

## Supplementary Material

Figure S1. Diversity metric comparisons among *a posteriori* depth groups for DeSoto Canyon macrofauna (A) abundance ( $\chi^2 = 19.148$ ;  $p < 0.001$ ), (B) species richness ( $\chi^2 = 14.28$ ;  $p < 0.001$ ), and (C) Pielou's evenness ( $\chi^2 = 13.278$ ;  $p = 0.0013$ ). Shared letter indicates no statistical difference between depth groups ( $p > 0.05$ ).

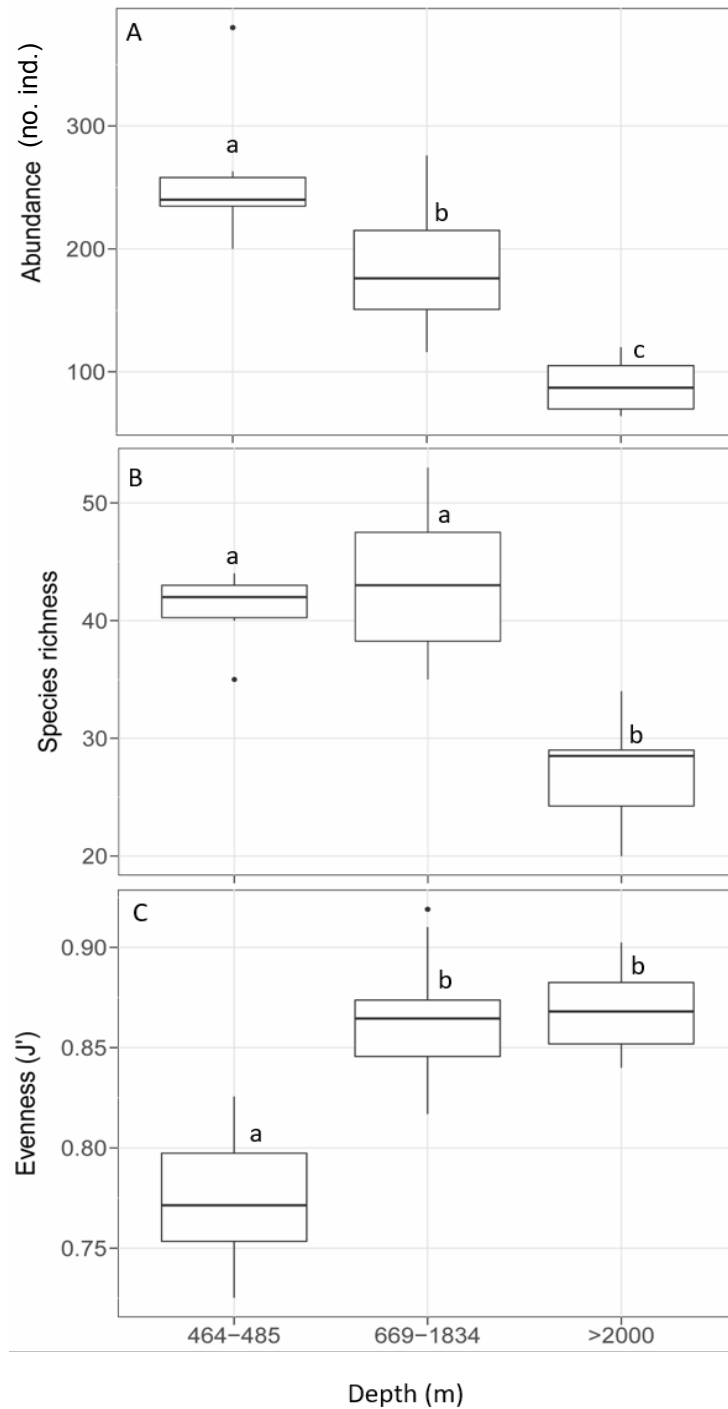


Figure S2. Distance-based redundancy analysis (dbRDA) plot of the top DISTLM model of community structure and environmental variables within DeSoto Canyon in the Phase I of the analysis.

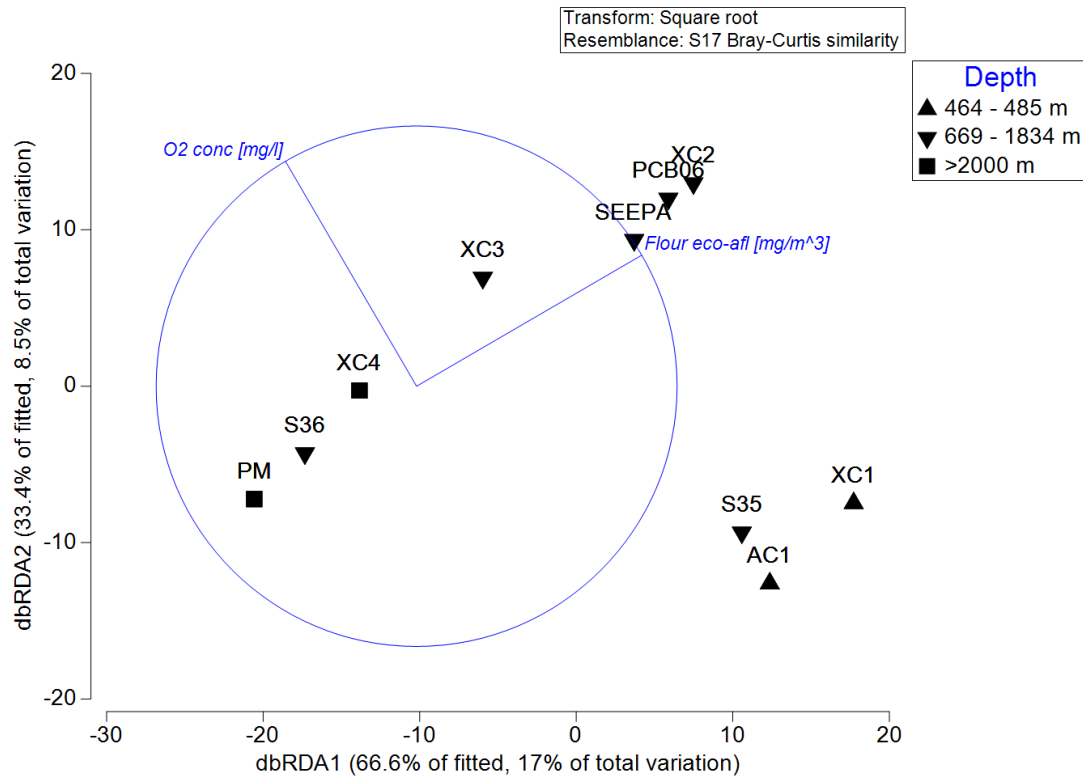


Table S1. SIMPER analysis between habitat types limited to groups giving a large contribution to differences (&gt;2%).

Groups Slope & Wall						
Average dissimilarity = 42.98						
	Group Slope	Group Wall				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
THYASIRIDAE	0.17	2.1	1.51	1	3.5	3.5
MALDANIDAE	1.14	3.32	1.5	1.78	3.48	6.99
LONGOSOMATIDAE	0.98	2.97	1.36	1.29	3.16	10.15
FAUVELIOPSIDAE	0.17	2.05	1.27	2.91	2.95	13.1
CIRRATULIDAE	1.51	3.23	1.13	2.04	2.64	15.73
CAPITELLIDAE	1.82	3.38	1.12	1.63	2.59	18.33
PARAONIDAE	3.49	5.06	1.08	1.71	2.51	20.84
APLACOPHORA	2.37	2.9	1.05	1.7	2.45	23.29
SIGALIONIDAE	1.15	2.05	0.99	1.4	2.3	25.59
POLYNOIDAE	0.86	2.3	0.97	1.85	2.27	27.85
MALLETIIDAE	0.4	1.81	0.96	1.94	2.23	30.09

Groups Slope & Axis						
Average dissimilarity = 39.80						
	Group Slope	Group Axis				
Species	Av.Abund	Av.Abund	Av.Diss	Diss/SD	Contrib%	Cum.%
FAUVELIOPSIDAE	0.17	1.69	1.15	1.37	2.9	2.9
CAPITELLIDAE	1.82	3.07	0.94	1.82	2.37	5.26
SABELLIDAE	1.39	0.33	0.85	1.9	2.14	7.4
CNIDARIA	1.07	0.69	0.82	1.02	2.07	9.47
MALLETIIDAE	0.4	1.47	0.82	1.7	2.05	11.53
ISOPODA	1.94	2.62	0.81	1.69	2.04	13.57
SIGALIONIDAE	1.15	1.88	0.81	1.39	2.03	15.6
TANAIDACEA	3.27	3.7	0.81	1.38	2.03	17.63