Appendix A–Reprint of Published Paper from Subchapter 4.1.

This appendix contains an electronic reprint of the paper published in the special issue of *Bulletin of Marine Science*.

Citation: Mellors, J., Marsh, H., Carruthers, T.J.B. and Waycott, M. (2002). Testing the sediment-trapping paradigm of seagrass: Do seagrasses influence nutrient status and sediment structure in tropical intertidal environments? *Bulletin of Marine Science* **71(3):** 1215–1226.

Appendix B: Statistical tables for analyses in Chapter 4.

Note that throughout these tables if the only significant relationship in the analyses is due to location no statistical table is shown as it is adequately quoted in the text.

Table of Contents—Appendix B

Concept 1

Table B.1: Pearson correlation coefficients illustrating the relationship between sediment structure and plant abundance for *Halodule uninervis*, (**bold** denotes significant r^2 N = 21, $r^2_{(21)}$ = 0.433).

	Leaf biomass	Rhizome biomass	Root biomass	Total biomass	Leaf density	Clay	Very fine silt	Fine silt	Medium silt	Coarse silt
Rhizome biomass	**.743**									
Roots biomass	**.506**	**.799**								
Total biomass	**.705**	**.947**	**.934**							
Leaf density	**.867**	**.641**	.408	**.585**						
Clay	-.114	-.204	.041	-.081	.042					
Very fine silt	.019	.264	.211	.237	.210	**.589**				
Fine silt	-.051	.195	-.199	-.014	-.067	-.354	.285			
Medium silt	-.011	.197	.205	.190	-.226	**-.675**	**-.570**	.343		
Coarse silt	.257	.163	.417	.316	.186	-.248	**-.562**	**-.447**	**.434**	
sand	.319	.275	.238	.287	.222	**-.645**	**-.638**	-.080	**.547**	**.705**

Table B.2: Seagrass abundance affects sediment structure: MANOVA results for total biomass of *Halodule uninervis* and sediment structure.

Multivariate Tests for Total Biomass *of Halodule uninervis* affecting sediment structure

	Effect	Value [a]	F [b]	Hypothesis df [c]	Error df	Sig.
Intercept	Pillai's Trace	.975	51.052	6.000	8.000	.000
	Wilks' Lambda	.025	51.052	6.000	8.000	.000
	Hotelling's Trace	38.289	51.052	6.000	8.000	.000
	Roy's Largest Root	38.289	51.052	6.000	8.000	.000
LTOTBIOM	Pillai's Trace	.536	1.539	6.000	8.000	.279
	Wilks' Lambda	.464	1.539	6.000	8.000	.279
	Hotelling's Trace	1.154	1.539	6.000	8.000	.279
	Roy's Largest Root	1.154	1.539	6.000	8.000	.279
LOCATION	Pillai's Trace	3.851	3.882	36.000	78.000	.000
	Wilks' Lambda	.000	13.300	36.000	37.891	.000
	Hotelling's Trace	132.811	23.365	36.000	38.000	.000
	Roy's Largest Root	79.117	171.421	6.000	13.000	.000

[a] Exact statistic. [b] The statistic is an upper bound on F that yields a lower bound on the significance level. [c] Design: Intercept+LTOTBIOM+LOCATION.

Tests of Between-Subjects Effects or univariate outcomes for total biomass and sediment structure

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model [a]	LCLAY	12.180	7	1.740	59.759	.000
	LVFSILT	13.405	7	1.915	76.729	.000
	LFSILT	2.296	7	.328	7.692	.001
	LMEDSILT	1.997	7	.285	5.118	.006
	LCSILT	17.270	7	2.467	10.290	.000
	LSAND	.896	7	.128	6.388	.002
Intercept [b]	LCLAY	.889	1	.889	30.539	.000
	LVFSILT	1.105	1	1.105	44.280	.000
	LFSILT	7.026	1	7.026	164.780	.000
	LMEDSILT	8.632	1	8.632	154.876	.000
	LCSILT	.602	1	.602	2.510	.137
	LSAND	1.557	1	1.557	77.673	.000
LTOTBIOM [c]	LCLAY	3.454E-02	1	3.454E-02	1.186	.296
	LVFSILT	.224	1	.224	8.990	.010
	LFSILT	4.357E-03	1	4.357E-03	.102	.754
	LMEDSILT	2.302E-02	1	2.302E-02	.413	.532
	LCSILT	8.412E-03	1	8.412E-03	.035	.854
	LSAND	6.851E-02	1	6.851E-02	3.418	.087
LOCATION [d]	LCLAY	12.107	6	2.018	69.302	.000
	LVFSILT	12.610	6	2.102	84.209	.000
	LFSILT	2.295	6	.383	8.971	.001
	LMEDSILT	1.902	6	.317	5.689	.004
	LCSILT	15.307	6	2.551	10.640	.000
	LSAND	.805	6	.134	6.692	.002
Error [e]	LCLAY	.379	13	2.912E-02		
	LVFSILT	.324	13	2.496E-02		
	LFSILT	.554	13	4.264E-02		
	LMEDSILT	.725	13	5.574E-02		
	LCSILT	3.117	13	.240		
	LSAND	.261	13	2.004E-02		
Total [f]	LCLAY	15.615	21			
	LVFSILT	15.722	21			
	LFSILT	36.906	21			
	LMEDSILT	50.637	21			
	LCSILT	24.119	21			
	LSAND	12.298	21			
Corrected Total	LCLAY	12.558	20			
	LVFSILT	13.730	20			
	LFSILT	2.850	20			
	LMEDSILT	2.721	20			
	LCSILT	20.387	20			
	LSAND	1.157	20			

a R Squared = .970 (Adjusted R Squared = .954)   b R Squared = .976 (Adjusted R Squared = .964)   c R Squared = .806 (Adjusted R Squared = .701)
d R Squared = .734 (Adjusted R Squared = .590)   e R Squared = .847 (Adjusted R Squared = .765)   f R Squared = .775 (Adjusted R Squared = .653)

Table B.3: Seagrass abundance affects sediment structure: MANOVA results for leave, rhizome and root biomass of *Halodule uninervis* and sediment structure.

Multivariate Tests for leaves, rhizomes and roots biomass of *Halodule uninervis* affecting sediment structure

Effect	Test	Value [a]	F [b]	Hypothesis df [c]	Error df	Sig.
Intercept	Pillai's Trace	.966	28.850	6.000	6.000	.000
	Wilks' Lambda	.034	28.850	6.000	6.000	.000
	Hotelling's Trace	28.850	28.850	6.000	6.000	.000
	Roy's Largest Root	28.850	28.850	6.000	6.000	.000
LLVS	Pillai's Trace	.545	1.199	6.000	6.000	.416
	Wilks' Lambda	.455	1.199	6.000	6.000	.416
	Hotelling's Trace	1.199	1.199	6.000	6.000	.416
	Roy's Largest Root	1.199	1.199	6.000	6.000	.416
LRHIZ	Pillai's Trace	.704	2.374	6.000	6.000	.158
	Wilks' Lambda	.296	2.374	6.000	6.000	.158
	Hotelling's Trace	2.374	2.374	6.000	6.000	.158
	Roy's Largest Root	2.374	2.374	6.000	6.000	.158
LROOTS	Pillai's Trace	.870	6.717	6.000	6.000	.018
	Wilks' Lambda	.130	6.717	6.000	6.000	.018
	Hotelling's Trace	6.717	6.717	6.000	6.000	.018
	Roy's Largest Root	6.717	6.717	6.000	6.000	.018
LOCATION	Pillai's Trace	3.900	3.406	36.000	66.000	.000
	Wilks' Lambda	.000	11.363	36.000	29.109	.000
	Hotelling's Trace	145.851	17.556	36.000	26.000	.000
	Roy's Largest Root	84.804	155.474	6.000	11.000	.000

a Exact statistic
b The statistic is an upper bound on F that yields a lower bound on the significance level.
c Design: Intercept+LLVS+LRHIZ+LROOTS+LOCATION

Tests of Between-Subjects Effects or univariate outcomes for leaf, rhizome and root biomass and sediment structure

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LCLAY	12.276	9	1.364	53.042	.000
	LVFSILT	13.559	9	1.507	96.828	.000
	LFSILT	2.483	9	.276	8.261	.001
	LMEDSILT	2.246	9	.250	5.779	.004
	LCSILT	17.751	9	1.972	8.230	.001
	LSAND	.990	9	.110	7.260	.002
Intercept	LCLAY	.492	1	.492	19.119	.001
	LVFSILT	.448	1	.448	28.764	.000
	LFSILT	1.257	1	1.257	37.644	.000
	LMEDSILT	1.806	1	1.806	41.819	.000
	LCSILT	1.218E-02	1	1.218E-02	.051	.826
	LSAND	.545	1	.545	35.937	.000
LLVS	LCLAY	4.805E-02	1	4.805E-02	1.868	.199
	LVFSILT	6.637E-02	1	6.637E-02	4.266	.063
	LFSILT	4.965E-02	1	4.965E-02	1.487	.248
	LMEDSILT	.200	1	.200	4.642	.054
	LCSILT	.464	1	.464	1.935	.192
	LSAND	5.597E-02	1	5.597E-02	3.694	.081
LRHIZ	LCLAY	.110	1	.110	4.274	.063
	LVFSILT	.230	1	.230	14.764	.003
	LFSILT	.135	1	.135	4.048	.069
	LMEDSILT	.248	1	.248	5.746	.035
	LCSILT	.403	1	.403	1.680	.221
	LSAND	4.385E-02	1	4.385E-02	2.894	.117
LROOTS	LCLAY	1.899E-02	1	1.899E-02	.739	.408
	LVFSILT	1.519E-02	1	1.519E-02	.976	.344
	LFSILT	.166	1	.166	4.982	.047
	LMEDSILT	2.967E-02	1	2.967E-02	.687	.425
	LCSILT	5.528E-02	1	5.528E-02	.231	.640
	LSAND	2.275E-02	1	2.275E-02	1.502	.246
LOCATION	LCLAY	10.102	6	1.684	65.475	.000
	LVFSILT	11.497	6	1.916	123.160	.000
	LFSILT	.828	6	.138	4.134	.020
	LMEDSILT	1.998	6	.333	7.710	.002

	LCSILT	10.483	6	1.747	7.291	.002
	LSAND	.862	6	.144	9.486	.001
Error	LCLAY	.283	11	2.571E-02		
	LVFSILT	.171	11	1.556E-02		
	LFSILT	.367	11	3.339E-02		
	LMEDSILT	.475	11	4.319E-02		
	LCSILT	2.636	11	.240		
	LSAND	.167	11	1.515E-02		
Total	LCLAY	15.615	21			
	LVFSILT	15.722	21			
	LFSILT	36.906	21			
	LMEDSILT	50.637	21			
	LCSILT	24.119	21			
	LSAND	12.298	21			
Corrected Total	LCLAY	12.558	20			
	LVFSILT	13.730	20			
	LFSILT	2.850	20			
	LMEDSILT	2.721	20			
	LCSILT	20.387	20			
	LSAND	1.157	20			

a R Squared = .977 (Adjusted R Squared = .959)   b R Squared = .988 (Adjusted R Squared = .977)
c R Squared = .871 (Adjusted R Squared = .766)   d R Squared = .825 (Adjusted R Squared = .683)
e R Squared = .871 (Adjusted R Squared = .765)   f R Squared = .856 (Adjusted R Squared = .738) (numbering as per Table B.2).

Table B.4: Seagrass abundance affects sediment structure: MANOVA results for rhizome and root (below ground) biomass of *Halodule uninervis* affecting sediment structure.

Multivariate Tests for rhizome and roots (below ground) biomass of *Halodule uninervis* affecting sediment structure

Effect	Test	Value [a]	F [b]	Hypothesis df [c]	Error df	Sig.
Intercept	Pillai's Trace	.989	107.339	6.000	7.000	.000
	Wilks' Lambda	.011	107.339	6.000	7.000	.000
	Hotelling's Trace	92.005	107.339	6.000	7.000	.000
	Roy's Largest Root	92.005	107.339	6.000	7.000	.000
LRHIZ	Pillai's Trace	.815	5.138	6.000	7.000	.025
	Wilks' Lambda	.185	5.138	6.000	7.000	.025
	Hotelling's Trace	4.404	5.138	6.000	7.000	.025
	Roy's Largest Root	4.404	5.138	6.000	7.000	.025
LROOTS	Pillai's Trace	.879	8.457	6.000	7.000	.006
	Wilks' Lambda	.121	8.457	6.000	7.000	.006
	Hotelling's Trace	7.249	8.457	6.000	7.000	.006
	Roy's Largest Root	7.249	8.457	6.000	7.000	.006
LOCATION	Pillai's Trace	3.845	3.567	36.000	72.000	.000
	Wilks' Lambda	.000	12.934	36.000	33.500	.000
	Hotelling's Trace	139.721	20.699	36.000	32.000	.000
	Roy's Largest Root	78.296	156.592	6.000	12.000	.000
Intercept	Pillai's Trace	.989	107.339	6.000	7.000	.000
	Wilks' Lambda	.011	107.339	6.000	7.000	.000
	Hotelling's Trace	92.005	107.339	6.000	7.000	.000
	Roy's Largest Root	92.005	107.339	6.000	7.000	.000

a Exact statistic b The statistic is an upper bound on F that yields a lower bound on the significance level. c Design: Intercept+LRHIZ+LROOTS+LOCATION

Tests of Between-Subjects Effects or univariate responses for rhizome and roots and sediment structure

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LCLAY	12.228	8	1.528	55.427	.000
	LVFSILT	13.492	8	1.687	85.210	.000
	LFSILT	2.433	8	.304	8.753	.001
	LMEDSILT	2.046	8	.256	4.543	.010
	LCSILT	17.287	8	2.161	8.365	.001
	LSAND	.934	8	.117	6.293	.002
Intercept	LCLAY	.864	1	.864	31.345	.000
	LVFSILT	.664	1	.664	33.564	.000
	LFSILT	5.466	1	5.466	157.299	.000
	LMEDSILT	9.429	1	9.429	167.482	.000
	LCSILT	.662	1	.662	2.562	.135
	LSAND	2.797	1	2.797	150.720	.000
LRHIZ	LCLAY	6.835E-02	1	6.835E-02	2.479	.141
	LVFSILT	.210	1	.210	10.618	.007
	LFSILT	.101	1	.101	2.900	.114
	LMEDSILT	5.386E-02	1	5.386E-02	.957	.347
	LCSILT	2.110E-02	1	2.110E-02	.082	.780
	LSAND	1.017E-03	1	1.017E-03	.055	.819
LROOTS	LCLAY	6.165E-03	1	6.165E-03	.224	.645
	LVFSILT	2.693E-03	1	2.693E-03	.136	.719
	LFSILT	.129	1	.129	3.714	.078
	LMEDSILT	2.151E-03	1	2.151E-03	.038	.848
	LCSILT	1.809E-03	1	1.809E-03	.007	.935
	LSAND	5.191E-02	1	5.191E-02	2.798	.120
LOCATION	LCLAY	10.255	6	1.709	61.979	.000
	LVFSILT	12.511	6	2.085	105.354	.000
	LFSILT	1.331	6	.222	6.386	.003
	LMEDSILT	1.927	6	.321	5.704	.005
	LCSILT	12.209	6	2.035	7.877	.001
	LSAND	.848	6	.141	7.619	.002
Error	LCLAY	.331	12	2.758E-02		
	LVFSILT	.238	12	1.979E-02		
	LFSILT	.417	12	3.475E-02		
	LMEDSILT	.676	12	5.630E-02		
	LCSILT	3.100	12	.258		
	LSAND	.223	12	1.855E-02		

			df			
Total	LCLAY	15.615	21			
	LVFSILT	15.722	21			
	LFSILT	36.906	21			
	LMEDSILT	50.637	21			
	LCSILT	24.119	21			
	LSAND	12.298	21			
Corrected Total	LCLAY	12.558	20			
	LVFSILT	13.730	20			
	LFSILT	2.850	20			
	LMEDSILT	2.721	20			
	LCSILT	20.387	20			
	LSAND	1.157	20			
Corrected Model	LCLAY	12.228	8	1.528	55.427	.000
	LVFSILT	13.492	8	1.687	85.210	.000
	LFSILT	2.433	8	.304	8.753	.001
	LMEDSILT	2.046	8	.256	4.543	.010
	LCSILT	17.287	8	2.161	8.365	.001
	LSAND	.934	8	.117	6.293	.002

a R Squared = .974 (Adjusted R Squared = .956)   b R Squared = .983 (Adjusted R Squared = .971)   c R Squared = .854 (Adjusted R Squared = .756)
d R Squared = .752 (Adjusted R Squared = .586)   e R Squared = .848 (Adjusted R Squared = .747)   f R Squared = .808 (Adjusted R Squared = .679) (numbering as per Table B.2).

Table B.5: Seagrass abundance affects sediment structure: MANOVA results for leaf density of *Halodule uninervis* affecting sediment structure.

Multivariate Tests for leaf density of *Halodule uninervis* affecting sediment structure

Effect	Test	Value [a]	F [b]	Hypothesis df [c]	Error df	Sig.
Intercept	Pillai's Trace	.795	5.158	6.000	8.000	.019
	Wilks' Lambda	.205	5.158	6.000	8.000	.019
	Hotelling's Trace	3.868	5.158	6.000	8.000	.019
	Roy's Largest Root	3.868	5.158	6.000	8.000	.019
LDENSITY	Pillai's Trace	.404	.905	6.000	8.000	.535
	Wilks' Lambda	.596	.905	6.000	8.000	.535
	Hotelling's Trace	.679	.905	6.000	8.000	.535
	Roy's Largest Root	.679	.905	6.000	8.000	.535
LOCATION	Pillai's Trace	4.015	4.381	36.000	78.000	.000
	Wilks' Lambda	.000	14.354	36.000	37.891	.000
	Hotelling's Trace	119.491	21.022	36.000	38.000	.000
	Roy's Largest Root	69.931	151.517	6.000	13.000	.000

Tests of Between-Subjects Effects or univariate responses leaf density and sediment structure

a Exact statistic b The statistic is an upper bound on F that yields a lower bound on the significance level. c Design: Intercept+LDENSITY+LOCATION

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LCLAY	12.178	7	1.740	59.436	.000
	LVFSILT	13.264	7	1.895	52.942	.000
	LFSILT	2.292	7	.327	7.620	.001
	LMEDSILT	1.975	7	.282	4.918	.007
	LCSILT	17.485	7	2.498	11.190	.000
	LSAND	.848	7	.121	5.104	.006
Intercept	LCLAY	.125	1	.125	4.278	.059
	LVFSILT	.183	1	.183	5.127	.041
	LFSILT	.353	1	.353	8.209	.013
	LMEDSILT	.534	1	.534	9.302	.009
	LCSILT	7.709E-02	1	7.709E-02	.345	.567
	LSAND	3.633E-02	1	3.633E-02	1.530	.238
LDENSITY	LCLAY	3.254E-02	1	3.254E-02	1.112	.311
	LVFSILT	8.354E-02	1	8.354E-02	2.334	.151
	LFSILT	1.426E-04	1	1.426E-04	.003	.955
	LMEDSILT	1.636E-03	1	1.636E-03	.029	.869
	LCSILT	.223	1	.223	1.001	.335
	LSAND	2.045E-02	1	2.045E-02	.861	.370
LOCATION	LCLAY	12.156	6	2.026	69.215	.000
	LVFSILT	12.660	6	2.110	58.953	.000
	LFSILT	2.279	6	.380	8.840	.001
	LMEDSILT	1.837	6	.306	5.336	.006
	LCSILT	16.778	6	2.796	12.527	.000
	LSAND	.791	6	.132	5.553	.005
Error	LCLAY	.381	13	2.927E-02		
	LVFSILT	.465	13	3.579E-02		
	LFSILT	.559	13	4.296E-02		
	LMEDSILT	.746	13	5.738E-02		
	LCSILT	2.902	13	.223		
	LSAND	.309	13	2.374E-02		
Total	LCLAY	15.615	21			
	LVFSILT	15.722	21			
	LFSILT	36.906	21			
	LMEDSILT	50.637	21			
	LCSILT	24.119	21			
	LSAND	12.298	21			
Corrected Total	LCLAY	12.558	20			
	LVFSILT	13.730	20			
	LFSILT	2.850	20			
	LMEDSILT	2.721	20			
	LCSILT	20.387	20			
	LSAND	1.157	20			

a R Squared = .970 (Adjusted R Squared = .953)   b R Squared = .966 (Adjusted R Squared = .948)   c R Squared = .804 (Adjusted R Squared = .699) d R Squared = .726 (Adjusted R Squared = .578)   e R Squared = .858 (Adjusted R Squared = .781)   f R Squared = .733 (Adjusted R Squared = .590) (Numbering as per Table B.2).

Table B.6: Pearson correlation coefficients illustrating the relationship between sediment structure and plant abundance for *Zostera capricorni* (**bold** denotes significant r^2 N = 6, $r^2_{(6)}$ = 0.811).

	Leaf biomass	Rhizome biomass	Root biomass	Total biomass	Leaf density	Clay	Very fine silt	Fine silt	Medium silt	Coarse silt
Rhizome biomass	**.739**									
Roots biomass	**.889**	**.866**								
Total biomasss	**.957**	**.901**	**.939**							
Leaf density	**.941**	.756	**.894**	**.940**						
Clay	-.783	-.511	-.532	-.710	-.586					
Very fine silt	**-.959**	-.685	-.778	**-.917**	**-.948**	.769				
Fine silt	-.622	-.181	-.415	-.507	-.741	.402	.753			
Medium silt	.761	.667	.616	.767	.615	**-.953**	-.744	-.353		
Coarse silt	**.820**	.648	.638	.807	.736	**-.929**	**-.853**	-.575	**.966**	
Sand	.201	.083	-067	.154	-.014	-.761	-.246	-.045	.740	.659

Table B.7: Seagrass abundance affects sediment structure: MANOVA results for total biomass of *Zostera capricorni* and sediment structure.

Multivariate Tests for Total Biomass of *Zostera capricorni* affecting sediment structure

Effect	Test	Value [a]	F [b]	Hypothesis df [c]	Error df	Sig.
Intercept	Pillai's Trace	.765	1.086	3.000	1.000	.592
	Wilks' Lambda	.235	1.086	3.000	1.000	.592
	Hotelling's Trace	3.257	1.086	3.000	1.000	.592
	Roy's Largest Root	3.257	1.086	3.000	1.000	.592
LTOTAL	Pillai's Trace	.812	1.443	3.000	1.000	.534
	Wilks' Lambda	.188	1.443	3.000	1.000	.534
	Hotelling's Trace	4.328	1.443	3.000	1.000	.534
	Roy's Largest Root	4.328	1.443	3.000	1.000	.534
LOCATION	Pillai's Trace	.876	2.366	3.000	1.000	.438
	Wilks' Lambda	.124	2.366	3.000	1.000	.438
	Hotelling's Trace	7.097	2.366	3.000	1.000	.438
	Roy's Largest Root	7.097	2.366	3.000	1.000	.438

a Exact statistic b Design: Intercept+Ltotal+LOCATION

Tests of Between-Subjects Effects or univariate responses of total biomass of *Zostera capricorni* and sediment structure

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LCLAY	.145	2	7.246E-02	2.179	.260
	LVFSILT	.431	2	.216	42.284	.006
	LFSILT	1.748	2	.874	6.206	.086
	LMEDSILT	.176	2	8.785E-02	2.662	.216
	LCSILT	.598	2	.299	6.817	.077
	LSAND	7.168E-03	2	3.584E-03	.350	.730
Intercept	LCLAY	1.038E-03	1	1.038E-03	.031	.871
	LVFSILT	1.188E-03	1	1.188E-03	.233	.662
	LFSILT	.786	1	.786	5.582	.099
	LMEDSILT	1.749E-02	1	1.749E-02	.530	.519
	LCSILT	.105	1	.105	2.388	.220
	LSAND	2.491E-02	1	2.491E-02	2.434	.217
LSEAGRAS	LCLAY	6.327E-03	1	6.327E-03	.190	.692
	LVFSILT	1.415E-02	1	1.415E-02	2.774	.194
	LFSILT	.875	1	.875	6.214	.088
	LMEDSILT	1.789E-03	1	1.789E-03	.054	.831
	LCSILT	4.748E-02	1	4.748E-02	1.083	.375
	LSAND	5.236E-03	1	5.236E-03	.512	.526
LOCATION	LCLAY	2.147E-02	1	2.147E-02	.646	.480
	LVFSILT	5.544E-02	1	5.544E-02	10.872	.046
	LFSILT	1.190	1	1.190	8.453	.062
	LMEDSILT	1.395E-02	1	1.395E-02	.423	.562
	LCSILT	.123	1	.123	2.799	.193
	LSAND	6.272E-03	1	6.272E-03	.613	.491
Error	LCLAY	9.976E-02	3	3.325E-02		
	LVFSILT	1.530E-02	3	5.100E-03		
	LFSILT	.422	3	.141		
	LMEDSILT	9.899E-02	3	3.300E-02		
	LCSILT	.132	3	4.385E-02		
	LSAND	3.070E-02	3	1.023E-02		
Total	LCLAY	11.752	6			
	LVFSILT	7.015	6			
	LFSILT	4.329	6			
	LMEDSILT	7.738	6			
	LCSILT	11.057	6			
	LSAND	6.777	6			
Corrected Total	LCLAY	.245	5			
	LVFSILT	.447	5			

LFSILT	2.170	5
LMEDSILT	.275	5
LCSILT	.729	5
LSAND	3.787E-02	5

a R Squared = .592 (Adjusted R Squared = .320)   b R Squared = .966 (Adjusted R Squared = .943)
c R Squared = .805 (Adjusted R Squared = .676)   d R Squared = .640 (Adjusted R Squared = .399)
e R Squared = .820 (Adjusted R Squared = .699)   f R Squared = .189 (Adjusted R Squared = -.351) (Numbering as per Table B.2).

Table B.8: Seagrass abundance affects sediment structure: MANOVA results for leaf, rhizome and root biomass of *Zostera capricorni* and sediment structure.

Multivariate Tests for leaf, rhizome and root biomass of *Zostera capricorni* affecting sediment structure

Effect	Test	Value [a]	F	Hypothesis df [b]	Error df	Sig.
Intercept	Pillai's Trace	.570	1.324	1.000	1.000	.455
	Wilks' Lambda	.430	1.324	1.000	1.000	.455
	Hotelling's Trace	1.324	1.324	1.000	1.000	.455
	Roy's Largest Root	1.324	1.324	1.000	1.000	.455
LLVS	Pillai's Trace	.383	.621	1.000	1.000	.575
	Wilks' Lambda	.617	.621	1.000	1.000	.575
	Hotelling's Trace	.621	.621	1.000	1.000	.575
	Roy's Largest Root	.621	.621	1.000	1.000	.575
LRHZ	Pillai's Trace	.164	.196	1.000	1.000	.735
	Wilks' Lambda	.836	.196	1.000	1.000	.735
	Hotelling's Trace	.196	.196	1.000	1.000	.735
	Roy's Largest Root	.196	.196	1.000	1.000	.735
LRTS	Pillai's Trace	.424	.737	1.000	1.000	.548
	Wilks' Lambda	.576	.737	1.000	1.000	.548
	Hotelling's Trace	.737	.737	1.000	1.000	.548
	Roy's Largest Root	.737	.737	1.000	1.000	.548
LOCATION	Pillai's Trace	.048	.050	1.000	1.000	.860
	Wilks' Lambda	.952	.050	1.000	1.000	.860
	Hotelling's Trace	.050	.050	1.000	1.000	.860
	Roy's Largest Root	.050	.050	1.000	1.000	.860

a Exact statistic b Design: Intercept+LLVS+LRHZ+LRTS+LOCATION

Tests of Between-Subjects Effects or univariate responses of leaf, rhizome and root biomass of *Zostera capricorni* and sediment structure

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LCLAY	.193	4	4.818E-02	.928	.642
	LVFSILT	.443	4	.111	34.276	.127
	LFSILT	2.120	4	.530	10.429	.228
	LMEDSILT	.194	4	4.860E-02	.605	.732
	LCSILT	.607	4	.152	1.239	.580
	LSAND	1.743E-02	4	4.358E-03	.213	.904
Intercept	LCLAY	6.877E-02	1	6.877E-02	1.324	.455
	LVFSILT	6.599E-03	1	6.599E-03	2.041	.389
	LFSILT	.688	1	.688	13.539	.169
	LMEDSILT	1.667E-03	1	1.667E-03	.021	.909
	LCSILT	3.345E-02	1	3.345E-02	.273	.693
	LSAND	6.713E-03	1	6.713E-03	.329	.669
LLVS	LCLAY	3.227E-02	1	3.227E-02	.621	.575
	LVFSILT	1.202E-03	1	1.202E-03	.372	.651
	LFSILT	.348	1	.348	6.839	.233
	LMEDSILT	7.889E-03	1	7.889E-03	.098	.807
	LCSILT	2.016E-04	1	2.016E-04	.002	.974
	LSAND	2.787E-03	1	2.787E-03	.136	.775
LRHZ	LCLAY	1.016E-02	1	1.016E-02	.196	.735
	LVFSILT	2.767E-03	1	2.767E-03	.856	.525
	LFSILT	.994	1	.994	19.565	.142
	LMEDSILT	1.054E-02	1	1.054E-02	.131	.779
	LCSILT	6.829E-06	1	6.829E-06	.000	.995
	LSAND	2.661E-03	1	2.661E-03	.130	.780
LRTS	LCLAY	3.830E-02	1	3.830E-02	.737	.548
	LVFSILT	2.689E-03	1	2.689E-03	.832	.529
	LFSILT	.166	1	.166	3.259	.322
	LMEDSILT	2.038E-02	1	2.038E-02	.254	.703
	LCSILT	2.467E-02	1	2.467E-02	.201	.731
	LSAND	1.294E-02	1	1.294E-02	.633	.572
LOCATION	LCLAY	2.598E-03	1	2.598E-03	.050	.860
	LVFSILT	1.629E-02	1	1.629E-02	5.039	.267
	LFSILT	.906	1	.906	17.831	.148
	LMEDSILT	2.112E-04	1	2.112E-04	.003	.967
	LCSILT	3.691E-02	1	3.691E-02	.301	.680
	LSAND	5.573E-05	1	5.573E-05	.003	.967

Error	LCLAY	5.195E-02	1	5.195E-02
	LVFSILT	3.234E-03	1	3.234E-03
	LFSILT	5.081E-02	1	5.081E-02
	LMEDSILT	8.028E-02	1	8.028E-02
	LCSILT	.123	1	.123
	LSAND	2.044E-02	1	2.044E-02
Total	LCLAY	11.752	6	
	LVFSILT	7.015	6	
	LFSILT	4.329	6	
	LMEDSILT	7.738	6	
	LCSILT	11.057	6	
	LSAND	6.777	6	
Corrected Total	LCLAY	.245	5	
	LVFSILT	.447	5	
	LFSILT	2.170	5	
	LMEDSILT	.275	5	
	LCSILT	.729	5	
	LSAND	3.787E-02	5	

a R Squared = .788 (Adjusted R Squared = -.062) b R Squared = .993 (Adjusted R Squared = .964) c R Squared = .977 (Adjusted R Squared = .883) d R Squared = .708 (Adjusted R Squared = -.461) e R Squared = .832 (Adjusted R Squared = .160) f R Squared = .460 (Adjusted R Squared = -1.698) (Numbering follows Table B.2)

Table B.9: Seagrass abundance affects sediment structure: MANOVA results for leaf density of *Zostera capricorni* and sediment structure.

Multivariate Tests on leaf density of *Zostera capricorni* affecting sediment structure

Effect		Value [a]	F	Hypothesis df [b]	Error df	Sig.
Intercept	Pillai's Trace	.791	1.262	3.000	1.000	.561
	Wilks' Lambda	.209	1.262	3.000	1.000	.561
	Hotelling's Trace	3.786	1.262	3.000	1.000	.561
	Roy's Largest Root	3.786	1.262	3.000	1.000	.561
LLEAFNO	Pillai's Trace	.819	1.513	3.000	1.000	.524
	Wilks' Lambda	.181	1.513	3.000	1.000	.524
	Hotelling's Trace	4.538	1.513	3.000	1.000	.524
	Roy's Largest Root	4.538	1.513	3.000	1.000	.524
LOCATION	Pillai's Trace	.840	1.750	3.000	1.000	.495
	Wilks' Lambda	.160	1.750	3.000	1.000	.495
	Hotelling's Trace	5.251	1.750	3.000	1.000	.495
	Roy's Largest Root	5.251	1.750	3.000	1.000	.495

a Exact statistic   b Design: Intercept+LLEAFNO+LOCATION

Table B.10: Seagrass abundance affects sediment structure: MANOVA results for location and sediment structure of *Zostera capricorni* meadow.

Multivariate Tests on the effect of location on sediment structure of *Zostera capricorni* meadows

Effect		Value	F	Hypothesis df	Error df		Sig.
Intercept	Pillai's Trace	1.000	1101.626	4.000	1.000	.023	
	Wilks' Lambda	.000	1101.626	4.000	1.000	.023	
	Hotelling's Trace	4406.505	1101.626	4.000	1.000	.023	
	Roy's Largest Root	4406.505	1101.626	4.000	1.000	.023	
LOCATION	Pillai's Trace	.994	44.824	4.000	1.000	.112	
	Wilks' Lambda	.006	44.824	4.000	1.000	.112	
	Hotelling's Trace	179.295	44.824	4.000	1.000	.112	
	Roy's Largest Root	179.295	44.824	4.000	1.000	.112	

a Exact statistic b Design: Intercept+LOCATION

Tests of Between-Subjects Effects on Location and sediment structure of *Zostera capricorni* meadows

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LCLAY	.139	1	.139	5.225	.084
	LVFSILT	.417	1	.417	56.664	.002
	LFSILT	.873	1	.873	2.690	.176
	LMEDSILT	.174	1	.174	6.902	.058
	LCSILT	.550	1	.550	12.298	.025
	LSAND	1.932E-03	1	1.932E-03	.215	.667
Intercept	LCLAY	11.508	1	11.508	433.879	.000
	LVFSILT	6.568	1	6.568	892.247	.000
	LFSILT	2.158	1	2.158	6.653	.061
	LMEDSILT	7.463	1	7.463	296.216	.000
	LCSILT	10.328	1	10.328	230.753	.000
	LSAND	6.739	1	6.739	750.107	.000
LOCATION	LCLAY	.139	1	.139	5.225	.084
	LVFSILT	.417	1	.417	56.664	.002
	LFSILT	.873	1	.873	2.690	.176
	LMEDSILT	.174	1	.174	6.902	.058
	LCSILT	.550	1	.550	12.298	.025
	LSAND	1.932E-03	1	1.932E-03	.215	.667
Error	LCLAY	.106	4	2.652E-02		
	LVFSILT	2.945E-02	4	7.361E-03		
	LFSILT	1.298	4	.324		
	LMEDSILT	.101	4	2.520E-02		
	LCSILT	.179	4	4.476E-02		
	LSAND	3.594E-02	4	8.984E-03		
Total	LCLAY	11.752	6			
	LVFSILT	7.015	6			
	LFSILT	4.329	6			
	LMEDSILT	7.738	6			
	LCSILT	11.057	6			
	LSAND	6.777	6			
Corrected Total	LCLAY	.245	5			
	LVFSILT	.447	5			
	LFSILT	2.170	5			
	LMEDSILT	.275	5			
	LCSILT	.729	5			
	LSAND	3.787E-02	5			

a R Squared = .566 (Adjusted R Squared = .458)   b R Squared = .934 (Adjusted R Squared = .918)c R Squared = .402 (Adjusted R Squared = .253)
d R Squared = .633 (Adjusted R Squared = .541)e R Squared = .755 (Adjusted R Squared = .693)   f R Squared = .051 (Adjusted R Squared = -.186) Numbering as per Table B.2).

Table B.11: Summaries of the above analysis outcomes investigating the influence of *Zostera capricorni* abundance on sediment grain size.

Model	Response variable	Effect[1]	covariate(s)	p of covariate	Main Effect $F_{(d.f)}$	p
1	Sediment structure	Location	total biomass	0.534	$2.366_{(3,1)}$	0.438
2	Sediment structure	Location	leaf biomass	0.575	$0.050_{(1,1)}$	0.860
	Sediment structure		rhizome biomass	0.735		
	Sediment structure		root biomass	0.548		
3	Sediment structure	Location	leaf density	0.524	$1.750_{(3,1)}$	0.495
4	Sediment structure	Location	none		$44.824_{(4,1)}$	0.112
4a	Very fine silt	Location	None		$56.664_{(1,4)}$	0.002
4b	Coarse silt	Location	none		$12.298_{(1,4)}$	0.025

[1] analysis was performed on $\log_{10}$ transformed data

Table B.12: Pearson correlation coefficients between sediment structure and plant abundance measures *Halophila ovalis* (**bold** denotes significant $r^2_{(6)} = 0.811$).

	Leaf biomass	Rhizome biomass	Root biomass	Total biomass	Leaf density	Clay	Very fine silt	Fine silt	Medium silt	Coarse silt
Rhizome biomass	**.994**	.								
Roots biomass	**.992**	**.998**								
Total biomasss	**.996**	**.999**	**.998**							
Leaf density	**.889**	**.895**	**.895**	**.889**						
Clay	**-.947**	**-.943**	**-.943**	**-.942**	-.701					
Very fine silt	**-.956**	**-.926**	**-.926**	**-.931**	-.741	**.966**				
Fine silt	.753	.755	.755	.752	.399	**-.914**	**-.834**			
Medium silt	.584	.589	.589	.589	.214	-.783	-.691	**.965**		
Coarse silt	.442	.459	.459	.458	.101	-.648	-.536	**.889**	**.975**	
sand	.810	**.823**	**.823**	**.824**	.518	**-.930**	**-.846**	**.982**	**.940**	**.874**

Concept 2

Table B.13: Pearson correlation coefficients between sediment nutrients and plant abundance measures *Halodule uninervis* (critical $r^2_{(21)}$ = 0.433).

	Leaf biomass	Rhizome biomass	Root biomass	Total biomass	Leaf density	Adsorbed PO_4^{3-} (bray)	Adsorbed PO_4^{3-} (bicarbonate)	Adsorbed NH_4	Interstitial NH_4	Interstitial $NO_2^- + NO_3^-$	Interstitial PO_4^{3-}	pH	Eh	Carbonate matter
Rhizome biomass	.743													
Roots biomass	.506	.799												
Total biomass	.705	.947	.934											
Leaf density	.867	.641	.408	.585										
Adsorbed PO4 (Bray)	-.023	-.133	-.079	-.092	-.025									
Adsorbed PO_4^3 (Bicarbonate)	.002	-.161	-.305	-.226	.171	-.007								
Adsorbed NH_4^+	-.065	-.280	-.053	-.171	.001	.147	.530							
Interstitial NH_4^+	-.403	-.794	-.806	-.822	.352	.167	.448	.508						
Interstitial NO_2+NO_3	-.354	-.257	-.045	-.169	-.167	.419	.308	.397	.088					
Interstitial PO_4^{3-}	.021	.145	.037	.077	.254	-.008	.642	.038	.005	.308				
PH	-.142	.106	.114	.063	.034	.435	-.012	-.109	-.226	.232	.287			
Eh	-.072	-.308	.291	.111	-.292	-.449	-.456	.074	-.192	-.178	-.560	.104		
Carbonate matter	.148	.061	.137	.109	.155	-.758	.282	.250	.049	-.376	.062	.002	.446	
Plant organic matter	.092	-.206	-.216	-.216	.284	.033	.812	.709	.482	.266	.486	.030	-.201	.291

Table B.14: Sediment nutrients (chemical parameters) affect seagrass abundance: A summarized table for MANOVA results for all geochemical parameters and abundance measures of *Halodule uninervis*.

Model	Dependent variables	Effect	covariates	p of covariates	Main effect $F_{(d.f)}$	p
1	total biomass	location	adsorbed PO_4^{3-} (bray)	0.423	$0.215_{(18,6)}$	0.953
			adsorbed PO_4^{3-} (bicarbonate)	0.858		
			adsorbed NH_4^+	0.294		
			interstitial NH_4^+	0.337		
			interstitial $NO_2^- + NO_3^-$	0.767		
			interstitial PO_4^{3-}	0.818		
			pH	0.980		
			Eh	0.856		
			carbonate	0.861		
			plant organic matter	0.939		
2	total biomass	location	none		$9.499_{(6,14)}$	<0.001
3	leaf biomass rhizome biomass root biomass	location	adsorbed PO_4^{3-} (bray)	0.869	$0.674_{(18,12)}$	0.784
			adsorbed PO_4^{3-} (bicarb)	0.965		
			adsorbed NH_4^+	0.728		
			interstitial NH_4^+	0.791		
			interstitial $NO_2^- + NO_3^-$	0.821		
			interstitial PO_4^{3-}	0.945		
			pH	0.982		
			Eh	0.935		
			carbonate	0.813		
			plant organic matter	0.676		
4	leaf biomass rhizome biomass root biomass	location	none		$4.113_{(18,42)}$	<0.001
5	leaf density	location	adsorbed PO_4^{3-} (bray)	0.099	$1.300_{(6,4)}$	0.417
			adsorbed PO_4^{3-} (bicarb)	0.362		
			adsorbed NH_4^+	0.182		
			interstitial NH_4^+	0.080		
			interstitial $NO_2^- + NO_3^-$	0.291		
			interstitial PO_4^{3-}	0.660		
			pH	0.601		
			Eh	0.204		
			carbonate	0.697		
			plant organic matter	0.118		
6	leaf density	location	none		$1.559_{(6,14)}$	0.231

Table B.15: Pearson correlation coefficients between sediment nutrients and plant abundance measures for *Zostera capricorni*.

	Leaf biomass	Rhizome biomass	Root biomass	Total biomass	Leaf density	Adsorbed PO_4^{3-} (bray)	Adsorbed PO_4^{3-} (bicarbonate)	Adsorbed NH_4	Interstitial NH_4	Interstitial $NO_2^- + NO_3^-$	Interstitial PO_4^{3-}	pH	Eh	carbonate matter
Rhizome biomass	.739													
Roots biomass	**.889**	**.866**												
Total biomass	**.957**	**.901**	**.936**											
Leaf density	**.941**	.756	**.894**	**.940**										
Adsorbed PO_4^{3-} (bray)	**.857**	.719	.698	**.839**	.679									
Adsorbed PO_4^{3-} (bicarbonate)	-.803	**-.955**	**-.875**	**-.933**	**-.863**	-.663								
Adsorbed NH_4^+	.604	.368	.292	.567	.656	.522	-.523							
Interstitial NH_4^+	-.332	-.589	-.251	-.460	-.228	-.544	.581	-.385						
Interstitial $NO_2 + NO_3$	.391	-.001	.268	.284	.531	-.072	-.288	.465	.094	.373				
Interstitial PO_4^{3-}	.497	.797	.667	.678	.623	.292	**-.884**	.308	-.600	-.231				
Ph	-.793	-.368	-.521	-.664	-.725	-.757	.408	-.724	.023	.603	.029			
EH	-.309	-.501	-.183	-.387	-.115	-.738	.330	-.303	.690	-.577	-.073	.353		
Carbonate matter	**-.936**	-.767	**-.876**	**-.943**	**-.988**	-.677	**.894**	-.679	.343	-.241	-.698	.664	.128	
Plant organic matter	-.374	-.696	-.727	-.551	-.551	-.084	.711	.081	.092	.391	-.805	-.105	-.211	.548

(**bold** denotes significant r^2 N = 6) critical $r^2_{(6)}$ = 0.811

Table B.16: Significance table for the effect of location on seagrass abundance with sediment nutrient covariates for locations with *Zostera capricorni* meadows.

Model	Dependent variables	Effect	Covariates	p of covariates	Main effect $F_{(d.f)}$	p
1	total biomass	location	adsorbed PO_4^{3-} (bray)	0.504	$28.482_{(1,3)}$	0.013
2	total biomass	location	adsorbed PO_4^{3-} (bicarbonate)	0.499	$10.782_{(1,3)}$	0.046
3	total biomass	location	adsorbed NH_4^+	0.120	$151.070_{(1,3)}$	0.001
4	total biomass	location	interstitial NH_4^+	0.926	$67.461_{(1,3)}$	0.004
5	total biomass	location	interstitial $NO_2^- + NO_3^-$	0.142	$185.846_{(1,3)}$	0.011
6l	total biomass	location	interstitial PO_4^{3-}	0.918	$45.349_{(1,3)}$	0.007
7	total biomass	location	PH	0.810	$47.909_{(1,3)}$	0.006
8	total biomass	location	Eh	0.574	$82.758_{(1,3)}$	0.003
9	total biomass	location	Carbonate	0.473	$9.077_{(1,3)}$	0.057
10	total biomass	location	plant organic matter	0.413	$77.690_{(1,3)}$	0.003
11	total biomass	location	None		$114.792_{(1,4)}$	0.003
12	Leaf, rhizome root biomass	location	adsorbed PO_4^{3-} (bray))	0.118	$206.153_{(3,1)}$	0.051
13	Leaf, rhizome root biomass		adsorbed PO_4^{3-} (bicarb)	0.125	$79.400_{(3,1)}$	0.082
14	Leaf, rhizome root biomass		adsorbed NH_4^+	0.488	$17.066_{(3,1)}$	0.176
15	Leaf, rhizome root biomass		interstitial NH_4^+	0.702	$8.497_{(3,1)}$	0.246
16	Leaf, rhizome root biomass		interstitial $NO_2^- + NO_3^-$	0.153	$494.859_{(3,1)}$	0.073
17	Leaf, rhizome root biomass		interstitial PO_4^{3-}	0.443	$30.270_{(3,1)}$	0.133
18	Leaf, rhizome root biomass		PH	0.701	$6.457_{(3,1)}$	0.280
19	Leaf, rhizome root biomass		Eh	0.052	$2220.666_{(3,1)}$	0.016
20	Leaf, rhizome root biomass		Carbonate	0.284	$24.560_{(3,1)}$	0.147
21	Leaf, rhizome root biomass		plant organic matter	0.014	$10411.657_{(3,1)}$	0.007
22	leaf ,rhizome, root biomass	location			$22.038_{(3,2)}$	0.44
23	leaf density	location	adsorbed PO_4^{3-} (bray)	0.291	$28.763_{(1,3)}$	0.013
24	leaf density	location	adsorbed PO_4^{3-} (bicarb)	0.773	$7.077_{(1,3)}$	0.076
25	leaf density	location	adsorbed NH_4^+	0.997	$18.755_{(1,3)}$	0.023
26	leaf density	location	interstitial NH_4^+	0.018	$297.404_{(1,3)}$	<0.001
27	leaf density	location	interstitial $NO_2^- + NO_3^-$	0.376	$34.227_{(1,3)}$	0.010
28	leaf density	location	interstitial PO_4^{3-}	0.812	$20.878_{(1,3)}$	0.020
29	leaf density	location	PH	0.647	$16.667_{(1,3)}$	0.027
30	leaf density	location	Eh	0.122	$92.306_{(1,3)}$	0.002
31	leaf density	location	Carbonate	0.081	$0.052_{(1,3)}$	0.834
32	leaf density	location	plant organic matter	0.551	$27.552_{(1,3)}$	0.013
33	leaf density	location	None		$46.887_{(1,3)}$	0.002

Table B.17: Sediment nutrients (chemical parameters) affect seagrass abundance: MANOVA results for the effect percent organic content of the leaf, rhizome and root biomass of *Zostera capricorni*.

Multivariate Tests for the affect percent organic matter on the leaf, rhizome and root biomass of *Zostera capricorni*

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	1.000	14996.209	3.000	1.000	.006
	Wilks' Lambda	.000	14996.209	3.000	1.000	.006
	Hotelling's Trace	44988.627	14996.209	3.000	1.000	.006
	Roy's Largest Root	44988.627	14996.209	3.000	1.000	.006
LVEG	Pillai's Trace	1.000	2417.430	3.000	1.000	.015
	Wilks' Lambda	.000	2417.430	3.000	1.000	.015
	Hotelling's Trace	7252.291	2417.430	3.000	1.000	.015
	Roy's Largest Root	7252.291	2417.430	3.000	1.000	.015
LOCATION	Pillai's Trace	1.000	9468.768	3.000	1.000	.008
	Wilks' Lambda	.000	9468.768	3.000	1.000	.008
	Hotelling's Trace	28406.305	9468.768	3.000	1.000	.008
	Roy's Largest Root	28406.305	9468.768	3.000	1.000	.008

a Exact statistic   b Design: Intercept+LVEG+LOCATION

Tests of Between-Subjects Effects or univariate results for the affect percent organic matter on the leaf, rhizome and root biomass of *Zostera capricorni*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LLVS	.766	2	.383	22.619	.016
	LRHZ	.285	2	.142	6.565	.080
	LRTS	.325	2	.163	13.479	.032
Intercept	LLVS	1.426	1	1.426	84.176	.003
	LRHZ	2.127	1	2.127	98.129	.002
	LRTS	.871	1	.871	72.142	.003
LVEG	LLVS	8.640E-03	1	8.640E-03	.510	.527
	LRHZ	3.886E-02	1	3.886E-02	1.793	.273
	LRTS	4.284E-02	1	4.284E-02	3.549	.156
LOCATION	LLVS	.652	1	.652	38.500	.008
	LRHZ	.115	1	.115	5.316	.104
	LRTS	.134	1	.134	11.105	.045
Error	LLVS	5.081E-02	3	1.694E-02		
	LRHZ	6.502E-02	3	2.167E-02		
	LRTS	3.621E-02	3	1.207E-02		
Total	LLVS	8.514	6			
	LRHZ	8.130	6			
	LRTS	3.014	6			
Corrected Total	LLVS	.817	5			
	LRHZ	.350	5			
	LRTS	.362	5			

a R Squared = .938 (Adjusted R Squared = .896)
b R Squared = .814 (Adjusted R Squared = .690)
c R Squared = .900 (Adjusted R Squared = .833) (Numbering follows Table 4.2).

Table B.18: Pearson correlation coefficients between sediment nutrients and plant abundance measures *Halophila ovalis* (**bold** denotes significant r^2 N = 6 critical $r^2_{(6)}$ = 0.811).

	Leaf biomass	Rhizome biomass	Root biomass	Total biomass	Leaf density	Adsorbed PO$_4^{3-}$(Bray)	Adsorbed PO$_4^{3-}$ (Bicarbonate)	Adsorbed NH$_4$	Interstitial NH$_4$	Interstitial NO$_2^-$ + NO$_3^-$	Interstitial PO$_4^{3-}$	pH	Eh	carbonate matter
Rhizome biomass	**.994**													
Roots biomass	**.992**	**.998**												
Total biomass	**.996**	**.999**	**.998**											
Leaf density	**.889**	**.895**	**.895**	**.899**										
Adsorbed PO$_4$ (Bray)	**-.969**	**-.987**	**-.992**	**-.985**	**-.891**									
Adsorbed PO$_4^3$ (Bicarbonate)	**-.951**	**-.941**	**-.948**	**-.944**	-.724	**.926**								
Adsorbed NH$_4^+$	.439	.349	.387	.377	.313	-.317	-.507							
Interstitial NH$_4^+$	**-.843**	**-.843**	**-.873**	**-.846**	-.705	**.887**	**.881**	-.545						
Interstitial NO$_2$+NO$_3$	-.188	-.141	-.157	-.143	.199	.117	.386	-.509	.438					
Interstitial PO$_4^{3-}$	-.516	-.569	-.580	-.552	-.512	.642	.462	.035	.726	.255				
PH	**.975**	**.969**	**.980**	**.972**	**.829**	**-.968**	**-.972**	.516	**-.939**	-.326	-.599			
Eh	-.758	-.797	-.762	-.779	-.585	.761	.715	.164	.511	.131	.535	-.688		
Carbonate matter	**.998**	**.993**	**.992**	**.995**	**.907**	**.-971**	**-.935**	.430	**-.847**	-.173	-.550	**.973**	-.753	
Plant organic matter	**-.924**	**-.928**	**-.926**	**-.925**	-.668	**.911**	**.979**	-.343	**.824**	.379	.488	**-.932**	**.825**	**-.906**

Table B.19: Significance table for the effect of location on seagrass abundance with nutrient covariates for locations with *Halophila ovalis* meadows.

Model	Dependent variables	Effect	covariates	p of covariates	Main effect $F_{(d.f)}$	p
1	total biomass	location	adsorbed PO_4^{3-} (bray)	0.271	$1.510_{(1,3)}$	0.307
2	total biomass	location	adsorbed PO_4^{3-} (bicarbonate)	0.969	$7.269_{(1,3)}$	0.074
3	total biomass	location	adsorbed NH_4^+	0.938	$77.898_{(1,3)}$	0.003
4	total biomass	location	interstitial NH_4^+	1.044	$33.071_{(1,3)}$	0.010
5	total biomass	location	interstitial $NO_2^- + NO_3^-$	0.063	$344.502_{(1,3)}$	<0.001
6l	total biomass	location	interstitial PO_4^{3-}	0.328	$92.084_{(1,3)}$	0.002
7	total biomass	location	PH	0.971	$2.275_{(1,3)}$	0.229
8	total biomass	location	Eh	0.986	$33.972_{(1,3)}$	0.010
9	total biomass	location	carbonate	0.058	$0.555_{(1,3)}$	0.510
10	**total biomass**	**location**	**plant organic matter**	**0.780**	**$10.915_{(1,3)}$**	**0.046**
11	total biomass	location	none		$121.925_{(1,4)}$	0.002
12	Leaf, rhizome root biomass	location	adsorbed PO_4^{3-} (bray))	0.068	$0.257_{(3,1)}$	0.857
13	Leaf, rhizome root biomass	location	adsorbed PO_4^{3-} (bicarb)	0.939	$1.107_{(3,1)}$	0.588
14	**Leaf, rhizome root biomass**	**location**	**adsorbed NH_4^+**	**0.010**	**$417.672_{(3,1)}$**	**0.036**
15	Leaf, rhizome root biomass	location	interstitial NH_4^+	0.177	$25.059_{(3,1)}$	0.101
16	Leaf, rhizome root biomass	location	interstitial $NO_2^- + NO_3^-$	0.230	$310.462_{(3,1)}$	0.042
16a	**Rhizome**	**location**	**interstitial $NO_2^- + NO_3^-$**	**0.028**	**$653.728_{(1,3)}$**	**<0.001**
16b	Rhizome		none		$136.576_{(1,4)}$	<0.001
17	Leaf, rhizome root biomass	location	interstitial PO_4^{3-}	0.715	$15.432_{(3,1)}$	0.185
18	Leaf, rhizome root biomass	location	pH	0.122	$22.652_{(3,1)}$	0.153
19	Leaf, rhizome root biomass	location	Eh	0.235	$26.242_{(3,1)}$	0.142
20	Leaf, rhizome root biomass	location	carbonate	0.387	$0.163_{(3,1)}$	0.911
21	Leaf, rhizome root biomass	location	plant organic matter	0.989	$1.671_{(3,1)}$	0.504
23	Leaf, rhizome, root biomass	location	none		$25.906_{(3,2)}$	0.037
26	Leaf density	location	adsorbed PO_4^{3-} (bray)	0.223	$0.587_{(1,3)}$	0.499
27	Leaf density	location	adsorbed PO_4^{3-} (bicarb)	0.399	$3.150_{(1,3)}$	0.174
28	Leaf density	location	adsorbed NH_4^+	0.969	$5.840_{(1,3)}$	0.094
29	Leaf density	location	interstitial NH_4^+	0.764	$2.111_{(1,3)}$	0.242
30	**Leaf density**	**location**	**interstitial $NO_2^- + NO_3^-$**	**0.076**	**$28.779_{(1,3)}$**	**0.013**
31	Leaf density	location	interstitial PO_4^{3-}	0.940	$4.246_{(1,3)}$	0.131
32	Leaf density	location	pH	0.906	$0.088_{(1,3)}$	0.786
33	Leaf density	location	Eh	0.716	$3.789_{(1,3)}$	0.147
34	Leaf density	location	carbonate	0.078	$2.793_{(1,3)}$	0.193
35	Leaf density	location	plant organic matter	0.172	$2.192_{(1,3)}$	0.064
36	**Leaf density**	**location**	**none**		**$9.061_{(1,4)}$**	**0.040**

Table B.20: Sediment nutrients (chemical parameters) affect seagrass abundance: MANOVA results for the effect of $NO_2^- + NO_3^-$ on the leaf, rhizome and root biomass of *Halophila ovalis*.

Multivariate Tests for the effect of $NO_2^- + NO_3^-$ on the leaf, rhizome and root biomass of *Halophila ovalis*

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.968	10.025	3.000	1.000	.227
	Wilks' Lambda	.032	10.025	3.000	1.000	.227
	Hotelling's Trace	30.074	10.025	3.000	1.000	.227
	Roy's Largest Root	30.074	10.025	3.000	1.000	.227
LNIT	Pillai's Trace	.967	9.736	3.000	1.000	.230
	Wilks' Lambda	.033	9.736	3.000	1.000	.230
	Hotelling's Trace	29.207	9.736	3.000	1.000	.230
	Roy's Largest Root	29.207	9.736	3.000	1.000	.230
LOCATION	Pillai's Trace	.999	310.463	3.000	1.000	.042
	Wilks' Lambda	.001	310.463	3.000	1.000	.042
	Hotelling's Trace	931.389	310.463	3.000	1.000	.042
	Roy's Largest Root	931.389	310.463	3.000	1.000	.042

a Exact statistic b Design: Intercept+LNIT+LOCATION

Tests of Between-Subjects Effects or univariate results for the effect of $NO_2^- + NO_3^-$ on the leaf, rhizome and root biomass of *Halophila ovalis*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LLVS	4.771	2	2.386	57.444	.004
	LRHZ	7.498	2	3.749	333.568	.000
	LRTS	5.710	2	2.855	248.288	.000
Intercept	LLVS	.402	1	.402	9.685	.053
	LRHZ	.201	1	.201	17.895	.024
	LRTS	.598	1	.598	51.974	.006
LNIT	LLVS	5.391E-02	1	5.391E-02	1.298	.337
	LRHZ	.181	1	.181	16.068	.028
	LRTS	.111	1	.111	9.657	.053
LOCATION	LLVS	4.598	1	4.598	110.723	.002
	LRHZ	7.347	1	7.347	653.728	.000
	LRTS	5.568	1	5.568	484.257	.000
Error	LLVS	.125	3	4.153E-02		
	LRHZ	3.372E-02	3	1.124E-02		
	LRTS	3.450E-02	3	1.150E-02		
Total	LLVS	7.089	6			
	LRHZ	9.590	6			
	LRTS	9.277	6			
Corrected Total	LLVS	4.896	5			
	LRHZ	7.532	5			
	LRTS	5.744	5			

a R Squared = .975 (Adjusted R Squared = .958)
b R Squared = .996 (Adjusted R Squared = .993)
c R Squared = .994 (Adjusted R Squared = .990)

Table B.21: Statistical output on the analysis of the effect of $NO_2^- + NO_3^-$ on rhizome biomass of *Halophila ovalis.*

Tests of Between-Subjects Effects for the effect of $NO_2^- + NO_3^-$ on the single variable, rhizome biomass of *Halophila ovalis*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7.498	2	3.749	333.568	.000
Intercept	.201	1	.201	17.895	.024
LNIT	.181	1	.181	16.068	.028
LOCATION	7.347	1	7.347	653.728	.000
Error	3.372E-02	3	1.124E-02		
Total	9.590	6			
Corrected Total	7.532	5			

a R Squared = .996 (Adjusted R Squared = .993)

Table B.22: Sediment nutrients (chemical parameters) affect seagrass abundance: MANOVA results for the effect of adsorbed NH_4^{+-} on the leaf, rhizome and root biomass of *Halophila ovalis*

Multivariate Tests for the effect of adsorbed NH_4^- on the leaf, rhizome and root biomass of *Halophila ovalis*

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	1.000	7418.965	3.000	1.000	.009
	Wilks' Lambda	.000	7418.965	3.000	1.000	.009
	Hotelling's Trace	22256.894	7418.965	3.000	1.000	.009
	Roy's Largest Root	22256.894	7418.965	3.000	1.000	.009
LKCL	Pillai's Trace	1.000	5606.609	3.000	1.000	.010
	Wilks' Lambda	.000	5606.609	3.000	1.000	.010
	Hotelling's Trace	16819.827	5606.609	3.000	1.000	.010
	Roy's Largest Root	16819.827	5606.609	3.000	1.000	.010
LOCATION	Pillai's Trace	.999	417.672	3.000	1.000	.036
	Wilks' Lambda	.001	417.672	3.000	1.000	.036
	Hotelling's Trace	1253.017	417.672	3.000	1.000	.036
	Roy's Largest Root	1253.017	417.672	3.000	1.000	.036

a Exact statistic, b Design: Intercept+LKCL+LOCATION

Tests of Between-Subjects Effects for the effect of adsorbed NH_4^- on the leaf, rhizome and root biomass of *Halophila ovalis*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LLVS	4.735	2	2.368	44.192	.006
	LRHZ	7.329	2	3.665	54.354	.004
	LRTS	5.599	2	2.799	57.707	.004
Intercept	LLVS	4.379E-02	1	4.379E-02	.817	.433
	LRHZ	1.284E-03	1	1.284E-03	.019	.899
	LRTS	9.617E-03	1	9.617E-03	.198	.686
LKCL	LLVS	1.777E-02	1	1.777E-02	.332	.605
	LRHZ	1.204E-02	1	1.204E-02	.179	.701
	LRTS	2.089E-06	1	2.089E-06	.000	.995
LOCATION	LLVS	3.790	1	3.790	70.742	.004
	LRHZ	6.414	1	6.414	95.123	.002
	LRTS	4.740	1	4.740	97.708	.002
Error	LLVS	.161	3	5.357E-02		
	LRHZ	.202	3	6.742E-02		
	LRTS	.146	3	4.851E-02		
Total	LLVS	7.089	6			
	LRHZ	9.590	6			
	LRTS	9.277	6			
Corrected Total	LLVS	4.896	5			
	LRHZ	7.532	5			
	LRTS	5.744	5			

a R Squared = .967 (Adjusted R Squared = .945)
b R Squared = .973 (Adjusted R Squared = .955)
c R Squared = .975 (Adjusted R Squared = .958)

Concept 3

Table B.23: Pearson correlation coefficients between sediment nutrients, related chemical parameters and plant tissue nutrient for *Halodule uninervis,* (The relevant sample sizes are bracketed after the parameter) (**bold** denotes significant result $r^2_{(19)} = 0.456$ $r^2_{(21)} = 0.433$).

	% leaf N (19)	% leaf P (19)	% rhizome N (21)	% rhizome P (21)	%root N (21)	% root P (21)	Adsorbed PO_4^{3-} (bray) (21)	Adsorbed PO_4^{3-} (bicarbonate) (21)	Adsorbed NH_4 (21)	Interstitial NH_4 (21)	Interstitial $NO_2^- + NO_3^-$ (21)	Interstitial PO_4^{3-} (21)	pH (21)	Eh (21)	carbonate matter (21)
% leaf P	**.697**														
% rhizome N	**.698**	.283													
% rhizome P	**.636**	**.626**	**.651**												
% root N	**.618**	.234	**.687**	**.571**											
% root P	**.781**	**.720**	.407	**.726**	**.615**										
Adsorbed PO_4^{3-} (bray)	.291	422	.208	**.581**	.396	.300									
Adsorbed PO_4^{3-} (bicarbonate))	**.750**	**.733**	.351	**.494**	.296	**.628**	-.007								
Adsorbed NH_4^+	.436	.232	**.563**	.430	**.475**	.178	.147	**.530**							
Interstitial NH_4^+	**.643**	.183	**.546**	.362	**.678**	**.434**	.167	**.430**	**.508**						
Intersitial NO_2+NO_3	**.636**	**.466**	**.608**	**.545**	.360	.208	.419	.308	.397	.088					
Interstitial PO_4^{3-}	**.465**	**.556**	.189	**.536**	.030	**.547**	-.008	**.642**	.038	.005	.308				
ph	.105	-.015	**.445**	.115	.051	.144	**-.435**	-.012	-.109	-.226	.232	.287			
eH	**-.604**	**-.692**	-.108	**-.534**	-.348	**-.732**	**-.449**	**-.456**	.074	-.192	-.178	**-.560**	.104		
Carbonate matter	-.150	-.267	-.203	-.430	-.317	-.285	**-.758**	.282	.250	.049	-.376	.062	.002	**.446**	
Plant organic matter	**.617**	**.610**	**.475**	**.602**	.261	**.510**	.033	**-.812**	**.709**	**.482**	.266	**.486**	.030	-.201	.291

Table B.24: A summary of MANOVA analyses on *Halodule uninervis* plant tissue nutrients and geochemical parameters as covariates.

Model	Effect	covariates	p of covariates	Main effect $F_{(d.f)}$	p
1	Location	adsorbed PO_4^{3-} (bray)	0.157	$2.275_{(12,4)}$	0.222
		adsorbed PO_4^{3-} (bicarbonate)	0.102		
		adsorbed NH_4^+	0.808		
		interstitial NH_4^+	0.111		
		interstitial $NO_2^- + NO_3^-$	0.100		
		interstitial PO_4^{3-}	0.616		
		pH	0.341		
		Eh	0.939		
		carbonate	0.199		
		plant organic matter	0.392		
2	Location	none		$2.016_{(36,72)}$	**0.006**

Table B.25: MANOVA results on the effect of geochemical parameters on the plant tissue nutrients of *Halodule uninervis.*

Multivariate Tests on the effect of geochemical parameters on the plant tissue nutrients of *Halodule uninervis*

Effect	Test	Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.214	.137	2.000	1.000	.886
	Wilks' Lambda	.786	.137	2.000	1.000	.886
	Hotelling's Trace	.273	.137	2.000	1.000	.886
	Roy's Largest Root	.273	.137	2.000	1.000	.886
LBRAY	Pillai's Trace	.975	19.891	2.000	1.000	.157
	Wilks' Lambda	.025	19.891	2.000	1.000	.157
	Hotelling's Trace	39.781	19.891	2.000	1.000	.157
	Roy's Largest Root	39.781	19.891	2.000	1.000	.157
LBICARB	Pillai's Trace	.990	47.744	2.000	1.000	.102
	Wilks' Lambda	.010	47.744	2.000	1.000	.102
	Hotelling's Trace	95.489	47.744	2.000	1.000	.102
	Roy's Largest Root	95.489	47.744	2.000	1.000	.102
LKCL	Pillai's Trace	.347	.265	2.000	1.000	.808
	Wilks' Lambda	.653	.265	2.000	1.000	.808
	Hotelling's Trace	.531	.265	2.000	1.000	.808
	Roy's Largest Root	.531	.265	2.000	1.000	.808
LNH	Pillai's Trace	.988	39.894	2.000	1.000	.111
	Wilks' Lambda	.012	39.894	2.000	1.000	.111
	Hotelling's Trace	79.788	39.894	2.000	1.000	.111
	Roy's Largest Root	79.788	39.894	2.000	1.000	.111
LNIT	Pillai's Trace	.990	49.759	2.000	1.000	.100
	Wilks' Lambda	.010	49.759	2.000	1.000	.100
	Hotelling's Trace	99.518	49.759	2.000	1.000	.100
	Roy's Largest Root	99.518	49.759	2.000	1.000	.100
LPO4	Pillai's Trace	.620	.816	2.000	1.000	.616
	Wilks' Lambda	.380	.816	2.000	1.000	.616
	Hotelling's Trace	1.632	.816	2.000	1.000	.616
	Roy's Largest Root	1.632	.816	2.000	1.000	.616
LPH	Pillai's Trace	.884	3.795	2.000	1.000	.341
	Wilks' Lambda	.116	3.795	2.000	1.000	.341
	Hotelling's Trace	7.589	3.795	2.000	1.000	.341
	Roy's Largest Root	7.589	3.795	2.000	1.000	.341
LEH	Pillai's Trace	.118	.067	2.000	1.000	.939
	Wilks' Lambda	.882	.067	2.000	1.000	.939
	Hotelling's Trace	.133	.067	2.000	1.000	.939
	Roy's Largest Root	.133	.067	2.000	1.000	.939
LCARB	Pillai's Trace	.960	12.115	2.000	1.000	.199
	Wilks' Lambda	.040	12.115	2.000	1.000	.199
	Hotelling's Trace	24.230	12.115	2.000	1.000	.199
	Roy's Largest Root	24.230	12.115	2.000	1.000	.199
LVEG	Pillai's Trace	.846	2.748	2.000	1.000	.392
	Wilks' Lambda	.154	2.748	2.000	1.000	.392
	Hotelling's Trace	5.497	2.748	2.000	1.000	.392
	Roy's Largest Root	5.497	2.748	2.000	1.000	.392
LOCATION	Pillai's Trace	1.744	2.275	12.000	4.000	.222
	Wilks' Lambda	.002	3.525	12.000	2.000	.242
	Hotelling's Trace	123.402	.000	12.000	.000	.
	Roy's Largest Root	120.360	40.120	6.000	2.000	.025

a Exact statistic
b The statistic is an upper bound on F that yields a lower bound on the significance level.
c Design: Intercept+LBRAY+LBICARB+LKCL+LNH+LNIT+LPO4+LPH+LEH+LCARB+LVEG+LOCATION
(Numbering follows Table B.2).

Tests of Between-Subjects Effects or univariate tests on the effect of geochemical parameters on the plant tissue nutrients of *Halodule uninervis*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LNL	.237	16	1.481E-02	6.065	.151
	LPL	.393	16	2.455E-02	196.845	.005
	LNR	.386	16	2.410E-02	2.553	.318
	LPR	.466	16	2.912E-02	2.738	.300
	LNZ	.679	16	4.241E-02	3.535	.243
	LPZ	.713	16	4.459E-02	5.597	.162
Intercept	LNL	2.138E-04	1	2.138E-04	.088	.795
	LPL	7.395E-06	1	7.395E-06	.059	.830
	LNR	3.558E-03	1	3.558E-03	.377	.602
	LPR	5.891E-04	1	5.891E-04	.055	.836
	LNZ	5.657E-03	1	5.657E-03	.472	.563
	LPZ	1.059E-03	1	1.059E-03	.133	.750
LBRAY	LNL	2.963E-05	1	2.963E-05	.012	.922
	LPL	4.710E-03	1	4.710E-03	37.770	.025
	LNR	1.186E-02	1	1.186E-02	1.256	.379
	LPR	3.292E-02	1	3.292E-02	3.096	.221
	LNZ	3.984E-03	1	3.984E-03	.332	.623
	LPZ	2.124E-04	1	2.124E-04	.027	.885

		Type III Sum of Squares	df	Mean Square	F	Sig.
LBICARB	LNL	4.908E-03	1	4.908E-03	2.010	.292
	LPL	8.607E-03	1	8.607E-03	69.025	.014
	LNR	2.895E-02	1	2.895E-02	3.066	.222
	LPR	2.699E-02	1	2.699E-02	2.537	.252
	LNZ	1.303E-02	1	1.303E-02	1.086	.407
	LPZ	5.644E-03	1	5.644E-03	.708	.489
LKCL	LNL	2.087E-03	1	2.087E-03	.855	.453
	LPL	1.214E-04	1	1.214E-04	.974	.428
	LNR	3.441E-04	1	3.441E-04	.036	.866
	LPR	2.738E-02	1	2.738E-02	2.574	.250
	LNZ	1.367E-02	1	1.367E-02	1.140	.398
	LPZ	4.422E-04	1	4.422E-04	.056	.836
LNH	LNL	3.780E-04	1	3.780E-04	.155	.732
	LPL	9.820E-03	1	9.820E-03	78.751	.012
	LNR	8.521E-04	1	8.521E-04	.090	.792
	LPR	3.148E-02	1	3.148E-02	2.960	.227
	LNZ	2.542E-06	1	2.542E-06	.000	.990
	LPZ	2.413E-02	1	2.413E-02	3.029	.224
LNIT	LNL	1.037E-03	1	1.037E-03	.425	.581
	LPL	1.034E-02	1	1.034E-02	82.906	.012
	LNR	4.391E-03	1	4.391E-03	.465	.566
	LPR	3.671E-03	1	3.671E-03	.345	.616
	LNZ	1.273E-02	1	1.273E-02	1.062	.411
	LPZ	1.358E-02	1	1.358E-02	1.704	.322
LPO4	LNL	6.947E-04	1	6.947E-04	.285	.647
	LPL	3.054E-04	1	3.054E-04	2.449	.258
	LNR	4.126E-05	1	4.126E-05	.004	.953
	LPR	5.516E-03	1	5.516E-03	.519	.546
	LNZ	1.371E-03	1	1.371E-03	.114	.767
	LPZ	3.403E-03	1	3.403E-03	.427	.581
LPH	LNL	1.250E-03	1	1.250E-03	.512	.549
	LPL	1.221E-03	1	1.221E-03	9.789	.089
	LNR	1.128E-02	1	1.128E-02	1.195	.388
	LPR	1.637E-05	1	1.637E-05	.002	.972
	LNZ	5.631E-03	1	5.631E-03	.469	.564
	LPZ	3.013E-03	1	3.013E-03	.378	.601
LEH	LNL	5.366E-04	1	5.366E-04	.220	.685
	LPL	3.007E-05	1	3.007E-05	.241	.672
	LNR	2.177E-03	1	2.177E-03	.231	.678
	LPR	5.973E-05	1	5.973E-05	.006	.947
	LNZ	5.870E-03	1	5.870E-03	.489	.557
	LPZ	1.244E-02	1	1.244E-02	1.562	.338
LCARB	LNL	9.496E-04	1	9.496E-04	.389	.597
	LPL	3.335E-03	1	3.335E-03	26.748	.035
	LNR	6.717E-04	1	6.717E-04	.071	.815
	LPR	6.186E-03	1	6.186E-03	.582	.525
	LNZ	2.785E-04	1	2.785E-04	.023	.893
	LPZ	2.488E-03	1	2.488E-03	.312	.632
LVEG	LNL	7.185E-06	1	7.185E-06	.003	.962
	LPL	6.562E-04	1	6.562E-04	5.263	.149
	LNR	3.366E-03	1	3.366E-03	.357	.611
	LPR	3.579E-03	1	3.579E-03	.337	.620
	LNZ	1.294E-02	1	1.294E-02	1.079	.408
	LPZ	1.253E-02	1	1.253E-02	1.573	.336
LOCATION	LNL	1.721E-02	6	2.869E-03	1.175	.527
	LPL	1.243E-02	6	2.072E-03	16.615	.058
	LNR	4.444E-02	6	7.407E-03	.784	.654
	LPR	7.347E-02	6	1.224E-02	1.151	.534
	LNZ	3.793E-02	6	6.321E-03	.527	.770
	LPZ	4.385E-02	6	7.308E-03	.917	.605
Error	LNL	4.884E-03	2	2.442E-03		
	LPL	2.494E-04	2	1.247E-04		
	LNR	1.888E-02	2	9.442E-03		
	LPR	2.127E-02	2	1.064E-02		
	LNZ	2.399E-02	2	1.200E-02		
	LPZ	1.593E-02	2	7.967E-03		
Total	LNL	7.464	19			
	LPL	6.582	19			
	LNR	.678	19			
	LPR	7.407	19			
	LNZ	.727	19			
	LPZ	11.210	19			
Corrected Total	LNL	.242	18			
	LPL	.393	18			
	LNR	.405	18			
	LPR	.487	18			
	LNZ	.703	18			
	LPZ	.729	18			

a R Squared = .980 (Adjusted R Squared = .818) b R Squared = .999 (Adjusted R Squared = .994) c R Squared = .953 (Adjusted R Squared = .580)
d R Squared = .956 (Adjusted R Squared = .607) e R Squared = .966 (Adjusted R Squared = .693) f R Squared = .978 (Adjusted R Squared = .803)
(Numbering follows Table B.2).

Table B.26: Summary of statistical outcomes for Leaf %P as the only plant tissue nutrient of *Halodule uninervis* to covary with geochemical parameters.

Model	Effect	covariates	p of covariates	Main effect F$_{(d.f)}$	p
1	Location	Adsorbed PO$_4^{3-}$ (bray)	.025	16.615$_{(6,2)}$	.058
		Adsorbed PO$_4^{3-}$ (bicarb)	.014		
		Adsorbed NH$_4^+$	.428		
		Porewater NH$_4^+$	.012		
		Porewater NO$_2^-$ + NO$_3^-$	.012		
		Porewater PO$_4^{3-}$	.258		
		pH	.089		
		Eh	.672		
		Carbonate	.035		
		Plant organic matter	.149		
2	Location	Adsorbed PO$_4^{3-}$ (bray)	.002	10.294$_{(6,7)}$	.004
		Adsorbed PO$_4^{3-}$ (bicarb)	.036		
		Porewater NH$_4^+$	.000		
		Porewaterl NO$_2^-$ + NO$_3^-$	.000		
		Carbonate	.011		

Table B.27: Pearson correlation coefficients between sediment nutrients, related chemical parameters and plant tissue nutrient for *Zostera capricorni* (**bold** denotes significant r^2 $r^2_{(6)}$ = 0.829).

	% leaf N (19)	% leaf P (19)	% rhizome N	% rhizome P	%root N	% root P	Adsorbed PO_4^{3-} (bray)	Adsorbed PO_4^{3-} (bicarbonate)	Adsorbed NH_4	Interstitial NH_4	Interstitial $NO_2^- + NO_3^-$	Interstitial PO_4^{3-}	pH	Eh	carbonate matter
% leaf P	.060														
% rhizome N	-.638	.101													
% rhizome P	-.614	.513	.570												
% root N	.682	.073	-.948	-.600											
% root P	.659	-.314	-.882	-.626	.856										
Adsorbed PO_4 (Bray)	-.584	.385	.671	.918	-.760	-.787									
Adsorbed PO_4^3 (Bicarbonate)	.013	-.022	-.111	-.442	.385	.272	-.663								
Adsorbed NH_4^+	.129	.276	.573	.247	-.567	-.622	.522	-.523							
Interstitial NH_4^+	-.116	-.765	.089	-.499	-.060	-.278	-.544	.581	-.385						
Intersitial NO_2+NO_3	.625	-.127	.005	-.136	-.026	.274	-.072	-.288	.465	.094					
Interstitial PO_4^{3-}	.377	.017	-.348	.126	.115	.162	.292	-.884	.308	-.600	.373				
PH	.495	-.028	-.940	-.584	.968	.827	-.757	.408	-.724	.023	-.231	.029			
EH	.568	-.602	-.416	-.672	.415	.769	-.738	.330	-.303	.690	.603	-.073	.353		
Carbonate matter	.007	.041	-.375	-.473	.564	.341	-.677	.894	-.679	.343	-.577	-.698	.663	.128	
Plant organic matter	-.139	.523	.387	057	-.079	-.339	-.084	.711	.081	.092	-.241	-.805	-.105	-.211	.548

Table B.28: Summary of MANOVA results on the effect of (single) geochemical parameters on the plant tissue nutrients of *Zostera capricorni.*

Model	Response variables (data $\log_{10}$ transformed)	Effect	Covariates	p of covariates	Main effect $F_{(d.f)}$	p
1	Plant tissue nutrients	Location	Adsorbed PO_4^{3-} (bray)	0.039	$169.556_{(3,1)}$	0.056
1a	% rhizome P	Location	Adsorbed PO_4^{3-} (bray)	0.035	$1.20_{(1,3)}$	0.353
2	Plant tissue nutrients	Location	Adsorbed PO_4^{3-} (bicarb)	0.658	$1.584_{(3,1)}$	0.515
3	Plant tissue nutrients	Location	Adsorbed NH_4^+	0.498	$0.064_{(3,1)}$	0.971
4	Plant tissue nutrients	Location	Interstitial NH_4^+	0.462	$1.84_{(3,1)}$	0.486
5	Plant tissue nutrients	Location	Interstitial $NO_2^- + NO_3^-$	0.592	$0.321_{(3,1)}$	0.824
6	Plant tissue nutrients	Location	Interstitial PO_4^{3-}	0.346	$7.620_{(3,1)}$	0.259
6a	%rhizome N, %root N	Location	Interstitial PO_4^{3-}	0.046	$22.024_{(2,2)}$	0.042
7	Plant tissue nutrients	Location	pH	0.082	$0.047_{(3,1)}$	0.981
7a	%rhizome N, %root N	Location	pH	0.028	$4.027_{(2,2)}$	0.199
8	Plant tissue nutrients	Location	Eh	0.612	$0.446_{(3,1)}$	0.769
9	Plant tissue nutrients	Location	Carbonate	0.394	$2.762_{(3,1)}$	0.410
10	Plant tissue nutrients	Location	Plant organic matter	0.110	$0.995_{(3,1)}$	0.089
11	Plant tissue nutrients	Location	none		$0.355_{(4,1)}$	0.831
11a	%rhizome N, %root N	Location	none		$2.215_{(2,3)}$	0.257

Table B.29: MANOVA results on the effect of individual significant covariates (adsorbed $PO_4^{3-}{}_{(bray)}$) with plant tissue nutrients of *Zostera capricorni*.

Multivariate Tests on the effect of adsorbed $PO_4^{3-}{}_{(bray)}$ on the plant tissue nutrients of *Zostera capricorni*

Effect	Test	Value [a]	F	Hypothesis df [b]	Error df	Sig.
Intercept	Pillai's Trace	.999	552.150	3.000	1.000	.031
	Wilks' Lambda	.001	552.150	3.000	1.000	.031
	Hotelling's Trace	1656.449	552.150	3.000	1.000	.031
	Roy's Largest Root	1656.449	552.150	3.000	1.000	.031
LBRAY	Pillai's Trace	.999	352.251	3.000	1.000	.039
	Wilks' Lambda	.001	352.251	3.000	1.000	.039
	Hotelling's Trace	1056.752	352.251	3.000	1.000	.039
	Roy's Largest Root	1056.752	352.251	3.000	1.000	.039
LOCATION	Pillai's Trace	.998	169.546	3.000	1.000	.056
	Wilks' Lambda	.002	169.546	3.000	1.000	.056
	Hotelling's Trace	508.639	169.546	3.000	1.000	.056
	Roy's Largest Root	508.639	169.546	3.000	1.000	.056

a Exact statistic b Design: Intercept+LBRAY+LOCATION

Tests of Between-Subjects Effects of univariate responses on the effect of adsorbed $PO_4^{3-}{}_{(bray)}$ on the plant tissue nutrients of *Zostera capricorni*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LNL	2.289E-02	2	1.145E-02	2.992	.193
	LPL	1.894E-02	2	9.470E-03	.575	.614
	LNR	6.226E-02	2	3.113E-02	2.052	.274
	LPR	5.562E-02	2	2.781E-02	3.441	.167
	LNZ	3.610E-02	2	1.805E-02	1.409	.370
	LPZ	3.336E-02	2	1.668E-02	11.789	.038
Intercept	LNL	2.915E-02	1	2.915E-02	7.617	.070
	LPL	4.156E-02	1	4.156E-02	2.525	.210
	LNR	1.663E-02	1	1.663E-02	1.096	.372
	LPR	1.369E-02	1	1.369E-02	1.694	.284
	LNZ	2.582E-02	1	2.582E-02	2.015	.251
	LPZ	4.016E-02	1	4.016E-02	28.379	.013
LBRAY	LNL	2.224E-02	1	2.224E-02	5.812	.095
	LPL	1.826E-02	1	1.826E-02	1.109	.370
	LNR	2.139E-02	1	2.139E-02	1.410	.320
	LPR	3.771E-02	1	3.771E-02	4.666	.120
	LNZ	2.200E-02	1	2.200E-02	1.717	.281
	LPZ	1.901E-02	1	1.901E-02	13.437	.035
LOCATION	LNL	1.115E-02	1	1.115E-02	2.915	.186
	LPL	8.828E-03	1	8.828E-03	.536	.517
	LNR	1.638E-07	1	1.638E-07	.000	.998
	LPR	6.168E-03	1	6.168E-03	.763	.447
	LNZ	2.525E-03	1	2.525E-03	.197	.687
	LPZ	1.698E-03	1	1.698E-03	1.200	.353
Error	LNL	1.148E-02	3	3.826E-03		
	LPL	4.938E-02	3	1.646E-02		
	LNR	4.551E-02	3	1.517E-02		
	LPR	2.425E-02	3	8.082E-03		
	LNZ	3.844E-02	3	1.281E-02		
	LPZ	4.245E-03	3	1.415E-03		
Total	LNL	.380	6			
	LPL	3.543	6			
	LNR	.325	6			
	LPR	4.437	6			
	LNZ	.189	6			
	LPZ	2.912	6			
Corrected Total	LNL	3.437E-02	5			
	LPL	6.832E-02	5			
	LNR	.108	5			
	LPR	7.987E-02	5			
	LNZ	7.454E-02	5			
	LPZ	3.761E-02	5			

a R Squared = .666 (Adjusted R Squared = .443) b R Squared = .277 (Adjusted R Squared = -.205) c R Squared = .578 (Adjusted R Squared = .296) d R Squared = .696 (Adjusted R Squared = .494) e R Squared = .484 (Adjusted R Squared = .141) f R Squared = .887 (Adjusted R Squared = .812) (Numbering follows Table B.2).

Table B.30: MANOVA results on the effect of individual significant covariates (porewater PO_4^{3-}) the plant tissue nutrients of *Zostera capricorni*.

Multivariate Tests on the effect of porewater PO_4^{3-} on the plant tissue nutrients of *Zostera capricorni*

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.967	9.690	3.000	1.000	.231
	Wilks' Lambda	.033	9.690	3.000	1.000	.231
	Hotelling's Trace	29.070	9.690	3.000	1.000	.231
	Roy's Largest Root	29.070	9.690	3.000	1.000	.231
LPO4	Pillai's Trace	.924	4.057	3.000	1.000	.346
	Wilks' Lambda	.076	4.057	3.000	1.000	.346
	Hotelling's Trace	12.172	4.057	3.000	1.000	.346
	Roy's Largest Root	12.172	4.057	3.000	1.000	.346
LOCATION	Pillai's Trace	.958	7.620	3.000	1.000	.259
	Wilks' Lambda	.042	7.620	3.000	1.000	.259
	Hotelling's Trace	22.860	7.620	3.000	1.000	.259
	Roy's Largest Root	22.860	7.620	3.000	1.000	.259

a Exact statistic b Design: Intercept+LPO4+LOCATION

Tests of Between-Subjects Effects or univariate results on the effect of porewater PO_4^{3-} on the plant tissue nutrients of *Zostera capricorni*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LNL	1.491E-02	2	7.453E-03	1.149	.426
	LPL	1.019E-03	2	5.093E-04	.023	.978
	LNR	9.823E-02	2	4.911E-02	15.424	.026
	LPR	5.287E-02	2	2.643E-02	2.937	.197
	LNZ	7.172E-02	2	3.586E-02	38.088	.007
	LPZ	2.043E-02	2	1.022E-02	1.785	.309
Intercept	LNL	.174	1	.174	26.864	.014
	LPL	1.042	1	1.042	46.452	.006
	LNR	2.479E-03	1	2.479E-03	.779	.443
	LPR	.938	1	.938	104.187	.002
	LNZ	.148	1	.148	156.871	.001
	LPZ	.961	1	.961	167.794	.001
LPO4	LNL	1.425E-02	1	1.425E-02	2.196	.235
	LPL	3.333E-04	1	3.333E-04	.015	.911
	LNR	5.736E-02	1	5.736E-02	18.013	.024
	LPR	3.496E-02	1	3.496E-02	3.884	.143
	LNZ	5.761E-02	1	5.761E-02	61.193	.004
	LPZ	6.084E-03	1	6.084E-03	1.063	.378
LOCATION	LNL	1.001E-02	1	1.001E-02	1.543	.302
	LPL	9.987E-04	1	9.987E-04	.045	.846
	LNR	9.680E-02	1	9.680E-02	30.400	.012
	LPR	5.076E-02	1	5.076E-02	5.640	.098
	LNZ	6.270E-02	1	6.270E-02	66.598	.004
	LPZ	1.984E-02	1	1.984E-02	3.465	.160
Error	LNL	1.947E-02	3	6.489E-03		
	LPL	6.730E-02	3	2.243E-02		
	LNR	9.553E-03	3	3.184E-03		
	LPR	2.700E-02	3	9.001E-03		
	LNZ	2.824E-03	3	9.415E-04		
	LPZ	1.717E-02	3	5.724E-03		
Total	LNL	.380	6			
	LPL	3.543	6			
	LNR	.325	6			
	LPR	4.437	6			
	LNZ	.189	6			
	LPZ	2.912	6			
Corrected Total	LNL	3.437E-02	5			
	LPL	6.832E-02	5			
	LNR	.108	5			
	LPR	7.987E-02	5			
	LNZ	7.454E-02	5			
	LPZ	3.761E-02	5			

a R Squared = .434 (Adjusted R Squared = .056) b R Squared = .015 (Adjusted R Squared = -.642) c R Squared = .911 (Adjusted R Squared = .852) d R Squared = .662 (Adjusted R Squared = .437) e R Squared = .962 (Adjusted R Squared = .937) f R Squared = .543 (Adjusted R Squared = .239) (Numbering follows Table B.2).

Table B.31: MANOVA results on the effect of the individual significant covariates (porewater PO_4^{3-}) on %rhizome N and % root N of *Zostera capricorni.*

Multivariate Tests on the effect of porewater PO_4^{3-} on % rhzimoe N and % rhizome N of *Zostera capricorni*						
Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.990	103.071	2.000	2.000	.010
	Wilks' Lambda	.010	103.071	2.000	2.000	.010
	Hotelling's Trace	103.071	103.071	2.000	2.000	.010
	Roy's Largest Root	103.071	103.071	2.000	2.000	.010
LPO4	Pillai's Trace	.954	20.949	2.000	2.000	.046
	Wilks' Lambda	.046	20.949	2.000	2.000	.046
	Hotelling's Trace	20.949	20.949	2.000	2.000	.046
	Roy's Largest Root	20.949	20.949	2.000	2.000	.046
LOCATION	Pillai's Trace	.957	22.204	2.000	2.000	.043
	Wilks' Lambda	.043	22.204	2.000	2.000	.043
	Hotelling's Trace	22.204	22.204	2.000	2.000	.043
	Roy's Largest Root	22.204	22.204	2.000	2.000	.043
a Exact statistic b Design: Intercept+LPO4+LOCATION						

Table B.32: MANOVA results on the effect of the individual significant covariates (pH) on %rhizome N and % root N of *Zostera capricorni.*

Multivariate Tests on the effect of pH⁻ on % rhizome N and % rhizome N of *Zostera capricorni*

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.971	33.563	2.000	2.000	.029
	Wilks' Lambda	.029	33.563	2.000	2.000	.029
	Hotelling's Trace	33.563	33.563	2.000	2.000	.029
	Roy's Largest Root	33.563	33.563	2.000	2.000	.029
LPH	Pillai's Trace	.972	34.136	2.000	2.000	.028
	Wilks' Lambda	.028	34.136	2.000	2.000	.028
	Hotelling's Trace	34.136	34.136	2.000	2.000	.028
	Roy's Largest Root	34.136	34.136	2.000	2.000	.028
LOCATION	Pillai's Trace	.801	4.027	2.000	2.000	.199
	Wilks' Lambda	.199	4.027	2.000	2.000	.199
	Hotelling's Trace	4.027	4.027	2.000	2.000	.199
	Roy's Largest Root	4.027	4.027	2.000	2.000	.199

a Exact statistic b Design: Intercept+LPH+LOCATION

Tests of Between-Subjects Effects on the effect of the individual significant covariates (pH) on %rhizome N and % root N of *Zostera capricorni*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	LNZ	7.275E-02	2	3.637E-02	60.899	.004
	LNR	.102	2	5.087E-02	25.299	.013
Intercept	LNZ	5.726E-02	1	5.726E-02	95.869	.002
	LNR	6.284E-02	1	6.284E-02	31.248	.011
LPH	LNZ	5.864E-02	1	5.864E-02	98.182	.002
	LNR	6.088E-02	1	6.088E-02	30.273	.012
LOCATION	LNZ	6.934E-03	1	6.934E-03	11.608	.042
	LNR	7.057E-04	1	7.057E-04	.351	.595
Error	LNZ	1.792E-03	3	5.973E-04		
	LNR	6.033E-03	3	2.011E-03		
Total	LNZ	.189	6			
	LNR	.325	6			
Corrected Total	LNZ	7.454E-02	5			
	LNR	.108	5			

a R Squared = .976 (Adjusted R Squared = .960) b R Squared = .944 (Adjusted R Squared = .907) (Numbering follows Table B.2).

Comment: NO analyses done for *Halophila ovalis* plant tissue nutrients due to insufficient tissue being harvested to collect

this data, see Chapter for discussion.

Appendix C: Statistical tables for analyses in Chapter 5.

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Table C.1: Statistical table of the between quadrat scale analysis for clay minerals at Bolger Bay during Experiment 1: seagrass senescing, May–August.

Clay mineral phase analysis — Bolger Bay Experiment 1

```
***** Analysis of variance *****
Variate: Clays
Source of variation      d.f.        s.s.          m.s.      v.r.   F pr.
Block stratum               2       176.56        88.28      1.76
Block.*Units* stratum
trt                         9       476.97        53.00      1.05   0.438
Residual                   18       904.28        50.24
Total                      29      1557.81
***** Tables of means *****
Variate: Clays
Grand mean  30.9
      trt          1         2         3         4         5         6         7
                34.7      36.1      28.1      30.1      28.1      30.1      30.6
      trt          8         9        10
                29.4      37.7      23.7
*** Standard errors of differences of means ***
```

Table	trt
rep.	3
d.f.	18
s.e.d.	5.79

Table C.2: Statistical table of the between quadrat scale analysis for evaporite minerals at Bolger Bay during Experiment 1: seagrass senescing. May–August.

Evaporite mineral phase analysis — Bolger Bay Experiment 1

```
** Analysis of variance *****
Variate: Evaporites
Source of variation      d.f.        s.s.          m.s.      v.r.   F pr.
Block stratum               2        38.421       19.210     3.55
Block.*Units* stratum
trt                         9        68.027        7.559     1.40   0.261
Residual                   18        97.526        5.418
Total                      29       203.974
***** Tables of means *****
Variate: Evaporites
Grand mean   4.28
      trt          1         2         3         4         5         6         7
                3.77      5.00      5.43      3.57      6.83      1.47      4.13
      trt          8         9        10
                4.30      5.80      2.47
*** Standard errors of differences of means ***
```

Table	trt
rep.	3
d.f.	18
s.e.d.	1.901

Table C.3: Statistical table of the between quadrat scale analysis for carbonate minerals at Bolger Bay during Experiment 1: seagrass senescing, May–August.

Carbonate mineral phase analysis — Bolger Bay Experiment 1

```
***** Analysis of variance *****
Variate: Carbonate
Source of variation     d.f.       s.s.        m.s.      v.r.   F pr.
Block stratum              2       5.402       2.701     1.36
Block.*Units* stratum
trt                        9      25.594       2.844     1.43   0.248
Residual                  18      35.831       1.991
Total                     29      66.827
***** Tables of means *****
Variate: Carbonate
Grand mean   6.01
      trt        1        2        3        4        5        6        7
              6.20     5.53     5.93     6.03     4.80     4.53     5.83
      trt        8        9       10
              6.47     6.83     7.93
*** Standard errors of differences of means ***

Table                  trt
rep.                     3
d.f.                    18
s.e.d.                1.152
```

Table C.4: Statistical table of the between quadrat scale analysis for granite minerals at Bolger Bay during Experiment 1: seagrass senescing, May–August.

Granite mineral phase analysis — Bolger Bay Experiment 1

```
 ***** Analysis of variance *****
Variate: granite_derived
Source of variation     d.f.       s.s.        m.s.      v.r.   F pr.
Block stratum              2      402.28      201.14     2.57
Block.*Units* stratum
trt                        9      628.03       69.78     0.89   0.551
Residual                  18     1409.14       78.29
Total                     29     2439.45
***** Tables of means *****
Variate: granite_derived
Grand mean   58.8
      trt        1        2        3        4        5        6        7
              55.4     53.4     60.5     60.2     60.3     63.9     59.5
      trt        8        9       10
              59.9     49.6     65.8
*** Standard errors of differences of means ***

Table                  trt
rep.                     3
d.f.                    18
s.e.d.                 7.22
```

Table C.5: Statistical table of the between quadrat scale analysis for clay minerals at Bolger Bay during Experiment 2: seagrass growing, August–November.

```
Clay mineral phase analysis — Bolger Bay Experiment 2
```

```
***** Analysis of variance *****
Variate: Clays
Source of variation     d.f.        s.s.        m.s.      v.r.   F pr.
Block stratum              2       40.22       20.11      0.28
Block.*Units* stratum
trt                        9      773.97       86.00      1.21   0.348
Residual                  18     1279.22       71.07
Total                     29     2093.41
***** Tables of means *****
Variate: Clays
Grand mean   25.1
      trt         1       2        3       4        5         6         7
               25.8    26.5     29.8    28.5     18.5      17.2      33.1
      trt         8       9       10
               24.2    28.4     18.8
*** Standard errors of differences of means ***

Table                   trt
rep.                      3
d.f.                     18
s.e.d.                 6.88
```

Table C.6: Statistical table of the between quadrat scale analysis for evaporite minerals at Bolger Bay during Experiment 2: seagrass growing, August–November.

```
Evaporite mineral phase analysis — Bolger Bay Experiment 2
```

```
***** Analysis of variance *****
Variate: Evaporites
Source of variation     d.f.        s.s.        m.s.      v.r.   F pr.
Block stratum              2       5.138       2.569      0.28
Block.*Units* stratum
trt                        9      85.208       9.468      1.03   0.451
Residual                  18     164.742       9.152
Total                     29     255.088
***** Tables of means *****
Variate: Evaporites
Grand mean   3.88
      trt         1       2        3       4        5         6         7
               2.97    3.47     4.07    6.47     2.77      2.50      7.53
      trt         8       9       10
               2.13    4.07     2.83
*** Standard errors of differences of means ***

Table                   trt
rep.                      3
d.f.                     18
s.e.d.                2.470
```

Table C.7: Statistical table of the between quadrat scale analysis for carbonate minerals at Bolger Bay during Experiment 2: seagrass growing, August–November.

```
Carbonate mineral phase analysis — Bolger Bay Experiment 2

***** Analysis of variance *****
Variate: Carbonate
Source of variation     d.f.        s.s.        m.s.      v.r.   F pr.
Block stratum              2       2.945       1.472      0.30
Block.*Units* stratum
trt                        9      88.260       9.807      1.98   0.105
Residual                  18      89.349       4.964
Total                     29     180.554
***** Tables of means *****
Variate: Carbonate
Grand mean   7.28
      trt         1        2        3        4        5        6        7
                6.60     4.73    11.00     5.50     7.60     7.67     5.87
      trt         8        9       10
                6.97     7.90     8.93
*** Standard errors of differences of means ***

Table                  trt
rep.                     3
d.f.                    18
s.e.d.               1.819
```

Table C.8: Statistical table of the between quadrat scale analysis for granite minerals at Bolger Bay during Experiment 2: seagrass growing, August–November.

```
Granite mineral phase analysis — Bolger Bay Experiment 2

***** Analysis of variance *****
Variate: granite_derived
Source of variation     d.f.        s.s.        m.s.      v.r.   F pr.
Block stratum              2       35.91       17.96      0.20
Block.*Units* stratum
trt                        9     1172.93      130.33      1.47   0.231
Residual                  18     1593.06       88.50
Total                     29     2801.90
***** Tables of means *****
Variate: granite_derived
Grand mean   63.8
      trt         1        2        3        4        5        6        7
                64.6     65.4     55.0     59.5     71.1     72.7     53.6
      trt         8        9       10
                66.7     59.8     69.4
*** Standard errors of differences of means ***

Table                  trt
rep.                     3
d.f.                    18
s.e.d.                7.68
```

Table C.9: Statistical table of the between quadrat scale analysis for clay minerals at Picnic Bay during Experiment 1: seagrass senescent, May–August.

```
Clay mineral phase analysis – Picnic Bay Experiment 1
```

```
***** Analysis of variance *****
Variate: Clays
Source of variation     d.f.        s.s.        m.s.      v.r.   F pr.
Block stratum              2      164.27       82.14      1.00
Block.*Units* stratum
Trt                        9      207.73       23.08      0.28   0.972
Residual                  18     1482.47       82.36
Total                     29     1854.48
***** Tables of means *****
Variate: Clays
Grand mean   16.8
     Trt        1        2        3        4        5        6        7
             16.1     20.9     17.2     19.0     18.6     14.0     13.1
     Trt        8        9       10
             16.5     13.0     19.5
*** Standard errors of differences of means ***

Table              Trt
rep.                 3
d.f.                18
s.e.d.             7.41
```

Table C.10: Statistical table of the between quadrat scale analysis for evaporite minerals at Picnic Bay during Experiment 1: seagrass senescent, May–August.

```
Evaporite mineral phase analysis – Picnic Bay Experiment 1
```

```
**** Analysis of variance *****
Variate: Evaporites
Source of variation     d.f.        s.s.        m.s.      v.r.   F pr.
Block stratum              2       5.234       2.617      1.80
Block.*Units* stratum
Trt                        9      10.168       1.130      0.78   0.639
Residual                  18      26.166       1.454
Total                     29      41.568
***** Tables of means *****
Variate: Evaporites
Grand mean   1.72
     Trt        1        2        3        4        5        6        7
             2.70     1.87     1.40     1.43     1.80     2.33     0.77
     Trt        8        9       10
             1.13     2.40     1.37
*** Standard errors of differences of means ***

Table              Trt
rep.                 3
d.f.                18
s.e.d.             0.984
```

Table C.11: Statistical table of the between quadrat scale analysis for carbonate minerals at Picnic Bay during Experiment 1: seagrass senescent, May–August.

```
Carbonate mineral phase analysis - Picnic Bay Experiment 1

***** Analysis of variance *****
Variate: Carbonate
Source of variation     d.f.      s.s.        m.s.      v.r.   F pr.
Block stratum             2      256.39      128.20     2.77
Block.*Units* stratum
Trt                       9       90.44       10.05     0.22   0.988
Residual                 18      832.10       46.23
Total                    29     1178.93
***** Tables of means *****
Variate: Carbonate
Grand mean   16.7
     Trt         1        2        3        4        5        6        7
               16.9     18.9     16.6     20.1     15.9     15.2     15.2
     Trt         8        9       10
               17.6     16.9     13.9
*** Standard errors of differences of means ***

Table              Trt
rep.                 3
d.f.                18
s.e.d.             5.55
```

Table C.12: Statistical table of the between quadrat scale analysis for granite minerals at Picnic Bay during Experiment 1: seagrass senescent, May–November.

```
Granite mineral phase analysis - Picnic Bay Experiment 1

***** Analysis of variance *****
Variate: Granite
Source of variation     d.f.      s.s.        m.s.      v.r.   F pr.
Block stratum             2       34.7        17.3      0.14
Block.*Units* stratum
Trt                       9      395.8        44.0      0.37   0.937
Residual                 18     2158.9       119.9
Total                    29     2589.4
***** Tables of means *****
Variate: Granite
Grand mean   64.8
     Trt         1        2        3        4        5        6        7
               64.3     58.4     64.9     59.4     63.7     68.5     71.0
     Trt         8        9       10
               64.8     67.7     65.1
*** Standard errors of differences of means ***

Table              Trt
rep.                 3
d.f.                18
s.e.d.             8.94
```

Table C.13: Statistical table of the between quadrat scale analysis for clay minerals at Picnic Bay during Experiment 2: seagrass growing, August–November.

```
Clay mineral phase analysis - Picnic Bay Experiment 2


**** Analysis of variance *****
Variate: Clays
Source of variation     d.f.        s.s.        m.s.      v.r.   F pr.
Block stratum              2        41.20       20.60     0.75
Block.*Units* stratum
Trt                        9       295.09       32.79     1.19   0.358
Residual                  18       495.58       27.53
Total                     29       831.87
***** Tables of means *****
Variate: Clays
Grand mean   19.95
      Trt        1        2        3        4        5        6        7
              20.93    22.70    17.50    23.57    19.87    21.97    12.93
      Trt        8        9       10
              21.30    22.10    16.63
**** Standard errors of differences of means ***

Table                  Trt
rep.                     3
d.f.                    18
s.e.d.               4.284
```

Table C.14: Statistical table of the between quadrat scale analysis for evaporite minerals at Picnic Bay during Experiment 2: seagrass growing, August–November.

```
Evaporite mineral phase analysis - Picnic Bay Experiment 2


**** Analysis of variance *****
Variate: Evaporites
Source of variation     d.f.        s.s.        m.s.      v.r.   F pr.
Block stratum              2        1.075       0.537     0.32
Block.*Units* stratum
Trt                        9        4.907       0.545     0.33   0.954
Residual                  18       29.785       1.655
Total                     29       35.767
***** Tables of means *****
Variate: Evaporites
Grand mean   2.03
      Trt        1        2        3        4        5        6        7
               2.13     2.10     2.10     2.07     2.10     1.53     1.17
      Trt        8        9       10
               2.77     2.30     2.07
*** Standard errors of differences of means ***

Table                  Trt
rep.                     3
d.f.                    18
s.e.d.               1.050
```

Table C.15: Statistical table of the between quadrat scale analysis for carbonate minerals at Picnic Bay during Experiment 2: seagrass growing, August–November.

```
Carbonate mineral phase analysis - Picnic Bay Experiment 2


***** Analysis of variance *****
Variate: Carbonate
Source of variation     d.f.       s.s.        m.s.     v.r.   F pr.
Block stratum             2        21.77      10.88     1.06
Block.*Units* stratum
Trt                       9        66.03       7.34     0.72  0.687
Residual                 18       184.03      10.22
Total                    29       271.83
***** Tables of means *****
Variate: Carbonate
Grand mean   11.88
      Trt         1         2         3         4         5         6         7
               13.73     11.10     11.37     13.47     10.73     12.90      9.97
      Trt         8         9        10
               10.10     14.23     11.20
*** Standard errors of differences of means ***

Table              Trt
rep.                 3
d.f.                18
s.e.d.           2.611
```

Table C.16: Statistical table of the between quadrat scale analysis for granite minerals at Picnic Bay during Experiment 2: seagrass growing, August–November.

```
Granite mineral phase analysis - Picnic Bay Experiment 2


***** Analysis of variance *****
Variate: Granite
Source of variation     d.f.       s.s.        m.s.     v.r.   F pr.
Block stratum             2       122.73      61.36     1.16
Block.*Units* stratum
Trt                       9       584.76      64.97     1.23  0.339
Residual                 18       953.03      52.95
Total                    29      1660.52
***** Tables of means *****
Variate: Granite
Grand mean   66.1
      Trt         1         2         3         4         5         6         7
                63.1      64.0      69.1      60.8      67.3      63.6      76.0
      Trt         8         9        10
                65.8      61.3      70.1
*** Standard errors of differences of means ***

Table              Trt
rep.                 3
d.f.                18
s.e.d.            5.94
```

Table C.17: Statistical table of univariate analyses of sediment nutrient (adsorbed and porewater) responses to different levels of Osmocote® of N and P at Bolger Bay during Experiment 1: seagrass senescing, May–August.

Parameter	Source of variation	d.f.	s.s.	m.s.	F	p
Bolger Bay Senescent Season						
Sediment Nutrients						
Adsorbed						
PO_4^{3-} (Bicarbonate)	Block stratum	2	0.0875	0.0438	0.34	
	Lifting	1	0.3210	0.3210	2.49	0.132
	Lifting.N	2	2.2387	1.1194	8.68	0.002
	Lifting.P	2	3.8356	1.9178	14.47	<0.001
	Lifting.N.P	4	2.8073	0.7018	5.44	0.005
	Residual	18	2.3219	0.1290		
	Total	29	11.6121			
PO_4^{3-} (Bray)	Block stratum	2	0.2921	0.1460	1.04	
	Lifting	1	0.6452	0.6452	4.61	0.046
	Lifting.N	2	0.1509	0.0754	0.54	0.593
	Lifting.P	2	3.3465	1.6733	11.95	<0.001
	Lifting.N.P	4	0.1780	0.0445	0.32	0.862
	Residual	18	2.5205	0.1400		
	Total	29	7.1332			
NH_4^+	Block stratum	2	1.0211	0.5105	3.06	
	Lifting	1	0.2264	0.2264	1.36	0.259
	Lifting.N	2	1.6327	0.8163	4.89	0.020
	Lifting.P	2	0.5034	0.2517	1.51	0.248
	Lifting.N.P	4	0.2438	0.0609	0.37	0.830
	Residual	18	3.0022	0.1668		
	Total	29	6.6295			
Porewater						
PO_4^{3-}	Block stratum	2	0.9608	0.4804	2.14	
	Lifting	1	3.8735	3.8735	17.26	<0.001
	Lifting.N	2	0.9043	0.4521	2.01	0.162
	Lifting.P	2	24.7862	12.3931	55.21	<0.001
	Lifting.N.P	4	2.2100	0.5525	2.46	0.082
	Residual	18	4.0403	0.2245		
	Total	29	36.7751			
$NO_2^- + NO_3^-$	Block stratum	2	2.4160	1.2080	2.79	
	Lifting	1	3.3711	3.3711	7.80	0.012
	Lifting.N	2	21.6843	10.8422	25.08	<0.001
	Lifting.P	2	1.6330	0.8165	1.89	0.180
	Lifting.N.P	4	1.3739	0.3435	0.79	0.544
	Residual	18	7.7823	0.4323		
	Total	29	38.2605			
NH_4^+	Block stratum	2	6591	3295	1.52	
	Lifting	1	10611	10611	4.89	0.040
	Lifting.N	2	49279	24639	11.37	<0.001
	Lifting.P	2	4869	2435	1.12	0.347
	Lifting.N.P	4	1838	459	0.21	0.928
	Residual	18	39018	2168		
	Total	29	112205			

Table C.18: Statistical table of univariate analyses of sediment nutrient (adsorbed and porewater) responses to different levels of Osmocote® of N and P at Bolger Bay during Experiment 2: seagrass growing, August–November.

Parameter	Source of variation	d.f.	s.s.	m.s.	F	p
Sediment Nutrients Porewater						
NH_4^+	Block stratum	2	0.3993	0.1997	1.28	
	Lifting	1	1.4359	1.4359	0.007	
	Lifting.N	2	12.1803	6.0902	39.13	0.007
	Lifting.P	2	0.1892	0.0946	0.61	0.555
	Lifting.N.P	4	0.2703	0.0676	0.43	0.782
	Residual	18	2.8015	0.1556		
	Total	29	17.2765			
PO_4^{3-}	Block stratum	2	0.5607	0.2804	0.50	
	Lifting	1	1.5438	1.5438	2.77	0.114
	Lifting.N	2	2.0609	1.0304	1.85	0.186
	Lifting.P	2	26.9731	13.4860	24.17	<0.001
	Lifting.N.P	4	1.9985	0.4996	0.90	0.487
	Residual	18	10.0430	0.5579		
	Total	29	43.1789			
$NO_2^- + NO_3^-$	Block stratum	2	1.605	0.803	0.77	
	Lifting	1	5.541	5.541	5.35	0.033
	Lifting.N	2	70.495	35.248	34.00	<0.001
	Lifting.P	2	0.055	0.028	0.03	0.974
	Lifting.N.P	4	1.985	0.496	0.48	0.751
	Residual	18	18.660	1.037		
	Total	29	98.342			
Adsorbed						
$PO_4^{3-}{}_{(Bray)}$	Block stratum	2	0.2391	0.1196	1.04	
	Lifting	1	0.1896	0.1896	1.66	0.214
	Lifting.N	2	0.4395	0.2197	1.92	0.176
	Lifting.P	2	0.8712	0.4356	3.80	0.042
	Lifting.N.P	4	0.2340	0.0585	0.51	0.728
	Residual	18	2.0607	0.1145		
	Total	29	4.0340			
$PO_4^{3-}{}_{(Bicarbonate)}$	Block stratum	2	0.1217	0.0609	0.30	
	Lifting	1	0.0003	0.0003	0.00	0.972
	Lifting.N	2	0.4112	0.2056	1.02	0.381
	Lifting.P	2	0.2673	0.1336	0.66	0.528
	Lifting.N.P	4	0.6616	0.1654	0.82	0.529
	Residual	18	3.6330	0.2018		
	Total	29	5.0950			
NH_4^+	Block stratum	2	0.38871	0.19436	1.95	
	Lifting	1	0.18747	0.18747	1.88	0.187
	Lifting.N	2	2.37040	1.18520	11.90	<0.001
	Lifting.P	2	0.25769	0.12884	1.29	0.299
	Lifting.N.P	4	0.14585	0.03646	0.37	0.830
	Residual	18	1.79278	0.09960		
	Total	29	5.14291			

Table C.19: Statistical table of univariate analyses of sediment nutrient (adsorbed and porewater) responses to different levels of Osmocote® of N and P at Picnic Bay during Experiment 1: seagrass senescing, May–August.

Parameter	Source of variation	d.f.	s.s.	m.s.	F	*p*
Adsorbed						
PO_4^{3-} (Bray)	Block stratum	2	0.2473	0.1236	1.16	
	Lifting	1	0.3752	0.3752	3.53	0.077
	Lifting.N	2	0.2923	0.1461	1.37	0.279
	Lifting.P	2	0.5439	0.2720	2.56	0.105
	Lifting.N.P	4	0.5993	0.1498	1.41	0.271
	Residual	18	1.9159	0.1064		
	Total	29	3.9739			
PO_4^{3-} (Bicarbonate)	Block stratum	2	0.3563	0.1781	1.04	
	Lifting	1	0.4224	0.4224	2.46	0.134
	Lifting.N	2	0.1573	0.0786	0.46	0.640
	Lifting.P	2	1.2190	0.6095	3.54	0.050
	Lifting.N.P	4	0.4328	0.1082	0.63	0.648
	Residual	18	3.0950	0.1719		
	Total	29	5.6828			
NH_4^+	Block stratum	2	0.1559	0.0780	0.68	
	Lifting	1	0.1831	0.1831	1.59	0.224
	Lifting.N	2	1.6650	0.8325	7.21	0.005
	Lifting.P	2	0.1050	0.0525	0.45	0.642
	Lifting.N.P	4	0.5555	0.1389	1.20	0.344
	Residual	18	2.0785	0.1155		
	Total	29	4.7430			
Porewater						
NH_4^+	Block stratum	2	0.2402	1.201	1.02	
	Lifting	1	1.4340	1.4340	12.14	0.003
	Lifting.N	2	5.6012	2.8006	23.70	<0.001
	Lifting.P	2	0.0787	0.0393	0.33	0.721
	Lifting.N.P	4	0.7979	0.1995	1.69	0.196
	Residual	18	2.21269	0.1182		
	Total	29	10.2788			
$NO_2^-+NO_3^-$	Block stratum	2	1.0616	0.5308	1.09	
	Lifting	1	4.6063	4.6063	9.47	0.007
	Lifting.N	2	12.8571	6.4285	13.21	<0.001
	Lifting.P	2	0.2677	0.1339	0.28	0.763
	Lifting.N.P	4	3.2489	0.8122	1.67	0.201
	Residual	18	8.7586	0.4866		
	Total	29	30.8002			
PO_4^{3-}	Block stratum	2	0.2018	0.1009	0.67	
	Lifting	1	3.4085	3.4085	22.76	<0.001
	Lifting.N	2	0.0329	0.0164	0.11	0.897
	Lifting.P	2	14.5250	7.2625	18.50	<0.001
	Lifting.N.P	4	0.4684	0.1171	0.78	0.551
	Residual	18	2.6951	0.1497		
	Total	29	21.3317			

Table C.20: Statistical table of univariate analyses of sediment nutrient (adsorbed and porewater) responses to different levels of Osmocote® of N and P at Picnic Bay during Experiment 2: seagrass growing, August–November.

Parameter	Source of variation	d.f.	s.s.	m.s.	F	p
Picnic Bay Growing Season Sediment Nutrients Porewater						
NH_4^+	Block stratum	2	55013	27507	4.64	
	Lifting	1	12117	12117	2.13	0.161
	Lifting.N	2	79980	39990	7.04	0.006
	Lifting.P	2	10291	5145	0.91	0.422
	Lifting.N.P	4	10181	25454	0.45	0.772
	Residual	18	102221	5679		
	Total	29	269803			
PO_4^{3-}	Block stratum	2	0.24316	0.12158	2.04	
	Lifting	1	0.93293	0.93293	15.63	<0.001
	Lifting.N	2	0.29949	0.14975	2.51	0.109
	Lifting.P	2	12.47685	6.23842	104.55	<0.001
	Lifting.N.P	4	0.40686	0.10172	1.70	0.193
	Residual	18	1.07409	0.05967		
	Total	29	15.43338			
$NO_2^- + NO_3^-$	Block stratum	2	46345	23175	4.19	
	Lifting	1	6709	6709	1.21	0.285
	Lifting.N	2	64925	32462	5.87	0.011
	Lifting.P	2	5936	2968	0.54	0.594
	Lifting.N.P	4	15583	3896	0.70	0.599
	Residual	18	99519	5529		
	Total	29	239017			

Table C.21: Statistical table of univariate analyses of plant abundance responses to different levels of Osmocote® N and P at Bolger Bay during Experiment 1: seagrass senescing, May–August.

Parameter	Source of variation	d.f.	s.s.	m.s.	F	*p*
Bolger Bay Senescent Season Biomass						
Shoot Density	Block stratum	2	8117	4059	2.80	
	Lifting	1	193	193	0.13	0.720
	Lifting.N	2	12106	6053	4.18	0.032
	Lifting.P	2	20947	10473	7.22	0.005
	Lifting.N.P	4	28440	7110	4.90	0.007
	Residual	18	26094	1450		
	Total	29	95896			
Total Biomass	Block stratum	2	0.4641	0.2321	1.89	
	Lifting	1	0.0218	0.0218	0.18	0.679
	Lifting.N	2	0.5100	0.2550	2.07	0.155
	Lifting.P	2	0.6982	0.3491	2.84	0.085
	Lifting.N.P	4	0.4190	0.1048	0.85	0.512
	Residual	18	2.2159	0.1231		
	Total	29	4.3291			
Roots	Block stratum	2	0.2305	0.1152	0.98	
	Lifting	1	0.0062	0.0062	0.05	0.821
	Lifting.N	2	1.2958	0.6479	5.51	0.014
	Lifting.P	2	1.0295	0.5147	4.38	0.028
	Lifting.N.P	4	0.7784	0.1946	1.65	0.204
	Residual	18	2.1176	0.1176		
	Total	29	5.4580			
Rhizome	Block stratum	2	0.5489	0.2744	1.48	
	Lifting	1	0.0039	0.0039	0.02	0.887
	Lifting.N	2	0.5175	0.2587	1.40	0.273
	Lifting.P	2	0.3577	0.1789	0.97	0.400
	Lifting.N.P	4	0.5789	0.1447	0.78	0.552
	Residual	18	3.3332	0.1852		
	Total	29	5.3400			
Leaves	Block stratum	2	0.6631	0.3315	2.70	
	Lifting	1	0.0267	0.0367	0.22	0.646
	Lifting.N	2	0.3714	0.1857	1.51	0.247
	Lifting.P	2	1.1990	0.5995	4.88	0.020
	Lifting.N.P	4	0.6064	0.1516	1.23	0.332
	Residual	18	2.2125	0.1229		
	Total	29	5.0791			

Table C.22: Statistical table of univariate analyses of plant abundance responses to different levels of Osmocote® N and P at Bolger Bay during Experiment 2: seagrass growing, August-November.

Parameter	Source of variation	d.f.	s.s.	m.s.	F	*p*
Bolger Bay Growing						
Seagrass Parameters						
Biomass						
Roots	Block stratum	2	0.0051011	0.0025506	3.15	
	Lifting	1	0.0000011	0.0000011	0.00	0.971
	Lifting.N	2	0.0002609	0.0001304	0.16	0.852
	Lifting.P	2	2.0014270	0.0007135	0.88	0.431
	Lifting.N.P	4	0.0016899	0.0004225	0.52	0.720
	Residual	18	0.0145537	0.0008085		
	Total	29	0.0230337			
Total	Block stratum	2	0.15745	0.07873	5.04	
	Lifting	1	0.00056	0.00056	0.04	0.852
	Lifting.N	2	0.00275	0.00137	0.09	0.916
	Lifting.P	2	0.03054	0.01527	0.98	0.395
	Lifting.N.P	4	0.02639	0.00660	0.42	0.790
	Residual	18	0.28098	0.01561		
	Total	29	0.49867			
Rhizome	Block stratum	2	0.24698	0.12349	5.38	
	Lifting	1	0.00046	0.00046	0.02	0.889
	Lifting.N	2	0.00607	0.00304	0.13	0.877
	Lifting.P	2	0.05437	0.02718	1.18	0.329
	Lifting.N.P	4	0.03835	0.00959	0.42	0.794
	Residual	18	0.41342	0.02297		
	Total	29	0.75965			
Leaf	Block stratum	2	0.57459	0.28729	4.64	
	Lifting	1	0.00060	0.00060	0.01	0.922
	Lifting.N	2	0.0983	0.00492	0.08	0.924
	Lifting.P	2	0.13440	0.06720	1.08	0.359
	Lifting.N.P	4	0.12925	0.03231	0.52	0.721
	Residual	18	1.11486	0.06194		
	Total	29	1.96353			
Shoot Density	Block stratum	2	1.801	2.901	0.66	
	Lifting	1	0.405	0.405	0.30	0.592
	Lifting.N	2	1.212	0.606	0.45	0.646
	Lifting.P	2	2.808	1.404	1.04	0.375
	Lifting.N.P	4	2.886	0.721	0.53	0.714
	Residual	18	24.394	1.355		
	Total	29	33.505			

Table C.23: Statistical table of univariate analyses of plant abundance responses to different levels of Osmocote® N and P at Picnic Bay during Experiment 1: seagrass senescing, May–August.

Parameter	Source of variation	d.f.	s.s.	m.s.	F	p
Shoot Density	Block stratum	2	0.56306	0.28153	4.16	
	Lifting	1	0.08303	0.08303	1.23	0.283
	Lifting.N	2	0.13638	0.06819	1.01	0.385
	Lifting.P	2	0.17110	0.08555	1.26	0.307
	Lifting.N.P	4	0.21683	0.05421	0.80	0.541
	Residual	18	1.21961	0.06776		
	Total	29	2.39001			
Leaf	Block stratum	2	0.36059	0.19530	1.99	
	Lifting	1	0.02144	0.02144	0.22	0.646
	Lifting.N	2	0.07819	0.03909	0.40	0.677
	Lifting.P	2	0.24820	0.12410	1.27	0.306
	Lifting.N.P	4	0.41212	0.10303	1.05	0.409
	Residual	18	1.76513	0.09806		
	Total	29	2.91567			
Rhizome	Block stratum	2	1.8112	0.9056	5.09	
	Lifting	1	0.0405	0.0405	0.23	0.639
	Lifting.N	2	0.0732	0.0366	0.21	0.816
	Lifting.P	2	0.6336	0.3168	1.78	0.197
	Lifting.N.P	4	0.5792	0.1448	0.81	0.533
	Residual	18	3.2040	0.1780		
	Total	29	6.3417			
Roots	Block stratum	2	0.5305	0.2653	1.96	
	Lifting	1	0.1280	0.1280	0.95	0.343
	Lifting.N	2	0.0819	0.0410	0.30	0.742
	Lifting.P	2	0.6636	0.3318	2.46	0.114
	Lifting.N.P	4	0.3027	0.0757	0.56	0.694
	Residual	18	2.4313	0.1351		
	Total	29	4.1380			

Table C.24: Statistical table of univariate analyses of plant abundance responses to different levels of Osmocote® N and P at Picnic Bay during Experiment 2: seagrass growing, August–November.

Parameter	Source of variation	d.f.	s.s.	m.s.	F	*p*
Picnic Bay Growing Season						
Biomass						
Leaf	Block stratum	2	1.0856	0.5428	1.70	
	Lifting	1	0.0000	0.0000	0.00	0.997
	Lifting.N	2	1.8652	0.9326	2.93	0.079
	Lifting.P	2	0.8612	0.4306	1.35	0.284
	Lifting.N.P	4	0.9377	0.2344	0.74	0.579
	Residual	18	5.7336	0.3185		
	Total	29	10.4833			
Rhizome	Block stratum	2	1.0910	0.5455	2.49	
	Lifting	1	0.0216	0.0216	0.10	0.757
	Lifting.N	2	1.7653	0.8827	4.03	0.036
	Lifting.P	2	1.0815	0.5408	2.47	0.113
	Lifting.N.P	4	0.7151	0.1788	0.82	0.532
	Residual	18	3.9471	0.2193		
	Total	29	8.6216			
Roots	Block stratum	2	0.89297	0.44648	5.17	
	Lifting	1	0.01755	0.01755	0.20	0.658
	Lifting.N	2	0.23164	0.11582	1.34	0.287
	Lifting.P	2	0.26199	0.13100	1.52	0.246
	Lifting.N.P	4	0.56933	0.14233	1.65	0.206
	Residual	18	1.5563	0.08642		
	Total	29	3.52912			
Total	Block stratum	2	9.107	4.553	2.72	
	Lifting	1	0.000	0.000	0.00	0.993
	Lifting.N	2	9.823	4.911	2.93	0.079
	Lifting.P	2	6.001	3.00	1.79	0.195
	Lifting.N.P	4	6.389	1.597	0.95	0.456
	Residual	18	30.134	1.674		
	Total	29	61.453			
Shoot density	Block stratum	2	2.543×10^7	1.272×10^7	3.01	
	Lifting	1	2.745×10^6	2.745×10^6	0.65	0.431
	Lifting.N	2	5.333×10^7	2.667×10^7	6.31	0.008
	Lifting.P	2	8.118×10^6	4.059×10^6	0.96	0.401
	Lifting.N.P	4	5.390×10^6	1.348×10^6	0.32	0.862
	Residual	18	7.606×10^7	4.225×10^6		
	Total	29	1.711×10^8			

Table C.25: Statistical table of univariate analyses of plant tissue nutrient responses to different levels of Osmocote® N and P at Picnic Bay during Experiment 1: seagrass senescing, May–August.

Parameter	Source of variation	d.f.	s.s.	m.s.	F	*p*
Pg seagrass quad^{-1}	Block stratum		0.52807	0.26403	2.70	
		2				
	Lifting	1	0.12731	0.12731	1.30	0.269
	Lifting.N	2	0.13718	0.06859	0.70	0.509
	Lifting.P	2	1.31601	0.65800	6.74	0.007
	Lifting.N.P	4	0.24671	0.06168	0.63	0.646
	Residual	18	1.75791	0.09766		
	Total	29	4.11318			
Leaf %N	Block stratum	2	0.1984	0.0992	0.60	
	Lifting	1	1.6489	1.6489	9.89	0.006
	Lifting.N	2	7.6395	3.8197	22.92	<0.001
	Lifting.P	2	0.4168	0.2084	1.25	0.310
	Lifting.N.P	4	0.8433	0.2108	1.27	0.320
	Residual	18	2.9999	0.1667		
	Total	29	13.7468			
	Block stratum	2	0.028586	0.014293	4.63	
Rhizome %N						
	Lifting	1	0.022817	.002817	7.39	0.014
	Lifting.N	2	0.127315	0.063657	20.62	<0.001
	Lifting.P	2	0.000226	0.000113	0.04	0.964
	Lifting.N.P	4	0.016959	0.004215	1.37	0.285
	Residual	18	0.055562	0.003087		
	Total	29	0.251364			
Root%N	Block stratum	2	0.014073	0.007037	0.77	
	Lifting	1	0.000042	0.000042	0.00	0.947
	Lifting.N	2	0.014752	0.007376	0.81	0.461
	Lifting.P	2	0.003481	0.001741	0.19	0.828
	Lifting.N.P	4	0.074952	0.018738	2.05	0.130
	Residual	18	0.164289	0.009127		
	Total	29	0.271590			
Whole Plant %N	Block stratum	2	0.4650	0.2325	0.76	
	Lifting	1	2.9141	2.19141	9.54	0.006
	Lifting.N	2	14.8226	7.4113	24.23	<0.001
	Lifting.P	2	0.2426	0.1213	0.40	0.678
	Lifting.N.P	4	1.2145	0.3036	0.99	0.436
	Residual	18	5.5010	0.3056		
	Total	29	25.1598			
Ng seagrass quad^{-1}	Block stratum	2	0.4825	0.2412	2.41	
	Lifting	1	0.1085	0.1085	1.08	0.312
	Lifting.N	2	0.1201	0.0601	0.60	0.560
	Lifting.P	2	0.2714	0.1357	1.35	0.283
	Lifting.N.P	4	0.2301	0.0575	0.57	0.685
	Residual	18	1.8027	0.1001		
	Total	29	3.0152			
Leaf%P	Block stratum	2	0.014083	.001743	0.40	

	Lifting	1	0.01403	0.014083	3.20	0.091
	Lifting.N	2	0.032689	0.016344	3.71	0.045
	Lifting.P	2	0.240800	0.120400	27.35	<0.001
	Lifting.N.P	4	0.023711	0.005928	1.35	0.291
	Residual	18	0.079247	0.004403		
	Total	29	0.394017			
Rhizome%P	Block stratum	2	0.01943	0.00972	0.81	
	Lifting	1	0.01537	0.01537	1.28	0.272
	Lifting.N	2	0.15385	0.07692	6.41	0.008
	Lifting.P	2	0.54301	0.27151	22.64	<0.001
	Lifting.N.P	4	0.02472	0.00618	0.52	0.725
	Residual	18	0.21586	0.01199		
	Total	29	0.97224			
Root%P	Block stratum	2	0.00147	0.00074	0.04	
	Lifting	1	0.10347	0.10347	5.34	0.025
	Lifting.N	2	0.06643	0.03322	1.91	0.177
	Lifting.P	2	1.03033	0.51516	29.58	<0.001
	Lifting.N.P	4	0.31350	0.04703	2.70	0.064
	Residual	18	0.31350	0.01742		
	Total	29	1.700333			
Whole Plant %P	Block stratum	2	0.00811	0.00405	0.11	
	Lifting	1	0.12762	0.12762	3.55	0.076
	Lifting.N	2	0.23265	0.11633	3.24	0.063
	Lifting.P	2	1.81156	0.90578	25.23	<0.001
	Lifting.N.P	4	0.26237	0.06559	1.83	0.168
	Residual	18	0.64623	0.03590		
	Total	29	3.08854	0.03590		
Pg seagrass quad^{-1}	Block stratum	2	0.52807	0.26403	2.70	
	Lifting	1	0.12731	0.12731	1.30	0.269
	Lifting.N	2	0.13718	0.06859	0.70	0.509
	Lifting.P	2	1.31601	0.65800	6.74	0.007
	Lifting.N.P	4	0.24671	0.06168	0.63	0.646
	Residual	18	1.75791	0.09766		
	Total	29	4.11318			

Table C.26: Statistical table of univariate analyses of plant tissue nutrient responses to different levels of Osmocote® N and P at Picnic Bay during Experiment 2: seagrass growing, August-November.

Parameter	Source of variation	d.f.	s.s.	m.s.	F	p
Picnic Bay Growing Season Plant nutrients						
Root %P	Block stratum	2	0.003727	0.001863	0.80	
	Lifting	1	0.009481	0.009481	4.07	0.059
	Lifting.N	2	0.010007	0.005004	2.151	0.146
	Lifting.P	2	0.053096	0.026548	11.39	0.001
	Lifting.N.P	4	0.008815	0.002204	0.95	0.460
	Residual	18	0.041940	0.002330		
	Total	29	0.127067			
Rhizome %P	Block stratum	2	0.005037	0.002519	0.63	
	Lifting	1	0.000469	0.000469	0.12	0.736
	Lifting.N	2	0.357016	0.178508	44.54	<0.001
	Lifting.P	2	0.372263	0.186132	46.44	<0.001
	Lifting.N.P	4	0.018474	0.004618	1.15	0.364
	Residual	18	0.072149	0.004008		
	Total	29	0.825405			
Leaf %P	Block stratum	2	0.10580	0.005290	2.47	
	Lifting	1	0.000593	0.000593	0.28	0.605
	Lifting.N	2	0.095119	0.047559	22.20	<0.001
	Lifting.P	2	0.154985	0.077493	36.18	<0.001
	Lifting.N.P	4	0.014570	0.003643	1.70	0.194
	Residual	18	0.038553	0.002142		
	Total	29	0.314400			
Whole Plant %P	Block stratum	2	0.001661	0.000831	0.26	
	Lifting	1	0.002131	0.002131	0.66	0.429
	Lifting.N	2	0.164485	0.080593	24.81	<0.001
	Lifting.P	2	0.303194	0.151597	46.66	<0.001
	Lifting.N.P	4	0.013375	0.003344	1.03	0.419
	Residual	18	0.058476	0.003249		
	Total	29	0.540023			
Pg quad of seagrass^{-1}	Block stratum	2	5.503	2.752	2.35	
	Lifting	1	0.272	0.272	0.23	0.636
	Lifting.N	2	0.559	0.280	0.24	0.790
	Lifting.P	2	22.492	11.246	9.60	0.001
	Lifting.N.P	4	8.515	2.129	1.82	0.169
	Residual	18	21.082	1.171		
	Total	29	58.424			
Leaf %N	Block stratum	2	0.027921	0.013960	1.55	
	Lifting	1	0.015150	0.015150	1.69	0.210
	Lifting.N	2	0.131161	0.065580	7.03	0.005
	Lifting.P	2	0.038764	0.019382	2.16	0.145
	Lifting.N.P	4	0.046089	0.011522	1.28	0.314
	Residual	18	0.161734	0.008985		
	Total	29	0.420818			
Rhizome %N	Block stratum	2	0.007050	0.003525	0.69	

	Lifting	1	0.029706	0.029706	5.81	0.027
	Lifting.N	2	0.020488	0.010244	2.00	0.164
	Lifting.P	2	0.014068	0.007034	1.38	0.278
	Lifting.N.P	4	0.036784	0.009196	1.80	0.173
	Residual	18	0.092037	0.0051013		
	Total	29	0.200132			
root%N	Block stratum	2	0.02211	0.01105	0.81	
	Lifting	1	0.02278	0.02278/	1.67	0.213
	Lifting.N	2	0.00539	0.00269	0.20	0.823
	Lifting.P	2	0.06610	0.03305	2.42	0.118
	Lifting.N.P	4	0.21086	0.05271	3.85	0.020
	Residual	18	0.24616	0.01368		
	Total	29	0.57339			
Whole Plant %N	Block stratum	2	0.3222	0.1611	1.08	
	Lifting	1	2.3074	2.3074	15.51	<0.001
	Lifting.N	2	6.1556	3.0778	20.69	<0.001
	Lifting.P	2	1.0576	0.5288	3.56	0.050
	Lifting.N.P	4	2.2138	0.5535	3.72	0.022
	Residual	18	2.6775	0.1487		
	Total	29	14.7341			
Ng quad of seagrass[-1]	Block stratum	2	302.91	151.45	3.43	
	Lifting	1	28.01	28.01	0.63	0.436
	Lifting.N	2	502.37	251.18	5.69	0.012
	Lifting.P	2	146.86	73.43	1.66	0.218
	Lifting.N.P	4	124.81	32.20	0.71	0.598
	Residual	18	795.21	44.18		
	Total	29	1900.16			

Table C.27: Means and standard errors of the significant outcomes of comparisons between sediment nutrient levels at Bolger Bay (note missing values represent non-significant outcomes).

Parameter	Ambient (Field Control)	Nil addition (Experimental Control)	Low Addition	High Addition
Bolger Bay–Senescent Season				
Porewater				
NH_4^+	19.15±4.61	24.5 ±2.46	93.9 ±15.82	127.02±21.64
PO_4^{3-}	0.09±0.03	0.12±0.05	3.89±1.28	13.74±3.12
$NO_2^- + NO_3^-$	0.42±0.08	0.42±0.11	21.98±6.64	113.3±40.74
Adsorbed				
NH_4^+	526.58±77.72	864.82±375.71	3440.78±1710.82	2839.92±1237.76

For PO_4^{3-} (Bicarbonate) — with subcategories under Low Addition and High Addition:

Parameter	Ambient	Nil	n	p	np	nP	Np	N	P	NP
PO_4^{3-} (Bicarbonate)	295.62±38.43	265.38±45.34	209±80	366. ±49.2	1781 ±1103	10077±5099	1095±412	213.36±43	178.11±31	6674.±2303

Parameter	Ambient (Field Control)	Nil addition (Experimental Control)	Low Addition	High Addition
PO_4^{3-} (Bray)	165.74±22.33	212.31±17.17	859.6±478.08	2168.58±63.14
Bolger Bay–Growing Season				
Porewater				
NH_4^+	47.64±10.55	38.7±3.52	424.65±148.37	2006.94±483.36
PO_4^{3-}	0.68±0.33	0.265±0.04	20.844±12.42	113.549±55.79
$NO_2^- + NO_3^-$	0.59±0.44	0.45±0.41	162.003±119.49	1315.98±615.70
Adsorbed				
NH_4^+	768.49±268	687.64±77.15	953.676±143.43	5821.109±2535.59
PO_4^{3-} (Bicarbonate)				
PO_4^{3-} (Bray)				

Table C.28: Means and standard errors of comparisons between sediment nutrient levels at Picnic Bay (note missing values represent non-significant outcomes). Note values in parentheses are where the result for the parameter is a multiple of either the EC or FC.

Parameter	*Levels of Fertilizer*									
	Ambient (Field Control)	**Nil addition** (Experimental Control)	**Low Addition**				**High Addition**			
Senescent *Porewater*										
NH_4^+	5.72±2.72	7.89±2.47	51.93±12.68				66.88±10.26			
PO_4^{3-}	0.25±0.13	0.28±0.06	2.87±0.96				18.04±4.51			
$NO_2^- + NO_3^-$	0.21±0.03	0.59±0.17	33.11±13.92				42.16±14.62			
Adsorbed										
NH_4^+	521.98±227.93	383.69±36.08	751.06±146.89				2954.73±1321.54			
PO_4^{3-} (Bicarbonate)	*147.484±9.29*	*321.28±145.08*	*677.1±342.13*				*948.78±356.4*			
PO_4^{3-} (Bray)	48.03±5.94	74.14±5.15	199.615± 68.693				191.59±43.283			
Growing *Porewater*										
NH_4^+	8.67±1.81	9.40±0.78	74.88±25.16				142.71±42.83			
PO_4^{3-}	0.65±0.09	0.33±0.06	5.38±1.28 (x16 EC)(x8 FC)				14.13±2.48 (x43 EC) (x22 FC)			
$NO_2^- + NO_3^-$	0.52±0.48	1.33±0.51	32.41±16.61 (x24 EC) (x64 FC)				117.35±45.26 (x90 EC) (x234 FC)			
Adsorbed										
NH_4^+	288.11±113.46	164.19±39.56	814.85±528.82				4297.57±2263.96			
PO_4^{3-}			**n**	**p**	**np**	**nP**	**Np**	**N**	**P**	**NP**
(Bicarbonate)	415.59±96.80	372.19±55.24	179±47	443±110	1801±349	1316±297	2477±197	283±49	4118±3122	1084±329
PO_4^{3-} (Bray)	110.30±83.70	44.40±8.44	55.58±9.93	69.20±9.93	545.31± 495.50	168.57± 68.82	341.19± 263.94	27.40± 11.08	53.647± 19.71	298.47± 237.46

Table C.29: Means and standard errors of plant parameters for each treatment at Bolger Bay in both seasons.

Parameter	Levels of Fertilizer									
	Ambient Field Control	Nil addition (Experimental Control)	Low Addition					High Addition		
			n	p	np	nP	Np	N	P	NP
Bolger Bay Senescent										
Biomass										
Leaf	0.009±0.004	0.015±0.006	0.006±0.001	0.004±0.001	0.004±0.003	0.012±0.0001	0.006±0.003	0.012±0.004	0.018±0.004	0.004±0.001
Rhizome	0.012±0.005	0.022±0.01	0.01±0.004	0.013±0.002	0.004±0.002	0.016±0.004	0.017±0.006	0.01±0.006	0.031±0.013	0.046±0.042
Root	0.004±0.002	0.007±0.002	0.003±0.001	0.003±0.001	0.001±0.0001	0.006±0.003	0.003±0.001	0.005±0.003	0.029±0.016	0.002±0.001
Total	0.025±0.01	0.044±0.017	0.02±0.003	0.02±0.002	0.009±0.005	0.035±0.005	0.025±0.009	0.027±0.012	0.079±0.029	0.052±0.044
Shoot density	27±14	36±12	24±3	13±3	10±7	46±6	20±6	36±22	90±21	10±2
above:below	0.435±0.129	0.487±0.05	0.656±0.64	0.306±0.078	0.528±0.237	0.599±0.162	0.295±0.124	1.204±0.493	0.445±0.161	0.482±0.279
Bolger Bay Growing										
Biomass										
Leaf	0.176±0.139	0.116±0.095	0.258±0.25	0.15±0.029	0.027±0.014	0.132±0.047	0.018±0.014	0.186±0.183	0.21±0.182	0.354±0.348
Rhizome	0.121±0.101	0.076±0.065	0.14±0.132	0.112±0.007	0.016±0.009	0.108±0.039	0.011±0.007	0.158±0.157	0.147±0.111	0.203±0.199
Root	0.048±0.041	0.029±0.024	0.078±0.073	0.053±0.017	0.008±0.004	0.036±0.008	0.005±0.003	0.045±0.044	0.09±0.077	0.076±0.073
Total	0.345±0.28	0.221±0.184	0.476±0.455	0.313±0.05	0.052±0.026	0.277±0.093	0.034±0.025	0.39±0.384	0.447±0.37	0.634±0.62
Shoot density	790±574	518±395	801±754	695±141	184±92	764±120	103±85	596±571	772±598	1326±1273
above:below	1.205±0.118	0.879±0.321	0.613±0.349	0.9±0.111	0.874±0.351	0.833±0.125	0.729±0.262	1.054±0.101	0.741±0.131	1.136±0.258

Table C.30: Means and standard errors of plant parameters for each treatment and both seasons at Picnic Bay.

Parameter	*Levels of Fertilizer*									
	Ambient	**Nil addition**	**Intermediate Addition**				**High Addition**			
	Field Control	Experimental Control	**N**	**p**	**np**	**nP**	**Np**	**N**	**P**	**NP**
Picnic Bay Senescent										
Biomass										
Leaf	0.473±0.14	0.571±0.115	0.191±0.053	0.415±0.131	0.599±0.173	0.932±0.403	0.814±0.354	0.502±0.222	0.642±0.213	0.739±0.287
Rhizome	0.651±0.222	0.557±0.014	0.293±0.099	0.55±0.24	0.7336±0.257	1.055±0.448	0.844±0.4	0.53±0.191	0.733±0.222	0.945±0.395
Root	0.337±0.101	0.486±0.022	0.655±0.198	0.498±0.227	0.45±0.172	0.803±0.336	0.585±0.213	0.363±0.192	0.518±0.149	0.853±0.418
Total	1.461±0.461	1.613±0.106	0.171±0.047	1.463±0.597	1.785±0.593	2.79±1.162	2.243±0.959	1.394±0.603	1.894±0.529	2.537±1.09
Shoot density	869±217	1072±465	603±91	944±404	1647±488	1830±671	1887±856	1164±424	1082±426	1903±689
above: below	0.512±0.045	0.548±0.114	0.433±0.059	0.471±0.093	0.53±0.084	0.504±0.062	0.564±0.009	0.562±0.049	0.508±0.06	0.523±0.13
Picnic Bay Growing										
Biomass										
Leaf	1.206±0.298	0.688±0.172	0.948±0.217	1.054±0.235	1.537±0.238	1.63±0.403	1.145±0.415	1.831±0.182	0.758±0.169	1.393±0.508
Rhizome	1.101±0.159	0.632±0.107	1.131±0.184	1.005±0.259	1.422±0.163	1.71±0.199	0.991±0.415	1.689±0.379	0.864±0.149	1.372±0.486
Root	0.703±0.3	0.385±0.079	0.493±0.083	0.707±0.195	0.696±0.136	0.769±0.102	0.492±0.245	0.889±0.088	0.399±0.102	0.501±0.324
Total	3.009±0.744	1.705±0.353	2.572±0.473	2.765±0.689	3.655±0.532	4.109±0.693	2.628±1.073	4.409±0.648	2.02±0.411	3.566±1.31
Shoot density	1968±338	1477±384	2279±621	1599±147	3128±300	3247±615	3068±1056	3623±526	1373±476	2748±938
above: below	0.667±0.038	0.659±0.062	0.57±0.06	0.631±0.03	0.723±0.027	0.641±0.085	0.83±0.067	0.721±0.06	0.593±0.041	0.693±0.057

Table C.31: Means and standard errors of plant tissue nutrient contents for each treatment at Picnic Bay during the sensescent season.

Parameter	Levels of Fertilizer									
	Ambient	Nil addition	Low Addition			High Addition				
	Field Control	Experimental Control	n	p	np	nP	Np	N	P	NP
Picnic Bay Senescent										
Plant nutrients										
Leaf %N	2.52±0.19	2.91±0.82	3.75±0.12	2.71±0.17	3.74±0.13	3.53±0.17	4.40±0.22	3.63±0.24	3.00±0.07	4.05±0.10
Leaf %P	0.31±0.04	0.32±0.05	0.32±0.05	0.51±0.03	0.45±0.06	0.48±0.03	0.35±0.00	0.24±0.01	0.55±0.02	0.50±0.04
Rhizome %N	0.91±0.06	0.96±0.09	1.26±0.15	0.92±0.06	1.26±0.10	1.19±0.20	1.39±0.06	1.50±0.06	1.06±0.05	1.31±0.10
Rhizome %P	0.17±0.02	0.18±0.01	0.13±0.03	0.30±0.03	0.21±0.04	0.26±0.03	0.17±0.01	0.13±0.03	0.40±0.03	0.30±0.07
Root %N	0.71±0.01	0.53±0.10	0.80±0.07	0.69±0.06	0.81±0.03	0.66±0.06	0.56±0.08	0.81±0.14	0.74±0.09	0.80±0.13
Root %P	0.11±0.00	0.10±0.02	0.11±0.02	0.21±0.02	0.21±0.05	0.21±0.03	0.12±0.01	0.09±0.01	0.40±0.05	0.39±0.14
Whole Plant %N	4.37±0. 09	4.07±0.65	5.81±0.11	4.32±0.29	5.82±0.17	5.37±0.39	6.36±0.21	5.94±0.39	4.79±0.07	6.16±0.30
Whole Plant %P	0.63±0.07	0.56±0.04	0.56±0.09	1.02±0.04	0.87±0.14	0.94±0.08	0.63±0.01	0.47±0.01	1.35±0.07	1.20±0.25
%N of seagrass 0.25m^{-2}	5.77±2.63	6.88±1.23	3.83±1.21	8.32±2.72	10.23±3.19	14.14±5.67	13.89±5.77	7.82±2.82	7.04±2.94	15.34±6.72
%P of seagrass 0.25m^{-2}	0.93±0.38	0.95±0.15	0.34±0.05	1.96±0.61	1.47±0.44	2.54±1.07	1.44±0.63	0.67±0.31	1.99±0.79	2.56±1.03

Table C.32: Means and standard errors of plant tissue nutrient contents for each treatment at Picnic Bay during the growing season.

Parameter	Levels of Fertilizer									
	Ambient	Nil addition	Low Addition			High Addition				
	Field Control	Experimental Control	n	p	np	nP	Np	N	P	NP
Picnic Bay Growing										
Plant nutrients										
Leaf %N	2.49±0.169	2.87±0.087	2.81±0.209	2.57±0.221	3.48±0.101	3.10±0.126	3.81±0.085	3.35±0.235	2.06±0.599	3.32±0.150
Leaf %P	0.37±0.032	0.34±0.007	0.25±0.023	0.54±0.015	0.37±0.017	0.45±0.013	0.32±0.020	0.23±0.015	0.51±0.070	0.38±0.041
Rhizome %N	0.97±0.037	1.05±0.044	1.17±0.074	0.98±0.064	1.28±0.027	1.28±0.058	1.38±0.032	1.32±0.050	1.53±0.434	1.29±0.026
Rhizome %P	0.24±0.013	0.23±0.023	0.14±0.019	0.40±0.023	0.22±0.007	0.29±0.006	0.18±0.006	0.12±0.010	0.43±0.027	0.24±0.027
Root %N	0.82±0.069	0.93±0.094	0.90±0.038	0.83±0.055	0.94±0.050	0.89±0.118	1.14±0.042	0.84±0.010	0.92±0.055	0.81±0.081
Root %P	0.12±0.006	0.13±0.012	0.10±0.003	0.23±0.037	0.18±0.015	0.24±0.045	0.17±0.003	0.09±0.010	0.26±0.029	0.19±0.025
Whole Plant %N	4.28±0.272	4.85±0.215	4.88±0.308	4.38±0.248	5.70±0.069	5.27±0.237	6.33±0.106	5.51±0.295	4.51±0.254	5.42±0.240
Whole Plant %P	0.73±0.050	0.71±0.038	0.49±0.043	1.67±0.064	0.77±0.013	0.98±0.057	0.67±0.023	0.44±0.015	1.20±0.073	0.81±0.071
%N of seagrass 0.25m^{-2}	12.54±2.576	8.33±1.827	12.83±2.954	11.77±2.305	20.89±3.248	21.35±2.599	16.78±7.076	24.08±2.267	8.94±1.548	18.67±6.909
%P of seagrass 0.25m^{-2}	2.14±0.453	1.23±0.303	1.23±0.143	3.31±0.981	2.80±0.395	3.95±0.049	1.753±0.718	1.93±0.348	2.41±0.516	3.13±1.323