

Non-linear effects of macrofauna functional trait interactions on biogeochemical fluxes in marine sediments change with environmental stress

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Table S1. Results of the 2 way ANOVA showing the preliminary analysis of effects of each species and sediment layer on measured fluxes. Significant results are indicated in bold text ('p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001). N₂ flux data was log-transformed prior to analysis.

Factor	df	SS	MS	F.Model	p-value
(a) O₂					
Species	3	12845.941	4281.980	30.267	<0.001***
Treatment	2	8496.382	4248.191	30.028	<0.001***
Species x Treatment	6	5093.557	848.926	6.001	<0.001***
Res	36	5093.019	141.473		
Total	47	31528.899	670.828		
Pairwise comparison (Holm-Sidak)			Diff of Means	t	p-value
Species within 0mm					
(1) vs. (3)			51.963	6.178	<0.001***
(2) vs. (3)			53.475	6.358	<0.001***
(4) vs. (3)			56.062	6.666	<0.001***
(1) vs. (2)			1.512	0.180	0.858
(1) vs. (4)			4.099	0.487	0.949
(2) vs. (4)			2.586	0.308	0.943
Species within 3mm					
(1) vs. (3)			22.968	2.731	0.048*
(2) vs. (3)			26.481	3.149	0.020*
(4) vs. (3)			21.033	2.501	0.067'
(1) vs. (2)			3.513	0.418	0.897
(1) vs. (4)			1.934	0.230	0.819
(2) vs. (4)			5.448	0.648	0.890
Species within 6mm					
(1) vs. (3)			39.946	4.750	<0.001***
(2) vs. (3)			1.932	0.230	0.820
(4) vs. (3)			47.796	5.683	<0.001***
(1) vs. (2)			38.015	4.520	<0.001***
(1) vs. (4)			7.850	0.933	0.586
(2) vs. (4)			45.864	5.453	<0.001***
Treatment within (1)					
0mm vs. 3mm			1.734	0.206	0.838
0mm vs. 6mm			19.758	2.349	0.071'
3mm vs. 6mm			18.024	2.143	0.076'
Treatment within (2)					
0mm vs. 3mm			0.267	0.0318	0.975
0mm vs. 6mm			59.285	7.049	<0.001***
3mm vs. 6mm			59.553	7.081	<0.001***
Treatment within (3)					
0mm vs. 3mm			27.262	3.241	0.005**
0mm vs. 6mm			7.742	0.920	0.363
3mm vs. 6mm			35.003	4.162	<0.001***
Treatment within (4)					
0mm vs. 3mm			7.767	0.923	0.362
0mm vs. 6mm			16.008	1.903	0.183
3mm vs. 6mm			8.241	0.980	0.556

Factor	df	SS	MS	F.Model	p-value
(b) NH₄⁺					
Species	3	11121.266	3707.089	52.311	<0.001***
Treatment	2	173.169	86.585	1.222	0.307
Species x Treatment	6	6890.554	1148.426	16.205	<0.001***
Res	36	2551.195	70.867		
Total	47	20736.185	441.195		
Pairwise comparison (Holm-Sidak)			Diff of Means	t	p-value
Species within 0mm					
(1) vs. (3)			31.538	5.298	<0.001***
(2) vs. (3)			67.580	11.353	<0.001***
(4) vs. (3)			58.968	9.906	<0.001***
(1) vs. (2)			36.043	6.055	<0.001***
(1) vs. (4)			27.430	4.608	<0.001***
(2) vs. (4)			8.613	1.447	0.157
Species within 3mm					
(1) vs. (3)			34.748	5.837	<0.001***
(2) vs. (3)			36.105	6.065	<0.001***
(4) vs. (3)			35.638	5.987	<0.001***
(1) vs. (2)			1.358	0.228	0.994
(1) vs. (4)			0.890	0.150	0.986
(2) vs. (4)			0.468	0.0785	0.938
Species within 6mm					
(1) vs. (3)			6.273	1.054	0.509
(2) vs. (3)			7.235	1.215	0.547
(4) vs. (3)			26.802	4.503	<0.001***
(1) vs. (2)			0.962	0.162	0.872
(1) vs. (4)			33.075	5.556	<0.001***
(2) vs. (4)			34.037	5.718	<0.001***
Treatment within (1)					
0mm vs. 3mm			20.700	3.477	0.004**
0mm vs. 6mm			1.335	0.224	0.824
3mm vs. 6mm			19.365	3.253	0.005**
Treatment within (2)					
0mm vs. 3mm			13.985	2.349	0.024*
0mm vs. 6mm			35.670	5.992	<0.001***
3mm vs. 6mm			21.685	3.643	0.002**
Treatment within (3)					
0mm vs. 3mm			17.490	2.938	0.006**
0mm vs. 6mm			39.145	6.576	<0.001***
3mm vs. 6mm			21.655	3.638	0.002**
Treatment within (4)					
0mm vs. 3mm			5.840	0.981	0.333
0mm vs. 6mm			6.980	1.173	0.435
3mm vs. 6mm			12.820	2.154	0.110
(c) N₂					
Species	3	2.523	0.841	0.803	0.500
Treatment	2	0.192	0.0962	0.0919	0.912
Species x Treatment	6	0.835	0.139	0.133	0.991
Res	36	37.679	1.047		
Total	47	41.229	0.877		