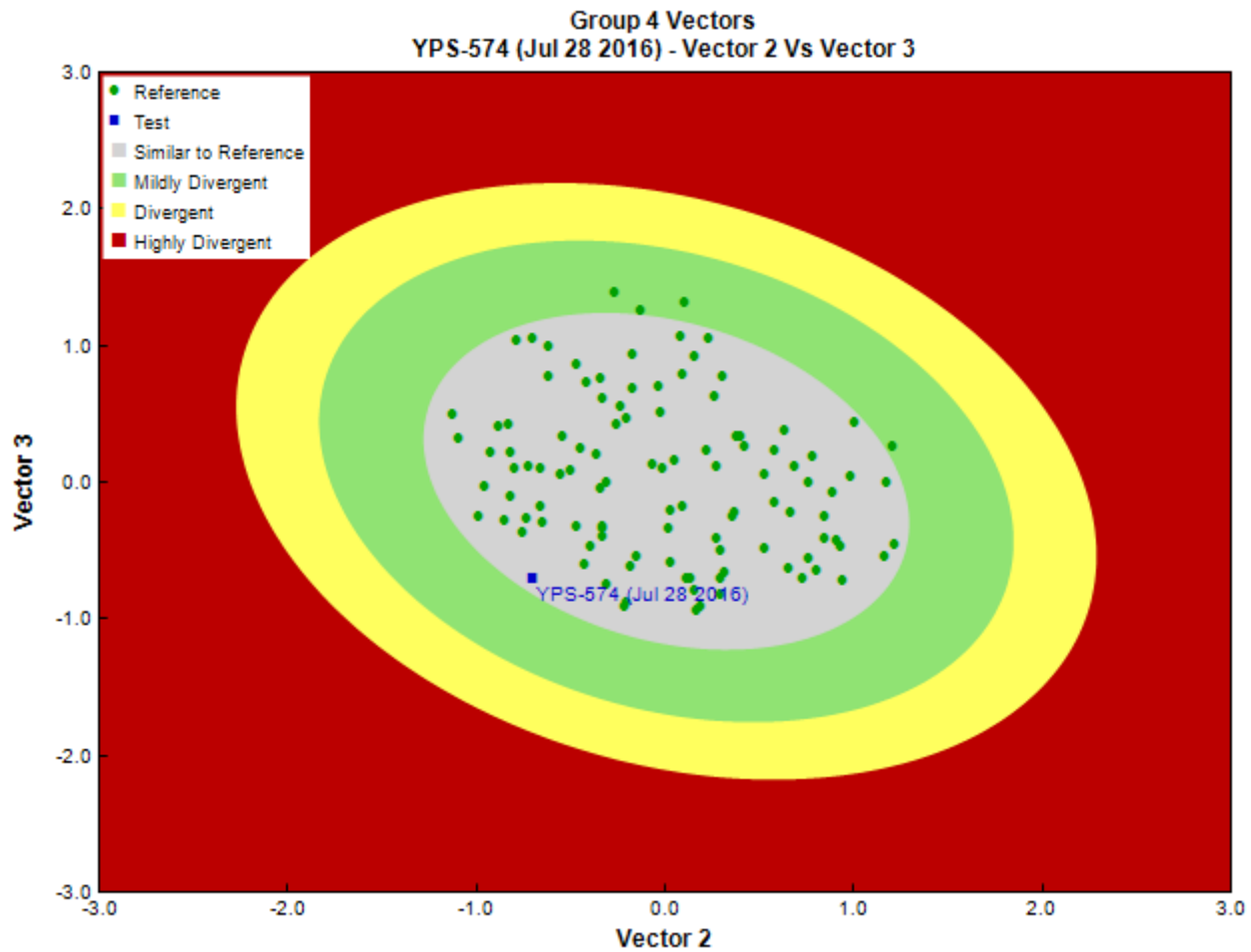


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	12/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Annelida	Oligochaeta	Lumbriculida	Lumbriculidae	63	525.0
Arthropoda	Insecta	Diptera	Chironomidae	51	425.0
			Empididae	9	75.0
			Simuliidae	2	16.6
			Tipulidae	3	25.0
		Ephemeroptera	Ameletidae	3	25.0
			Baetidae	3	25.0
			Heptageniidae	132	1,100.0
		Plecoptera	Chloroperlidae	7	58.2
			Nemouridae	40	333.3
			Perlodidae	10	83.4
			Taeniopterygidae	1	8.3
		Trichoptera	Limnephilidae	1	8.3
			Uenoidae	1	8.3
			Total	326	2,716.4

Metrics

Name	YPS-574	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.68	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	2716.7	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	14.0	13.0 \pm 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%	0.42
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%	0.85
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%	0.44
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
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%	0.01
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%	0.58
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemereidae	26%	37%	61%	37%	31%	0.41

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	
Ephyridae	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%	0.75
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%	0.14
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%	0.44
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%	0.14
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%	0.04
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%	0.23
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%	0.50
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%	0.04
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%	0.81
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%	0.03
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%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.09

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.98
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	1.29
RIVPACS : Expected taxa P>0.70	4.23
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.18

Habitat Description

Variable	YPS-574	Predicted Group Reference Mean ±SD
Bedrock Geology		
Channel		
Depth-Avg (cm)	33.2	29.8 ± 14.6
Velocity-Avg (m/s)	0.50	0.52 ± 0.32
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
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-577
Sampling Date	Jul 27 2016
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

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	9.6%	9.9%	28.2%	46.5%	5.6%
CABIN Assessment of YPS-577 on Jul 27, 2016	Divergent				

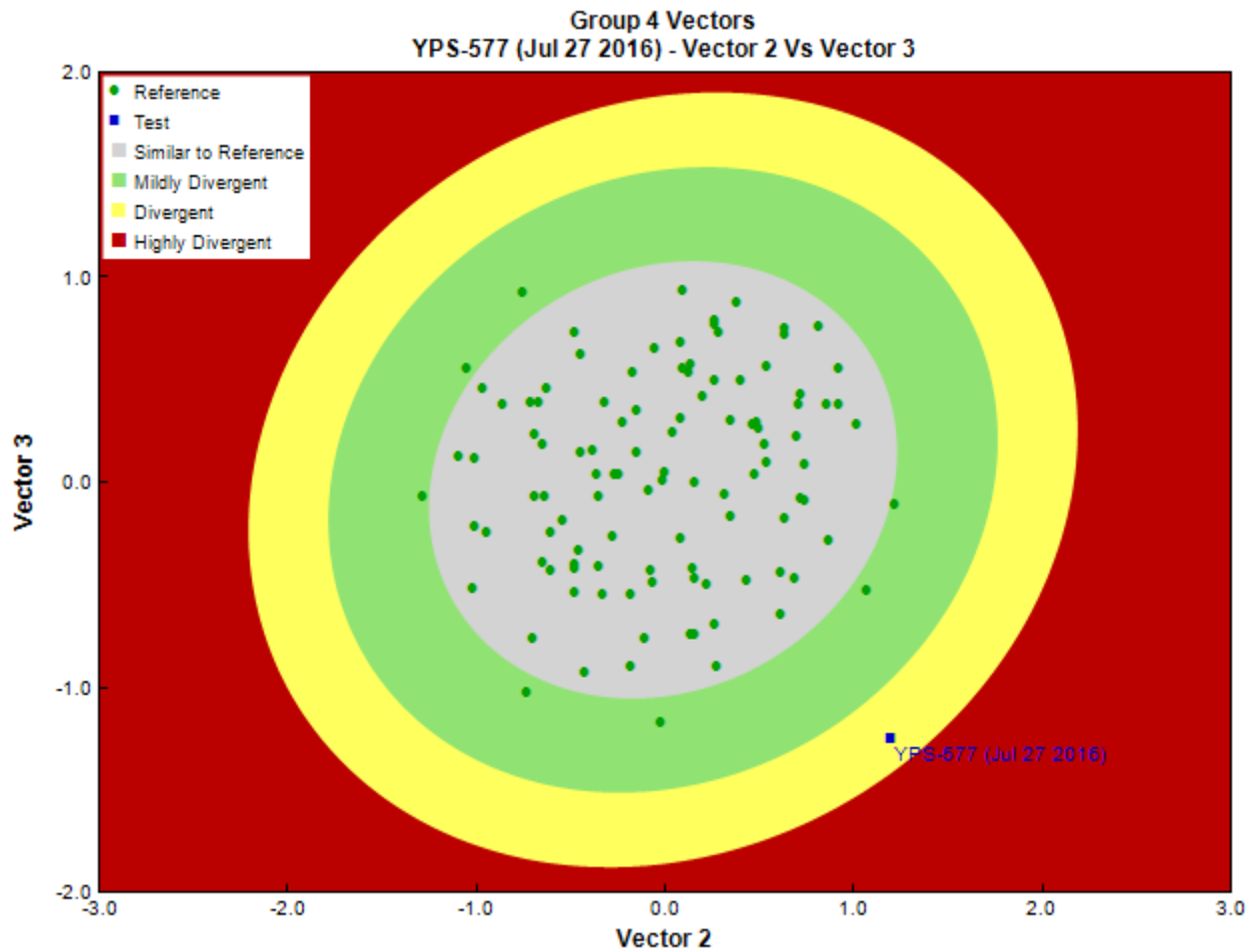


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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		1	1.0
			Hygrobatidae	3	3.0
			Lebertiidae	6	6.0
			Sperchontidae	3	3.0
	Insecta	Diptera	Ceratopogonidae	8	8.0
			Chironomidae	16	16.0
			Empididae	5	5.0
			Simuliidae	1	1.0
		Ephemeroptera	Ameletidae	1	1.0
			Baetidae	85	85.0
			Ephemerellidae	32	32.0
			Heptageniidae	59	59.0
		Plecoptera	Chloroperlidae	5	5.0
			Nemouridae	2	2.0
		Trichoptera	Apataniidae	16	16.0
			Glossosomatidae	19	19.0
			Limnephilidae	19	19.0
			Total	281	281.0

Metrics

Name	YPS-577	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.71	0.5 \pm 0.2
Number Of Individuals		
Total Abundance	281.0	2059.4 \pm 1572.9
Richness		
Total No. of Taxa	16.0	13.0 \pm 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%	0.43
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%	0.84
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%	0.24
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

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	
Empididae	9%	49%	77%	59%	54%	0.58
Enchytraeidae	0%	0%	9%	2%	0%	0.03
Ephemerellidae	26%	37%	61%	37%	31%	0.42
Ephydriidae	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%	0.75
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%	0.16
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%	0.21
Isotomidae	9%	5%	2%	1%	0%	0.02
Lebertiidae	13%	20%	52%	54%	23%	0.44
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%	0.41
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%	0.83
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%	0.04
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%	0.81
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%	0.03
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%	0.10
Valvatidae	4%	9%	5%	11%	8%	0.08

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.99
RIVPACS : Observed taxa P>0.50	8.00
RIVPACS : O:E (p > 0.5)	1.15
RIVPACS : Expected taxa P>0.70	4.22
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.19

Habitat Description

Variable	YPS-577	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	69.1	29.8 \pm 14.6
Velocity-Avg (m/s)	1.15	0.52 \pm 0.32
Climate		
Precip02_FEB (mm)	35.63261	29.33781 \pm 11.78911
Precip03_MAR (mm)	35.22826	27.45595 \pm 11.91497
Precip06_JUN (mm)	64.07435	53.48783 \pm 18.48854
Precip07_JUL (mm)	81.58522	65.85484 \pm 22.37167
Rainfall06_JUN (mm)	58.13304	48.43760 \pm 16.05524
Temp04_APRmax (Degrees Celsius)	-0.19261	-0.98364 \pm 3.37510
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.55051	0.37555 \pm 1.31381
Natl-Bryoids (%)	0.00000	0.53753 \pm 1.04480
Natl-MixedwoodOpen (%)	0.00000	0.77433 \pm 2.87383
Natl-WetlandHerb (%)	0.06511	0.14452 \pm 0.46324
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - YTG
Site	YPS-584
Sampling Date	Jul 26 2016
Know Your Watershed Basin	Central Yukon
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Klondike Plateau EcoRegion
Coordinates (decimal degrees)	63.93610 N, 140.15710 W
Altitude	1650
Local Basin Name	Enchantment Creek
	Sixty Mile River
Stream Order	0



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	2.3%	7.3%	17.1%	35.7%	37.5%
CABIN Assessment of YPS-584 on Jul 26, 2016	Similar to Reference				

Note: Group 4 was used for this site, see report tables for further explanation.

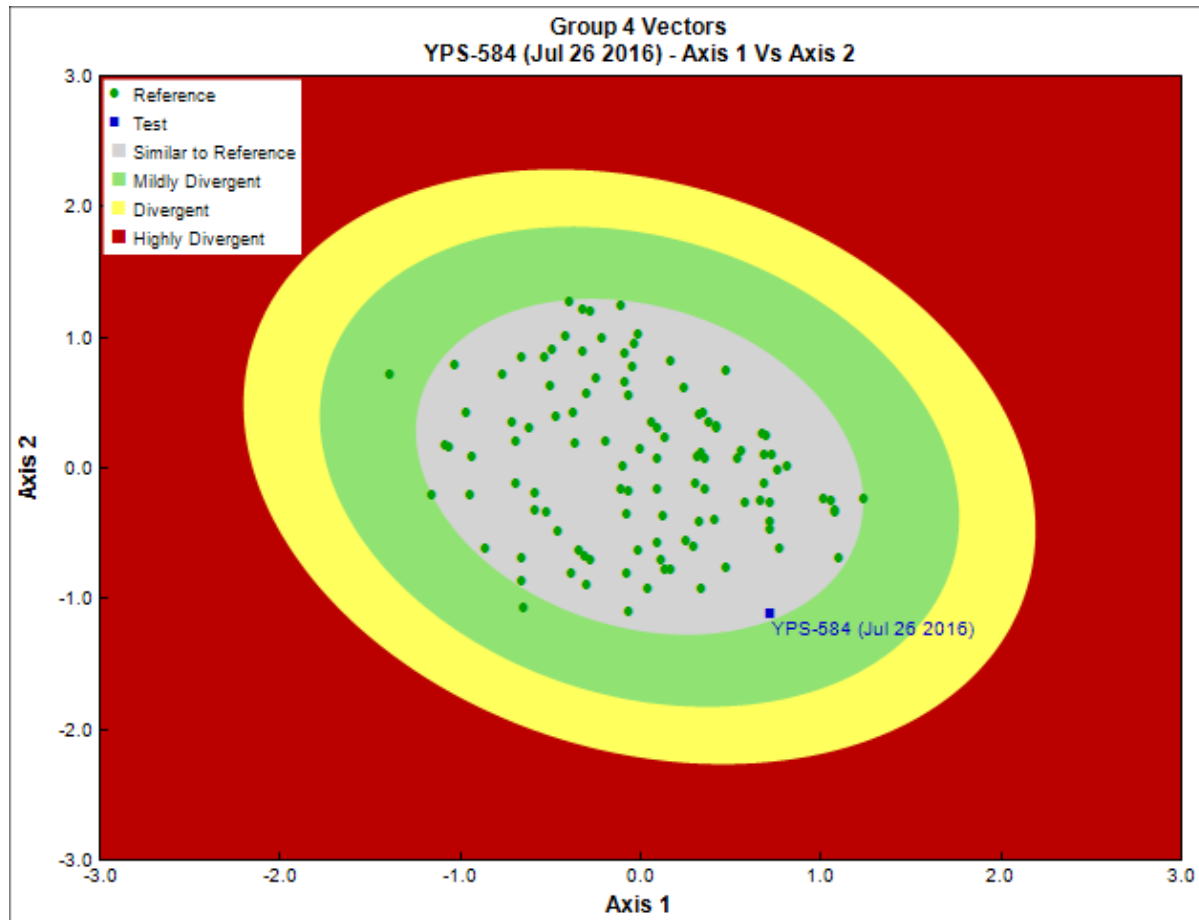


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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		Sarcoptiformes		1	1.0
		Trombidiformes		1	1.0
			Sperchontidae	9	9.0
	Insecta	Diptera		6	6.0
			Chironomidae	150	150.0
			Empididae	7	7.0
			Simuliidae	75	75.0
			Tipulidae	1	1.0
		Ephemeroptera	Baetidae	19	19.0
			Heptageniidae	15	15.0
		Plecoptera	Capniidae	8	8.0
			Nemouridae	52	52.0
			Perlodidae	2	2.0
		Trichoptera	Limnephilidae	1	1.0
Mollusca	Gastropoda				1
			Total	349	349.0

Metrics

Name	YPS-584	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.93	0.4 \pm 0.2
Number Of Individuals		
Total Abundance	349.0	12539.4 \pm 5669.6
Richness		
Total No. of Taxa	12.0	11.3 \pm 3.4

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-584
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.35
Apataniidae	0%	1%	0%	3%	8%	0.04
Arrenuridae	0%	0%	2%	0%	0%	0.00
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%	0.13
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.56
Ceratopogonidae	22%	28%	30%	24%	0%	0.16
Chironomidae	91%	100%	100%	100%	100%	1.00
Chloroperlidae	22%	43%	77%	50%	38%	0.49
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%	0.03
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%	0.58

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-584
	Group 1	Group 2	Group 3	Group 4	Group 5	
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemereidae	26%	37%	61%	37%	31%	0.39
Ephydriidae	0%	0%	2%	0%	0%	0.00
Feltriidae	0%	0%	2%	6%	8%	0.05
Gammaridae	9%	2%	0%	13%	23%	0.14
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%	0.80
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%	0.01
Hydropsychidae	4%	13%	36%	8%	0%	0.10
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%	0.15
Isotomidae	9%	5%	2%	1%	0%	0.01
Lebertiidae	13%	20%	52%	54%	23%	0.39
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%	0.10
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%	0.32
Lymnaeidae	13%	9%	0%	3%	0%	0.02
Metretopodidae	0%	1%	0%	1%	0%	0.00
Mideopsidae	0%	0%	2%	0%	0%	0.00
Muscidae	0%	4%	7%	7%	0%	0.04
Naididae	35%	43%	9%	22%	31%	0.25
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%	0.55
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%	0.29
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.81
Sperchontidae	22%	49%	68%	68%	31%	0.51
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%	0.53
Torrenticolidae	0%	0%	0%	5%	8%	0.05
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	7.17
RIVPACS : Observed taxa P>0.50	10.00
RIVPACS : O:E (p > 0.5)	1.39
RIVPACS : Expected taxa P>0.70	4.43
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.13

Habitat Description

Variable	YPS-584	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	40.0	24.0 \pm 13.5
Velocity-Avg (m/s)	1.34	0.69 \pm 0.41
Climate		
Precip02_FEB (mm)	34.01125	23.64703 \pm 9.87067
Precip03_MAR (mm)	32.89000	21.43418 \pm 10.28637
Precip06_JUN (mm)	52.88250	42.70673 \pm 20.01009
Precip07_JUL (mm)	68.63875	53.48428 \pm 23.82521
Rainfall06_JUN (mm)	50.99125	39.58541 \pm 18.10735
Temp04_APRmax (Degrees Celsius)	-3.56250	-1.98555 \pm 4.49028
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.10660 \pm 0.30602
Natl-Bryoids (%)	1.72664	1.00805 \pm 2.53070
Natl-MixedwoodOpen (%)	0.00000	0.13901 \pm 0.32395
Natl-WetlandHerb (%)	0.00000	0.03267 \pm 0.07770
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-585
Sampling Date	Jul 25 2016
Know Your Watershed Basin	Alsek
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Ruby Ranges EcoRegion
Coordinates (decimal degrees)	61.17294 N, 138.00465 W
Altitude	3732
Local Basin Name	Larose Creek
	Alsek
Stream Order	0



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	6.4%	9.1%	40.6%	29.2%	14.7%
CABIN Assessment of YPS-585 on Jul 25, 2016	Similar to Reference				

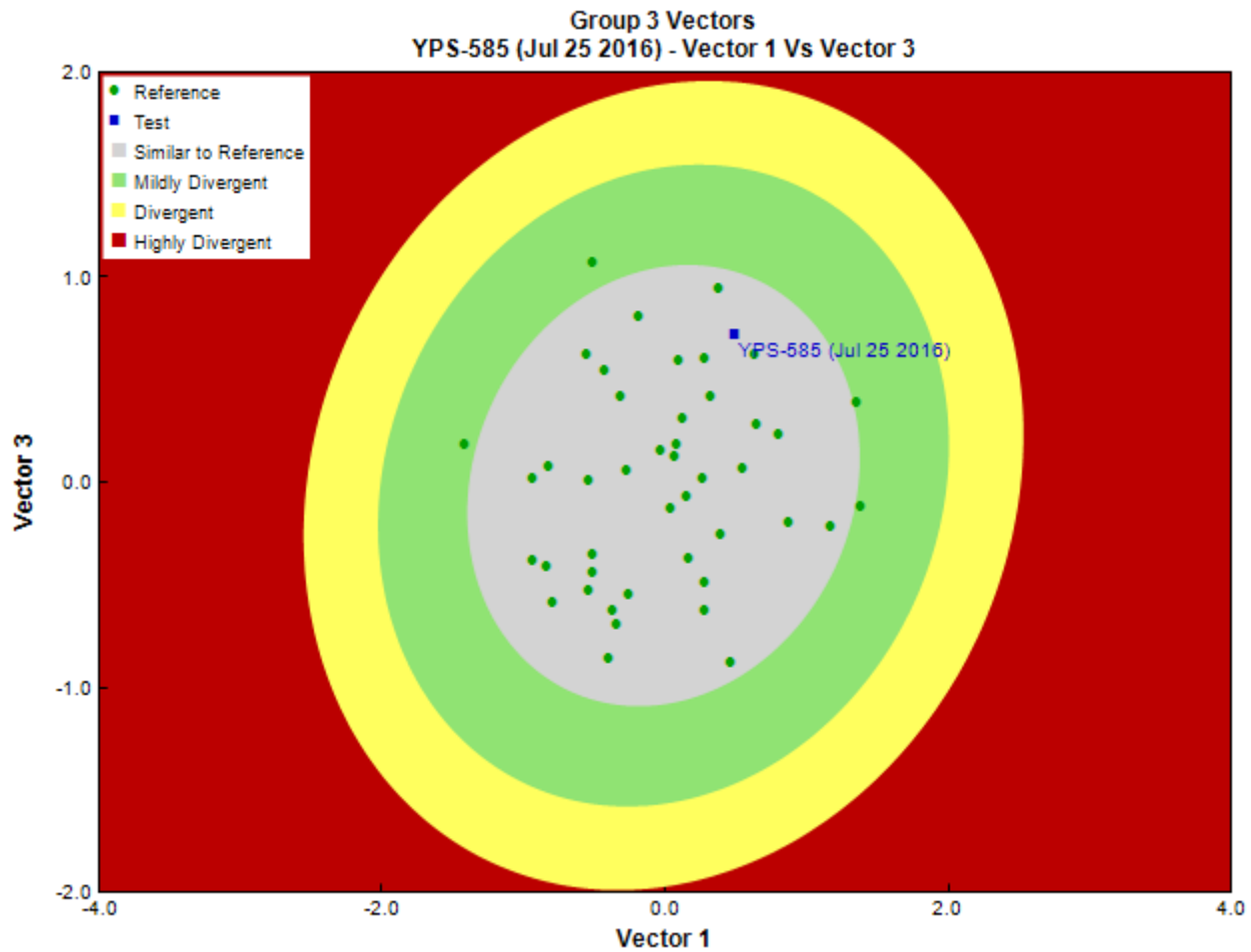


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	84	84.0
Arthropoda	Collembola	Collembola		1	1.0
	Insecta	Diptera	Chironomidae	72	72.0
			Empididae	8	8.0
			Muscidae	2	2.0
			Simuliidae	62	62.0
			Tipulidae	1	1.0
		Ephemeroptera	Ameletidae	25	25.0
			Baetidae	52	52.0
			Ephemerellidae	1	1.0
			Heptageniidae	116	116.0
		Plecoptera	Capniidae	1	1.0
			Chloroperlidae	11	11.0
			Nemouridae	68	68.0
			Perlodidae	14	14.0
		Trichoptera	Limnephilidae	3	3.0
			Total	521	521.0

Metrics

Name	YPS-585	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.38	0.4 \pm 0.1
Number Of Individuals		
Total Abundance	521.0	567.0 \pm 737.1
Richness		
Total No. of Taxa	15.0	10.6 \pm 6.1

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-585
	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%	0.04
Baetidae	30%	85%	82%	94%	100%	0.85
Blephariceridae	0%	0%	5%	0%	0%	0.02
Brachycentridae	0%	15%	7%	23%	8%	0.12
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.46
Ceratopogonidae	22%	28%	30%	24%	0%	0.23
Chironomidae	91%	100%	100%	100%	100%	0.99
Chloroperlidae	22%	43%	77%	50%	38%	0.57
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%	0.06
Dixidae	0%	5%	2%	1%	0%	0.02
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%	0.62

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-585
	Group 1	Group 2	Group 3	Group 4	Group 5	
Enchytraeidae	0%	0%	9%	2%	0%	0.04
Ephemereidae	26%	37%	61%	37%	31%	0.45
Ephydriidae	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%	0.15
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.80
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%	0.19
Hydroptilidae	4%	7%	0%	6%	0%	0.03
Hydrozetidae	4%	3%	20%	28%	31%	0.21
Hydryphantidae	4%	0%	9%	6%	0%	0.06
Hygrobatidae	0%	9%	25%	28%	0%	0.19
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%	0.04
Leuctridae	4%	14%	32%	10%	0%	0.17
Limnephilidae	13%	48%	43%	46%	23%	0.40
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%	0.02
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%	0.21
Nemouridae	39%	74%	100%	81%	100%	0.88
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%	0.06
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%	0.41
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%	0.05
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%	0.13
Valvatidae	4%	9%	5%	11%	8%	0.07

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	7.20
RIVPACS : Observed taxa P>0.50	9.00
RIVPACS : O:E (p > 0.5)	1.25
RIVPACS : Expected taxa P>0.70	4.34
RIVPACS : Observed taxa P>0.70	5.00
RIVPACS : O:E (p > 0.7)	1.15

Habitat Description

Variable	YPS-585	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	19.0	32.1 \pm 15.8
Velocity-Avg (m/s)	1.14	0.58 \pm 0.29
Climate		
Precip02_FEB (mm)	39.25333	36.13728 \pm 23.92832
Precip03_MAR (mm)	36.46667	33.12839 \pm 21.04203
Precip06_JUN (mm)	69.82333	64.67097 \pm 18.68912
Precip07_JUL (mm)	88.93333	78.30006 \pm 20.80864
Rainfall06_JUN (mm)	65.09333	52.72477 \pm 13.45837
Temp04_APRmax (Degrees Celsius)	1.10000	1.37555 \pm 3.73745
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.67948 \pm 1.61907
Natl-Bryoids (%)	0.00000	0.36641 \pm 0.83769
Natl-MixedwoodOpen (%)	0.00000	0.96002 \pm 1.72070
Natl-WetlandHerb (%)	0.00000	0.03164 \pm 0.10034
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-590
Sampling Date	Jul 25 2016
Know Your Watershed Basin	Alsek
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone Ruby Ranges EcoRegion
Coordinates (decimal degrees)	60.85958 N, 138.06937 W
Altitude	2554
Local Basin Name	Kimberley Creek
	Alsek
Stream Order	3



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	26.5%	4.7%	56.8%	11.7%	0.4%
CABIN Assessment of YPS-590 on Jul 25, 2016	Highly Divergent				

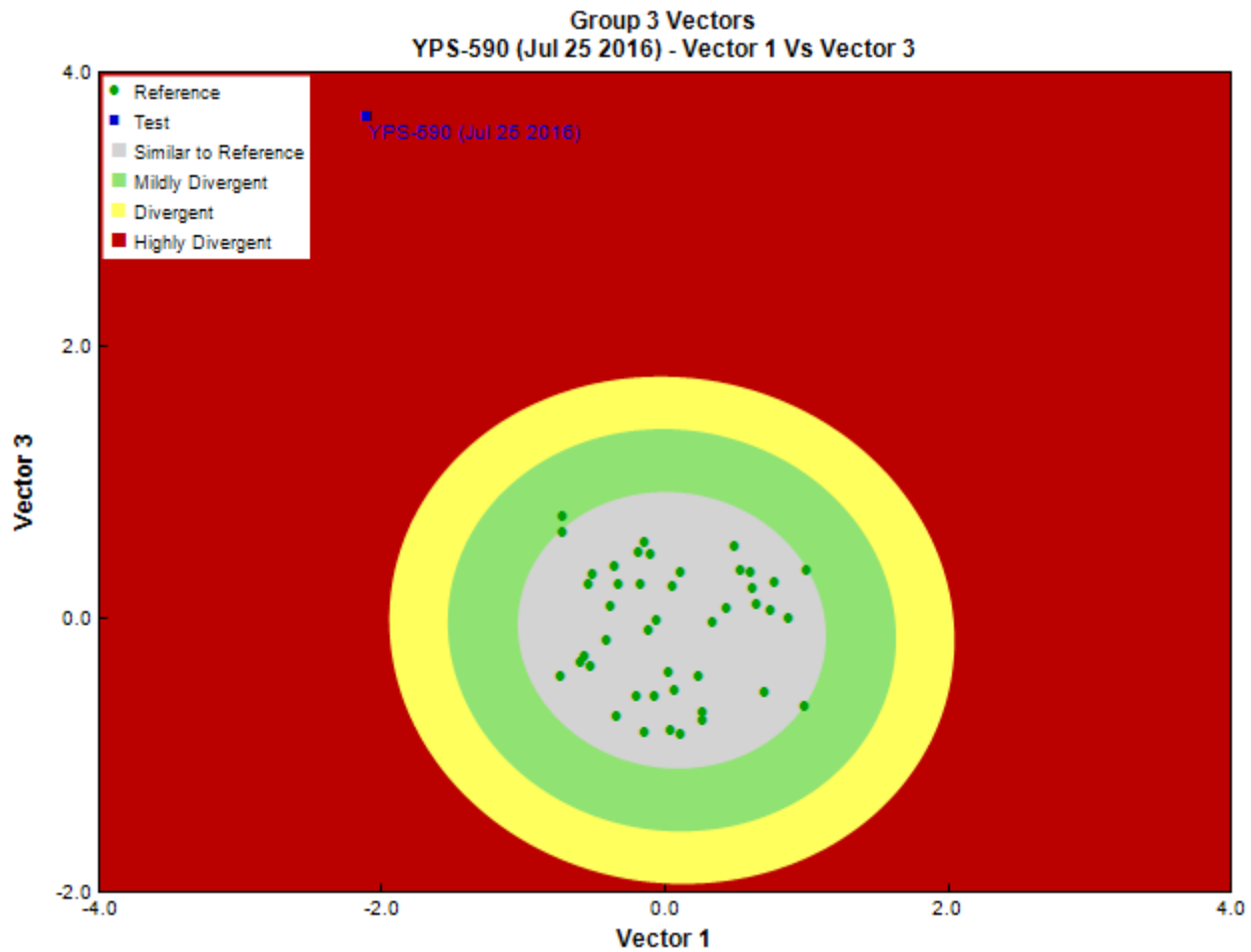


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

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	1	1.0
		Ephemeroptera	Baetidae	2	2.0
			Heptageniidae	10	10.0
		Plecoptera	Chloroperlidae	1	1.0
			Nemouridae	1	1.0
			Perlodidae	1	1.0
			Total	16	16.0

Metrics

Name	YPS-590	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	0.95	0.4 \pm 0.1
Number Of Individuals		
Total Abundance	16.0	567.0 \pm 737.1
Richness		
Total No. of Taxa	6.0	10.6 \pm 6.1

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-590
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.49
Apataniidae	0%	1%	0%	3%	8%	0.00
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%	0.70
Blephariceridae	0%	0%	5%	0%	0%	0.03
Brachycentridae	0%	15%	7%	23%	8%	0.07
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.34
Ceratopogonidae	22%	28%	30%	24%	0%	0.27
Chironomidae	91%	100%	100%	100%	100%	0.98
Chloroperlidae	22%	43%	77%	50%	38%	0.58
Corixidae	13%	8%	0%	0%	0%	0.04
Culicidae	9%	0%	0%	0%	0%	0.02
Curculionidae	0%	1%	0%	1%	0%	0.00
Deuterophlebiidae	0%	3%	14%	1%	0%	0.08
Dixidae	0%	5%	2%	1%	0%	0.02
Dolichopodidae	0%	0%	2%	1%	0%	0.01
Dytiscidae	4%	14%	0%	13%	0%	0.03
Elmidae	4%	3%	0%	2%	0%	0.02
Empididae	9%	49%	77%	59%	54%	0.56
Enchytraeidae	0%	0%	9%	2%	0%	0.05
Ephemerellidae	26%	37%	61%	37%	31%	0.48
Ephydriidae	0%	0%	2%	0%	0%	0.01
Feltriidae	0%	0%	2%	6%	8%	0.02
Gammaridae	9%	2%	0%	13%	23%	0.04
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%	0.71
Hirudinidae	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-590
	Group 1	Group 2	Group 3	Group 4	Group 5	
Hyaellidae	4%	5%	0%	6%	0%	0.02
Hydraenidae	0%	2%	0%	1%	0%	0.00
Hydrobiidae	9%	3%	2%	1%	0%	0.04
Hydropsychidae	4%	13%	36%	8%	0%	0.23
Hydroptilidae	4%	7%	0%	6%	0%	0.02
Hydrozetidae	4%	3%	20%	28%	31%	0.16
Hydryphantidae	4%	0%	9%	6%	0%	0.07
Hygrobatidae	0%	9%	25%	28%	0%	0.18
Isotomidae	9%	5%	2%	1%	0%	0.04
Lebertiidae	13%	20%	52%	54%	23%	0.40
Lepidostomatidae	0%	1%	5%	4%	8%	0.03
Leptoceridae	0%	1%	0%	2%	0%	0.00
Leptophlebiidae	4%	7%	0%	7%	8%	0.02
Leuctridae	4%	14%	32%	10%	0%	0.21
Limnephilidae	13%	48%	43%	46%	23%	0.36
Limnesiidae	0%	1%	2%	6%	8%	0.02
Limnocharidae	0%	0%	0%	1%	0%	0.00
Lumbriculidae	26%	22%	34%	42%	23%	0.32
Lymnaeidae	13%	9%	0%	3%	0%	0.04
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%	0.19
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
Peltopteridae	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%	0.05
Poduridae	0%	1%	0%	1%	0%	0.00
Psychodidae	22%	15%	11%	25%	8%	0.16
Rhyacophilidae	4%	34%	68%	25%	15%	0.44
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.74
Sperchontidae	22%	49%	68%	68%	31%	0.55
Staphylinidae	4%	0%	0%	1%	0%	0.01
Stratiomyidae	0%	0%	0%	2%	0%	0.00
Tabanidae	4%	0%	0%	0%	0%	0.01
Taeniopterygidae	0%	1%	5%	2%	15%	0.03
Tipulidae	35%	47%	55%	62%	46%	0.50
Torrenticolidae	0%	0%	0%	5%	8%	0.01
Tubificidae	4%	1%	9%	13%	0%	0.08
Uenoidae	0%	8%	30%	1%	0%	0.17
Valvatidae	4%	9%	5%	11%	8%	0.05

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	6.13
RIVPACS : Observed taxa P>0.50	6.00
RIVPACS : O:E (p > 0.5)	0.98
RIVPACS : Expected taxa P>0.70	3.23
RIVPACS : Observed taxa P>0.70	3.00
RIVPACS : O:E (p > 0.7)	0.93

Habitat Description

Variable	YPS-590	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	47.6	32.1 \pm 15.8
Velocity-Avg (m/s)	2.38	0.58 \pm 0.29
Climate		
Precip02_FEB (mm)	30.72000	36.13728 \pm 23.92832
Precip03_MAR (mm)	26.68000	33.12839 \pm 21.04203
Precip06_JUN (mm)	59.56400	64.67097 \pm 18.68912
Precip07_JUL (mm)	75.48200	78.30006 \pm 20.80864
Rainfall06_JUN (mm)	55.99000	52.72477 \pm 13.45837
Temp04_APRmax (Degrees Celsius)	4.59600	1.37555 \pm 3.73745
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.67948 \pm 1.61907
Natl-Bryoids (%)	0.00000	0.36641 \pm 0.83769
Natl-MixedwoodOpen (%)	0.00000	0.96002 \pm 1.72070
Natl-WetlandHerb (%)	0.00000	0.03164 \pm 0.10034
Substrate Data		
Water Chemistry		

Site Description

Study Name	Yukon Territory - DFO
Site	YPS-592
Sampling Date	Jul 26 2016
Know Your Watershed Basin	White
Province / Territory	Yukon Territories
Terrestrial Ecological Classification	Boreal Cordillera EcoZone St.Elias Mountains EcoRegion
Coordinates (decimal degrees)	61.40434 N, 139.40996 W
Altitude	4455
Local Basin Name	Tatamagouche Tributary
	White River
Stream Order	0



Figure 1. Location Map



Down Stream

Cabin Assessment Results

Reference Model Summary	
Model	Yukon 2013
Analysis Date	March 20, 2017
Taxonomic Level	Family

Cabin Assessment Results

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
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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	44.1%	7.7%	23.0%	21.5%	3.8%
CABIN Assessment of YPS-592 on Jul 26, 2016	Highly Divergent				

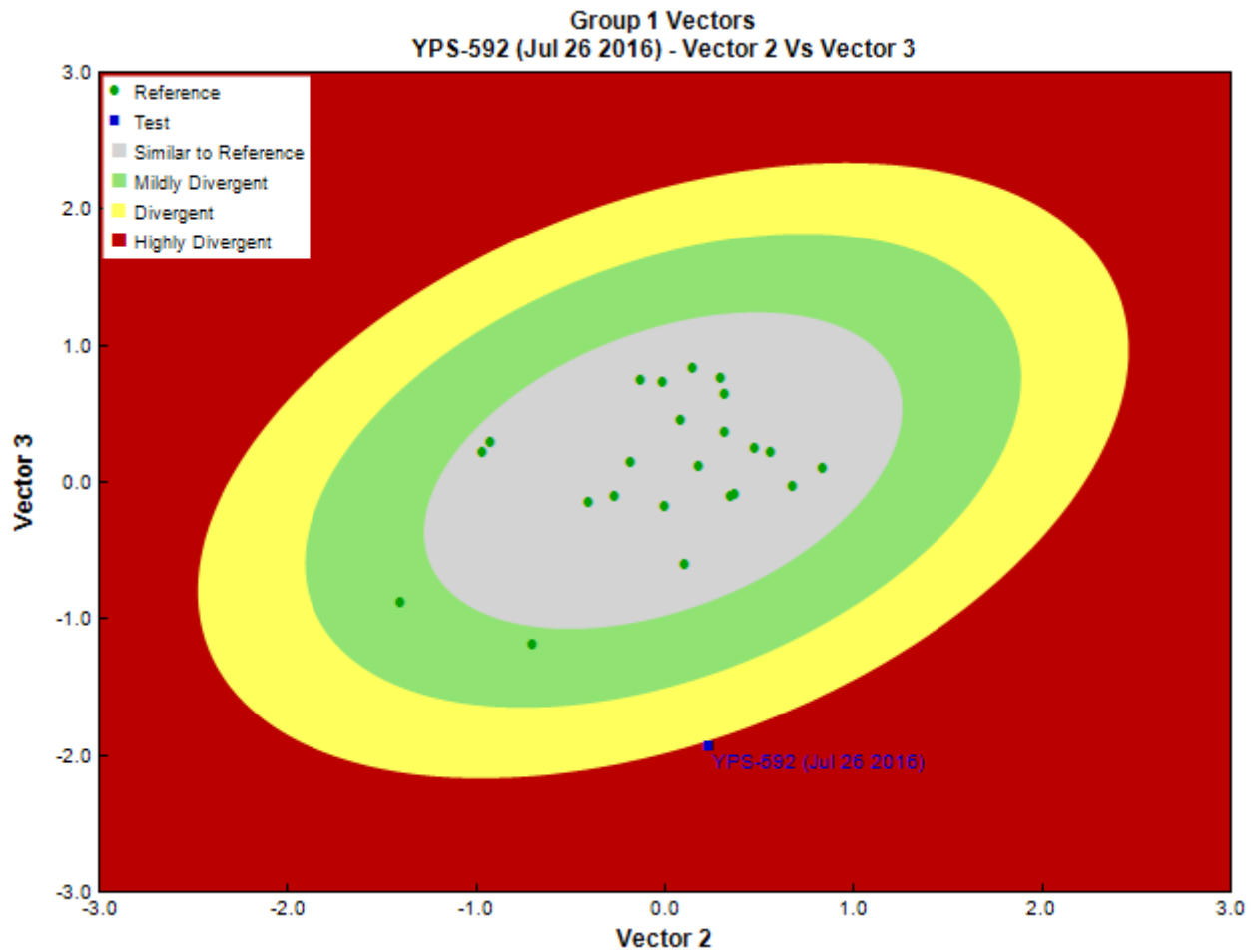


Figure 3. CABIN ordination assessment of the test site with the predicted group of reference sites. Each axis represents the relative abundance of the entire benthic invertebrate community with different organisms weighted differently on each axis.

Sample Information

Sampling Device	Kick Net
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Sample Information

Mesh Size	500
Sampling Time	3
Taxonomist	-
Date Taxonomy Completed	-
	-
Sub-Sample Proportion	18/100

Community Structure

Phylum	Class	Order	Family	Raw Count	Total Count
Arthropoda	Arachnida	Sarcoptiformes		3	16.7
		Trombidiformes	Sperchontidae	5	27.8
	Insecta	Diptera	Chironomidae	21	116.7
			Empididae	1	5.6
			Simuliidae	80	444.4
		Ephemeroptera	Baetidae	50	277.8
			Heptageniidae	16	88.9
		Plecoptera	Capniidae	7	38.9
			Nemouridae	170	944.5
			Total	353	1,961.3

Metrics

Name	YPS-592	Predicted Group Reference Mean \pm SD
Bray-Curtis Distance	--	--
Number Of Individuals		
Total Abundance	1961.1	192.2 \pm 127.1
Richness		
Total No. of Taxa	8.0	10.1 \pm 4.5

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-592
	Group 1	Group 2	Group 3	Group 4	Group 5	
Ameletidae	9%	37%	70%	39%	15%	0.32
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%	0.63
Blephariceridae	0%	0%	5%	0%	0%	0.01
Brachycentridae	0%	15%	7%	23%	8%	0.08
Caenidae	0%	1%	0%	1%	0%	0.00
Capniidae	9%	23%	43%	50%	77%	0.29
Ceratopogonidae	22%	28%	30%	24%	0%	0.24
Chironomidae	91%	100%	100%	100%	100%	0.96
Chloroperlidae	22%	43%	77%	50%	38%	0.43
Corixidae	13%	8%	0%	0%	0%	0.06
Culicidae	9%	0%	0%	0%	0%	0.04
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%	0.03
Empididae	9%	49%	77%	59%	54%	0.40
Enchytraeidae	0%	0%	9%	2%	0%	0.02
Ephemerellidae	26%	37%	61%	37%	31%	0.38
Ephydriidae	0%	0%	2%	0%	0%	0.01
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%	0.10

Frequency and Probability of Taxa Occurrence

Reference Model Taxa	Frequency of Occurrence in Reference Sites					Probability Of Occurrence at YPS-592
	Group 1	Group 2	Group 3	Group 4	Group 5	
Helophoridae	0%	0%	2%	0%	0%	0.01
Heptageniidae	17%	63%	95%	76%	85%	0.54
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%	0.05
Hydropsychidae	4%	13%	36%	8%	0%	0.13
Hydroptilidae	4%	7%	0%	6%	0%	0.04
Hydrozetidae	4%	3%	20%	28%	31%	0.14
Hydryphantidae	4%	0%	9%	6%	0%	0.05
Hygrobatidae	0%	9%	25%	28%	0%	0.12
Isotomidae	9%	5%	2%	1%	0%	0.05
Lebertiidae	13%	20%	52%	54%	23%	0.32
Lepidostomatidae	0%	1%	5%	4%	8%	0.02
Leptoceridae	0%	1%	0%	2%	0%	0.00
Leptophlebiidae	4%	7%	0%	7%	8%	0.04
Leuctridae	4%	14%	32%	10%	0%	0.13
Limnephilidae	13%	48%	43%	46%	23%	0.30
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%	0.00
Mideopsidae	0%	0%	2%	0%	0%	0.01
Muscidae	0%	4%	7%	7%	0%	0.03
Naididae	35%	43%	9%	22%	31%	0.27
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%	0.00
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%	0.11
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%	0.19
Rhyacophilidae	4%	34%	68%	25%	15%	0.26
Scathophagidae	0%	2%	0%	0%	0%	0.00
Simuliidae	39%	78%	86%	87%	77%	0.65
Sperchontidae	22%	49%	68%	68%	31%	0.45
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%	0.02
Tipulidae	35%	47%	55%	62%	46%	0.47
Torrenticolidae	0%	0%	0%	5%	8%	0.01
Tubificidae	4%	1%	9%	13%	0%	0.07
Uenoidae	0%	8%	30%	1%	0%	0.08
Valvatidae	4%	9%	5%	11%	8%	0.06

RIVPACS Ratios

RIVPACS : Expected taxa P>0.50	3.45
RIVPACS : Observed taxa P>0.50	0.00
RIVPACS : O:E (p > 0.5)	0.00
RIVPACS : Expected taxa P>0.70	0.96

RIVPACS Ratios

RIVPACS : Observed taxa P>0.70	0.00
RIVPACS : O:E (p > 0.7)	0.00

Habitat Description

Variable	YPS-592	Predicted Group Reference Mean \pmSD
Bedrock Geology		
Channel		
Depth-Avg (cm)	10.5	36.5 \pm 24.3
Velocity-Avg (m/s)	0.67	0.42 \pm 0.29
Climate		
Precip02_FEB (mm)	33.29500	27.73943 \pm 9.10561
Precip03_MAR (mm)	29.55500	25.54674 \pm 9.71520
Precip06_JUN (mm)	54.95500	49.78117 \pm 15.10067
Precip07_JUL (mm)	70.80500	63.45366 \pm 19.76560
Rainfall06_JUN (mm)	52.47500	45.78194 \pm 13.48156
Temp04_APRmax (Degrees Celsius)	4.85000	-0.26448 \pm 3.57165
Hydrology		
Landcover		
Natl-BroadleafOpen (%)	0.00000	0.19525 \pm 0.41187
Natl-Bryoids (%)	0.20908	0.16846 \pm 0.41890
Natl-MixedwoodOpen (%)	0.00000	2.45662 \pm 5.01153
Natl-WetlandHerb (%)	0.00000	0.22137 \pm 0.64189
Substrate Data		
Water Chemistry		