

Supplement S4. Anova model results from biodiversity-stream size relationships

Anova results for macroinvertebrate communities

Diversity measure	Stream size measure	Dataset	F-statistic	num df	den df	p value
Shannon Diversity	Strahler order	MD	6.2926484	2	786	0.001944
		NC	6.8880768	5	743	2.69E-06
		cont. US	47.259087	7	1916	3.93E-62
Functional diversity (RaoQ)	Strahler order	MD	11.756967	2	786	9.31E-06
		NC	12.891198	5	741	4.85E-12
		cont. US	23.472073	7	1843	1.03E-30
Shannon Diversity	Watershed area	MD	0.0469721	1	787	0.828475
		NC	5.6061917	1	758	0.018147
		cont. US	183.97769	1	1922	4.31E-40
Functional diversity (RaoQ)	Watershed area	MD	0.0229001	1	787	0.879756
		NC	50.460173	1	750	2.83E-12
		cont. US	49.701788	1	1849	2.52E-12
Beta diversity	Watershed area	MD	20.007119	1	51	4.34E-05
		NC	63.340649	1	204	1.19E-13
		cont. US	267.87763	1	1052	8.22E-54
Shannon Diversity	Stream width	MD	0.0124705	1	750	0.911114
		NC	31.292993	1	762	3.09E-08
		cont. US	105.29729	1	1916	4.36E-24
Functional diversity (RaoQ)	Stream width	MD	0.0002633	1	750	0.987057
		NC	35.000901	1	761	4.98E-09
		cont. US	18.397085	1	1843	1.89E-05

Anova results for fish communities

Diversity measure	Stream size measure	Dataset	F-statistic	num df	den df	p value
Shannon Diversity	Strahler order	MD	197.45915	2	889	1.10E-71
		NC	6.2605205	3	411	0.000366
		cont. US	51.078833	7	2115	1.63E-67
Functional diversity (RaoQ)	Strahler order	MD	56.292849	2	836	1.16E-23
		NC	4.546955	3	411	0.003783
		cont. US	27.339916	7	1820	6.62E-36
Shannon Diversity	Watershed area	MD	757.23121	1	890	4.15E-121
		NC	27.187904	1	437	2.85E-07
		cont. US	187.794	1	2120	5.11E-41
Functional diversity (RaoQ)	Watershed area	MD	153.3345	1	837	1.86E-32
		NC	19.96	1	436	1.01E-05
		cont. US	105.0966	1	1826	5.13E-24
Beta diversity	Watershed area	MD	0.0197019	1	51	0.888926
		NC	0.6716366	1	171	0.413622
		cont. US	176.06158	1	1051	2.91E-37
Shannon Diversity	Stream width	MD	616.80131	1	889	7.75E-104
		NC	4.8418225	1	437	0.0283
		cont. US	766.67668	1	2105	3.64E-144
Functional diversity (RaoQ)	Stream width	MD	109.09948	1	837	4.33E-24
		NC	0.3377737	1	437	0.561417
		cont. US	147.71418	1	1815	9.86E-33