Effect of water temperature, conductivity and discharge on Macroinvertebrate abundance in the Old Chelsea River

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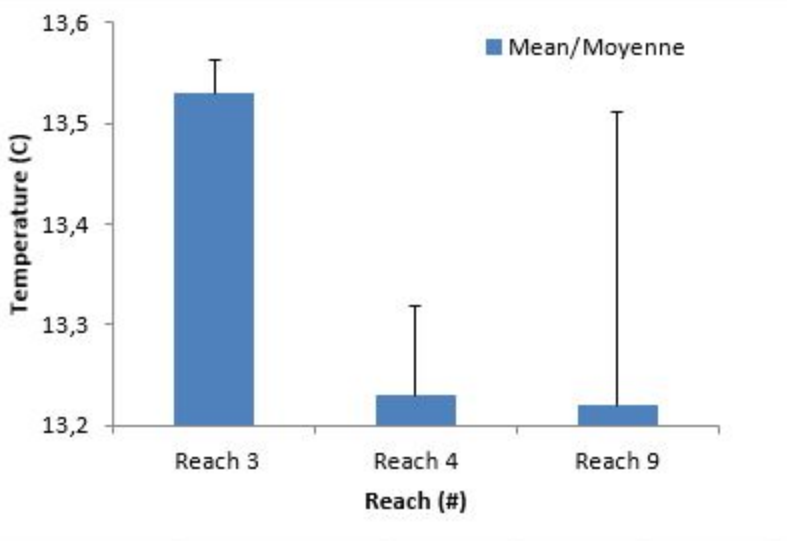

Figure 1A.

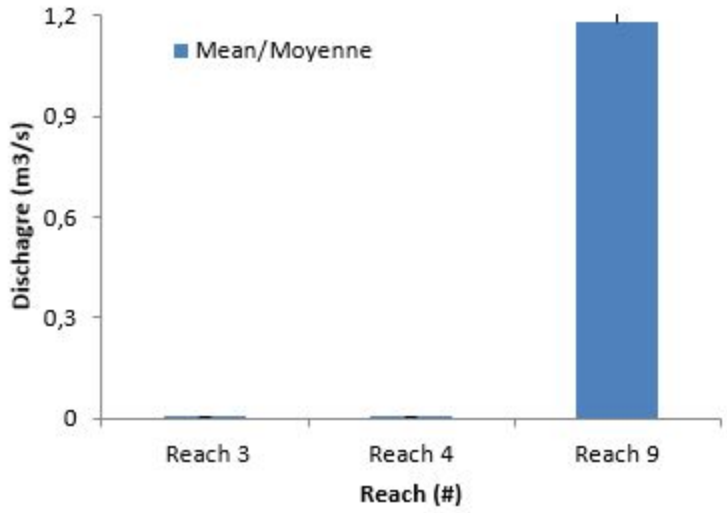

Figure 1B.

Table 1. t-test results comparing reach 3 and 4, 3 and 9, and 4 and 9 using abiotic factors of Temperature (^{o}C) and Discharge (m^3/s)

Abiotic Factor	Reach (#)	Mean & Standard Deviation	t-Value	Statistical Conclusion
Temperature (^{o}C)	3	13.53 ± 0.0333	3.182	Reject Null Hypothesis
	4	13.23 ± 0.0882		
	3	13.53 ± 0.0333	1.077	Accept Null Hypothesis
	9	13.22 ± 0.292		
	4	13.23 ± 0.0882	0.05464	Accept Null Hypothesis
	9	13.22 ± 0.292		
Discharge (m^3/s)	3	0.004094 ± 0.000229	0.1917	Accept Null Hypothesis
	4	0.003908 ± 0.000941		
	3	0.004094 ± 0.000229	-1.054	Accept Null Hypothesis
	9	1.181 ± 0.292		
	4	0.003908 ± 0.000941	-1.054	Accept Null Hypothesis
	9	1.181 ± 0.292		

α : Critical t Value : 2.776 Degrees of Freedom : 4^o

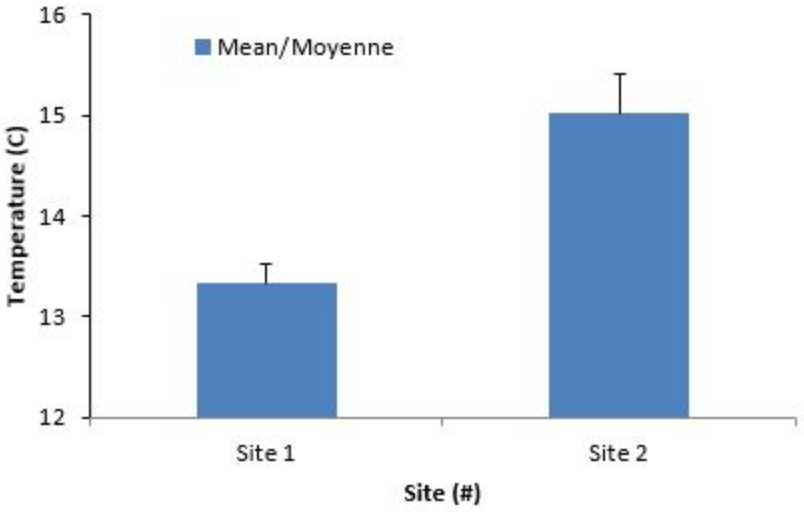

Figure 2A.

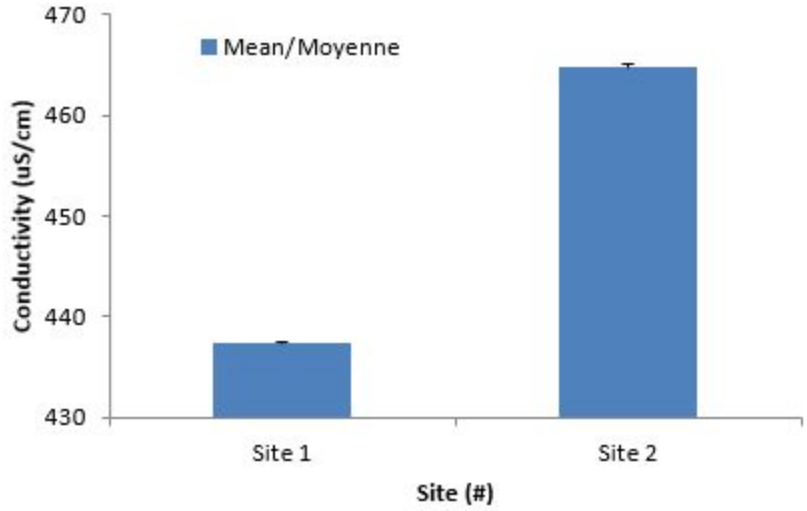

Figure 2B.

Table 2. t-test results comparing site 1 and 2 using abiotic factors of Temperature (^oC) and Conductivity ($\mu S/cm$)

Abiotic Factor	Site (#)	Mean & Standard Deviation	t-Value	Statistical Conclusion
Temperature (^oC)	1	13.33 ± 0.1017	-9.030	Reject Null Hypothesis
	2	15.01 ± 0.1567		
Conductivity ($\mu S/cm$)	1	437.3 ± 3.756	-7.083	Reject Null Hypothesis
	2	464.8 ± 0.9498		

α : Critical t Value : 2.776 Degrees of Freedom : 4^o

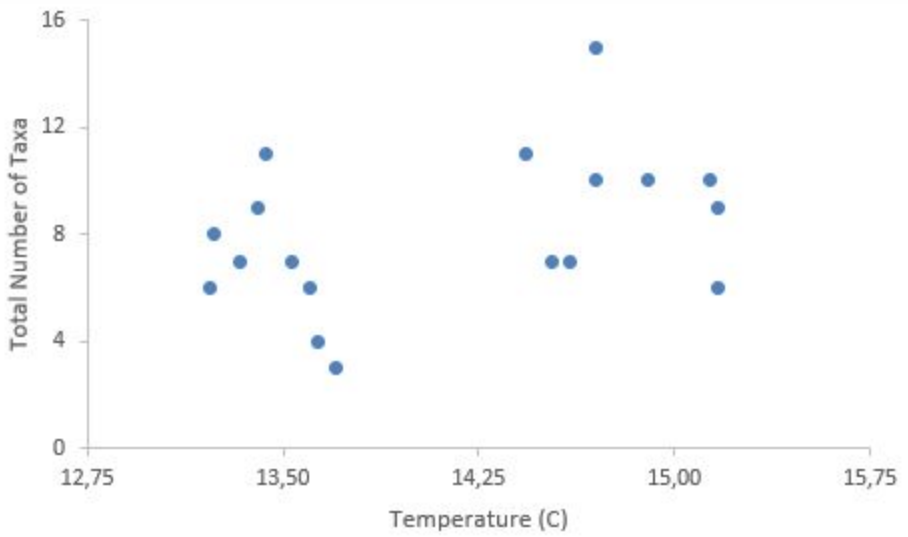

Figure 3A.

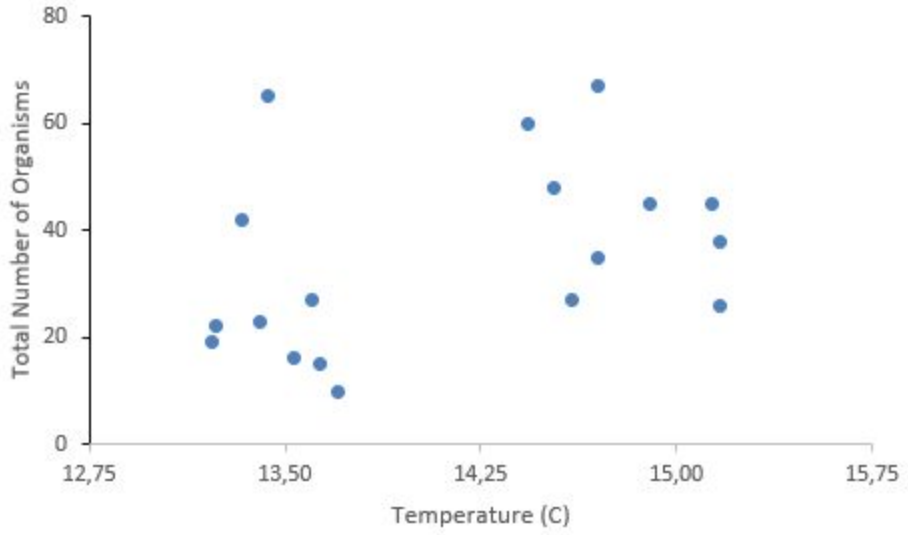

Figure 3B.

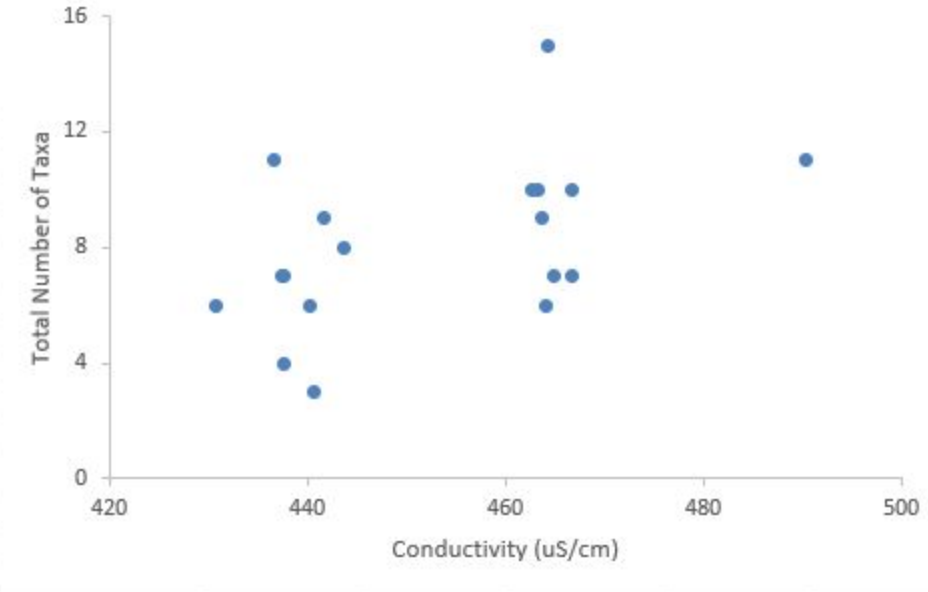

Figure 4A.

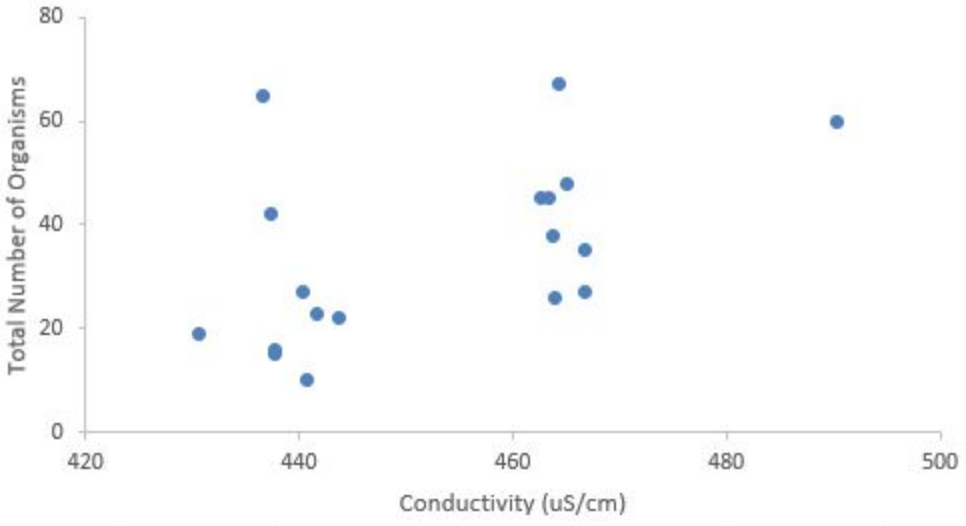

Figure 4B.

Table 3. t-test results comparing reach 3 and 4, 3 and 9, and 4 and 9 using abiotic factors of Temperature (^{o}C) and Discharge (m^3/s)

Abiotic Factor	Biotic Factor	Correlation Coefficient (r)	Significant/ Non-significant
Temperature (^{o}C)	Total number of Taxa	0.3719	Non-significant
	Total number of Organisms	0.3839	Non-significant
	1/D	0.1332	Non-significant
	E1/D	− 0.3186	Non-significant
	DMg	0.2743	Non-significant
Discharge (m^3/s)	Total number of Taxa	0.4904	Non-significant
	Total number of Organisms	0.5204	Non-significant
	1/D	0.4350	Non-significant
	E1/D	− 0.1787	Non-significant
	DMg	0.3883	Non-significant

α : Critical r Value : 2.776 Degrees of Freedom : 4^{o}

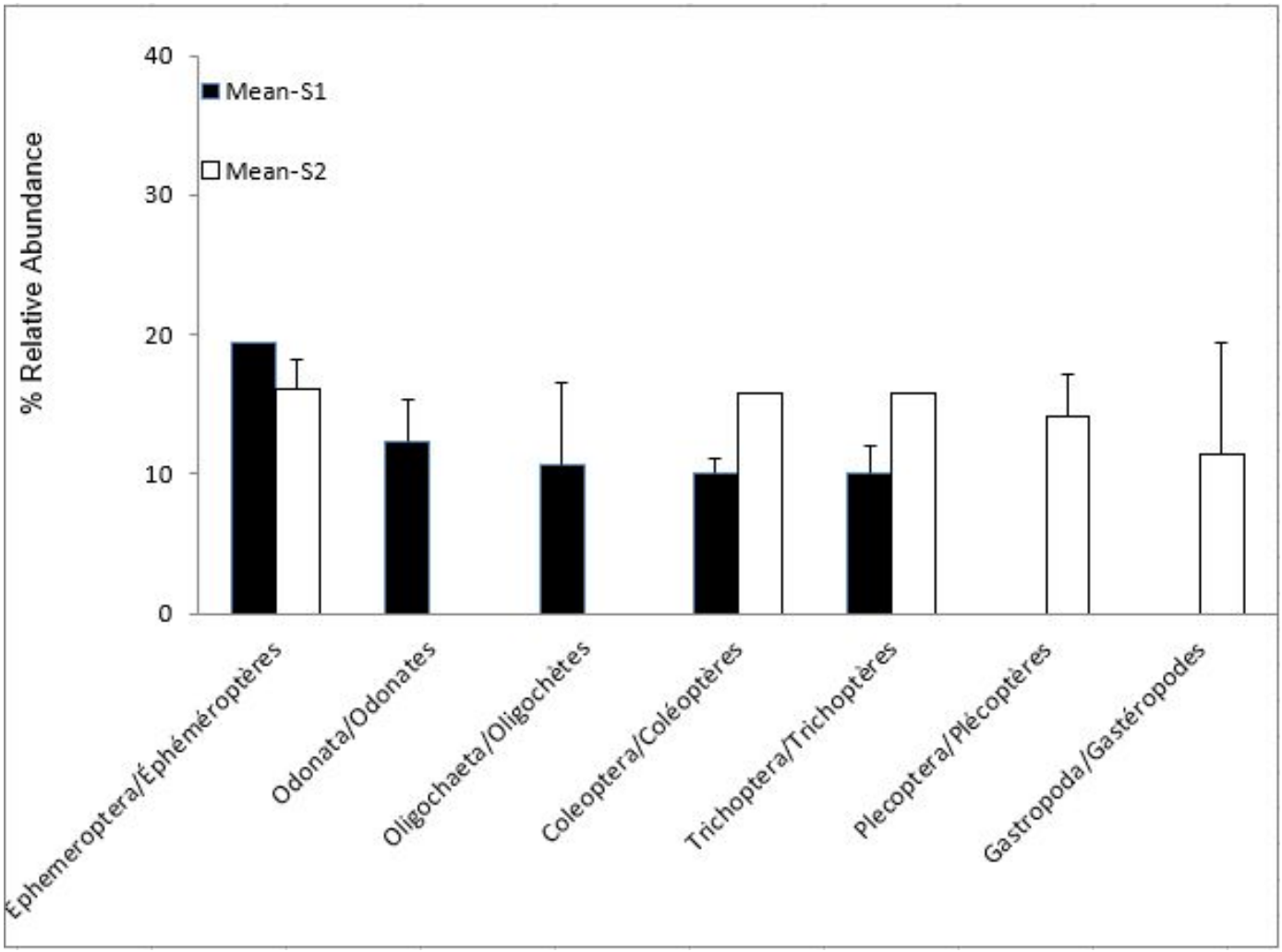
40
30
20
10
0
% Relative Abundance
Mean-S1
Mean-S2
Ephemeroptera/Éphéméroptères
Odonata/Odonates
Oligochaeta/Oligochètes
Coleoptera/Coléoptères
Trichoptera/Trichoptères
Plecoptera/Plécoptères
Gastropoda/Gastéropodes

Figure 5.

Discussion

References

Appendix